Appendix A-1

Sonoma Water

CF/42-0.19-9.1 Correspondence Related to SWRCB
Order Approving Temporary Urgency Change in Permit
12947A for January 2021 (ID 7540)

January 7, 2021

Erik Ekdahl, Deputy Director of Water Rights
State Water Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000

RE: Petition for Temporary Urgency Change—Permit 12947A

Dear Mr. Ekdahl:

Enclosed is the Petition for Temporary Urgency Change to modify the hydrologic index that sets the minimum instream flow requirements for the Russian River as established by Decision 1610 for Permit 12947A. Accompanying the petition are the following:

1) *Supplement to the January 2021 Temporary Urgency Change Petition*
2) Environmental Information for Petition
3) Notice of Exemption
4) California Department of Fish and Wildlife Review Fee Payment
5) State Water Resources Control Board Petition Fee Payment

The petition is being submitted due to drought conditions, severely low storage levels in Lake Mendocino, and a hydrologic index for establishing minimum flows not aligning with the watershed conditions. On January 1, 2021, the water supply condition for the Russian River was reclassified as 'Normal' from 'Dry' based on the cumulative inflow into Lake Pillsbury for the water year. The calculated cumulative inflow of 9,539 acre-feet exceeded the threshold criterion of 8,000 acre-feet between the two classifications. This designation of 'Normal' water supply conditions does not accurately reflect the conditions and lack of rainfall experienced in 2020 in the Upper Russian River. As measured at Ukiah, recorded rainfall for 2020 was 11.32 inches, which amounts to 31% of the average rainfall (37.01 inches) and the second lowest recorded rainfall since 1893.

I look forward to working with the Division of Water Rights staff on this important conservation effort.



Grant Davis
General Manager

c: S. Boland-Brien, J. Ling, S. McFarland, S. Westhoff – State Water Resources Control Board
R. Coey, J. Fuller – National Marine Fisheries Service
E. Larson - California Department of Fish & Wildlife
M. St. John, B. McFadin – North Coast Regional Water Quality Control Board
P. Jeane, D. Seymour, T. Schram, J. Martini Lamb, J. Jasperse – Sonoma Water
C. O'Donnell, A. Brand – Sonoma County Counsel
R. Bezerra – Bartkiewicz, Kronick & Shanahan

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Please indicate County where your project is located here:

Sonoma / Mendo.

MAIL FORM AND ATTACHMENTS TO:
State Water Resources Control Board
DIVISION OF WATER RIGHTS
P.O. Box 2000, Sacramento, CA 95812-2000
Tel: (916) 341-5300 Fax: (916) 341-5400
http://www.waterboards.ca.gov/waterrights

PETITION FOR CHANGE

Separate petitions are required for each water right. Mark all areas that apply to your proposed change(s). Incomplete forms may not be accepted. Location and area information must be provided on maps in accordance with established requirements. (Cal. Code Regs., tit. 23, § 715 et seq.) Provide attachments if necessary.

☐ **Point of Diversion** Wat. Code, § 1701
☐ **Point of Rediversion** Cal. Code Regs., tit. 23, § 791(e)
☐ **Place of Use** Wat. Code, § 1701
☐ **Purpose of Use** Wat. Code, § 1701

☐ **Distribution of Storage** Cal. Code Regs., tit. 23, § 791(e)
☒ **Temporary Urgency** Wat. Code, § 1435
☐ **Instream Flow Dedication** Wat. Code, § 1707
☐ **Waste Water** Wat. Code, § 1211

☐ **Split** Cal. Code Regs., tit. 23, § 836
☐ **Terms or Conditions** Cal. Code Regs., tit. 23, § 791(e)
☐ **Other**

Application 12919A Permit 12947A License Statement

I (we) hereby petition for change(s) noted above and described as follows:

Point of Diversion or Rediversion – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Present:

Proposed:

Place of Use – Identify area using Public Land Survey System descriptions to ¼-¼ level; for irrigation, list number of acres irrigated.

Present:

Proposed:

Purpose of Use

Present:

Proposed:

Split

Provide the names, addresses, and phone numbers for all proposed water right holders.

In addition, provide a separate sheet with a table describing how the water right will be split between the water right holders: for each party list amount by direct diversion and/or storage, season of diversion, maximum annual amount, maximum diversion to offstream storage, point(s) of diversion, place(s) of use, and purpose(s) of use. Maps showing the point(s) of diversion and place of use for each party should be provided.

Distribution of Storage

Present:

Proposed:

Temporary Urgency
This temporary urgency change will be effective from January 28, 2021 to July 26, 2021.

Include an attachment that describes the urgent need that is the basis of the temporary urgency change and whether the change will result in injury to any lawful user of water or have unreasonable effects on fish, wildlife or instream uses.

Instream Flow Dedication – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Upstream Location:

Downstream Location:

List the quantities dedicated to instream flow in either: ☐ cubic feet per second or ☐ gallons per day:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Will the dedicated flow be diverted for consumptive use at a downstream location? ◯ Yes ◯ No
If yes, provide the source name, location coordinates, and the quantities of flow that will be diverted from the stream.

Waste Water
If applicable, provide the reduction in amount of treated waste water discharged in cubic feet per second.

Will this change involve water provided by a water service contract which prohibits your exclusive right to this treated waste water? ◯ Yes ◯ No

Will any legal user of the treated waste water discharged be affected? ◯ Yes ◯ No

General Information – For all Petitions, provide the following information, if applicable to your proposed change(s).

Will any current Point of Diversion, Point of Storage, or Place of Use be abandoned? ◯ Yes ◉ No

I (we) have access to the proposed point of diversion or control the proposed place of use by virtue of:
☐ ownership ☐ lease ☐ verbal agreement ☐ written agreement

If by lease or agreement, state name and address of person(s) from whom access has been obtained.

Give name and address of any person(s) taking water from the stream between the present point of diversion or rediversion and the proposed point of diversion or rediversion, as well as any other person(s) known to you who may be affected by the proposed change.

All Right Holders Must Sign This Form: I (we) declare under penalty of perjury that this change does not involve an increase in the amount of the appropriation or the season of diversion, and that the above is true and correct to the best of my (our) knowledge and belief. Dated 01/07/2021 at Santa Rosa, CA.

[redacted]

Right Holder or Authorized Agent Signature

Right Holder or Authorized Agent Signature

NOTE: All petitions must be accompanied by:
(1) the form Environmental Information for Petitions, including required attachments, available at: http://www.waterboards.ca.gov/waterrights/publications_forms/forms/docs/pet_info.pdf
(2) Division of Water Rights fee, per the Water Rights Fee Schedule, available at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/fees/
(3) Department of Fish and Wildlife fee of $850 (Pub. Resources Code, § 10005)

January 2021

Sonoma County Water Agency

Supplement to the January 2021 Temporary Urgency Change Petition

The Sonoma County Water Agency (Sonoma Water) seeks a temporary urgency change to Term 20 of Sonoma Water's water right Permit 12947A, one of four permits that Sonoma Water uses to provide wholesale water to cities and water districts in Sonoma and Marin Counties in order to maintain viable operations to support municipal use and protect listed salmon species in the Russian River. This is in response to 2020's extremely dry hydrology and low water supply storage levels at Lake Mendocino. Sonoma Water requires urgency changes to Term 20 in order to ensure that sufficient water will be available later in 2021 for listed salmon fisheries, municipal, and agricultural uses.

Sonoma Water's proposed urgency changes would replicate the logic on which Decision 1610's minimum streamflow requirements are based by tying temporary requirements for the Russian River to the same statistical distribution of hydrologic conditions used by Decision 1610, but using Lake Mendocino storage, rather than cumulative inflow into Lake Pillsbury as the basis for calculating the applicable hydrologic condition. This proposed urgency change would implement minimum streamflow requirements that would adjust to changes in the watershed hydrologic conditions with streamflow requirements increasing if seasonal rainfall improves.

1.0 BACKGROUND

Sonoma Water controls and coordinates water supply releases from Lake Mendocino and Lake Sonoma to implement the minimum instream flow requirements in accordance with its water rights and Decision 1610, which the State Water Resources Control Board (State Water Board) adopted on April 17, 1986. Decision 1610 specifies minimum flow requirements for the Upper

Russian River, Dry Creek and the Lower Russian River.[1] These minimum flow requirements vary based on water supply 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 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 (NMFS) on September 24, 2008.

1.1 Minimum Flow Requirements

Term 20 of Permit 12497A 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, the Decision 1610 required minimum Russian River flows are: 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 (owned and operated by PG&E) 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

[1] The Upper Russian River is the stream reach from the confluence of the East Fork Russian River and the West Fork 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.

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 based on the hydrologic conditions for the Russian River system. 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.

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 or 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 CURRENT WATER SUPPLY CONDITIONS

On June 10, 2020, Sonoma Water filed a Temporary Urgency Petition with the State Water Board, which issued an order on July 28, 2020 approving the following temporary changes to the Decision 1610 instream flow requirements:

(a) for July 1 through December 27, the minimum instream flow requirements in the Upper Russian River be reduced to 50 cfs and in the Lower Russian River be reduced to 60 cfs;

(b) If storage in Lake Mendocino drops more than one percent below the target water supply storage level on any day between the date of the Board's order granting the TUCP and December 27, then, from that date through December 27, the minimum instream flow requirement on the Upper Russian River be reduced from 50 cfs to 40 cfs and on the Lower Russian River from 60 cfs to 50 cfs.

c) The minimum instream flow requirement be implemented as a 5-day running average of average daily stream flow measurements with instantaneous minimum instream flows being no less than 40 cfs on the Upper Russian River and no less than 50 cfs on the Lower Russian River, unless storage drops more than one percent below the target water supply storage at Lake Mendocino, then the instantaneous minimum instream flow would be no less than 30 cfs on the Upper Russian River and no less than 40 cfs on the Lower Russian River.

These changes, along with water conservation efforts throughout the region, preserved storage in Lake Mendocino well above the target water supply storage levels avoiding the need to further reduce flows. On December 27, 2020, the order expired and minimum instream flow requirements reverted back to *Dry* water supply conditions for the remainder of 2020. On January 1, 2021, cumulative inflow into Lake Pillsbury between October 1, 2020 and December 31, 2020 exceeded the threshold criterion of 8,000 acre-feet. Consequently, the water supply condition for the Russian River was defined as *Normal.* This water supply condition is reassessed at the beginning of each month through June.

2.1 Lake Mendocino

As of January 6, 2021 the water supply storage level in Lake Mendocino was 28,206 acre-feet. This storage level is approximately 41 percent of the available water conservation pool for this time of year. The current low storage level is the result of severely low rainfall in the region since January 1, 2020. Furthermore, Pacific Gas & Electric (PG&E) has indicated they intend to file a request with the Federal Energy Regulatory Commission (FERC) for a temporary variance to reduce its minimum instream flow requirements for the Potter Valley Project (PVP). PG&E, in consultation with NMFS, California Department of Fish and Wildlife, Round Valley Indian Tribes, Potter Valley Irrigation District and Sonoma

Water, plans to file the variance in early January due to critically low storage in Lake Pillsbury and concern that they may no longer meet minimum flow requirements while also ensuring the safe operation of the PVP.

The temporary variance would reduce the transfer of Eel River water through the project to the Russian River watershed from 45 cfs to 15 cfs if storage in Lake Pillsbury falls below 18,000 acre-feet and would expire once storage in Lake Pillsbury exceeds 30,000 acre-feet. The temporary variance will result in a substantial reduction to the required minimum flow in the East Branch of the Russian River and correspondingly reduced inflow into Lake Mendocino.

While there is significant uncertainty in projecting end of the year water supply conditions this early in the water year, a recent analysis prepared by Sonoma Water engineering staff indicates that unless mitigation measures are taken in the near future, such as those requested in the Temporary Urgency Change Petitions (TUCP), there is an unacceptable risk that Lake Mendocino could decline to critically low levels. Storage projections for Lake Mendocino were developed using observed storage on December 28, 2020 and modeled simulations for the remainder of the water year using watershed hydrology for 21 years from the historical record (1908 – 2017) that exhibited similar conditions to water year 2021 to date.

Results of the modeling indicate four of the 21 selected years (1920, 1929, 1931 and 1976) show Lake Mendocino storage levels well below 20,000 acre-feet at the end of the water year, which would have a significant impact to water supply sufficient to support survival of listed Russian River salmonid fisheries and significantly risk water availability for agricultural and municipal use, and recreation. The high ratio of projections (4 of 21 years) that result in very low storage levels supports the need to expeditiously implement temporary changes to Sonoma Water's water right Permit 12947A that would temporarily determine minimum instream flow requirements based on storage thresholds at Lake Mendocino rather than cumulative inflow into Lake Pillsbury as required by Term 20 and State Water Board Decision 1610. A detailed description of the analysis is presented in Appendix A.

2.2 Lake Sonoma

As of January 6, 2021 the water supply storage level in Lake Sonoma was 158,715 acre-feet. This storage level is approximately 65 percent of the available water conservation pool. Although this level is below normal for this time of year, the much larger water supply pool of Lake Sonoma provides multiple years of carry over storage.

3.0 CRITERIA FOR APPROVING TEMPORARY UNGENCY CHANGE TO PERMIT 12947A

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 this petition, an urgent need for the requested temporary changes exists because of the extremely low storage levels in Lake Mendocino and the fact that, with the changes in PVP operations since 2004, cumulative inflow into Lake Pillsbury no longer is a good metric to determine water supply conditions in the Russian River. Without the proposed changes, the applicable minimum instream

flow requirements may require releases of water from Lake Mendocino at levels that would risk significant depletions of storage and potential elimination of water supplies for water users in Mendocino County and northern Sonoma County (above the confluence with Dry Creek) during the spring, summer and fall of 2021. Such depletions in storage and reductions or eliminations of water supplies would cause serious impacts to human health and welfare, and reduce water supplies needed for fishery protection and stable flows in the Upper Russian River.

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 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 this petition is approved, monthly storage thresholds in Lake Mendocino would determine the water supply conditions that set the Upper Russian River minimum instream flow requirements. This change could result in lower instream flows in the Upper 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 the present instream flow requirements, if they were to lead to the draining of Lake Mendocino and the dewatering of the Upper Russian River.

3.4 The Proposed Change is in the Public Interest

Approval of this petition would provide an alternative criteria for minimum instream flow requirements for the Upper Russian River that would be based on a more accurate assessment of water supply conditions in Lake Mendocino and the Upper Russian River. This would help conserve stored water in Lake Mendocino, so that sufficient water is available to be released throughout 2021 to maintain instream flows for the benefit of all uses of Russian River water, including the salmonid fisheries in the Russian River. It is in the public interest to

preserve these water supplies for these beneficial uses under present hydrological conditions.

4.0 REQUESTED TEMPORARY URGENCY CHANGE TO PERMIT 12947A

To address the current and projected water supply conditions in Lake Mendocino and the risks associated with continuing to set Upper Russian River minimum instream flow requirements using cumulative inflow into Lake Pillsbury, Sonoma Water requests that the State Water Board make the following temporary urgency change to Term 20 of water right Permit 12947A:

Starting January 28, 2021, the minimum instream flow requirements for the Upper Russian River will be established using an index based on water storage in Lake Mendocino, rather than using the current index which is based on cumulative inflow into Lake Pillsbury. This temporary change is requested to preserve the Lake Mendocino water supply in case below normal rainfall and dry hydrologic conditions continue. Specifically, Sonoma Water proposes that the monthly 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 will apply to the Upper Russian River:

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

40,000 acre-feet as of January 1
59,000 acre-feet as of February 1
68,000 acre-feet as of March 1
69,500 acre-feet as of March 16
71,000 acre-feet as of April 1
70,000 acre-feet as of April 16
69,000 acre-feet as of May 1
67,500 acre-feet as of May 16
65,000 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
36,000 acre-feet as of February 1
52,000 acre-feet as of March 1
53,000 acre-feet as of March 16
54,000 acre-feet as of April 1
53,000 acre-feet as of April 16
52,000 acre-feet as of May 1
51,000 acre-feet as of May 16
50,000 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 streamflow requirements would be tied to Lake Mendocino storage, they directly reflect the hydrologic conditions in the Upper 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, but would shift the criteria on which the requirements would be based to hydrologic conditions in the Russian River watershed rather than using the surrogate metric of inflows to Lake Pillsbury in the Eel River watershed which are not representative of Russian River hydrologic conditions

These Lake Mendocino storage thresholds were developed by Sonoma Water engineering staff using its Russian River Simulation Model, and assuming: (1) current Russian River system losses, (2) 1910 to 2017 unimpaired flow hydrology, and (3) Potter Valley Project operations based on PG&E's temporary variance request they have indicated will be filed with the Federal Energy Regulatory Commission in early January 2021. 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, and 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 Appendix A.

At this time, no changes are being requested for how minimum instream flow requirements are determined for Dry Creek and the Lower Russian River. As indicated above, although Lake Sonoma storage levels are below normal for this time of year, that reservoir has adequate water supply to meet minimum instream flows in Dry Creek and the Lower Russian River based on the State Water Board's Decision 1610. However, Sonoma Water will re-evaluate supply conditions in Lake Sonoma in the spring to determine whether it is necessary to file a subsequent Temporary Urgency Change Petition to address a significant depletion at Lake Sonoma storage.

5.0 WATER CONSERVATION ACTIVITIES

Sonoma Water and its water contractors continue to implement water-use-efficiency programs that align with the legacy programs of the California Urban Water Conservation Council's (CUWCC) Best Management Practices (BMPs) and comply with SB 7x-7. While these BMPs remain the baseline for the region, the establishment of the Sonoma-Marin Water Saving Partnership (Partnership) in December 2010, and the subsequent ten year extension of the Partnership agreement in May 2018, memorialized the region's commitment to long-term, year-round water use efficiencies. The Partnership removes one of the most significant barriers to implementing conservation programs, namely funding. Each Partner has committed to a sustained level of funding that is allocated specifically to implementing conservation programs to reduce overall regional water use.

The Partnership represents twelve 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, Cotati, Healdsburg; North Marin Water, Valley of the Moon and Marin Municipal Water Districts; Cal 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.

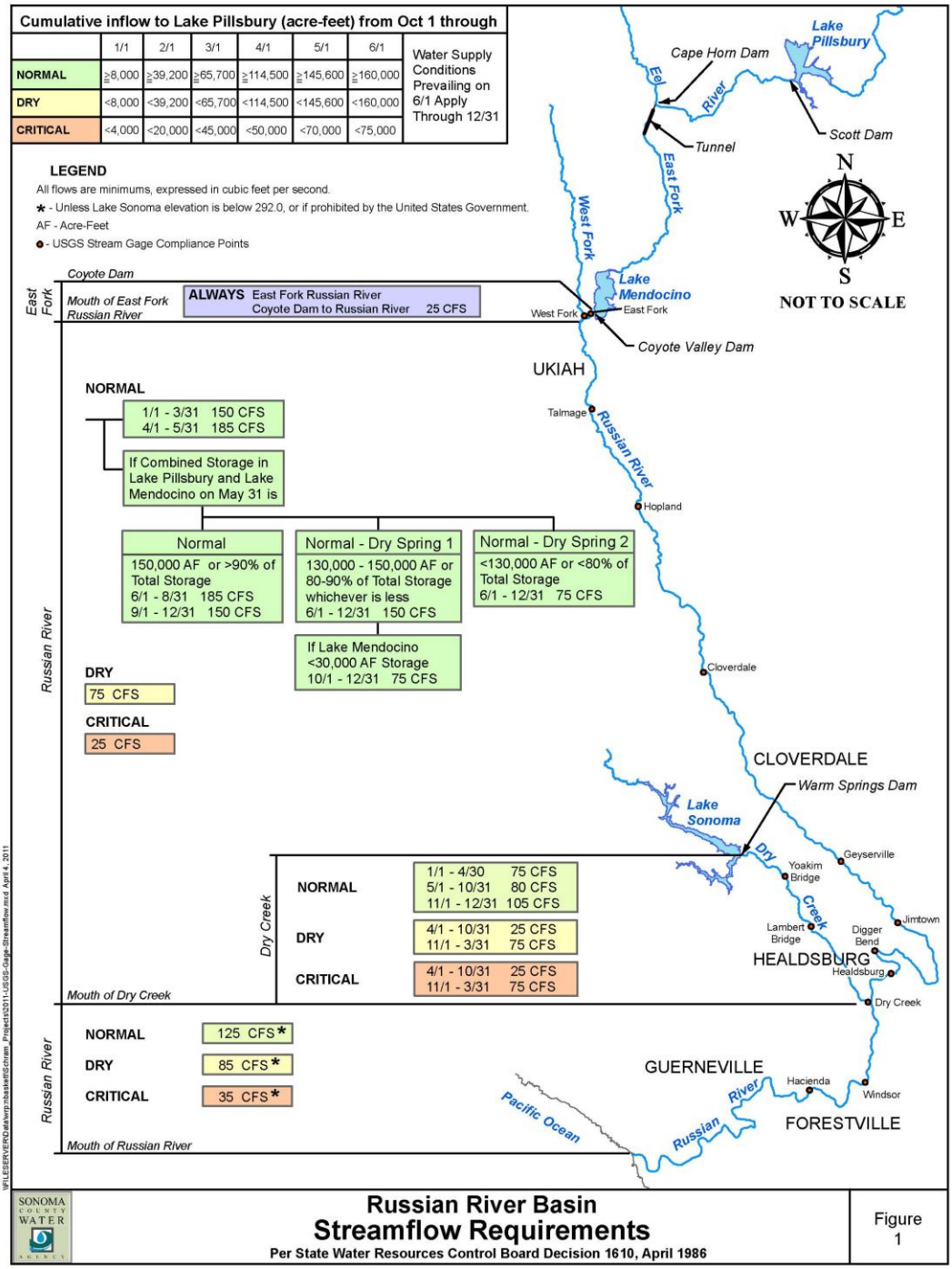
On May 9, 2016, Governor Edmund G. Brown Jr. issued Executive Order B-37-16 that set forth actions to be taken to use water more wisely, eliminate water waste, strengthen local drought resilience, and improve agricultural water use efficiency and drought planning. Subsequent passage of SB 606, AB 1668, and SB 555 provided the needed authority for state agencies to begin the development of a new statewide framework for making conservation a California way of life. The Partners are committed to maintaining a conservation ethic in the region and will continue to implement conservation programs that are minimizing water demand rebound following the 2012-2016 drought, while working collaboratively with state agencies to develop and implement the new water use objectives of the statewide framework. The Partners, working alongside the California Water Efficiency Partnership as the successor organization to CUWCC, will continue to collect regional data and develop new programs that ensure our customers remain engaged in making conservation a California way of life.

In summer 2020, the Partnership conducted a successful multi-media public outreach campaign from June through September called “Saving Water Ensures Water for What You Love” which emphasized the importance of water conservation for long-term water supply reliability, fisheries, and summertime recreation in the Russian River. This campaign was a contributing factor in the successful preservation of storage in Lake Mendocino and the avoidance of further reduced flows in the Russian River this past summer. In addition to public outreach, the Partnership continued to offer a wide variety of water-use-efficiency incentive programs, workshops, trainings, school classes, and other resources for customers in spite of COVID Shelter-in-Place (SIP) Orders. The Partnership’s activities for calendar year 2020 were detailed in three separate update reports submitted to the State Water Board to meet the Term 10 requirements of Order WR 2020-0102-EXEC.

Because of continued low rainfall and reservoir levels at the end of 2020, the Partnership is undertaking a new public outreach campaign in winter 2021 that will initially focus on paid social media messages. In addition to social media ad buys, the Partners will continue with already underway winter savings messages using AMI billing software, more traditional bill inserts, website posts, E-news, local radio, and direct customer outreach. Should dry conditions persist, a further

escalation of the winter outreach campaign will be implemented, along with consideration to include a regional reduction target that is aligned with needed savings.

The Partnership will also continue to provide programs that help customers make water conservation a way of life. This includes workarounds to SIP Orders, such as the upcoming virtual training for professional landscapers in February, titled ***Rehydrating the Russian River Watershed: Moving towards Regenerative Landscapes***, or the virtual Garden Sense consultations offered to residential customers. Due to these and previous years' efforts, water use by the Partnership near the end of 2020 was still 9% below the 2013 benchmark year chosen by the state for water use reductions during the drought. It is anticipated that the Partnership's wintertime activities will continue the successful water use reductions of the past few years.


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
Lake Pillsbury
Cape Horn Dam
Eel River
Tunnel
Scott Dam
East Fork
West Fork
Lake Mendocino
Coyote Valley Dam
N
W
E
S
NOT TO SCALE
Coyote Dam
East Fork
Mouth of East Fork Russian River
ALWAYS East Fork Russian River Coyote Dam to Russian River 25 CFS
UKIAH
Talmage
Russian River
Hopland
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
If Lake Mendocino <30,000 AF Storage
10/1 - 12/31 75 CFS
Normal - Dry Spring 2
<130,000 AF or <80% of Total Storage
6/1 - 12/31 75 CFS
DRY
75 CFS
CRITICAL
25 CFS
Cloverdale
CLOVERDALE
Warm Springs Dam
Lake Sonoma
Dry Creek
Geyserville
Yoakim Bridge
Jimtown
Lambert Bridge
Digger Bend
HEALDSBURG
Healdsburg
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*
GUERNEVILLE
Hacienda
Windsor
Russian River
Pacific Ocean
FORESTVILLE
Mouth of Russian River
SONOMA COUNTY WATER AGENCY
Russian River Basin
Streamflow Requirements
Per State Water Resources Control Board Decision 1610, April 1986
Figure 1

Water Year 2021 Russian River Hydrologic Analysis

The Lake Mendocino storage projections were simulated 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 108 years of hydrologic data (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. Within each reach gains associated with unimpaired flows and losses associated with municipal and industrial (M&I) diversions and/or other distributed demands are accounted for.

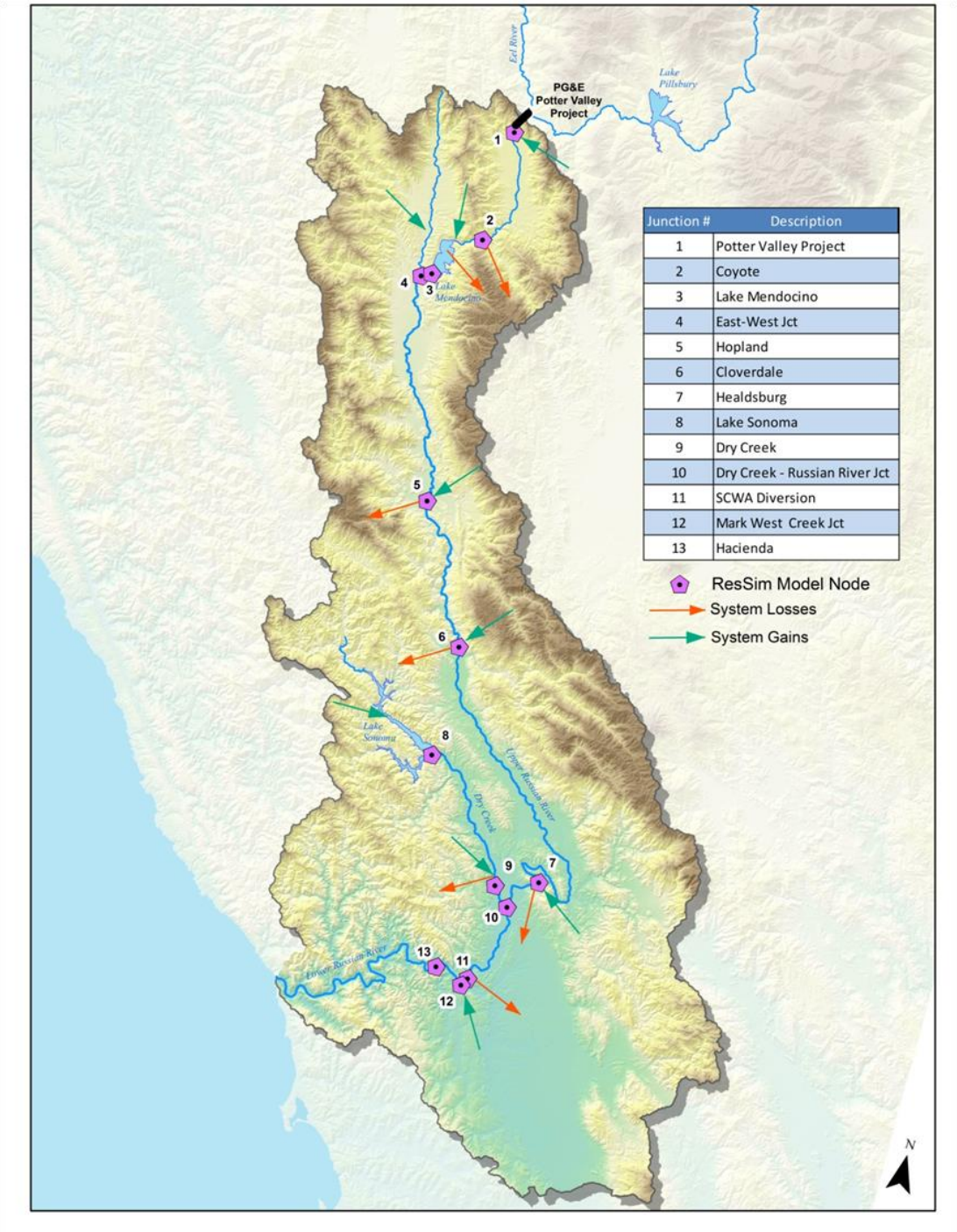


Figure 1: Russian River ResSim Model Schematic

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 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.

Projected PVP diversion 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.

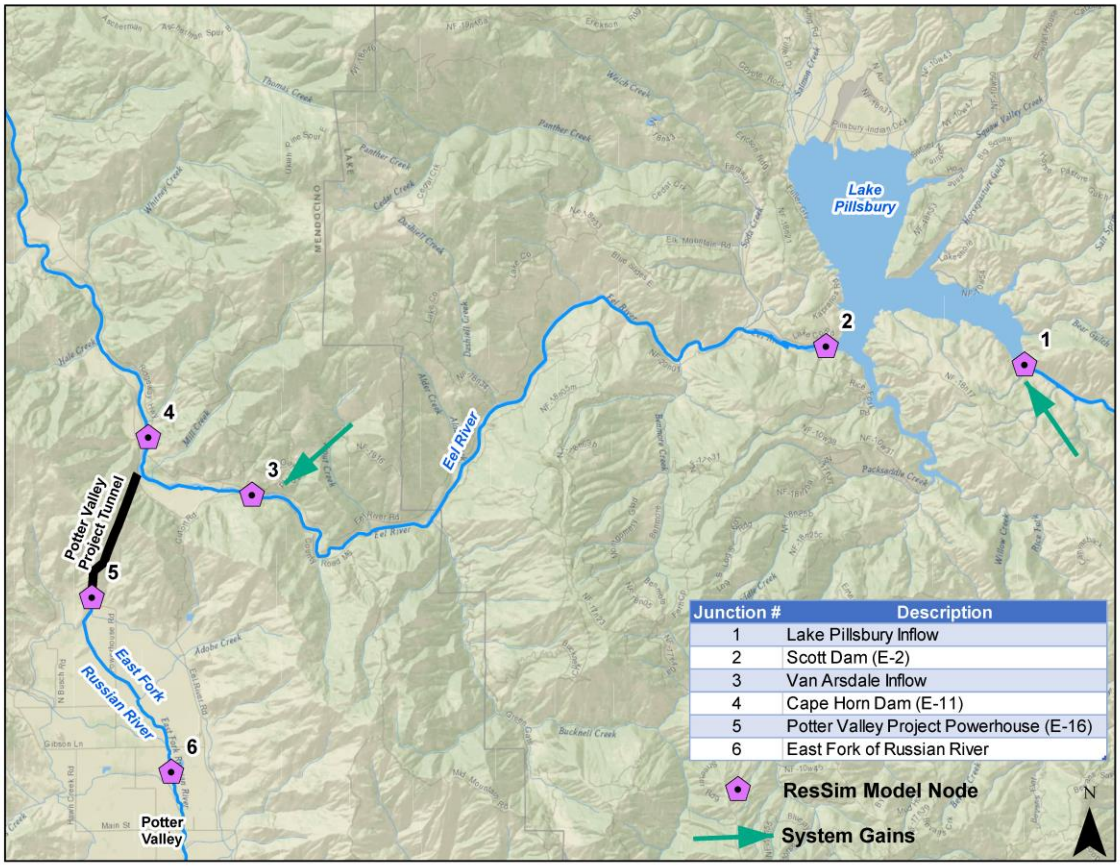


Figure 2: Potter Valley Project ResSim Model Schematic

Simulation of PVP operations included the proposed changes to minimum instream flows Pacific Gas & Electric (PG&E) has indicated they will request in a temporary variance they intend to file with the Federal Energy Regulatory Commission in early January 2021. The temporary variance would reduce the maximum transfer of Eel River water through the project to the Russian River watershed from 45 cfs to 15 cfs if storage in Lake Pillsbury falls below 18,000 acre-feet.

To evaluate potential risk to water supply in Lake Mendocino due to this year's low water supply storage conditions, below normal precipitation and potential reductions in transfers of Eel River water through PVP, storage projections for Lake Mendocino were developed that incorporates observed storage on

December 28, 2020 and model simulations for the remainder of the water year using hydrology from select historical years. Selection of historical years for projections was completed through an analysis of observed and forecasted Lake Pillsbury inflows, which is the criterion used in Decision 1610 for setting water supply conditions in the Russian River. Thirty eight ensemble forecasts of cumulative inflow into Lake Pillsbury prepared by the California Nevada River Forecast Center (CNRFC) made on December 28, 2020 to January 12, 2021 (15 days), as shown in Figure 3, were used to assess the range of short-term forecasted Lake Pillsbury inflow conditions and select historical years for developing water supply projections

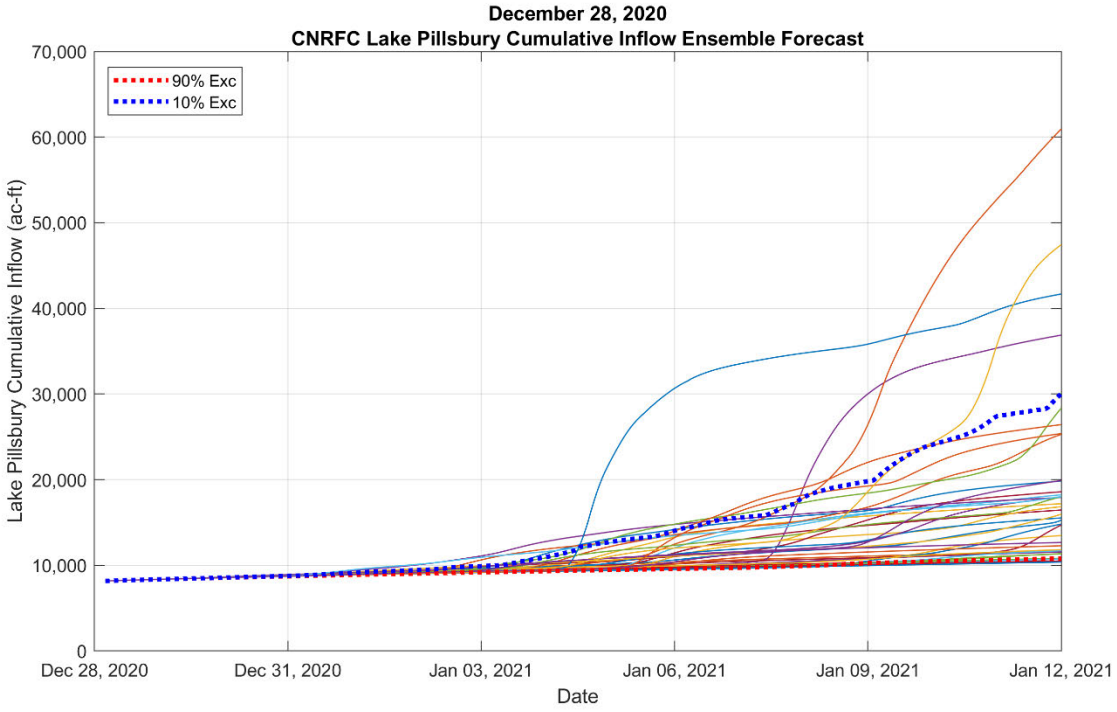


Figure 3: CNRFC Ensemble Cumulative Lake Pillsbury Inflow Forecasts Made on December 28, 2020

Water supply projection years were selected based on historical Lake Pillsbury water year cumulative inflow from 1910 through 2017 that fall between the 10 percent and 90 percent exceedance range of ensemble CNRFC forecasts of cumulative inflow on January 12, 2021. The 10 percent exceedance (10,700

acre-feet cumulative inflow on January 12, 2021) is shown as the red dotted line and the 90 percent exceedance (28,200 acre-feet cumulative inflow on January 12, 2021) is shown as the blue dotted line in Figure 3. This range of exceedances was used to eliminate extraneous ensemble forecasts. Results of this analysis are summarized in Figure 4 below, which shows all years (1910-2017) of Lake Pillsbury cumulative inflow (gray lines) and the subset of 21 years in the historical record where cumulative inflow on January 12 is between the 10% and 90% exceedance range (10,700 to 28,200 acre-feet). These 21 years are referred to as the projection years. This figure also includes *Dry* and *Critical* water supply condition thresholds defined in Decision 1610. It can be seen in this figure that all of the projection years show trends of cumulative inflow that are very low for the first portion of the water year (similar to observed conditions for water year 2021). Many of these projection years, however, show significant gains in cumulative inflow in January through March and exceed the *Dry* threshold under Decision 1610.

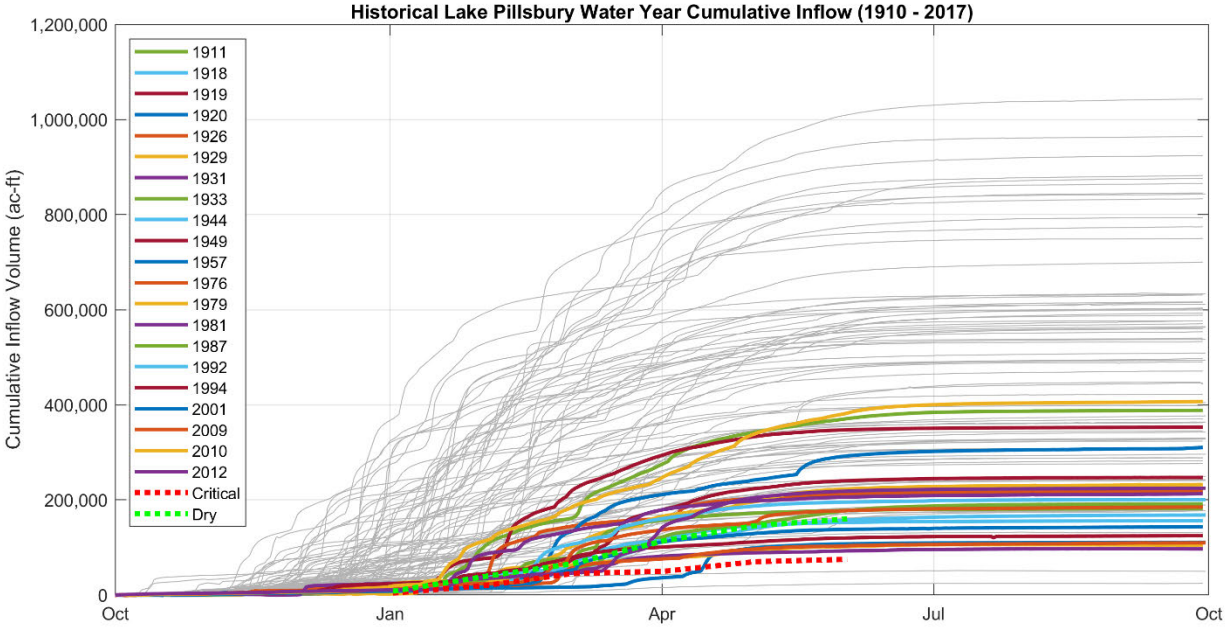


Figure 4: Water Year Cumulative Inflow into Lake Pillsbury from 1910 Through 2017

Simulation results of Lake Mendocino storage for the projection years are shown in Figure 5 below. Results of these model simulations show that most of the projection years have significant recovery of storage in January through April, and therefore, a sufficient amount of water leading into the dry season (May through September) for water supply. Four of the projection years (1920, 1929, 1931 and 1976) show storage levels well below 20,000 acre-feet at the end of the water year, which would have a significant impact to water supply in Lake Mendocino sufficient to support survival of listed Russian River salmonid fisheries and significantly risk water availability for agricultural and municipal use, and recreation. The high ratio of model simulations (4 of 21 projection years) that result in very low year end Lake Mendocino storage levels supports the need to implement temporary changes to Sonoma Water's water rights permits that would temporarily determine minimum instream flow requirements based on storage thresholds at Lake Mendocino rather than cumulative inflow into Lake Pillsbury as required by Term 20 and State Board Decision 1610.

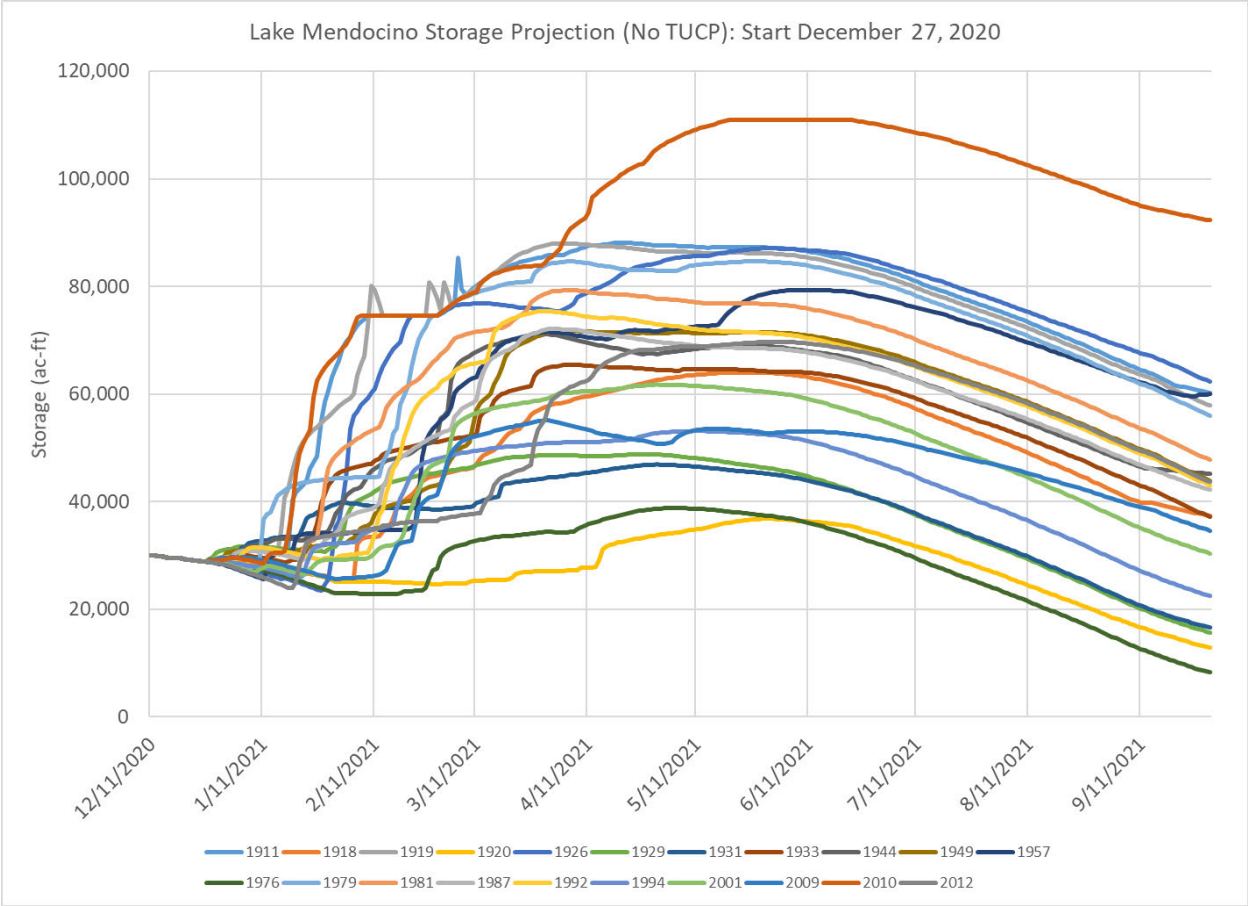


Figure 5: Lake Mendocino Storage Projections

Lake Mendocino Storage Thresholds

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 2021. These storage thresholds, which were also requested in the Temporary Urgency Change Petition filed by Sonoma Water in December 2013, 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.

	D1610 LP[1] Cumulative Inflow			LM[2] Storage Thresholds		
Date	**Normal**	**Dry**	**Critical**	**Normal**	**Dry**	**Critical**
1-Jan	86.9	9.3	3.7	82.2	6.5	11.2
1-Feb	78.4	13.1	8.4	80.4	14.0	5.7
1-Mar	86.0	9.3	4.7	86.1	7.4	6.5
1-Apr	86.9	10.3	2.8	89.3	7.0	3.7
1-May	86.9	11.2	1.9	90.2	6.0	3.7
1-Jun	87.9	10.3	1.9	93.5	2.8	3.7
Average	**85.5**	**10.6**	**3.9**	**86.9**	**7.3**	**5.8**

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

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 will apply to the Upper Russian River:

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

40,000 acre-feet as of January 1
59,000 acre-feet as of February 1
68,000 acre-feet as of March 1
69,500 acre-feet as of March 16

71,000 acre-feet as of April 1
70,000 acre-feet as of April 16
69,000 acre-feet as of May 1
67,500 acre-feet as of May 16
65,000 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
36,000 acre-feet as of February 1
52,000 acre-feet as of March 1
53,000 acre-feet as of March 16
54,000 acre-feet as of April 1
53,000 acre-feet as of April 16
52,000 acre-feet as of May 1
51,000 acre-feet as of May 16
50,000 acre-feet as of June 1

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

State of California
State Water Resources Control Board
DIVISION OF WATER RIGHTS
P.O. Box 2000, Sacramento, CA 95812-2000
Tel: (916) 341-5300 Fax: (916) 341-5400
http://www.waterboards.ca.gov/waterrights

ENVIRONMENTAL INFORMATION FOR PETITIONS

This form is required for all petitions.

Before the State Water Resources Control Board (State Water Board) can approve a petition, the State Water Board must consider the information contained in an environmental document prepared in compliance with the California Environmental Quality Act (CEQA). This form is not a CEQA document. If a CEQA document has not yet been prepared, a determination must be made of who is responsible for its preparation. As the petitioner, you are responsible for all costs associated with the environmental evaluation and preparation of the required CEQA documents. Please answer the following questions to the best of your ability and submit any studies that have been conducted regarding the environmental evaluation of your project. If you need more space to completely answer the questions, please number and attach additional sheets.

DESCRIPTION OF PROPOSED CHANGES OR WORK REMAINING TO BE COMPLETED

For a petition for change, provide a description of the proposed changes to your project including, but not limited to, type of construction activity, structures existing or to be built, area to be graded or excavated, increase in water diversion and use (up to the amount authorized by the permit), changes in land use, and project operational changes, including changes in how the water will be used. For a petition for extension of time, provide a description of what work has been completed and what remains to be done. Include in your description any of the above elements that will occur during the requested extension period.

See 'Supplement to the January 2021 Temporary Urgency Change Petition' for a summary of the requested changes.

Insert the attachment number here, if applicable: [ ]

Coordination with Regional Water Quality Control Board

For change petitions only, you must request consultation with the Regional Water Quality Control Board regarding the potential effects of your proposed change on water quality and other instream beneficial uses. (Cal. Code Regs., tit. 23, § 794.) In order to determine the appropriate office for consultation, see: http://www.waterboards.ca.gov/waterboards_map.shtml. Provide the date you submitted your request for consultation here, then provide the following information.

Date of Request: 1/4/2021

Will your project, during construction or operation, (1) generate waste or wastewater containing such things as sewage, industrial chemicals, metals, or agricultural chemicals, or (2) cause erosion, turbidity or sedimentation? ○ Yes ◉ No

Will a waste discharge permit be required for the project? ○ Yes ◉ No

If necessary, provide additional information below:

Bryan McFadin of the North Coast Regional Water Quality Control Board (NCRWQCB) was contacted on January 4, 2021, by Sonoma Water staff, Don Seymour and Jessica Martini-Lamb.

Insert the attachment number here, if applicable:

Local Permits

For temporary transfers only, you must contact the board of supervisors for the county(ies) both for where you currently store or use water and where you propose to transfer the water. (Wat. Code § 1726.) Provide the date you submitted your request for consultation here.

Date of Contact:

For change petitions only, you should contact your local planning or public works department and provide the information below.

Person Contacted: Date of Contact:

Department: Phone Number:

County Zoning Designation:

Are any county permits required for your project? If yes, indicate type below. ○ Yes ◉ No

☐ Grading Permit ☐ Use Permit ☐ Watercourse ☐ Obstruction Permit

☐ Change of Zoning ☐ General Plan Change ☐ Other (explain below)

If applicable, have you obtained any of the permits listed above? If yes, provide copies. ○ Yes ○ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

Federal and State Permits

Check any additional agencies that may require permits or other approvals for your project:

☐ Regional Water Quality Control Board ☐ Department of Fish and Game

☐ Dept of Water Resources, Division of Safety of Dams ☐ California Coastal Commission

☐ State Reclamation Board ☐ U.S. Army Corps of Engineers ☐ U.S. Forest Service

☐ Bureau of Land Management ☐ Federal Energy Regulatory Commission

☐ Natural Resources Conservation Service

Have you obtained any of the permits listed above? If yes, provide copies. ○ Yes ◉ No

For each agency from which a permit is required, provide the following information:

Agency	Permit Type	Person(s) Contacted	Contact Date	Phone Number

If necessary, provide additional information below:

Insert the attachment number here, if applicable: ☐

Construction or Grading Activity

Does the project involve any construction or grading-related activity that has significantly altered or would significantly alter the bed, bank or riparian habitat of any stream or lake? ○ Yes ◉ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable: ☐

Archeology

Has an archeological report been prepared for this project? If yes, provide a copy. ◯ Yes ◉ No

Will another public agency be preparing an archeological report? ◯ Yes ◉ No

Do you know of any archeological or historic sites in the area? If yes, explain below. ◯ Yes ◉ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable: ☐

Photographs

For all petitions other than time extensions, attach complete sets of color photographs, clearly dated and labeled, showing the vegetation that exists at the following three locations:

☒ Along the stream channel immediately downstream from each point of diversion

☒ Along the stream channel immediately upstream from each point of diversion

☒ At the place where water subject to this water right will be used

Maps

For all petitions other than time extensions, attach maps labeled in accordance with the regulations showing all applicable features, both present and proposed, including but not limited to: point of diversion, point of rediversion, distribution of storage reservoirs, point of discharge of treated wastewater, place of use, and location of instream flow dedication reach. (Cal. Code Regs., tit. 23, §§ 715 et seq., 794.)

Pursuant to California Code of Regulations, title 23, section 794, petitions for change submitted without maps may not be accepted.

All Water Right Holders Must Sign This Form:

I (we) hereby certify that the statements I (we) have furnished above and in the attachments are complete to the best of my (our) ability and that the facts, statements, and information presented are true and correct to the best of my (our) knowledge. Dated 1.7.21 at Santa Rosa, CA.

[redacted]

Water Right Holder or Authorized Agent Signature

Water Right Holder or Authorized Agent Signature

NOTE:

- **Petitions for Change may not be accepted unless you include proof that a copy of the petition was served on the Department of Fish and Game. (Cal. Code Regs., tit. 23, § 794.)**
- **Petitions for Temporary Transfer may not be accepted unless you include proof that a copy of the petition was served on the Department of Fish and Game and the board of supervisors for the county(ies) where you currently store or use water and the county(ies) where you propose to transfer the water. (Wat. Code § 1726.)**

Sonoma Water

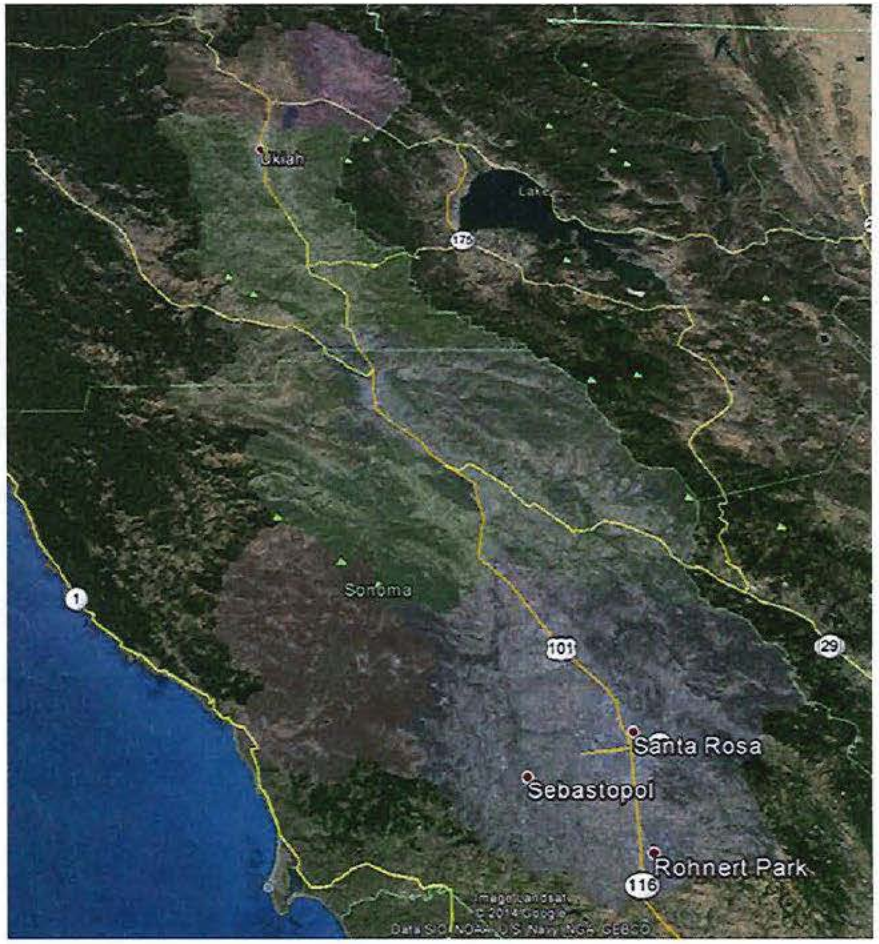
Photographs in Vicinity of Main Diversion Facilities at Mirabel Park

Russian River Downstream of Mirabel Park Production Facilities on July 12, 2016





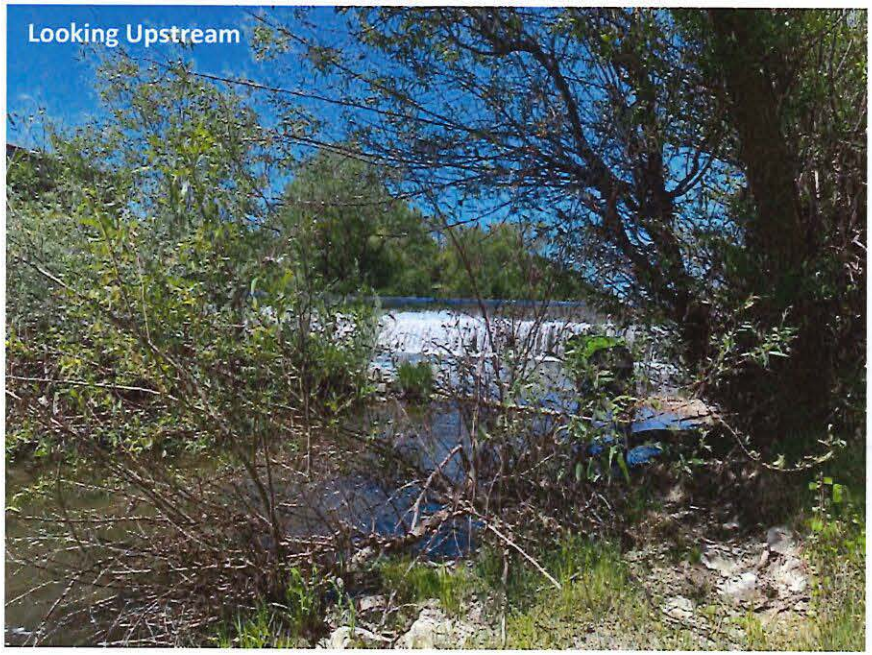
Russian River Watershed



Sonoma Water

Photographs of Russian River Downstream of River Diversion System at Mirabel Park on May 14, 2020

Mirabel Inflatable Dam





NOTICE OF EXEMPTION

To: X Office of Planning & Research
1400 Tenth Street
Sacramento, CA 95814

X County Clerk
County of Sonoma
Santa Rosa, CA 95401

X County Clerk
County of Mendocino
Ukiah, CA 95482

From: Sonoma County Water Agency
404 Aviation Boulevard
Santa Rosa, CA 95403

Project Title: Petition Requesting Approval of a Temporary Urgency Change in Water Right Permit 12947A in Mendocino and Sonoma counties

Project Location-Specific: The proposed action would occur in Mendocino and Sonoma counties at Lake Mendocino and in the Upper Russian River from Coyote Valley Dam/Lake Mendocino to the confluence with Dry Creek. Figure 1 shows the streamflow requirements for the Russian River system. Communities and cities along the Russian River include Ukiah, Hopland, Cloverdale, Geyserville, Healdsburg, Forestville, Mirabel Park, Rio Nido, Guerneville, Monte Rio, Duncans Mills, and Jenner.

Project Location – City: N/A **Project Location – County:** Mendocino and Sonoma

Description of Nature, Purpose and Beneficiaries of Project: The Sonoma County Water Agency (Sonoma Water) controls and coordinates water supply releases from the Coyote Valley Dam and Warm Springs Dam projects in accordance with the provisions of Decision 1610, which the State Water Resources Control Board (SWRCB) adopted on April 17, 1986. Decision 1610 specifies the minimum instream flow requirements for the Upper Russian River, Dry Creek and the Lower Russian River, which vary based on water supply conditions. The requirements for the Upper Russian River have been incorporated into Term 20 of Sonoma Water's water right Permit 12947A (Application 12919A). These minimum flow requirements vary based on water supply conditions, which are also specified by Decision 1610 and Term 20. The water supply conditions defined in Decision 1610 and Term 20 are established 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. Specifically, cumulative inflow for Lake Pillsbury is defined as the algebraic sum of releases from Lake Pillsbury, change in storage and lake evaporation. Sonoma Water's operations are also subject to the Russian River Biological Opinion issued by the National Marine Fisheries Service on September 24, 2008.

Sonoma Water is requesting that the SWRCB make the following temporary urgency change to Term 20 of Sonoma Water's water right Permit 12947A. Starting January 28, 2021, the minimum instream flow requirements for the Upper Russian River would be established using an index based on water storage in Lake Mendocino, rather than the current index of cumulative inflow into Lake Pillsbury. This temporary change is requested to preserve the Lake Mendocino water supply in case below normal rainfall and hydrologic conditions continue. Specifically, Sonoma Water proposes that the following monthly storage criteria be used, in lieu of cumulative Lake Pillsbury inflow, to determine the water supply condition that sets the minimum instream flow requirements in Term 20 of Permit 12947A as applied to the Upper Russian River: (a) *Dry* water supply conditions will exist when storage in Lake Mendocino is less than 40,000 acre-feet (ac-ft) as of January 1, 59,000 ac-ft as of February 1, 68,000 ac-ft as of March 1, 69,500 ac-ft as of March 16, 71,000 ac-ft as of April 1, 70,000 ac-ft as of April 16, 69,000 ac-ft as of May

1, 67,500 ac-ft as of May 16, and 65,000 ac-ft as of June 1; (b) *Critical* water supply conditions exist when storage in Lake Mendocino is less than 31,000 ac-ft as of January 1, 36,000 ac-ft as of February 1, 52,000 ac-ft as of March 1, 53,000 ac-ft as of March 16, 54,000 ac-ft as of April 1, 53,000 ac-ft as of April 16, 52,000 ac-ft as of May 1, 51,000 ac-ft as of May 16, 50,000 ac-ft as of June 1; and (c) *Normal* water supply conditions will exist in the absence of defined *Dry* or *Critical* water supply conditions.

As of January 6, 2021, the water supply storage level in Lake Mendocino was 28,206 ac-ft. This storage level is approximately 41 percent of the available water conservation pool for this time of year. The current low storage level is the result of severely low rainfall in the region since January 1, 2020. Furthermore, Pacific Gas & Electric (PG&E) has indicated it intends to file a request with the Federal Energy Regulatory Commission (FERC) for a temporary variance to reduce its minimum instream flow requirements for the Potter Valley Project (PVP). The temporary variance would reduce minimum instreams flows from the PVP into the East Fork of the Russian River from 45 cubic feet per second (cfs) to 15 cfs.

Sonoma Water staff is concerned that cumulative inflow into Lake Pillsbury between October 1, 2020 and December 31, 2020, does not accurately reflect water supply conditions in the Russian River watershed. The cumulative inflow exceeded 8,000 ac-ft by January 1, 2021, which changed the water supply condition from *Dry* to *Normal*. Following Decision 1610 and Term 20 of Permit 12947A, this has increased the minimum instream flows required in the Upper Russian River to a rate that current storage in Lake Mendocino may not be able to reliably sustain. Specifically, there is an elevated risk this year to Lake Mendocino storage dropping to precarious levels if there are no significant storms before the end of the water year and minimum instream flow requirements remain based on a *Normal* water supply condition. The likelihood that FERC will allow PG&E to substantially reduce releases from the PVP into the East Fork of the Russian River combined with the near historical low rainfall since January 1, 2020 points to water supply conditions that cannot be characterized as normal. If storage in Lake Mendocino is depleted, then water to maintain the Upper Russian River flows through to the fall of 2021 will not be available to support the multitude of downstream beneficial uses, which includes habitat for threatened and endangered species, agriculture, and domestic/municipal water supplies.

An urgent need for the requested temporary changes exists because of the extremely low storage levels in Lake Mendocino and the fact that, with the changes in PVP operations since 2004, cumulative inflow into Lake Pillsbury is no longer a good metric to determine the water supply conditions in the Russian River. Without the proposed changes, the applicable minimum instream flow requirements may require releases of water from Lake Mendocino at levels that would risk significant depletions of storage and potential elimination of water supplies for water users in Mendocino County and northern Sonoma County (above the confluence with Dry Creek) during the spring, summer, and fall of 2021. Such depletions in storage and reductions or eliminations of water supplies would cause serious impacts to human health and welfare, and reduce water supplies needed for fishery protection and stable flows in the Upper Russian River.

Name of Public Agency Approving Project: State Water Resources Control Board - Division of Water Rights

Name of Person or Agency Carrying Out Project: Sonoma County Water Agency

Exempt Status: (check one)

	Ministerial (Sec. 21080(b)(1); 15268)	
	Declared Emergency (Sec. 21080(b)(3); 15269(a))	
X	Emergency Project (Sec.21080 (b)(4); 15269(b)(c)):	Section 21080(b)(4): Specific actions necessary to prevent or mitigate an emergency
X	Categorical Exemption. State type and section number:	State CEQA Guidelines 15307: Actions by Regulatory Agencies for Protection of Natural Resources State CEQA Guidelines 15308: Actions by Regulatory Agencies for Protection of the Environment State CEQA Guidelines 15301(i): Existing Facilities
	Statutory Exemptions. State code number:	

Reasons why project is exempt: The proposed action is statutorily exempt under California Environmental Quality Act (CEQA) Statute 21080(b)(4) and categorically exempt from CEQA under the State CEQA Guidelines Sections 15307, 15308, and 15301(i).

A. Actions to Prevent or Mitigate an Emergency
California Public Resources Code, Division 13, Section 21080(b)(4) provides that specific actions necessary to prevent or mitigate an emergency are exempt from CEQA. As of January 6, 2021, the water supply storage level in Lake Mendocino was 28,206 acre-feet. This storage level is approximately 41 percent of the available water conservation pool for this time of year. The current low storage level is the result of severely low rainfall in the region. As measured at Ukiah, recorded rainfall for 2020 was 11.32 inches, which amounts to 31% of the average rainfall (37.01 inches) and the second lowest recorded rainfall since 1893.

Without significant storm events in the near future, results of the modeling show storage levels in Lake Mendocino well below 20,000 ac-ft by the end of the water year due to releases required to meet downstream water demands and minimum instream flow requirements on the Russian River. Furthermore, it is anticipated that PG&E will file an application for a flow variance for the PVP with the FERC due to extremely low storage levels in Lake Pillsbury and concern that they can no longer meet minimum flow requirements while also ensuring the safe operation of PVP. This would reduce minimum instream flows from the PVP into the East Fork of the Russian River from 45 cfs to 15 cfs.

Current minimum instream flow requirements are based on cumulative inflow into Lake Pillsbury, which is not accurately reflecting water supply conditions in the Russian River. The cumulative inflow from October 31, 2020 to December 31, 2020 is above the criteria of 8,000 ac-ft, which changed the water supply condition from a *Dry* to *Normal* designation on January 1, 2021. This has increased the minimum instream flows required in the Upper Russian River to a rate that current storage in Lake Mendocino may not be able to reliably sustain if dry weather persists. If storage in Lake Mendocino is depleted, then water to maintain the Upper Russian River flows through to the fall of 2021 will not be available to support the multitude of downstream beneficial uses, which includes habitat for threatened and endangered species, agriculture, and domestic/municipal water supplies.

B. Actions by Regulatory Agencies for Protection of Natural Resources and the Environment
CEQA Guidelines Sections 15307 and 15308 provide that actions taken by regulatory agencies to assure the maintenance, restoration or enhancement of a natural resource and the environment are categorically exempt. The proposed temporary urgency change to Sonoma Water's water right Permit 12947A would conserve water in Lake

Mendocino to support beneficial uses downstream of Lake Mendocino, including habitat for listed Russian River salmonid fisheries, agricultural and municipal use, and recreation.

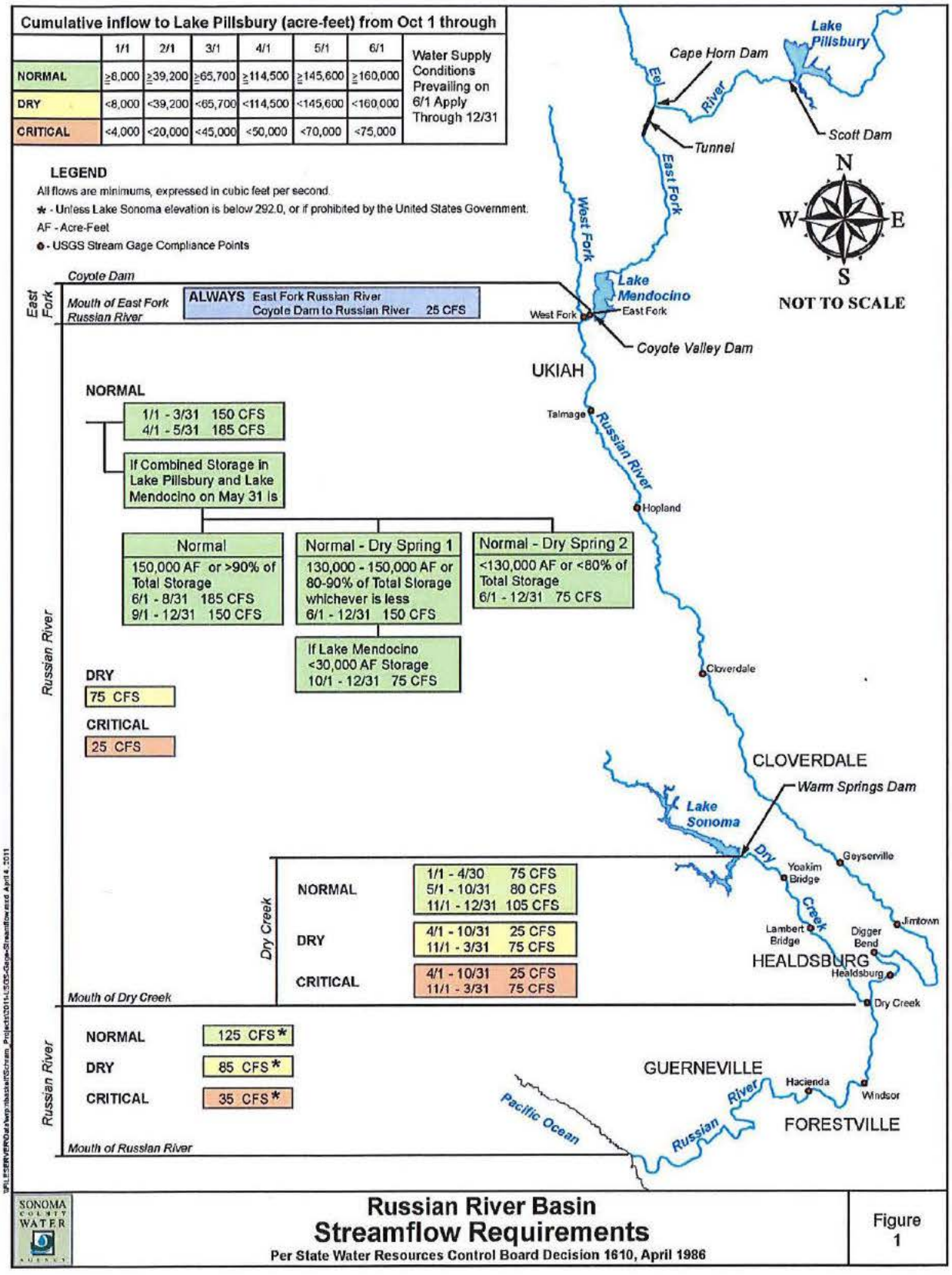
C. Existing Facilities

CEQA Guidelines Section 15301(i) provides, generally, that the operation of existing facilities involving negligible or no expansion of use beyond that existing at the time of the lead agency's determination is categorically exempt from CEQA. The examples in subdivision (i) of Section 15301(i) specifically provide that the maintenance of streamflows to protect fish and wildlife resources is exempt. Sonoma Water's request to would not expand Sonoma Water's use or increase the water diversions available to Sonoma Water for consumptive purposes. The proposed change in would still be within the existing minimum instream flows established by SWRCB Decision 1610.

Lead Agency Contact Person: Jessica Martini-Lamb Area Code/Telephone: (707) 547-1903

Signature: [redacted] Date: 01/07/2021 Title: General Manager

X Lead Agency ___ Applicant Date Received for filing at OPR: _____



SONOMA COUNTY WATER AGENCY

Russian River Basin Streamflow Requirements

Per State Water Resources Control Board Decision 1610, April 1986

Figure 1

Appendix A-2

State Water Resources Control Board

FEB 04 2021

In Reply Refer to:
JL: A012919A

Mr. Grant Davis
General Manager
Sonoma County Water Agency
404 Aviation Boulevard
Santa Rosa, CA 95403-90919
Grant.Davis@scwa.gov

Dear Mr. Davis:

ORDER APPROVING PETITION FOR TEMPORARY URGENCY CHANGE OF PERMIT 12947A (APPLICATION 12919A) OF SONOMA COUNTY WATER AGENCY

Enclosed is the Order approving the petitions for temporary urgency change of Permit 12947A (Application 12919A). Please review the conditions of the Order and retain the Order with your permit.

If you have any questions, please contact Jane Ling by email at jane.ling@waterboards.ca.gov. Written correspondence should be addressed as follows: State Water Resources Control Board, Division of Water Rights, Attn: Jane Ling, P.O. Box 2000, Sacramento, CA 95812-2000.

Sincerely,

ORIGINAL SIGNED BY:

Sam Boland-Brien, Manager
Petition, Licensing, and Registration Section
Division of Water Rights

Enclosure: Order

ec (w/enclosure): North Coast Regional Water Quality Control Board
c/o Mr. Bryan McFadin
Bryan.McFadin@waterboards.ca.gov

National Marine Fisheries Service
c/o Mr. Bob Cooey
Bob.Cooey@noaa.gov

California Department of Fish and Wildlife
Region 3: Bay Delta Region
c/o Mr. Eric Larson
Eric.Larson@wildlife.ca.gov

Russian Riverkeeper
c/o Mr. Don McEnhill
don@russianriverkeeper.org

Russian River Flood Control
& Water Conservation Improvement District
c/o Ms. Elizabeth Salomone
districtmanager@rrfc.net

Mr. Don Seymour
Donald.Seymour@scwa.ca.gov

Mr. Todd Schram
Todd.Schram@scwa.ca.gov

STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
STATE WATER RESOURCES CONTROL BOARD

DIVISION OF WATER RIGHTS

In the Matter of Permit 12947A
(Application 12919A)

Sonoma County Water Agency

ORDER APPROVING TEMPORARY URGENCY CHANGE

SOURCE: Russian River

COUNTIES: Sonoma and Mendocino Counties

BY THE DEPUTY DIRECTOR FOR WATER RIGHTS:

1.0 SUBSTANCE OF TEMPORARY URGENCY CHANGE PETITION

On January 13, 2021, Sonoma County Water Agency (Sonoma Water) filed a Temporary Urgency Change Petition (TUCP) with the State Water Resources Control Board (State Water Board), Division of Water Rights (Division), requesting approval of a change pursuant to California Water Code section 1435. The TUCP requests implementation of an alternative hydrologic index based on Lake Mendocino storage values starting January 28, 2021 (proposed hydrologic index). The proposed hydrologic index is requested in lieu of the hydrologic index based on cumulative Lake Pillsbury inflow (the current hydrologic index). The hydrologic index is used to determine which minimum instream flow requirements in Term 20 of Permit 12947A will apply to the upper Russian River (from its confluence with the East Fork Russian River to its confluence with Dry Creek; Term 20.B). The proposed hydrologic index is as follows:

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

40,000 acre-feet as of January 1
59,000 acre-feet as of February 1
68,000 acre-feet as of March 1
69,500 acre-feet as of March 16
71,000 acre-feet as of April 1
70,000 acre-feet as of April 16

69,000 acre-feet as of May 1
67,500 acre-feet as of May 16
65,000 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
36,000 acre-feet as of February 1
52,000 acre-feet as of March 1
53,000 acre-feet as of March 16
54,000 acre-feet as of April 1
53,000 acre-feet as of April 16
52,000 acre-feet as of May 1
51,000 acre-feet as of May 16
50,000 acre-feet as of June 1

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

This temporary change is requested in response to 2020's extremely dry conditions, severely low storage levels in Lake Mendocino, and the current hydrologic index not aligning with observed hydrologic conditions in the Russian River watershed. No changes are requested in this petition for how minimum instream flow requirements are determined for Dry Creek or the lower Russian River (from its confluence with Dry Creek to the Pacific Ocean, Term 20.C).

2.0 BACKGROUND

Sonoma Water controls and coordinates water supply releases from Lake Mendocino and Lake Sonoma to implement the minimum instream flow requirements in accordance with its water rights and 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. These minimum instream flow requirements vary based on water supply conditions specified in Decision 1610. The Decision 1610 requirements for the upper Russian River are contained in Term 20 of Sonoma Water's water right Permit 12947A (Application 12919A). Sonoma Water's operations are also subject to the National Marine Fisheries Service (NMFS) Russian River Biological Opinion issued in 2008.

2.1 Sonoma Water's Water Right Permit

The TUCP involves Permit 12947A, which authorizes direct diversion of 92 cubic feet per second (cfs) from the East Fork Russian River and storage of 122,500 acre-feet per annum (afa) in Lake Mendocino from January 1 through December 31 of each year.

Term 20 of Sonoma Water's Permit 12947A states the following:

For the protection of fish and wildlife, and for the maintenance of recreation in the Russian River, permittee shall pass through or release from storage at Lake Mendocino sufficient water to maintain:

A. A continuous streamflow in the East Fork Russian River from Coyote Dam to its confluence with the Russian River of 25 cfs at all times.

B. The following minimum flows in the Russian River between the East Fork Russian River and Dry Creek:

1. During normal water supply conditions when the combined water in storage, including dead storage, in Lake Pillsbury and Lake Mendocino on May 31 of any year exceeds 150,000 af 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. During normal water supply conditions and when the combined water in storage, including dead storage, in Lake Pillsbury and Lake Mendocino on May 31 of any year is between 150,000 af or 90 percent of the estimated water supply storage capacity of the reservoirs, whichever is less, and 130,000 af 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. During normal water supply conditions and when the combined water in storage, including dead storage, in Lake Pillsbury and Lake Mendocino on May 31 of any year is less than 130,000 af 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*

4. During dry water supply conditions 75 cfs

5. During critical water supply conditions 25 cfs

C. The following minimum flows in the Russian River between its confluence with Dry Creek and the Pacific Ocean to the extent that such flows cannot be met by releases from storage at Lake Sonoma under Permit 16596 issued on Application 19351:

1. During normal water supply conditions 125 cfs

2. During dry water supply conditions 85 cfs

3. During critical water supply conditions 35 cfs

For the purposes of the requirements in this term, the following definitions shall apply:

1. Dry water supply conditions exist when cumulative inflow to Lake Pillsbury beginning on October 1 of each year 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
160,000 acre-feet as of June 1

2. Critical water supply conditions exist when cumulative inflow to Lake Pillsbury beginning on October 1 of each year 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
75,000 acre-feet as of June 1

3. Normal water supply conditions exist in the absence of defined dry or critical water supply conditions.

4. The water supply condition designation for the months of July through December shall be the same as the designation for the previous June. Water supply conditions for January through June shall be predetermined monthly.

5. *Cumulative inflow to Lake Pillsbury is the calculated algebraic sum of releases from Lake Pillsbury, increases in storage in Lake Pillsbury, and evaporation from Lake Pillsbury.*

6. *Estimated water supply storage space is the calculated reservoir volume below elevation 1,828.3 feet in Lake Pillsbury and below elevation 749.0 feet in Lake Mendocino. Both elevations refer to the National Geodetic Vertical Datum of 1929. The calculation shall use the most recent two reservoir volume surveys made by the U. S. Geological Survey, U. S. Army Corps of Engineers, or other responsible agency to determine the rate of sedimentation to be assumed from the date of the most recent reservoir volume survey.*

2.2 Current Drought Conditions and Response

During 2020, the Russian River Watershed experienced the third driest year in the past 127 years of record. Sonoma Water filed TUCPs with the State Water Board in June 2020, and the State Water Board issued an order approving temporary urgency changes to the Decision 1610 instream flow requirements for Permits 12947A, 12949, 12950, and 16596. These changes, along with water conservation efforts throughout the region, preserved storage in Lake Mendocino above the target water supply storage levels, thereby avoiding the need to further reduce flows. On December 27, 2020, the State Water Board's temporary urgency change order expired, and minimum instream flow requirements reverted to "Dry" water supply conditions for the remainder of 2020. On January 1, 2021, cumulative inflow into Lake Pillsbury between October 1, 2020 and December 31, 2020 exceeded the threshold criterion of 8,000 acre-feet, resulting in a "Normal" water supply condition for the Russian River. This water supply condition is reassessed at the beginning of each month through June under Decision 1610, including as specified in Term 20 of Permit 12947A.

As of January 6, 2021, the water supply storage level in Lake Mendocino was 28,206 acre-feet. This storage level is approximately 41 percent of the available water conservation pool for this time of year. The current low storage level is the result of the severe drought of 2020 and low rainfall in the region since January 1, 2020. As measured at Ukiah, recorded rainfall for 2020 was 11.32 inches, which amounts 31% of the average rainfall (37.01 inches) and the second lowest recorded rainfall since 1893. Furthermore, Pacific Gas & Electric (PG&E) has indicated that it intends to file a request with the Federal Energy Regulatory Commission (FERC) for a temporary variance to reduce its minimum instream flow requirements for the Potter Valley Project (PVP). The temporary variance would reportedly reduce the transfer of Eel River water through the PVP to the Russian River watershed from 45 cfs to 15 cfs if storage in Lake Pillsbury falls below 18,000 acre-feet and would expire once storage in Lake Pillsbury exceeds 30,000 acre-feet. The storage in Lake Pillsbury was 17,292 acre-feet at the end of December 2020. The temporary variance would result in a substantial reduction to inflow into Lake Mendocino from the PVP.

Sonoma Water's recent analysis of the current drought conditions indicates that unless additional mitigation measures are taken soon, there is a risk that Lake Mendocino could decline to critically low levels. Sonoma Water's projection based on modeled simulations using hydrology data from 1908 to 2017 indicates that Lake Mendocino storage levels could potentially decline below 20,000 acre-feet at the end of the current water year. The very low storage levels in Lake Mendocino would significantly impact the availability of water supplies for supporting survival of listed Russian River salmonid fisheries, agricultural and municipal uses, and recreation in the late summer and following water year. Additionally, the low storage levels may result in disturbance of sediment at the bottom of Lake Mendocino that may cause additional adverse impacts on water quality in Lake Mendocino and the Russian River.

The "Normal" water supply conditions designated by the current hydrologic index does not accurately reflect the severe drought conditions in the upper Russian River. Sonoma Water's proposed temporary urgency change would maintain the logic on which Decision 1610's minimum instream flow requirements are based by relying on the same statistical distribution of hydrologic conditions used by Decision 1610. Sonoma Water's proposed temporary urgency change would use Lake Mendocino storage, rather than cumulative inflow into Lake Pillsbury, as the basis for defining the applicable hydrologic condition. This proposed temporary urgency change would implement minimum instream flow requirements under Term 20.B of Permit 12947A that would adjust to changes in the upper Russian River watershed hydrologic conditions. Streamflow requirements would increase if additional seasonal rainfall results in Lake Mendocino storage increasing or remaining above the volumes specified in the proposed hydrologic index.

3.0 COMPLIANCE WITH CALIFORNIA ENVIRONMENTAL QUALITY ACT

The State Water Board must comply with applicable requirements of the California Environmental Quality Act (Pub. Resources Code, § 21000 et seq.) (CEQA) prior to issuance of any order approving a TUCP. (Cal. Code Regs., tit. 23, § 805, subd. (b).) Sonoma Water determined that the requested change is statutorily and categorically exempt under CEQA, as the change is an action to prevent or mitigate an emergency. Sonoma Water determined that the requested change also meets the Class 1, 7, and 8 categorical exemption criteria set forth in the CEQA Guidelines (Cal. Code Regs., tit. 14, § 15000 et seq.). Sonoma Water filed a Notice of Exemption on January 8, 2021. The State Water Board has reviewed the information submitted by Sonoma Water and has made its own independent finding that the requested temporary urgency changes to Permit 12947A are statutorily and categorically exempt from CEQA.

The changes sought by Sonoma Water in its January 13, 2021 TUCP are consistent with the following statutory and categorical CEQA exemptions for the following reasons:

1) Information provided by Sonoma Water demonstrates that continued releases of water pursuant to the current hydrologic index in Term 20 of Permit 12947A as it

applies to the upper Russian River could cause storage levels in Lake Mendocino to decline to unsafe levels. Extensive drought conditions in the Russian River watershed throughout 2020 and extending into 2021 have resulted in already low storage conditions in Lake Mendocino. Drought conditions that may persist through 2021 will result in continued low storage levels in Lake Mendocino. As discussed in this Order, if storage in Lake Mendocino is further depleted, there will be serious impacts to human health and welfare, and water will not be available to protect aquatic life, including threatened and endangered species in the Russian River. Approval of the TUCP is therefore necessary to respond to drought conditions and prevent and mitigate loss of, or damage to, the environment, fishery resources, property, public health, and essential public services. Accordingly, the project is statutorily exempt from CEQA because it is necessary to prevent or mitigate an emergency. (Pub. Resources Code, § 21080, subd. (b)(4); Cal. Code Regs., tit. 14, § 15269, subd. (c).)

2) A Class 1 exemption "consists of the operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of existing or former use." (Cal. Code Regs., tit. 14, § 15301.) The proposed action consists of the operation of existing facilities involving negligible or no expansion of use beyond that existing, and accordingly is categorically exempt from CEQA under a Class 1 exemption. The proposed action will be within the range of minimum instream flows established by Decision 1610.

3) A Class 7 exemption "consists of actions taken by regulatory agencies as authorized by state law or local ordinance to assure the maintenance, restoration, or enhancement of a natural resource where the regulatory process involves procedures for protection of the environment." (*Id*., § 15307.) The proposed action will ensure the maintenance of a natural resource (i.e., the instream resources of the Russian River) by increasing availability and improving the quality of salmonid rearing habitat in the upper Russian River and more closely mimicking natural inflow to the estuary, thereby enhancing the potential for maintaining a seasonal freshwater lagoon that could support increased production of juvenile steelhead. Accordingly, these changes are categorically exempt from CEQA pursuant to a Class 7 exemption.

4) A Class 8 exemption "consists of actions taken by regulatory agencies, as authorized by state or local ordinance, to assure the maintenance, restoration, enhancement, or protection of the environment where the regulatory process involves procedures for protection of the environment." (*Id*., § 15308.) The proposed action will ensure the maintenance of the environment (i.e., the instream environment of the Russian River) in the same way as stated for the Class 7 exemption.

4.0 PROCEDURAL REQUIREMENTS CONCERNING THE TEMPORARY URGENCY CHANGE PETITION

On January 19, 2021, the State Water Board issued and delivered to Sonoma Water a notice of the temporary urgency change order pursuant to Water Code section 1438, subdivision (a). Pursuant to Water Code section 1438, subdivision (b)(1), Sonoma Water published the notice in *Ukiah Daily Journal* and *The Press Democrat* on January 19, 2021. In addition, the State Water Board posted the notice of the temporary urgency change order on its website and distributed the notice through its electronic notification system.

Any interested person may file an objection to a temporary urgency change. (*Id*., subd. (d).) The State Water Board must promptly consider the objection and may hold a hearing on any objection. (*Id*., subd. (e).) Pursuant to Water Code section 1438, the State Water Board may issue a temporary urgency change order in advance of the required notice. It was indicated in the public notice that the State Water Board may issue an order approving or denying the TUCP before the end of the notice period. The State Water Board will promptly consider all objections received, and may issue an amended order if necessary to address objections. This Order reflects consideration of all correspondence regarding the TUCP received by January 29, 2021; no objections were received as of this date. Any objections received will be considered in a separate memorandum or, if appropriate, an amended order.

By January 29, 2021, the Division has received letters from Mendocino County Russian River Flood Control and Water Conservation Improvement District (RRFC), the North Coast Regional Water Quality Control Board (North Coast Water Board), NMFS, and Russian Riverkeeper (RRK) in support of Sonoma Water's TUCP. Details of support of the North Coast Water Board and NMFS are included in Section 5 of this Order.

RRFC indicated in its letter submitted on January 8, 2021 that the severely low water levels in Lake Mendocino and the reclassification of water supply condition of the Russian River from Dry to Normal cause great concerns to RRFC and representatives of municipalities, agricultural users, and other water users of the Russian River. RRFC stated that Sonoma Water's TUCP clearly outlines the urgency and necessity of the proposed changes, and RRFC and Sonoma Water have increased communications to improve water resource management for the upper Russian River and to implement necessary steps to address impacts of the prolonged drought in the region.
On January 28, 2021, RRK submitted a comment letter supporting Sonoma Water's request of using the alternative hydrologic index to better conserve water stored in Lake Mendocino. RRK indicated modification of Term 20 would allow minimum flows in the Russian River to reflect more accurately the realities of available water supply within the Russian River watershed. RRK also noted the risk of water not being available for local municipal, agriculture, and environmental uses due to the extended drought if the TUCP is not approved. Additionally, RRK indicated that the TUCP and any subsequent order must consider: (1) the protection of public trust resources, (2) what RRK believes to be the continued allowance of waste and unreasonable use, and (3) requirements of CEQA.

Specifically, RRK requested the State Water Board: 1) require mandatory conservation measures by Sonoma Water Agency; 2) require mandatory conservation measures for other users in the Russian River watershed and/or use the established broad authority to curtail users to prevent waste and unreasonable use; 3) establish carry-over storage targets with an adequate margin of safety to prevent managing the River in a perpetual state of drought; 4) require updates to the Decision 1610 hydrologic index and Decision 1610 in its entirety, by expedited dates; 5) conduct CEQA review to mitigate and avoid the significant effects of Sonoma Water's and State Water Board's purported pattern and practice of TUCP approvals; and 6) establish a stakeholder committee comprised of both upper and lower Russian River users to develop a Drought Action Plan with additional emergency conservation measures for when storage or Eel River diversions drop below minimum thresholds to prevent deep cuts to flow in the next dry year.

The State Water Board has considered RRK's comments.

This Order includes terms and conditions that require Sonoma Water to report periodically on conservation activities and programs being implemented by Sonoma Water and its water contractors. The State Water Board will monitor the conservation efforts of Sonoma Water and will continue to evaluate whether additional conservation measures are necessary if dry conditions persist in the Russian River watershed during the period the Order is applicable.

RRK comments that both Sonoma Water and the State Water Board may not lawfully rely on statutory or categorical exemptions to CEQA when undertaking the proposed temporary urgency action. Apparently based upon prior orders for temporary urgency change, RRK's comment letter presupposes that the State Water Board will not make adequate findings in this Order. Although RRK recognizes that there exists an "actual, urgent need to protect the dwindling water supply at Lake Mendocino," RRK asserts that the emergency statutory exemption, discussed above, does not apply.

RRK appears to primarily argue that the clear and imminent danger to the environment, fishery resources, property, public health, and essential public services was not sudden or unexpected and, therefore, should not have required immediate action to prevent or mitigate such losses. RRK indicates that the emergency exemption is narrow, and it erroneously suggests that severe water supply shortage, whether due to infrastructure failure or hydrologic conditions, cannot constitute an emergency. RRK also states that the Class 1, Class 7, and Class 8 categorical exemptions do not apply in this instance due to alleged but unspecified potentially significant environmental impacts, including the alleged cumulative impacts of Sonoma Water's successive temporary urgency water right changes, that RRK states must be mitigated through, among other measures, additional mandatory water conservation requirements for Sonoma Water and other parties within the Russian River watershed.

RRK does not specify the alleged potentially significant impacts or effects of this temporary urgency change, alone or in conjunction with previous temporary urgency changes. RRK's assertions that "there is zero guarantee that there will be any flow" in the Russian River is contrary to the enforceable minimum instream flow requirements of Permit 12947A and this Order. Although Sonoma Water's TUCP and this Order address an urgent and emergency situation, the proposed temporary changes to Sonoma Water's existing operations remain comparatively minor, unless conditions remain dry or worsen to critically dry in the Russian River watershed while remaining normal in the Eel River watershed. Furthermore, contrary to RRK's assertion, maintenance, restoration, enhancement, or protection actions need not benefit natural resources or the environment immediately or "right now" to be effective.

In conjunction with RRK's arguments that successive temporary urgency changes to Sonoma Water's water rights permits are cumulative projects under CEQA, RRK alleges that Decision 1610 has "long standing and well-known inadequacies" that should have been addressed comprehensively through permanent changes. RRK's requests prompt revision of the Decision 1610 hydrologic index. When referring to a "flawed Biological Opinion," the uncertainty of future PVP operations, and the nascent Two-Basin Partnership in its comment letter, RRK also explicitly acknowledges some of the very complexities that have hindered comprehensive environmental review of and water right changes pursuant to any proposed amendment of Decision 1610. As RRK notes, Sonoma Water has filed long-term change petitions to modify the hydrologic index and other portions of Decision 1610. But many details of its actual proposal and the means by which the crucial issues referenced above, among other concerns, may be adequately addressed and resolved for this long-term change petition remain materially uncertain. This Order is conditioned on Sonoma Water's submitting a report detailing a schedule of milestones and completion dates for additional activities necessary for the State Water Board's consideration of, and potential action on, Sonoma Water's pending petitions to permanently change Permit 12947A and other related water rights.

Regarding RRK's urging the State Water Board to take various action on water diversions and uses under rights not held by Sonoma Water – both upstream and downstream of Lake Mendocino, in both the Russian River and Eel River watersheds – this falls outside the scope of what is being requested in the TUCP or may be included as a condition of this temporary urgency change approval. However, to improve information regarding and understanding of the dynamics of Russian River flows and water uses and to facilitate possible future action, if warranted, under other authorities held by the State Water Board, Condition 11 of this Order contains a condition requires Sonoma Water to develop an accounting methodology characterizing its inflows to and releases from Lake Mendocino.

5.0 CRITERIA FOR APPROVING THE PROPOSED TEMPORARY URGENCY CHANGE

Water Code section 1435 provides that a right holder who has an urgent need to change the point of diversion, place of use, or purpose of use from that specified in the water right may petition for a conditional temporary change order. The State Water Board's regulations set forth the filing and other procedural requirements applicable to TUCPs. (Cal. Code Regs., tit. 23, §§ 805, 806.) The State Water Board's regulations also clarify that requests for changes to permits or licenses other than changes in point of diversion, place of use, or purpose of use may be filed, subject to the same filing and procedural requirements that apply to changes in point of diversion, place of use, or purpose of use. (*Id*., § 791, subd. (e).)

Before approving a TUCP, the State Water Board must make the following findings: (1) the right holder 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. (Wat. Code, § 1435, subd. (b)(1)-(4).)

A temporary change order does not result in the creation of a vested right, even of a temporary nature, but shall be subject at all times to modification or revocation in the discretion of the Board. (Wat. Code, § 1440.)

5.1 Urgency of the Proposed Change

Under Water Code section 1435, subdivision (c), an "urgent need" means "the existence of circumstances from which the board may in its judgment conclude 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 . . . ."

In this case, an urgent need exists for the proposed change in the hydrologic index for determining minimum instream flow requirements in the upper Russian River because, as described in the TUCP, cumulative inflow into Lake Pillsbury does not reflect hydrologic or water supply conditions in the Russian River watershed; storage levels in Lake Mendocino are currently extremely low for January, but the current hydrologic index indicates conditions are normal. The changes in PVP operations since 2004, the FERC temporary variance anticipated to be sought by PG&E for the PVP, and the severe drought conditions that occurred in 2020 in the Russian River watershed further compound the urgency. Without the proposed change, Permit 12947A's applicable minimum instream flow requirements may require releases of water from Lake Mendocino at levels that would risk significant depletions of reservoir storage and potential elimination of water supplies for water users in Mendocino County and northern Sonoma County (above the confluence

with Dry Creek) during the summer and fall of 2021. Such depletions in storage and reductions or eliminations of water supplies would risk water supplies needed for fishery protection, municipal and agricultural supplies, and recreation use in the upper Russian River. Extremely low storage levels may result in loss of the cold-water pool in Lake Mendocino that is needed to support listed Russian River salmonid fishery species in the fall, and may cause increased total dissolved solid or mercury concentrations if lake-bottom sediments become displaced due to reservoir operation at low storage levels.

Water Code section 1435, subdivision (c) also states that the State Water Board shall not find a petitioner's need to be urgent if it concludes that the petitioner has not exercised due diligence either in petitioning for a change pursuant to provisions other than a TUCP or in pursuing that petition for change. In this case, Sonoma Water has submitted petitions pursuant to Water Code section 1700 et seq. to modify Decision 1610 (the long-term petitions), including but not limited to modifying the hydrologic index that establishes water year type for Permit 12947A. Sonoma Water continues to work on those pending long-term petitions, including efforts to meet the requirements of CEQA and to develop more certainty regarding the future of PVP operations and Biological Opinions affecting the Russian River watershed. Given the circumstances discussed in this Order, the State Water Board finds that Sonoma County has exercised due diligence to this point and that there is an urgent need for the petitioned temporary change to Permit 12947A. To assist State Water Board staff in determining whether Sonoma Water continues to pursue its long-term petitions with due diligence, this Order requires Sonoma Water to submit a schedule of milestones related to completion of CEQA documents related to the long-term petitions, and any related concurrent or subsequent activities necessary for State Water Board action on Sonoma Water's long-term petitions.

The actual hydrologic conditions in the upper Russian River watershed and the aforementioned issues that could otherwise occur in the late summer and fall create an urgent need for avoidance and mitigation actions now. Specifically, Sonoma Water has demonstrated an urgent need to preserve Lake Mendocino storage through temporarily adjusting the hydrologic index applicable to the upper Russian River under Permit 12947A.

5.2 No Injury to Any Other Lawful User of Water

Under Decision 1610 and the terms and conditions of its associated water rights permits, Sonoma Water is required to maintain specified flows in the Russian River from Lake Mendocino to the Russian River's confluence with the Pacific Ocean. This Order retains these existing minimum instream flow requirements but, specifically for upper Russian River minimum instream flows under Permit 12947A, temporarily changes the circumstances under which "dry" or "critical" water supply conditions will apply. Because minimum instream flows will continue to be maintained under this Order consistent with hydrologic conditions within the upper Russian River watershed, it is anticipated that all other lawful users of water will be able to divert and use the amounts of water to which they are legally entitled during the period specified in this temporary urgency change order. Other legal users of water will not be injured by reduction in releases of previously

stored water because water released from storage is not available for diversion by downstream users with an independent basis of right. (See, e.g., *North Kern Water Storage Dist. v. Kern Delta Water Dist.* (2007) 147 Cal.App.4th 555, 570 [when the stored water is released for use, it is not part of the river's natural flow and rediversion of this water does not count toward the appropriator's current allocation of river water]; *State Water Resources Control Bd. Cases* (2006) 136 Cal.App.4th 674, 737-745 [a riparian or appropriator has no legally protected interest in other appropriators' stored water or in the continuation of releases of stored water].)

The State Water Board will supervise diversion and use of water under this temporary urgency change order for the protection of all other lawful users of water pursuant to Water Code section 1439.

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

Prior to approval of a TUCP, the Board must find that the proposed change may be made without unreasonable effect upon fish, wildlife, or other instream beneficial uses. In addition, the State Water Board has an independent obligation to consider the effect of approval of Sonoma Water's petitions on public trust resources and to protect those resources where feasible. (*National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419 [189 Cal.Rptr. 346].) Public trust resources may include, but are not limited to, wildlife, fish, aquatic dependent species, streambeds, riparian areas, tidelands, and recreation in navigable waterways, as well as fisheries located in non-navigable waterways. It is also the policy of this state that all state agencies, boards, and commissions shall seek to conserve endangered species and threatened species and shall use their authority in furtherance of the purposes of the California Endangered Species Act (Fish & G. Code, § 2050 et seq.). State agencies should not approve projects that would jeopardize the continued existence of any endangered species or threatened species if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat that would prevent jeopardy. (Fish & G. Code, §§ 2053 & 2055.)

Relying on Lake Mendocino storage thresholds to define the water supply conditions for determining upper Russian River minimum instream flow requirements may result in lower instream flows in the upper Russian River than might otherwise occur under the current hydrologic index in Term 20 of Permit 12947A. However, preservation of stored water in Lake Mendocino for subsequent releases is crucial to ensure sufficient water supply for municipal and agricultural uses, fish and wildlife, and other instream beneficial uses. It is possible that such reduced flows may impair instream beneficial uses, such as fish and wildlife, and recreational uses, in the upper Russian River, given that the temporary urgency changes approved under order will extend into the summer. However, any effects associated with such flow reductions would not be unreasonable, considering the potential impacts to fish, wildlife and other instream beneficial uses that could occur if dry conditions persist and reliance on the current hydrologic index led to reduced storage in Lake Mendocino or the dewatering of the upper Russian River later in the year.

5.3.1 Consultation with Other Agencies

Sonoma Water has consulted with the California Department of Fish and Wildlife (CDFW), NMFS, and North Coast Water Board regarding filing the TUCP and the effects of the proposed change.

On January 20, 2021, the North Coast Water Board submitted a letter supporting Sonoma Water's TUCP. The North Coast Water Board staff agreed with the need to reduce flow releases from Lake Mendocino to avoid adverse impacts to beneficial uses resulting from poor water quality conditions that occur when the reservoir reaches low storage levels. Specifically, the North Coast Water Board noted that reservoir sediments may be entrained into the reservoir's discharge as the water elevation declines, which would result in elevated turbidity and suspended sediment concentrations released downstream. Among other things, such discharges can cause impacts to downstream spawning gravels from settleable solids, and could be further complicated by the fact that Lake Mendocino is listed on the list of impaired waterbodies under Clean Water Act section 303(d) (303(d) list) due to mercury. While storage levels lower than current conditions have been experienced during droughts, there is the possibility of Lake Mendocino storage levels decrease to unprecedented levels and it is unclear how water quality, including mercury levels, may change at such unprecedented conditions. This uncertainty is addressed by conditions in this Order requiring Sonoma Water to conduct ongoing monitoring and to confer with the North Coast Water Board if conditions indicate additional monitoring or changes to the Order are necessary.

The North Coast Water Board also noted concerns about harmful algal blooms of cyanobacteria (cyanoHABs) and elevated pathogen concentrations that occur when low stream flow conditions coincide with warm weather in the Russian River and its tributaries. The Russian River is listed as impaired on the 303(d) list for pathogen conditions, leading to the North Coast Water Board's adoption of the Action Plan for the Russian River Watershed Pathogen Total Maximum Daily Load in August 2019. These conditions often pose a threat to public health and have resulted in public health advisory postings on the Russian River in recent years. The North Coast Water Board notes that past streamflow monitoring in the lower Russian River indicates that high rainfall following a dry year is not adequate to restore baseflows in the late summer. Given that the 2020 water year (Oct. 1, 2019-Sept. 30, 2020) was exceptionally dry, late summer baseflows are likely to be critically low in 2021 even if rainfall occurs in the coming months, further supporting the rationale for ongoing monitoring and coordination between Sonoma Water, the North Coast Water Board, and the State Water Board.

NMFS submitted a letter on January 22, 2021 in support of Sonoma Water's plan to conserve water storage in Lake Mendocino for its potential benefits to listed salmonids. NMFS's 2008 Biological Opinion calls for Sonoma Water to annually petition the State Water Board to reevaluate the minimum flow requirements in Decision 1610, and specifically to lower the minimum flow requirement at Healdsburg and Guerneville to

125 cfs and 70 cfs, respectively, during summer months. NMFS has requested additional terms and conditions be included to any order issued by the State Water Board to provide water needed to protect the adult and juvenile fall Chinook salmon, winter steelhead, and coho salmon in the Russian River. NMFS's requested terms and conditions in the January 22, 2021 letter are included in this Order to prevent unreasonable effects on fish and wildlife while preserving water needed for protecting salmonid species in the Russian River.

To allow for adaptive management of releases from Lake Mendocino, this Order requires Sonoma Water to provide weekly updates to the State Water Board, CDFW, NMFS, and the North Coast Water Board regarding the current hydrologic and water quality conditions for the Russian River and provide weekly updates on fishery conditions. This Order also requires Sonoma Water to initiate additional consultation with the North Coast Water Board on additional water quality monitoring activities if any water quality issues of concern are observed. This information will assist the State Water Board in determining whether additional actions or modifications to this Order are necessary.

5.3.2 Conservation

Sonoma Water is actively engaged in water conservation to reduce demands on water stored in Lake Mendocino for municipal supply. Sonoma Water and its water contractors have continued implementing water use efficiency programs to comply with the California Water Conservation Act since the establishment of the Sonoma-Marin Water Saving Partnership (Partnership) in 2010. The Partnership represents twelve North Bay water utilities in Sonoma and Marin counties that have joined to provide regional solution for water use efficiency.

In summer 2020, the Partnership conducted a successful multi-media public outreach campaign from June through September called "Saving Water Ensures Water for What You Love" which emphasized the importance of water conservation for long-term water supply reliability, fisheries, and summertime recreation in the Russian River. This campaign was a contributing factor in the successful preservation of storage in Lake Mendocino and the avoidance of further reduced flows in the Russian River this past summer. In addition to public outreach, the Partnership continued to offer a wide variety of water-use-efficiency incentive programs, workshops, trainings, school classes, and other resources for customers in spite of limitations and restrictions on in-person activities during the ongoing novel coronavirus (COVID-19) pandemic. The Partnership members also continue winter water savings messaging to customers using advanced metering infrastructure (AMI) billing software, more traditional bill inserts, website posts, E-news, local radio, and direct customer outreach, in addition to social media advertisement. Should dry conditions persist, the Partnership will implement a further escalation of the winter outreach campaign, along with consideration to include a regional reduction target aligned with needed savings.

To ensure continuation of these conservation activities, this Order includes a condition that requires Sonoma Water to provide monthly updates to the Board when the Order results in lower minimum instream flows than would have been required pursuant to the Lake Pillsbury cumulative inflow index regarding conservation activities and programs being implemented by Sonoma Water and its water contractors.

With the conditions imposed by this Order, including ongoing efforts to support water conservation and regular monitoring and reporting of conditions by Sonoma Water, the State Water Board finds that granting the proposed temporary changes will not have an unreasonable effect on fish, wildlife, or other instream beneficial uses and protects public trust resources to the extent feasible. The State Water Board will continue to evaluate conditions in the watershed throughout the duration of this Order and consider other actions that may further the protection fish, wildlife, and other instream beneficial uses. The State Water Board will review the monthly conservation efforts of Sonoma Water and will continue to evaluate whether additional conservation measures are necessary to respond to dry conditions in the Russian River watershed and/or low storage in Lake Mendocino.

5.4 The Proposed Change is in the Public Interest

During ongoing review of information submitted by Sonoma Water throughout operations under the State Water Board's temporary urgency change order issued July 28, 2020 and expiring December 27, 2020, State Water Board staff observed that the Russian River appeared to experience significant losses of water downstream of Lake Mendocino. A comparison between the flowrates of water that were released from Lake Mendocino or Lake Sonoma and the flows measured at downstream gages following these releases suggests that some or all of the diminishing flows is the result of diversions by other users downstream of the reservoirs. As noted above, water released from reservoir storage is not natural flow and is not available for diversion by downstream users with an independent basis of right.

Diversions of water released from storage by Sonoma Water exacerbate the low flow conditions in the Russian River watershed and the risks to future water supply that this Order is — and the July 28, 2020 order was — intended to address. In addition to potentially injuring Sonoma Water, the diversions would be unreasonable given that they contribute to the risks of low storage in Lake Mendocino. The diversions may also be unauthorized diversions. The State Water Board has authority to take all appropriate actions to prevent injury to water users or public trust resources, or to prevent unreasonable diversion or use of water. (See, e.g., Cal. Const., art. X, § 2; Wat. Code, §§ 100, 183, 275, 1058.5, & 1831.) North Coast Water Board staff have also expressed support for actions to address diversions of other users in the watershed that contribute to low flow conditions and the resulting potential water quality impairments.

However, in order to issue notices of a potential lack of available water to diverters, or to take action to prevent unauthorized diversions, State Water Board staff need more specific information from Sonoma Water on the source and basis of right of water released from Lake Mendocino and how Sonoma Water's water rights are exercised. This Order requires Sonoma Water to provide an accounting methodology and subsequent ongoing information on what water is released from Lake Mendocino so that State Water Board staff are better equipped to take actions to respond to continued drought conditions, and ensure downstream diversions are not contributing to a risk to water supplies and listed Russian River salmonid fishery species that this Order is addressing. This Order requires Sonoma Water to report on diversion and rediversion activities with more specificity in the event drought conditions persist.

State Water Board staff also observed that the program of real-time 3-day advance forecasts of diversions by irrigation and municipal users within Mendocino County Russian River Flood Control and Water Conservation Improvement District (District) required by Condition 11 of the July 28, 2020 temporary urgency change order often resulted in demand forecasts that differed from estimates of actual diversions. Given that diversion data would assist in reducing unnecessary releases from Lake Mendocino and thereby assist in preserving storage, this Order includes a condition directing Sonoma Water to present recommendations on what additional diversion data could be collected should dry conditions persist into the summer. The recommendations will assist the State Water Board in ensuring the public interest is adequately served during implementation of this Order. Based on Sonoma Water's recommendations and State Water Board staff's independent research and oversight, the State Water Board will evaluate whether other information gathering authorities may be relevant to ensuring the adverse impacts of low storage levels in Lake Mendocino are avoided to the extent feasible.

This Order will likely help conserve stored water in Lake Mendocino. If drought conditions persist, stored water can be released to maintain instream flows for the benefit and protection of all uses of the Russian River, including the salmonid fisheries and recreation as well as consumptive uses. It is in the public interest to preserve water supplies for these beneficial uses given the extreme hydrologic circumstances and reasonable possibility of reduced water supplies within the Russian River.

Should the conditions that support the approval of this Order change, whether in alterations to water supply or identification of additional impacts to aquatic habitat, water quality, or other matters within the public interest, the State Water Board has the authority to revoke this approval or modify the terms and conditions of this Order as necessary to promote the interests of the public.

6.0 CONCLUSIONS

The State Water Board has adequate information in its files to make the evaluation required by Water Code section 1435. The findings of this Order are based on unique circumstances created by drought, and are independent from any findings to be made in connection with the related change petitions filed by Sonoma Water in 2009 and revised in 2016 pursuant to Chapter 10 of Division 2 of Part 2 of the Water Code.

I conclude that, based on the available evidence:

1. The right holder has an urgent need to make the proposed change;

2. The proposed change will not operate to the injury of any other lawful user of water;

3. The proposed change will not have an unreasonable effect upon fish, wildlife, or other instream beneficial uses; and

4. The proposed change is in the public interest.

ORDER

NOW, THEREFORE, IT IS ORDERED THAT: the petition filed by Sonoma Water for a temporary urgency change in Permit 12947A is approved and effective from the date of this Order until July 26, 2021.

All existing terms and conditions of the subject permit remain in effect, except as temporarily amended by the following terms:

1. The minimum instream flow requirements for the upper Russian River (from its confluence with the East Fork of the Russian River to its confluence with Dry Creek) will be established using a hydrologic index based on water storage in Lake Mendocino. The definitions included in Term 20 of Permit 12947A shall be modified as follows as the definitions apply to the upper river:

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

        40,000 acre-feet as of January 1
        59,000 acre-feet as of February 1
        68,000 acre-feet as of March 1
        69,500 acre-feet as of March 16
        71,000 acre-feet as of April 1

70,000 acre-feet as of April 16
69,000 acre-feet as of May 1
67,500 acre-feet as of May 16
65,000 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
36,000 acre-feet as of February 1
52,000 acre-feet as of March 1
53,000 acre-feet as of March 16
54,000 acre-feet as of April 1
53,000 acre-feet as of April 16
52,000 acre-feet as of May 1
51,000 acre-feet as of May 16
50,000 acre-feet as of June 1

c. Normal water supply conditions exist in the absence of defined dry or critical water supply conditions.

2. During each week or partial week that water supply conditions result in lower minimum instream flows per this Order than would have been required pursuant to the Lake Pillsbury cumulative inflow index (Term 20 of Permit 12947A), Sonoma Water shall conduct the following fisheries monitoring tasks and associated recording and reporting requirements. A summary of the fisheries monitoring tasks described below shall be submitted to the State Water Board's Deputy Director for Water Rights (Deputy Director), CDFW, and NMFS by October 1, 2021 in accordance with NMFS and CDFW annual reporting requirements as more fully described in the NMFS Russian River Biological Opinion.

a. If flow conditions allow, Sonoma Water shall continue monitoring and recording daily numbers of adult salmon and steelhead moving upstream past the life cycle monitoring station at the Mirabel Dam fish ladder. The Mirabel Dam fish ladder and video counting station only functions when Mirabel Dam is in operation. Adult salmonid monitoring at this location can cease if high river flow necessitates deflation of Mirabel Dam. Mirabel fish ladder numbers shall be included in weekly the hydrologic status reports submitted to the Deputy Director, CDFW, NMFS, and the North Coast Water Board pursuant to Condition 4 of this Order.

b. If suitable water clarity allows redd and spawning surveys, Sonoma Water shall monitor the spawning activity of adult salmon and steelhead in representative reaches in Dry Creek, Alexander Valley, and the Upper River.

c. Sonoma Water shall provide fisheries status updates with the weekly reports described in Condition 4 of this Order. Sonoma Water shall consult at least biweekly with NMFS and CDFW. During consultation meetings, Sonoma Water shall share all relevant ongoing fisheries data including information gathered pursuant to the NMFS Biological Opinion and CDFW Coastal Monitoring Plan. Sonoma Water shall submit a summary report of consultation details to the Deputy Director within one week of each consultation meeting.

d. To protect against stranding of fish when releases from Lake Mendocino are reduced under this Order, flow in the East Fork Russian River immediately below Coyote Dam shall not be reduced by more than 12 cfs/hr., with a minimum of 4 hours between the end of each flow reduction. Flow reduction shall not exceed 24 cfs per day. NMFS Santa Rosa Office (North Coast team) and CDFW shall be notified by email 48 hours in advance of ramping events that will reach 24 cfs per day. Ramping rates specified in this term may be revised upon consultation and concurrence with NMFS and CDFW and approval by the Deputy Director. If seeking such a revision, Sonoma Water shall submit to the Deputy Director a summary report of consultation details and documentation showing NMFS and/or CDFW concurrence that the Order should be amended to incorporate the revised ramping rates.

3. Sonoma Water shall continue ongoing monitoring in coordination with the United States Geological Survey (USGS) at the existing multi-parameter water quality sonde sites on the Russian River. By April 16, 2021, Sonoma Water shall consult with the North Coast Water Board to discuss possible water quality impacts of the reduced flows and whether additional water quality monitoring activities should be required to document water quality conditions in the Russian River. If any water quality issues of concern are observed from the continuous monitoring or water sampling required by this Order, Sonoma Water shall initiate additional consultation with the North Coast Water Board. Sonoma Water shall submit a summary report of consultation details and a description of proposed monitoring activities to the Deputy Director within one week of the consultation. Any necessary revisions to the terms and conditions of this Order may be made following consultation with the North Coast Water Board and approval by the Deputy Director.

4. During each week or partial week that water supply conditions result in lower minimum instream flows per this Order than would have been required pursuant to the Lake Pillsbury cumulative inflow index (Term 20 of Permit 12947A), Sonoma Water shall report, or make available on a publicly accessible website, to the Deputy Director, the North Coast Water Board, CDFW, and NMFS on a weekly basis regarding the current hydrologic condition of the Russian River system, including current Lake Mendocino reservoir level, the rate of decline for Lake Mendocino, a 16-day cumulative rainfall forecast, current inflow from the Potter

Valley Project, and Mirabel fish ladder numbers, and a summary of the available water quality data.

5. This Order does not authorize any act that results in the taking of a candidate, threatened or endangered species, or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish & G. Code, § 2050 et seq.) or the federal Endangered Species Act (16 U.S.C § 1531 et seq.). If a "take" will result from any act authorized under this Order, Sonoma Water shall obtain authorization for an incidental take permit prior to operation of the project. Sonoma Water shall be responsible for meeting all requirements of the applicable Endangered Species Act for the temporary urgency changes authorized under this Order.

6. The State Water Board reserves jurisdiction to supervise the temporary urgency changes under this Order, and to coordinate or modify terms and conditions, for the protection of vested rights, fish, wildlife, instream beneficial uses and the public interest as future conditions may warrant.

7. By April 1, 2021, Sonoma Water shall submit to the Deputy Director a report detailing a schedule of milestones and completion dates for additional activities necessary for the State Water Board's consideration of, and potential action on, Sonoma Water's pending petitions to permanently change Permit 12947A and other interrelated water rights. Such activities detailed in the report shall include, but are not limited to, Sonoma Water's completion of review, analysis, and documentation to meet the requirements of the California Environmental Quality Act.

8. Sonoma Water shall immediately notify the Deputy Director if any significant change in storage conditions in Lake Mendocino occurs that warrants reconsideration of this Order.

9. If the hydrologic index described by Condition 1 of this Order indicates conditions are Dry or Critically Dry following March 1, Sonoma Water shall submit to the Deputy Director a monthly Water Conservation Status Report for Sonoma Water's service area and other areas served by Lake Mendocino for the preceding month, starting April 1, 2021, and continuing until the expiration of this Order (July 26, 2021). The report shall specify the water conservation measures being implemented in the areas served by Lake Mendocino, and shall specify the water savings resulting from the measures during the term of this Order. Sonoma Water shall submit a final Water Conservation Report no later than August 31, 2021.

10. If the hydrologic index described by Condition 1 of this Order indicates conditions are Dry or Critically Dry following March 1, to facilitate releases of Lake Mendocino stored water with minimal operational buffers, Sonoma Water shall provide to the Deputy Director recommendations on what additional diversion information from other water users in the watershed may support improved real-time demand

forecasts and reduced operational buffers for Lake Mendocino. Sonoma Water shall coordinate with the Mendocino County Russian River Flood Control on developing the recommendations and shall submit the recommendations by April 1, 2021.

11. Sonoma Water shall submit a proposed accounting methodology to the Deputy Director that characterizes the source and basis of right of water flowing into (inflow) and released from Lake Mendocino and the subsequent rediversion of this water by Sonoma Water or its contractors. The accounting methodology shall be sufficient to define, distinguish, and quantify the following:

    a. Inflows from water native to the watershed and flows originating from the Potter Valley Project (PVP) or the Eel River.
    b. Releases from Lake Mendocino that constitute bypass of water native to the watershed, bypass of water from the Eel River or PVP, water released from storage for downstream deliveries, or water released from storage to maintain instream flows.
    c. Releases from Lake Mendocino that are rediverted by Sonoma Water or its contractors.
    d. Sonoma Water may choose to include additional inflow or outflow categories not listed under a, b, and c in the accounting methodology. Explanations for each category and how it is defined shall be included in the proposed accounting methodology.

    The proposed methodology shall be submitted by April 1, 2021, and any revisions requested by the Deputy Director shall be incorporated within 30 days of being provided to Sonoma Water. If the hydrologic index described by Condition 1 of this Order indicates conditions are Dry or Critically Dry following May 1, 2021, Sonoma Water shall submit, or make available on a publicly accessible website, weekly reports of daily average release rates and characterize those releases based on the accounting methodology approved by the Deputy Director.

STATE WATER RESOURCES CONTROL BOARD

ORIGINAL SIGNED BY:

Erik Ekdahl, Deputy Director
Division of Water Rights

Date: FEB 04 2021

Appendix A-3

Sonoma Water

Via Email

April 1, 2021

Erik Ekdahl
Deputy Director
Division of Water Rights
California State Water Resources Control Board

SUBJECT: February 4, 2021, Order Approving Temporary Urgency Change to Sonoma County Water Agency Permit 12947A - Term 7 Report of Milestones for State Water Resources Control Board Consideration of, and Potential Action on, Sonoma Water's Petitions to Permanently Change Permit 12947A and Other Interrelated Water Rights

Dear Mr. Ekdahl,

As required by Term 7 of the Temporary Urgency Change Order dated February 4, 2021, Sonoma County Water Agency (Sonoma Water) submits the following report of milestones for activities necessary for the State Water Resources Control Board's (State Water Board) consideration of petitions to permanently change Permit 12947A and other interrelated water rights.

Sonoma Water filed petitions with the State Water Board to modify its water rights permits in August 2016 and subsequently issued the Fish Habitat Flows and Water Rights Project (Fish Flow Project) Draft Environmental Impact Report (EIR) for public review. Through the Fish Flow Project, Sonoma Water proposes to modify the Decision 1610 hydrologic index and revise associated minimum instream flow requirements, request an extension of time (out to 2040) to put its existing 75,000 acre-feet per year water rights to full beneficial use, and to add additional points of diversion for the Town of Windsor and Occidental Community Services District.

The State Water Board publicly noticed Sonoma Water's petitions on September 23, 2016. The petitions public notice process and the Draft EIR public review period generated numerous protests and comments on the Draft EIR. Sonoma Water staff have been diligently working to consider the protests and comments and is planning to recirculate a Draft EIR for the Fish Flow Project by mid-December 2021. After receiving and reviewing any comment, Sonoma Water staff plans to prepare a Final EIR for the Sonoma Water Board of Directors' review and consideration for certification and project approval and for the State Water Board's use in considering Sonoma Water's petitions to permanently change its water rights permits. The following table outlines milestones for activities necessary to complete the EIR and California Environmental Quality Act (CEQA) process. The milestones also include activities to address resolution of protests and the State Water Board's process for consideration of the petitions.

Table 1. Anticipated Milestones for Activities Necessary for the State Water Resources Control Board's Consideration of Petitions to Permanently Change Permit 12947A and Other Interrelated Water Rights

Activity	Milestone (Subject to Revision)
Status meeting with State Water Resources Board staff	Monthly
Submittal of amended petitions to State Water Resources Control Board	Fall 2021
Notice of Availability of Recirculated Draft EIR for Fish Flow Project *Notices will be sent to every agency, person, or organization that commented on the Draft EIR. Notices will also be provided to all parties that filed a protest to Sonoma Water's petitions.*	December 16, 2021
Public review period for Recirculated Draft EIR *Public workshops and/or hearings will be held during public review period.*	December 16, 2021, to March 16, 2022 CEQA requires minimum of 45 days, but likely at least 90 days (subject to change)
State Water Resources Control Board send request to non-legal injury protestants for additional information	To be determined by State Water Resources Control Board
Release of Final EIR	September 2022
Consideration of EIR certification by Sonoma Water Board of Directors	September 2022 *Date to be determined by Board calendar*
Project approval/findings by Sonoma Water Board of Directors	September 2022 *Date to be determined by Board calendar*
Filing of Notice of Determination (NOD)	September 2022 *CEQA requires NOD to be filed within 5 days of project approval. Filing NOD starts a 30-day statute of limitations on court challenges to the approval under CEQA.*
NOD statute of limitations ends	October 2022
State Water Resources Control Board hearing notice, if needed	To be determined by State Water Resources Control Board
State Water Resources Control Board consideration of petitions	To be determined by State Water Resources Control Board

Sonoma Water staff appreciate State Water Board staff making themselves available for regular status meetings on the project. Staff recognize the general interest in completing the CEQA process as soon as possible. Staff believe that given the current and anticipated workloads in response to continuing dry conditions into 2021, the milestones described provide a realistic timeframe for completion of a CEQA document and project that is technically rigorous and legally defensible.

Please contact me with any questions regarding the Fish Flow Project CEQA process at (707) 547-1903 or jessica.martinilamb@scwa.ca.gov. Questions regarding Sonoma Water's filed petitions may be directed to Todd Schram at (707) 524-1173 or todd.schram@scwa.ca.gov

Sincerely,

[redacted]

Jessica Martini-Lamb
Environmental Resources Manager

c: Sonoma Water – Grant Davis, Pam Jeane, Jay Jasperse, Don Seymour, David Manning
County Counsel – Cory O'Donnell, Verne Ball
BKS – Ryan Bezerra

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Appendix A-4

Sonoma Water

April 1, 2021

VIA EMAIL

Attn: Mr. Erik Ekdahl
Deputy Director of Water Rights
State Water Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000

RE: Reporting Requirements for Term 9 of the State Water Resources Control Board Order in the Matter of Permit 12947A dated February 4, 2021

Dear Mr. Ekdahl:

In accordance with the requirements of the State Water Resources Control Board Order dated February 4, 2021 that approved the Temporary Urgency Change Petition for water-right Permit 12947A (Application 12919A), please accept this submittal of the following enclosed report by Sonoma Water:

- Term 9 – Monthly Water Conservation Status Report

If you have any questions about the report, please do not hesitate to contact me at paul.piazza@scwa.ca.gov.

Sincerely,

[redacted]

Paul Piazza
Principal Programs Specialist

Enclosures

c: Jane Ling, Sam Boland-Brien - State Water Resources Control Board, Division of Water Rights
G. Davis, J. Jasperse, P. Jeane, D. Seymour, T. Schram - Sonoma Water
C. O'Donnell, A. Brand - Sonoma County Counsel
Ryan Bezerra - Bartkiewicz, Kronick & Shanahan

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State Water Resources Control Board
ORDER in the Matter of Permit 12947A
(Application 12919A)

Term 9 – Water Conservation Status Report

April 1, 2021

Prepared by

Sonoma County Water Agency
404 Aviation Blvd
Santa Rosa, CA 95403

1 Introduction

The Sonoma County Water Agency (Sonoma Water) prepared this report to fulfill the requirements of Term 9 of the State Water Resources Control Board (State Board) Order in the matter of Permit 12947A (Application 12919A) approving a temporary urgency change to permit conditions (Order) dated February 4, 2021.

Term 9 of the Order directs Sonoma Water to take the following actions:

> *If the hydrologic index described by Condition 1 of this Order indicates conditions are Dry or Critically Dry following March 1, Sonoma Water shall submit to the Deputy Director a monthly Water Conservation Status Report for Sonoma Water's service area and other areas served by Lake Mendocino for the preceding month, starting April 1, 2021, and continuing until the expiration of this Order (July 26, 2021). The report shall specify the water conservation measures being implemented in the areas served by Lake Mendocino, and shall specify the water savings resulting from the measures during the term of this Order. Sonoma Water shall submit a final Water Conservation Report no later than August 31, 2021.*

The following sections detail the programs and measures being implemented through February 2021 to promote increased water use efficiency and conservation, with Appendix A providing program participation metrics of the Sonoma-Marin Saving Water Partnership (Partnership). February 2021 is the nearest month that program metrics are available by the Partnership for inclusion in the April 1, 2021 report. Subsequent monthly reports will adhere to this same approach. For example, next month's report due May 1 will detail measures implemented in March, and so on. This report contains in-depth information about the full range of programs being implemented by the Partnership to accompany the participation metrics provided in Appendix A. Subsequent monthly reports will simply reference the ongoing participation metrics and programmatic water savings estimates, and will also detail any new or changed program implementation or outreach efforts.

2 Sonoma-Marin Saving Water Partnership

Sonoma Water, along with the cities of Santa Rosa, Rohnert Park, Sonoma, Cotati, and Petaluma, the Town of Windsor, and North Marin, Marin Municipal and Valley of the Moon Water Districts, formed the Sonoma-Marin Saving Water Partnership (http://www.savingwaterpartnership.org/) in 2010. The Partnership Memorandum of Understanding was amended in May 2018, extending the term another 10 years, and adding language to streamline the addition of members to the Partnership. Two new Partners have subsequently joined, with California American Water-Larkfield joining in January 2019 and the City of Healdsburg joining in August 2019.

The purpose of the Partnership is to establish the contributing financial obligation for the 10 local water retailers, Marin Municipal Water District and Sonoma Water, and to identify, recommend and implement regional water conservation projects in a manner that maximizes cost effectiveness and achieves greater impact than would otherwise be realized individually. The Partnership coordinates all

water use efficiency focused media buys in the region and provides support to members that need additional assistance meeting conservation targets. A Partnership Water Conservation Subcommittee meets quarterly to address ongoing program needs, evaluate effectiveness of current programs, and discuss and plan for new programming opportunities to meet the developing water use efficiency regulations for California. Additional meetings and collaboration occur on an ad-hoc basis when emergency conditions arise affecting short-term water conservation needs, such as the current twice-monthly meetings for development of expanded outreach.

2.1 Outreach

Partnership Winter/Spring Outreach Campaign

Due to low rainfall and reservoir levels, an internal Sonoma Water team from Community and Government Affairs and Water Use Efficiency met in late November 2020 for initial development of a winter outreach campaign by the Partnership. Public messaging about the campaign's development was included as an agenda report at the December 7, 2020 Technical Advisory Committee (TAC) meeting, and again at the January 4, 2021 joint Water Advisory Committee (WAC) and TAC meeting. The goal of the ongoing campaign is to raise public awareness of the dry conditions and to implement a call to action resulting in regional water savings. Taking action in winter to implement a more intensive messaging campaign was prudent due to the uncertainty of additional rainfall and the possibility that the region could experience a second dry water year.

An initial social media campaign consisting of 10 unique ads was created collaboratively with the Partnership and distributed by Sonoma Water in early January 2021 for joint implementation of weekly posts to each agency's available social media accounts. Sonoma Water and other Partners are using paid posts to increase the reach of the campaign, and some are posting at a higher frequency than weekly as staffing and budget allows. The ads are in English and Spanish and use the tag line "It's A Dry Year. Save Water With Us" paired with different actionable tips to save water and a link to the Partnership website. Example social media ads are included in Appendix B.

On January 8, 2021, Sonoma Water issued a press release regarding Sonoma Water's filing of a Temporary Urgency Change Petition (TUCP) to save water in Lake Mendocino, which also included a mention of the winter outreach campaign and urging our community to help by saving water. Sonoma Water and the Partnership websites were updated at this time to include information about the current TUCP, dry year and low water supply conditions, and information about the campaign with tips for saving water.

By February, with seasonal rainfall still 50 percent of normal, Sonoma Water's internal outreach team began meeting twice monthly with an outreach subcommittee of the Partnership to further develop the initial social media campaign into a wider-scale marketing and outreach effort to include:

- Streaming and broadcast radio
- Paid digital and print advertising

- Leveraging of outreach materials across Partner agencies, such as an email signature block image of the campaign tag line and internal talking points for staff and public officials
- Identification and pursuit of influencers and earned media
- Outreach to community groups
- Undertaking one or more region-wide event or a community challenge as was done in previous years with the Drought Drive Up event (distribution of water saving devices) or 20-Gallon Challenge
- Continued use of bill inserts, website messages, and E-News by the Partnership

By mid-February, a dedicated Sonoma Water dry-year webpage (https://www.sonomawater.org/dryyear) went live to include a newly developed water supply infographic that is being updated weekly. The infographic is also being used in print and digital editions of The Press Democrat (the regional newspaper), with plans to add it to La Prensa Sonoma in Spanish. Contracted ad buys for print, digital, and radio were being negotiated at the end of February for roll out in March 2021. Example ads and the water supply infographic are included in Appendix C.

Local news outlets have responded to these early outreach efforts with earned media in The Press Democrat and Sonoma West Publishers newspapers. Additional earned media is expected as the outreach campaign expands in the coming months.

Regional Outreach and Collaboration

Sonoma Water and the Partnership provide influence and support for water use efficiency and conservation activities throughout the Russian River watershed. This includes both upper and lower Russian River communities served water by agencies outside the Partnership. Some of this support occurs directly at times, through special agreements with Sonoma Water to provide programming or by extension of grant-funded projects. For example, Sonoma Water has ongoing agreements with Sonoma Resource Conservation District and Gold Ridge Resources Conservation District to conduct education and hands-on trainings for rural landowners on water conservation, water storage and groundwater management and monitoring.

Other Partnership support occurs indirectly in the form of open-source tools and resources created using Partnership funding but made available for anyone to use, including non-Partnership agencies. This indirect support is easy to see by visiting a few of the non-Partnership agency websites with a water supply connection to the Russian River, where you can find the use of links to the Partnership's website, programs, and resources. For examples, see the City of Cloverdale (https://www.cloverdale.net/263/Water-Conservation-Drought-Information), Sweetwater Springs Water District (https://www.sweetwatersprings.com/), and Forestville Water District (https://forestvillewd.com/resources).

The Partnership and Sonoma Water have an active part in promoting water-saving practices that support watershed-wide water supply reliability for people as well as for the environment and fisheries. These activities recognize the importance of the Russian River as a recreational and water supply

resource for people and as critical ecosystem for wildlife and plants. Some recent outreach examples are below:

- Sonoma Water provided a joint presentation to the Cloverdale City Council on January 27, 2021, for an update on Sonoma Water's TUCP and water supply conditions, along with information about becoming a member agency of the Partnership.

- Sonoma Water provided a presentation to the Board of the Mendocino County Russian River Flood Control and Water Conservation Improvement District (RRFC) on February 1, 2021 for an update on Sonoma Water's TUCP and water supply conditions. Sonoma Water has been actively supporting RRFC with information and materials needed for messaging water savings to their customers. RRFC's website homepage (https://www.rrfc.net/) now includes a prominent link to the Partnership's website for water saving tips and information.

2.2 Incentive Programs

The Partners implement a wide range of incentive programs traditionally relied on to achieve immediate and sustained reductions in water use. Incentives include both monetary rebates and a variety of subsidies in the form of parts kits or other materials to remove barriers for customers to complete water use efficiency upgrade projects. These incentive programs target both indoor and outdoor water use for both residential and commercial customers, including but not limited to those listed in Table 1.

Table 1: Incentive Programs

Outdoor	Indoor
Lawn Removal	High Efficiency Toilets
Efficient Irrigation Equipment Upgrades	High Efficiency Urinals
Weather-Based SMART Irrigation Controllers	High Efficiency Clothes Washers
Rainwater Catchment Systems	Commercial/Industrial Sustained Reduction
Pool Covers	Hot Water Recirculation Pumps
Greywater Parts Kits	Home Water Monitoring Devices

2.3 Customer Education, Training, and Assistance Programs

The Partnership has a suite of programs that provide practical advice and education about how to reduce water use by using it more efficiently. These programs target indoor and outdoor water use for residential and commercial water customers, as well as professionals involved in facility and landscape water management. Some of the key programs are described below.

Workshops, Talks, and Seminars

These training and education events (typically free of charge) target homeowners and others interested in gaining the skills and information needed to tackle Do-It-Yourself (DIY) water saving projects. Examples include sheet mulching for lawn removal, laundry-to-landscape greywater systems, rainwater

catchment systems, drip irrigation systems, low-water use garden design, installing raingardens and bioswales as landscape features and more.

Residential and Business Water Assessments

This program provides water-use-efficiency assessments of plumbing fixtures, appliances, and irrigation systems and a report that details water saving opportunities through behavior change, leak repair, plumbing fixture and irrigation system upgrades, irrigation scheduling improvements, and landscape changes to low water use plants. This may include process water evaluations for businesses. Do-It-Yourself options for the residential program have been added during COVID-19 to overcome restrictions on in-person programs. These DIY assessment tools are coupled with home delivery of efficiency upgrade products for participants to install.

Qualified Water Efficient Landscaper (QWEL)

QWEL (https://www.qwel.net/) is an EPA WaterSense labeled Professional Certification Program for irrigation system auditing that was developed by Sonoma Water and the Partnership and is now offered in six western states and British Columbia, Canada. The Partnership has received national recognition from the EPA WaterSense program for continued efforts in promoting water use efficiency in our region and beyond. For three consecutive years (2014-16) the Partnership was the recipient of the Professional Certifying Partner of the Year award for its work in educating landscape professionals through its WaterSense labeled QWEL professional certification program. For four consecutive years (2017-20) the Partnership has been the recipient of the Sustained Excellence Award for QWEL. The training program is an affordable, proactive, local approach to reducing landscape water demand. QWEL provides graduates with knowledge in water efficient and sustainable landscape practices, including water management and preservation of other valuable resources.

In 2020, the QWEL program received authorization from EPA WaterSense to develop and offer online and virtual training, along with remote proctoring of exams in consideration of COVID-19. Locally, both Santa Rosa Junior College and Mendocino College successfully completed QWEL trainings remotely in 2020 with additional classes scheduled in spring and summer 2021 through the Partnership's agreement with the California Water Efficiency Partnerships' Bay QWEL online series.

Garden Sense Program

Garden Sense (http://sonomamg.ucanr.edu/Garden_Sense_Master/Garden_Sense/) is a free program offered by the University of California Master Gardener Program of Sonoma County in collaboration with and funded by Sonoma Water. Garden Sense consultants have advanced training in water management, irrigation systems, site assessment, low-water use plants, and sustainable garden practices. Through free on-site residential appointments, Garden Sense consultants show homeowners how to easily conserve water by creating a climate-appropriate garden that is healthy, environmentally sound, and beautiful. This program helps remove barriers to participation in lawn removal rebate programs by providing free design consultation and practical, how-to advice for those interested in doing the work themselves.

Eco-Friendly Garden Tour

The annual Eco-Friendly Garden Tour is a public outreach and education program that promotes sustainable landscaping practices by showcasing inspiring gardens throughout Sonoma and Marin counties. The Tour highlights Russian River-Friendly and Bay-Friendly landscaping best practices and supports QWEL certified professionals by featuring their personal or client's gardens. The 2021 tour is scheduled for Saturday, May 15, and similar to 2020 will be conducted virtually due to COVID-19 in-person restrictions. This year's tour will feature professionally produced videos and special events focused on needed water savings due to current dry conditions.

Landscape Design Templates

The Partnership has developed eight scalable landscape design templates for the fire rebuild efforts in Sonoma County following the devastating Sonoma Complex fires in 2017. These free, front yard designs are scalable to fit landscaped areas up to 2,500 square feet, ready-to-permit, and in compliance with local Water Efficient Landscape Ordinances. The templates are available for all to download and use whether or not the project is a rebuild. A companion Maintenance Manual is currently in development to complement the use of the templates.

Water Smart Plant Labeling Program

The Partnership provides and supports a free Water Smart Plant-Labeling Program (http://www.savingwaterpartnership.org/water-smart-plant/) to local nurseries. The water smart plant label highlights low water use plants to nursery customers and promotes sustainable landscaping practices in Sonoma and Marin counties. There are currently 15 nurseries participating in the program. Support includes staff training and point of sale marketing materials. This program is featured in the winter-spring outreach campaign to encourage additional outdoor water savings this summer.

DIY Energy and Water Saving Toolkits

The Do-It-Yourself (DIY) Home Energy and Water Saving Toolkits (http://www.savingwaterpartnership.org/diy-toolkit/) are stocked with energy and water saving supplies that can help homeowners measure how much energy or water is being consumed and allow them to make easy upgrades to save money on their utility bills. Toolkits are available for checkout through local branches of the Sonoma County Library and include upgrade devices such as water saving showerheads and faucet aerators for homeowners to keep and install. The DIY Toolkits are made possible through a partnership with Sonoma Clean Power, Sonoma County Library, Sonoma County Energy and Sustainability Division, and Sonoma Water. There are currently no restrictions on the checkout and use of the kits due to COVID-19.

Green Business Certification

Sonoma County Green Business Certification is part of the California Green Business Network, whose mission is to assist businesses to operate sustainably as well as profitably. The County of Sonoma's Energy and Sustainability Division, through funding from Sonoma Water, works with local government agencies to provide assistance to small-to-medium sized businesses who choose to go through the process of becoming "Green". To be certified, participants must comply with all environmental

regulations and meet program standards for saving water, conserving energy, preventing pollution, and minimizing waste.

2.4 Free Devices

Water saving fixtures and devices are distributed by Partners to both residential and commercial customers at no charge as a cost-effective alternative to incentive programs. These giveaways complement residential and business water-use assessment programs and facilitate customer fixture replacement or upgrades based on inefficiencies identified during the assessment. These free devices include efficient showerheads and faucet aerators, as well as self-closing hose nozzles. Most Partnership members make these devices available to their customers at no cost, regardless of their participation in assessment programs. Home delivery of water saving kits is offered by some of the Partners during COVID-19.

2.5 School Education Program

The Partnership contributes to and receives the benefit of Sonoma Water's award winning Water and Energy Education Program (https://www.sonomawater.org/education), which utilizes a multifaceted approach to help students learn the value of water as an important natural resource. The programs are free to schools and teachers and aligned with the Next Generation Science Standards. The program teaches inquiry-based, exploratory science. The program also provides classroom visits, field trips, and curriculum materials for teachers and their students. The goal is for students to become environmental stewards and informed citizens who can examine the world through an inquisitive, scientific lens. In response to the COVID-19 pandemic, the program has provided virtual, engaging lessons to students.

2.6 Programmatic Water Savings

Total programmatic water savings has been estimated based on industry acceptable approaches or data available from the work of the former California Urban Water Conservation Council, the Alliance for Water Efficiency, the 2011 California Single Family Home Water Use Efficiency Study by Aquacraft, Inc., and the recently completed 2020 Water Demand Analysis and Water Conservation Measure Update reports by EKI Environment & Water, Inc. The latter reports were done on behalf of the Partnership's retail agencies for preparing their 2020 Urban Water Management Plans. Savings estimates for measures implemented in February 2021 have been aggregated based on the program participation metrics reported in Appendix A.

Table 2: Water Savings

Programmatic Water Savings February 2021 (gal/yr)	Cumulative Water Savings Term of the Order (gal)
931,203	465,602

Many of the programs relied upon by the Partnership for generating both long and short-term water savings focus solely on behavior change and are consequently not included in these savings estimates. Examples of short-term behavior change may include less frequent toilet flushing, capturing rinse and

warm-up water that normally runs down the drain to use for watering potted plants, and forgoing car washing. A long-term example is not running water continuously while brushing teeth or shaving. The goal of behavior change programs is for the new water saving practices to become the norm, or minimally to achieve greater short-term savings by implementing practices that many may view as unsustainable longer term.

2.7 Monthly Conservation Reporting

Most of the retail agencies in the Partnership are required to submit Urban Water Supplier Monitoring Reports to the state in accordance with the Regulation for Monthly Urban Water Conservation Reporting. The Partners continue to see water demand reductions as compared to the 2013 Benchmark established by Executive Order B-40-17, which expired in November 2017. Table 3 shows the region's cumulative reduction in demand through February 2021 at six percent. As displayed, the Partnership is sustaining demand reductions even during an exceptionally dry and warm winter and even though the population has increased 2.7% since 2013.

Table 3: Jan - Feb 2021 Total Deliveries Compared to 2013 Benchmark Water Use

Water Retailer	Total Deliveries (Gallons)	2013 Benchmark (Gallons)	Relative to 2013 Benchmark
Cal Am	33,867,000	33,143,000	2%
Cotati	31,734,987	38,189,737	-17%
Healdsburg	60,675,000	66,140,256	-8%
Marin Municipal	921,535,955	1,004,078,587	-8%
North Marin	337,577,139	299,000,000	13%
Petaluma	307,603,344	341,321,143	-10%
Rohnert Park	199,908,872	201,000,000	-1%
Santa Rosa	773,732,091	814,253,456	-5%
Sonoma	68,423,464	90,358,601	-24%
Valley of the Moon	93,962,525	106,696,791	-12%
Windsor	114,504,041	125,752,583	-9%
SMSWP Total	**2,943,524,418**	**3,119,934,154**	**-6%**

2.8 Limitations due to COVID-19

The COVID-19 pandemic continues to pose challenges for many of the programs of the Partnership and its member agencies. Local COVID Orders forced the curtailment or cessation of activities for most of the programs reliant on direct customer interactions. Additional challenges exist because of continued remote work and learning environments. In spite of these challenges, rapid and creative approaches have been and are continuing to be developed to provide the services and programs of the Partnership in new ways. The Partnership is confident that it can overcome these limitations and achieve water saving contributions from its customers to help preserve water supplies this year, while continuing work to achieve the longer-term water use reductions of the statewide water conservation framework.

3 Water Loss Reduction Efforts

The Partners continue to make improvements to the validity of data used to accurately estimate both real and apparent water losses from their distribution systems in order to inform cost effective water

loss control programs. In March 2021, the Partnership initiated a regional water loss control working group made up of key agency staff under the guidance of a leading water loss industry firm. The group will meet quarterly to provide staff with continuing water loss education and sharing of best practices in support of economically sound water loss recovery programs that will help the Partners achieve the developing performance targets by the state.

Appendix A

Program Implementation Activities for the Sonoma-Marin Saving Water Partnership February 2020 (begins on the following page)

WATER CONSERVATION ACTIVITIES

FEBRUARY 2021

LANDSCAPE PROGRAMS

19
IRRIGATION CONTROLERS RETROFITTED WITH SMART IRRIGATION CONTROLLERS*

2,933
SQUARE FEET OF LAWN REMOVED VIA CASH FOR GRASS / MULCH MADNESS*

4
REBATES GIVEN FOR LAWN REMOVAL VIA CASH FOR GRASS / MULCH MADNESS

6
LANDSCAPE PLANS REVIEWED

0
LANDSCAPE UPGRADE REBATES

7,355
GALLONS OF RAINWATER HARVESTING CAPACITY ADDED*

14
WATER WASTE ENFORCEMENTS

64
UNIQUE PAGEVIEWS ON THE ECO FRIENDLY GARDEN TOUR WEBSITE

0
POOL COVER REBATE

0
MARIN GARDEN WALK CONSULTATIONS

3
GARDEN SENSE CONSULTATIONS

4
LANDSCAPE IRRIGATION METER AUDITS*

COMMERCIAL PROGRAMS

2
INDOOR SURVEY COMPLETED*

0
COMMERCIAL HIGH EFFICIENCY TOILETS RETROFITTED*

0
COMMERCIAL HIGH EFFICIENCY URINALS RETROFITTED*

*THESE ACTIVITIES ARE INCLUDED IN THE PROGRAMATIC WATER SAVINGS IN SECTION 2.6

WATER CONSERVATION ACTIVITIES

FEBRUARY 2021

RESIDENTIAL PROGRAMS

22
HIGH-EFFICIENCY CLOTHES WASHER REBATES*

8
WATER SMART HOME EVALUATIONS*

16
WATER SMART HOME SURVEY KITS DISTRIBUTED*

25
RESIDENTIAL TOILET REPLACEMENTS*

0
GRAYWATER SYSTEMS WERE PERMITTED*

1
LAUNDRY TO LANDSCAPE GRAYWATER SYSTEMS INSTALLED*

K-12 EDUCATION PROGRAMS

736
STUDENTS RECEIVED DIRECT INSTRUCTION

1,927
STUDENTS ATTENDED THE ZUN ZUN VIRTUAL ASSEMBLY PROGRAM

32
CLASSES PARTICIPATED VIRTUALLY FROM

18
SCHOOLS



*THESE ACTIVITIES ARE INCLUDED IN THE PROGRAMATIC WATER SAVINGS IN SECTION 2.6

Appendix B

Sonoma-Marin Saving Water Partnership
Social Media Ads for Winter Outreach Campaign
(begins on the following page)

Sonoma Water
February 25 ·

[En Español abajo]
It's A Dry Year. Save Water With Us.
Save water now by replacing inefficient toilets with new high-efficiency models.

For more water saving tips visit SavingWaterPartnership.org
~~
Es un año seco. Ahorre agua con nosotros.
Ahorre agua ahora, reemplace inodoros ineficientes con nuevos modelos de alta eficiencia.

Para obtener más consejos sobre cómo ahorrar agua, visite: SavingWaterPartnership.org

See Translation



Sonoma Water
February 4 ·

[En Español abajo]
It's a dry year. Save water with us.

Save water now by loading the dishwasher like this:
- Scrape food scraps into the compost bin instead of the garbage disposal.
- Skip rinsing dishes before loading.
- Wait for a full load before running.

For more information, visit SavingWaterPartnership.org
~~
Es un año seco. Ahorre agua con nosotros.

Ahorre agua ahora cargando el lavaplatos de esta manera:
- Raspe los restos de comida en el contenedor de basura verde en lugar de en el triturador de desperdicios de comida.
- No enjuague los platos antes de cargarlos.
- Espere una carga completa.

Para obtener más consejos sobre cómo ahorrar agua, visite:
SavingWaterPartnership.org

See Translation





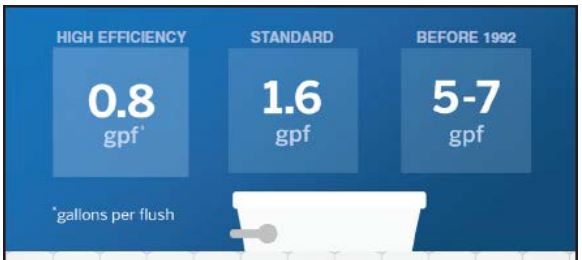
It's a dry year. Save water with us.

Save water now by using a broom instead of a hose.

Sweep off patios, decks, sidewalks and driveways.

For more water saving tips visit SavingWaterPartnership.org

Public Works & Utilities
Water • Sewer • Storm
cityofpetaluma.org/water-conservation



It's a dry year. Save water with us.

Save water now by replacing inefficient toilets with new high-efficiency models.

Top performing models use just 0.8 gallons per flush.

For more water saving tips visit SavingWaterPartnership.org

For details on toilet rebates, call the water conservation hotline at (707) 778-4507.

Public Works & Utilities
Water • Sewer • Storm
cityofpetaluma.org/water-conservation



It's a dry year. Save water with us.

Save water now by not using the toilet as a trash bin.

Never flush wipes, tissues, masks, gloves or paper towels.

For more water saving tips visit SavingWaterPartnership.org

Public Works & Utilities
Water • Sewer • Storm
cityofpetaluma.org/water-conservation



It's a dry year. Save water with us.

Save water now by applying mulch to retain moisture and prevent soil erosion.

Maintain a three inch layer of mulch throughout your landscape for healthy soil and to keep weeds down.

For more water saving tips visit SavingWaterPartnership.org

Public Works & Utilities
Water • Sewer • Storm
cityofpetaluma.org/water-conservation

February Social Media Highlights | Facebook



52 people reached | 2 engagements



59 people reached | 2 engagements



42 people reached | 1 engagements

Engagements include likes, reactions, clicks and comments

February Social Media Highlights | Twitter

North Marin Water District @NorthMarinWater · Feb 16

Look for the 'water smart plant' label at participating local nurseries. Visit nmwd.com/save-water for more water saving tips.
#northmarinwaterdistrict #water #savewater #savemoney #dryyear



North Marin Water District @NorthMarinWater · Feb 18

Only run the dishwasher when it's full. It will help save water for the dry year ahead, and save money on your water bill. Visit nmwd.com/save-water for more water saving tips.
#northmarinwaterdistrict #water #savewater #savemoney #dryyear



February Social Media Highlights | Instagram

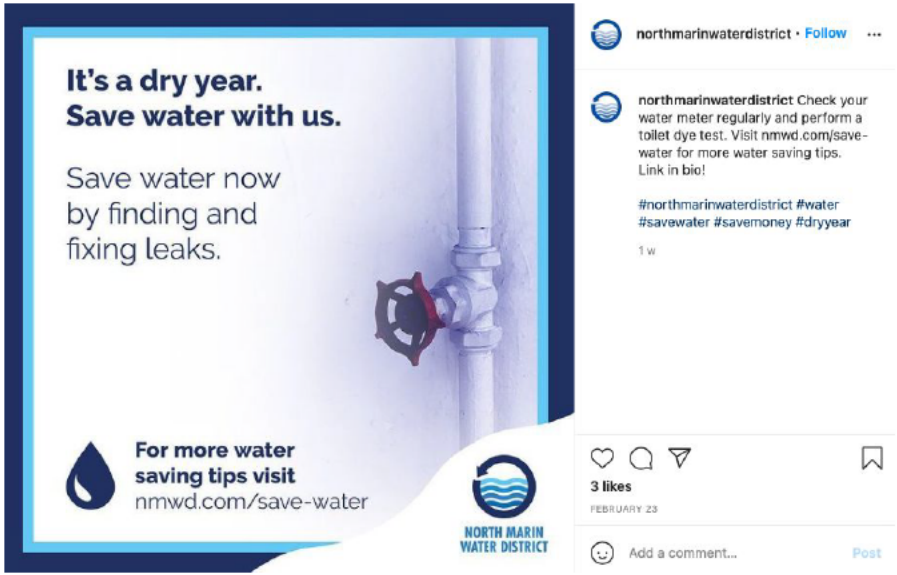


6 likes



4 likes

February Social Media Highlights | Instagram



3 likes



7 like

Appendix C

Sonoma-Saving Water Partnership
Print/Digital Ads and Water Supply Infographic
(begins on the following page)

It's A Dry Year.
Save Water With Us.



SONOMA - MARIN SAVING WATER PARTNERSHIP

For water saving tips visit:
SavingWaterPartnership.org

It's A Dry Year.
Save Water With Us.



SONOMA - MARIN SAVING WATER PARTNERSHIP

For water saving tips visit:
SavingWaterPartnership.org

It's A Dry Year.
Save Water With Us.



SONOMA - MARIN SAVING WATER PARTNERSHIP

For water saving tips visit:
SavingWaterPartnership.org

It's A Dry Year.
Save Water With Us.



SONOMA - MARIN SAVING WATER PARTNERSHIP

More Water-Saving Tips:
SavingWaterPartnership.org

It's A Dry Year.
Save Water With Us.



SONOMA - MARIN SAVING WATER PARTNERSHIP

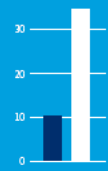
For water saving tips visit:
SavingWaterPartnership.org

Current Water Supply Levels

SANTA ROSA RAINFALL

Percent of Average Rainfall to Date as of March 18, 2021:

42%



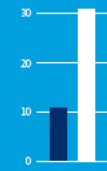
As of March 18, 2021:
12.72"

30-year Annual Average:
36"

UKIAH RAINFALL

Percent of Average Rainfall to Date as of March 18, 2021:

43%



As of March 18, 2021:
12.98"

30-year Annual Average:
37"

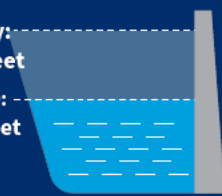
LAKE SONOMA

Percent of Water Supply Capacity for March 18:

63%

Total Water Supply Capacity:
245,000 acre-feet

Current Storage:
155,388 acre-feet



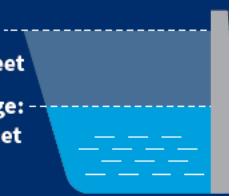
LAKE MENDOCINO

Percent of Target Water Supply Curve for March 18:

46.3%

Target Water Supply Curve:
75,700 acre-feet

Current Storage:
35,063 acre-feet



Sonoma Water

It's a dry year. Save water with us!
Visit us at **www.sonomawater.org** to learn more.

Appendix A-5

Sonoma Water

VIA EMAIL

April 1, 2021

Attn: Mr. Erik Ekdahl
Deputy Director of Water Rights
State Water Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000

Re: Reporting Requirements for Term 10 of the State Water Resources Control Board Order Dated February 4, 2021 (Amended February 11, 2021)

Dear Mr. Ekdahl:

In accordance with the requirements of the State Water Resources Control Board Order 2020-0102-EXEC received July 28, 2021 that approved the Temporary Urgency Change Petitions for water-right Permit 12947A (Applications 12919A), please accept the submittal of the following enclosed report by Sonoma Water:

- Term 10 – Upper Russian River Operations and Water Use Forecasts

If you have any questions about these reports, please do not hesitate to contact me at tschram@scwa.ca.gov.

Sincerely,

[redacted]

Todd J. Schram, P.E.
Water Agency Engineer IV

Enclosures

c: S. Boland-Brien - State Water Resources Control Board, Division of Water Rights
G. Davis, J. Jasperse, P. Jeane, D. Seymour - Sonoma Water
C. O'Donnell, A. Brand - Sonoma County Counsel
R. Bezerra - Bartkiewicz, Kronick & Shanahan
E. Salomone – Mendocino County Russian River FCWCID

Sch: S:\Clerical\Pinks\03-29-21\TUCO2021_Reports_Transmittal_1apr2021.docx

State Water Resources Control Board
Order Dated February 4, 2021
(Amended February 11, 2021)

Term 10

Upper Russian River Operations and Water Use Forecasts

April 1, 2021

Prepared by

Sonoma County Water Agency
404 Aviation Blvd
Santa Rosa, CA 95403

1 Introduction

The Sonoma County Water Agency (Sonoma Water) submitted a temporary urgency change petition on January 7, 2021 for modifications to water right Permit 12947A that would implement an alternative hydrologic index to establish minimum instream flow requirements in the Upper Russian River (upstream of the Dry Creek confluence). On February 4, 2021, the State Water Resources Control Board (SWRCB) Order was issued approving Sonoma Water's petition. On February 11, 2021, the SWRCB issued an amended order (Order). This report documents Sonoma Water's response to the requirements of Term 10, which was unchanged under the Order.

The completion of the requirements under Term 10 were contingent on the water supply conditions status on March 1st as determined by the alternative hydrologic index (found in Term 1 of the Order). Because Term 1 established a 'Critically Dry' water supply condition on March 1st for the Upper Russian River, the following requirements of Term 10 are to be submitted by April 1, 2021:

> '…to facilitate releases of Lake Mendocino stored water with minimal operational buffers, Sonoma Water shall provide to the Deputy Director recommendations on what additional diversion information from other water users in the watershed may support improved real-time demand forecasts and reduced operational buffers for Lake Mendocino. Sonoma Water shall coordinate with the Mendocino County Russian River Flood Control on developing recommendations…'

2 Lake Mendocino Operations

Sonoma Water is the local sponsor for Lake Mendocino, a U.S. Army Corps of Engineers (USACE) facility, and is responsible for making water supply releases in compliance with its water right permits. As the local sponsor, Sonoma Water has the exclusive right to control releases from the water supply pool. Under flood control operations, reservoir releases are performed by the USACE.

Sonoma Water makes releases from Coyote Valley Dam at Lake Mendocino to maintain the minimum instream flow requirements specified in its water right permits and for downstream beneficial uses along the Russian River, including diversions for domestic, municipal, industrial and agricultural purposes. These releases are made by Sonoma Water when reservoir storage levels are in the water supply pool as determined by the reservoir guide curve, a seasonally-variable water surface elevation documented in the facility's Water Control Manual.

Sonoma Water and the Mendocino County Russian River Flood Control and Water Conservation Improvement District (Mendocino District) each have a water right that authorizes storage of water in Lake Mendocino's water supply pool, rediversion of storage releases downstream, and direct diversion of Russian River water.

Sonoma Water makes release decisions on the Upper Russian River to comply with minimum instream flow requirements in its water right permits at compliance locations as far away as Healdsburg, over 60 miles downstream of Lake Mendocino. While Sonoma Water must release enough water to satisfy

diversions and stream depletions that occur along the river as well as achieve compliance with the minimum instream flow requirements, it does not control nor have operational schedules for any of these diversions. The magnitude of diversions and depletions are estimated from net streamflow loss calculated from stream gage information at the compliance locations and fluctuate as there is no coordination of diversions within the watershed. Streamflow depletions represent losses due to diversions (direct or via groundwater wells) and other processes such as evapotranspiration and surface-groundwater exchange.

Sonoma Water only has discretion to make reservoir releases to meet instream flows and very little real-time information regarding downstream diversions and other losses, nor authority or control over such diversion and losses. Consequently, Sonoma Water must make release decisions to account for this uncertainty in actual diversions and depletions across the river reaches down to the confluence with Dry Creek by incorporating an operational buffer flow into its calculation for required reservoir releases. This buffer flow is meant to maintain minimum instream flow compliance even if sudden increases in reach losses occur. When such increases are observed, operations staff at Sonoma Water must determine whether the situation requires a change in reservoir releases. This situation is complicated by the time lag between reservoir releases and potential downstream changes in diversions. In general, Sonoma Water bears a risk of not achieving minimum in-stream flows due to rapidly fluctuating downstream diversions it neither controls nor has sufficient information about timing, magnitude and location. This risk of non-compliance leads to the necessity of a greater operational buffer.

3 Minimum Instream Flow Requirements

The minimum instream flow requirements for the Upper Russian River downstream of Lake Mendocino are divided into two regulatory reaches. Lake Mendocino lies on the East Fork of the Russian River and the region downstream has a year-round minimum instream flow requirement of 25 cubic feet per second (cfs). The East Fork confluence with the West Fork lies approximately one mile downstream of Coyote Valley Dam. From this point, referred to as The Forks, to the Russian River's confluence with Dry Creek, the minimum instream flow requirements range from 25 cfs under critical conditions to 185 cfs under normal conditions in the spring and summer. Since the National Marine Fisheries Service's issuance of the 2009 Russian River Biological Opinion, summertime minimum instream flow requirements have been reduced to 125 cfs through multiple temporary urgency change orders due to the harm higher flows pose to threatened and endangered salmonids.

During the wet weather season that spans from late fall through spring, natural streamflows are often sufficiently high enough that additional reservoir releases are not needed to meet the minimum instream flow requirements on the mainstem downstream of The Forks. Based on a review of operational data from 2013-2019, this condition spanned more than 90% of the wet weather season (see Table 1). For the remainder of the year, Sonoma Water is most often making reservoir releases to satisfy the minimum instream flow requirements downstream of The Forks. Based on the 2013-2019 operational data, this was the case 74% of the dry season. During dry years, however, Sonoma Water may be making significant reservoir releases to satisfy the minimum instream flow requirements throughout the whole year.

Table 1. Percentage of Time that Lake Mendocino Releases Set by Minimum Instream Flow Requirements Compliance Gages (2013-2019)

	Streamflow Locations (river mile)			
	The Forks (99.0)	Hopland (84.8)	Cloverdale (70.9)	Healdsburg (35.6)
Dry Season	9.4%	9.7%	2.7%	61.5%
Wet Season	35.0%	5.0%	1.6%	1.8%

Note: Coyote Valley Dam lies on the East Fork 1.0 mile upstream of The Forks.

4 Operational Buffer Analysis

The amount of the operational buffer maintained by Sonoma Water operations staff ranges based on hydrologic conditions, the designated minimum instream flow requirement, and the distance downstream that the controlling compliance stream gage is from Lake Mendocino. During dry years, when Lake Mendocino does not have adequate storage, reducing the operational buffer can provide a moderate water supply benefit to Lake Mendocino storage.

In a number of recent orders issued by the SWRCB approving temporary urgency change petitions filed by Sonoma Water, the SWRCB has approved using a five-day running average of average daily flows to comply with minimum instream flow requirements. Based on recent analysis by Sonoma Water engineering staff, this can reduce the operational buffer by at least 25 percent. Table 2 shows the average operational buffers for operating to The Forks and Healdsburg under a 75-cfs minimum instream flow requirement.

Table 2. Average Operational Buffers (cfs) Under Minimum Instream Flow Requirement of 75 cfs for Alternate Compliance Criteria (2013-2019)

	The Forks	Healdsburg
Instantaneous	12.8	15.8
5-day Running Average	13.1	11.7

5 Recommendations

Sonoma Water has implemented a program of developing real-time diversion forecast reports for the Upper Russian River on several occasions as a part of the terms under temporary urgency change orders (TUCO). The most recent implementation was under Term 11 of the 2020 TUCO, but the original development of a diversion forecast reporting tool dates back to 2014. Under Term 1 of the Mendocino

District's 2014 TUCO (dated August 25, 2014), Sonoma Water provided coordination and developed the tools and protocols for a 3-day diversion forecast based on submittals of planned diversions by the Mendocino District's customers. The requirements for implementing a diversion forecast reporting in the Upper Russian River was subsequently also included in Sonoma Water TUCOs in 2015 (Term 19) and 2016 (Term 12). Sonoma Water used a similar approach under each TUCO that was based on Mendocino District customers submitting hourly diversion forecasts via an online reporting form from a desktop or mobile device. These diversion forecast submittals were aggregated to produce a daily diversion forecast report provided to Sonoma Water operations staff. The report provided hourly diversion forecasts over the upcoming 72 hours for the three reaches of the Upper Russian River—Talmage, Hopland, and Cloverdale—and Lake Mendocino. The amount of diversion forecast data collected under the program fell short on achieving a level of participation upon which any meaningful interpretations could be realized.

The experience with implementing diversion forecast reporting has helped inform an understanding of the limitations of an approach that relies on additional reporting requirements by river diverters. Sonoma Water believes that there may be a better approach to forecasting river conditions than individual diversion schedule submittals, which are subject to change and a challenge to manage.

Sonoma Water has considered various alternatives and developed the following recommendations to achieve improved efficiencies in utilizing Lake Mendocino releases to meet authorized downstream beneficial uses.

List of Recommendations:

I. The implementation of a five-day running average flow criteria for compliance with the minimum instream flow requirements on the Russian River has occurred temporarily eight times since 2011 under orders issued on Sonoma Water's temporary urgency change petitions. Due to the implicit reactive nature under which Sonoma Water must operate the Russian River, a compliance criteria of a five-day running average provides Sonoma Water additional time and flexibility in the decision-making process of setting reservoir releases to meet flow changes observed downstream with travel times of up to several days. This change would result in a lower operational buffer. Sonoma Water recommends that a five-day running average compliance criteria be implemented for the minimum instream flow requirements specified in its water rights permits for water supply conditions other than 'Critical' with new additional minimum instantaneous limits equivalent to 10 cfs less than the minimum instream flow requirements.

II. Since 2017, the monitoring and reporting requirements implemented under Senate Bill 88 provide a valuable dataset to characterize and better understand the dynamics in the Russian River watershed. Sonoma Water estimates that these regulations apply to nearly 1,000 water rights in the watershed with over 200 rights required to submit daily production data at each point of diversion in their annual water rights reports. These data have provided a higher quality record of diversions at more relevant time intervals for larger water rights from which improved planning and operational tools can be developed. Sonoma Water recommends that the SWRCB continue

its efforts in auditing annual report submittals and achieving higher compliance rates over the coming years.

III. Operations of Lake Mendocino by Sonoma Water are best described as a reactive approach. Understanding the authorized diversions and water rights in the Russian River watershed is a complex matter with multiple sources of water present in the system (primarily natural flow, imported water, and reservoir storage releases) and water right-holders with multiple overlapping rights that provide access to certain 'types' of water. Additional complications are found in distinguishing surface water use of underflow from groundwater pumping and the quantification of natural streamflow present and available underground for surface water diversions. The SWRCB has published basic information about water rights on its website via the eWRIMS water rights database tools and queries. To interpret diversions and observations in the watershed a more comprehensive understanding of the watershed water rights is necessary, which would include establishing the relationships that exist across water rights and how water rights-holders use multiple rights to satisfy demands, updating outdated Place of Use mapping to establish reliably where diversions are beneficially used, and confirming the relationships of Points of Diversion locations with places of use. Sonoma Water recommends that the SWRCB continue to improve and modernize its documentation of water rights such that a more comprehensive understanding can be developed of water use in the Russian River.

IV. While the initial iterations of a diversion forecast program haven't been successful in providing operational guidance to reduce operational buffer flows, Sonoma Water does believe that such a program could be a valuable operations tool to assist in Lake Mendocino release decisions. The Russian River watershed has 27 stream gages with 14 on the mainstem of the Russian River and Dry Creek that provide real-time access to streamflows. Other than the diversions that occur by Sonoma Water, there is no other real-time access to quantify large diversions on the Russian River. In place of water right-holders submitting scheduled diversions over the next several days, Sonoma Water sees potential in the development of a short-term diversion forecast model based on current hydrologic conditions, forecasted meteorology and real-time diversion data. Sonoma Water recommends that a study be conducted to evaluate the feasibility of a real-time diversion forecast tool based on access to real-time diversion telemetry and comprehensive data analytics. Such an endeavor would necessitate regional partners and the support of state government agencies, such as SWRCB and California Department of Water Resources. This work could leverage ongoing projects and partnerships that Sonoma Water has supported, such as the Russian River GSFLOW - MODSIM model development work that is ongoing in collaboration with the SWRCB and the U.S. Geological Survey.

Appendix A-6

Sonoma Water

May 13, 2021

Erik Ekdahl, Deputy Director of Water Rights
State Water Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000

RE: Petitions for Temporary Urgency Change—Permits 12947A, 12949, 12950 and 16596 (Applications 12919A, 15736, 15737 and 19351)

Dear Mr. Ekdahl:

Enclosed are the Petitions for Temporary Urgency Change to modify the minimum instream flow requirements for the Russian River as established by Decision 1610 for Permits 12947A, 12949, 12950 and 16596. Accompanying the petitions are the following:

1) *Supplement to the May 2021 Temporary Urgency Change Petitions*
2) Environmental Information for Petition
3) Notice of Exemption
4) California Department of Fish and Wildlife Review Fee Payment
5) State Water Resources Control Board Petition Fee Payment

These petitions are being submitted due to extreme drought conditions, historically low storage levels in Lake Mendocino and Lake Sonoma, and a flawed hydrologic index that established minimum instream flow requirements that do not align with the current watershed conditions. Sonoma Water is currently operating under permit conditions modified by a temporary urgency change order dated February 4, 2021 (and amended February 11, 2021) for Permit 12947A. The requested changes in these submitted petitions would supersede the changes enacted in this previous order.

On February 1st, the water supply condition for the Russian River was reclassified from 'Normal' to 'Dry' based on the cumulative inflow into Lake Pillsbury for the water year. This designation of 'Dry' water supply conditions would continue through until the end of the year, but it does not accurately reflect the dismal conditions in Lake Mendocino and the Upper Russian River, which has experienced back-to-back water years (WY) of near record low rainfall as measured in Ukiah. Rainfall in WY 2020 was the fourth driest year and WY 2021 was the second driest year of record (1893-present). Without the proposed changes in effect, Sonoma Water projects that Lake Mendocino will completely drain in September in the absence of any interventions.

I look forward to working with the Division of Water Rights staff on this important conservation effort.

Sincerely,

[redacted]

Grant Davis
General Manager

c: S. Boland-Brien, J. Ling, S. McFarland – State Water Resources Control Board
R. Coey, J. Fuller – National Marine Fisheries Service
E. Larson - California Department of Fish & Wildlife
M. St. John, B. McFadin – North Coast Regional Water Quality Control Board
P. Jeane, D. Seymour, T. Schram, J. Martini Lamb, J. Jasperse – Sonoma Water
C. O'Donnell, A. Brand – Sonoma County Counsel
R. Bezerra – Bartkiewicz, Kronick & Shanahan

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Please indicate County where your project is located here:

Sonoma / Mendo.

MAIL FORM AND ATTACHMENTS TO:
State Water Resources Control Board
DIVISION OF WATER RIGHTS
P.O. Box 2000, Sacramento, CA 95812-2000
Tel: (916) 341-5300 Fax: (916) 341-5400
http://www.waterboards.ca.gov/waterrights

PETITION FOR CHANGE

Separate petitions are required for each water right. Mark all areas that apply to your proposed change(s). Incomplete forms may not be accepted. Location and area information must be provided on maps in accordance with established requirements. (Cal. Code Regs., tit. 23, § 715 et seq.) Provide attachments if necessary.

☐ **Point of Diversion** Wat. Code, § 1701 ☐ **Point of Rediversion** Cal. Code Regs., tit. 23, § 791(e) ☐ **Place of Use** Wat. Code, § 1701 ☐ **Purpose of Use** Wat. Code, § 1701

☐ **Distribution of Storage** Cal. Code Regs., tit. 23, § 791(e) ☒ **Temporary Urgency** Wat. Code, § 1435 ☐ **Instream Flow Dedication** Wat. Code, § 1707 ☐ **Waste Water** Wat. Code, § 1211

☐ **Split** Cal. Code Regs., tit. 23, § 836 ☐ **Terms or Conditions** Cal. Code Regs., tit. 23, § 791(e) ☐ **Other**

Application 12919A Permit 12947A License Statement

I (we) hereby petition for change(s) noted above and described as follows:

Point of Diversion or Rediversion – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Present:

Proposed:

Place of Use – Identify area using Public Land Survey System descriptions to ¼-¼ level; for irrigation, list number of acres irrigated.

Present:

Proposed:

Purpose of Use

Present:

Proposed:

Split

Provide the names, addresses, and phone numbers for all proposed water right holders.

In addition, provide a separate sheet with a table describing how the water right will be split between the water right holders: for each party list amount by direct diversion and/or storage, season of diversion, maximum annual amount, maximum diversion to offstream storage, point(s) of diversion, place(s) of use, and purpose(s) of use. Maps showing the point(s) of diversion and place of use for each party should be provided.

Distribution of Storage

Present:

Proposed:

Temporary Urgency

This temporary urgency change will be effective from Order date to + 180 days.

Include an attachment that describes the urgent need that is the basis of the temporary urgency change and whether the change will result in injury to any lawful user of water or have unreasonable effects on fish, wildlife or instream uses.

Instream Flow Dedication – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Upstream Location:

Downstream Location:

List the quantities dedicated to instream flow in either: ☐ cubic feet per second or ☐ gallons per day:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Will the dedicated flow be diverted for consumptive use at a downstream location? ◯ Yes ◯ No

If yes, provide the source name, location coordinates, and the quantities of flow that will be diverted from the stream.

Waste Water

If applicable, provide the reduction in amount of treated waste water discharged in cubic feet per second.

Will this change involve water provided by a water service contract which prohibits your exclusive right to this treated waste water? ◯ Yes ◯ No

Will any legal user of the treated waste water discharged be affected? ◯ Yes ◯ No

General Information – For all Petitions, provide the following information, if applicable to your proposed change(s).

Will any current Point of Diversion, Point of Storage, or Place of Use be abandoned? ◯ Yes ◉ No

I (we) have access to the proposed point of diversion or control the proposed place of use by virtue of:

☐ ownership ☐ lease ☐ verbal agreement ☐ written agreement

If by lease or agreement, state name and address of person(s) from whom access has been obtained.

Give name and address of any person(s) taking water from the stream between the present point of diversion or rediversion and the proposed point of diversion or rediversion, as well as any other person(s) known to you who may be affected by the proposed change.

All Right Holders Must Sign This Form: I (we) declare under penalty of perjury that this change does not involve an increase in the amount of the appropriation or the season of diversion, and that the above is true and correct to the best of my (our) knowledge and belief. Dated 5.13.21 at Santa Rosa, CA.

[redacted]

Right Holder or Authorized Agent Signature

Right Holder or Authorized Agent Signature

NOTE: All petitions must be accompanied by:

(1) the form Environmental Information for Petitions, including required attachments, available at: http://www.waterboards.ca.gov/waterrights/publications_forms/forms/docs/pet_info.pdf

(2) Division of Water Rights fee, per the Water Rights Fee Schedule, available at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/fees/

(3) Department of Fish and Wildlife fee of $850 (Pub. Resources Code, § 10005)

Please indicate County where your project is located here:

Sonoma / Mendo.

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☐ **Point of Rediversion** Cal. Code Regs., tit. 23, § 791(e)
☐ **Place of Use** Wat. Code, § 1701
☐ **Purpose of Use** Wat. Code, § 1701

☐ **Distribution of Storage** Cal. Code Regs., tit. 23, § 791(e)
☒ **Temporary Urgency** Wat. Code, § 1435
☐ **Instream Flow Dedication** Wat. Code, § 1707
☐ **Waste Water** Wat. Code, § 1211

☐ **Split** Cal. Code Regs., tit. 23, § 836
☐ **Terms or Conditions** Cal. Code Regs., tit. 23, § 791(e)
☐ **Other**

Application 15736 Permit 12949 License Statement

I (we) hereby petition for change(s) noted above and described as follows:

Point of Diversion or Rediversion – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Present:

Proposed:

Place of Use – Identify area using Public Land Survey System descriptions to ¼-¼ level; for irrigation, list number of acres irrigated.

Present:

Proposed:

Purpose of Use

Present:

Proposed:

Split

Provide the names, addresses, and phone numbers for all proposed water right holders.

In addition, provide a separate sheet with a table describing how the water right will be split between the water right holders: for each party list amount by direct diversion and/or storage, season of diversion, maximum annual amount, maximum diversion to offstream storage, point(s) of diversion, place(s) of use, and purpose(s) of use. Maps showing the point(s) of diversion and place of use for each party should be provided.

Distribution of Storage

Present:

Proposed:

Temporary Urgency
This temporary urgency change will be effective from Order date to + 180 days .

Include an attachment that describes the urgent need that is the basis of the temporary urgency change and whether the change will result in injury to any lawful user of water or have unreasonable effects on fish, wildlife or instream uses.

Instream Flow Dedication – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).
Upstream Location:

Downstream Location:

List the quantities dedicated to instream flow in either: ☐ cubic feet per second or ☐ gallons per day:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Will the dedicated flow be diverted for consumptive use at a downstream location? ◯ Yes ◯ No
If yes, provide the source name, location coordinates, and the quantities of flow that will be diverted from the stream.

Waste Water
If applicable, provide the reduction in amount of treated waste water discharged in cubic feet per second.

Will this change involve water provided by a water service contract which prohibits your exclusive right to this treated waste water? ◯ Yes ◯ No

Will any legal user of the treated waste water discharged be affected? ◯ Yes ◯ No

General Information – For all Petitions, provide the following information, if applicable to your proposed change(s).

Will any current Point of Diversion, Point of Storage, or Place of Use be abandoned? ◯ Yes ◉ No

I (we) have access to the proposed point of diversion or control the proposed place of use by virtue of:
☐ ownership ☐ lease ☐ verbal agreement ☐ written agreement

If by lease or agreement, state name and address of person(s) from whom access has been obtained.

Give name and address of any person(s) taking water from the stream between the present point of diversion or rediversion and the proposed point of diversion or rediversion, as well as any other person(s) known to you who may be affected by the proposed change.

All Right Holders Must Sign This Form: I (we) declare under penalty of perjury that this change does not involve an increase in the amount of the appropriation or the season of diversion, and that the above is true and correct to the best of my (our) knowledge and belief. Dated 5.13.21 at Santa Rosa, CA .

[redacted]

Right Holder or Authorized Agent Signature

Right Holder or Authorized Agent Signature

NOTE: All petitions must be accompanied by:
(1) the form Environmental Information for Petitions, including required attachments, available at: http://www.waterboards.ca.gov/waterrights/publications_forms/forms/docs/pet_info.pdf
(2) Division of Water Rights fee, per the Water Rights Fee Schedule, available at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/fees/
(3) Department of Fish and Wildlife fee of $850 (Pub. Resources Code, § 10005)

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Sonoma / Mendo.

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☐ **Point of Rediversion** Cal. Code Regs., tit. 23, § 791(e)
☐ **Place of Use** Wat. Code, § 1701
☐ **Purpose of Use** Wat. Code, § 1701

☐ **Distribution of Storage** Cal. Code Regs., tit. 23, § 791(e)
☒ **Temporary Urgency** Wat. Code, § 1435
☐ **Instream Flow Dedication** Wat. Code, § 1707
☐ **Waste Water** Wat. Code, § 1211

☐ **Split** Cal. Code Regs., tit. 23, § 836
☐ **Terms or Conditions** Cal. Code Regs., tit. 23, § 791(e)
☐ **Other**

Application 15737 Permit 12950 License _____ Statement _____

I (we) hereby petition for change(s) noted above and described as follows:

Point of Diversion or Rediversion – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Present:

Proposed:

Place of Use – Identify area using Public Land Survey System descriptions to ¼-¼ level; for irrigation, list number of acres irrigated.

Present:

Proposed:

Purpose of Use

Present:

Proposed:

Split

Provide the names, addresses, and phone numbers for all proposed water right holders.

In addition, provide a separate sheet with a table describing how the water right will be split between the water right holders: for each party list amount by direct diversion and/or storage, season of diversion, maximum annual amount, maximum diversion to offstream storage, point(s) of diversion, place(s) of use, and purpose(s) of use. Maps showing the point(s) of diversion and place of use for each party should be provided.

Distribution of Storage

Present:

Proposed:

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This temporary urgency change will be effective from Order date to + 180 days .

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If yes, provide the source name, location coordinates, and the quantities of flow that will be diverted from the stream.

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If applicable, provide the reduction in amount of treated waste water discharged in cubic feet per second.

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Will any legal user of the treated waste water discharged be affected? ◯ Yes ◯ No

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If by lease or agreement, state name and address of person(s) from whom access has been obtained.

Give name and address of any person(s) taking water from the stream between the present point of diversion or rediversion and the proposed point of diversion or rediversion, as well as any other person(s) known to you who may be affected by the proposed change.

All Right Holders Must Sign This Form: I (we) declare under penalty of perjury that this change does not involve an increase in the amount of the appropriation or the season of diversion, and that the above is true and correct to the best of my (our) knowledge and belief. Dated 5.10.21 at Santa Rosa, CA .

[redacted]

Right Holder or Authorized Agent Signature

Right Holder or Authorized Agent Signature

NOTE: All petitions must be accompanied by:
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(3) Department of Fish and Wildlife fee of $850 (Pub. Resources Code, § 10005)

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☐ **Point of Rediversion** Cal. Code Regs., tit. 23, § 791(e)
☐ **Place of Use** Wat. Code, § 1701
☐ **Purpose of Use** Wat. Code, § 1701

☐ **Distribution of Storage** Cal. Code Regs., tit. 23, § 791(e)
☒ **Temporary Urgency** Wat. Code, § 1435
☐ **Instream Flow Dedication** Wat. Code, § 1707
☐ **Waste Water** Wat. Code, § 1211

☐ **Split** Cal. Code Regs., tit. 23, § 836
☐ **Terms or Conditions** Cal. Code Regs., tit. 23, § 791(e)
☐ **Other**

Application 19351 Permit 16596 License _____ Statement _____

I (we) hereby petition for change(s) noted above and described as follows:

Point of Diversion or Rediversion – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Present:

Proposed:

Place of Use – Identify area using Public Land Survey System descriptions to ¼-¼ level; for irrigation, list number of acres irrigated.

Present:

Proposed:

Purpose of Use

Present:

Proposed:

Split

Provide the names, addresses, and phone numbers for all proposed water right holders.

In addition, provide a separate sheet with a table describing how the water right will be split between the water right holders: for each party list amount by direct diversion and/or storage, season of diversion, maximum annual amount, maximum diversion to offstream storage, point(s) of diversion, place(s) of use, and purpose(s) of use. Maps showing the point(s) of diversion and place of use for each party should be provided.

Distribution of Storage

Present:

Proposed:

Temporary Urgency
This temporary urgency change will be effective from [Order date] to [+ 180 days].

Include an attachment that describes the urgent need that is the basis of the temporary urgency change and whether the change will result in injury to any lawful user of water or have unreasonable effects on fish, wildlife or instream uses.

Instream Flow Dedication – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Upstream Location:

Downstream Location:

List the quantities dedicated to instream flow in either: ☐ cubic feet per second or ☐ gallons per day:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Will the dedicated flow be diverted for consumptive use at a downstream location? ◯ Yes ◯ No
If yes, provide the source name, location coordinates, and the quantities of flow that will be diverted from the stream.

Waste Water
If applicable, provide the reduction in amount of treated waste water discharged in cubic feet per second.

Will this change involve water provided by a water service contract which prohibits your exclusive right to this treated waste water? ◯ Yes ◯ No

Will any legal user of the treated waste water discharged be affected? ◯ Yes ◯ No

General Information – For all Petitions, provide the following information, if applicable to your proposed change(s).

Will any current Point of Diversion, Point of Storage, or Place of Use be abandoned? ◯ Yes ◉ No

I (we) have access to the proposed point of diversion or control the proposed place of use by virtue of:
☐ ownership ☐ lease ☐ verbal agreement ☐ written agreement

If by lease or agreement, state name and address of person(s) from whom access has been obtained.

Give name and address of any person(s) taking water from the stream between the present point of diversion or rediversion and the proposed point of diversion or rediversion, as well as any other person(s) known to you who may be affected by the proposed change.

All Right Holders Must Sign This Form: I (we) declare under penalty of perjury that this change does not involve an increase in the amount of the appropriation or the season of diversion, and that the above is true and correct to the best of my (our) knowledge and belief. Dated 5-13-21 at Santa Rosa, CA.

[redacted]

Right Holder or Authorized Agent Signature

Right Holder or Authorized Agent Signature

NOTE: All petitions must be accompanied by:
(1) the form Environmental Information for Petitions, including required attachments, available at: http://www.waterboards.ca.gov/waterrights/publications_forms/forms/docs/pet_info.pdf
(2) Division of Water Rights fee, per the Water Rights Fee Schedule, available at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/fees/
(3) Department of Fish and Wildlife fee of $850 (Pub. Resources Code, § 10005)

State of California
State Water Resources Control Board
DIVISION OF WATER RIGHTS
P.O. Box 2000, Sacramento, CA 95812-2000
Tel: (916) 341-5300 Fax: (916) 341-5400
http://www.waterboards.ca.gov/waterrights

ENVIRONMENTAL INFORMATION FOR PETITIONS

This form is required for all petitions.

Before the State Water Resources Control Board (State Water Board) can approve a petition, the State Water Board must consider the information contained in an environmental document prepared in compliance with the California Environmental Quality Act (CEQA). This form is not a CEQA document. If a CEQA document has not yet been prepared, a determination must be made of who is responsible for its preparation. As the petitioner, you are responsible for all costs associated with the environmental evaluation and preparation of the required CEQA documents. Please answer the following questions to the best of your ability and submit any studies that have been conducted regarding the environmental evaluation of your project. If you need more space to completely answer the questions, please number and attach additional sheets.

DESCRIPTION OF PROPOSED CHANGES OR WORK REMAINING TO BE COMPLETED

For a petition for change, provide a description of the proposed changes to your project including, but not limited to, type of construction activity, structures existing or to be built, area to be graded or excavated, increase in water diversion and use (up to the amount authorized by the permit), changes in land use, and project operational changes, including changes in how the water will be used. For a petition for extension of time, provide a description of what work has been completed and what remains to be done. Include in your description any of the above elements that will occur during the requested extension period.

See 'Supplement to the May 2021 Temporary Urgency Change Petitions' for a summary of the requested changes.

Insert the attachment number here, if applicable: [ ]

Coordination with Regional Water Quality Control Board

For change petitions only, you must request consultation with the Regional Water Quality Control Board regarding the potential effects of your proposed change on water quality and other instream beneficial uses. (Cal. Code Regs., tit. 23, § 794.) In order to determine the appropriate office for consultation, see: http://www.waterboards.ca.gov/waterboards_map.shtml. Provide the date you submitted your request for consultation here, then provide the following information.

Date of Request: 5/7/2021

Will your project, during construction or operation, (1) generate waste or wastewater containing such things as sewage, industrial chemicals, metals, or agricultural chemicals, or (2) cause erosion, turbidity or sedimentation? ○ Yes ◉ No

Will a waste discharge permit be required for the project? ○ Yes ◉ No

If necessary, provide additional information below:

On May 7, 2021, the most recent weekly meeting was held with the fishery agencies and Bryan McFadin of the North Coast Regional Water Quality Control Board (NCRWQCB). These meetings are held per term 2.c of the February 4, 2021 Temporary Urgency Change Order. This meeting addressed the pending filing of these temporary urgency change petitions and the potential impacts to water quality.

Insert the attachment number here, if applicable:

Local Permits

For temporary transfers only, you must contact the board of supervisors for the county(ies) both for where you currently store or use water and where you propose to transfer the water. (Wat. Code § 1726.) Provide the date you submitted your request for consultation here.

Date of Contact:

For change petitions only, you should contact your local planning or public works department and provide the information below.

Person Contacted: Date of Contact:

Department: Phone Number:

County Zoning Designation:

Are any county permits required for your project? If yes, indicate type below. ○ Yes ◉ No

☐ Grading Permit ☐ Use Permit ☐ Watercourse ☐ Obstruction Permit

☐ Change of Zoning ☐ General Plan Change ☐ Other (explain below)

If applicable, have you obtained any of the permits listed above? If yes, provide copies. ○ Yes ○ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

Federal and State Permits

Check any additional agencies that may require permits or other approvals for your project:

☐ Regional Water Quality Control Board ☐ Department of Fish and Game

☐ Dept of Water Resources, Division of Safety of Dams ☐ California Coastal Commission

☐ State Reclamation Board ☐ U.S. Army Corps of Engineers ☐ U.S. Forest Service

☐ Bureau of Land Management ☐ Federal Energy Regulatory Commission

☐ Natural Resources Conservation Service

Have you obtained any of the permits listed above? If yes, provide copies. ○ Yes ◉ No

For each agency from which a permit is required, provide the following information:

Agency	Permit Type	Person(s) Contacted	Contact Date	Phone Number

If necessary, provide additional information below:

Insert the attachment number here, if applicable: ☐

Construction or Grading Activity

Does the project involve any construction or grading-related activity that has significantly altered or would significantly alter the bed, bank or riparian habitat of any stream or lake? ○ Yes ◉ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable: ☐

Archeology

Has an archeological report been prepared for this project? If yes, provide a copy. ◯ Yes ◉ No

Will another public agency be preparing an archeological report? ◯ Yes ◉ No

Do you know of any archeological or historic sites in the area? If yes, explain below. ◯ Yes ◉ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable: ☐

Photographs

For all petitions other than time extensions, attach complete sets of color photographs, clearly dated and labeled, showing the vegetation that exists at the following three locations:

☒ Along the stream channel immediately downstream from each point of diversion

☒ Along the stream channel immediately upstream from each point of diversion

☒ At the place where water subject to this water right will be used

Maps

For all petitions other than time extensions, attach maps labeled in accordance with the regulations showing all applicable features, both present and proposed, including but not limited to: point of diversion, point of rediversion, distribution of storage reservoirs, point of discharge of treated wastewater, place of use, and location of instream flow dedication reach. (Cal. Code Regs., tit. 23, §§ 715 et seq., 794.)

Pursuant to California Code of Regulations, title 23, section 794, petitions for change submitted without maps may not be accepted.

All Water Right Holders Must Sign This Form:

I (we) hereby certify that the statements I (we) have furnished above and in the attachments are complete to the best of my (our) ability and that the facts, statements, and information presented are true and correct to the best of my (our) knowledge. Dated 5.13.21 at Santa Rosa, CA.

[redacted]

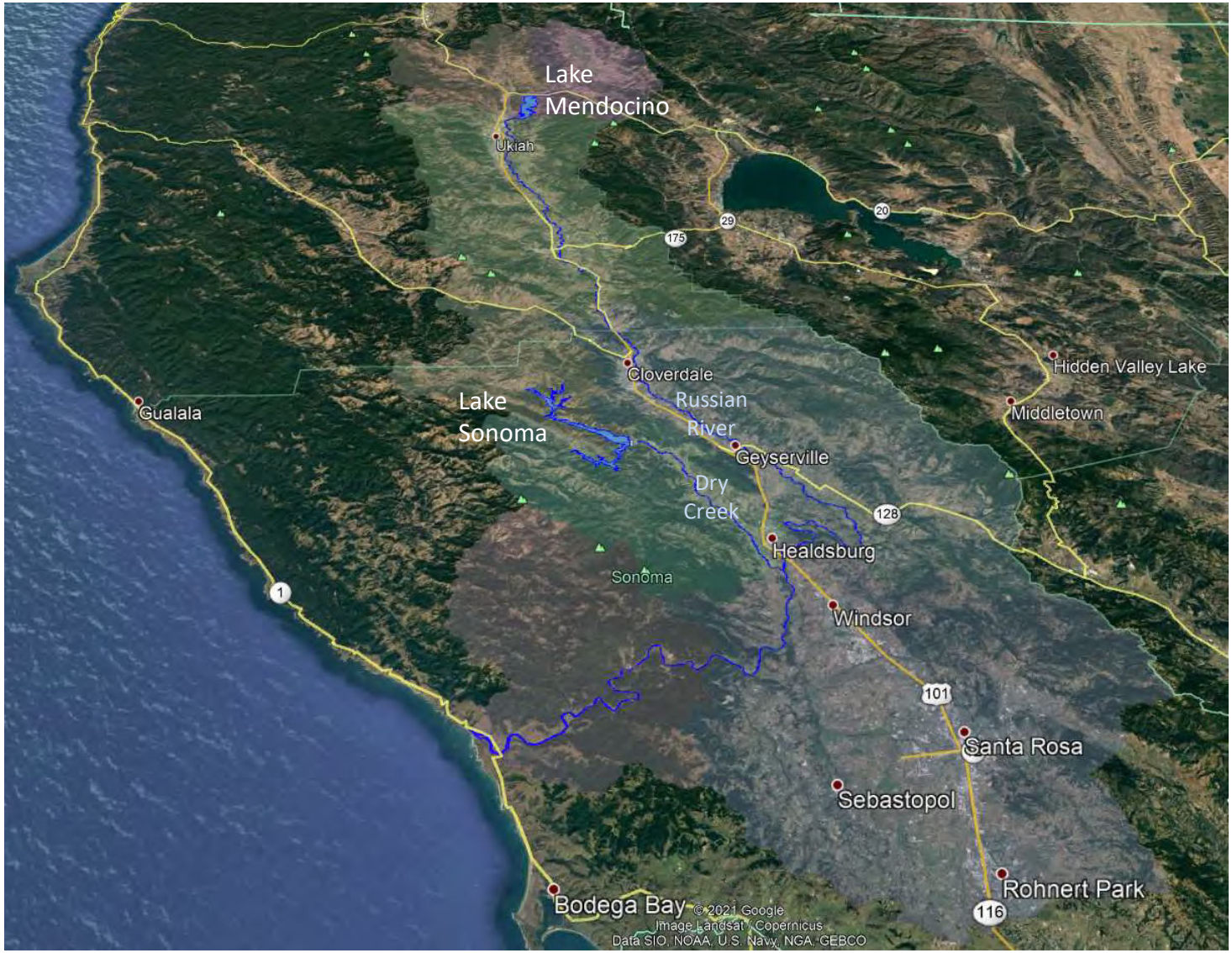
Water Right Holder or Authorized Agent Signature

Water Right Holder or Authorized Agent Signature

NOTE:

- **Petitions for Change may not be accepted unless you include proof that a copy of the petition was served on the Department of Fish and Game. (Cal. Code Regs., tit. 23, § 794.)**
- **Petitions for Temporary Transfer may not be accepted unless you include proof that a copy of the petition was served on the Department of Fish and Game and the board of supervisors for the county(ies) where you currently store or use water and the county(ies) where you propose to transfer the water. (Wat. Code § 1726.)**

SONOMA WATER
Russian River Watershed Place of Water Use

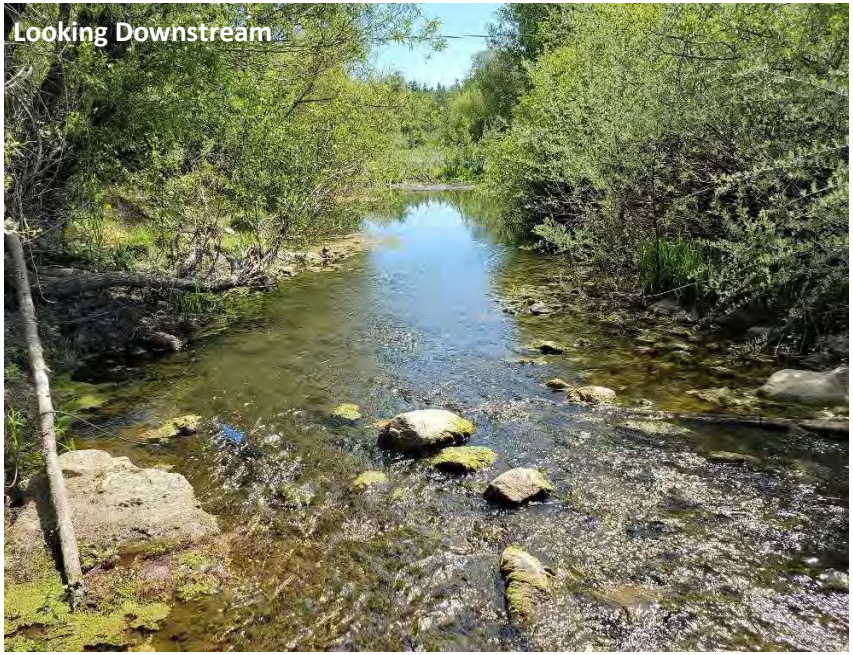


SONOMA WATER

Photographs of Russian River Downstream of River Diversion System at Mirabel Park on April 29, 2021

Mirabel Inflatable Dam





Sonoma County Water Agency

Supplement to the May 2021 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 maintain viable operations to support municipal use, protect listed salmon species and prevent Lake Mendocino from declining to a storage level at which the reservoir may no longer be functional in light of the extremely dry hydrology the region has been experiencing since 2020. Sonoma Water has filed two consecutive temporary urgency change petitions (TUCP) over the past year to address low reservoir storage in Lake Mendocino. On July 28, 2020, the State Water Resources Control Board (State Water Board) issued an order approving Sonoma Water's TUCPs requesting temporary reductions to Russian River minimum instream flow requirements to address low storage conditions in Lake Mendocino projected to occur due to reduced transfers of Eel River water through Pacific Gas & Electric's (PG&E) Potter Valley Project (PVP). That order expired on December 27, 2020. Facing persistent dry conditions in the watershed, Sonoma Water filed a TUCP for Permit 12947A on January 7, 2021 to request an alternative hydrologic index for the Upper Russian River. On February 4, 2021, the State Water Board issued an order approving Sonoma Water's TUCP requesting that the water year classification for the Upper Russian River be determined based on storage thresholds developed by Sonoma Water engineering staff. The State Water Board issued an amended order on February 11, 2021. While the January 2021 TUCP did not request changes to Dry Creek or the Lower Russian River, the Supplemental document stated that Sonoma Water would re-evaluate water supply conditions in Lake Sonoma in the spring to determine whether it is necessary to file a subsequent TUCP to address a significant depletion of storage at Lake Sonoma.

Due to the continued dry conditions in the Russian River Watershed, Lake Mendocino and Lake Sonoma are at their lowest levels for this time of year since filling in 1959 and 1986, respectively. As a result of the extremely low rainfall that the region has received since the State Water Board issued its February 2021 order, Sonoma Water requires urgent changes to the *Dry* year minimum instream flow requirements for the Lower Russian River to extend limited supplies that may

allow sufficient water to be available later on in 2021 for listed salmon fisheries and municipal needs. The proposed urgency changes also are necessary to ensure that Sonoma Water is not required, in order to maintain Russian River minimum stream flows, to release water from Lake Sonoma to Dry Creek at rates that would violate the applicable incidental take statement issued by the National Marine Fisheries Service (NMFS).

The severe water supply shortage that the Russian River Watershed (particularly the Upper Russian River) is currently experiencing, as a result of two consecutive extremely dry years, has been recognized by both the state and local governments. On April 21, Governor Gavin Newsom signed an executive order proclaiming a regional drought emergency for the Russian River Watershed in Mendocino and Sonoma counties. On April 20, the Mendocino County Board of Supervisors adopted a resolution declaring a local emergency and imminent threat of disaster in Mendocino County due to drought conditions. On April 27, the Sonoma County Board of Supervisors adopted a resolution proclaiming a drought emergency due to drought conditions in Sonoma County.

1.0 BACKGROUND

Sonoma Water controls and coordinates water supply releases from Lake Mendocino and Lake Sonoma to implement the minimum instream flow requirements in water rights 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 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

[1] The Upper Russian River is the stream reach from the confluence of the East Fork Russian River and West Fork 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.

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 NMFS on September 24, 2008, and consistency determination issued by the California Department of Fish and Wildlife (CDFW) 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, the Decision 1610 required minimum Russian River flows are: 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 (located in the Eel River watershed) 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 based on the hydrologic conditions for the Russian River system. 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.

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 or 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 PROJECTED WATER SUPPLY CONDITIONS

From October 1, 2020 to May 3, 2021, the cumulative inflow into Lake Pillsbury was 82,215 acre-feet. Consequently, the water year classification will be categorized as *Dry* for the remainder of the year. Sonoma Water is currently managing the Upper Russian River based on a *Critical* water year classification as authorized by the February 4, 2021 State Water Board order approving Sonoma Water's January 2021 TUCP, which requested that the water year classification temporarily be determined based on storage thresholds at Lake Mendocino. These changes were necessary because of the critically dry hydrology and very low storage at Lake Mendocino.

Based on the State Water Board's February 4, 2021 order, without an additional temporary urgency change order, the minimum instream flows on the Upper Russian River between June 1 and July 26 would be 25 cfs and from July 27 to December 31 would be 75 cfs. The minimum instream flows on the Lower Russian River between June 1 and December 31 would be 85 cfs. As discussed in sections 2.2 and 2.3 below, this would result in draining Lake Mendocino, drawing down Lake Sonoma to a very low level and making releases from Lake Sonoma that would violate the incidental take statement in the Russian River Biological Opinion.

2.1 Potter Valley Hydroelectric Project

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

On April 23, 2021, PG&E filed a request with FERC for a temporary variance to reduce its minimum instream flow requirements for the PVP. PG&E, in consultation with NMFS, CDFW, Round Valley Indian Tribes, Potter Valley Irrigation District and Sonoma Water, filed the variance due to critically low water storage in Lake Pillsbury.

On May 5, 2021, FERC issued an order approving PG&E's temporary variance request to reduce the minimum instream flow requirement below the powerhouse in the East Fork Russian River and water supply deliveries to the Potter Valley Irrigation District. Based on the approved temporary variance, Sonoma Water staff have forecasted that transfers from the Eel River to the East Fork Russian River through PVP will be reduced by 90 acre feet per day between May 5, 2021 and December 31, 2021, with little or none of the transferred Eel River water being conveyed to Lake Mendocino.

2.2 Lake Mendocino

As of May 3, 2021 the water supply storage level in Lake Mendocino was 36,883 acre-feet (AF). This storage level is approximately 33 percent of the available water conservation pool for this time of year. This is the lowest storage level for this time of year since Lake Mendocino filled in 1959. Figure 2 shows observed storage in Lake Mendocino for 2014 through May 3, 2021.

In February 2021, the U.S. Army Corps of Engineers (USACE) approved a Planned Major Deviation (Deviation) of the Coyote Valley Dam/Lake Mendocino Water Control Manual for WY 2021 through 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 11,050 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, WY 2021 is the second driest year in the Ukiah Valley during the past 127 years of record, with WY 2020 being the fourth driest. Figure 3 shows total annual rainfall by water year (October 1 through September 30) ranked from lowest to highest from 1894 to 2021. As a result, storage at Lake Mendocino remained well below the flood control pool and the FIRO DSM was not utilized this year.

As discussed above, Sonoma Water filed a TUCP in January 2021 requesting that the water year classification for the Upper Russian River be temporarily determined based on storage thresholds at Lake Mendocino in order to be more reflective of actual water supply conditions. The State Water Board issued an

order on February 4, 2021 approving the TUCP. Based on an analysis by Sonoma Water engineering staff, this preserved approximately 4,000 acre-feet of storage in Lake Mendocino between February 4 and May 3 of this year.

While the February 2021 order has improved the water supply storage condition at Lake Mendocino, a recent analysis prepared by Sonoma Water engineering staff indicates that unless mitigation measures are taken, such as those requested in the TUCP, the water level in Lake Mendocino is projected to decline to the bottom of the reservoir prior to October 1. Even with the requested changes, the water level in Lake Mendocino is projected to decline to below 10,000 acre-feet by October 1. This could result in the inability to continue reservoir releases and the potential elimination of water supplies for water users in Mendocino County and the northern part of Sonoma County (above the confluence with Dry Creek) during the fall, which could cause serious impacts to human health and safety; and reduction of water supplies (including groundwater supplies from aquifers underlying and adjacent to the Russian River) needed for fishery protection and stable flows in the Upper Russian River during the fall.

The analysis used to project storage was completed using Sonoma Water's Russian River ResSim simulation model with the following assumptions: (1) *Critical* water year classification minimum instream flow requirements on the Upper Russian River from May 1 through July 26 (end of February 2021 order) and *Dry* water year classification minimum instream flow requirements from July 27 until the end of the year; (2) WY 2015 hydrology; (3) Russian River system losses[2]; and (4) PVP operations based on FERC's May 5, 2021 order approving PG&E's request for a temporary variance to minimum stream flows. WY 2015 hydrology was selected based on very similar distribution of West Fork Russian River cumulative flow volume (USGS Gage 11461000) from March through April compared to WY 2021.

Figure 4 shows: (1) the Lake Mendocino storage level that has occurred through April 25, 2021 (solid black line); (2) the storage level that is projected to occur

[2] Russian River System reach losses were developed through an analysis of water balance that incorporated observed flows, observed metered diversions, simulated diversions, simulated unimpaired reach gains, and simulated evapotranspiration for the period from 2000 through 2013, to estimate reach water depletion based on current water use practices. These losses were then scaled by 2020 estimated losses to capture the most current observed water losses on the Russian River.

during the remainder of 2021 if the Decision 1610 minimum instream flow requirements are not temporarily changed (solid orange line); and (3) the Lake Mendocino storage level projected to occur during the remainder of 2021 with the temporary requested changes to the minimum in-stream flows for the Upper Russian River (solid blue line). As shown in Figure 4, without the requested temporary changes, Lake Mendocino is projected to be depleted before October 1. With the requested changes described in Section 4, the projected storage level in Lake Mendocino is projected to decline to below 10,000 acre-feet by October 1. This would be the lowest level Lake Mendocino has declined to since filling in 1959.

In either projected scenario: (1) Lake Mendocino storage will be depleted or decline to an extremely low level; (2) listed and threatened Russian River fish species will be severely impacted; (3) there will be serious water supply impacts in Mendocino County and the Alexander Valley in Sonoma County; and (4) conditions will pose a risk to water supply availability for human health and safety needs. Sonoma Water is currently working with staff from the Division of Water Rights and municipal and agricultural stakeholders on the Upper Russian River to reduce diversions with a goal of preserving 20,000 acre-feet of storage in Lake Mendocino on October 1. Sonoma Water believes this is the minimum storage level to best ensure there is adequate water supply for human health and safety needs for communities on the Upper Russian River and to make reservoir releases to meet minimum instream flow requirements should dry conditions continue through the end of the year

2.3 Lake Sonoma

As of May 3, 2021 the water supply storage level in Lake Sonoma was 149,766 acre-feet. This storage level is approximately 61 percent of the available water conservation pool. This is the lowest storage level for this time of year since Lake Sonoma filled in 1986. Figure 5 shows observed storage in Lake Sonoma for 2014 through May 3, 2021.

The January 2021 TUCP did not request changes for how minimum instream flow requirements are determined for Dry Creek and the Lower Russian River, but did state that Sonoma Water would re-evaluate water supply conditions in the spring to determine whether it is necessary to file a subsequent TUCP to address low water supply storage levels at Lake Sonoma and minimum instream flow requirements for the Russian River if water supply conditions did not improve. A recent analysis prepared by Sonoma Water engineering staff indicates that unless mitigation measures are taken, such as those requested in these TUCPs, water levels in Lake Sonoma are projected to decline to 100,000 acre-feet by October 1

of this year. This could threaten the water supply to over 650,000 people in Sonoma and Marin counties who rely on stored water from Lake Sonoma for their water supply needs. Additionally, cold water stored in Lake Sonoma is critical to the operation of the Warm Springs Hatchery, which produces 500,000 steelhead and 200,000 endangered coho salmon annually. High quality water released from the lake provides valuable spawning and rearing habitat for threatened and endangered salmon and steelhead throughout the 14-mile length of Dry Creek. Sonoma Water and the USACE in concert with NMFS, CDFW, and dozens of private property owners have invested more than $30 million in restoring Dry Creek habitat. With adequate flow, these habitat enhancements will serve as crucial refugia during times of drought and may prevent species extirpation in the Russian River watershed

Furthermore, the reduced minimum instream flows requested on the Upper Russian River, while necessary to preserve storage in Lake Mendocino, will significantly lower its contribution towards meeting minimum instream flow requirements in the Lower Russian River. Consequently, increased releases from Lake Sonoma into Dry Creek would be necessary to maintain Decision 1610's minimum instream flow requirements for a *Dry* year water classification (85 cfs) in the Lower Russian River. However, such increased releases into Dry Creek would result in Sonoma Water violating the Incidental Take Statement contained in the Russian River Biological Opinion. The Incidental Take Statement restricts releases from Lake Sonoma into Dry Creek because they can result in flows that are too high for optimal habitat for rearing juvenile salmonids. Additionally, due to extremely low flow conditions in the Lower Russian River tributaries, CDFW, NMFS, and USACE will stock 30,000 coho salmon into Dry Creek habitat restoration sites constructed by Sonoma Water this spring. Consistent cool water flow in Dry Creek at velocities that are optimal for rearing juvenile salmonids will provide a critical refuge for endangered salmon and threatened steelhead throughout the current drought.

Figure 6 shows: (1) the Lake Sonoma storage level that has occurred through April 25, 2021 (solid black line); (2) the storage level that is projected to occur during the remainder of 2021 if the Decision 1610 minimum instream flow requirements are not temporarily changed (solid orange line); and (3) the storage level that is projected to occur during the remainder of 2021 with the temporary requested changes (solid blue line).

As shown in Figure 6, the projected storage level in Lake Sonoma without the requested temporary changes could decline to 100,000 acre-feet by October 1.

With the requested temporary changes described in Section 4 and Sonoma Water's commitment to reduce diversions by 20 percent between July 1 and October 31 described in Section 5, the projected storage level in Lake Sonoma is projected to remain above 100,000 acre-feet until November 1 (see Figure 7).

The analysis used to project storage was completed using Sonoma Water's Russian River ResSim simulation model with the following assumptions: (1) *Critical* water year classification minimum instream flow requirements on the Upper Russian River from May 1 through July 26 (end of February 2021 order) and *Dry* water year classification minimum instream flow requirements from July 27 until the end of the year; (2) *Dry* water year classification minimum instream flow requirements from May 1 until the end of the year on the Lower Russian River and Dry Creek (3) WY 2015 hydrology; (4) Russian River system losses[3]; and (5) PVP operations based on FERC's May 5, 2021 order approving PG&E's request for a temporary variance to minimum stream flows. WY 2015 hydrology was selected based on very similar distribution of West Fork Russian River cumulative flow volume (USGS Gage 11461000) from March through April compared to WY 2021.

3.0 CRITERIA FOR APPROVING TEMPORARY UNGENCY 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

[3] Russian River System reach losses were developed through an analysis of water balance that incorporated observed flows, observed metered diversions, simulated diversions, simulated unimpaired reach gains, and simulated evapotranspiration for the period from 2000 through 2013, to estimate reach water depletion based on current water use practices. These losses were then scaled by 2020 estimated losses to capture the most current observed water losses on the Russian River.

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.

In this case, an urgent need exists to implement the proposed instream flow requirement changes on the Upper Russian River because Sonoma Water predicts Lake Mendocino would otherwise drain by October 1, 2021. Approval of the requested temporary urgency changes would improve storage at Lake Mendocino, but not prevent Lake Mendocino from reaching predicted critical storage levels in the absence of other interventions. Water supplies sufficient to provide continuous flow and health and human safety needs are at risk in the Upper Russian River. Because there are typically no diversions under Sonoma Water's water-right permits in the Upper Russian River and no additional releases of Lake Mendocino storage beyond maintaining the minimum instream flows in the Upper Russian River, there are no other direct actions available to Sonoma Water to improve the projected water supply condition at Lake Mendocino.

Without the proposed changes, Sonoma Water would need to release additional stored water from Lake Mendocino, which would result in severe depletion of storage during the summer. This would lead to the elimination of water supplies during the fall for water users in Mendocino County and the northern part of Sonoma County (above the confluence with Dry Creek), which would cause serious impacts to human health and welfare and fishery protection. Under these conditions, any releases that could be made would not likely meet the minimum instream flow requirements in the Upper Russian River potentially resulting in disconnected flow.

An urgent need for the proposed changes on the Lower Russian River exists because Sonoma Water predicts Lake Sonoma could decline to below 100,000 acre-feet by October 1. Furthermore, in the absence of the requested temporary urgency changes, Sonoma Water would either have to choose between exacerbating the depletion of Lake Mendocino storage levels or increasing Lake Sonoma releases such that they would violate the Incidental Take Statement contained in the Biological Opinion.

3.2 No Injury to Any Other Lawful User of Water

If these petitions are granted, Sonoma Water will still be required to maintain specific minimum instream flows in the Russian River. Under the requested temporary changes, reservoir and river operations will fall within the general operational range of water supply conditions as laid out in Sonoma Water's water-right permits. Therefore, these changes would not impair any downstream rights to flows that may be authorized for their diversions. Failure to implement the reduced instream flow requirements would result in more severe depletion of the reservoirs. Lake Mendocino storage could reach levels at which releases would cease, which would present more serious impacts to entitled users of water downstream of Lake Mendocino. Accordingly, authorizing the changes in these petitions 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

Although flows in the Upper Russian River would be reduced upon approval of these petitions, the conservation of water in Lake Mendocino will make additional storage available such that Sonoma Water may be able to continue releases of stored water from Lake Mendocino later into the fall. In the absence of other interventions, there is still a risk that Lake Mendocino storage will be depleted by the end of the year. Under the proposed reduced flows in the Upper Russian River, fish, wildlife and other beneficial uses will likely be impaired during the period before existing minimum flow requirements would result in Lake Mendocino being drained. However, the consequence of draining Lake Mendocino would result in catastrophic impacts to water supply availability for human health and safety needs and survival of fish and wildlife in the Upper Russian River and in the lake itself.

The proposed reduced flows in the Lower Russian River will likely impair some instream beneficial uses, principally recreation uses during the period before existing minimum flow requirements would result in Lake Mendocino being drained. Although recreation uses will be affected by these reduced flows, it is not unreasonable considering the potentially grave impacts to fisheries, water supply in Lake Mendocino and Lake Sonoma, and loss of juvenile salmonid habitat in Dry Creek (which will be of critical importance this year) that could occur if the petitions were not approved.

3.4 The Proposed Change is in the Public Interest

Approval of these petitions will help conserve stored water in Lake Mendocino so that it can be released later in the year to continue to provide human health and

safety needs and maintain continuous flow in the Upper Russian River until the return of wet season runoff. Furthermore, in the absence of the requested temporary urgency changes, Sonoma Water would need to make releases from Lake Sonoma that would violate the incidental take statement in the Biological Opinion resulting in loss of juvenile salmonid habitat in Dry Creek.

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

To address the water supply conditions at Lake Mendocino and Lake Sonoma, and avoid potential violations of the Incidental Take Statement contained in the Russian River Biological Opinion by making excessive releases into Dry Creek, Sonoma Water is filing these TUCPs, which request that the State Water Board make the following temporary changes to the Decision 1610 instream flow requirements:

(a) From the date of approval through a term of 180 days, the minimum instream flow requirements will be set to the *Critical* water supply classification criteria of 25 cfs in the Upper Russian River and 35 cfs in the Lower Russian River;

b) The minimum instream flow requirement will be implemented as a 5-day running average of average daily stream flow measurements with instantaneous minimum instream flows being no less than 15 cfs on the Upper Russian River and no less than 25 cfs on the Lower Russian River[4].

Due to the tremendous uncertainty regarding the effectiveness of the proposed temporary requested changes and other Upper Russian River regional response measures to prevent Lake Mendocino from declining to unsafe levels that could impair the availability of water released from Lake Mendocino for human health

[4] These changes will allow Sonoma Water to improve its efforts to optimally manage flows in the Russian River. Sonoma Water does not control, and is not able to predict the timing and magnitude of diversions by Russian River water users downstream of the reservoirs. Consequently, the implementation of a 5-day running average will allow for river operations with a reduced frequency of reservoir release changes intended to respond to transitory flow reductions due to large diversions that may occur simultaneously. This implementation of minimum instream flow requirements will allow Sonoma Water to manage stream flows with smaller operational buffers, thereby conserving water supply in Lake Mendocino and Lake Sonoma.

and safety needs, Sonoma Water may file for amendments to the TUCPs requesting changes that may be warranted as determined in consultation with staff from the State Water Board, North Coast Regional Water Quality Control Board, NMFS and CDFW.

5.0 PROPOSED ACTIONS BY SONOMA WATER

5.1 Weekly Reports

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 report document that contains:

1) a hydrologic status report containing the following information:

    - Current reservoir levels and reservoir storage hydrographs for Lake Pillsbury, Lake Mendocino and Lake Sonoma;
    - The daily rate of change in storage, inflow and reservoir release for Lake Mendocino and Lake Sonoma;
    - Storage hydrograph plot for Lake Mendocino displaying observed storage versus a storage threshold curve developed to achieve at least 20,000 acre-feet of storage on October 1, 2021
    - Daily transfer flows from the Potter Valley Project for the previous seven days;
    - Streamflow hydrographs for watershed stream gages compared to minimum instream flow requirements for previous two weeks. Daily average and minimum instantaneous stream gage flowrates for compliance stream gages.
    - Observed daily reach losses for the Upper Russian River compared to the same time period in 2020;
    - Cumulative rainfall plot for current water year versus historical precipitation range for Ukiah. Cumulative rainfall forecasts for 3-day, 7-day and 16-day; and
    - A summary of the available water quality data, including bacteria indicators.

2) an Upper Russian River water accounting report that will provide daily recorded and estimated flow data for characterizing the types of waters available for the following regions:

- Upper East Fork of the Russian River
- Upper Russian River Downstream of Lake Mendocino
- Lower Dry Creek Downstream of Lake Sonoma

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

5.2 Diversion Reductions

Because the requested change to minimum instream flow requirements on the Lower Russian River to some extent is driven by low storage levels in Lake Sonoma, Sonoma Water and its retail water customers will commit to a 20 percent reduction in total diversions across all downstream points of diversion/re-diversion authorized under Sonoma Water's water rights from July 1 through October 31 compared to the same time period in 2020. Sonoma Water will submit a monthly report to the Deputy Director, Division of Water Rights documenting Sonoma Water's reduction in diversions compared to the same period the previous year and provide an updated projection of Lake Sonoma storage through the end of 2021.

Figure 7 shows: (1) the Lake Sonoma storage level that has occurred through April 25, 2021 (solid black line); (2) the storage level that is projected to occur during the remainder of 2021 with the temporary requested changes (solid blue line); and (3) the storage level that is projected to occur during the remainder of 2021 with the temporary requested changes and the 20 percent reduction in diversions between July 1 and October 31 (solid green line).

As shown in Figure 7, the 20 percent reduction in Sonoma Water's diversions is projected to preserve an additional 4,000 acre-feet of storage in Lake Sonoma by October 31.

6.0 WATER CONSERVATION ACTIVITIES

The following water conservation activities reflect the efforts of Sonoma Water and the Sonoma-Marin Saving Water Partnership (Partnership). The Partnership

represents twelve 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, Cotati, Healdsburg; North Marin Water, Valley of the Moon and Marin Municipal Water Districts; Cal 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.

On April 21, 2021, Governor Newsom issued a regional drought emergency proclamation for the Russian River watershed in Sonoma and Mendocino counties. Recognizing the need to reduce diversions from the Russian River, Sonoma Water's contractors adopted a resolution at the May 3, 2021 Water Advisory Committee (WAC) meeting supporting the water saving efforts of the Partnership and urging a 20 percent reduction in customer water use. Subsequent to the adoption of the WAC resolution, the contractors will be taking individual actions with their Boards and/or Councils for activation of the Water Shortage Contingency Plans for their respective agencies as needed to meet the reduction goal. Marin Municipal Water District's board of directors has already adopted mandatory water use reductions for its service area. The Sonoma County Board of Supervisors also 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. The County of Mendocino has acted similarly to declare a local drought emergency.

Leading up to these actions, Sonoma Water, its water contractors, and the other member agencies of the Partnership began implementing an aggressive water saving outreach campaign in winter 2021 to raise awareness of the continued dry-year conditions and low water supply levels in the region, asking customers to eliminate water waste and adopt habits to use less. The campaign, which began as a paid social media blitz in the winter, expanded in spring to become a broader multi-media marketing effort. The campaign, called *It's a Dry Year. Save Water With Us*, now includes broadcast and streaming radio, weekly print ads in the Santa Rosa Press Democrat newspaper, online digital advertisements for both mobile and desktop devices, sponsored media content, and the development of a dedicated webpage that includes weekly water supply updates and current status of activities being undertaken to affect water use reductions. The Partnership spend for winter and spring ad buys is $50,000, with an additional $100,000 spend by Sonoma Water for advertising and $150,000 for staff time. Sonoma Water's

contractors are also spending additional funds for outreach beyond what is being coordinated by the Partnership and through Sonoma Water.

An outreach subcommittee of the Partnership is continuing to meet twice monthly to assess the effectiveness of early efforts and to continue to grow the campaign in step with changing water supply conditions. The focus of the campaign is now shifting quickly to drought messaging and adoption of a new tag line, *Drought is Here. Save Water*. Ad placement for the new messaging will begin in May 2021. In addition to paid advertising, earned media has grown markedly in the last few months to bring greater public awareness of the drought conditions locally. A series of news articles in the Santa Rosa Press Democrat newspaper included interviews with Sonoma Water Board of Directors and staff in March and April that featured calls to action to save water. Local water supply conditions also received regional televised news coverage featuring Sonoma Water staff interviews that emphasized the urgent need for water savings. A more complete list of earned media is available on Sonoma Water's website at https://www.sonomawater.org/dryyear.

The drought outreach campaign will continue through the end of summer, or longer if drought conditions persist through fall. Outreach for early summer includes a region-wide event for direct distribution of water saving devices like showerheads, faucet aerators, shower timers, and hose nozzles, along with water saving tips-cards, incentive program brochures for lawn removal, irrigation equipment upgrades, and appliance upgrades, as well as buckets for capture and reuse of warm-up and rinse water in showers and sinks. The event, which will leverage donations from local businesses to increase effectiveness and numbers of customers served, is planned for multiple locations on June 12, 2021 in Sonoma, Marin, and Mendocino counties for areas with a water supply connection to the Russian River.

On May 15, the Partnership's annual Eco-Friendly Garden Tour will once again occur virtually to offer professionally developed videos of inspiring water saving gardens in Sonoma and Marin counties. The Tour will also feature a webinar on Resilient Summer-Dry Landscapes to reinforce the value of gardens that are fire-wise while using less water. Other activities planned for summer roll out are the development and use of a variety of marketing tools including the use of lawn signs, electronic signs, banners, highway billboard ads, direct to business materials like mirror and window clings, table tents for restaurants, room tents for hotels and motels, and the possible development of a regional challenge event. The Partnership spend for the device distribution event, summer advertising, and Tour are approximately $255,000, not inclusive of staff time. Additional spend will

occur by Sonoma Water's water contractors on additional ad buys and particularly on device distribution for many water contractor hosted sites.

Outside of the Partnership, Sonoma Water staff has been active in meetings with the Upper Russian River Water Managers to share water saving materials and staff resources to help address needed water reductions in the upper Russian River. As was previously mentioned, Sonoma Water staff is extending the water saving device distribution event to a Mendocino County location, made possible through the collaboration of Sonoma Water and the Mendocino County Russian River Flood Control and Water Conservation Improvement District (RRFC). Sonoma Water will continue to coordinate with RRFC and other Upper Russian River agencies through the summer. As a positive example, previous presentations by Sonoma Water staff to the City of Cloverdale regarding the opportunity to join the Partnership resulted in an April 14, 2021 resolution by the Cloverdale City Council authorizing their city manager to negotiate and execute the Memorandum of Understanding needed to join. The Partnership's TAC Water Conservation Subcommittee passed a Memorandum of Approval for Cloverdale on May 5, 2021 and now moves to the TAC for consideration of approval scheduled on June 7, 2021. Pending approval, Cloverdale will become a member by July 1, 2021.

Sonoma Water has been very active with other speaking engagements throughout the watershed as well, including the below completed or planned talks:

- April 12: County of Mendocino Board of Supervisors – Water supply update
- April 14: Ag/Farm Bureau South County town hall – Water supply update
- April 14: Santa Rosa Water (SRW staff only) – Water supply update
- April 15: Sonoma County Supervisorial District 5 – Lower Russian River town hall – Water supply update
- April 19: City of Sonoma – Water supply update
- April 28: City of Cloverdale
- April 30: Sonoma Valley Chamber of Commerce
- May 4: Sonoma Valley Non-Profit Executives Roundtable
- May 5: Town of Windsor – Water supply update
- May 6: Sweet Water Springs Water District - Water supply update

- May 11: Sonoma County Board of Supervisors – Drought Update
- May 12: Oakmont Senior Community, Santa Rosa – Water supply update
- TBD: Santa Rosa Chamber – Water supply update

Figures

Cumulative inflow to Lake Pillsbury (acre-feet) from Oct 1 through							
	1/1	2/1	3/1	4/1	5/1	6/1	Water Supply Conditions Prevailing on 6/1 Apply Through 12/31
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	

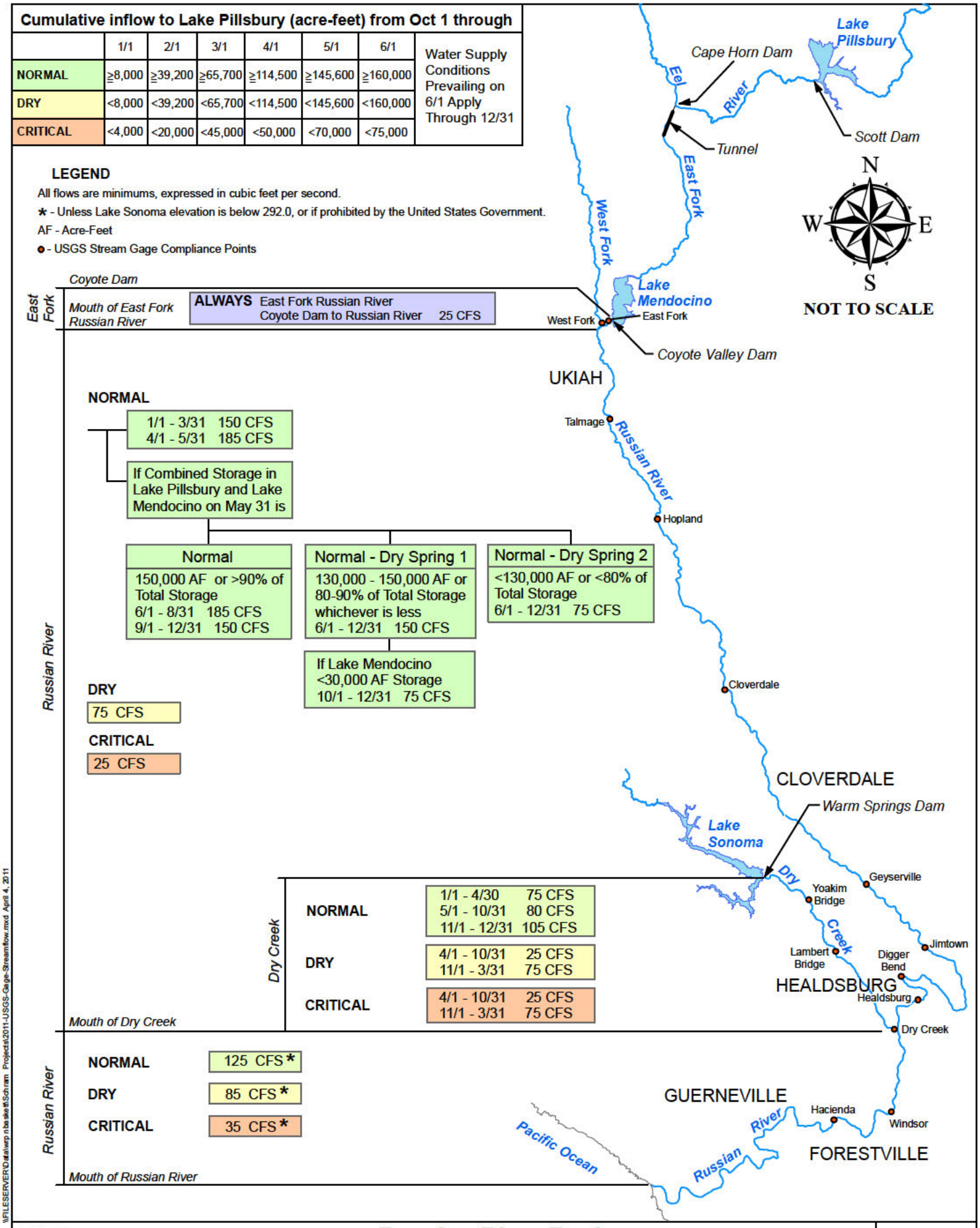
LEGEND

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



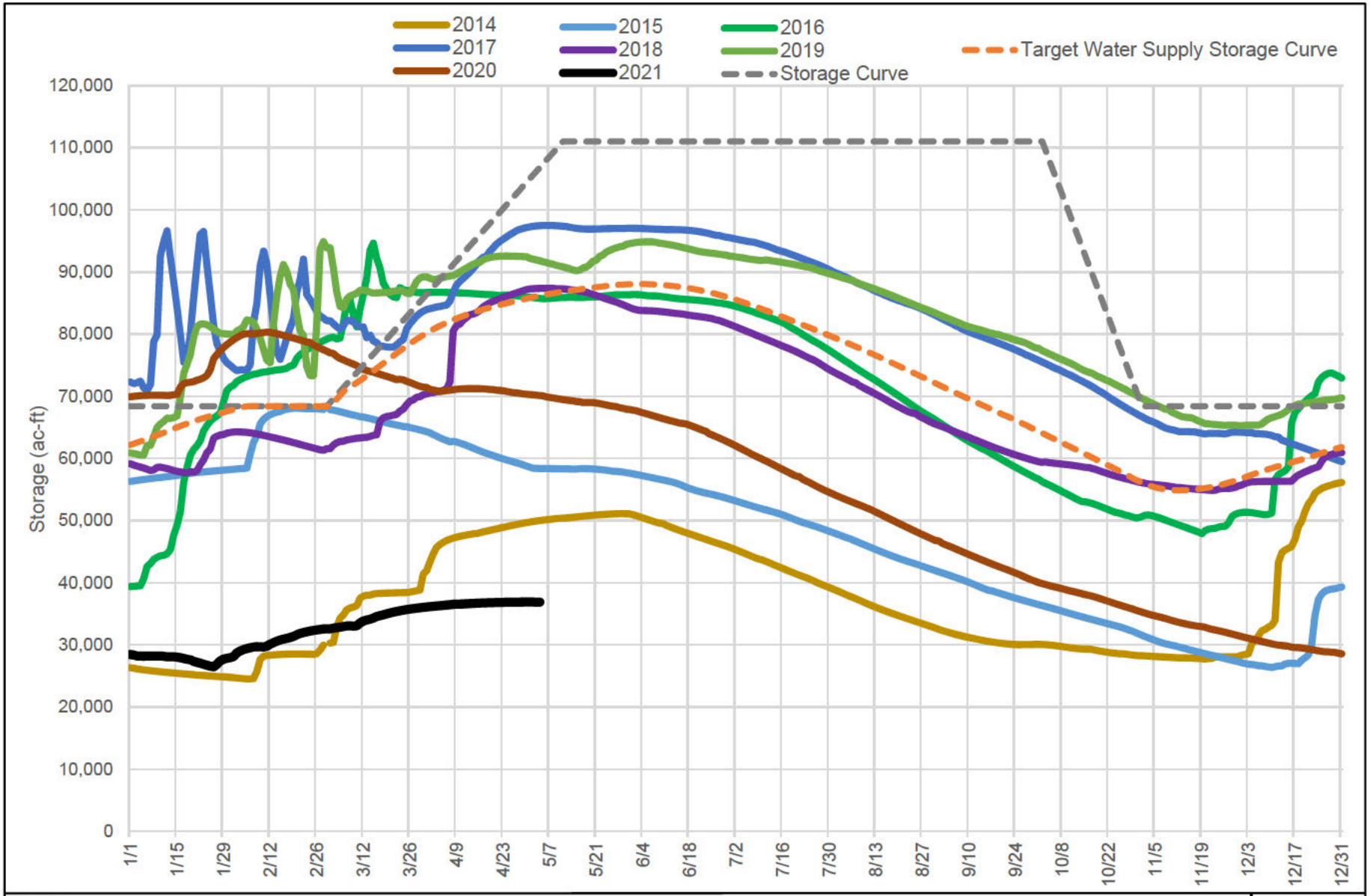
\\FILESERVER\Data\wrp nbaskett\Schram Projects\2011-USGS-Gage-Streamflow.mxd April 4, 2011

Sonoma Water

Russian River Basin
Streamflow Requirements

Per State Water Resources Control Board Decision 1610, April 1986

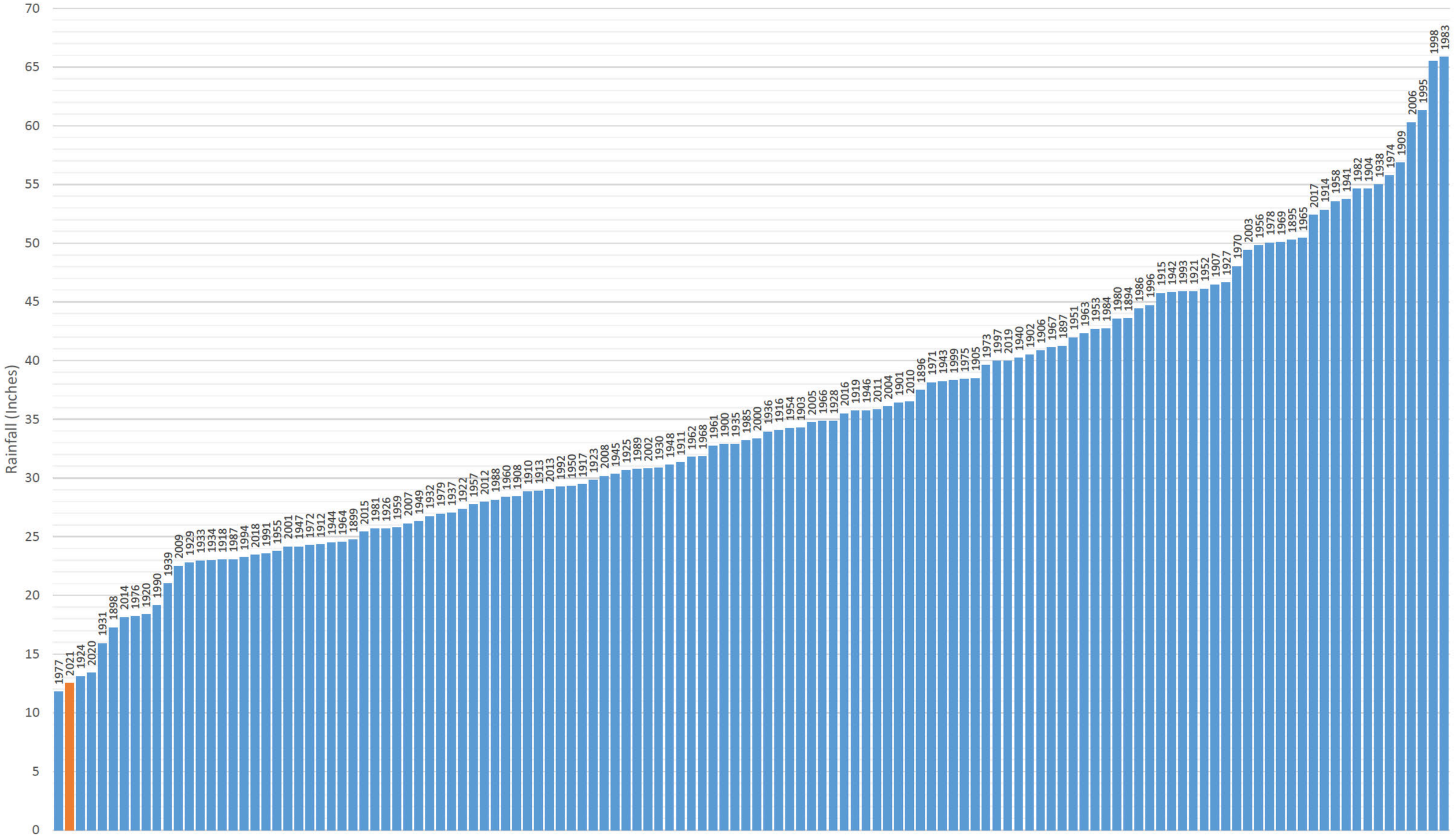
Figure 1



Sonoma Water

Lake Mendocino Storage Hydrograph (2014 - 2021)

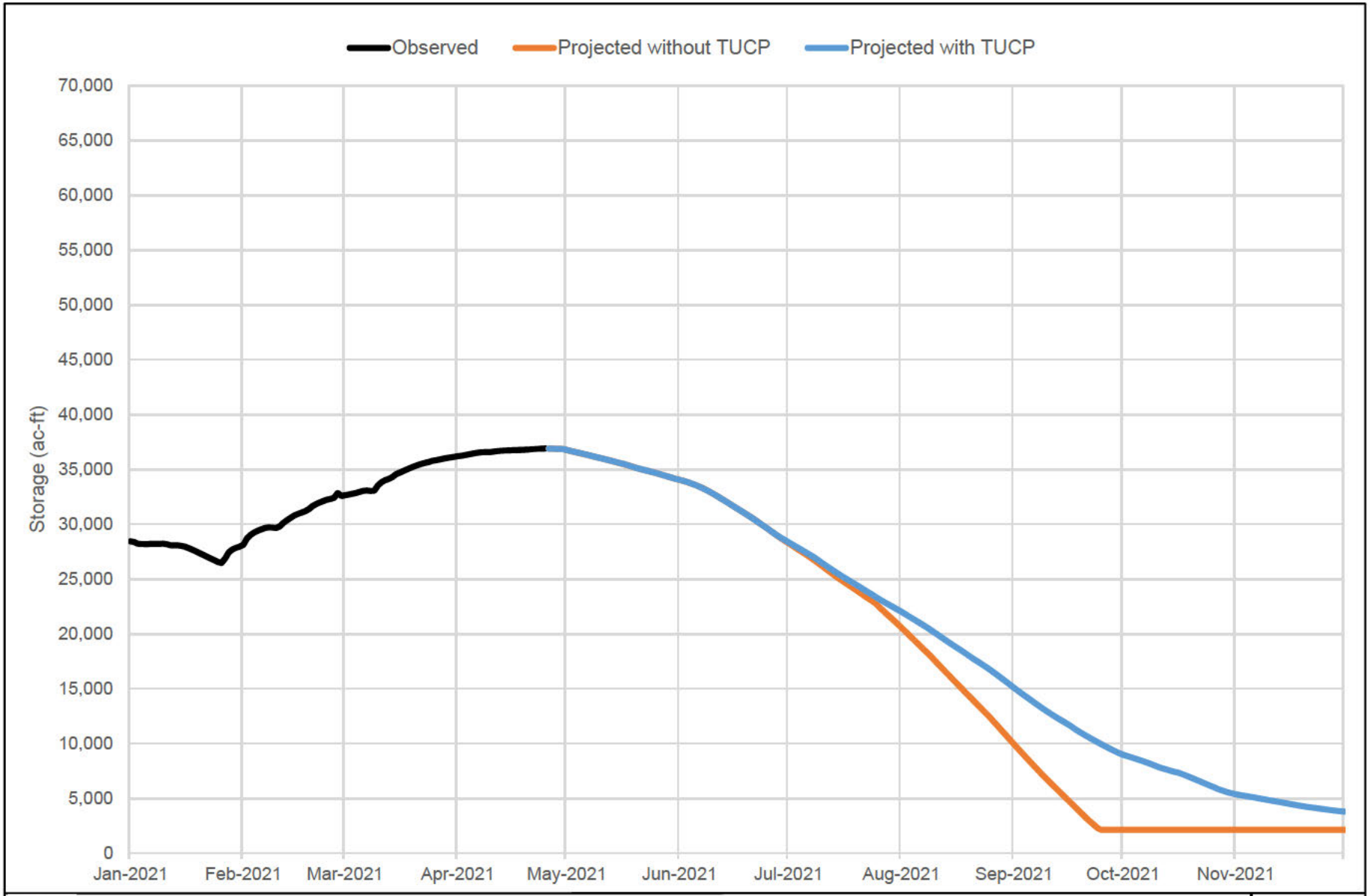
Figure 2



Sonoma Water

Cumulative Rainfall at Ukiah for Water Year through May 5th (WY 1894 - 2021)

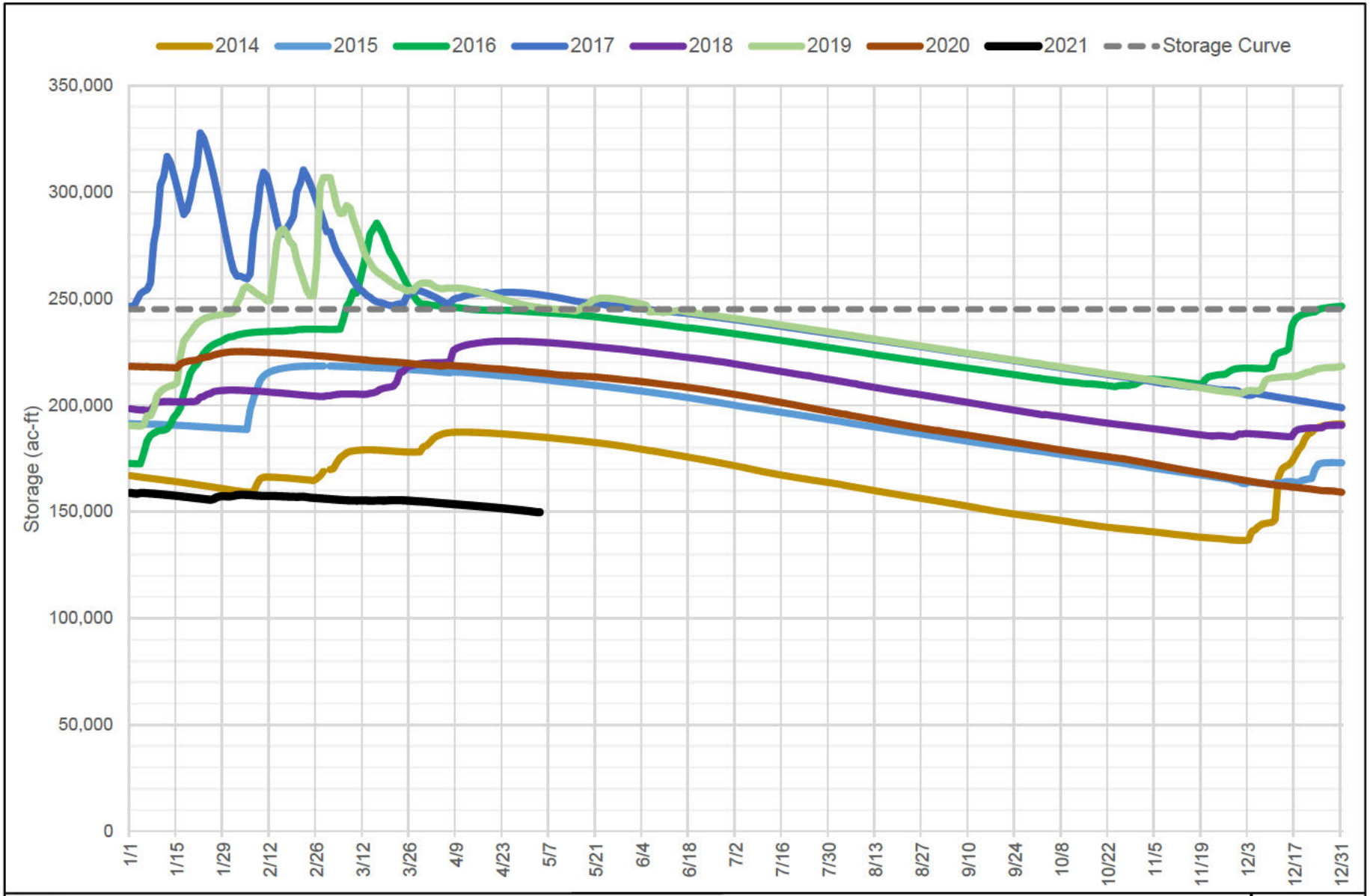
Figure 3



Sonoma Water

Lake Mendocino Storage Projections

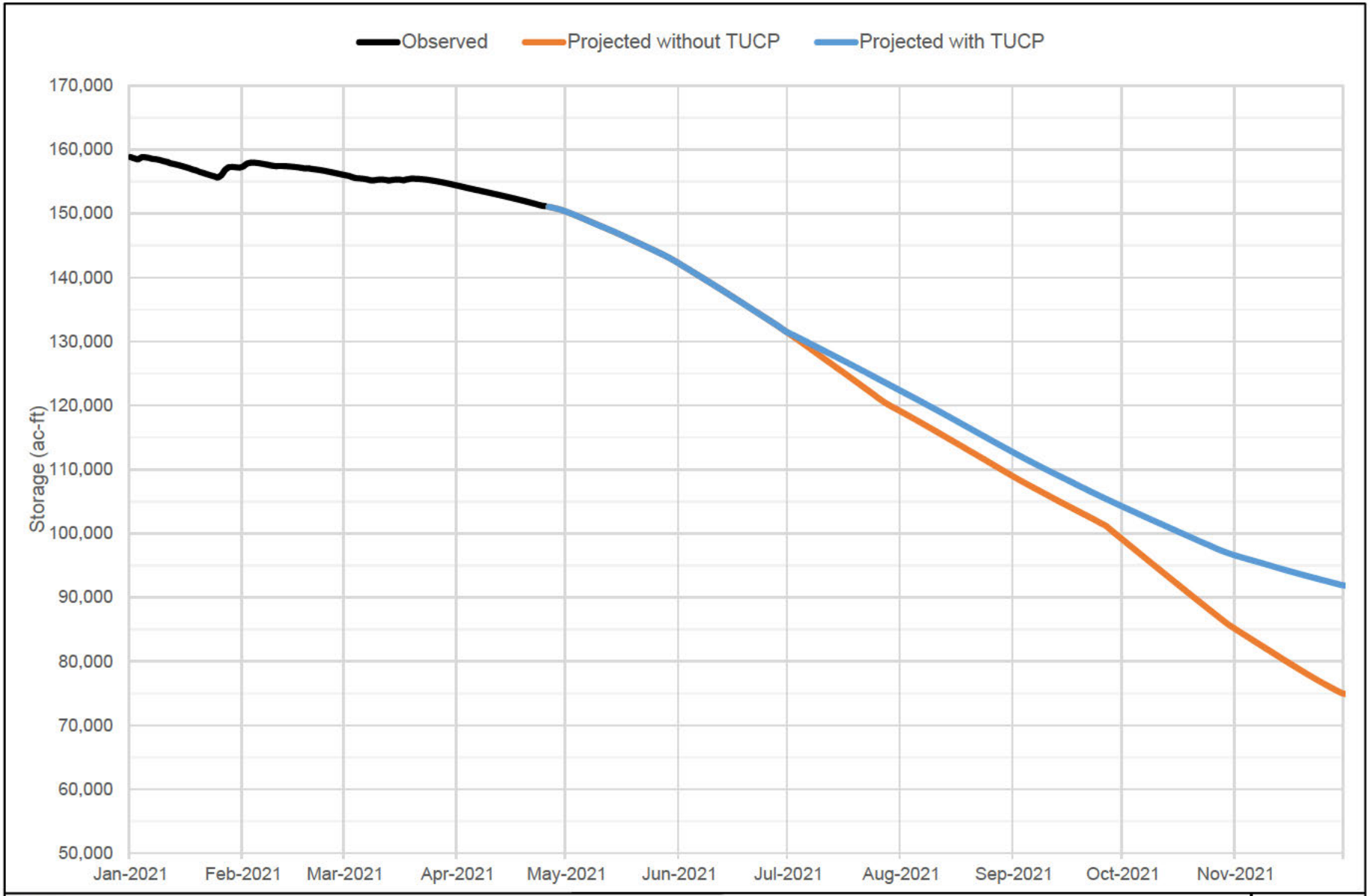
Figure 4



Sonoma Water

Lake Sonoma Storage Hydrograph (2014 - 2021)

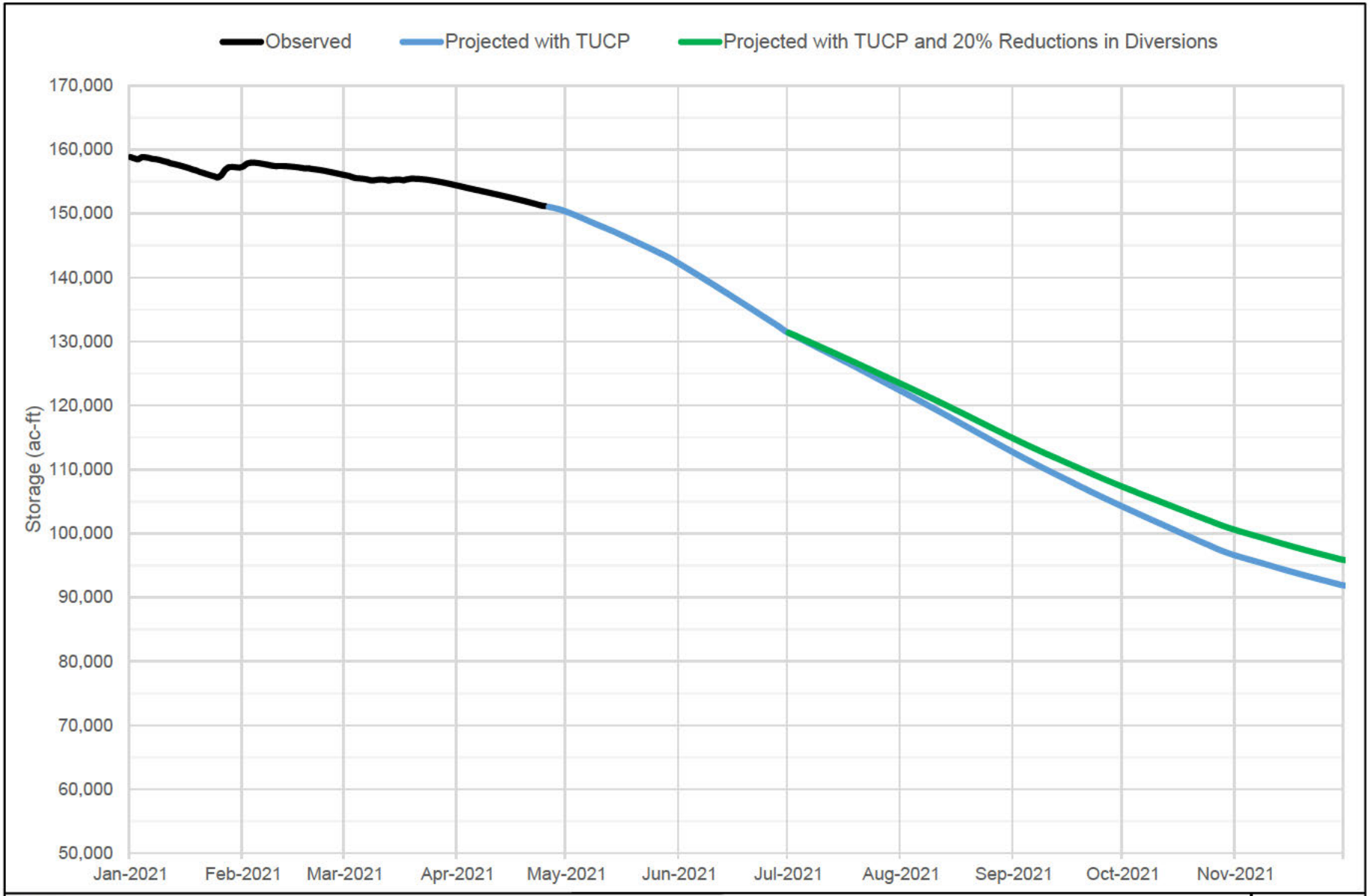
Figure 5



Sonoma Water

Lake Sonoma Storage Projections

Figure 6



Sonoma Water

Lake Sonoma Storage Projections with Proposed Sonoma Water Action

Figure 7

NOTICE OF EXEMPTION

TO: ☒ Office of Planning and Research
State Clearinghouse
1400 Tenth Street
Sacramento, CA 95814

☒ County Clerk
County of Sonoma
585 Fiscal Drive, Room 103
Santa Rosa, CA 95403

☒ County Clerk
County of Mendocino
501 Low Gap Road
Ukiah, CA 95482

FROM: Sonoma County Water Agency
404 Aviation Blvd.
Santa Rosa, CA 95403

Project Title: Petitions Requesting Approval of Temporary Urgency Changes in Water Right Permits 12947A, 12949, 12950, and 16596 in Mendocino and Sonoma Counties

Project Location- Specific: The proposed action would occur in Mendocino and Sonoma counties at Lake Mendocino, in the Upper Russian River from Coyote Valley Dam/Lake Mendocino to the confluence with Dry Creek, and in the Lower Russian River from the confluence with Dry Creek to the Pacific Ocean. Figure 1 shows the minimum instream flow requirements for the Russian River system. Communities and cities along the Russian River include Ukiah, Hopland, Cloverdale, Geyserville, Healdsburg, Forestville, Mirabel Park, Rio Nido, Guerneville, Monte Rio, Duncans Mills, and Jenner.

Project Location – City: N/A **Project Location – County:** Mendocino and Sonoma

Description of Nature, Purpose and Beneficiaries of Project: The Sonoma County Water Agency (Sonoma Water) controls and coordinates water supply releases from the Coyote Valley Dam and Warm Springs Dam projects in accordance with the provisions of water rights Decision 1610, which the State Water Resources Control Board (State Water Board) adopted on April 17, 1986. Decision 1610 specifies the minimum instream flow requirements for the Upper Russian River, Dry Creek, and the Lower Russian River, which vary based on water supply conditions (Figure 1).

Sonoma Water is filing a temporary urgency change petition (TUCP) requesting that the State Water Board make the following changes in the minimum instream flow requirements for the Russian River mainstem that are specified in Decision 1610 and Sonoma Water's water right permits: (a) a *Critical* water supply condition minimum instream flow of 25 cubic feet per second (cfs) in the Upper Russian River from its confluence with the East Fork to its confluence with Dry Creek, and (b) a *Critical* water supply condition minimum instream flow of 35 cfs in the Lower Russian River downstream of its confluence with Dry Creek to the Pacific Ocean. The changes are necessary in order to maintain viable operations to support municipal use, protect listed salmon species, address water supply conditions at Lake Mendocino and Lake Sonoma, and prevent Lake Mendocino from declining to a storage level at which the reservoir may no longer be functional in light of the extremely dry hydrology the region has been experiencing since 2020.

To allow Sonoma Water to optimally manage flows in the Upper Russian River and Lower Russian River, Sonoma Water is requesting that the TUCP minimum instream flow requirements be specified as a 5-day running average of average daily stream flow measurements with instantaneous minimum instream flows being no less than 15 cfs in the Upper Russian River and no less than 25 cfs in the Lower Russian River. This implementation of minimum instream flow requirements will allow Sonoma Water to manage stream flows with a smaller operational buffer, thereby conserving water supply in Lake Mendocino and Lake Sonoma.

Lake Mendocino

As of May 3, 2021, the water supply storage level in Lake Mendocino was 36,883 acre-feet. This storage level is approximately 33 percent of the available water conservation pool. This is the lowest storage level for this time of year since Lake Mendocino filled in 1959. Water supplies sufficient to support continuous flow and health and human safety needs are at risk in the Upper Russian River. Without the proposed changes, Sonoma Water would be required to release additional stored water from Lake Mendocino through most of the summer to meet Decision 1610 *Dry* condition minimum instream flow requirements, which would result in the significant depletion and potential elimination of water supplies in Lake Mendocino for water users in Mendocino County and northern Sonoma County (above the confluence with Dry Creek) and cause serious impacts to human health and welfare, and fishery protection and connected flows in the Upper Russian River. Furthermore, if the upcoming Water Year 2022 is another dry year, carryover storage in Lake Mendocino will be crucial for the continued recovery of the Russian River salmonid fishery and for water supply reliability during 2022.

Sonoma Water staff estimate that the Decision 1610 Dry condition 75 cfs minimum flow in the Upper Russian River will result in Lake Mendocino being drained by October 1, 2021. Reducing Upper Russian River minimum flows from 75 cfs to 25 cfs would improve storage at Lake Mendocino, but will not prevent Lake Mendocino from reaching predicted critical storage levels in the absence of other interventions. With the requested changes, the storage level in Lake Mendocino is projected to decline to below 10,000 acre-feet by October 1.

Lake Sonoma

As of May 3, 2021, the water supply storage level in Lake Sonoma was 149,766 acre-feet. This storage level is approximately 61 percent of the available water conservation pool. This is the lowest storage level for this time of year since Lake Sonoma filled in 1986. A recent analysis prepared by Sonoma Water engineering staff indicates that unless mitigation measures are taken, such as those requested in the TUCP, water levels in Lake Sonoma are projected to decline to below 100,000 acre-feet by October 1 of this year. Furthermore, the reduced minimum instream flows requested on the Upper Russian River, while necessary to preserve storage in Lake Mendocino, will significantly lower its contribution towards meeting minimum instream flow requirements in the Lower Russian River. Consequently, increased releases from Lake Sonoma into Dry Creek would be necessary to maintain Decision 1610's minimum instream flow requirements for a Dry year water classification (85 cfs) in the Lower Russian River. However, such increased releases into Dry Creek would result in Sonoma Water violating the Incidental Take Statement contained in the National Marine Fisheries Service's Biological Opinion for Water Supply, Flood Control Operations and Channel Maintenance Conducted by U.S. Army Corps of Engineers, the Sonoma County Water Agency and the Mendocino County Russian River Flood Control and Water Conservation Improvement District in the Russian River Watershed (Russian River Biological Opinion), at pages 297-299 (September 24, 2008), unless a corresponding reduction is made in the minimum flow requirements for the Lower Russian River. This is because, if there are lower flows in the Upper Russian River and no corresponding reductions in the minimum flow requirements for the Lower Russian River, then higher flows on Dry Creek would be required to meet the Decision 1610 minimum instream flow requirements for the Lower Russian River. To minimize the need for these high Dry Creek flows, Sonoma Water is requesting, as a part of the TUCP, that the required minimum instream flows for the Lower Russian River also be reduced.

Because the requested change to minimum instream flow requirements on the Lower Russian River to some extent is driven by low storage levels in Lake Sonoma, Sonoma Water and its retail water customers will commit to a 20 percent reduction in diversions across all downstream points of diversion/re-diversion authorized under Sonoma Water's water rights from June 1 through October 31 compared to the same time period in 2020.

Sonoma Water staff estimate that without the requested temporary changes the storage level in Lake Sonoma could decline to below 100,000 acre-feet by October 1. With the requested temporary changes and Sonoma Water's commitment to reduce diversions by 20 percent between June 1 and October 31, the projected storage level in Lake Sonoma is projected to remain above 100,000 acre-feet until November 1.

Name of Public Agency Approving Project: State Water Resources Control Board – Division of Water Rights

Name of Person or Agency Carrying Out Project: Sonoma County Water Agency

Exempt Status (check one):

- ☐ Ministerial (Sec. 21080(b)(1); 15268);
- ☐ Declared Emergency (Sec. 21080(b)(3); 15269(a));
- ☒ Emergency Project (Sec.21080 (b)(4); 15269(b)(c)): Section 21080(b)(4) and State CEQA Guidelines 15269(c): Specific actions necessary to prevent or mitigate an emergency
- ☒ Categorical Exemption. State type and section number: State CEQA Guidelines 15301(i): Existing Facilities; State CEQA Guidelines 15307: Actions by Regulatory Agencies for Protection of Natural Resources; State CEQA Guidelines 15308: Actions by Regulatory Agencies for Protection of the Environment
- ☒ Exemption under Governor's April 21, 2021 emergency proclamation (Sec. 7): Government Code section 8571
- ☐ Statutory Exemptions. State Code number:

Reasons why project is exempt: The proposed action is statutorily exempt under California Environmental Quality Act (CEQA) Statute 21080(b)(4) and categorically exempt from CEQA under the State CEQA Guidelines Sections 15301(i), 15307, and 15308, and under Section 7 of Governor's April 21, 2021, emergency proclamation for, among other areas, the Russian River watershed.

A. Actions to Prevent or Mitigate an Emergency

California Public Resources Code, Division 13, Section 21080(b)(4) provides that specific actions necessary to prevent or mitigate an emergency are exempt from CEQA. The emergency conditions are demonstrated by current Lake Mendocino and Lake Sonoma storage levels. As of May 3, 2021, the water supply storage level in Lake Mendocino was approximately 36,883 acre-feet. This storage level is 33 percent of the summer water supply pool. As of May 3, 2021, the water supply storage level in Lake Sonoma was approximately 149,766 acre-feet. This storage level is 61 percent of the summer water supply pool.

These emergency conditions also are demonstrated by Governor Newsom's April 21, 2021, Proclamation of a State of Emergency in Sonoma and Mendocino counties due to drought conditions in the Russian River Watershed (Governor's Drought Proclamation). Section 7 of the Governor's Drought Proclamation suspends the requirements of CEQA for purposes of the State Water Board's consideration of modifying reservoir releases, which would be a necessary element of an order granting the TUCP.

In addition, the Sonoma County Board of Supervisors on April 27, 2021, proclaimed a local emergency due to drought conditions in the Sonoma County Operational Area and the Mendocino County Board of Supervisors April 20, 2021, adopted a resolution declaring a local emergency and imminent threat of disaster in Mendocino County due to drought conditions.

Sonoma Water staff estimate that without the proposed reductions in the minimum instream flow requirement for the Upper Russian River, Lake Mendocino could be drained by October 1. Reducing the Upper Russian River minimum instream flow requirement from 75 cfs to 25 cfs would improve storage at Lake Mendocino, but will not prevent Lake Mendocino from reaching predicted critical storage levels in the absence of other interventions. Water supplies sufficient to provide continuous flow and health and human safety needs are at risk in the Upper Russian River.

Sonoma Water staff estimate water levels in Lake Sonoma are projected to decline to below 100,000 acre-feet by October 1 of this year if the existing minimum instream flow requirement of 85 cfs on the Lower Russian River is not reduced. With the requested temporary changes and Sonoma Water's commitment to reduce diversions by 20 percent between July 1 and October 31, the projected storage level in Lake Sonoma is projected to remain above 100,000 acre-feet until November 1. Low water storage levels could affect drinking water supplies, agriculture, commercial and industrial business sectors, and recreation.

B. Actions by Regulatory Agencies for Protection of Natural Resources and the Environment
CEQA Guidelines Sections 15307 and 15308 provide that actions taken by regulatory agencies to assure the maintenance, restoration or enhancement of a natural resource and the environment are categorically exempt. The proposed temporary urgency change to Sonoma Water's water right Permits 12947A, 12949, 12950, and 16596 are necessary in order to maintain viable operations to support municipal use, protect listed salmon species, address water supply conditions at Lake Mendocino and Lake Sonoma, and prevent Lake Mendocino from declining to a storage level at which the reservoir may no longer be functional in light of the extremely dry hydrology the region has been experiencing since 2020.

The Russian River Biological Opinion found that high flows in Dry Creek (above 90 cfs) were harmful to listed salmon, and limited the extent to which Sonoma Water could make releases from Lake Sonoma from June through October. Approval of the proposed temporary urgency change in the Lower Russian River is requested in order to avoid violation of the Incidental Take Statement contained in the Russian River Biological Opinion. Furthermore, if the upcoming Water Year 2022 is another dry year, carryover storage in Lake Sonoma and Lake Mendocino will be crucial for the continued recovery of the Russian River salmonid fishery and for water supply reliability during 2022.

C. Existing Facilities
CEQA Guidelines Section 15301(i) provides, generally, that the operation of existing facilities involving negligible or no expansion of use beyond that existing at the time of the lead agency's determination is categorically exempt from CEQA. The examples in subdivision (i) of Section 15301(i) specifically provide that the maintenance of streamflows to protect fish and wildlife resources is exempt. Sonoma Water's request to change minimum instream flows would not expand Sonoma Water's use or increase the water diversions available to Sonoma Water for consumptive purposes. The proposed changes in minimum instream flows would still be within the existing minimum instream flows established by Decision 1610.

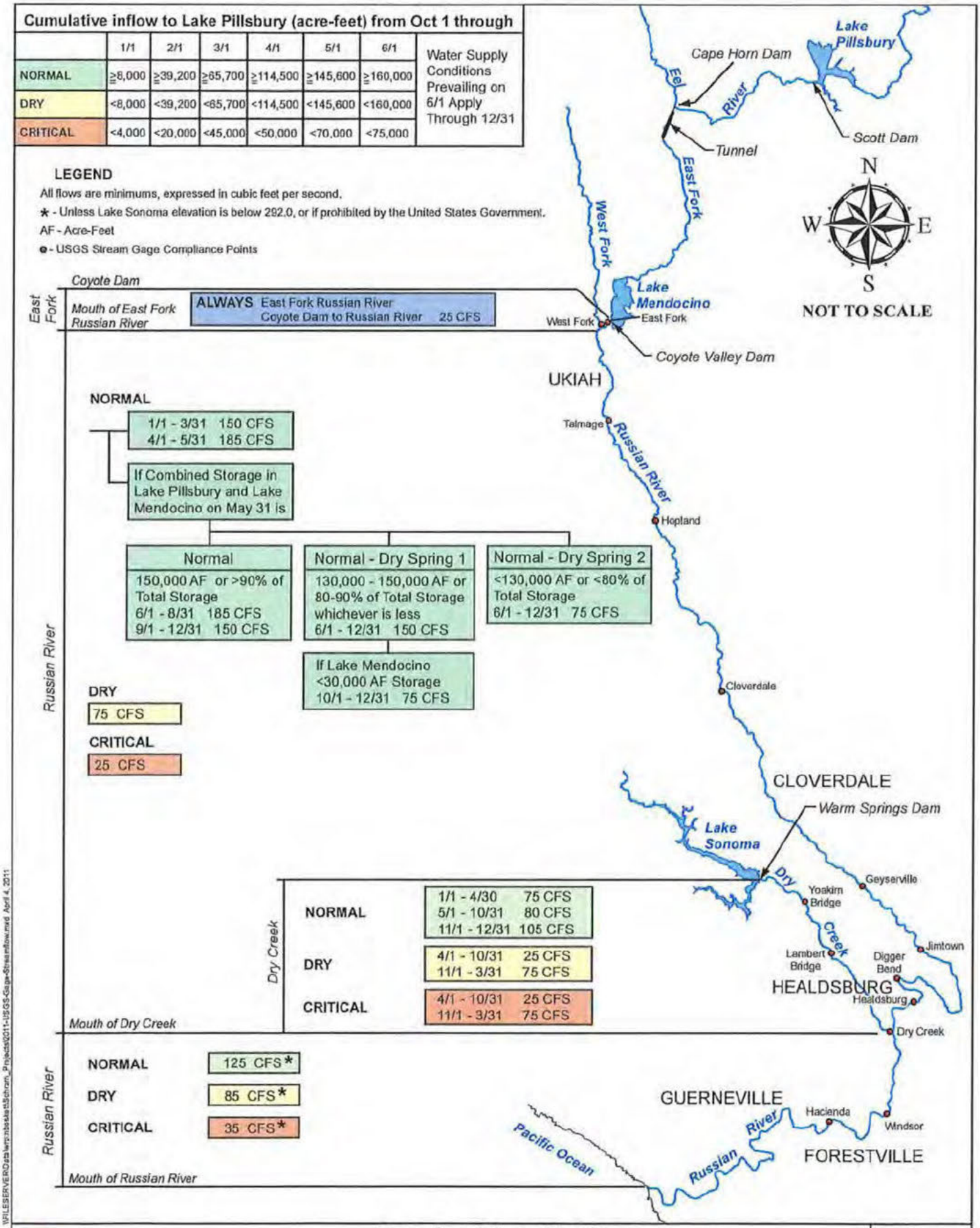
D. Governor's Drought Proclamation
Government Code section 8571 authorizes the Governor to suspend certain regulatory requirements, including CEQA, under emergency conditions. Section 7 of the Governor's April 21, 2021, Drought Proclamation suspended CEQA to address "the acutely dry conditions in the Russian River Watershed" through the State Water Board's consideration of modifications of reservoir releases "to ensure adequate, minimal water supplies for critical purposes." The TUCP's purpose is to modify the water-right terms that otherwise would require releases from Lake Mendocino and Lake Sonoma and is within the suspension of CEQA under section 7 of the Governor's Drought Proclamation.

Lead Agency Contact Person: Jessica Martini-Lamb **Area Code/Telephone/Extension:** 707-547-1903

[redacted] General Manager May 13, 2021
Signature *Title* *Date*

☒ Signed by Lead Agency
☐ Signed by Applicant

Date received for filing at OPR:



Sonoma Water

Russian River Basin
Streamflow Requirements

Per State Water Resources Control Board Decision 1610, April 1986

Figure 1

THIS CHECK IS VOID WITHOUT A GREEN & BLUE BORDER AND BACKGROUND PLUS A DIAMOND & FINGERPRINT WATERMARK ON THE BACK - HOLD AT ANGLE TO VIEW

TO THE TREASURER OF THE
COUNTY OF SONOMA
SANTA ROSA, CALIFORNIA

CLAIMS CHECK

CHECK NO.
1873968

11-35
1210

DATE 04/28/2021

VOID AFTER SIX MONTHS

PAY THIS AMOUNT
******$56,495.14

BANK OF AMERICA

PAY *Fifty six thousand four hundred ninety five and 14/100 Dollars*

To The Order Of

STATE OF CALIFORNIA
SWRCB
PO BOX 1888
SACRAMENTO CA 95812-1888

[redacted]
ERICK ROESER
AUDITOR-CONTROLLER

⑈0187396⑧⑈ ⑆121000358⑆ 00439⑉80050⑈

THIS CHECK IS VOID WITHOUT A GREEN & BLUE BORDER AND BACKGROUND PLUS A DIAMOND & FINGERPRINT WATERMARK ON THE BACK - HOLD AT ANGLE TO VIEW

TO THE TREASURER OF THE
COUNTY OF SONOMA
SANTA ROSA, CALIFORNIA

CLAIMS CHECK

CHECK NO.
1873937

11-35
1210

DATE 04/28/2021

VOID AFTER SIX MONTHS

PAY THIS AMOUNT
*********$850.00

BANK OF AMERICA

PAY *Eight hundred fifty and 00/100 Dollars*

To The Order Of

ST OF CA DEPT OF FISH & WILDLIFE
DEPT FISH & WILDLIFE
PO BOX 944209
SACRAMENTO CA 94244-2090

[redacted]
ERICK ROESER
AUDITOR-CONTROLLER

⑈0187393⑦⑈ ⑆121000358⑆ 00439⑉80050⑈

Appendix A-7

State Water Resources Control Board

JUN 14 2021

In Reply Refer to:
JL: A012919A et al.

Mr. Grant Davis
General Manager
Sonoma County Water Agency
404 Aviation Boulevard
Santa Rosa, CA 95403-90919
Grant.Davis@scwa.ca.gov

Dear Mr. Davis:

ORDER APPROVING PETITIONS FOR TEMPORARY URGENCY CHANGES OF PERMITS 12947A, 12949, 12950, AND 16596 (APPLICATIONS 12919A, 15736, 15737, AND 19351) OF SONOMA COUNTY WATER AGENCY

Enclosed is the Order approving the petitions for temporary urgency changes of Permits 12947A, 12949, 12950, and 16596 (Applications 12919A, 15736, 15737, and 19351). Please review the conditions of the Order and retain the Order with your permits.

If you have any questions, please contact Jane Ling by email at jane.ling@waterboards.ca.gov. Written correspondence should be addressed as follows: State Water Resources Control Board, Division of Water Rights, Attn: Jane Ling, P.O. Box 2000, Sacramento, CA 95812-2000.

Sincerely,

ORIGINAL SIGNED BY:

Sam Boland-Brien, Manager
Petition, Licensing, and Registration Section
Division of Water Rights

Enclosure: Order

ec: See next page.

ec (w/enclosure): North Coast Regional Water Quality Control Board
c/o Mr. Bryan McFadin
Bryan.McFadin@waterboards.ca.gov

National Marine Fisheries Service
c/o Mr. Bob Coey
Bob.Coey@noaa.gov

California Department of Fish and Wildlife
Region 3: Bay Delta Region
c/o Mr. Eric Larson
Eric.Larson@wildlife.ca.gov

Mr. Don Seymour
Donald.Seymour@scwa.ca.gov

Mr. Todd Schram
Todd.Schram@scwa.ca.gov

STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
STATE WATER RESOURCES CONTROL BOARD

DIVISION OF WATER RIGHTS

ORDER WR 2021-0056-EXEC

In the Matter of Permits 12947A, 12949, 12950, and 16596
(Applications 12919A, 15736, 15737, 19351)

Sonoma County Water Agency

ORDER APPROVING TEMPORARY URGENCY CHANGE

SOURCE: Dry Creek, Russian River, and East Fork Russian River

COUNTIES: Sonoma and Mendocino Counties

BY THE EXECUTIVE DIRECTOR:

1.0 SUBSTANCE OF TEMPORARY URGENCY CHANGE PETITION

On May 14, 2021, Sonoma County Water Agency (Sonoma Water) filed Temporary Urgency Change Petitions (TUCPs) with the State Water Resources Control Board (State Water Board), Division of Water Rights (Division) requesting approval of changes to the subject permits pursuant to California Water Code section 1435. The TUCPs requested the following temporary reductions to the Russian River instream flow requirement terms of the subject permits, to address the current dry conditions in the Russian River Watershed and the extreme low storage conditions in Lake Mendocino, and to avoid potential violations of the Incidental Take Statement contained in the 2008 National Marine Fisheries Service (NMFS) Biological Opinion (hereafter, 2008 Biological Opinion)[1]:

[1] No changes to the instream flow requirements for East Fork Russian River or Dry Creek are requested pursuant to the TUCPs.

(a) From the date of approval of the TUCPs through a term of 180 days, the minimum instream flow requirements will be set to the *Critical* water supply classification criteria of 25 [cubic feet per second (cfs)] in the Upper Russian River[2] and 35 cfs in the Lower Russian River[3];

b) The minimum instream flow requirement will be implemented as a 5-day running average of average daily stream flow measurements with instantaneous minimum instream flows being no less than 15 cfs on the Upper Russian River and no less than 25 cfs on the Lower Russian River[4].

Sonoma Water indicated in its TUCPs that it may file amendments requesting additional changes that may be warranted to address the uncertainty of effectiveness of the proposed temporary changes and other regional response measures in the Upper Russian River to prevent Lake Mendocino from declining to unsafe levels to meet human health and safety needs.

2.0 BACKGROUND

2.1 Sonoma Water's Water Right Permits

The TUCPs involve the following water right permits held by Sonoma Water:

- Permit 12947A (Application 12919A), which authorizes direct diversion of 92 cfs from the East Fork Russian River and storage of 122,500 acre-feet (AF) per year in Lake Mendocino from January 1 through December 31 of each year;
- Permit 12949 (Application 15736), which authorizes direct diversion of 20 cfs from the Russian River from January 1 through December 31 of each year;

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[2] For purposes of this Order, Upper Russian River refers to the mainstem Russian River from its confluence with the East Fork Russian River to its confluence with Dry Creek.
[3] For purposes of this Order, the Lower Russian River refers to the mainstem Russian River from its confluence with Dry Creek to the Pacific Ocean.
[4] Sonoma Water also stated in a footnote: "These changes will allow Sonoma Water to improve its efforts to optimally manage flows in the Russian River. Sonoma Water does not control, and is not able to predict the timing and magnitude of diversions by Russian River water users downstream of the reservoirs. Consequently, the implementation of a 5-day running average will allow for river operations with a reduced frequency of reservoir release changes intended to respond to transitory flow reductions due to large diversions that may occur simultaneously. Implementation of minimum instream flow requirements will allow Sonoma Water to manage stream flows with smaller operational buffers, thereby conserving water supply in Lake Mendocino and Lake Sonoma."

- Permit 12950 (Application 15737), which authorizes direct diversion of 60 cfs from the Russian River from April 1 through September 30 of each year; and
- Permit 16596 (Application 19351), which authorizes direct diversion of 180 cfs from the Russian River from January 1 to December 31 of each year and storage of 245,000 AF in Lake Sonoma from October 1 of each year to May 1 of the succeeding year.

2.2 Requirements of State Water Board Decision 1610

Sonoma Water controls and coordinates water supply releases from Lake Mendocino (Coyote Valley Dam) and Lake Sonoma (Warm Springs Dam) to implement the minimum instream flow requirements in State Water Board Decision 1610 (1986) (hereafter, Decision 1610). Decision 1610 set minimum instream flows in the Russian River to "preserve the fishery and recreation in the river and in Lake Mendocino to the greatest extent possible while serving the needs of the agricultural, municipal, domestic, and industrial uses which are dependent upon the water." (Decision 1610, p. 21.)

Decision 1610 established water year classifications of *Normal*, *Dry*, and *Critical*, which are based on cumulative inflow into Lake Pillsbury (in the adjacent Eel River Watershed) beginning October 1 of each year.[5] From October 1, 2020 to June 1, 2021, the cumulative inflow into Lake Pillsbury was 85,727 AF. Consequently, pursuant to Decision 1610, the water supply condition is categorized as *Dry* for the remainder of the year, and the following conditions apply, among others:

- Term 20 of Sonoma Water's Permit 12947A requires Sonoma Water to pass through or release from storage at Lake Mendocino sufficient water to maintain instream flows of 75 cfs for the Upper Russian River[6] and 85 cfs for the Lower Russian River.
- Terms 17 of both Permit 12949 and Permit 12950 require Sonoma Water to allow sufficient water to bypass the points of diversion on the Russian River to maintain 85 cfs to the Pacific Ocean.
- Term 13 of Permit 16596 requires Sonoma Water to maintain 85 cfs in the Lower Russian River unless the water level in Lake Sonoma is below elevation 292 feet with reference to the National Geodetic Vertical Datum of 1929, or unless prohibited by the United States Government.

[5] Permits 12947A, 12949, 12950, and 16596 use the same water-year classification definitions. (Decision 1610, pp. 47-48, 53, 57-58, 60.)
[6] Sonoma Water is operating Lake Mendocino for releases to maintain a minimum stream flow of 25 cfs for the Upper Russian River per the State Water Board's TUCP order issued in February 2021 for Permit 12947A.

2.3 2008 Biological Opinion

Central California Coast (CCC) steelhead *(Oncorhynchus mykiss)*, CCC coho salmon *(O. kisutch)*, and Central Coast (CC) Chinook salmon *(O. tshawytscha)* in the Russian River Watershed are listed as threatened or endangered species under the federal Endangered Species Act (16 U.S.C § 1531 et seq.). In accordance with the requirements of section 7 of the federal Endangered Species Act (16 U.S.C. § 1536), NMFS, Sonoma Water, and the U.S. Army Corps of Engineers (USACE) participated in a consultation process involving studies to determine whether the water supply and flood control operations of the Russian River, including the operations authorized under the subject permits, are likely to harm the survival and recovery of these listed fish species. The 2008 Biological Opinion includes summaries of the studies, analyses of the project impacts, and a determination that summer flows in the Upper Russian River and Dry Creek, as required by Decision 1610, are too high for optimal juvenile salmonid habitat within the Russian River system. According to the 2008 Biological Opinion, two types of issues are associated with the summer flows required by Decision 1610[7]: (1) the flows create current velocities that limit the amount of freshwater rearing habitat available to salmonids; and (2) the flow release requirements deplete the cold water pool in Lake Mendocino, contributing to relatively high water temperatures, which reduce the quality of available rearing habitat.

The 2008 Biological Opinion sets limits on releases from Lake Mendocino and Lake Sonoma during the summer months to maintaining suitable habitat for CCC steelhead, CCC coho salmon, and CC Chinook salmon and avoid take under the Endangered Species Act. These limitations are relevant to the TUCPs because the limitations on higher releases from Lake Sonoma restrict the ability of Sonoma Water to release additional water from Lake Sonoma through Dry Creek to offset reduced releases from Lake Mendocino for maintaining instream flows in the Lower Russian River. The Incidental Take Statement from the 2008 Biological Opinion set limits on how many months from June through October Sonoma Water may operate a monthly median daily release above 105 cfs from Lake Sonoma during the period the 2008 Biological Opinion is effective. These criteria are set to avoid jeopardizing listed salmonids and their habitat in Dry Creek. The 2008 Biological Opinion establishes four tiers of Incidental Take Allowance for reservoir release from Lake Sonoma based on monthly median daily release in June through October in the first 12 years in which the 2008 Biological Opinion is effective[8]. Detailed information of the Allowance Tiers and expended exceedances are as follows:

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[7] The 2008 Biological Opinion focused on the flows required by Decision 1610 under *Normal* water year types. No changes to the flows for *Critical* water year types under Decision 1610 were recommended. By letters dated May 27, 2021 and June 2, 2021, respectively, NMFS and CDFW reiterated their support for the need to maintain the flows required in *Critical* water year types.

[8] Sonoma County continues to operate within these Incidental Take Statement

- Allowance Tier for monthly median release of 105 cfs to 120 cfs has 34 allowable exceedances (18 accumulative exceedances have occurred).
- Allowance Tier for monthly median release of 120 cfs to 140 cfs has 16 allowable exceedances (2 accumulative exceedances have occurred).
- Allowance Tier for monthly median release of 140 cfs to 160 cfs has 5 allowable exceedances (0 accumulative exceedance has occurred).
- Allowance Tier for monthly median release higher than 160 cfs has 1 allowable exceedance (0 accumulative exceedance has occurred).

2.4 Current Drought Conditions and Response

The Russian River Watershed has experienced extremely dry conditions since 2020, with Water Year 2021 being the driest year in the Ukiah Valley during the past 127 years of record, and Water Year 2020 being the fourth driest. As the drought continues into 2021, Lake Mendocino and Lake Sonoma are at their lowest levels for this time of the year since they began storing water in 1959 and 1984, respectively. As of May 3, 2021, the water supply storage levels were 36,883 AF in Lake Mendocino and 149,766 AF in Lake Sonoma. In addition, on April 23, 2021, Pacific Gas & Electric (PG&E) filed a request with Federal Energy Regulatory Commission (FERC) for a temporary variance to reduce its minimum instream flow requirements for the East Fork Russian River under the Potter Valley Project (PVP) due to critically low water storage in Lake Pillsbury and the need to maintain minimum flows in the Eel River below Lake Van Arsdale and the Cape Horn Dam, including for threatened Chinook salmon and steelhead trout. On May 5, 2021, FERC approved PG&E's temporary variance request to reduce PVP's minimum instream flow requirements for the East Fork Russian River below the Potter Valley Powerhouse, from 25 cfs to 5 cfs. Although FERC has only approved the variance through June 21, 2021, and reserves the authority to modify the terms of its approval based on new information, PG&E has requested that the variance remain in place until Lake Pillsbury storage exceeds 36,000 AF "following October 1, 2021." Accordingly, Sonoma Water staff have forecasted that "transfers from the Eel River to the East Fork Russian River through PVP will be reduced by 90 AF per day between May 5, 2021 and December 31, 2021, with little or none of the transferred Eel River water being conveyed to Lake Mendocino."

The current critical water supply shortage in the Russian River Watershed, particularly the Upper Russian River, resulting from two consecutive extremely dry years, has been recognized by both the state and local governments. On April 21, 2021 Governor Gavin Newsom proclaimed a regional drought emergency for the Russian River Watershed in Mendocino and Sonoma counties. On April 20, 2021 Mendocino County declared a local emergency and imminent threat of disaster in Mendocino County due to drought

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"Allowance Tiers" despite the first 12 years of the 2008 Biological Opinion having passed. The Dry Creek Habitat Enhancement projects have not yet been completed as assumed in the 2008 Biological Opinion to support increasing releases and flows in year 13, and Sonoma Water has not yet expended its exceedance allowances.

conditions. On April 27, 2021 Sonoma County also adopted a resolution proclaiming a local drought emergency due to drought conditions in Sonoma County. Sonoma Water has filed two previous sets of TUCPs over the past year to address dry conditions in the Russian River Watershed and low reservoir storage in Lake Mendocino. On July 28, 2020, the State Water Board approved Sonoma Water's TUCPs to temporarily reduce the minimum instream flow requirements in the Russian River. After the 2020 TUCP order expired on December 27, 2020, Sonoma Water filed another TUCP for Permit 12947A in January 2021 to lower the minimum instream flow requirement in the Upper Russian River. The State Water Board issued an order approving the TUCP on February 4, 2021, and approved clarifying amendments to the order on February 11, 2021. According to an analysis by Sonoma Water engineering staff, the February TUCP order helped preserve approximately 4,000 AF of storage in Lake Mendocino between February 4 and May 3 of this year. However, a recent analysis prepared by Sonoma Water engineering staff indicated that the water level in Lake Mendocino is projected to decline to their reservoir model's dead pool storage level before October 1 unless additional mitigation measures are taken. Even with the requested changes in the current TUCPs, Sonoma Water projects the water level in Lake Mendocino would decline to below 10,000 AF by October 1, 2021.

Sonoma Water's January 2021 TUCP did not request changes to lower the instream flow requirements in Dry Creek or the Lower Russian River, but Sonoma Water had stated that it might file additional TUCPs depending on water supply conditions during the spring. Sonoma Water engineering staff's recent analysis indicated that levels in Lake Sonoma are projected to decline to 100,000 AF by October 1 of this year unless additional mitigation measures are taken.

These extremely low projected storage levels in Lake Sonoma and the possible elimination of water storage in Lake Mendocino could cause serious impacts to human health and safety, and harm listed and threatened fish species in the Russian River Watershed. Therefore, Sonoma Water requested changes to the minimum instream flow requirements on both the Upper and Lower Russian River to maintain water in storage in Lake Mendocino and Lake Sonoma at levels necessary to meet water supply demands and maintain instream flows. Reduced instream flows on the Upper Russian River will result in significantly less contribution to instream flows in the Lower Russian River. Increased releases from Lake Sonoma into Dry Creek would be necessary for Sonoma Water to maintain Decision 1610 minimum instream flow requirements for the Lower Russian River while meeting water contractor, purchaser, and customer water supply demands. However, releases into Dry Creek in addition to those necessary to meet water supply demands are likely to violate the Incidental Take Statement in the 2008 Biological Opinion, which restricts releases from Lake Sonoma into Dry Creek to prevent flows that are too high to maintain habitat for juvenile salmonids. Therefore, Sonoma Water proposes to reduce the minimum instream flow requirements for the Lower Russian River to avoid the need for increased release rates from Lake Sonoma in excess of the flows authorized by the 2008 Biological Opinion, in addition to

preserving reservoir storage for water supplies to meet human health and safety needs in Sonoma and Marin counties.

3.0 COMPLIANCE WITH CALIFORNIA ENVIRONMENTAL QUALITY ACT

Ordinarily, the State Water Board must comply with applicable requirements of the California Environmental Quality Act (Pub. Resources Code, § 21000 et seq.) (CEQA) prior to issuance of any order approving a TUCP. (Cal. Code Regs., tit. 23, § 805.) However, the Governor's April 21, 2021 Drought Emergency Proclamation, ordering paragraph 7 suspended CEQA and regulations adopted pursuant to CEQA in Mendocino and Sonoma Counties, to the extent necessary for the State Water Board to address drought-related impacts through "[m]odifying requirements for reservoir releases or diversion limitations" in the Russian River Watershed "to ensure adequate, minimal water supplies for critical purposes." Sonoma Water's requests to temporarily lower instream flow requirements in the Russian River due to historically dry conditions are eligible for suspension under the Governor's April 21, 2021 Drought Emergency Proclamation. In conjunction with approving this Order, the State Water Board will add the activities approved under this Order to its list of suspended projects on its website.

In addition to the Governor's suspension of CEQA covering the activities proposed and approved under this Order, Sonoma Water determined that the requested water right changes are categorically exempt under CEQA's emergency statutory exemption and Class 1, 7, and 8 categorical exemptions. Sonoma Water filed a Notice of Exemption on May 13, 2021. The State Water Board has reviewed the information submitted by Sonoma Water and has made its own independent finding that the requested changes are statutorily and categorically exempt from CEQA. The changes sought by the TUCPs are consistent with the following statutory and categorical CEQA exemptions for the following reasons:

1) As mentioned above, on April 21, 2021, the Governor proclaimed a drought emergency in Mendocino and Sonoma counties due to drought conditions in the Russian River Watershed. The Governor's Drought Emergency Proclamation ordered the State Water Board to consider specific actions to "ensure adequate, minimal water supplies for critical purposes." Information provided by Sonoma Water demonstrates that continued releases of water to maintain minimum instream flows required by Sonoma Water's current water right permit terms could cause storage levels in Lake Mendocino and Lake Sonoma to decline to unsafe levels. As discussed in this Order, if storage in Lake Mendocino is depleted, there will be serious water supply impacts to human health and safety, and water will not be available to protect aquatic life, including threatened and endangered species in the Russian River. Furthermore, increasing Lake Sonoma releases to maintain instream flow requirements under current permit terms could harm critical endangered species habitat in Dry Creek, and the resulting depletion of Lake Sonoma could also affect drinking water supplies and

other critical water uses if dry conditions persist into 2022. Approval of the TUCPs is therefore necessary to prevent and mitigate loss of, or damage to, the environment, fishery resources, property, public health and safety, and essential public services. Accordingly, the project is statutorily exempt from CEQA because it is necessary to prevent or mitigate an emergency—in this case, a proclaimed drought emergency—that poses a clear and imminent danger. (Pub. Resources Code, §§ 21060.3 & 21080, subd. (b)(4); Cal. Code Regs., tit. 14, § 15269, subd. (c).)

2) A Class 1 categorical exemption "consists of the operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of existing or former use." (Cal. Code Regs., tit. 14, § 15301.) The proposed action consists of the operation of existing facilities involving negligible or no expansion of use beyond that existing, and accordingly is categorically exempt from CEQA under a Class 1 exemption.

3) A Class 7 categorical exemption "consists of actions taken by regulatory agencies as authorized by state law or local ordinance to assure the maintenance, restoration, or enhancement of a natural resource where the regulatory process involves procedures for protection of the environment." (*Id*., § 15307.) The proposed action will ensure the maintenance of a natural resource (i.e., the instream resources of the Russian River) by increasing availability and improving the quality of salmonid rearing habitat in the Russian River and more closely mimicking natural inflow to the estuary, thereby enhancing the potential for maintaining a seasonal freshwater lagoon that could support increased production of juvenile steelhead. Accordingly, these changes are categorically exempt from CEQA pursuant to a Class 7 exemption.

4) A Class 8 categorical exemption "consists of actions taken by regulatory agencies, as authorized by state or local ordinance, to assure the maintenance, restoration, enhancement, or protection of the environment where the regulatory process involves procedures for protection of the environment." (*Id*., § 15308.) The proposed action will ensure the maintenance of the environment (i.e., the instream environment of the Russian River) in the same way as stated for the Class 7 categorical exemption, and the proposed temporary changes are also therefore categorically exempt under Class 8.

4.0 PROCEDURAL REQUIREMENTS CONCERNING THE TEMPORARY URGENCY CHANGE PETITION

On May 19, 2021, the State Water Board issued and delivered to Sonoma Water a notice of the temporary urgency change order pursuant to Water Code section 1438, subdivision (a). Pursuant to Water Code section 1438, subdivision (b)(1), Sonoma

Water published the notice in *Ukiah Daily Journal* and *The Press Democrat* on May 19, 2021. In addition, the State Water Board posted the notice of the TUCPs on its website and distributed the notice through its electronic notification system. Any interested person may file an objection to a temporary urgency change. (*Id*., subd. (d).) The State Water Board must promptly consider the objection and may hold a hearing on any objection. (*Id*., subd. (e).)

As of June 4, 2021, the State Water Board had received eight letters in support of Sonoma Water's TUCPs from 1) Mendocino County Russian River Flood Control and Water Conservation Improvement District (Mendocino County RRFC), 2) NMFS, 3) the California Department of Fish and Wildlife (CDFW), 4) the Russian Riverkeeper (RRK), 5) the City of Santa Rosa, 6) the Marin Municipal Water District, 7) the Russian River Watershed Association, and 8) the Technical Advisory Committee (TAC)[9]. Mendocino County RRFC, the TAC, the City of Santa Rosa, the Marin Municipal Water District, and the Russian River Watershed Association all urge the State Water Board to immediately approve Sonoma Water's TUCPs to address the severe drought conditions in the Russian River Watershed.

NMFS and CDFW also urge the State Water Board to conditionally approve Sonoma Water's TUCPs as early as possible to preserve water stored in Lake Mendocino and Lake Sonoma to meet the needs of federal and state listed salmonids in the Russian River later in the fall, as well as to maintain Dry Creek flows consistent with the requirements and actions under the 2008 Biological Opinion. To assist NMFS, CDFW, the North Coast Regional Water Quality Control Board (North Coast Water Board), and the State Water Board in overseeing the effects of the TUCPs on conditions in the Russian River and determining if additional actions are required, NMFS and CDFW proposed terms and conditions that would require Sonoma Water to conduct continuous water quality and fisheries monitoring in the Russian River, ongoing consultation with NMFS, CDFW, and the North Coast Water Board, and ongoing reporting of monitoring measurements. The State Water Board has considered and incorporated the terms and conditions from the support letters of NMFS and CDFW into Conditions 2-7 of this Order.

RRK appears to support Sonoma Water's TUCPs to modify minimum instream flow requirements, but also recommends that the State Water Board impose additional conditions. RRK states that it supports "the need for temporary modification of flows within the Russian River so that water storage supplies are protected." RRK also recommends that the State Water Board "go beyond" the requested temporary urgency changes with additional actions to manage water diversion and use within the Russian River Watershed.

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[9] The TAC is comprised of eight Sonoma Water contractors (including the City of Cotati, City of Petaluma, City of Rohnert Park, City of Santa Rosa, City of Sonoma, Town of Windsor, North Marin Water District, and Valley of the Moon Water District) and Marin Municipal Water District, which also purchases water from Sonoma Water.

As relates to Sonoma Water's TUCPs, whereas Sonoma Water has committed to a 20% reduction in diversions between July 1 and October 31 compared to the same time period in 2020, RRK urges the State Water Board to instead require and enforce a 40% mandatory reduction. The State Water Board is not prepared to impose a steeper mandatory reduction at this time without better understanding the corresponding benefits for instream flows and storage and the corresponding impacts on Sonoma Water and its contractors, purchasers, and customers who rely on the water supplies. Furthermore, Sonoma Water has implemented a Water Shortage Contingency Plan that will, in certain water shortage circumstances, require a 30%, 40%, or greater percentage reduction in diversions. This plan has reportedly been incorporated into Section 3.5 of the Restructured Agreement for Water Supply with its contractor and customer agencies and so may accomplish the same or similar diversion reduction mandates as RRK's proposal under an established, contractual framework if water shortage conditions warrant.

Although RRK appears to support Sonoma Water's TUCPs, it also, paradoxically, appears to assert that approving and implementing the very same TUCPs would violate CEQA and the Water Code section governing temporary urgency water right changes, particularly regarding the petitioner's diligence. These assertions are adequately addressed in Sections 3.0 and 5.1, respectively, of this Order.

As of June 4, 2021, the State Water Board received 48 comments objecting to Sonoma Water's TUCPs from Richard Morat, the North Coast Stream Flow Coalition (NCSFC)[10], the Russian River Watershed Protection Committee (RRWPC), Monte Rio Recreation & Park District (MRRPD), and residents from communities near the Lower Russian River.

Mr. Morat objected the TUCPs based on concerns about adverse impacts on aquatic resources. Similar to RRK, Mr. Morat raised concerns that Sonoma Water has filed TUCPs almost annually in the past and argued that better environmental analysis is needed to evaluate the long-term and cumulative impacts of the requested changes. Mr. Morat indicated that the State Water Board should perform a programmatic environmental review to address Sonoma Water's TUCPs until such requests are addressed as long-term changes and non-urgent. As relates to these TUCPs, Mr. Morat's concerns regarding environmental review are addressed in part in Section 3.0 of this Order. As also discussed in Section 5.1 of this Order, Sonoma Water has

[10] NCSFC states that its member organizations include: Community Clean Water Institute; Forest Unlimited; Friends of Del Norte; Friends of the Eel River; Friends of Green Valley Creek, Friends of the Gualala River; Friends of the Navarro Watershed; Institute for Conservation Advocacy, Research and Education; Institute for Fisheries Resources; Klamath Forest Alliance; Living Rivers Council, Maacama Watershed Alliance; Pacific Coast Federation of Fishermen's Associations; Save Mark West Creek; Sonoma County Water Coalition; Sonoma Willits Environmental Center; and Willets/Outlet Creek Watershed Group.

previously filed petitions seeking long-term changes to its water right permits, including modification to the Decision 1610 hydrologic index relative to the minimum instream flow requirements as requested in the TUCPs. Sonoma Water is preparing a revised draft Environmental Impact Report (EIR) in response to feedback previously provided by stakeholders. The State Water Board's consideration of the long-term changes will proceed once Sonoma Water has completed the revised EIR and other related actions.

NCSFC objected to Sonoma Water's TUCPs for the following stated reasons: 1) Sonoma Water and the State Water Board "failed to prepare for drought conditions and should not be bailed out at the expense of stream ecosystems"; 2) granting the TUCPs will result in the "take" of coho salmon in violation of the federal and state Endangered Species Acts; 3) granting the TUCPs will "harm those who depend on the Russian River and transfer income from those who depend on the River to irrigators above [Lake Mendocino] and in Sonoma County"; 4) granting the TUCPs "would constitute environmental injustice"; and 5) the State Water Board "should take action to secure the enforcement staffing needed to adequately enforce water rights and water right cutbacks in response to drought." The State Water Board has considered NCSFC's comments and addresses similar points, including regarding public trust resources, beneficial uses of water, and public interests, in Section 5 of this Order. In addition to requiring continued compliance with the state and federal Endangered Species Acts, this Order specifically requires Sonoma Water to frequently and consistently consult with CDFW and NMFS—which both conditionally supported the flow reductions and reservoir storage conservation proposed in Sonoma Water's TUCPs—regarding hydrology and fishery and water quality conditions in the watershed.

In their comments, RRWPC, MRRPD, and residents from communities near the Lower Russian River objected to the lowering of instream flow requirements in the Lower Russian River to, and potentially at times below, 35 cfs. These comments raised similar issues, which include:

1) Stream flows as low as 50 cfs can result in adverse water quality impacts related to algal blooms and cyanobacteria that can cause beach closures and result in health impacts to humans, pets, and wildlife; the State Water Board should consider approving a minimum stream flow of 60 cfs and above for the Lower Russian River;
2) The reduced stream flows will cause potential impacts to fisheries and "loss of juvenile salmonid habitat";
3) Stream flows as low as 35 cfs would ruin tourism and recreation in the Lower Russian River;
4) Low instream flows in the Lower Russian River could cause harm to river supply for fire protection;
5) Sonoma Water should release flows much higher than required by the 2008 Biological Opinion from Lake Sonoma to meet instream flow requirements;
6) Voluntary conservation is not sufficient considering increased demand from new housing developments.

The State Water Board has considered these comments and objections in this Order. More detailed discussions are included in the Section 5 of this Order in response to the above comments (1), (2), (3), (5), and (6) regarding the potential impacts of reduced minimum instream flows on water quality (algal blooms and cyanobacteria), fisheries, and tourism and recreation; requests for stricter conservation measures, and requests for increasing releases of stored water from Lake Sonoma to provide higher flows in the Lower Russian River. With regard to commenters' concerns about impacts to fire protection due to the reduced stream flows, it is not clear how an increased release rate from Lake Sonoma would benefit water supplies needed for fire protection. The State Water Board exercises continuing supervision over temporary urgency change orders and may modify the terms and conditions in this Order at any time to increase stream flow requirements to meet water supply needs for protection purpose if there is a fire emergency.

Although 35 cfs is the minimum instream flow established by Decision 1610 for *Critical* water year conditions, a majority of the comments requested that minimum instream flows instead be set at 60 cfs, between the minimum instream flow requirements for the Lower Russian River during *Dry* (85 cfs) and *Critical* (35 cfs) years under Decision 1610. The State Water Board has considered these comments and objections in adopting this Order. As noted above, Decision 1610's hydrologic index—the classification of water year type as *Normal*, *Dry*, or *Critical*—is based on cumulative inflow to Lake Pillsbury, adopted under the presumption that water stored in Lake Pillsbury would flow into the Russian River watershed. However, in addition to existing hydrologic conditions within the Eel River Watershed and competing demands for the water stored in Lake Pillsbury, FERC issued a variance for the PVP, and may issue an extension of that variance beyond June 21, 2021, that will likely result in little or no water flowing from Lake Pillsbury through East Fork Russian River into Lake Mendocino and the downstream Russian River. According to Mendocino County RRFC, the FERC variance will likely result in approximately 5,000 fewer AF of water flowing into Lake Mendocino over the next five months. Based on historically dry conditions and historically low reservoir storage levels, the Russian River Watershed is by all accounts currently experiencing highly *Critical* water supply conditions. Sonoma Water's TUCPs propose minimum instream flows accordingly but also request more explicit flexibility in the maintenance of these minimum instream flows.

The State Water Board will separately consider parties' recommendations for additional drought response actions beyond the scope of Sonoma Water's TUCPs. Based upon the unprecedented, extremely dry drought conditions within the Russian River Watershed, specifically including the dire current and anticipated storage levels within Lake Mendocino and unavailability of water to meet demands, the State Water Board is considering emergency regulations that would authorize the curtailment of other users' diversions when water is unavailable under their water rights while also protecting human health and safety and public trust resources.

The State Water Board exercises continuing supervision over temporary urgency change orders and may modify or revoke temporary urgency change orders at any time. (Wat. Code, §§ 1439, 1440.) Temporary urgency change orders automatically expire 180 days after issuance, unless they are revoked, an earlier expiration date is specified, or they are renewed. (*Id*., §§ 1440, 1441.)

5.0 CRITERIA FOR APPROVING THE PROPOSED TEMPORARY URGENCY CHANGE

Water Code section 1435 provides that a right holder who has an urgent need to change the point of diversion, place of use, or purpose of use from that specified in the water right may petition for a conditional temporary change order. The State Water Board's regulations set forth the filing and other procedural requirements applicable to TUCPs. (Cal. Code Regs., tit. 23, §§ 805, 806.) The State Water Board's regulations also clarify that requests for changes to permits or licenses other than changes in point of diversion, place of use, or purpose of use may be filed, subject to the same filing and procedural requirements that apply to changes in point of diversion, place of use, or purpose of use. (*Id*., § 791, subd. (e).)

Before approving a TUCP, the State Water Board must make the following findings: (1) the right holder 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. (Wat. Code, § 1435, subd. (b)(1-4).)

A temporary change order does not result in the creation of a vested right, even of a temporary nature, but shall be subject at all times to modification or revocation in the discretion of the Board. (Wat. Code, § 1440.)

5.1 Urgency of the Proposed Change

Under Water Code section 1435, subdivision (c), an "urgent need" means "the existence of circumstances from which the board may in its judgment conclude 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 . . . ."

In this case, an urgent need exists for the proposed change in minimum instream flow requirements on the Upper Russian River. As indicated above in Section 2.4 of this Order, the Russian River Watershed is experiencing a second consecutive year of extremely dry conditions, with Water Year 2021 being the driest year and Water Year 2020 being the fourth driest in the Ukiah Valley since 1893. In April 2021, the state and local governments declared a drought emergency for the Russian River Watershed in

Mendocino and Sonoma counties. However, because Decision 1610's hydrologic index is based on cumulative inflow to Lake Pillsbury, the water supply condition is categorized as merely *Dry* instead of *Critical*. Based upon the TUCP granted by the State Water Board on February 4, 2021, the hydrologic index applicable to the instream flow requirements for the Upper Russian River under Permit 12947A was temporarily changed to be based on Lake Mendocino storage levels, such that applicable minimum instream flows for the Upper Russian River have been 25 cfs, consistent with Decision 1610's requirements for *Critical* water supply conditions. That temporary urgency change would expire on July 26, 2021. The Decision 1610 hydrologic index has continued to require Sonoma Water's maintenance of higher instream flows under Sonoma Water's other water rights (Permits 12949, 12950, and 16596), despite the critical dry conditions in the Russian River Watershed.

Sonoma Water has projected that Lake Mendocino would drain to its reservoir model's dead pool storage level by October 1, 2021, without its additional proposed temporary changes. Sonoma Water stated in the TUCPs that without the proposed changes it would need to release additional stored water from Lake Mendocino to maintain instream flow requirements per Decision 1610, which would lead to elimination of water supplies for human health and safety during the fall or winter for water users in Mendocino County and the northern part of Sonoma County (above the confluence with Dry Creek). Such depletion or possible elimination of stored water supplies would risk serious impacts to human health and safety and fishery protection and could possibly result in the Upper Russian River becoming a series of disconnected pools. There are 20 public water supply systems, in addition to other smaller diversions for domestic purposes, whose intakes are adjacent to the Upper Russian River that would be impacted if the river became discontinuous and unable to support their diversions. The letters of support received from CDFW and NMFS also emphasized the importance of maintaining river connectivity and avoiding the river becoming a series of disconnected pools due to the impacts it would have on fishery habitat conditions.

An urgent need also exists for the proposed change in minimum instream flow requirements on the Lower Russian River. Lake Sonoma is at its lowest storage level since it began storing water in 1984. Sonoma Water predicted Lake Sonoma could decline to below 100,000 AF by October 1, 2021, without additional mitigation measures. In addition, reductions in the Upper Russian River flows would require an increase in Lake Sonoma releases into Dry Creek to meet Lower Russian River flow requirements as well as water supply demands. Higher releases from Lake Sonoma may cause Sonoma Water to violate the Incidental Take Statement contained in the 2008 Biological Opinion and reduce the suitability of habitat for threatened and endangered fish species in Dry Creek. Sonoma Water is currently releasing above 170 cfs (with an average daily release rate of 183 cfs for the week of May 28 to June 3 of 2021) at Lake Sonoma to meet the instream flow requirements per Decision 1610, which puts reservoir operations above the 160 cfs maximum threshold established in the Incidental Take Statement of the 2008 Biological Opinion. Without modification to the current instream flow requirement for the Lower Russian River,

Sonoma Water would have to continue releases at 170 cfs or above at Lake Sonoma for the rest of this year, resulting in violation of the Incidental Take Statement contained in the 2008 Biological Opinion.

Furthermore, Sonoma Water is under an additional constraint due to coho salmon habitat restoration construction and stocking projects required under the 2008 Biological Opinion that will continue in Dry Creek this summer. These ongoing projects require stream flows to be less than 150 cfs for stability of the constructed habitat. NMFS also reiterated that higher flows would violate the existing Dry Creek maximum instream flow objectives and requirements of the 2018 Biological Opinion. Therefore, although a number of comments were received by the Board requesting to increase water releases from Lake Sonoma to meet higher minimum instream flow requirements in the Lower Russian River, the flow limitations in the 2008 Biological Opinion and the current construction activities restrict this option. Absent the proposed changes to the minimum instream flow requirements in the Lower Russian River, Sonoma Water would have to choose between either exacerbating the depletion of Lake Mendocino storage levels or increasing Lake Sonoma releases such that they would violate the Incidental Take Statement contained in the 2008 Biological Opinion.

Water Code section 1435, subdivision (c) also states that the State Water Board shall not find a petitioner's need to be urgent if it concludes that the petitioner has not exercised due diligence either in petitioning for a change pursuant to provisions other than a TUCP or in pursuing that petition for change. As noted in the State Water Board's February 2021 order approving Sonoma Water's TUCP for Permit 12947A, a number of factors have hindered action on Sonoma Water's long-term change petitions to modify Decision 1610 and Permits 12947A, 12949, 12950, and 16596. As required as a condition of that order, Sonoma Water has provided a schedule of milestones and completion dates for further actions necessary to act on its long-term change petitions. In its report dated April 1, 2021, Sonoma Water has stated that it plans to submit amended petitions for long-term water right changes in Fall 2021, to recirculate a draft EIR for the proposed project in December 2021, and to both certify a final EIR and approve a final project in September 2022. Sonoma Water staff states, "[G]iven the current and anticipated workloads in response to continuing dry conditions into 2021, the milestones described provide a realistic timeframe for completion of a CEQA document and project that is technically rigorous and legally defensible." In light of these circumstances and representations, the State Water Board finds that Sonoma Water has exercised due diligence. Sonoma Water must continue to diligently pursue its stated course of action, as outlined in its report and schedule, but there is also an urgent need now, during the current critical water conditions and ongoing drought emergency, to grant Sonoma Water's TUCPs.

5.2 No Injury to Any Other Lawful User of Water

Sonoma Water is required to maintain specified flows in the Russian River from its most upstream point of diversion to the Russian River's confluence with the Pacific Ocean. Under this Order, minimum flows are required to be maintained consistent with the critically dry conditions in the Russian River Watershed. Under present conditions, Lake Mendocino storage releases comprise virtually all water flowing in the Upper Russian River. What little natural flow exists, if any, will not be sufficient to support even the most senior water rights. In the Lower Russian River, hydrologic conditions are similarly dry, and it is anticipated that limited flows may only be sufficient to protect senior water right holders and public trust resources. Other legal users of water will not be injured by reduction in releases of previously stored water because water released from storage is not available for diversion by downstream users with an independent basis of right. (See, e.g., *North Kern Water Storage Dist. v. Kern Delta Water Dist.* (2007) 147 Cal.App.4th 555, 570 [when the stored water is released for use, it is not part of the river's natural flow and rediversion of this water does not count toward the appropriator's current allocation of river water]; *State Water Resources Control Bd. Cases* (2006) 136 Cal.App.4th 674, 737-745 [a riparian or appropriator has no legally protected interest in other appropriators' stored water or in the continuation of releases of stored water].)

In conjunction with other actions in response to the current drought state of emergency within the Russian River Watershed, the State Water Board will supervise diversion and use of water under this temporary urgency change order for the protection of all other lawful users of water pursuant to Water Code section 1439.

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

Prior to approval of a TUCP, the Board must find that the proposed change may be made without unreasonable effect upon fish, wildlife, or other instream beneficial uses. In addition, the State Water Board has an independent obligation to consider the effect of approval of Sonoma Water's petitions on public trust resources and to protect those resources where feasible. (*National Audubon Society v. Superior Court* (1983) 33 Cal. 3d 419 [189 Cal. Rptr. 346].) Public trust resources may include, but are not limited to, wildlife, fish, aquatic dependent species, streambeds, riparian areas, tidelands, and recreation in navigable waterways, as well as fisheries located in non-navigable waterways. It is also the policy of this state that all state agencies, boards, and commissions shall seek to conserve endangered species and threatened species and shall use their authority in furtherance of the purposes of the California Endangered Species Act (Fish & G. Code, § 2050 et seq.). State agencies should not approve projects that would jeopardize the continued existence of any endangered species or threatened species if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat that would prevent jeopardy. (Fish & G. Code, §§ 2053 & 2055.)

Although flows in the Russian River will be reduced upon approval of this petition, maintenance of stored water in Lake Mendocino and Lake Sonoma for subsequent release is crucial for ensuring sufficient water supplies for human health and safety use and maintaining habitat for threatened and endangered fish species during the critical life stages that occur during the fall. With the conditions imposed by this Order, including ongoing efforts to support water conservation and regular monitoring and reporting of conditions by Sonoma Water, the State Water Board finds that granting the proposed temporary changes will not have an unreasonable effect on fish, wildlife, or other instream beneficial uses and protects public trust resources to the extent feasible. The State Water Board will continue to evaluate conditions in the watershed throughout the duration of this Order and consider other actions that may further the protection fish, wildlife, and other instream beneficial uses.

5.3.1 CONSERVATION

Sonoma Water is actively engaged in water conservation to reduce demands on water stored in Lake Mendocino and Lake Sonoma for municipal supply. Sonoma Water and its water contractors have implemented water use efficiency programs to comply with the California Water Conservation Act since the establishment of the Sonoma-Marin Water Saving Partnership (Partnership) in 2010. The Partnership represents twelve North Bay water utilities in Sonoma and Marin counties that have joined to provide regional solution for water use efficiency.

To address the current drought and reduce diversions from the Russian River, Sonoma Water's contractors and Marin Municipal Water District adopted a resolution in its May 3, 2021 Water Advisory Committee (WAC) meeting urging a 20% reduction in customer water use in support of water saving efforts of the Partnership. Sonoma Water's contractors have already taken water conservation actions, and, Sonoma Water indicates, will continue to implement their respective agencies' Water Shortage Contingency Plans to meet the reduction goal. Additionally, to achieve a 40% reduction in water use, Marin Municipal Water District has adopted mandatory water use restrictions for its service area on April 20, 2021. The TUCPs stated that Sonoma Water and its retail water customers will commit to a 20% reduction in total diversions across all downstream points of diversion or rediversion authorized under Sonoma Water's water rights from July 1 through October 31 of this year compared to the same period in 2020.

As stated in the TUCPs, Sonoma Water, its water contractors, and other members of the Partnership began implementing an aggressive water saving outreach campaign in winter 2020. The campaign started as a paid social media campaign in winter and expanded in spring to become a broader multi-media effort. The Partnership has spent $50,000 in winter and spring advertisements, with Sonoma Water spending an additional $100,000 for advertising and $150,000 for staff time. Sonoma Water's contractors also spent additional funds for outreach beyond what is being coordinated

by the Partnership and through Sonoma Water. Sonoma Water stated the drought outreach campaign would continue through the end of summer, or longer if drought conditions persist through the fall.

In addition, Sonoma Water has been actively meeting with Upper Russian River water managers to share water saving materials and staff resources to help addressing water reduction needs in the Upper Russian River. Sonoma Water indicated it would continue to coordinate with the Mendocino County RRFC through the summer. Partly as an outcome of the coordination efforts, the City of Cloverdale adopted a resolution on April 14, 2021 authorizing its city manager to negotiate and execute a memorandum of understanding to join the Partnership. Once approved, Cloverdale will become a member of the Partnership by July 1, 2021.

To ensure continuation of these conservation activities, this Order includes a condition that requires Sonoma Water and its water contractors to achieve the committed 20% reduction in total diversions under Sonoma Water's water rights compared to the same period of 2020 from July 1 through the end of this Order. Sonoma Water is also required to submit to the Deputy Director for Water Rights monthly reports documenting Sonoma Water's reductions in diversions and provide an updated water storage projections of Lake Sonoma and Lake Mendocino through the end of this Order.

5.3.2 RECREATION

Reduced flows in the Russian River could impair recreational uses by lowering flows below those necessary for recreational boating and reducing the opportunities for other recreational activities such as swimming. Given the extremely low projected storage in Lake Mendocino and Lake Sonoma and the potential impacts to the environment, fishery resources, and essential human health and safety needs that could occur if the temporary changes are not approved, these impacts to recreation are reasonable under the circumstances. Maintenance of flows in excess of those required by this Order risks elimination of water storage in Lake Mendocino and reduction of water storage in Lake Sonoma to levels that may not be sufficient to meet human health and safety needs in Mendocino, Sonoma, and Marin counties, or provide minimum flows during the fall that are necessary for threatened and endangered fish species. Given the conflicting demands on limited water supplies, the need to maintain minimum storage levels to protect public water supplies and threatened and endangered species, and the implementation of conservation measures by Sonoma Water, this Order protects recreational interests in the Russian River to the extent feasible. Additionally, as described in Section 2.3 of this Order, releases from Lake Sonoma are limited by the 2008 Biological Opinion; maintenance of higher flows in the Lower Russian River may result in expending additional Incidental Take Allowances. Should changes in water supply conditions allow for enhanced flows that would further recreational interests, the Board retains the authority to amend or revoke this Order as appropriate.

5.3.3 Water Quality and Availability of Aquatic Habitat

The Russian River sustains an annual run of adult Chinook salmon that depend on the release of stored water from Lake Mendocino during October, November, and early December. Reduced minimum flows in the Russian River would probably have some immediate adverse impacts to water quality and the availability of aquatic habitat for anadromous fish and other species in the Upper and Lower Russian River. These impacts are, however, expected to be offset by improvements to water quality and aquatic habitat by preventing Lake Mendocino from being drained and allowing continued minimum releases through the fall. As discussed in Section 2.4 of this Order, Sonoma Water predicted that Lake Mendocino would have a potential of being drained by October 1, 2021, without the proposed TUCPs. Elimination of water storage in Lake Mendocino would result in catastrophic impacts to human health and safety and survival of fish and wildlife in the Upper Russian River and the lake itself. In addition, as discussed in Section 5.1 of this Order, Sonoma Water is currently releasing more than 170 cfs from Lake Sonoma to meet the current minimum flow requirements in the Lower Russian River. Without the proposed temporary changes, Sonoma Water would have to continue releases at 170 cfs and above from Lake Sonoma for the rest of this year, which may cause Sonoma Water to violate the Incidental Take Statement contained in the 2008 Biological Opinion and would reduce the suitability of habitat for threatened and endangered fish species in Dry Creek.

Both NMFS and CDFW support the TUCPs to conserve water storage in Lake Mendocino and Lake Sonoma for the benefit of listed salmonids, conditioned upon ongoing monitoring, reporting, and consultation requirements. These proposed terms and conditions have been included in this Order. To allow for adaptive management of releases from Lake Mendocino and Lake Sonoma, this Order requires Sonoma Water to provide weekly updates to the State Water Board, CDFW, NMFS, and the North Coast Water Board regarding the current hydrologic and water quality conditions on the Russian River and updates on fishery conditions. This information will assist the State Water Board in determining whether additional actions or modifications to this Order are necessary. All monitoring activities will be summarized in annual reports intended to evaluate whether and to what extent the reduced flows may have caused any impacts to water quality and availability of aquatic habitat for salmonids. This information will serve to inform the State Water Board's continuing supervision of the diversion and use of water under this temporary urgency change order pursuant to Water Code section 1439. In addition, this information may be used to assist the study and development of future long-term changes to Decision 1610 instream flow requirements for which separate petitions are pending.

5.3.4 CYANOBACTERIA

Cyanobacteria are present in most freshwater and marine aquatic environments. When conditions are favorable, including abundant light, elevated water temperature, elevated levels of nutrients, and lack of water turbulence and velocity, cyanobacteria can quickly multiply into a bloom. Not every bloom is toxic; however, harmful algal blooms of cyanobacteria (cyanoHABs) are a concern as some species of cyanobacteria produce toxins that have the potential to impact drinking water, recreation, and fish and wildlife. Cyanotoxins were present in the Russian River in 2015, 2016, 2017, and 2018, which led to warning signs being posted by Sonoma County Department of Health Services.

There are currently no federal water quality criteria or regulations for cyanobacteria or cyanotoxins. However, some toxins (microcystins and clyindrospermopsin) have been added to the contaminant candidate list under the Safe Drinking Water Act. In addition, the Clean Water Act sets ambient water quality standards and requires that the Environmental Protection Agency develop management strategies for assessing and managing algal toxins.

As of 2021, there is no regulation in the State of California specifically regarding cyanobacteria or cyanotoxins in drinking water or recreational waters. However, there has been an increase in cyanoHABs in California. The North Coast Water Board has noted concerns about cyanoHABs and elevated pathogen concentrations that occur when low stream flow conditions coincide with warm weather in the Russian River and its tributaries. The Russian River is listed as impaired on the 303(d) list for pathogen conditions, leading to the North Coast Water Board's adoption of the Action Plan for the Russian River Watershed Pathogen Total Maximum Daily Load in August 2019. These pathogens often pose a threat to public health and have resulted in public health advisory postings on the Russian River in recent years. The North Coast Water Board notes that past streamflow monitoring in the Lower Russian River indicates that high rainfall following a dry year is not adequate to restore baseflows in the late summer. Given the extremely dry conditions in 2020 and 2021, the upcoming critically low late summer baseflows support the rationale for ongoing monitoring and coordination among Sonoma Water, the North Coast Water Board, and the State Water Board.

The State Water Board has considered the objections raised by members of the public regarding potential public health impacts from cyanobacteria or cyanotoxins in the Russian River. This Order includes conditions that require Sonoma Water to continue measuring and monitoring water quality in the Russian River to evaluate cyanoHAB conditions and factors contributing to nuisance blooms (e.g., flow, temperature, nutrients, etc.). Sonoma Water is required to consult with the North Coast Water Board and to complete development of the "Water Quality Monitoring Plan for the Russian River Estuary Management Project" (2021 Water Quality Monitoring Plan), which will address these and other water quality issues, no later than July 15, 2021. This Order also requires Sonoma Water to continue consultation with the North Coast Water Board

on any water quality issues caused by the TUCPs during the period of this Order. The State Water Board reserves jurisdiction to revise terms and conditions in this Order if the Sonoma County Department of Health Services posts health advisories related to cyanotoxins or indicator bacteria and will consult with the North Coast Water Board regarding any health advisories.

5.4 The Proposed Change is in the Public Interest

Approval of the TUCPs to temporarily reduce minimum instream flows will help conserve stored water in Lake Mendocino and Lake Sonoma to meet human health and safety needs, and to protect endangered and threaten species in the Russian River. Without the proposed changes, the resulting elimination of stored water in Lake Mendocino and the depletion of stored water in Lake Sonoma to unsafe levels will put residents in the counties of Mendocino, Sonoma, and Marin at risk should dry conditions persist into 2022. Fisheries and wildlife will be also at risk of running out of water in the Upper Russian River in the fall. Without modification to the current instream flow requirement for the Lower Russian River, Sonoma Water would have to continue releases from Lake Sonoma to the detriment of fisheries in Dry Creek for the rest of this year that would result in violation of the Incidental Take Statement contained in the 2008 Biological Opinion. It is in the public interest to preserve water supplies for these beneficial uses given the extreme hydrologic circumstances and reduced water supplies.

Should the conditions that support the approval of this Order change, whether in alterations to water supply or identification of additional impacts to aquatic habitat, water quality, or other matters within the public interest, the State Water Board has the authority to revoke this approval or modify the terms and conditions of this Order as necessary to promote the interests of the public.

6.0 CONCLUSIONS

The State Water Board has adequate information in its files to make the evaluation required by Water Code section 1435. The findings of this Order are based on unique circumstances created by drought, and are independent from any findings to be made in connection with the related change petitions filed by Sonoma Water in 2009 and revised in 2016 pursuant to Chapter 10 of Division 2 of Part 2 of the Water Code.

I conclude that, based on the available evidence:

1. The right holder has an urgent need to make the proposed change;

2. The proposed change will not operate to the injury of any other lawful user of water;

3. The proposed change will not have an unreasonable effect upon fish, wildlife, or other instream beneficial uses; and

4. The proposed change is in the public interest.

ORDER

NOW, THEREFORE, IT IS ORDERED THAT: the petitions filed by Sonoma Water for a temporary urgency change in Permits 12947A, 12949, 12950, and 16596 are approved and effective from the date of this Order through a period of 180 days.

All existing terms and conditions of the subject permits remain in effect, except as temporarily amended by the following terms:

1. The minimum instream flow requirements in the Russian River, as specified in Term 20 of Permit 12947A, Term 17 of Permit 12949, Term 17 of Permit 12950, and Term 13 of Permit 16596, shall be modified as follows:

    a. Minimum instream flow in the Upper Russian River shall remain at or above 25 cfs, as measured on a five-day running average of average daily stream flow.
    b. Minimum instream flow in the Lower Russian River shall remain at or above 35 cfs, as measured on a five-day running average of average daily stream flow.
    c. Sonoma Water shall pass through or release sufficient water to maintain a continuous, instantaneous streamflow of no less than 15 cfs in the Upper Russian River and no less than 25 cfs in the Lower Russian River at all times.

2. Sonoma Water shall conduct the following water quality monitoring tasks to monitor habitat conditions and hydrologic connectivity at the following locations:

    Upper Russian River Habitat:

    a. From June 1 to October 1 of 2021, Sonoma Water shall visit six reach sites on a biweekly[11] basis between the confluence of the East Fork Russian River and West Fork Russian River (the Forks) and the confluence of Dry Creek and Russian River in Healdsburg, among which four reach sites (Ukiah, Hopland, Commisky Station, and Cloverdale) have been used previously as flow/habitat study sites and two additional reach sites will be established in Alexander Valley and Healdsburg. Each study reach site will be approximately 500 meter long. At each reach site,

[11] Biweekly means once every two weeks throughout this Order.

habitat conditions and flow connectivity shall be documented via walking surveys, photo documentation, and measurement of width and depth at established cross-sections. Most reach sites shall be in close proximity to existing U.S. Geological Survey (USGS) stream gauges and Sonoma Water owned water quality data collection sites.

b. Sonoma Water shall supplement data collected at "permanent" water quality monitoring sites with temperature and dissolved oxygen measurements in up to a total of five deep pools in the Upper Russian River. These sites will be opportunistically sampled within and beyond the established habitat monitoring reaches.

Lower Russian River Habitat:

c. From October 1 through the end of this Order, Sonoma Water shall visit at least one, and up to four critical riffle sites based on consultation with NMFS, in the Lower Russian River biweekly as conditions allow assessing adult salmonid passage opportunities. At each site, Sonoma Water staff shall measure riffle length, width, depth, and document the site with photographs.

3. Sonoma Water shall conduct monitoring to determine the effects on water quality and availability of aquatic habitat for salmonids. Monitoring in the Russian River shall include continuous monitoring of temperature, dissolved oxygen, pH, and specific conductivity at multiple stations from Calpella to Jenner as follows for the duration of this Order:
    a. Monitoring on the East Fork Russian River shall occur at a seasonal water quality data sonde located approximately 1/3 mile (0.33 mi) downstream from Lake Mendocino and at the Russian River at the confluence with Pieta Creek; Sonoma Water shall record hourly measurements of water temperature, dissolved oxygen, specific conductivity, pH, and turbidity.
    b. Monitoring on the Russian River shall occur at three, multi-parameter "permanent" water quality data sondes at USGS stream gages located at Hopland, Diggers Bend near Healdsburg, and Hacienda Bridge. These three data sondes are referred to as "permanent" as they are maintained as part of Sonoma Water's early warning detection system in coordination with USGS on its "Real-time Data for California" website.
    c. Monitoring on the Russian River shall occur at four seasonal data sondes with real-time telemetry in cooperation with USGS at USGS gages at East Fork Russian River at Calpella station, Cloverdale station (north of Cloverdale at Commisky Station Road), Jimtown (at the Alexander Valley Road bridge), and Johnson's Beach (Guerneville). The data sonde at the Cloverdale gage will collect dissolved oxygen and temperature; the data sonde at the Jimtown gage will collect pH, temperature, dissolved oxygen, specific conductivity and turbidity; and the data sonde at Johnson's Beach will collect pH, temperature, dissolved oxygen, specific conductivity and turbidity.

d. Monitoring at Lake Sonoma and Lake Mendocino: Sonoma Water shall work with CDFW and USACE to monitor the vertical temperature profiles in Lake Sonoma and Lake Mendocino near the outlet structure of each lake on a biweekly basis for the period of this Order. This will inform adjustments to the outlet release at Lake Mendocino to ensure adequate cold water for Coyote Valley Hatchery operations, as well as the need for potential salvage/rescue operations for native fishes in the East Fork Russian River, or other necessary adaptive management. Monitoring at Lake Mendocino will contribute to the assessment of water quality indicators and water column conditions, including vertical profiles for temperature, dissolved oxygen, turbidity, specific conductance, and pH on a biweekly basis. Water grab samples for nutrients, chlorophyll a, and turbidity shall also be collected on a biweekly basis in the hypolimnion, metalimnion, and epilimnion. Monitoring at Lake Mendocino will be dependent on access to adequate safe boat launching sites at low reservoir water surface elevations.
e. Monitoring on the mainstem Russian River shall include collecting water grab samples for nutrient, chlorophyll a, and turbidity at the East Fork Russian River at Calpella, East Fork Russian River approximately 1/3 mile (0.33 mi) downstream from Lake Mendocino, Hopland, Cloverdale, Jimtown, and near Syar Vineyards on a biweekly basis.
f. Monitoring in the Russian River and its estuary shall contribute to assessing water quality indicators and water column conditions. By July 15, 2021, Sonoma Water shall develop a “Water Quality Monitoring Plan for the Russian River Estuary Management Project” (2021 Water Quality Monitoring Plan) in consultation with the North Coast Water Board.
g. Sonoma Water shall conduct the monitoring of the Russian River and its estuary in accordance with the 2021 Water Quality Monitoring Plan to evaluate cyanoHAB conditions and the risk co-factors contributing to nuisance blooms (e.g., flow, temperature, nutrients, etc.). Sonoma Water shall submit a copy of the final plan and any subsequent amendments to the State Water Board’s Deputy Director for Water Rights (Deputy Director) and the Executive Officer of the North Coast Water Board within two weeks of their completion.
h. If any water quality issues of concern are observed from the continuous monitoring or water sampling required by this Order, or if the Sonoma County Department of Health Services posts health advisories related to cyanotoxins or indicator bacteria, Sonoma Water shall consult with the North Coast Water Board. Sonoma Water shall submit a summary report of consultation details and a description of proposed monitoring activities, if any, to the Deputy Director within one week of the consultation. Any necessary revisions to this Condition may be made following consultation with the North Coast Water Board and approval by the Deputy Director.

4. Sonoma Water shall conduct the following Fisheries Monitoring at the following locations:

Upper Russian River:
Between June 1 and October 1 of 2021, Sonoma Water shall conduct two snorkel surveys in the four reaches between the Forks and Cloverdale described in Condition 2 to document fish presence and species composition. The surveys shall be conducted in the early (June/July) and late (September) portion of the monitoring season.

Lower Russian River:

a. From October 1 through the end of this Order, Sonoma Water shall conduct biweekly snorkel surveys in at least one, and up to six pools based on consultation with NMFS, between Mirabel Dam and the estuary to document the presence of adult salmonids. Snorkel surveys shall start after adult salmonids have access to the river (i.e., when the sandbar at the mouth of the river is open) and shall end after a cumulative season total of 100 adult salmonids move past the counting station at the Mirabel fish ladder.
b. Beginning no later than September 1, 2021 and continuing through the duration of this Order, Sonoma Water shall monitor and record the daily numbers of adult salmon and steelhead moving upstream past the life cycle monitoring station at the Mirabel Dam fish ladder. Mirabel fish ladder numbers shall be included in the weekly reports required by Condition 6.
c. Beginning no later than October 1, 2021 and after a cumulative season total of 100 adult salmonids have moved past the Mirabel fish ladder, if adult salmon and steelhead can enter the Russian River estuary and suitable water clarity allows, Sonoma Water shall conduct spawning ground surveys in Dry Creek. Based on consultation with NMFS, up to three comprehensive Dry Creek surveys shall be conducted by boat along the 14-mile reach between Warm Springs Dam and the confluence of the Russian River and Dry Creek in Healdsburg.
d. Beginning no later than November 1, 2021 and after a cumulative season total of 100 adult salmonids have moved past the Mirabel fish ladder and flows at the USGS gauge in Healdsburg exceed 100 cfs, Sonoma Water shall monitor numbers of adult salmonids in representation reaches in Alexander Valley and the Upper Russian River. Monitoring shall occur on a biweekly basis during the period of this Order.
e. By December 1, 2021, or after a cumulative seasonal total of 100 adult salmonids have moved upstream past the Mirabel fish ladder, whichever is earlier, Sonoma Water shall consult weekly with NMFS and CDFW regarding the possibility of increasing the instream flow at the gage at Hacienda to a level not to exceed 135 cfs.

5. Sonoma Water shall continue to consult with NMFS, CDFW, and the North Coast Water Board on a weekly basis for fishery and water quality monitoring updates and any concerns relative to water quality and hydrologic condition of the Russian River. Sonoma Water shall submit a summary report of consultation details to the Deputy Director upon request.

6. Sonoma Water shall report to the Deputy Director, the North Coast Water Board, CDFW, and NMFS on a weekly basis regarding the current hydrologic condition of the Russian River system, including current reservoir levels in Lake Mendocino and Lake Sonoma, the rates of decline for Lake Mendocino and to Lake Sonoma, a 16-day cumulative rainfall forecast, current inflow from the Potter Valley Project, and available data for Mirabel fish ladder numbers, and a summary of the available water quality data. Sonoma Water shall also make each report available on a publicly accessible website.

7. By April 1, 2022, Sonoma Water shall submit to the Deputy Director, CDFW, NMFS, and the North Coast Water Board a summary report of water quality monitoring activities required by Condition 3 of this Order and the fishery monitoring activities required by Condition 4 of this Order. The summary report shall include an evaluation of whether, and to what extent, the reduced flows authorized by the Order caused any impacts to water quality, including any water quality impacts affecting recreation or the availability of aquatic habitat for salmonids. The summary report shall also include a discussion of the conditions that contribute to cyanoHAB toxicity events and address the potential for minimizing cyanoHAB outbreaks during the current and future water years under similar environmental conditions to those experienced during the period of this Order.

8. This Order does not authorize any act that results in the taking of a candidate, threatened, or endangered species, or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish & G. Code, § 2050 et seq.) or the federal Endangered Species Act (16 U.S.C. § 1531 et seq.). If a “take” will result from any act authorized under this Order, Sonoma Water shall obtain authorization for an incidental take permit prior to operation of the project. Sonoma Water shall be responsible for meeting all requirements of the applicable Endangered Species Act for the temporary urgency changes authorized under this Order.

9. The State Water Board reserves jurisdiction to supervise the temporary urgency changes under this Order, and to coordinate or modify terms and conditions, for the protection of vested rights, fish, wildlife, instream beneficial uses and the public interest as future conditions may warrant.

10. Sonoma Water shall immediately notify the Deputy Director if any significant change in storage conditions in Lake Mendocino or Lake Sonoma occurs that warrants reconsideration of this Order.

11. Sonoma Water and its water contractors shall ensure a 20 percent reduction, as compared to the same period of the previous year, in total diversions across all downstream points of diversion or rediversion authorized under Sonoma Water's water rights from July 1, 2021 through the end of this Order.

    Sonoma Water shall submit a monthly report to the Deputy Director documenting Sonoma Water's reduction in diversions compared to the same period of the previous year, and provide updated projections of Lake Mendocino and Lake Sonoma storages through the end of this Order.

12. Sonoma Water shall submit a proposed accounting methodology to the Deputy Director that characterizes water flowing into (inflow) and released from Lake Sonoma, flows in the Lower Russian River, and the rediversion of water by Sonoma Water or its contractors. The accounting methodology shall be sufficient to define, distinguish, and quantify the following:

    a. Inflows from water native to the watershed.
    b. Releases from Lake Sonoma that constitute bypass of water, water released from storage for downstream deliveries, or water released from storage to maintain instream flows.
    c. Releases from Lake Sonoma that are rediverted by Sonoma Water or its water contractors or purchasers.
    d. Flows in the Lower Russian River that originate from Lake Mendocino releases.
    e. Reach losses in Dry Creek and the Lower Russian River.
    f. Sonoma Water may choose to include additional inflow or outflow categories not listed under a, b, and c in the accounting methodology. Explanations for each category and how it is defined shall be included in the proposed accounting methodology.

    The proposed methodology shall be submitted by July 15, 2021, and any revisions requested by the Deputy Director regarding the accounting methodology developed pursuant to this Condition or Condition 13 shall be incorporated within 30 days of being provided to Sonoma Water. From July 15, 2021 through the end of this Order, Sonoma Water shall submit to the Deputy Director weekly reports of daily average release rates and characterize those releases based on the accounting methodology developed pursuant to this Condition. Sonoma Water shall also make each report available on a publicly accessible website.

13. Based upon the methodology for characterizing Lake Mendocino water inflows, releases, and rediversions specified by Condition 11 of the State Water Board's TUCP order dated February 11, 2021, Sonoma Water shall submit weekly reports of daily average release rates and characterization of those releases. Sonoma Water shall also make each report available on a publicly accessible website.

14. Sonoma Water and its contractors and purchasers are prohibited from rediverting any releases of water from Lake Mendocino, as calculated using the accounting methodology described in Condition 12 and 13.

15. The order dated February 4, 2021, as amended February 11, 2021, approving temporary urgency changes to Permit 12947A, is revoked.

June 14, 2021
_____
Dated

ORIGINAL SIGNED BY:
_____
Eileen Sobeck,
Executive Director

Appendix A-8

Sonoma Water

April 1, 2022

Attn: Mr. Erik Ekdahl
Deputy Director of Water Rights
State Water Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000

VIA EMAIL

RE: Reporting Requirements for Term 7 of the State Water Resources Control Board Order 2021-0056-EXEC (June 14, 2021)

Dear Mr. Ekdahl:

In accordance with the requirements of the State Water Resources Control Board Order 2021-0056-EXEC received June 14, 2021 that approved the Temporary Urgency Change Petitions for water-right Permits 12947A, 12949, 12950, and 16596 (Applications 12919A, 15736, 15737, and 19351), please accept the submittal of the following enclosed report by Sonoma Water:

- Term 7 – Water Quality Monitoring Activities Summary Report

If you have any questions about the report, please do not hesitate to contact me at Shiyu.Xin@scwa.ca.gov.

Sincerely,

[redacted]

Shiyu Xin
Water Agency Engineer I

Enclosures

c: S. Boland-Brien, J. Ling - State Water Resources Control Board, Division of Water Rights
G. Davis, J. Jasperse, P. Jeane, D. Seymour, J. Martini-Lamb, D. Manning - Sonoma Water
C. O'Donnell, A. Brand - Sonoma County Counsel
R. Bezerra - Bartkiewicz, Kronick & Shanahan
R. Coey, J. Fuller – National Marine Fisheries Service
M. Kittel - California Department of Fish & Wildlife
M. St. John, B. McFadin – North Coast Regional Water Quality Control Board
E. Salomone – Mendocino County Russian River FCWCID

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Russian River Water Quality Summary for the 2021 Temporary Urgency Change



Sonoma Water

March 2022

American Disabilities Act Compliance

This report for Sonoma Water's Russian River Water Quality Summary for the 2021 Temporary Urgency Change has been prepared to be compliant with requirements under the Americans with Disabilities Act (ADA). The ADA mandates that reasonable accommodations be made to reduce "discrimination on the basis of disability." As such, Sonoma Water is committed to ensuring that documents we make publicly available online are accessible to potential users with disabilities, particularly blind or visually impaired users who make use of screen reading technology.

This disclaimer is provided to advise that portions of the document, including the figures, charts, and graphics included in the document are non-convertible material, and could not reasonably be adjusted to be fully compliant with ADA regulations. For assistance with this data or information, please contact Sonoma Water at (707) 526-5370 and reference the Russian River Water Quality Summary for the 2021 Temporary Urgency Change Project, dated March 2022.

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1.0 Introduction

On 14 May 2021, the Sonoma County Water Agency (Sonoma Water) filed Temporary Urgency Change Petitions (TUCPs) with the State Water Resources Control Board (SWRCB) to approve temporary reductions to minimum instream flows in the Russian River, to address the current dry conditions in the Russian River Watershed and the extreme low storage conditions in Lake Mendocino, and to meet the terms and conditions of the Russian River Biological Opinion (NMFS, 2008).

In summary, the SWRCB approved the following temporary changes to the Decision 1610 (D1610) instream flow requirements from 14 June 2021 through 11 December 2021 to the following:

(1) Minimum instream flow in the Upper Russian River (from its confluence of the East and West Forks of the Russian River to its confluence with Dry Creek) shall remain at or above 25 cubic feet per second (cfs), as measured on a five-day running average of average daily stream flow.

(2) Minimum instream flow in the Lower Russian River (from its confluence with Dry Creek to the Pacific Ocean) shall remain at or above 35 cfs, as measured on a five-day running average of average daily stream flow.

(3) Sonoma Water shall pass through or release sufficient water to maintain a continuous, instantaneous streamflow of no less than 15 cfs in the Upper Russian River and no less than 25 cfs in the Lower Russian River at all times.

Approval of the TUCP will increase storage levels in Lake Mendocino in the fall, which will be used for releases of stored water to benefit returning adult Chinook salmon, and improve the likelihood of carryover storage for use in 2022 in the event 2022 is also a dry year. The SWRCB issued the Order (Order) approving Sonoma Water's TUCP on 14 June 2021.

2.0 2021 Russian River Flow Summary

In early January 2021, following a dry fall and winter in 2020, water storage levels in Lake Mendocino were below 28,500 acre-feet, which is similar to storage levels experienced in 2014, a dry water year. Overall storage in 2021 was the lowest in the last ten years of monitoring. In addition, storage only increased by about 8,000 acre-feet through the months of February and March due to less than normal rainfall, and by April 2020 storage levels were below drought levels observed in 2014 and would remain that way the rest of the year (Figure 2-1). Storage in Lake Mendocino peaked in early May at just under 37,000 acre-feet, and dropped below 25,000 acre-feet by 1 August and below 13,000 acre-feet by late-October. However, with significant rainfall beginning in late October and continuing through the months of November and December, storage levels partially recovered and were approximately 41,000 acre-feet by 31 December (Figure 2-1).

The 2021 average daily flows at the Talmage, Hopland, Cloverdale, Jimtown, Digger Bend, and Hacienda U.S. Geological Survey (USGS) gaging stations are shown in Figure 2-2.

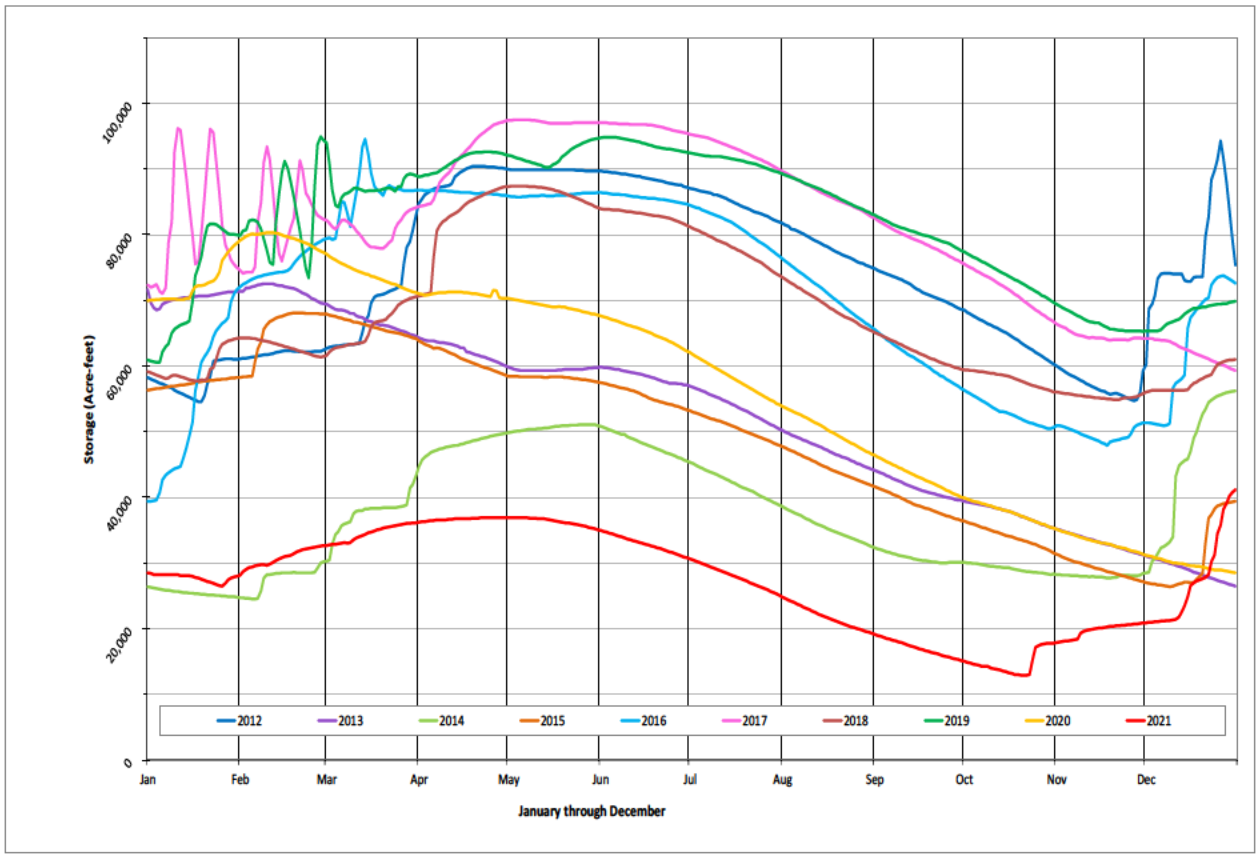


Figure 2-1. Lake Mendocino water storage levels, in acre-feet, from 2012 through 2021.

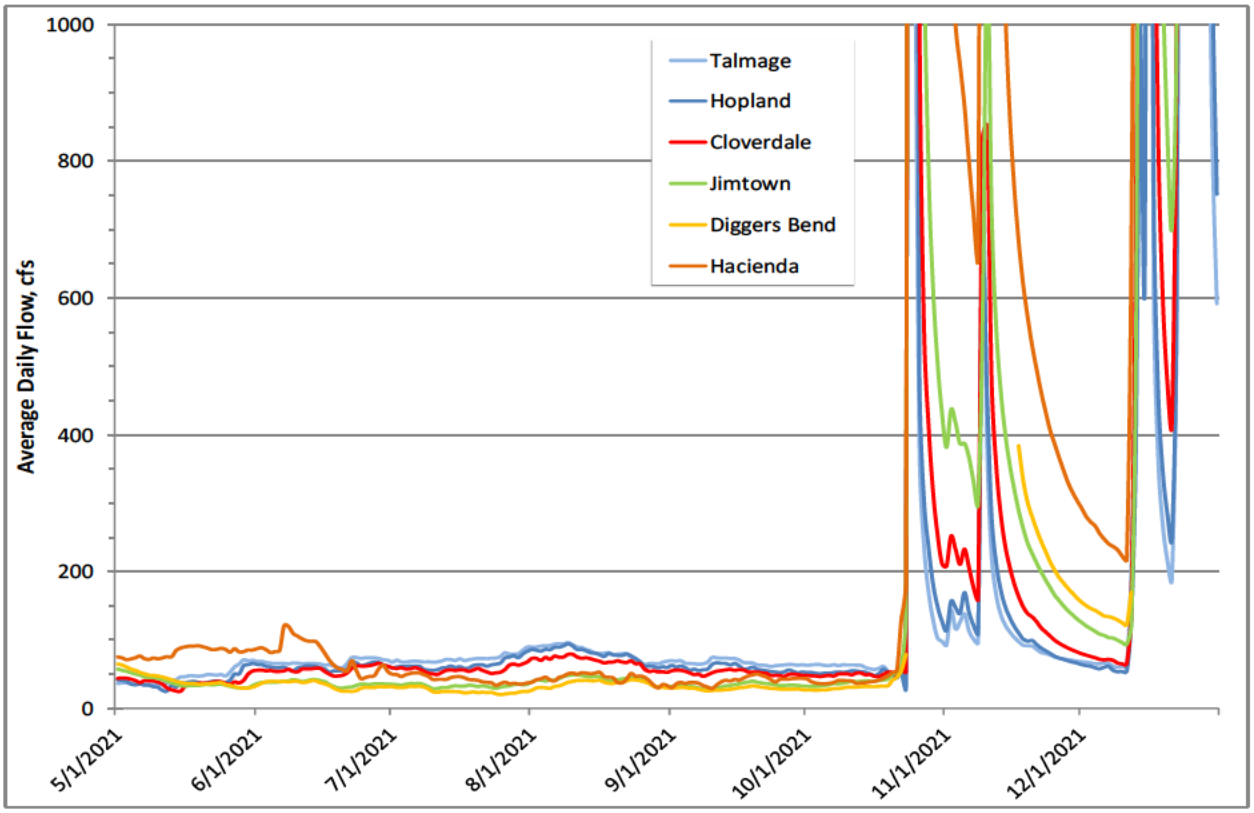


Figure 2-2. 2021 average daily flows in the Russian River as measured at U.S. Geological Survey (USGS) gages in cubic feet per second (cfs). Flow rates are preliminary and subject to final revision by USGS.

The changes in upper Russian River minimum instream flow requirements authorized by the Order allowed flows to decline below D1610 minimum instream flows of 75 cfs for most of the monitoring season (Figure 2-3). Additionally, upper Russian River flows did briefly decline below the TUC minimum daily average flows of 25 cfs at the Diggers Bend station, but did not drop below the instantaneous minimum flow of 15 cfs authorized by the Order (Figure 2-3).

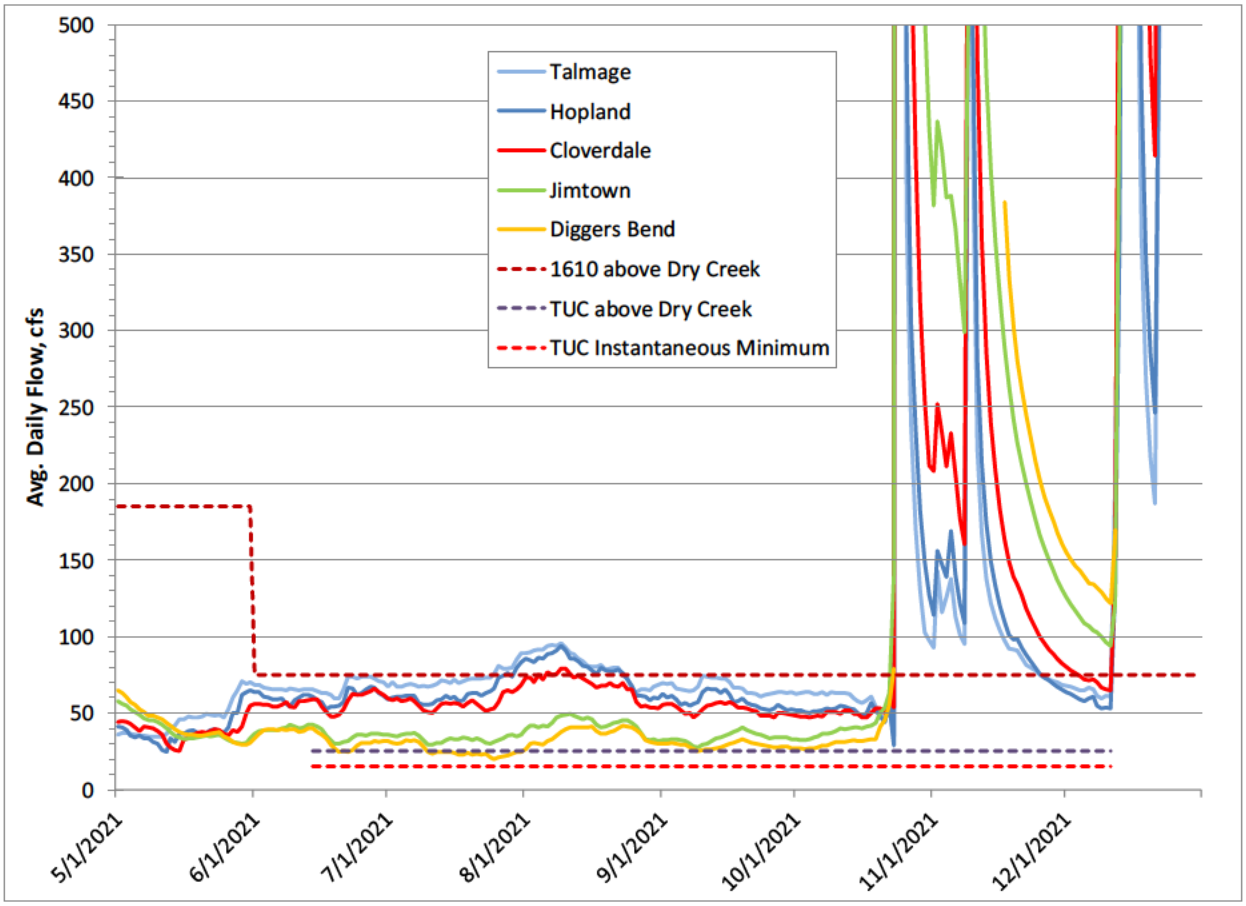


Figure 2-3. 2021 average daily flows in the upper Russian River as measured at USGS gages above the Dry Creek confluence in cubic feet per second. Flow rates are preliminary and subject to final revision by USGS.

The changes in lower Russian River minimum instream flow requirements authorized by the Order allowed flows at Hacienda to decline below D1610 minimum instream flows of 85 cfs for most of the monitoring season (Figure 2-4). Additionally, lower Russian River flows did briefly decline below the TUC minimum daily average flows of 35 cfs at Hacienda, but did not drop below the instantaneous minimum flow of 25 cfs authorized by the Order (Figure 2-4).

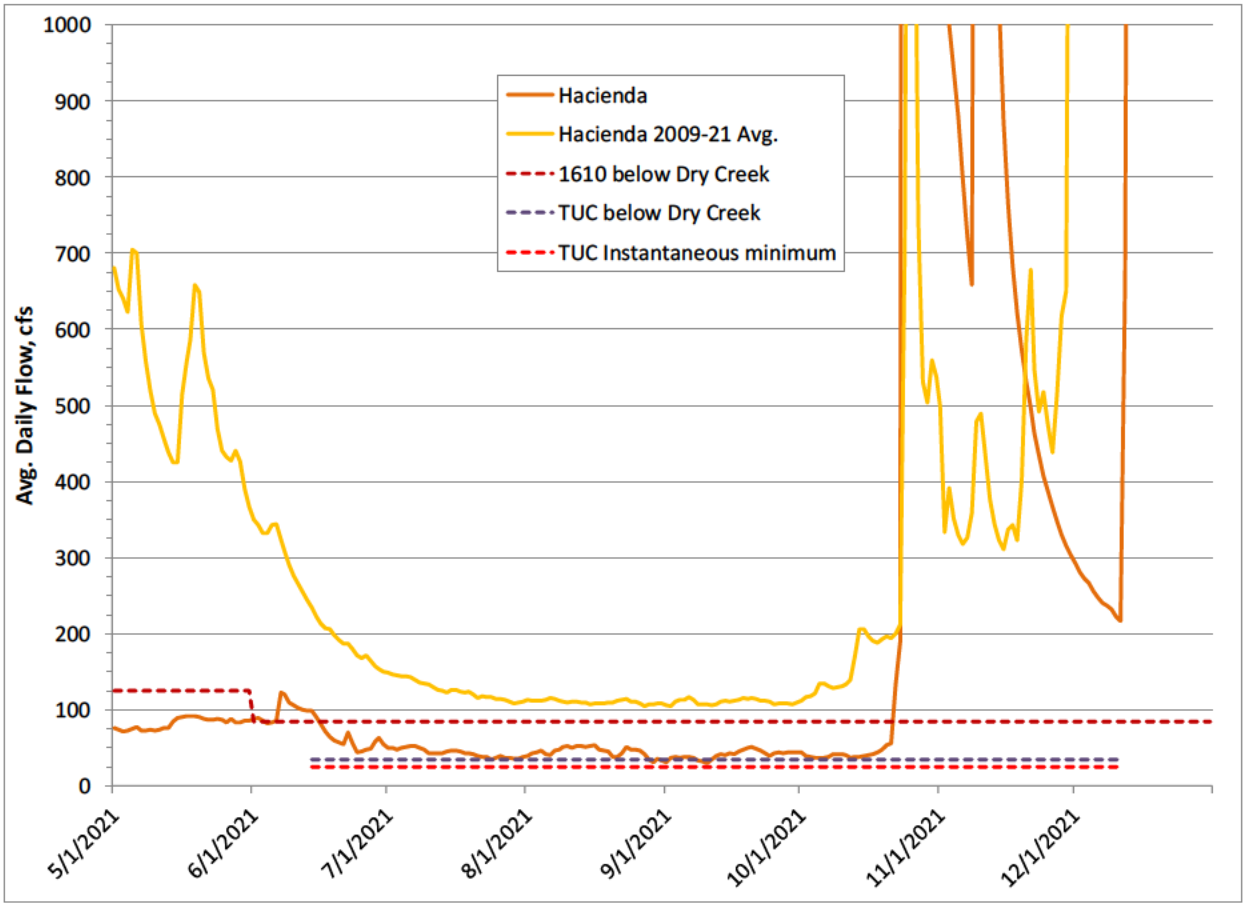


Figure 2-4. 2021 average daily flows in the lower Russian River as measured at USGS gages below the Dry Creek confluence in cubic feet per second. Flow rates are preliminary and subject to final revision by USGS.

3.0 Water Quality Monitoring

Water quality data was collected to monitor TUC flows for potential effects to recreation and available aquatic habitat for salmonids. The data was used to supplement existing data to provide a more complete basis for analyzing spatial and temporal water quality trends due to Biological Opinion-stipulated changes in river flow and estuary management.

3.1 Mainstem Russian River Water Quality Monitoring

The North Coast Regional Water Quality Control Board (NCRWQCB), Sonoma County Department of Health Services (DHS), Sonoma Water, and Sonoma County Department of Parks and Recreation (Regional Parks) formed a workgroup to coordinate a monitoring approach for assessing cyanobacteria in the Russian River during the summer of 2016. Sonoma Water staff continue to consult and coordinate with NCRWQCB staff regarding monitoring activities related to the workgroup. As a result of ongoing consultation, Sonoma Water has made modifications to their existing Water Quality Monitoring Plan for the Russian River Estuary Management Project to include mainstem freshwater monitoring for the purpose of assisting in the evaluation of cyanobacteria harmful algal bloom (cyanoHAB) conditions and the risk of co-factors contributing to biostimulatory conditions and nuisance blooms (e.g., flow, temperature, nutrient, etc.).

In 2021, Sonoma Water staff added East Fork Russian River and Lake Mendocino monitoring to their overall TUCP monitoring effort to provide a better understanding of lake limnology and potential effects on water quality in the upper Russian River mainstem.

In 2021, the Sonoma County DHS conducted weekly bacteriological sampling at ten (10) beaches with recreational activities involving the greatest body contact on the Russian River between Cloverdale and Patterson Point. Sonoma Water staff conducted vertical profiling and nutrient grab sampling at three (depths) in Lake Mendocino and conducted nutrient grab sampling at two (2) stations in the East Fork Russian River located above and below the lake. Sonoma Water also conducted mainstem sampling for nutrients at five (5) sites, and algae and cyanobacteria at four (4) sites, along the Russian River between Hopland and Patterson Point to support NCRWQCB analysis and evaluation of water quality data relating to biostimulatory conditions and cyanotoxins. In addition, Sonoma Water continued to conduct long-term water quality monitoring and weekly grab sampling for nutrients, bacteria, and algae in the middle and upper reaches of the Russian River Estuary and the upper extent of inundation and backwatering during lagoon formation, between Patty's Rock in Jenner and Vacation Beach in Guerneville, including in two tributaries.

3.1.1 Sonoma County DHS Seasonal Mainstem Bacterial Sampling (Beach Sampling)

The Sonoma County DHS conducts seasonal bacteriological sampling to monitor levels of pathogens at ten (10) Russian River beaches with recreational activities involving the greatest body contact. Results are used by the Sonoma County DHS to determine whether or not bacteria levels fall within State guidelines. The 2021 Sonoma County DHS seasonal beach sampling locations consisted of: Cloverdale River Park; Del Rio Woods Beach; Camp Rose Beach; Healdsburg Veterans Memorial Beach; Steelhead Beach; Forestville Access Beach; Sunset Beach; Johnson's Beach; Monte Rio Beach; and Patterson Point. Bacteriological samples were generally collected weekly beginning 17 May and continued until 20 September. The samples were analyzed using the Colilert quantitray MPN method for Total Coliform and *E. coli*.

The California Department of Public Health (CDPH) developed the "Draft Guidance for Fresh Water Beaches," which describes bacteria levels that, if exceeded, may require posted warning signs in order to protect public health (CDPH, 2011). The CDPH draft guideline for single sample maximum (SSM) concentrations is: 10,000 most probable numbers (MPN) per 100 milliliters (mL) for Total Coliform; 235 MPN per 100 mL for *E. coli*; and 61 MPN per 100 mL for *Enterococcus*. In 2012, the United States Environmental Protection Agency (EPA) issued Clean Water Act (CWA) §304(a) Recreational Water Quality Criteria (RWQC) for States (EPA, 2012). The RWQC recommends using two criteria for assessing water quality relating to *E. coli* and *Enterococcus*: the geometric mean (GM) of the dataset, and changing the single sample maximum (SSM) to a Statistical Threshold Value (STV) representing the 75th percentile of an acceptable water-quality distribution. The EPA recommends using STV values for potential recreational beach posting. However, EPA also suggests that states may use a (Beach Action Value) BAV as a more conservative, precautionary tool for making beach notification decisions. The BAV for *E. coli*, which is consistent with the CDPH SSM value, is not a component of EPA's recommended criteria, but a tool that states may choose to use as a "do not exceed" value for beach notification purposes (such as advisories). Exceedances of the CDPH SSM value for Total Coliform and the EPA BAV value for *E. coli* are highlighted in Table 3-1. It must be emphasized that these are draft guidelines and

criteria, not adopted standards, and are therefore both subject to change (if it is determined that the guidelines and/or criteria are not accurate indicators) and are not currently enforceable.

There were several exceedances throughout the season at Cloverdale River Park of the SSM for Total Coliform. There were also three (3) exceedances each of the Total Coliform SSM at the Johnson's Beach and Monte Rio Beach stations. There was one (1) exceedance of the BAV for *E. coli* that occurred at Camp Rose Beach on 20 September. There were three (3) exceedances of the BAV for *E. coli* that occurred at Johnson's Beach that generally corresponded with the timing of the exceedances of the Total Coliform SSM. Finally, there were four (4) exceedances of the BAV for *E. coli* that occurred at Monte Rio Beach that also generally corresponded with the timing of the exceedances of the Total Coliform SSM. Results from the sampling program were reported by the Sonoma County DHS at their website and on the Sonoma County DHS Beach Sampling Hotline (Sonoma County DHS, 2021a). The 2021 seasonal results are shown in Table 3-1 and in Figures 3-1 and 3-2.

Table 3-1. Sonoma County DHS 2021 Seasonal Mainstem Bacteria Sampling Results (Sonoma County DHS, 2021a).

Date Sampled	Cloverdale River Park		Del Rio Woods Beach		Camp Rose Beach		Healdsburg Veterans		Steelhead Beach		Forestville Access Beach		Sunset Beach		Johnson's Beach		Monte Rio Beach		Patterson Point	
	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC
17-May-21	15531*	52	1,414	10	932	20	860	52	457	<10	789	<10	813	31	670	52	2,014	108	1,664	41
18-May-21	>24196	31																		
24-May-21	8,164	10	521	<10	1,071	<10	410	10	420	31	959	<10	798	20	512	<10	906	41	857	20
1-Jun-21	12033*	41	1,374	169	2,480	20	1,211	10	504	20	860	30	1,014	20	2,909	10	2,481	41	1,076	<10
3-Jun-21	11,199	10																		
7-Jun-21	10,462	20	2,500	20	2,481	31	2,014	195	546	31	910	10	1,789	20	1,918	10	703	31	959	<10
14-Jun-21	11,199	52	2,755	63	5,794	41	2,909	63	616	20	820	20	1,500	52	1,455	20	1,607	20	1,430	30
21-Jun-21	14,136	10	1,860	41	3,448	156	1,153	52	934	30	3,448	41	1,515	20	8,664	218	11199*	1782*	1,785	<10
22-Jun-21																	2,909	20		
28-Jun-21	4,884	<10	1,553	10	2,909	20	1,296	75	1,674	20	4,106	31	2,909	52	6,488	110	4,106	763*	1,354	<10
30-Jun-21																	12,997	9,804		
6-Jul-21	7,701	31	2,247	10	2,909	<10	2,359	20	2,046	<10	3,873	10	4,106	41	5,794	30	1,725	20	1,782	10
12-Jul-21	15,531	10	1,842	72	4,611	20	2,613	10	1,785	30	6,131	31	2,613	31	7,701	110	1,314	10	1,850	61
19-Jul-21	7,270*	20	1,597	<10	1,664	<10	882	10	1,250	20	2,755	<10	2,359	20	9,208	<10	2,613	132	2,187	<10
20-Jul-21	4,352	85																		
26-Jul-21	15,531	<10	1,576	10	2,603	<10	1,274	10	1,515	<10	4,106	10	1,722	20	2,247	<10	2,098	31	1,467	<10
2-Aug-21	9,208	62	1,529	10	2,909	<10	886	10	1,246	31	3,255	52	1,616	<10	7,270	364*	1,607	233	1,789	10
3-Aug-21															24,196	388				
9-Aug-21	8,164	<10	1,483	20	2,755	10	1,789	189	1,664	10	3,255	10	2,310	31	2,046	41	1,989	20	1,785	98
16-Aug-21	19,863	52	2,143	<10	2,909	<10	958	<10	2,359	20	3,873	31	4,106	31	3,076	216	1,439	20	908	20
23-Aug-21	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
25-Aug-21	12,997	75	1,989	10	1,850	20	2,098	<10	1,153	10	1,860	<10	1,725	10	1,223	10	1,515	41	1,376	20
7-Sep-21	12,997	52	1,935	10	1,785	10	2,098	31	2,282	20	4,352	199	2,603	20	1,314	<10	1,236	10	2,851	<10
13-Sep-21	9,208	<10	1,414	10	3,873	10	2,282	20	1,539	20	1,872	20	2,755	20	>24,196	265	1,050	<10	1,333	52
20-Sep-21	3,873	20	1,722	31	5,475	1,274	1,565	75	712	20	2,247	20	1,529	10	11,199	110	>24,196	246	1,565	<10

* Resample conducted for confirmatory test.
** Resample conducted for lab accident.

GREEN indicates the beach is open - bacterial level results are within State guidelines.
YELLOW indicates the beach is open, but swimming is not advised - bacterial level results exceed State guidelines.
RED indicates the beach is closed - bacterial level results exceed State guidelines and are associated with a known or suspected human sewage release.

Recommended California Department of Public Health (CDPH) Draft Guidance - Single Sample Maximum (SSM):
Total Coliform (SSM): 10,000 per 100ml
Environmental Protection Agency (EPA) Recreational Water Quality Criteria - Beach Action Value (BAV):
E. coli (BAV): 235 per 100 ml
(Beach notification is recommended when indicator organisms exceed the SSM for Total Coliform or the BAV for *E. coli*) - Indicated by yellow or red text

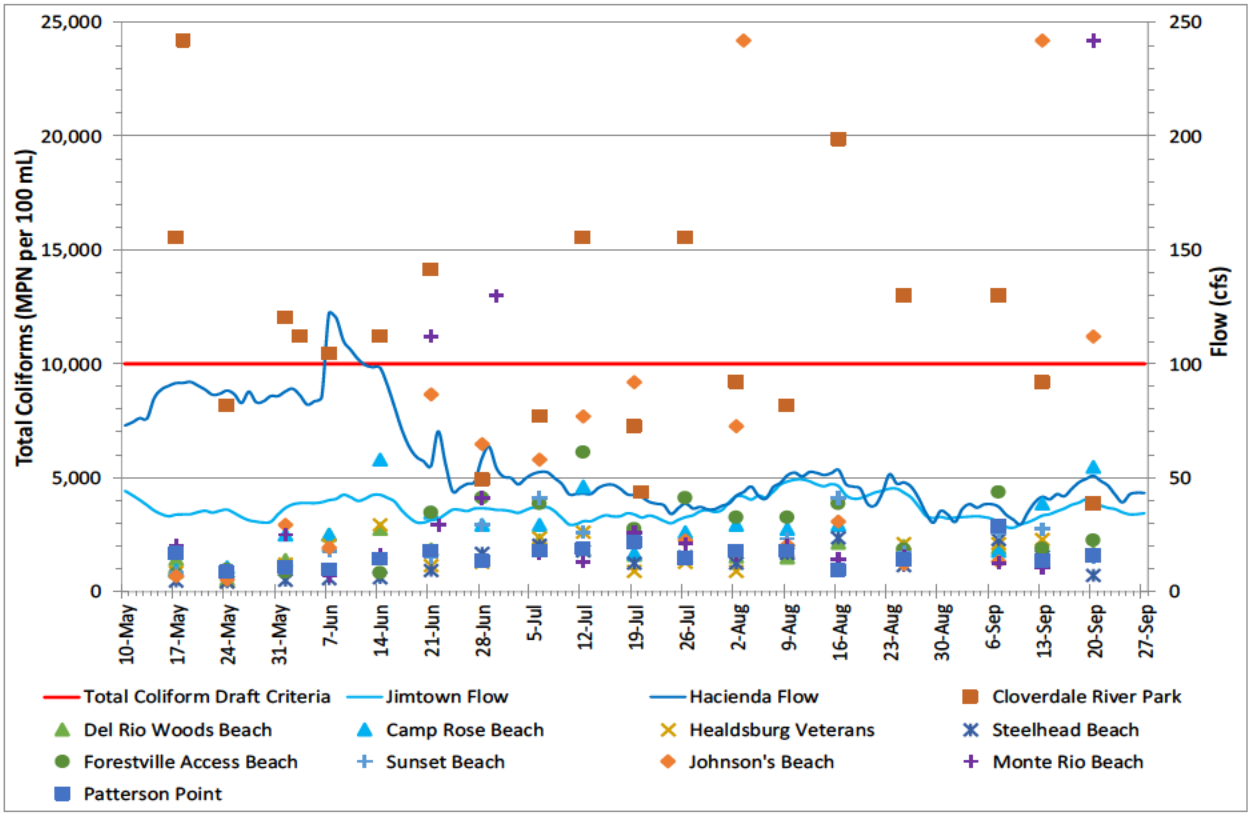


Figure 3-1. Sonoma County DHS 2021 Seasonal Mainstem Russian River Bacteria Sample Results for Total Coliform. Flow rates are preliminary and subject to final revision by USGS.

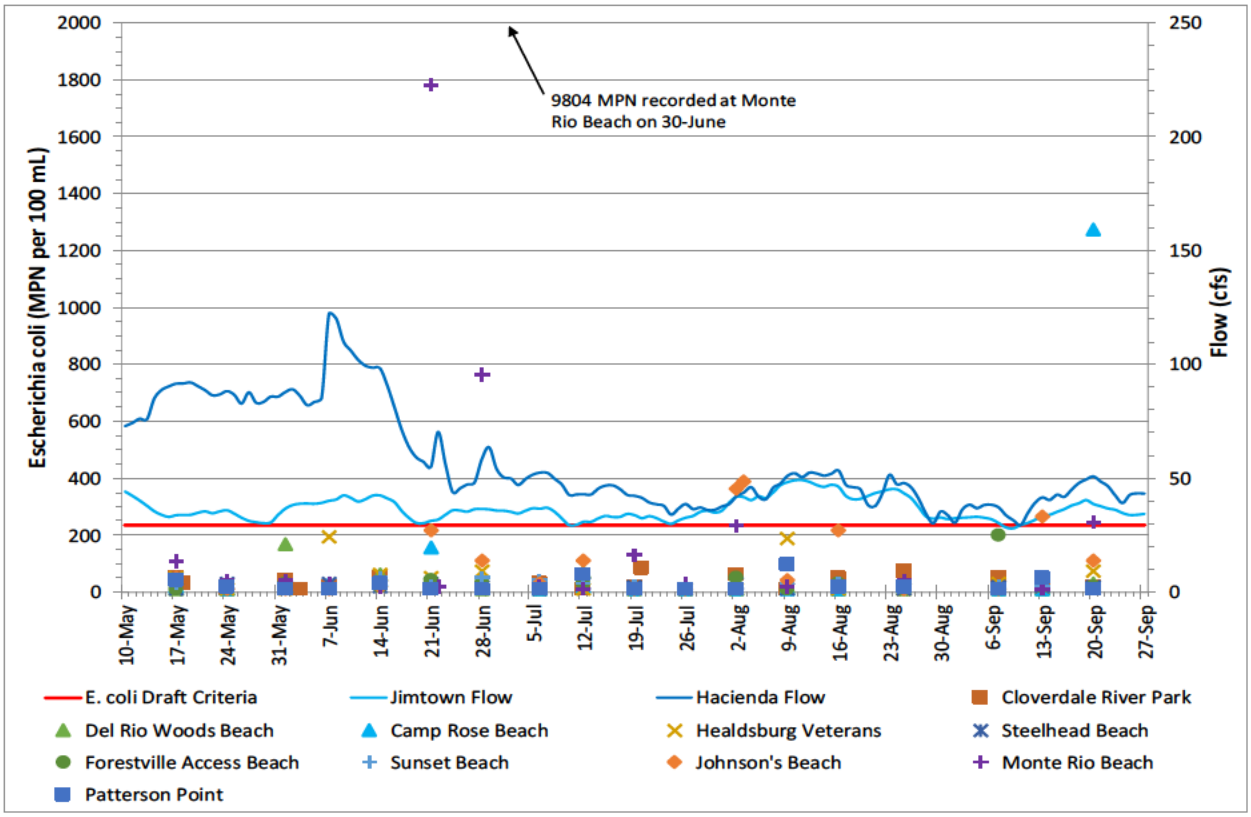


Figure 3-2. Sonoma County DHS 2021 Seasonal Mainstem Russian River Bacteria Sample Results for *E. coli*. Flow rates are preliminary and subject to final revision by USGS.

3.1.2 Sonoma County DHS Seasonal Mainstem Cyanotoxin Sampling (Beach Sampling)

The Sonoma County DHS did not conduct seasonal cyanotoxin sampling in 2021 (Sonoma County DHS, 2021b).

3.1.3 Sonoma Water Seasonal Lake Mendocino and East Fork Russian River Monitoring

Lake Mendocino Vertical Profiles

In 2021, Sonoma Water staff collected vertical profiles at Lake Mendocino near the dam using a datasonde. Vertical profiles were collected for temperature, dissolved oxygen, and turbidity between March and November as weather and access allowed, including biweekly monitoring from April through October. Vertical profiling was conducted in large part to track the timing and strength of stratification of the lake into a three layered system including; a colder, generally anoxic bottom layer known as the hypolimnion, a transitional middle layer known as the metalimnion where temperatures and dissolved oxygen rapidly increase, and a warm oxygenated layer on the surface known as the epilimnion (Figures 3-3 and 3-4). Water temperature and density differences typically form between the bottom and top layer in the spring as surface temperatures begin to rise with increasing air temperatures, creating a stratified lake system. Stratification of the lake typically begins to break down in the fall as surface temperatures decrease, diminishing the density gradient between layers, and wind driven events contribute to the mixing of the lake. Stratification of the lake was observed to begin in early April and break down into a mixed system in September. Turbidity values were generally observed to be higher in the hypolimnion than in the epilimnion (Figure 3-5).

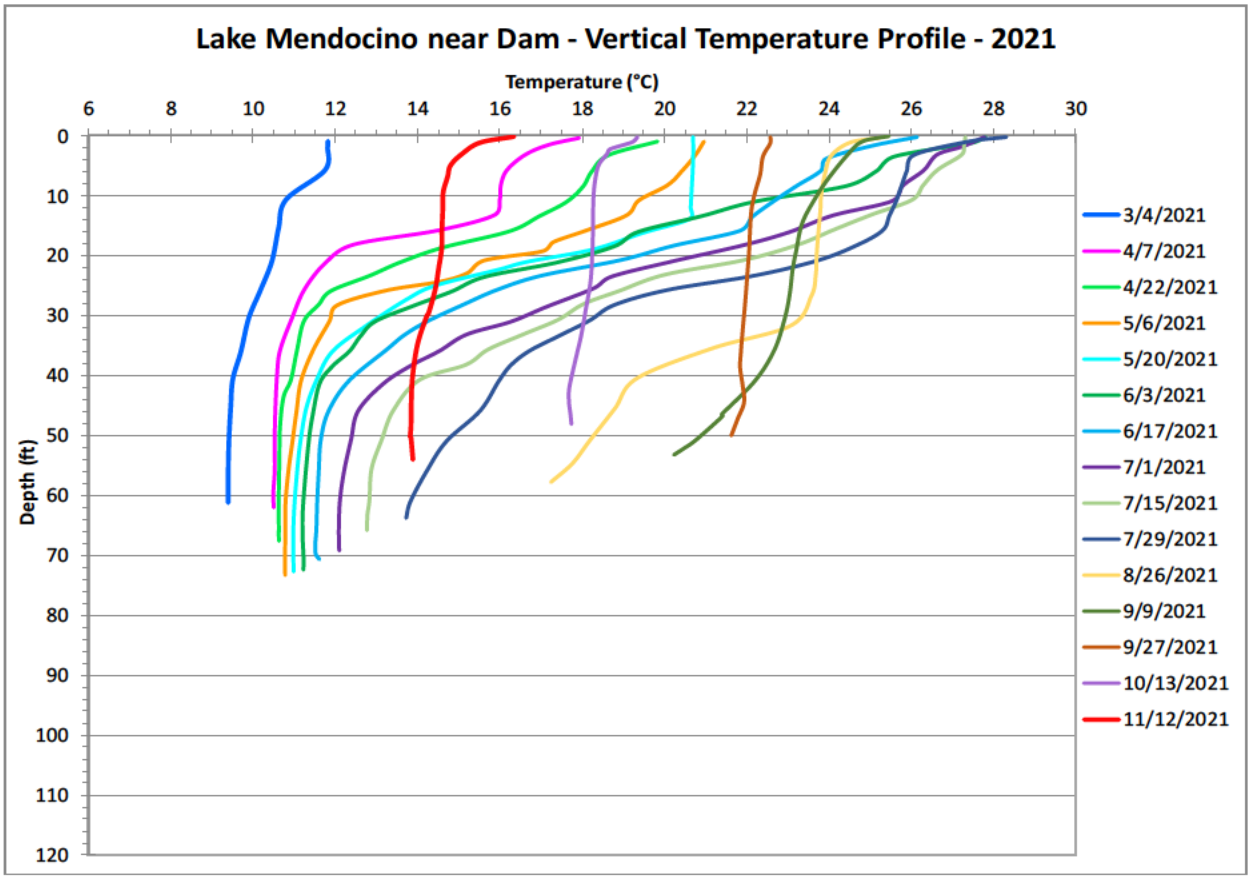


Figure 3-3. Sonoma Water 2021 Vertical Temperature Profiles of Lake Mendocino near the Dam.

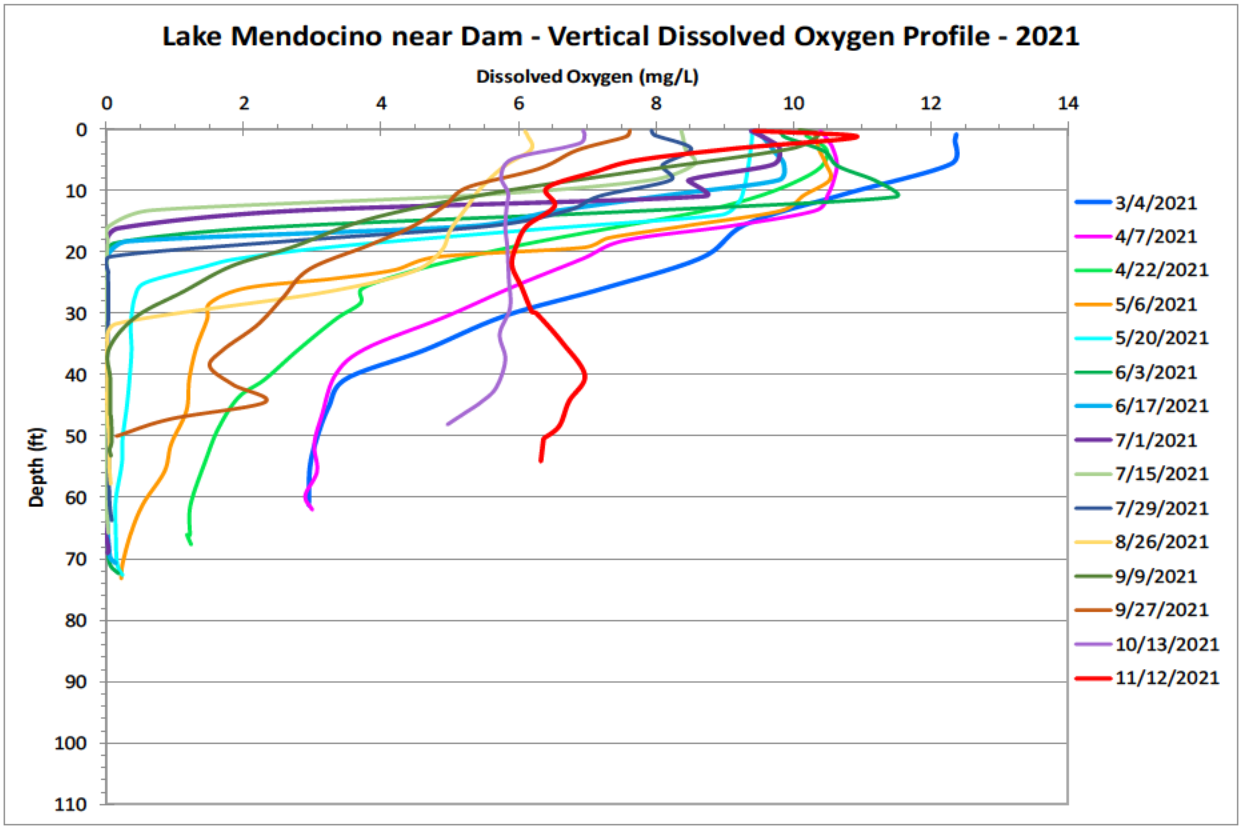


Figure 3-4. Sonoma Water 2021 Vertical Dissolved Oxygen Profiles of Lake Mendocino near the Dam.

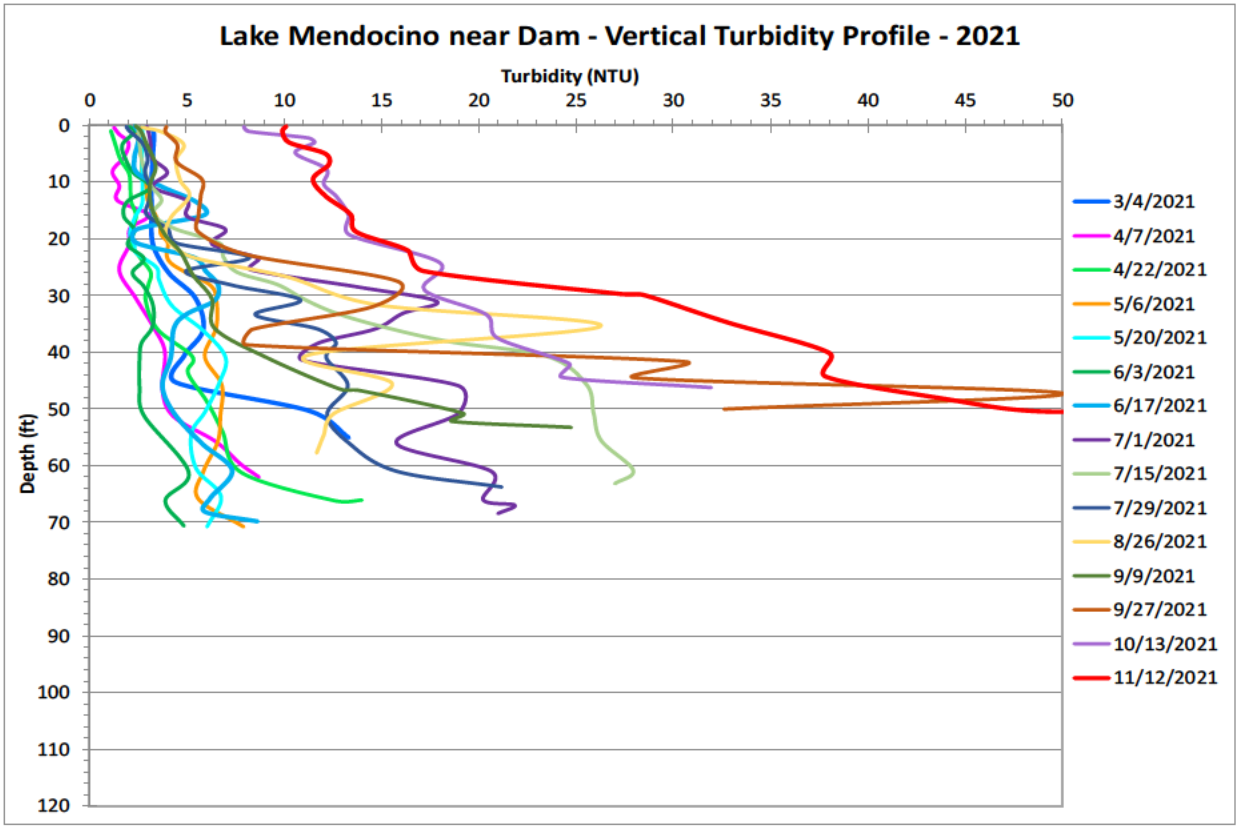


Figure 3-5. Water Vertical 2021 Turbidity Profiles of Lake Mendocino near the Dam.

Lake Mendocino and East Fork Russian River Grab Sampling

Sonoma Water staff generally conducted nutrient grab sampling on a bi-weekly basis during the terms of the Order at three depths in Lake Mendocino including the bottom (hypolimnion) layer, the middle transitional (metalimnion) layer, and the surface (Epilimnion) layer. However, sampling frequency at Lake Mendocino was affected by low water levels that restricted access beginning in the late summer through December. Nutrient grab samples were also generally collected bi-weekly at the USGS East Fork near Calpella station (East Fork Calpella) located upstream of Lake Mendocino, and the East Fork Russian River below Dam station (East Fork below Dam) located approximately 1/3 mile downstream of Lake Mendocino.

All grab samples were analyzed for nutrients including: total organic nitrogen, ammonia, unionized ammonia, nitrate, nitrite, total Kjeldahl nitrogen, total nitrogen, total phosphorus, and total orthophosphate. Samples were also analyzed for total dissolved solids, total and dissolved organic carbon, turbidity, and *chlorophyll a,* which is a measurable parameter of algal growth that can be tied to excessive nutrient concentrations and reflect a biostimulatory response. Grab samples were submitted to Alpha Analytical Labs in Ukiah for analysis.

The sampling results for total nitrogen, total phosphorus, turbidity, and *chlorophyll a* are discussed below and summarized in Tables 3-2 through 3-4 and Figures 3-6 through 3-9.

The United States Environmental Protection Agency (EPA) has established section 304(a) nutrient criteria across 14 major ecoregions of the United States. The Russian River is located in Aggregate Nutrient Ecoregion III (EPA, 2021).

Highlighted values for stations located on the East Fork of the Russian River indicate those values exceeding EPA recommended ambient water quality criteria for "Rivers and Streams in Nutrient Ecoregion III" (EPA, 2000). Lab analysis constraints in 2021 resulted in a method detection limit (MDL) for *chlorophyll a*, which is the level of accuracy for a given lab analysis to provide a valid concentration of a given constituent, that was higher than the EPA criteria for exceedances for *chlorophyll a* in rivers and streams. Put simply, the EPA exceedance criteria for *chlorophyll a* in rivers and streams is approximately 0.0018 mg/L, whereas the lab analysis MDL for *chlorophyll a* was 0.0030 mg/L. Therefore, some lab results for *chlorophyll a* that are listed as non-detect (ND) could potentially have concentrations above the criteria and below the MDL, which in turn could result in an under representation of the actual number of exceedances observed. However, for reporting purposes, only those exceedances that are quantified will be included in the summation.

Highlighted values for stations located in Lake Mendocino indicate those values exceeding EPA recommended ambient water quality criteria for "Lakes and Reservoirs in Nutrient Ecoregion III" (EPA, 2001). The EPA criteria for *chlorophyll a* in lakes and reservoirs is 0.0034 mg/L, which is above the lab MDL for *chlorophyll a*, therefore, exceedance values are accurately represented for Lake Mendocino results.

Finally, it must be emphasized that the EPA criteria are not adopted standards and are therefore both subject to change (if it is determined that the guidelines or criteria are not accurate indicators) and are not currently enforceable. Sampling results for other nutrient components, dissolved and total organic

carbon, and total dissolved solids are included in the tables; however, a discussion of these constituents is not included in this report.

Total Nitrogen

The EPA desired goal for total nitrogen in Aggregate Ecoregion III is 0.38 mg/L for rivers and streams (EPA, 2000). The EPA desired goal for total nitrogen in Aggregate Ecoregion III is 0.40 mg/L for lakes or reservoirs (EPA, 2001).

Calculating total nitrogen values requires the summation of the different components of total nitrogen: organic and ammoniacal nitrogen (referred to as Total Kjeldahl Nitrogen or TKN), and nitrate/nitrite nitrogen. The EPA criteria for total nitrogen for rivers and streams was exceeded fourteen (14) times, representing 43.8% of the total samples collected (14 out of 32) at the upper and lower East Fork Russian River stations (Tables 3-2 and 3-4, and Figure 3-6). The EPA criteria for lakes and reservoirs was exceeded three (3) times, representing 11.1% of the total samples collected (3 out of 27) in Lake Mendocino during the monitoring effort (Table 3-3).

The East Fork Calpella station had five (5) exceedances of the total nitrogen criteria out of 16 samples collected (31.3%), under flows that ranged from 10.1 cfs to 84.3 cfs (Table 3-2 and Figure 3-6). The maximum concentration measured 0.80 mg/L on 12 November with a flow of 84.3 cfs (Table 3-2). The minimum concentration was 0.05 mg/L, which occurred on 26 August with a flow of 10.9 cfs. Nitrogen values were observed to generally decline in the spring at Calpella then increase through the fall. However, concentrations were also observed to fluctuate during the spring and summer months.

Table 3-2. Sonoma Water 2021 Seasonal Grab Sampling Results at East Fork Russian River near Calpella.

East Fork Russian River near Calpella	Time	Temperature	pH	Total Organic Nitrogen	Ammonia as N	Ammonia as N Unionized	Nitrate as N	Nitrite as N	Total Kjeldahl Nitrogen	Total Nitrogen**	Phosphorus, Total	Total Orthophosphate	Dissolved Organic Carbon	Total Organic Carbon	Total Dissolved Solids	Turbidity	Chlorophyll-a	USGS 11461500 RR Near Calpella***
MDL*				0.20	0.10	0.00010	0.040	0.050	0.20	0.50	0.010	0.030	0.600	0.300	10	0.10	0.0030	Flow Rate****
Date		°C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	(cfs)
3/4/2021	13:20	9.4	7.8	0.33	ND	ND	0.15	ND	ND	**0.48**	0.018	0.030	1.72	1.99	140	1.2	ND	59.8
4/7/2021	10:50	12.9	7.6	ND	ND	ND	0.085	ND	ND	0.09	0.015	ND	1.48	1.89	120	0.64	ND	55.4
4/22/2021	12:50	14.9	7.6	ND	ND	ND	0.075	ND	ND	0.08	**0.027**	0.053	1.75	2.11	130	1.0	ND	46.0
5/6/2021	14:00	17.7	8.3	0.26	ND	ND	0.14	ND	0.26	**0.40**	**0.047**	0.10	2.48	3.06	150	1.3	ND	28.0
5/20/2021	11:30	15.3	8.1	0.18	ND	ND	0.092	ND	ND	0.27	**0.040**	0.077	2.04	2.58	150	0.94	ND	27.5
6/3/2021	14:10	22.9	8.3	0.18	ND	ND	0.099	ND	ND	0.28	**0.066**	0.15	2.49	2.54	140	0.38	ND	19.5
6/17/2021	13:50	21.9	8.2	ND	ND	ND	0.093	ND	ND	0.09	**0.059**	0.13	1.92	2.33	160	0.97	ND	12.0
7/1/2021	14:00	24.2	8.1	0.18	ND	ND	0.16	ND	ND	0.34	**0.086**	0.21	2.07	2.62	170	0.68	**0.0051**	13.3
7/15/2021	14:10	24.1	8.2	0.26	ND	ND	0.095	ND	0.26	0.36	**0.087**	0.20	2.16	2.67	170	0.34	ND	11.5
7/29/2021	14:00	24.4	8.2	0.18	ND	ND	0.071	ND	ND	0.25	**0.067**	0.16	2.39	2.62	170	0.41	ND	8.84
8/12/2021	12:40	22.2	8.1	ND	ND	ND	0.15	ND	ND	0.33	**0.071**	0.16	2.15	2.70	170	0.94	ND	9.30
8/26/2021	13:50	20.2	8.1	ND	ND	0.0034	0.050	ND	ND	0.05	**0.070**	0.15	1.93	2.36	170	1.3	ND	10.9
9/9/2021	14:00	21.1	8.0	0.26	ND	ND	0.066	ND	0.26	0.33	**0.064**	0.16	2.62	3.44	160	1.5	ND	15.6
9/27/2021	13:10	17.0	7.9	0.26	ND	ND	0.18	ND	0.26	**0.44**	**0.055**	0.12	2.32	2.78	160	1.0	ND	16.3
10/13/2021	13:10	12.4	7.9	0.44	ND	ND	0.083	ND	0.44	**0.52**	**0.043**	0.094	1.78	2.17	170	0.96	**0.0075**	10.1
11/12/2021	14:00	13.1	7.7	0.39	ND	ND	0.41	ND	0.38	**0.80**	**0.049**	0.098	4.15	4.85	140	**5.2**	ND	84.3

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revision.

** Total nitrogen is calculated through the summation of the different components of total nitrogen: organic and ammoniacal nitrogen (together referred to as Total Kjeldahl Nitrogen or TKN) and nitrate/nitrite nitrogen.

*** United States Geological Survey (USGS) Continuous-Record Gaging Station.

**** Flow rates are preliminary and subject to final revision by USGS.

Recommended EPA Criteria based on Aggregate Ecoregion III

Total Phosporus: 0.02188 mg/L (21.88 ug/L) ≈ 0.022 mg/L

Chlorophyll a: 0.00178 mg/L (1.78 ug/L) ≈ 0.0018 mg/L

Total Nitrogen: 0.38 mg/L

Turbidity: 2.34 FTU/NTU

The Lake Mendocino epilimnion had two (2) exceedances of the total nitrogen criteria out of nine (9) samples collected (22.2%) at a depth of 5 feet (Table 3-3). The maximum concentration measured 0.44 mg/L, which occurred twice on 4 March and on 17 June (Table 3-3 and Figure 3-6). The minimum concentration was 0.06 mg/L, which occurred on 1 July at a depth of 5 feet.

Table 3-3. Sonoma Water 2021 Seasonal Grab Sampling Results at Lake Mendocino.

Lake Mendocino Epilimnion	Time	Temperature	pH	Total Organic Nitrogen	Ammonia as N	Ammonia as N Unionized	Nitrate as N	Nitrite as N	Total Kjeldahl Nitrogen	Total Nitrogen**	Phosphorus, Total	Total Orthophosphate	Dissolved Organic Carbon	Total Organic Carbon	Total Dissolved Solids	Turbidity	Chlorophyll-a	Depth of Sample***
MDL*				0.20	0.10	0.00010	0.040	0.050	0.20	0.50	0.010	0.030	0.600	0.300	10	0.10	0.0030	
Date		°C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	feet
3/4/2021	15:30	11.8	8.2	0.44	ND	ND	ND	ND	0.44	**0.44**	**0.030**	ND	2.46	2.63	220	4.8	**0.017**	5
4/7/2021	13:30	16.0	8.6	0.26	ND	ND	0.046	ND	0.26	0.31	**0.029**	ND	2.24	2.54	130	3.2	**0.0056**	5
4/22/2021	14:40	18.2	8.7	0.26	ND	ND	ND	ND	0.26	0.26	**0.031**	ND	2.41	2.86	140	2.9	**0.0037**	5
5/6/2021	13:20	20.5	8.9	0.26	ND	ND	ND	ND	0.26	0.26	**0.027**	ND	2.76	3.53	130	3.2	**0.0051**	5
6/3/2021	12:50	25.2	9.0	0.35	ND	ND	ND	ND	0.35	0.35	**0.025**	ND	2.82	3.47	140	3.3	**0.0040**	5
6/17/2021	12:40	23.8	8.9	0.44	ND	ND	ND	ND	0.44	**0.44**	**0.030**	ND	3.09	3.71	140	4.0	**0.0067**	5
7/1/2021	12:40	26.3	8.9	ND	ND	ND	0.057	ND	ND	0.06	**0.031**	ND	3.00	3.75	150	4.5	**0.011**	5
7/15/2021	13:00	26.7	8.9	0.35	ND	ND	ND	ND	0.35	0.38	**0.034**	ND	2.88	3.33	150	1.9	**0.012**	5
7/29/2021	12:50	25.9	8.6	0.26	ND	ND	ND	ND	0.26	0.26	**0.039**	ND	3.09	3.12	160	4.0	**0.010**	5

Lake Mendocino Metalimnion	Time	Temperature	pH	Total Organic Nitrogen	Ammonia as N	Ammonia as N Unionized	Nitrate as N	Nitrite as N	Total Kjeldahl Nitrogen	Total Nitrogen**	Phosphorus, Total	Total Orthophosphate	Dissolved Organic Carbon	Total Organic Carbon	Total Dissolved Solids	Turbidity	Chlorophyll-a	Depth of Sample
MDL*				0.20	0.10	0.00010	0.040	0.050	0.20	0.50	0.010	0.030	0.600	0.300	10	0.10	0.0030	
Date		°C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	feet
3/4/2021	15:20	10.2	7.2	0.26	ND	ND	ND	ND	0.26	0.26	**0.026**	ND	2.20	2.52	120	5.5	**0.0083**	25
4/7/2021	13:20	14.5	7.7	0.35	ND	ND	0.045	ND	0.35	0.38	**0.031**	ND	2.19	2.65	120	3.1	**0.0035**	15
4/22/2021	14:30	13.6	7.0	0.26	ND	ND	ND	ND	0.26	0.26	**0.020**	ND	2.00	2.52	130	3.3	**0.0040**	20
5/6/2021	13:10	15.6	7.7	0.26	ND	ND	ND	ND	0.26	0.26	**0.022**	ND	1.95	2.66	130	7.0	**0.0067**	20
6/3/2021	12:40	19.4	7.6	0.35	ND	ND	ND	ND	0.35	0.38	**0.033**	ND	2.40	2.92	1400	3.6	**0.015**	15
6/17/2021	12:30	18.9	7.3	0.26	ND	ND	ND	ND	0.26	0.26	**0.028**	ND	2.54	3.05	150	4.6	**0.0043**	20
7/1/2021	12:30	20.2	7.3	ND	ND	ND	0.058	ND	ND	0.06	**0.033**	ND	2.17	3.18	140	6.2	**0.0096**	20
7/15/2021	12:50	20.0	7.3	0.26	ND	ND	ND	ND	0.26	0.26	**0.040**	ND	2.33	2.95	140	5.6	**0.0069**	22.5
7/29/2021	12:40	20.1	7.2	0.26	ND	ND	ND	ND	0.26	0.26	**0.049**	0.058	2.58	3.00	160	10	**0.0035**	25

Lake Mendocino Hypolimnion	Time	Temperature	pH	Total Organic Nitrogen	Ammonia as N	Ammonia as N Unionized	Nitrate as N	Nitrite as N	Total Kjeldahl Nitrogen	Total Nitrogen**	Phosphorus, Total	Total Orthophosphate	Dissolved Organic Carbon	Total Organic Carbon	Total Dissolved Solids	Turbidity	Chlorophyll-a	Depth of Sample
MDL*				0.20	0.10	0.00010	0.040	0.050	0.20	0.50	0.010	0.030	0.600	0.300	10	0.10	0.0030	
Date		°C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	feet
3/4/2021	15:10	9.4	7.0	0.26	ND	ND	ND	ND	0.26	0.26	**0.023**	ND	2.04	2.49	140	5.5	**0.0061**	50
4/7/2021	13:10	10.5	7.0	0.26	ND	ND	0.063	ND	0.26	0.32	**0.025**	ND	1.95	2.46	130	6.3	0.0032	50
4/22/2021	14:20	10.6	6.9	ND	ND	ND	0.048	ND	ND	0.05	**0.027**	0.033	1.95	2.40	130	7.7	ND	60
5/6/2021	13:00	10.8	7.1	0.18	ND	ND	0.060	ND	ND	0.24	**0.036**	0.051	1.94	2.51	140	8.4	ND	60
6/3/2021	12:30	11.2	6.7	0.26	ND	ND	ND	ND	0.26	0.26	**0.068**	0.12	1.96	2.57	140	4.8	ND	60
6/17/2021	12:20	11.6	6.9	0.26	ND	ND	ND	ND	0.26	0.26	**0.10**	0.13	2.14	2.61	150	8.8	ND	60
7/1/2021	12:20	12.1	7.1	0.44	ND	ND	0.058	ND	0.44	**0.50**	**0.14**	0.20	2.14	2.72	140	26	**0.0040**	60
7/15/2021	12:40	13.1	6.9	0.35	ND	ND	ND	ND	0.35	0.35	**0.15**	0.037	1.86	2.59	140	28	**0.0045**	50
7/29/2021	12:30	14.7	7.2	0.26	ND	ND	ND	ND	0.26	0.26	**0.11**	0.038	2.18	2.57	150	20	0.0032	50

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revision.

** Total nitrogen is calculated through the summation of the different components of total nitrogen: organic and ammoniacal nitrogen (together referred to as Total Kjeldahl Nitrogen or TKN) and nitrate/nitrite nitrogen.

***

****

Recommended EPA Criteria based on Aggregate Ecoregion III

Total Phosporus: 0.017 mg/L (17.00 ug/L) Chlorophyll a: 0.0034 mg/L (3.40 ug/L)

Total Nitrogen: 0.40 mg/L

The Lake Mendocino metalimnion did not have any exceedances of the total nitrogen criteria out of 9 samples collected (0%) at depths ranging from 15 to 25 feet (Table 3-3). The maximum seasonal value measured 0.38 mg/L, which occurred twice on 7 April and 3 June at a depth of 15 feet (Table 3-3 and Figure 3-6). The minimum concentration was 0.06 mg/L, which occurred on 1 July at a depth of 20 feet.

The Lake Mendocino hypolimnion had one (1) exceedance of the total nitrogen criteria out of 9 samples collected (11.1%) at depths ranging from 50 to 60 feet (Table 3-3). The maximum seasonal value measured 0.50 mg/L on 1 July at a depth of 60 feet (Table 3-3 and Figure 3-6). The minimum concentration was 0.05 mg/L, which occurred on 22 April at a depth of 60 feet.

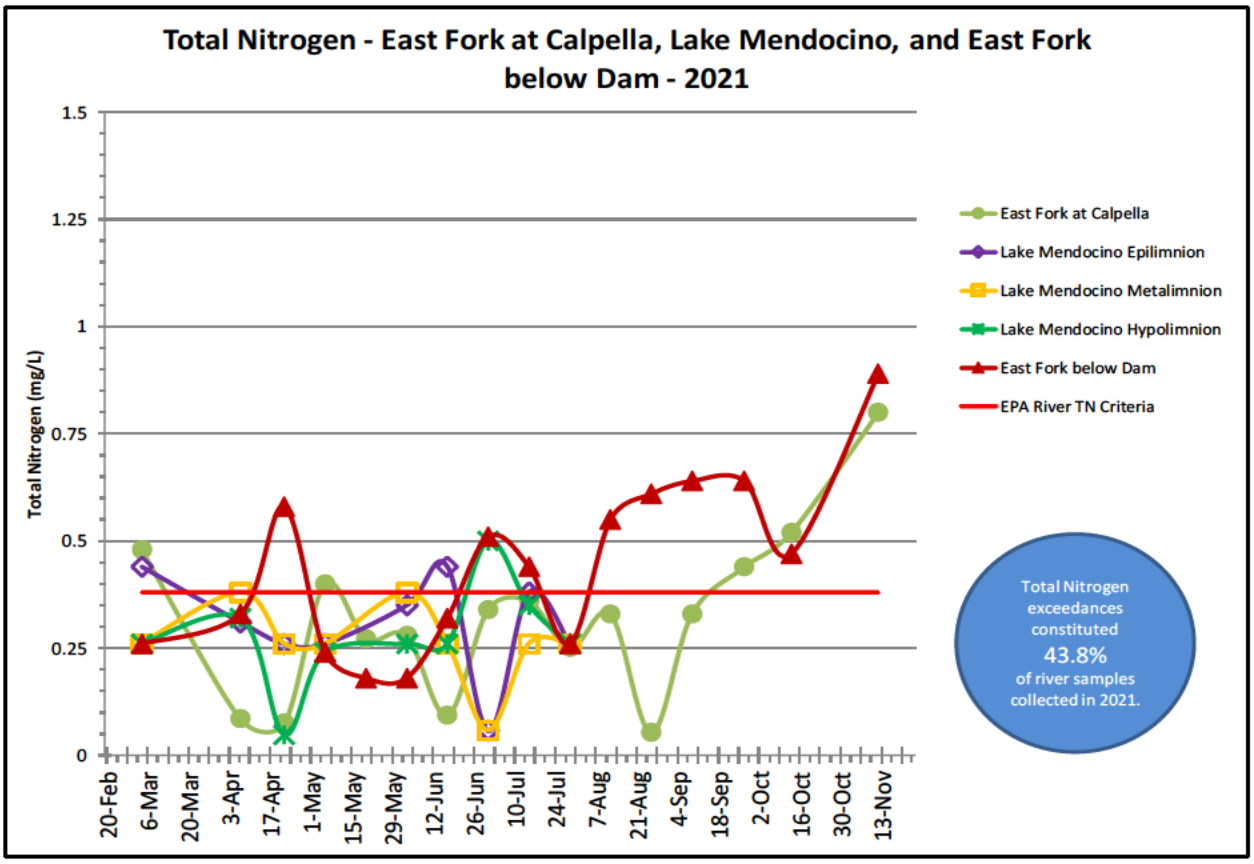


Figure 3-6. Sonoma Water Total Nitrogen results for the East Fork Russian River at Calpella, Lake Mendocino, and East Fork Russian River below Dam in 2021. Percent exceedances only apply to samples collected at East Fork stations.

The East Fork below Dam station had nine (9) exceedances of the total nitrogen criteria out of 16 samples collected (31.3%), under flows that ranged from 28 cfs to 109 cfs (Table 3-4 and Figure 3-6). The maximum concentration measured 0.89 mg/L on 12 November with a flow of 28 cfs (Table 3-4). The minimum concentration was 0.18 mg/L, which occurred twice on 20 May and 3 June with flows of 50 and 70 cfs, respectively. Nitrogen values were observed to generally increase during the second half of the monitoring season.

Total Phosphorus

The EPA's desired goal for total phosphates as phosphorus for rivers and streams in Aggregate Ecoregion III has been established as 21.88 micrograms per liter (µg/L), or approximately 0.022 mg/L (EPA, 2000). The EPA's desired goal for total phosphates as phosphorus for lakes and reservoirs in Aggregate

Ecoregion III has been established as 17.00 micrograms per liter (µg/L), or approximately 0.017 mg/L (EPA, 2001).

The total phosphorus criteria for rivers and streams was exceeded thirty (30) times, representing 93.8% of the total samples collected (30 out of 32) in the East Fork Russian River during the monitoring effort (Tables 3-2 and 3-4, and Figure 3-7). The total phosphorus criteria for lakes and reservoirs was exceeded twenty-seven (27) times, representing 100% of the total samples collected (27 out of 27) in Lake Mendocino during the monitoring effort (Table 3-3). The East Fork Calpella station was the only location that did not exceed the criteria in every sample during the 2021 season (Table 3-2).

Table 3-4. Sonoma Water 2021 Seasonal Grab Sampling Results at East Fork Russian River below Dam.

East Fork Russian River below Dam	Time	Temperature	pH	Total Organic Nitrogen	Ammonia as N	Ammonia as N Unionized	Nitrate as N	Nitrite as N	Total Kjeldahl Nitrogen	Total Nitrogen**	Phosphorus, Total	Total Orthophosphate	Dissolved Organic Carbon	Total Organic Carbon	Total Dissolved Solids	Turbidity	Chlorophyll-a	USACE COY (Lake Mendocino)***
MDL*				0.20	0.10	0.00010	0.040	0.050	0.20	0.50	0.010	0.030	0.600	0.300	10	0.10	0.0030	Outflow Rate****
Date		°C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	(cfs)
3/4/2021	16:00	10.0	7.3	0.26	ND	ND	ND	ND	0.26	0.26	**0.023**	ND	2.10	2.40	150	**5.3**	**0.0059**	30
4/7/2021	11:50	11.2	7.6	0.26	ND	ND	0.070	ND	0.26	0.33	**0.032**	ND	2.36	2.43	130	**5.6**	**0.0040**	28
4/22/2021	11:50	12.1	7.2	0.52	ND	ND	0.064	ND	0.52	**0.58**	**0.12**	0.033	1.98	2.62	140	**130**	**0.0053**	28
5/6/2021	11:10	11.8	7.7	0.18	ND	ND	0.062	ND	ND	0.24	**0.044**	0.084	1.94	2.43	110	**6.8**	ND	29
5/20/2021	12:30	12.0	7.6	0.18	ND	ND	ND	ND	ND	0.18	**0.053**	0.11	1.86	2.40	150	**5.4**	ND	50
6/3/2021	13:30	12.4	7.6	0.18	ND	ND	ND	ND	ND	0.18	**0.076**	0.14	1.94	2.53	140	**4.4**	**0.0032**	70
6/17/2021	13:20	12.7	7.4	0.26	ND	ND	0.064	ND	0.26	0.32	**0.085**	0.12	2.11	2.58	140	**6.3**	ND	72
7/1/2021	13:00	13.3	7.6	0.44	ND	ND	0.066	ND	0.44	**0.51**	**0.15**	0.10	2.16	2.77	140	**34**	**0.0040**	82
7/15/2021	13:30	13.8	7.2	0.44	ND	ND	ND	ND	0.44	**0.44**	**0.17**	0.054	1.90	2.61	140	**34**	**0.0035**	91
7/29/2021	13:30	15.0	7.1	0.26	ND	ND	ND	ND	0.26	0.26	**0.15**	0.058	2.16	2.36	170	**20**	ND	107
8/12/2021	11:30	16.7	7.1	0.44	ND	ND	0.11	ND	0.44	**0.55**	**0.17**	0.12	2.12	2.76	170	**14**	**0.0037**	109
8/26/2021	12:50	18.7	7.2	0.61	ND	ND	ND	ND	0.61	**0.61**	**0.23**	0.36	2.18	2.93	160	**17**	**0.0032**	82
9/9/2021	11:10	21.2	7.3	0.61	ND	ND	ND	ND	0.61	**0.64**	**0.24**	0.38	3.06	3.68	160	**15**	ND	83
9/27/2021	12:40	21.9	7.6	0.52	ND	ND	0.12	ND	0.52	**0.64**	**0.073**	0.072	3.42	3.73	230	**13**	**0.0056**	77
10/13/2021	12:50	18.1	7.7	0.44	ND	ND	ND	ND	0.44	**0.47**	**0.090**	0.050	3.09	3.41	190	**35**	**0.0064**	73
11/12/2021	13:40	14.5	7.4	0.49	ND	ND	0.40	ND	0.49	**0.89**	**0.11**	0.049	5.68	6.42	160	**60**	**0.0037**	28

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revision.

** Total nitrogen is calculated through the summation of the different components of total nitrogen: organic and ammoniacal nitrogen (together referred to as Total Kjeldahl Nitrogen or TKN) and nitrate/nitrite nitrogen.

*** United States Army Corps of Engineers (USACE) Continuous-Record Gaging Station.

**** Flow rates are preliminary and subject to final revision by USACE.

Recommended EPA Criteria based on Aggregate Ecoregion III

Total Phosporus: 0.02188 mg/L (21.88 ug/L) ≈ 0.022 mg/L

Chlorophyll a: 0.00178 mg/L (1.78 ug/L) ≈ 0.0018 mg/L

Total Nitrogen: 0.38 mg/L

Turbidity: 2.34 FTU/NTU

Calpella exceeded the EPA criteria for a majority of the season, including 14 of 16 samples (87.5%), under flows that ranged from 8.84 cfs to 84.3 cfs (Table 3-2 and Figure 3-7). The maximum concentration measured 0.087 mg/L on 15 July with a flow of approximately 11.5 cfs (Table 3-2 and Figure 3-7). The minimum concentration was 0.015 mg/L, which occurred on 7 April with a flow of approximately 55.4 cfs. Total phosphorus values were observed to generally increase from spring into summer at Calpella then slightly decrease through the fall. Calpella experienced two small spikes in concentration during July including a value of 0.086 mg/L on1 July and 0.087 mg/L on 15 July.

The Lake Mendocino epilimnion exceeded the total phosphorus EPA criteria throughout the season (9 of 9 samples or 100%) at a sampling depth of 5 feet (Table 3-3). The maximum concentration measured 0.039 mg/L on 29 July (Table 3-3 and Figure 3-7). The minimum concentration at the Lake Mendocino epilimnion was 0.025 mg/L, which occurred on 3 June.

The Lake Mendocino metalimnion also exceeded the total phosphorus EPA criteria throughout the season (9 of 9 samples or 100%) at a sampling depth that ranged from 15 to 25 feet (Table 3-3). The maximum concentration measured 0.049 mg/L on 29 July at a depth of 25 feet (Table 3-3 and Figure 3-7). The minimum concentration at the Lake Mendocino epilimnion was 0.020 mg/L, which occurred on 22 April at a depth of 20 feet.

The Lake Mendocino hypolimnion also exceeded the total phosphorus EPA criteria throughout the season (9 of 9 samples or 100%) at a sampling depth that ranged from 50 to 60 feet (Table 3-3). The maximum concentration measured 0.15 mg/L on 15 July at a depth of 50 feet (Table 3-3 and Figure 3-7). The minimum concentration at the Lake Mendocino epilimnion was 0.023 mg/L, which occurred on 4 March at a depth of 50 feet. Total phosphorus values at the hypolimnion were observed to generally increase from spring into summer (Figure 3-7).

The East Fork below Dam exceeded the total phosphorus EPA criteria throughout the season (16 of 16 samples or 100%) at flows that ranged from 28 to 109 cfs (Table 3-4). The East Fork below Dam was observed to have the highest overall concentration with a maximum value of 0.24 mg/L that occurred on 9 September with a flow of 83 cfs (Table 3-4). Total phosphorus values were observed to generally increase from spring into summer then decrease through the fall (Table 3-4 and Figure 3-7). The East Fork below Dam also experienced several spikes in concentration during the monitoring period including the seasonal maximum on 9 September (Figure 3-7).

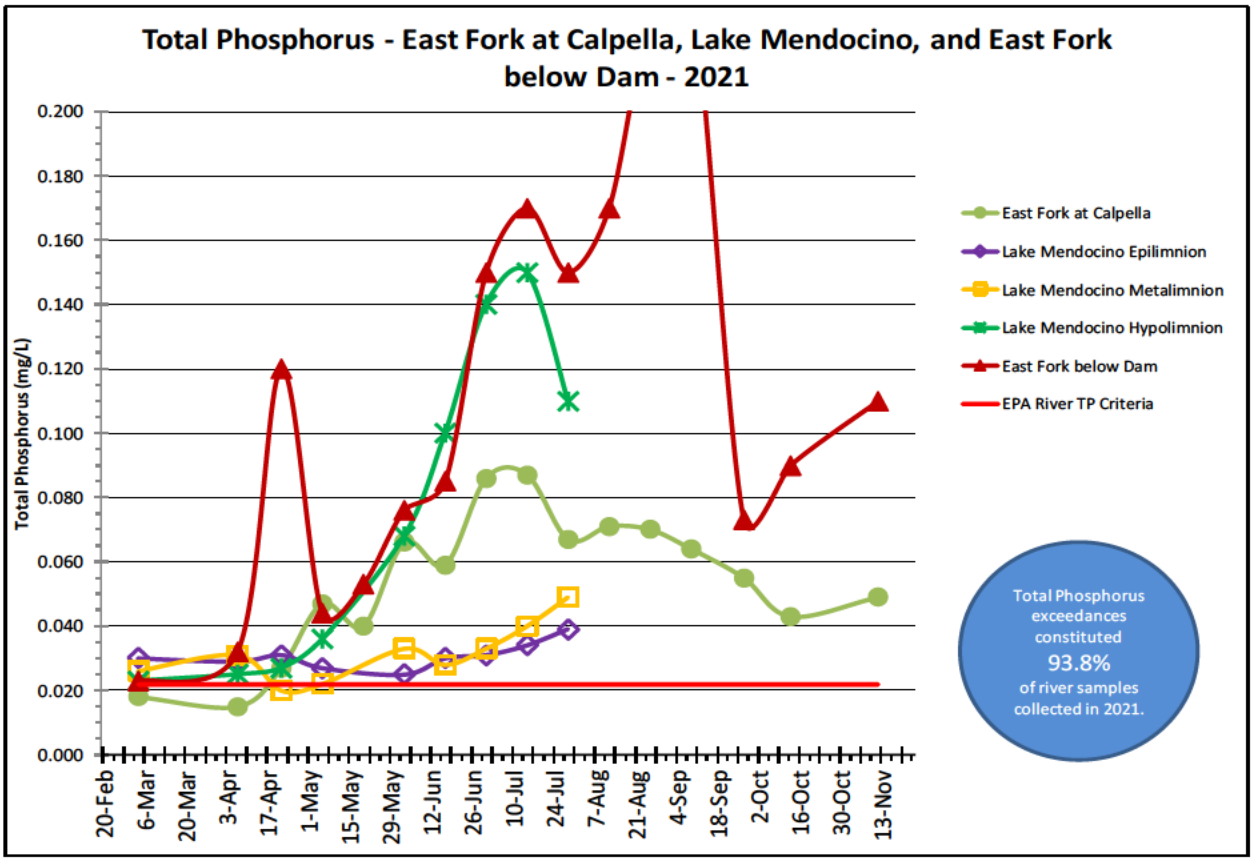


Figure 3-7. Sonoma Water Total Phosphorus results for the East Fork Russian River at Calpella, Lake Mendocino, and East Fork Russian River below Dam in 2021. Percent exceedances only apply to samples collected at East Fork stations.

Turbidity

The EPA recommended criteria for turbidity in rivers and streams is 2.34 Nephelometric Turbidity Units (NTU) (EPA, 2000). The EPA recommended criteria for turbidity in lakes and reservoirs is based on a secchi depth of 2.7 meters (EPA, 2001). Measuring the depth of visibility of a secchi disk to assess water clarity was not conducted in Lake Mendocino as part of a vertical profiling effort because two of the stations sampled occur well below visible depth. Turbidity was measured using NTU in the lake to provide additional context and a comparison to values observed in water being released from the lake as measured at the East Fork below Dam station. The EPA criteria for turbidity for rivers and streams was exceeded seventeen (17) times, representing 53.1% of the total samples collected (17 out of 32) at the upper and lower East Fork Russian River stations (Tables 3-2 and 3-4, and Figure 3-8).

Turbidity values at Calpella were observed to remain consistently low throughout the monitoring season with the exception of the last sample collected on 12 November that had a value of 5.2 NTU with a flow of 84.3 cfs (Table 3-2). This maximum value was the only exceedance of the EPA criteria (1 of 16 samples or 6.3%) at the station in 2021 (Table 3-2 and Figure 3-8).

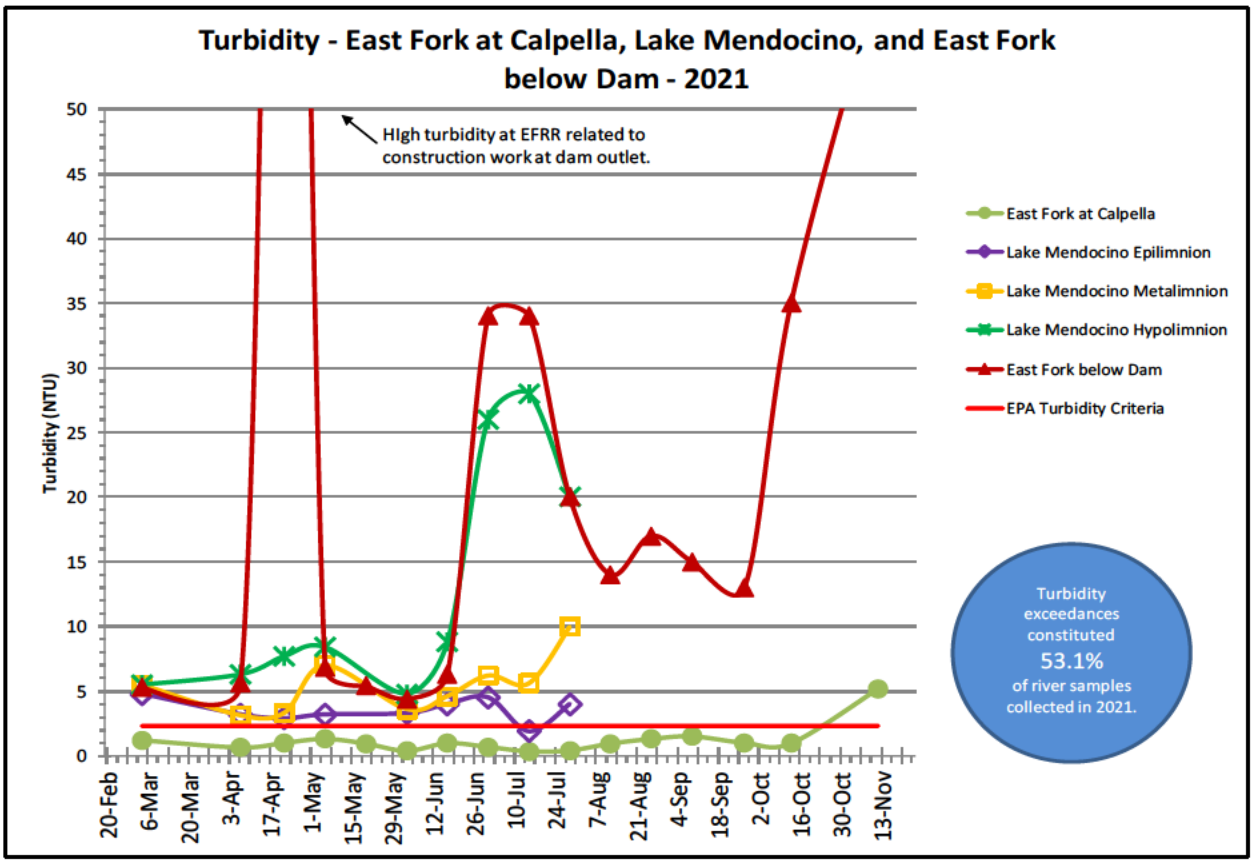


Figure 3-8. Sonoma Water Turbidity results for the East Fork Russian River at Calpella, Lake Mendocino, and East Fork Russian River below Dam in 2021. Percent exceedances only apply to samples collected at East Fork stations.

Turbidity levels exceeded the EPA criteria throughout the monitoring season (16 of 16 samples or 100%) at the East Fork below Dam station (Table 3-4). Values were observed to spike several times throughout the season including a maximum value of 130 NTU observed on 22 April with a flow of 28 cfs (Table 3-4 and Figure 3-8). That maximum value was partially a result of construction activity at the dam outlet that contributed to the high turbidity value. Values were also observed to spike in July and again at the

end of the season with a value of 60 NTU occurring on 12 November with a flow of 28 cfs. The minimum turbidity value observed was 4.4 NTU on 3 June with a flow of 70 cfs.

Chlorophyll a

The EPA criteria for *chlorophyll a* for rivers and streams in Aggregate Ecoregion III is 1.78 µg/L, or approximately 0.0018 mg/L (EPA, 2000). As mentioned above, lab analysis constraints in 2021 resulted in the MDL for *chlorophyll a* being higher than the EPA criteria for exceedances for *chlorophyll a* in rivers and streams. Therefore, some lab results for *chlorophyll a* in rivers and streams that are listed as non-detect (ND) could potentially have concentrations above the criteria and below the MDL. However, for reporting purposes, only those exceedances that are quantified will be included in the summation.

In 2021, the *chlorophyll a* criteria for rivers and streams was exceeded thirteen (13) times, representing 40.6% of the total samples collected (13 out of 32) in the East Fork Russian River at Calpella and East Fork Russian River below Dam stations during the monitoring effort (Tables 3-2 and 3-4, and Figure 3-9).

The EPA criteria for *chlorophyll a* for lakes and reservoirs in Aggregate Ecoregion III is 3.40 µg/L, or approximately 0.0034 mg/L (EPA, 2001). The *chlorophyll a* criteria for lakes and reservoirs was exceeded twenty-one (21) times, representing 77.8% of the total samples collected (21 out of 27) in Lake Mendocino during the monitoring effort (Table 3-3).

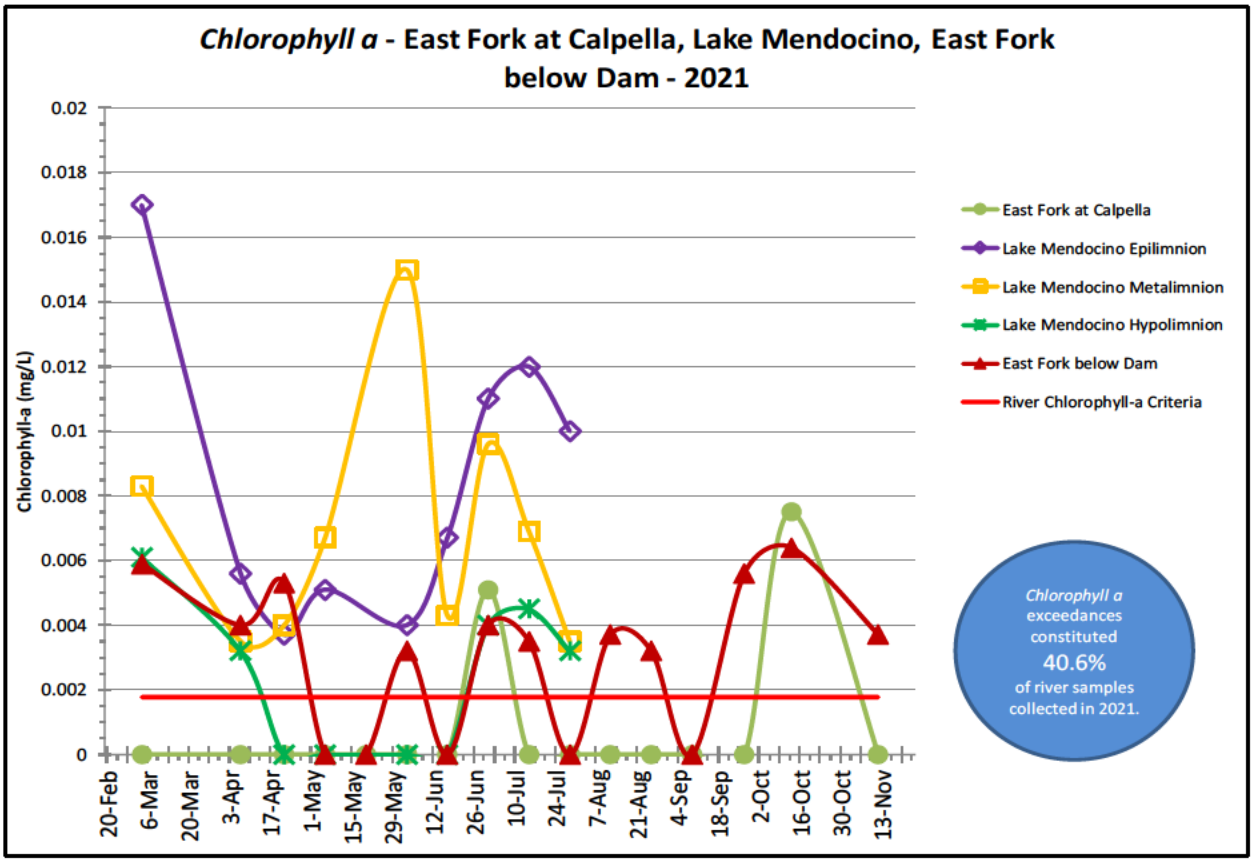


Figure 3-9. Sonoma Water Chlorophyll a results for the East Fork Russian River at Calpella, Lake Mendocino, and East Fork Russian River below Dam in 2021. Percent exceedances only apply to samples collected at East Fork stations.

Chlorophyll a exceedances occurred most predominantly at the Lake Mendocino epilimnion and metalimnion stations and least predominantly at Calpella (Tables 3-2 through 3-4 and Figure 3-9).

Calpella had two (2) *chlorophyll a* exceedances (2 of 16 or 12.5%) and fourteen (14) non-detects, including a maximum value of 0.0075 mg/L that occurred on 13 September with a flow of 10.1 cfs (Table 3-2 and Figure 3-9).

The Lake Mendocino epilimnion had nine (9) *chlorophyll a* exceedances (9 of 9 or 100%), including a maximum value of 0.017 mg/L that occurred on 4 March at a depth of 5 feet (Table 3-3 and Figure 3-9).

The Lake Mendocino metalimnion had nine (9) *chlorophyll a* exceedances (9 of 9 or 100%), including a maximum value of 0.015 mg/L that occurred on 3 June at a depth of 15 feet (Table 3-3 and Figure 3-9).

The Lake Mendocino hypolimnion had three (3) *chlorophyll a* exceedances (3 of 9 or 33.3%) and four (4) non-detects, including a maximum value of 0.0061 mg/L that occurred on 4 March at a depth of 50 feet (Table 3-3 and Figure 3-9).

The East Fork below Dam had eleven (11) *chlorophyll a* exceedances (11 of 16 or 68.8%) and five (5) non-detects, including a maximum value of 0.0064 mg/L that occurred on 13 October with a flow of 73 cfs (Table 3-4 and Figure 3-9).

3.1.4 Sonoma Water Seasonal Mainstem Russian River Ambient Algae and Nutrient Grab Sampling

Ambient Algae

In 2021, Sonoma Water conducted biweekly ambient algae and cyanobacterial monitoring and sampling during the terms of the Order at four (4) stations including: the Hopland USGS gaging station north of Hopland; the Jimtown USGS gaging station in Alexander Valley; Syar Vineyards downstream of the confluence with Dry Creek; and Patterson Point in Villa Grande (Figure 3-10). This effort supports the NCRWQCB and Sonoma County DHS cyanotoxin monitoring and assessment for the potential for harmful algal blooms dominated by cyanobacteria (cyanoHABs) in the Russian River. This effort is being conducted to identify algal and cyanobacterial genera and species in the Russian River, as well as to estimate algal cover, frequency, and seasonal growth patterns.

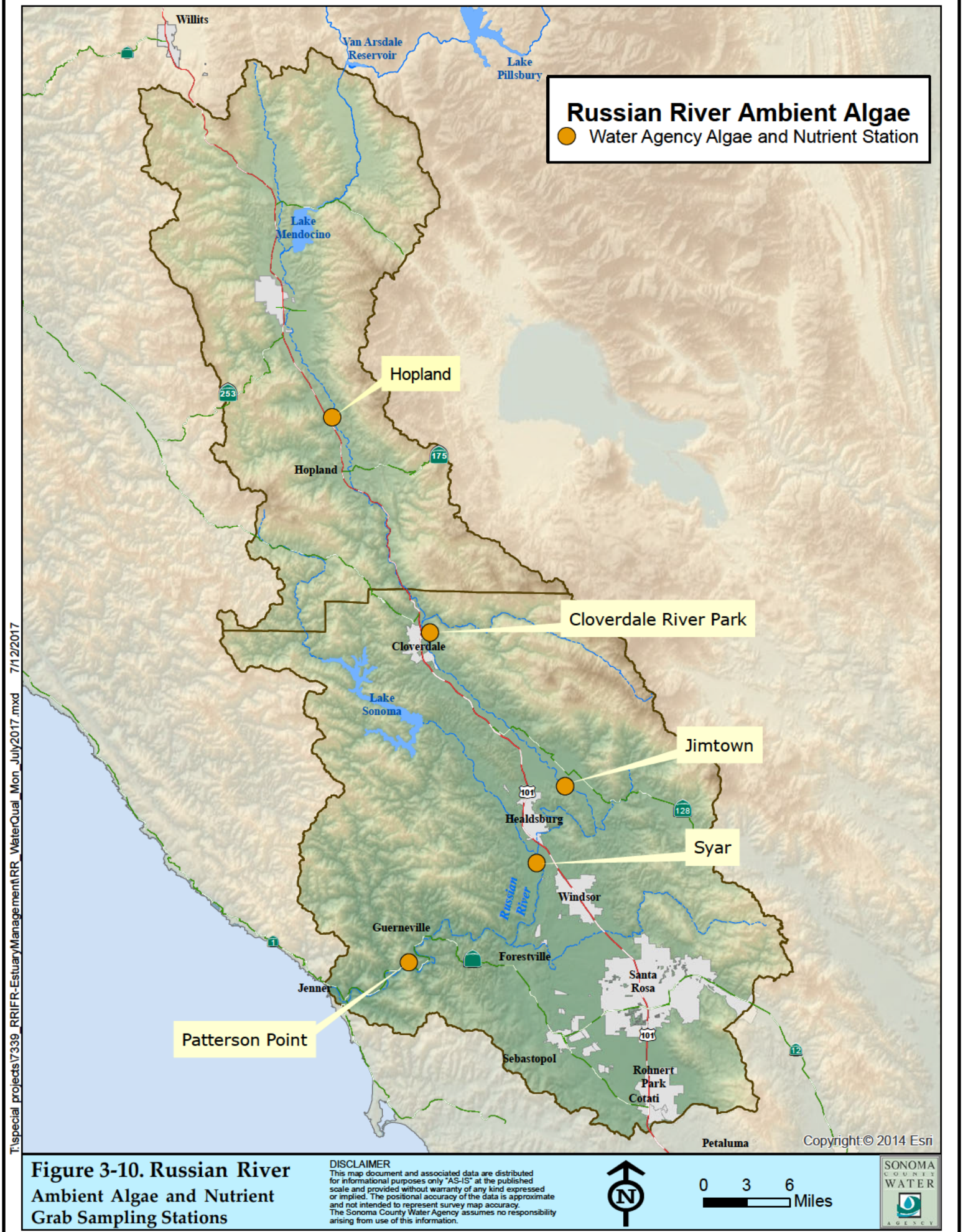


Figure 3-10. Russian River Ambient Algae and Nutrient Grab Sampling Stations

DISCLAIMER
This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from use of this information.

Methods

Algal monitoring includes identifying genera present and collecting cover data using a line-intercept method, estimating microalgae (microscopic algae) thickness, and macroalgae (relatively large filamentous algae) length along established transects at the four monitoring and sampling stations. Multi-habitat algae samples (as well as a separate phytoplankton sample) are collected from the range of algae habitats present in the littoral zone (depth light penetrates and supports photosynthesis) up to 100 feet (30 meters) upstream and downstream of the transect. Habitat variations sampled include different substrates (cobble, gravel, sand or mud), flow velocities, depths, shade, and incorporate emergent or floating aquatic vegetation, boulders, woody debris, edge water, and backwater, riffle, run and pool habitats. Genera present are identified by preparing wet slides of algae samples and evaluating taxa under 10X to 400X magnification. For each monitoring event, ten (10) slides were evaluated for each multi-habitat and phytoplankton sample collected to determine the frequency of occurrence of algal genera at each monitoring site.

For the convenience of analysis, algal groupings of genera are classified as: “Diatoms”; “Green Macrophytes” (filamentous and colonial green algae, desmids and *Vaucheria*); “Cyanobacteria”; and “Others” (including red algae, dinoflagellates, and golden brown algae). These groupings are convenient for separating algae types based on photosynthetic pigment (*chlorophyll a*, c, and phycobillins), morphology (filamentous, colonial or single celled), and microscopic and macroscopic scale.

These algal groupings follow formal taxonomy for “Diatoms” (members of the Division Bacillariophyta) and “Cyanobacteria” (members of the Division Cyanophyta or photosynthetic bacteria), which are both considered microalgae for the purposes of monitoring cover and thickness. The Genera incorporated in “Green Macrophytes” are considered macroalgae and include both filamentous and single celled members of the Division Chlorophyta (green algae) and filamentous members of Xanthophyta (yellow-green algae). Specifically, “Green Macrophytes” described here include both green and yellow green macroscopic genera dominant in the periphyton such as *Vaucheria* (yellow green), *Cladophora* (green), *Spirogyra* (green), *Mouegotia* (green), *Oedogonium* (green), *Zygnema* (green), and *Tribonema* (yellow-green). The “Others” grouping includes the Divisions Rhodophyta (red algae), Chrysophyta (golden brown algae), and Dinophyta (Dinoflagellates).

Results

Over the monitoring period, 746 slides were evaluated from multi-habitat samples collected from the four monitoring stations. Genera present in the samples were detected and identified a total of 10,178 times. Figure 3-11 illustrates the frequency of algal species observed in the mainstem Russian River between 3 March 2021 and 1 December 2021 at the four TUC stations. Figure 3-11 displays which algal genera were detected along the “x” axis while the “y” axis indicates the number of times each genus was detected. The colors indicate the functional group; yellow for Diatoms, green for Green Macrophytes, blue for cyanobacteria, and orange for Others.

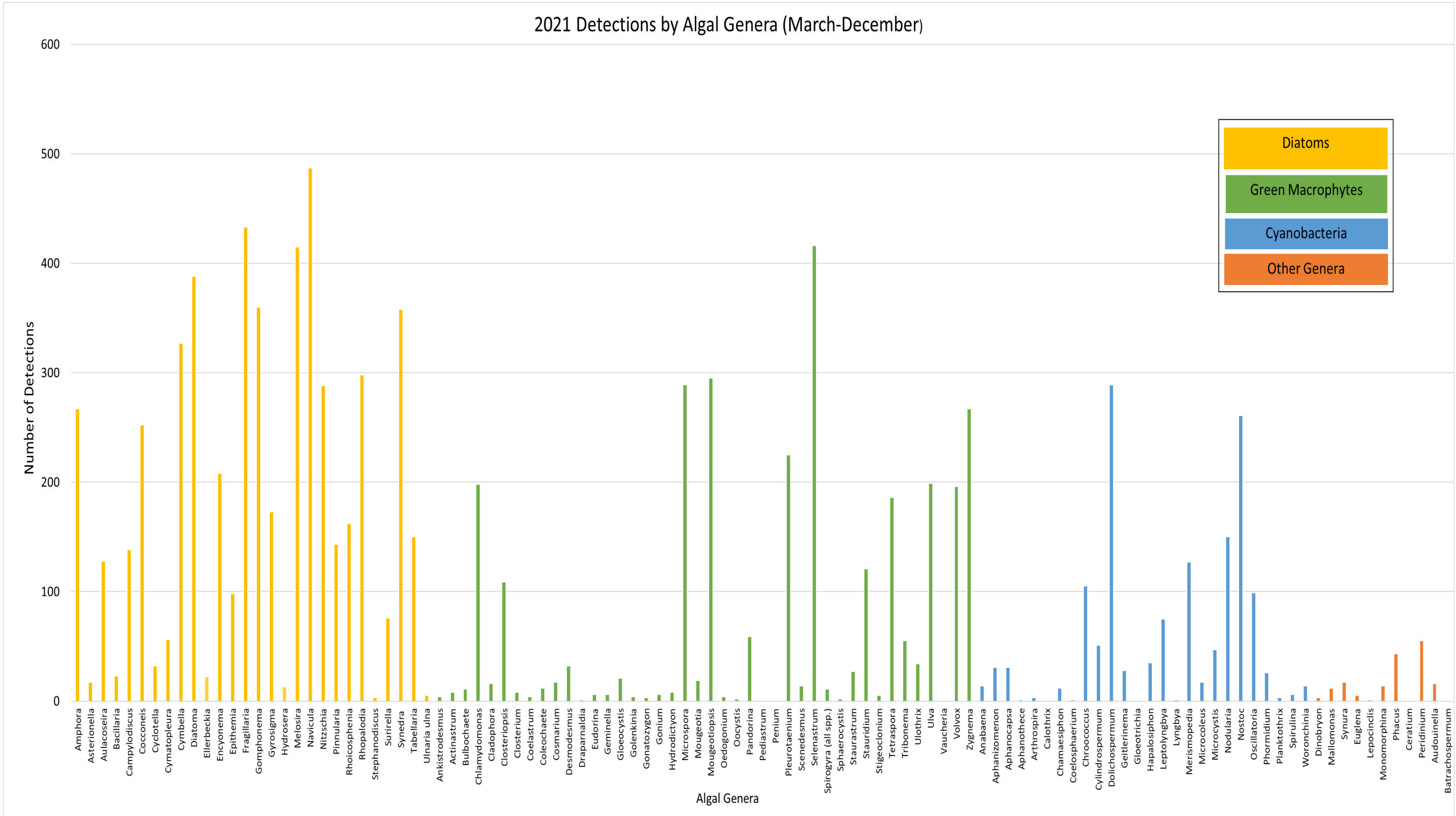


Figure 3-11. Algal Genera by Grouping Detected at the Hopland, Jimtown, Syar, and Patterson Point Ambient Algae Monitoring Stations in the Russian River in 2021.

For cover measurements, the periphyton was divided into two groups that are differentiated depending on their visibility without microscopic evaluation. Microalgae is comprised of microscopic algae genera in the periphyton that is dominated by diatoms and cyanobacteria but also includes other benthic green, red and yellow green microscopic algal genera. Macroalgae are the larger filamentous members of the periphyton that microalgae often grow on as epiphytes, and often form drifting masses (or metaphyton) that accumulates in backwater areas and shallow shorelines.

Percent cover is estimated by determining the presence of microalgae and/or macroalgae at a given point location across a linear transect in the littoral zone. The number of points microalgae and/or macroalgae is present along the transect, divided by the total number of points sampled, represents the percent cover. As a metric to quantify biomass, or density of algae in the littoral zone, the thickness of the microalgae is measured and the length of the macroalgae is measured to quantify the relative contributions of microalgae and macroalgae to the overall periphyton.

Figures 3-12 through 3-15 illustrate the shifts in frequency of the four algal groupings through the monitoring season based on number of detections of algae genera collected from the range of algae habitats present in the littoral zone up to 100 feet (30 meters) upstream and downstream of the transect. The number of detections is determined through microscopic identification of ten (10) slides of algae samples per sampling event. Diatoms were consistently found in the greatest frequency at all stations. Green macrophyte frequency was generally higher during the monitoring season than Cyanobacteria. Diatom frequency stayed higher at all sites than frequency observed to be contributed by Green macrophytes and Cyanobacteria throughout the monitoring season.

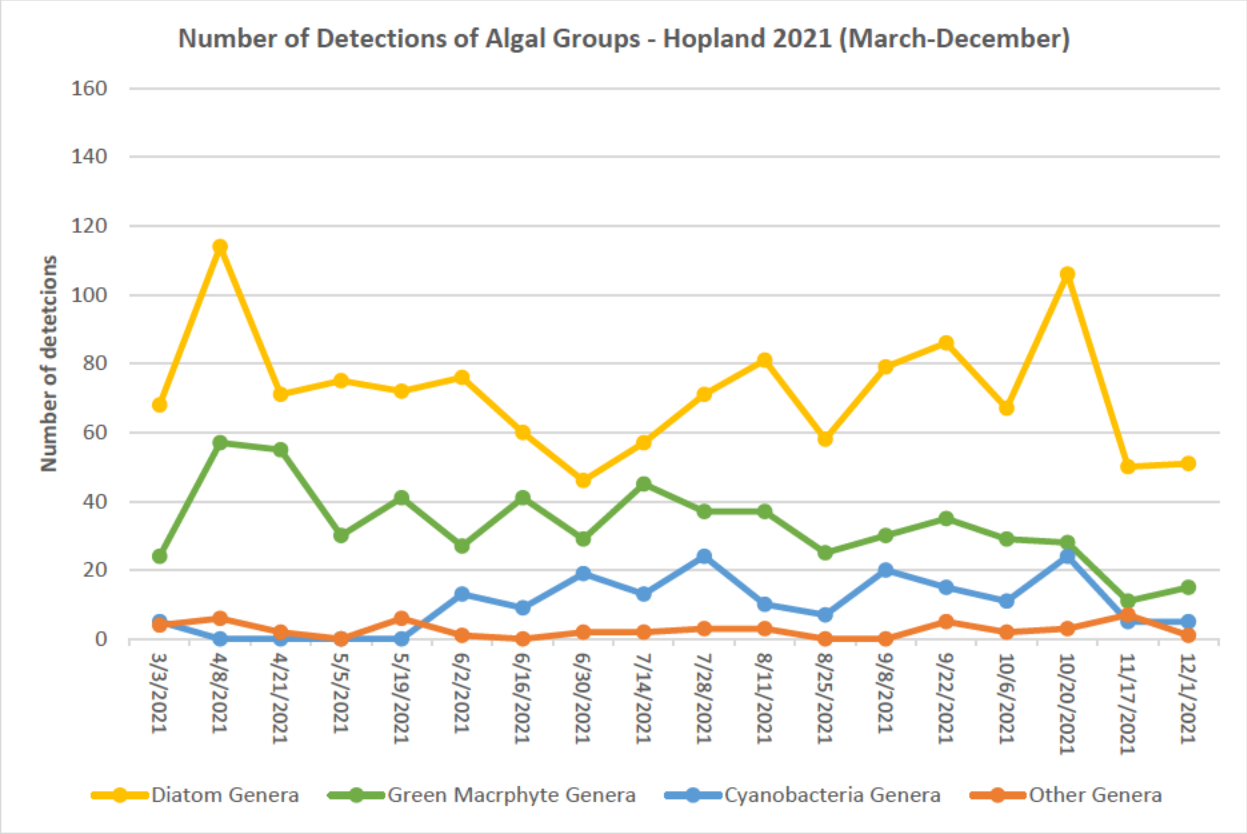


Figure 3-12. Number of Detections of Algal Groups at the Hopland Monitoring Station in 2021.

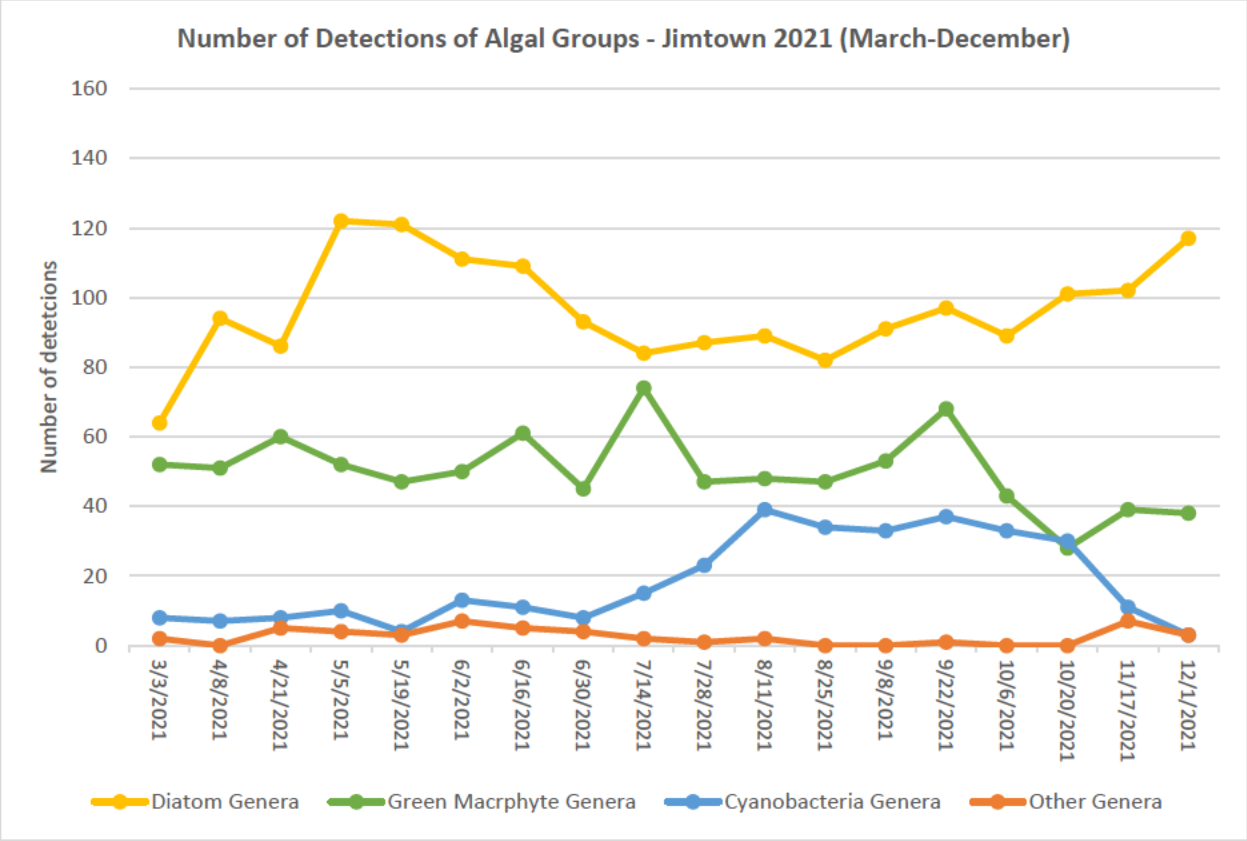


Figure 3-13. Number of Detections of Algal Groups at the Jimtown Monitoring Station in 2021.

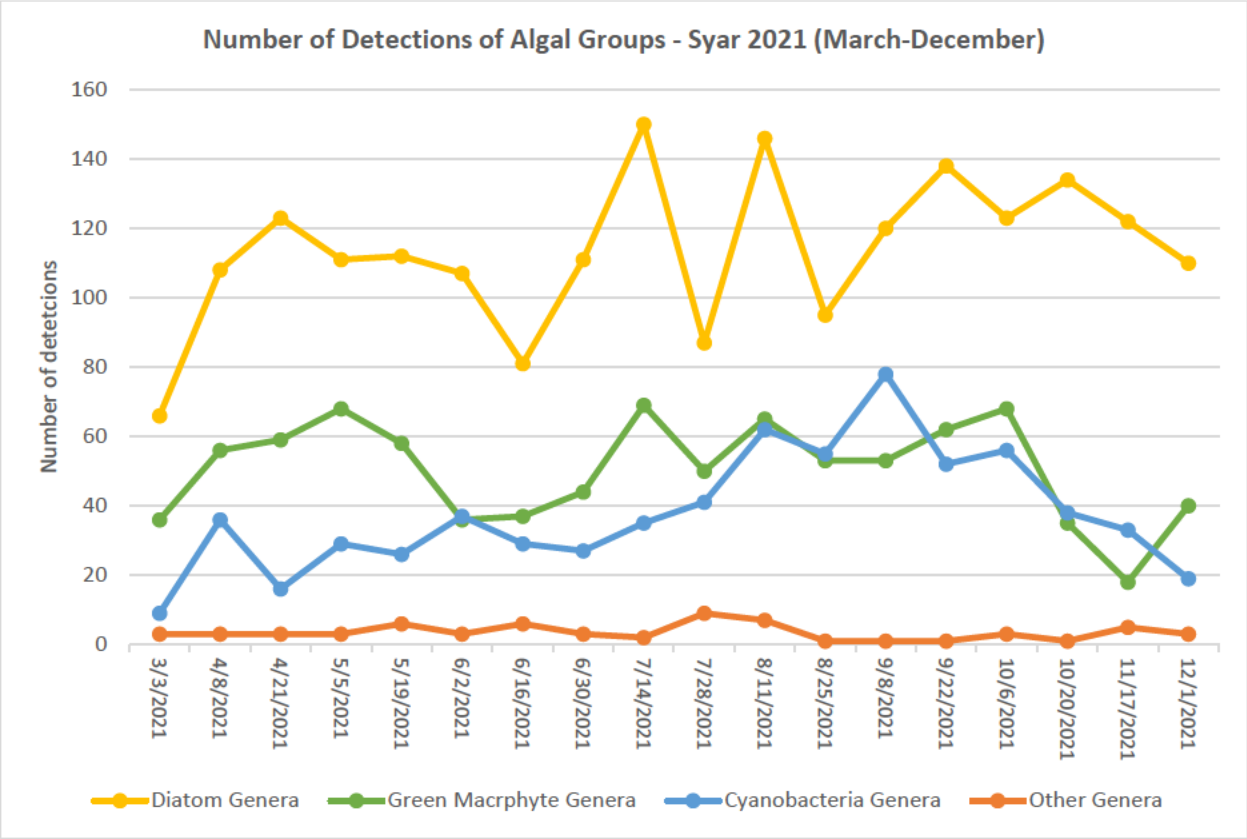


Figure 3-14. Number of Detections of Algal Groups at the Syar Monitoring Station in 2021.

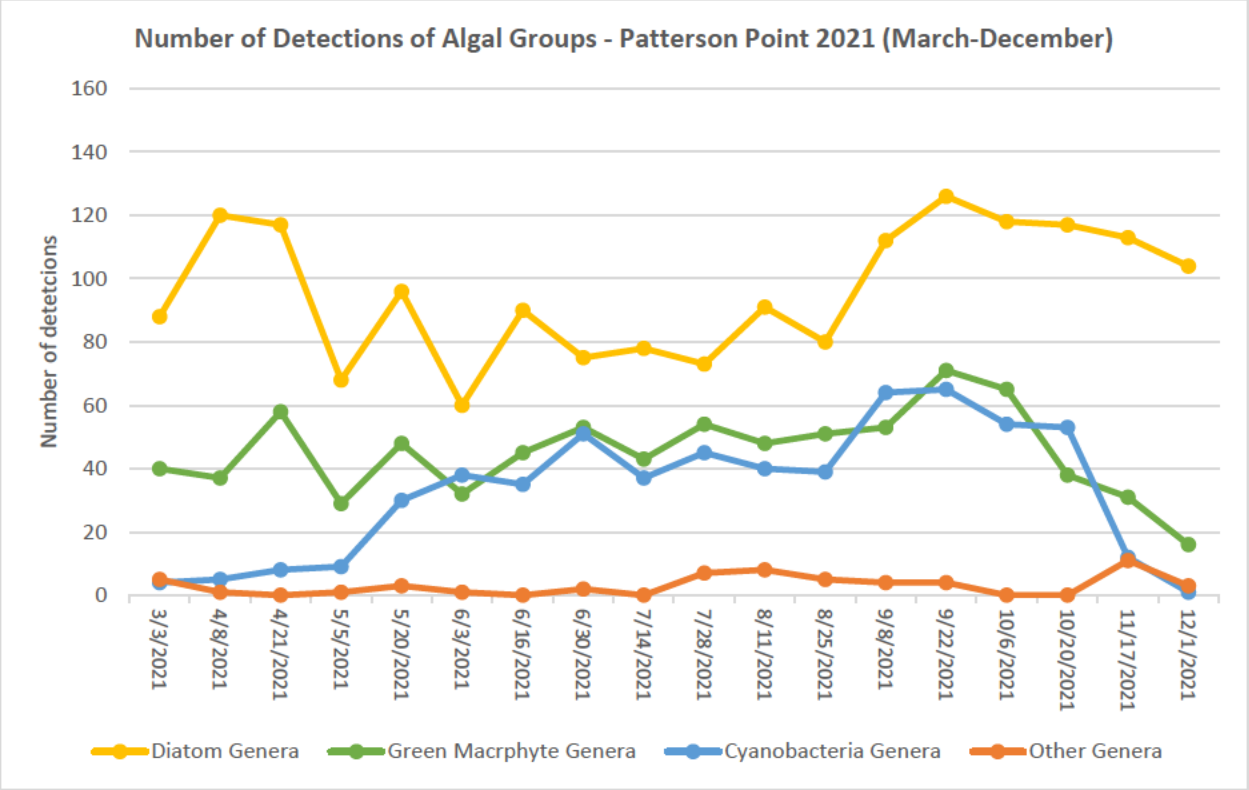


Figure 3-15. Number of Detections of Algal Groups at the Patterson Point Monitoring Station in 2021.

Some direct observations regarding the algal groups are evident. Figure 3-16 illustrates the overall average frequency of detections for the algal groupings as a percentage calculated for all sites between March and December 2021. Diatoms made up 55% of all detections. Green Macrophytes comprised 26% of all detections, Cyanobacteria made up 17%, and the rest of the detections were represented by Others at 2%.

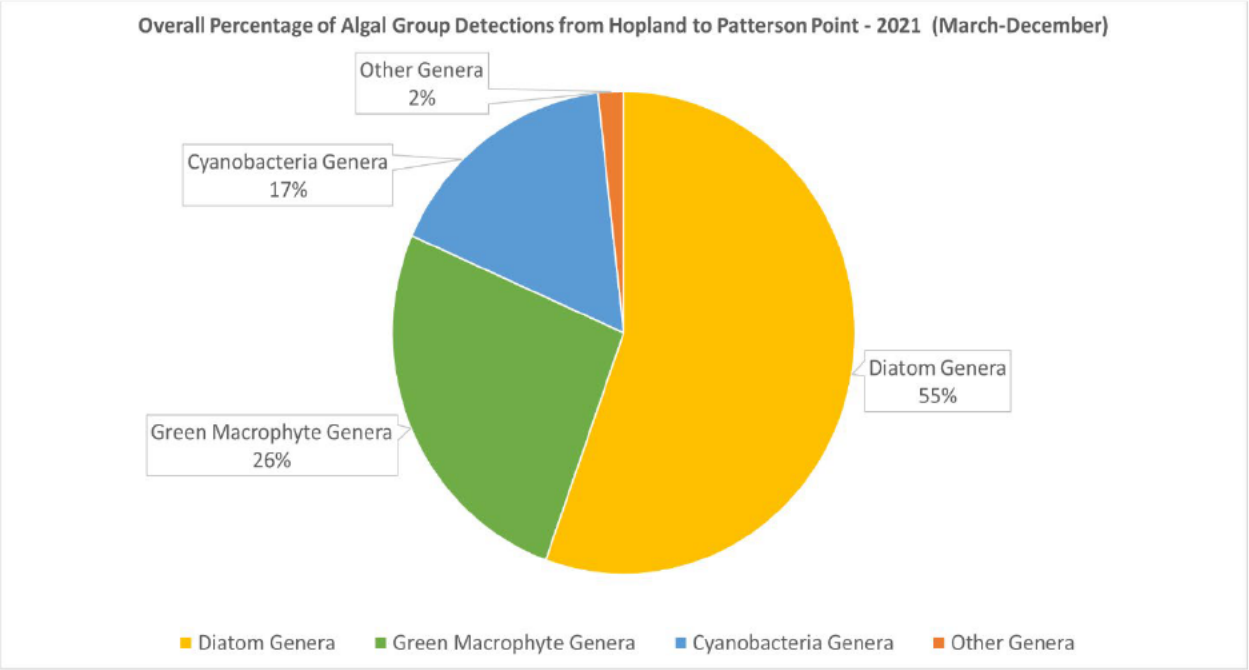


Figure 3-16. Overall Percentage of Algal Group Detections at Hopland, Jimtown, Syar, and Patterson Point in 2021.

Figures 3-17 through 3-20 display estimated cover contributed by microalgae (diatoms and cyanobacteria) versus macroalgae (filamentous green and yellow-green algae) at each sampling site during the monitoring season. Microalgae cover was generally higher at Patterson, Syar and Jimtown sites than Macroalgae cover throughout the monitoring season. Because of increased water clarity and low turbidity at the Hopland monitoring station, cover by Green macrophytes (specifically *Vaucheria*) was unusually high through the end of July when the Macroalgae started breaking off and floating downstream as metaphyton.

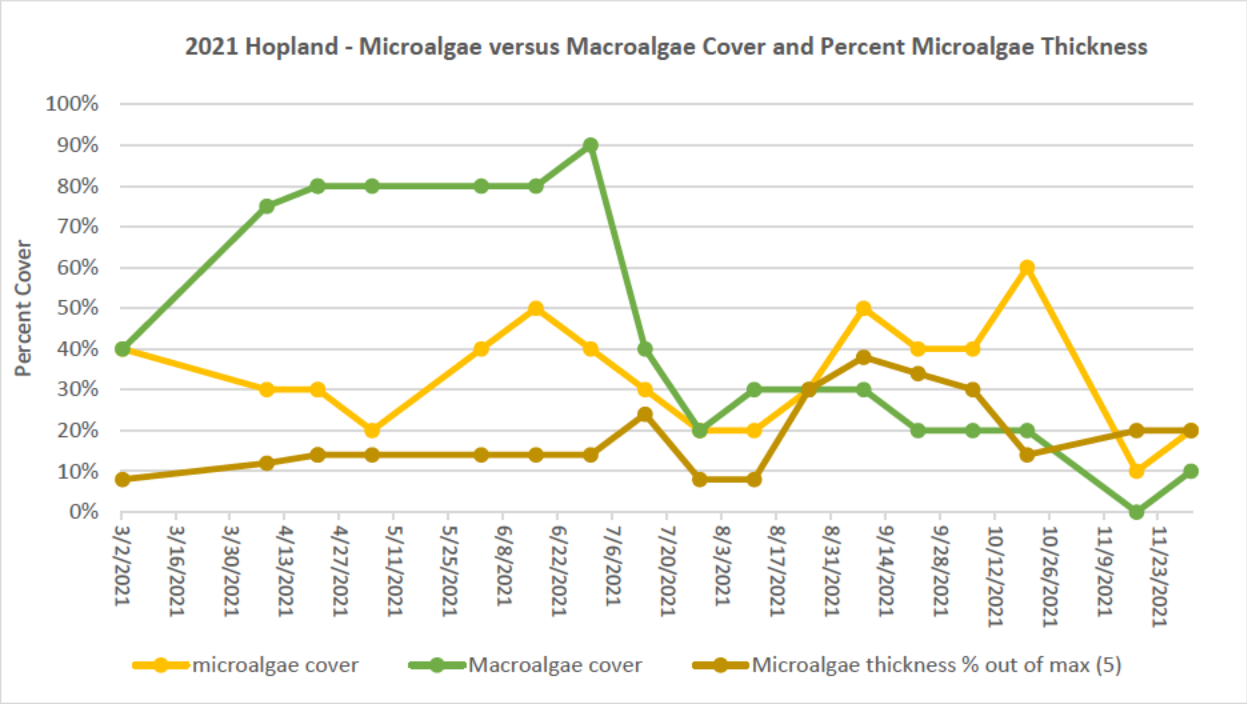


Figure 3-17. Microalgae versus Macroalgae Cover and percent Microalgae Thickness at Hopland in 2021.

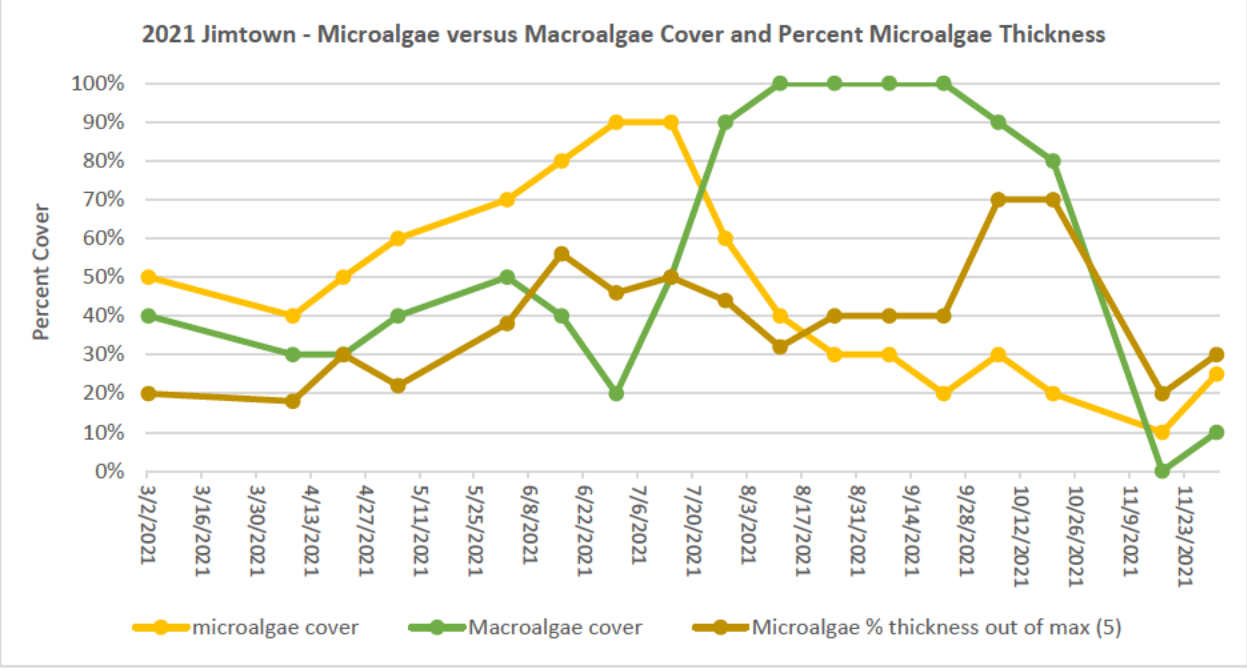


Figure 3-18. Microalgae versus Macroalgae Cover and percent Microalgae Thickness at Jimtown in 2021.

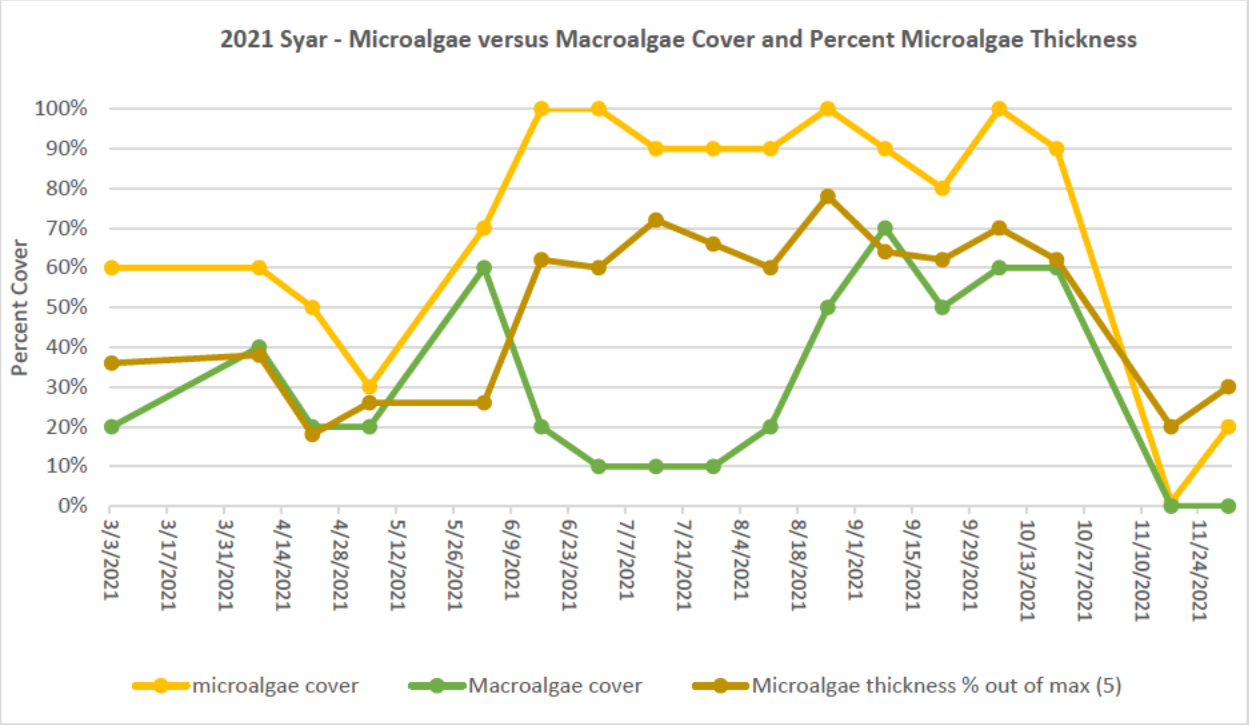


Figure 3-19. Microalgae versus Macroalgae Cover and percent Microalgae Thickness at Syar in 2021.

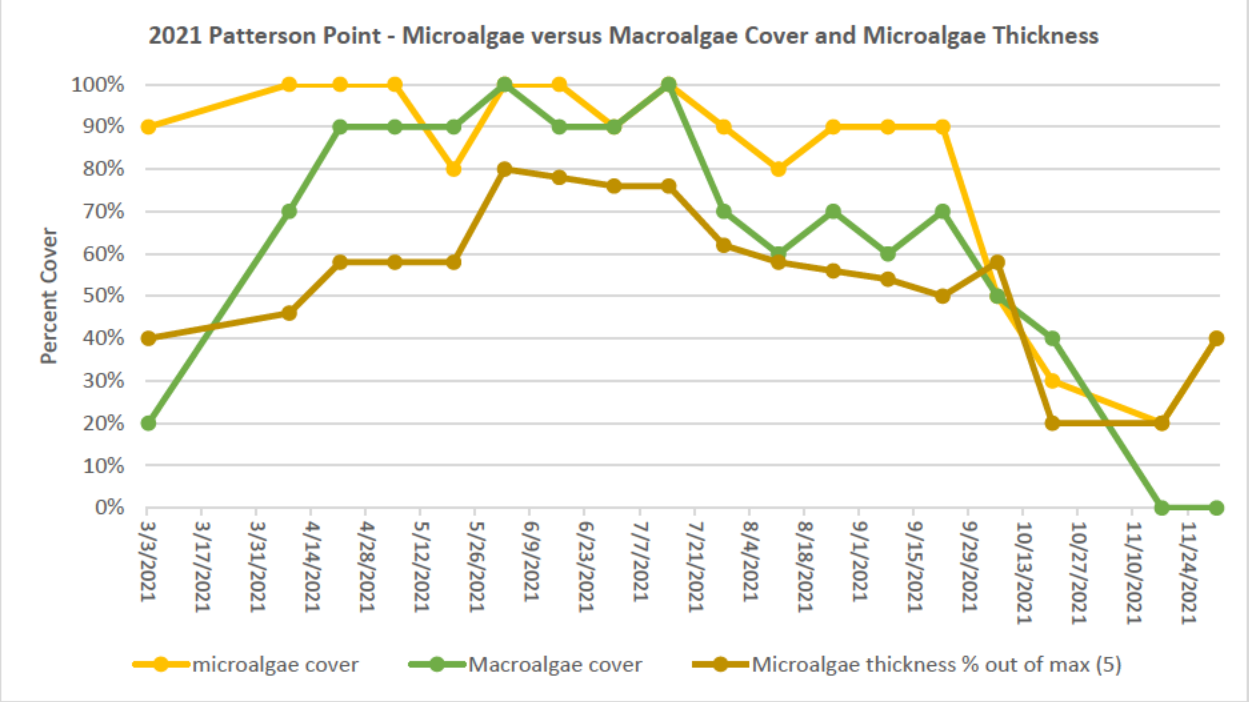


Figure 3-20. Microalgae versus Macroalgae Cover and percent Microalgae Thickness at Patterson Point in 2021.

Summary

Overall, 2021 algae growth in the Russian River was strongly affected by a lack of winter high flows, an abundance of snail grazing, an unusually high cover by Green Macrophytes in the upper river at Hopland, and limited runoff contributions of nutrients, and carbon inputs from the watershed. The river's dry season littoral zone was not scoured by flows in the winter of 2021 and algae growth did not experience a major turnover in algal populations. Significant gravel and bed movement was only

observed at the Patterson Point monitoring station, which is located in the lower Russian River. Substrates were already thickly (rank 2-3) (Fetscher et al., 2009) colonized by microalgae at Patterson, Jimtown, and Syar in May and June of 2021 (Figures 3-18 through 3-20). Generally, the development of filamentous algae in the Russian River in 2021 appeared to be affected by snail grazing which reduced cover by Green Macrophytes typically present by June. High numbers of New Zealand mud snails, an invasive species, were observed in the littoral zone between May and July at all monitoring sites. Likely early growth of green macrophytes was reduced by grazing pressure (Tuchman, N.C., Stevenson, R.C., 1991). Filamentous algae species did not become prevalent until late July at the Jimtown, Syar, and Patterson Point monitoring stations and then remained as the dominant cover until heavy rains in late October.

Dominant filamentous species in the periphyton were observed to be *Vaucheria* during the monitoring period at Hopland while *Spirogyra* was the dominant filamentous species at Jimtown, Syar, and Patterson Point. Mats of *Microcoleus*/*Phormidium* (Oscillatorian Genera) were present associated with layers of mucilaginous diatoms, and widespread by late July. These mats persisted at Patterson, Syar and Jimtown and started being observed in Hopland in late August and September and were present at all sites until high flows in late October. The diatoms *Rhopalodia* and *Amphora* (which are genera known to have cyanobacterial symbionts) were observed to be microscopically associated (imbedded in mucilage) with the cyanobacterial mats. A wide variety of Ocillatorian cyanobacteria were observed associated with cyanobacterial mat development on finer substrates (sand and small gravels). Occilatorian genera that were more prevalent in 2021 included, *Leptolyngba*, *Lyngba*, and several forms of *Phormidium* and *Ocillatoria.* (Figure 3-21).

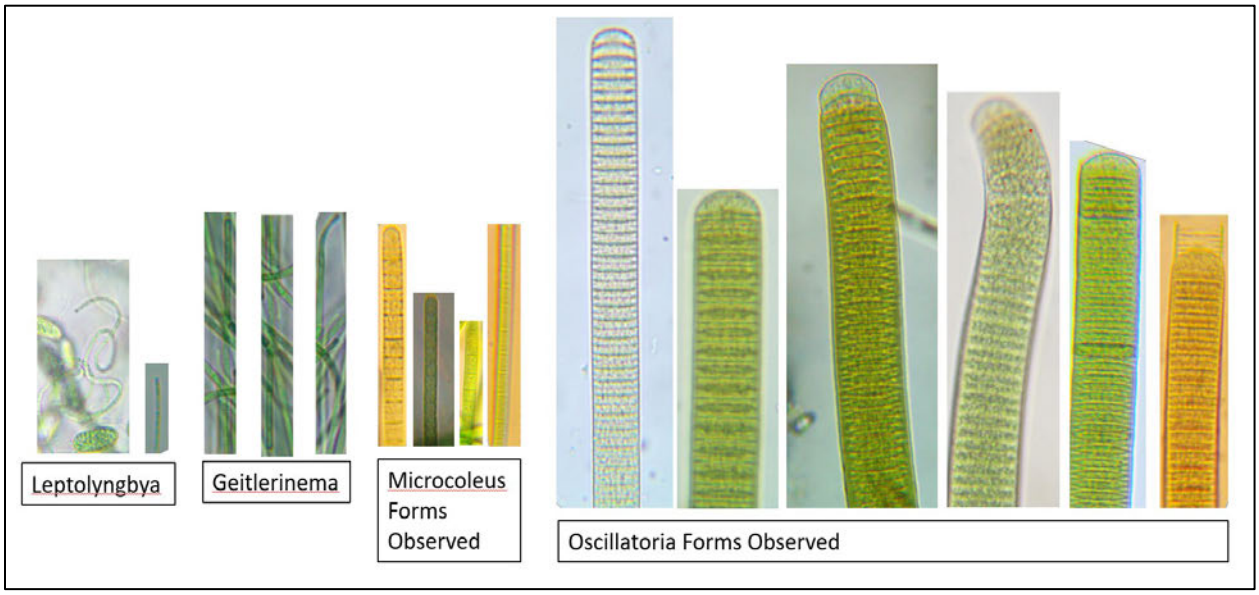


Figure 3-21. Variety of Oscillatorian cyanobacteria genera and forms observed in 2021.

Both Microalgae and Macroalgae support growth of cyanobacteria that contribute to cyanoHABs. Observations since 2016 support the hypothesis that the dominant green macrophyte influences the form and composition of the warm weather cyanoHAB in a given season. When Cladophora is the dominant Green Macrophyte numerous diatom species colonize the cell walls and provide suitable substrate for the growth of cyanobacterial genera dominated by the taxa that form heterocysts

(structure for nitrogen fixation) such as *Anabaena* and *Cylindrospermum*. In 2021, the periphyton was dominated by a variety of diatoms and the Green Macrophyte Spirogyra. Spirogyra has smooth cell walls and does not support the epiphytic growth of other algae. A thick layer of diatoms carried over from 2020 in the littoral zone and various Oscillatorian cyanobacteria (these genera do not form heterocysts) colonized this layer over the season forming complex mats that bubbled to the surface initiating cyanoHABs in late June, July and August. When an epiphytically colonizable macrophyte is present, cyanobacteria biomass has been observed to be contributed primarily by heterocyst forming genera. When a macrophyte is dominant that does not support epiphytic colonization cyanobacterial biomass is contributed by non-heterocyst forming Oscillatorian taxa closely associated with benthic diatom mats.

Nutrients

Sonoma Water staff conducted biweekly nutrient grab sampling monitoring at five (5) stations in the mainstem Russian River including: the Hopland USGS gaging station, Cloverdale River Park in Cloverdale, the Jimtown USGS gaging station, Syar Vineyards, and Patterson Point (Figure 3-10).

All grab samples were analyzed for nutrients including: total organic nitrogen, ammonia, unionized ammonia, nitrate, nitrite, total Kjeldahl nitrogen, total nitrogen, total phosphorus, and total orthophosphate. Samples were also analyzed for total dissolved solids, total and dissolved organic carbon, turbidity, and *chlorophyll a,* which is a measurable parameter of algal growth that can be tied to excessive nutrient concentrations and reflect a biostimulatory response. Grab samples were submitted to Alpha Analytical Labs in Ukiah for analysis. Grab sample data was collected during Sonoma Water's ambient algae and cyanobacteria monitoring effort.

The sampling results for total nitrogen, total phosphorus, turbidity, and *chlorophyll a* are discussed below and summarized in Tables 3-5 through 3-7 and Figures 3-22 through 3-25. Highlighted values indicate those values exceeding EPA recommended ambient water quality criteria for "Rivers and Streams in Nutrient Ecoregion III" (EPA, 2000).

Lab analysis constraints in 2021 resulted in a method detection limit (MDL) for *chlorophyll a*, which is the level of accuracy for a given lab analysis to provide a valid concentration of a given constituent, that was higher than the EPA criteria for exceedances for *chlorophyll a* in rivers and streams. Put simply, the EPA exceedance criteria for *chlorophyll a* in rivers and streams is approximately 0.0018 mg/L, whereas the lab analysis MDL for *chlorophyll a* was 0.0030 mg/L. Therefore, some lab results for *chlorophyll a* that are listed as non-detect (ND) could potentially have concentrations above the criteria and below the MDL, which in turn could result in an under representation of the actual number of exceedances observed. However, for reporting purposes, only those exceedances that are quantified will be included in the summation. Additionally, it must be emphasized that the EPA criteria are not adopted standards and are therefore both subject to change (if it is determined that the guidelines or criteria are not accurate indicators) and are not currently enforceable.

Sampling results for other nutrient components, dissolved and total organic carbon, and total dissolved solids are included in the tables; however, a discussion of these constituents is not included in this report.

Ambient algae, cyanobacteria, estuary response, and associated grab sampling data for 2021 is currently being compiled and will be discussed in greater detail in the Russian River Biological Opinion 2021-2022 annual report, which will be posted to Sonoma Water's website when available: https://www.sonomawater.org/biological-opinion-outreach.

Total Nitrogen

The EPA desired goal for total nitrogen in Aggregate Ecoregion III is 0.38 mg/L for rivers and streams (EPA, 2000).

Calculating total nitrogen values requires the summation of the different components of total nitrogen: organic and ammoniacal nitrogen (referred to as Total Kjeldahl Nitrogen or TKN), and nitrate/nitrite nitrogen. The EPA criteria for Total Nitrogen was exceeded eighteen (18) times, representing 16.4% of the total samples collected (18 out of 110) during the ambient algae monitoring effort (Tables 3-3 through 3-5, and Figure 3-22).

Hopland had seven (7) exceedances of the total nitrogen criteria out of 19 samples collected (36.8%), under flows that ranged from 47.7 cfs to 363 cfs (Table 3-5 and Figure 3-21). The maximum seasonal value measured 0.91 mg/L on 17 November with a flow of 104 cfs (Table 3-5). The minimum seasonal value was Non-Detect (ND), which occurred on 11 August with a flow of 85.8 cfs. Nitrogen values were observed to generally decline from spring into summer at Hopland then increase through the fall (Figure 3-22).

Cloverdale River Park had two (2) exceedances of the total nitrogen criteria out of 19 samples collected (10.5%), under flows that ranged from 164 to 406 cfs (Table 3-5 and Figure 3-21). The maximum concentration measured 0.52 mg/L on 1 January with a flow of 406 cfs (Table 3-5). The minimum seasonal value was Non-Detect (ND), which occurred six (6) times with flows that ranged from 37.0 to 75.6 cfs. Other than the two exceedances, which occurred during elevated winter and fall flows, total nitrogen values remained relatively low through the monitoring season (Figure 3-22).

Jimtown had two (2) exceedances of the total nitrogen criteria out of 19 samples collected (10.5%), under flows that ranged from 48.4 to 291 cfs (Table 3-6 and Figure 3-21). The maximum seasonal value measured 0.52 mg/L on 17 November with a flow of approximately 291 cfs (Table 3-6 and Figure 3-21). The minimum concentration was 0.10 mg/L, which occurred on 8 September with a flow of approximately 30.3 cfs. Nitrogen values at Jimtown remained relatively low through the monitoring season before increasing in the fall, resulting in the two late season exceedances (Figure 3-22).

Syar also had two (2) exceedances of the total nitrogen criteria out of 19 samples collected (10.5%) that occurred late in the season (Table 3-6 and Figure 3-21). The maximum seasonal value measured 0.45 mg/L on 17 November with an estimated flow of approximately 565 cfs (Table 3-6). The USGS near Windsor gaging station had been removed for the season therefore estimated flow is based on a flow of 434 cfs at USGS RR at Healdsburg combined with a flow of 131 cfs at USGS Dry Creek near Mouth. The minimum seasonal value was Non-Detect (ND), which occurred five (5) times with flows that ranged from 96.8 to 114 cfs. Syar also had nitrogen values that remained relatively low through the monitoring season before increasing in the fall, resulting in the two late season exceedances (Figure 3-22).

Patterson Point had five (5) exceedances of the total nitrogen criteria out of 34 samples collected (14.7%), under flows that ranged from 33.8 cfs to 684 cfs (Table 3-7 and Figure 3-21). The maximum seasonal value measured 4.0 mg/L on 1 December with a flow of 293 cfs (Table 3-7 and Figure 3-22). The minimum seasonal value was Non-Detect (ND), which occurred eight (8) times with flows that ranged from 36.5 to 120 cfs. Aside from the periodic exceedances, including the result on 1 December, total nitrogen values remained relatively low at Patterson Point through the monitoring season.

Table 3-5. Sonoma Water 2021 Seasonal Mainstem Russian River Grab Sampling Results at Hopland and Cloverdale.

Hopland	Time	Temperature	pH	Total Organic Nitrogen	Ammonia as N	Ammonia as N Unionized	Nitrate as N	Nitrite as N	Total Kjeldahl Nitrogen	Total Nitrogen**	Phosphorus, Total	Total Orthophosphate	Dissolved Organic Carbon	Total Organic Carbon	Total Dissolved Solids	Turbidity***	Chlorophyll-a	USGS 11462500 RR near Hopland***
MDL*				0.20	0.10	0.00010	0.040	0.050	0.20	0.50	0.010	0.030	0.600	0.300	10	0.10	0.0030	Flow Rate****
Date		°C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	(cfs)
1/14/2021	13:00	10.9	7.4	0.35	ND	ND	0.21	ND	0.35	**0.56**	**0.062**	0.052	4.18	4.58	110	**16**	**0.0043**	363
3/2/2021	10:00	9.9	6.9	ND	ND	ND	0.42	ND	ND	**0.42**	**0.048**	0.11	1.71	1.73	150	1.4	ND	113
4/5/2021	13:40	14.9	7.9	0.18	ND	ND	0.21	ND	ND	0.30	**0.048**	0.11	1.58	1.85	150	0.82	ND	77.7
4/21/2021	13:10	16.3	7.6	0.21	ND	ND	0.19	ND	0.21	**0.40**	**0.053**	0.12	1.55	1.93	160	1.2	ND	48.7
5/5/2021	15:00	19.1	8.2	0.18	ND	ND	0.17	ND	ND	0.35	**0.050**	0.11	1.67	2.02	190	0.72	ND	34.2
5/19/2021	13:40	16.6	7.7	0.18	ND	ND	0.048	ND	ND	0.228	**0.044**	0.083	1.72	2.13	160	1.0	**0.0035**	37.4
6/2/2021	14:10	18.6	7.8	0.18	ND	ND	0.063	ND	ND	0.243	**0.047**	0.055	2.01	2.44	140	1.1	ND	63.6
6/16/2021	14:50	18.1	7.5	0.18	ND	ND	0.057	ND	ND	0.237	**0.043**	0.082	2.16	2.94	150	1.8	ND	57.0
6/30/2021	14:00	19.5	7.4	0.18	ND	ND	0.060	ND	ND	0.240	**0.045**	0.077	2.23	2.72	140	2.0	**0.0035**	61.2
7/14/2021	14:40	18.8	7.4	0.18	ND	ND	0.044	ND	ND	0.224	**0.050**	0.087	2.20	2.56	140	**3.2**	ND	61.5
7/28/2021	15:20	19.0	8.5	ND	ND	ND	0.13	ND	ND	0.34	**0.057**	0.086	2.39	2.50	140	**5.0**	**0.0056**	76.5
8/11/2021	14:40	20.6	7.7	ND	ND	ND	ND	ND	ND	ND	**0.067**	0.12	2.28	2.86	150	1.8	ND	85.8
8/25/2021	14:20	19.4	7.7	0.18	ND	ND	0.12	ND	ND	0.30	**0.076**	0.14	2.55	2.73	160	**3.0**	**0.0053**	67.9
9/8/2021	15:45	21.3	7.6	0.26	ND	ND	0.076	ND	0.26	0.34	**0.13**	0.29	3.29	3.13	150	1.4	**0.0096**	56.1
9/22/2021	14:00	19.7	7.8	0.18	ND	ND	0.086	ND	ND	0.266	**0.080**	0.20	3.31	3.48	180	1.2	**0.0051**	54.7
10/6/2021	14:40	17.1	8.1	0.44	ND	ND	0.14	ND	0.44	**0.58**	**0.063**	0.12	3.16	3.70	180	2.1	**0.0048**	51.1
10/20/2021	13:30	14.1	7.7	0.35	ND	ND	0.090	ND	0.35	**0.44**	**0.051**	0.091	3.07	3.73	170	**5.0**	**0.0048**	47.7
11/17/2021	14:40	13.7	6.7	0.28	ND	ND	0.63	ND	0.28	**0.91**	**0.054**	0.096	2.64	3.12	180	**7.6**	ND	104
12/1/2021	15:20	11.7	7.5	0.28	ND	ND	0.46	ND	0.28	**0.74**	**0.041**	0.073	2.12	2.57	190	**5.7**	**0.0035**	58.9

Cloverdale River Park	Time	Temperature	pH	Total Organic Nitrogen	Ammonia as N	Ammonia as N Unionized	Nitrate as N	Nitrite as N	Total Kjeldahl Nitrogen	Total Nitrogen**	Phosphorus, Total	Total Orthophosphate	Dissolved Organic Carbon	Total Organic Carbon	Total Dissolved Solids	Turbidity***	Chlorophyll-a	USGS 11463000 RR near Cloverdale***
MDL*				0.20	0.10	0.00010	0.040	0.050	0.20	0.50	0.010	0.030	0.600	0.300	10	0.10	0.0030	Flow Rate****
Date		°C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	(cfs)
1/14/2021	12:10	11.4	7.6	0.35	ND	ND	0.17	ND	0.35	**0.52**	**0.080**	0.056	2.38	2.70	140	**15**	**0.0080**	406
3/2/2021	11:00	10.6	7.7	ND	ND	ND	0.19	ND	ND	0.19	0.014	ND	1.27	1.50	150	0.68	**0.0035**	137
4/5/2021	13:00	16.1	7.9	ND	ND	ND	0.069	ND	ND	0.069	0.018	ND	1.28	1.53	160	0.78	ND	91.5
4/21/2021	12:20	17.9	7.9	0.14	ND	ND	0.077	ND	ND	0.217	**0.029**	0.053	1.23	1.43	170	1.7	ND	52.3
5/5/2021	14:10	21.2	8.1	0.26	ND	ND	0.096	ND	0.26	0.36	**0.030**	0.059	1.14	1.45	220	0.87	ND	40.9
5/19/2021	12:50	19.4	8.1	ND	ND	ND	ND	ND	ND	ND	**0.026**	0.038	1.15	1.41	190	1.1	ND	37.0
6/2/2021	13:20	22.6	7.6	0.18	ND	ND	0.059	ND	ND	0.239	**0.029**	ND	1.65	2.01	160	0.37	ND	56.2
6/16/2021	14:00	22.3	7.4	0.18	ND	ND	0.063	ND	ND	0.243	**0.032**	0.049	1.60	2.17	160	**3.2**	ND	54.3
6/30/2021	13:20	24.7	7.7	0.18	ND	ND	ND	ND	ND	0.18	**0.035**	0.060	1.82	2.42	170	0.78	ND	61.7
7/14/2021	13:40	23.0	7.7	ND	ND	ND	ND	ND	ND	ND	**0.029**	0.054	1.83	2.24	140	0.37	ND	56.6
7/28/2021	14:40	23.3	8.3	ND	ND	ND	0.12	ND	ND	0.12	**0.025**	0.062	1.97	2.18	140	0.99	ND	65.1
8/11/2021	14:00	23.4	7.6	ND	ND	ND	ND	ND	ND	ND	**0.032**	0.059	1.83	2.25	170	0.74	ND	75.6
8/25/2021	13:40	21.3	8.5	0.10	ND	ND	0.12	ND	ND	0.22	**0.032**	0.052	1.84	2.17	190	1.0	ND	65.5
9/8/2021	14:00	23.3	7.0	ND	ND	ND	ND	ND	ND	ND	**0.028**	0.066	2.04	2.21	160	0.42	ND	47.2
9/22/2021	13:20	20.8	7.5	ND	ND	ND	ND	ND	ND	ND	**0.035**	0.086	2.21	2.48	200	0.42	**0.0037**	51.5
10/6/2021	13:50	17.3	8.1	0.18	ND	ND	0.12	ND	ND	0.30	**0.027**	0.050	2.22	2.60	190	0.30	ND	48.5
10/20/2021	11:40	16.4	7.2	0.18	ND	ND	ND	ND	ND	0.18	**0.15**	0.038	2.17	2.68	160	0.70	**0.0035**	53.0
11/17/2021	14:00	14.1	7.3	0.15	ND	ND	0.32	ND	ND	**0.47**	**0.027**	0.052	2.04	2.39	180	1.8	ND	164
12/1/2021	14:30	12.6	8.3	0.18	ND	ND	0.16	ND	ND	0.34	**0.014**	ND	1.63	1.77	200	0.62	**0.0035**	80.2

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revision.

** Total nitrogen is calculated through the summation of the different components of total nitrogen: organic and ammoniacal nitrogen (together referred to as Total Kjeldahl Nitrogen or TKN) and nitrate/nitrite nitrogen.

*** United States Geological Survey (USGS) Continuous-Record Gaging Station.

**** Flow rates are preliminary and subject to final revision by USGS.

Recommended EPA Criteria based on Aggregate Ecoregion III

Total Phosporus: 0.02188 mg/L (21.88 ug/L) ≈ 0.022 mg/L

Total Nitrogen: 0.38 mg/L

Chlorophyll *a*: 0.00178 mg/L (1.78 ug/L) ≈ 0.0018 mg/L

Turbidity: 2.34 FTU/NTU

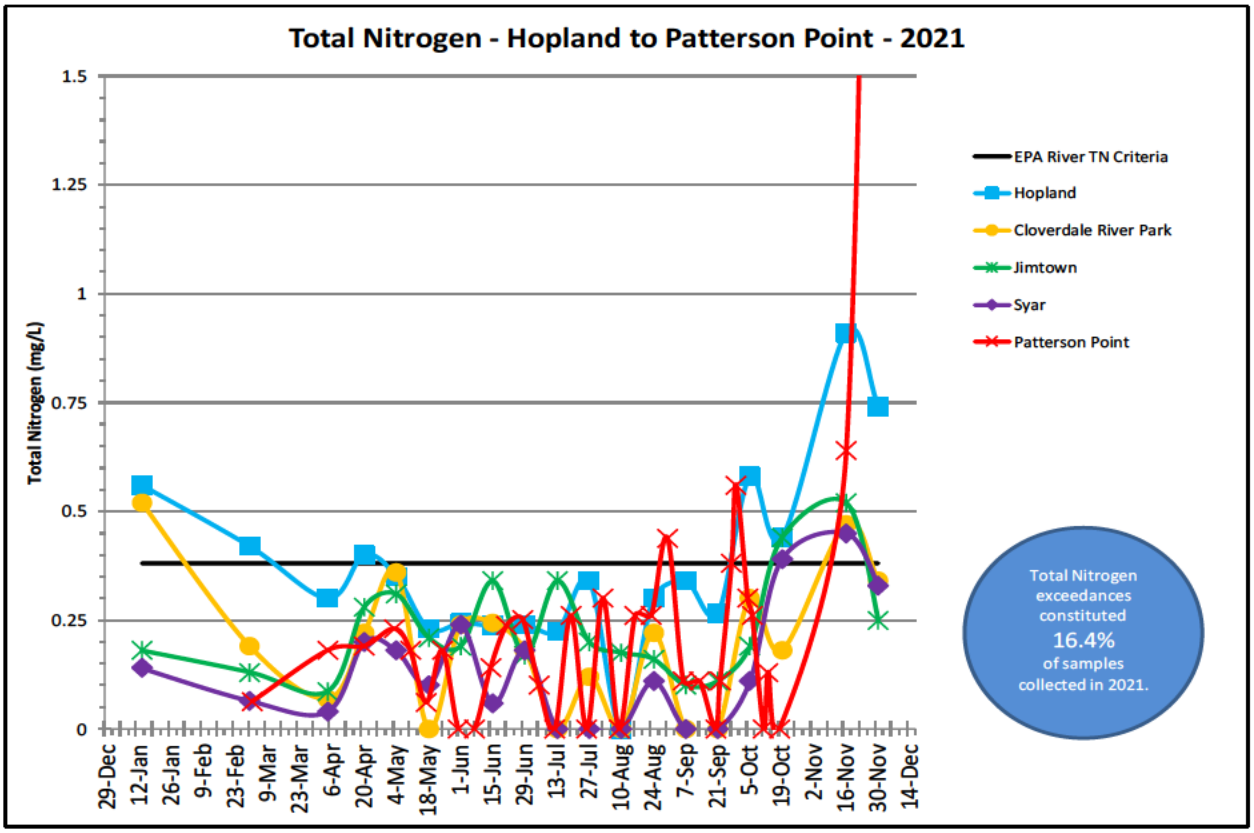


Figure 3-22. Sonoma Water Seasonal Mainstem Russian River Grab Sampling Total Nitrogen Results in 2021.

Total Phosphorus

The EPA's desired goal for total phosphates as phosphorus in Aggregate Ecoregion III has been established as 21.88 micrograms per liter (µg/L), or approximately 0.022 mg/L, for rivers and streams (EPA, 2000). All five monitoring stations were observed to have exceedances of the EPA criteria for total phosphorous during the monitoring season (Tables 3-5 through 3-7, and Figure 3-23). The EPA criteria was exceeded seventy (70) times out of 110 samples collected at the five stations (63.6%). The Hopland, Cloverdale, and Patterson Point stations predominantly exceeded the total phosphorus criteria during the monitoring season, whereas the Jimtown station had only two (2) exceedances and the Syar station had seven (7) exceedances during the 2021 season.

The station at Hopland generally had higher concentrations than the other stations, with the exception of the Patterson Point station in the spring and early summer (Figure 3-23). Hopland exceeded the EPA criteria throughout the monitoring season (19 of 19 samples or 100%), under flows that ranged from 34.2 cfs to 363 cfs (Table 3-5 and Figure 3-23). The maximum concentration measured 0.13 mg/L on 8 September with a flow of 56.1 cfs (Table 3-5). The minimum concentration was 0.041 mg/L, which occurred on 1 December with a flow of approximately 58.9 cfs. Total phosphorus values at Hopland were observed to slightly decrease from spring into summer before spiking in September and then decreasing through the fall (Figure 3-23).

The Cloverdale River Park station also exceeded the total phosphorus EPA criteria for a majority of the season, including 16 of 19 samples (84.2%) under flows that ranged from 37.0 to 406 cfs. The maximum concentration measured 0.15 mg/L on 20 October with a flow of 53.0 cfs (Table 3-5 and Figure 3-23).

The minimum concentration was 0.014 mg/L, which occurred twice on 2 March and 1 December with flows of approximately 137 and 80.2 cfs, respectively. Total phosphorus values at Cloverdale were observed to decrease from winter into spring, where they remained relatively stable through summer into fall before spiking in October (Figure 3-23).

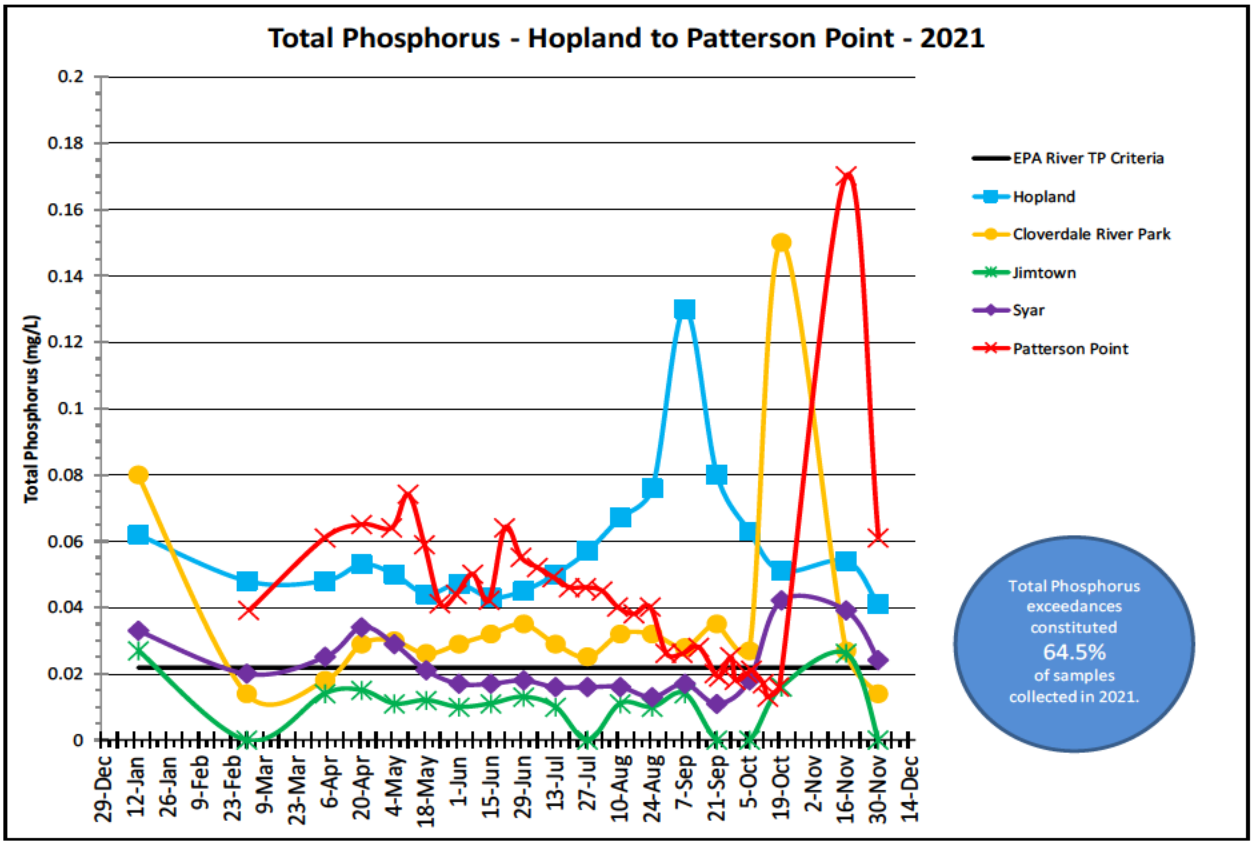


Figure 3-23. Sonoma Water Seasonal Mainstem Russian River Grab Sampling Total Phosphorus Results in 2021.

Concentrations at the Jimtown station were significantly lower compared to the Hopland and Cloverdale stations, with only two (2) exceedances (2 of 19 or 10.5%) of the EPA criteria with flows of 291 and 300 cfs, respectively (Table 3-6 and Figure 3-23). The maximum concentration measured 0.027 mg/L on 14 January with a flow of approximately 300 cfs (Table 3-6). The minimum seasonal value was ND, which occurred five (5) times with flows that ranged from approximately 34.0 to 184 cfs (Table 3-6). Overall, concentrations remained consistently low throughout the monitoring season (Figure 3-23).

Syar Vineyards had seven (7) exceedances (7 of 19 or 36.8%) of the total phosphorus EPA criteria during the season, with a maximum value of 0.042 mg/L that occurred on 20 October with a flow of approximately 115 cfs (Table 3-6 and Figure 3-23). A majority of the exceedances occurred early in winter/spring and again in the fall when the USGS gaging station had been removed for the season (Table 3-6). However, flows were estimated to range from approximately 145 to 565 cfs based on flows at the USGS RR at Healdsburg gage combined with flows at the USGS Dry Creek near Mouth gage. The minimum seasonal value was 0.011 mg/L on 22 September with a flow of approximately 97.8 cfs (Table 3-6). Concentrations remained relatively low throughout the season, similar to Jimtown (Figure 3-23).

Table 3-6. Sonoma Water 2021 Seasonal Mainstem Russian River Grab Sampling Results at Jimtown and Syar.

Jimtown	Time	Temperature	pH	Total Organic Nitrogen	Ammonia as N	Ammonia as N Unionized	Nitrate as N	Nitrite as N	Total Kjeldahl Nitrogen	Total Nitrogen**	Phosphorus, Total	Total Orthophosphate	Dissolved Organic Carbon	Total Organic Carbon	Total Dissolved Solids	Turbidity	Chlorophyll-a	USGS 11463682 RR at Jimtown***
MDL*				0.20	0.10	0.00010	0.040	0.050	0.20	0.50	0.010	0.030	0.600	0.300	10	0.10	0.0030	Flow Rate****
Date		°C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	(cfs)
1/14/2021	10:50	11.9	7.6	ND	ND	ND	0.18	ND	ND	0.18	**0.027**	0.043	1.58	2.00	130	1.1	ND	300
3/2/2021	12:00	13.0	7.3	ND	ND	ND	0.13	ND	ND	0.13	ND	ND	1.15	1.33	160	0.40	ND	184
4/5/2021	12:20	16.0	7.4	ND	ND	ND	0.086	ND	ND	0.086	0.014	ND	1.01	1.34	170	0.45	ND	134
4/21/2021	11:40	17.8	7.2	0.14	ND	ND	0.14	ND	ND	0.28	0.015	0.033	0.980	1.05	190	0.40	ND	70.6
5/5/2021	12:50	20.5	7.5	0.18	ND	ND	0.13	ND	ND	0.31	0.011	ND	0.881	0.998	220	0.25	ND	50.5
5/19/2021	11:30	17.5	6.9	ND	ND	ND	0.21	ND	ND	0.21	0.012	ND	0.573	0.692	210	0.53	ND	33.9
6/2/2021	11:50	19.8	6.9	ND	ND	ND	0.19	ND	ND	0.19	0.010	ND	0.803	0.968	180	ND	ND	38.2
6/16/2021	12:50	21.1	6.7	0.18	ND	ND	0.16	ND	ND	0.34	0.011	ND	0.817	1.13	200	1.5	**0.0040**	37.4
6/30/2021	12:00	21.5	6.4	ND	ND	ND	0.17	ND	ND	0.17	0.013	ND	0.867	1.17	190	0.89	ND	35.8
7/14/2021	12:40	20.5	7.0	0.18	ND	ND	0.16	ND	ND	0.34	0.010	ND	0.860	0.903	190	0.16	ND	32.3
7/28/2021	13:40	21.8	7.5	ND	ND	ND	0.20	ND	ND	0.20	ND	ND	0.820	0.996	190	ND	**0.0032**	35.2
8/11/2021	13:00	22.2	7.3	0.11	ND	ND	0.065	ND	ND	0.175	0.011	ND	0.976	1.45	190	0.70	**0.0093**	50.4
8/25/2021	12:40	20.3	7.1	ND	ND	ND	0.16	ND	ND	0.16	0.010	ND	0.848	1.18	200	0.58	**0.0048**	44.8
9/8/2021	13:00	21.1	7.2	ND	ND	ND	0.10	ND	ND	0.10	0.014	ND	0.920	1.12	180	0.53	**0.0064**	30.3
9/22/2021	12:20	19.5	7.3	ND	ND	ND	0.11	ND	ND	0.11	ND	ND	0.896	1.21	210	0.43	**0.0048**	35.6
10/6/2021	12:50	18.2	7.3	ND	ND	ND	0.19	ND	ND	0.19	ND	ND	0.905	1.27	290	0.30	ND	34.0
10/20/2021	10:40	13.3	7.3	0.35	ND	ND	0.089	ND	0.35	**0.44**	0.016	ND	1.13	1.67	180	0.88	**0.0075**	48.4
11/17/2021	12:50	15.4	6.7	0.18	ND	ND	0.34	ND	ND	**0.52**	**0.026**	0.048	1.79	2.08	200	1.6	ND	291
12/1/2021	13:20	14.6	7.7	0.10	ND	ND	0.15	ND	ND	0.25	ND	ND	1.26	1.41	210	0.37	ND	128

Syar	Time	Temperature	pH	Total Organic Nitrogen	Ammonia as N	Ammonia as N Unionized	Nitrate as N	Nitrite as N	Total Kjeldahl Nitrogen	Total Nitrogen**	Phosphorus, Total	Total Orthophosphate	Dissolved Organic Carbon	Total Organic Carbon	Total Dissolved Solids	Turbidity	Chlorophyll-a	USGS 11465390 RR near Windsor***
MDL*				0.20	0.10	0.00010	0.040	0.050	0.20	0.50	0.010	0.030	0.600	0.300	10	0.10	0.0030	Flow Rate****
Date		°C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	(cfs)
1/14/2021	9:50	11.8	7.3	ND	ND	ND	0.14	ND	ND	0.14	**0.033**	0.060	1.69	1.71	140	1.1	**0.0035**	out for season
3/3/2021	11:00	11.9	7.8	ND	ND	ND	0.065	ND	ND	0.065	0.020	0.031	1.26	1.45	150	0.47	**0.0056**	out for season
4/5/2021	11:30	14.9	7.5	ND	ND	ND	0.040	ND	ND	0.04	**0.025**	0.048	1.31	1.36	150	0.99	**0.0048**	out for season
4/21/2021	10:50	17.1	7.7	0.14	ND	ND	0.060	ND	ND	0.200	**0.034**	0.10	1.07	1.31	140	0.56	ND	out for season
5/5/2021	11:50	17.5	8.0	0.18	ND	ND	ND	ND	ND	0.18	**0.029**	0.055	1.13	1.41	160	0.50	ND	149
5/19/2021	10:20	14.6	7.2	0.10	ND	ND	ND	ND	ND	0.10	0.021	ND	1.10	1.38	130	1.4	ND	188
6/2/2021	10:10	15.7	7.5	0.18	ND	ND	0.059	ND	ND	0.239	0.017	0.57	1.26	1.48	120	0.54	ND	196
6/16/2021	11:40	19.0	7.2	ND	ND	ND	0.059	ND	ND	0.059	0.017	ND	1.22	1.58	140	1.1	ND	163
6/30/2021	11:00	19.4	8.3	0.18	ND	ND	ND	ND	ND	0.18	0.018	ND	1.24	1.68	130	0.70	ND	108
7/14/2021	11:10	16.2	7.1	ND	ND	ND	ND	ND	ND	ND	0.016	ND	1.20	1.46	120	0.54	ND	104
7/28/2021	12:40	20.0	8.1	ND	ND	ND	ND	ND	ND	ND	0.016	ND	1.24	1.43	130	0.57	ND	99.5
8/11/2021	11:50	18.4	7.4	ND	ND	ND	ND	ND	ND	ND	0.016	ND	1.08	1.70	770	0.58	ND	114
8/25/2021	11:30	16.8	7.5	ND	ND	ND	0.11	ND	ND	0.11	0.013	ND	0.980	1.29	140	0.64	ND	105
9/8/2021	11:50	17.7	7.1	ND	ND	ND	ND	ND	ND	ND	0.017	ND	1.36	1.40	120	0.63	ND	96.8
9/22/2021	10:10	16.3	7.3	ND	ND	ND	ND	ND	ND	ND	0.011	ND	1.40	1.54	150	0.52	**0.0048**	97.8
10/6/2021	11:20	14.7	7.9	ND	ND	ND	0.11	ND	ND	0.11	0.018	ND	1.78	2.14	120	0.57	ND	95.8
10/20/2021	9:20	14.7	7.7	0.35	ND	ND	0.041	ND	0.35	**0.39**	**0.042**	0.047	2.25	3.38	120	**4.0**	**0.0032**	115
11/17/2021	11:50	14.9	7.3	0.14	ND	ND	0.31	ND	ND	**0.45**	**0.039**	0.084	1.93	2.27	180	**3.0**	**0.0032**	out for season
12/1/2021	12:00	13.3	8.0	0.21	ND	ND	0.12	ND	0.21	0.33	**0.024**	0.037	1.50	1.62	180	**2.4**	**0.0048**	out for season

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revision.

** Total nitrogen is calculated through the summation of the different components of total nitrogen: organic and ammoniacal nitrogen (together referred to as Total Kjeldahl Nitrogen or TKN) and nitrate/nitrite nitrogen.

*** United States Geological Survey (USGS) Continuous-Record Gaging Station.

**** Flow rates are preliminary and subject to final revision by USGS.

Recommended EPA Criteria based on Aggregate Ecoregion III

Total Phosporus: 0.02188 mg/L (21.88 ug/L) ≈ 0.022 mg/L

Chlorophyll *a*: 0.00178 mg/L (1.78 ug/L) ≈ 0.0018 mg/L

Total Nitrogen: 0.38 mg/L

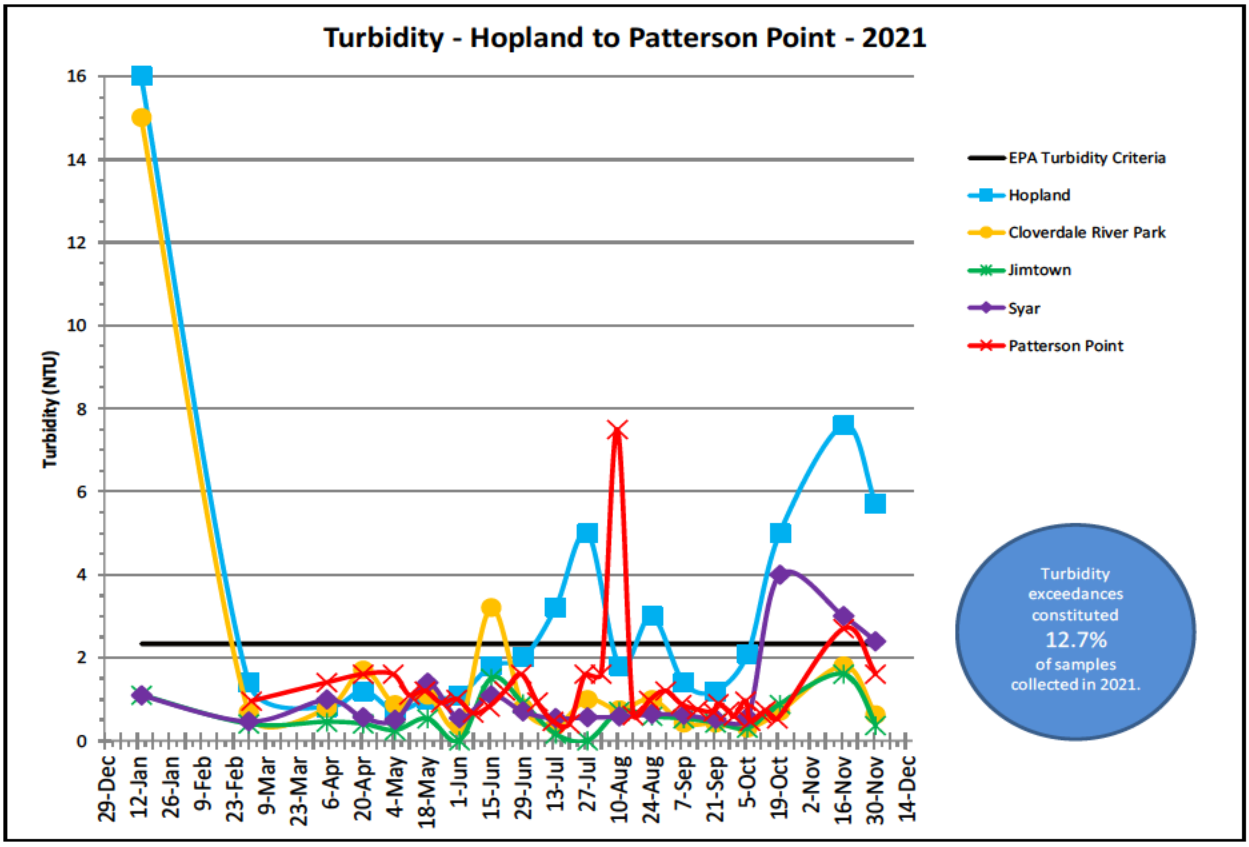
Turbidity: 2.34 FTU/NTU

Patterson Point had twenty-six (26) exceedances of the total phosphorus criteria (26 of 34 or 76.5%) under flows that ranged from 33.8 to 684 cfs (Table 3-7 and Figure 3-23). The maximum concentration measured 0.17 mg/L on 17 November with a flow of 684 cfs (Table 3-7). The minimum seasonal value was 0.013mg/L on 14 October with a flow of approximately 38.1 cfs (Table 3-7). Concentrations were observed to generally decrease from winter through summer and into fall before spiking in November during elevated storm flows (Table 3-7 and Figure 3-23).

Turbidity

The EPA recommended criteria for turbidity is 2.34 NTU (EPA, 2000). Four of the five monitoring stations were observed to have exceedances of the EPA criteria during the monitoring season (Tables 3-5 through 3-7). The Jimtown station did not have any observed exceedances during the 2021 season. Overall, the EPA criteria was exceeded fourteen (14) times out of 110 samples collected (12.7%) at the five stations (Tables 3-5 through 3-7 and Figure 3-24).

Turbidity levels at Hopland exceeded the EPA criteria periodically through the monitoring season (7 of 19 samples or 36.8%) with flows that ranged from 47.7 to 363 cfs (Table 3-5 and Figure 3-24). The maximum seasonal value measured 16 NTU on 14 January with a flow of approximately 363 cfs (Table 3-5). The minimum seasonal value was 0.72 NTU on 5 May with a flow of approximately 34.2 cfs (Table 3-5). Values were observed to remain relatively low through the spring and summer with a few periodic exceedances before increasing in the fall and winter (Figure 3-24).



Figures 3-24. Sonoma Water Seasonal Mainstem Russian River Grab Sampling Turbidity in 2021.

Cloverdale River Park had two (2) exceedances of the EPA criteria out of 19 samples collected (2 of 19 or 10.5%) during flows of approximately 406 and 54.3 cfs, respectively (Table 3-5 and Figure 3-24). Cloverdale River Park was observed to have a maximum value of 15 NTU on 14 January with a flow of 406 cfs (Table 3-5). The minimum seasonal value was 0.30 NTU on 6 October with a flow of approximately 48.5 cfs (Table 3-5). Other than the exceedance during elevated flows in January and a minor spike in June, values were observed to remain consistently low through the monitoring season (Figure 3-24).

Table 3-7. Sonoma Water 2021 Seasonal Mainstem Russian River Grab Sampling Results at Patterson Point.

Patterson Point	Time	Temperature	pH	Total Organic Nitrogen	Ammonia as N	Ammonia as N Unionized	Nitrate as N	Nitrite as N	Total Kjeldahl Nitrogen	Total Nitrogen**	Phosphorus, Total	Total Orthophosphate	Dissolved Organic Carbon	Total Organic Carbon	Total Dissolved Solids	Turbidity	Chlorophyll-a	USGS 11467000 RR near Guerneville (Hacienda)***
MDL*				0.20	0.10	0.00010	0.040	0.050	0.20	0.50	0.010	0.030	0.600	0.300	10	0.10	0.0030	Flow Rate****
Date		°C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	(cfs)
3/3/2021	9:50	11.6	7.4	ND	ND	ND	0.062	ND	ND	0.062	**0.039**	0.076	1.92	1.97	160	0.95	ND	276
4/5/2021	10:30	15.8	7.1	0.18	ND	ND	ND	ND	ND	0.18	**0.061**	0.14	1.73	2.06	160	1.4	ND	215
4/21/2021	9:50	18.6	7.5	0.14	ND	ND	0.045	ND	ND	0.185	**0.065**	0.17	1.66	1.91	170	1.6	ND	76.8
5/4/2021	12:00	21.1	8.2	0.18	ND	ND	0.053	ND	ND	0.233	**0.064**	0.14	1.66	1.95	150	1.6	ND	72.8
5/11/2021	11:40	21.2	7.3	0.18	ND	ND	ND	ND	ND	0.18	**0.074**	0.17	1.48	1.84	150	1.1	ND	74.3
5/18/2021	10:20	19.9	7.4	ND	ND	ND	0.060	ND	ND	0.060	**0.059**	0.12	1.32	1.70	140	1.2	**0.0037**	91.6
5/25/2021	10:30	20.1	7.5	0.18	ND	ND	ND	ND	ND	0.18	**0.041**	0.081	1.37	1.90	150	0.91	ND	86.6
6/1/2021	10:20	21.7	7.5	ND	ND	ND	ND	ND	ND	ND	**0.044**	0.10	1.35	1.84	140	1.0	ND	87.8
6/8/2021	9:20	21.5	7.4	ND	ND	ND	ND	ND	ND	ND	**0.050**	0.097	1.31	1.80	130	0.66	ND	120
6/15/2021	9:40	22.1	7.4	0.14	ND	ND	ND	ND	ND	0.14	**0.042**	0.078	1.50	1.79	130	0.82	ND	90.8
6/22/2021	9:30	22.9	7.7	0.18	ND	ND	0.057	ND	ND	0.237	**0.064**	0.14	1.63	1.98	130	1.2	**0.0037**	70.3
6/29/2021	9:10	22.8	7.8	0.18	ND	ND	0.071	ND	ND	0.251	**0.055**	0.11	1.78	1.99	130	1.6	ND	63.6
7/6/2021	9:30	23.1	7.9	0.10	ND	ND	ND	ND	ND	0.10	**0.052**	0.10	1.54	2.13	140	0.93	ND	52.5
7/13/2021	9:40	23.1	7.6	ND	ND	ND	ND	ND	ND	ND	**0.049**	0.095	1.50	1.90	150	0.46	ND	42.9
7/20/2021	10:20	22.8	7.9	0.26	ND	ND	ND	ND	0.26	0.26	**0.046**	0.083	1.48	1.85	160	0.52	**0.0035**	41.4
7/27/2021	9:50	22.1	7.6	ND	ND	ND	ND	ND	ND	ND	**0.046**	0.082	1.62	1.87	140	1.2	ND	36.5
8/3/2021	9:40	22.5	7.8	0.18	ND	ND	0.12	ND	ND	0.30	**0.045**	0.097	1.40	2.08	160	1.1	**0.0040**	43.8
8/10/2021	9:10	22.6	7.8	ND	ND	ND	ND	ND	ND	ND	**0.040**	0.055	1.46	1.80	140	**7.5**	ND	52.2
8/17/2021	9:10	22.8	7.8	0.26	ND	ND	ND	ND	0.26	0.26	**0.038**	0.047	1.46	1.71	170	0.61	ND	47.2
8/24/2021	9:30	20.7	7.6	0.14	ND	ND	0.12	ND	ND	0.26	**0.040**	0.055	1.27	1.62	150	0.97	ND	47.4
8/31/2021	9:40	21.7	7.8	ND	0.32	0.0087	0.11	ND	ND	**0.4387**	**0.026**	0.046	1.22	1.65	160	1.2	ND	33.8
9/7/2021	9:40	21.0	7.5	ND	ND	ND	0.11	ND	ND	0.11	**0.026**	ND	1.75	1.65	160	0.88	ND	37.2
9/14/2021	10:00	20.9	7.7	ND	ND	ND	0.11	ND	ND	0.11	**0.028**	0.032	1.47	1.97	170	0.75	ND	40.5
9/21/2021	9:50	19.8	7.5	ND	ND	ND	ND	ND	ND	ND	0.020	ND	1.42	1.74	140	0.69	ND	48.6
9/23/2021	10:30	19.8	7.7	ND	ND	ND	0.11	ND	ND	0.11	0.019	ND	1.45	1.78	190	0.89	ND	42.5
9/28/2021	9:40	19.1	7.7	0.26	ND	ND	0.12	ND	0.26	**0.38**	**0.025**	ND	1.62	1.66	140	0.70	ND	44.2
9/30/2021	11:10	18.7	7.3	0.44	ND	ND	0.12	ND	0.44	**0.56**	0.018	ND	1.66	1.65	130	0.58	ND	44.4
10/5/2021	9:40	18.4	7.5	0.18	ND	ND	0.12	ND	ND	0.30	0.020	ND	1.45	1.70	150	0.96	**0.0035**	36.6
10/7/2021	9:40	17.8	7.6	0.26	ND	ND	ND	ND	0.26	0.26	0.021	ND	1.56	1.76	140	0.47	ND	38.6
10/12/2021	10:00	15.5	7.6	ND	ND	ND	ND	ND	ND	ND	0.017	ND	1.38	1.50	160	0.64	ND	37.0
10/14/2021	10:10	15.1	7.2	ND	ND	ND	0.13	ND	ND	0.13	0.013	ND	1.17	1.50	150	0.73	ND	38.1
10/19/2021	9:50	14.6	7.3	ND	ND	ND	ND	ND	ND	ND	0.016	ND	1.19	1.64	150	0.53	ND	48.1
11/17/2021	10:10	14.4	7.1	0.35	ND	ND	0.29	ND	0.35	**0.64**	**0.17**	0.43	4.18	4.91	190	**2.7**	ND	684
12/1/2021	10:20	12.3	7.5	3.9	ND	ND	0.12	ND	3.9	**4.0**	**0.061**	0.15	2.73	2.83	190	1.6	ND	293

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revision.

** Total nitrogen is calculated through the summation of the different components of total nitrogen: organic and ammoniacal nitrogen (together referred to as Total Kjeldahl Nitrogen or TKN) and nitrate/nitrite nitrogen.

*** United States Geological Survey (USGS) Continuous-Record Gaging Station.

**** Flow rates are preliminary and subject to final revision by USGS.

Recommended EPA Criteria based on Aggregate Ecoregion III

Total Phosporus: 0.02188 mg/L (21.88 ug/L) ≈ 0.022 mg/L

Total Nitrogen: 0.38 mg/L

Chlorophyll *a*: 0.00178 mg/L (1.78 ug/L) ≈ 0.0018 mg/L

Turbidity: 2.34 FTU/NTU

Jimtown did not have any exceedances (0 of 19 or 0%) of the EPA criteria in 2021 (Table 3-6 and Figure 3-24). The maximum seasonal value was 1.6 NTU on 17 November with a flow of approximately 291 cfs (Table 3-6). The minimum seasonal value was ND, which occurred twice on 2 June and 28 July with flows of approximately 38.2 and 35.2 cfs, respectively (Table 3-6). Turbidity values remained consistently low through the monitoring season (Figure 3-24).

Syar Vineyards had three (3) exceedances of the turbidity criteria (3 of 19 or 15.8%) during the monitoring season (Table 3-6 and Figure 3-24). The maximum seasonal value was 4.0 NTU on 20 October with a flow of approximately 115 cfs (Table 3-6 and Figure 3-24). The minimum seasonal value was 0.47 NTU, which occurred 3 March with an estimated flow of approximately 284 cfs (Table 3-6 and Figure 3-24). The USGS near Windsor gaging station had been removed for the season therefore estimated flow is based on a flow of 199 cfs at USGS RR at Healdsburg gage combined with a flow of 85.3 cfs at USGS Dry Creek near Mouth gage. Turbidity values remained low through the monitoring

season before increasing and exceeding the EPA criteria during the last three sampling events in the fall and winter (Figure 3-24).

The Patterson Point station had two (2) exceedances of the turbidity criteria (2 of 34 or 5.9%) during flows of approximately 52.2 and 684 cfs, respectively (Table 3-7 and Figure 3-24). The maximum seasonal value was 7.5 NTU on 10 August with a flow of approximately 52.2 cfs (Table 3-7). The minimum seasonal value was 0.46 NTU on 13 July with a flow of approximately 42.9 cfs (Table 3-7). Other than the August exceedance and a minor spike in November, values were observed to remain consistently low through the monitoring season (Figure 3-24).

Chlorophyll a

The EPA criteria for *chlorophyll a* in Aggregate Ecoregion III is 1.78 µg/L, or approximately 0.0018 mg/L for rivers and streams (EPA, 2000). *Chlorophyll a* results were observed to periodically exceed the EPA criteria at all five stations during the season (34 of 110 samples or 30.9%), most predominantly at Hopland and least predominantly at Patterson Point (Tables 3-5 through 3-7 and Figure 3-25). *Chlorophyll a* values varied through the season with several ND values occurring at all five stations (Figure 3-25).

As mentioned above, lab analysis constraints in 2021 resulted in the MDL for *chlorophyll a* being higher than the EPA criteria for exceedances for *chlorophyll a* in rivers and streams. Therefore, some lab results for *chlorophyll a* that are listed as non-detect (ND) could potentially have concentrations above the criteria and below the MDL. However, for reporting purposes, only those exceedances that are quantified will be included in the summation.

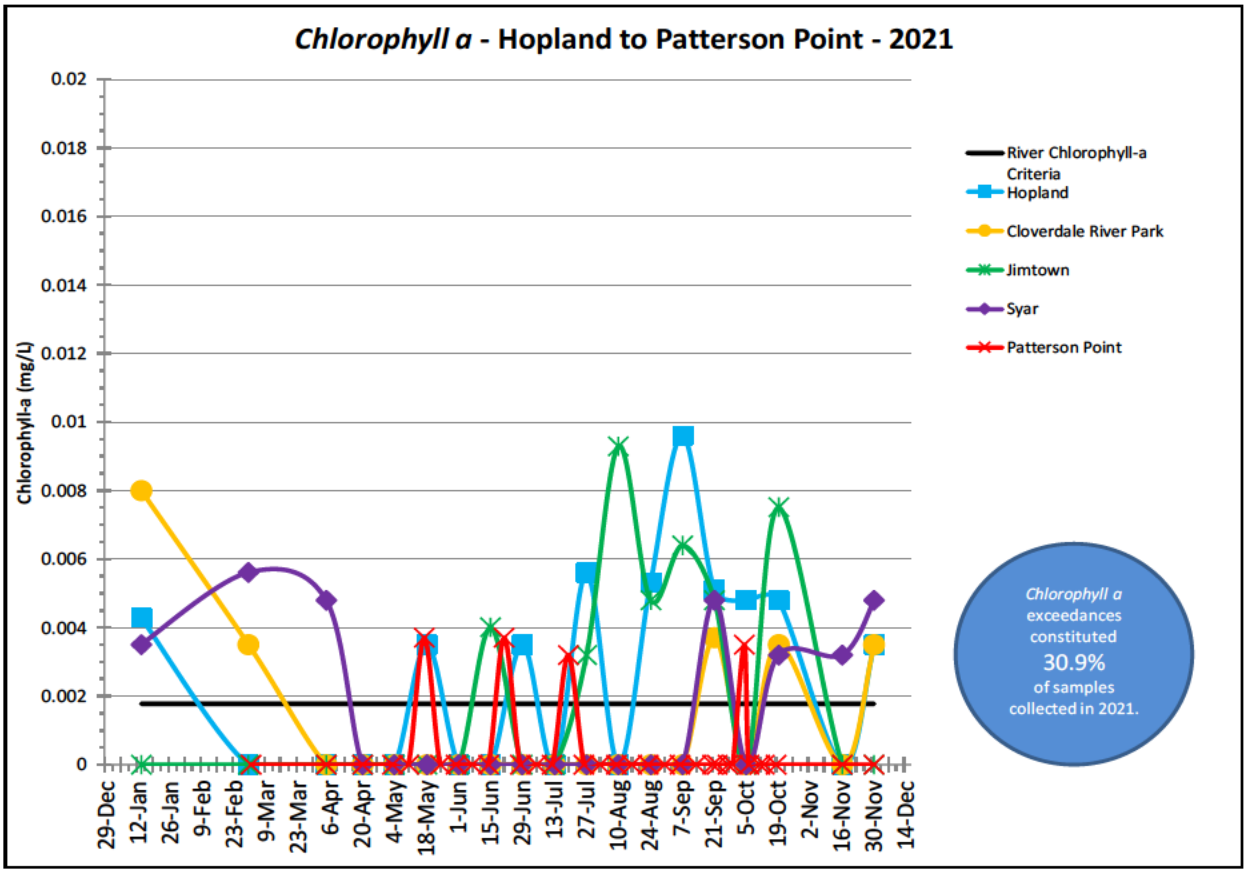
Hopland had ten (10) *chlorophyll a* exceedances (10 of 19 or 52.6%) and nine (9) non-detects, including a maximum value of 0.0096 mg/L that occurred on 8 September with a flow of 56.1 cfs (Table 3-5 and Figure 3-25). Hopland had exceedances periodically throughout the monitoring period, but more predominantly during the summer and fall months.

Cloverdale River Park had five (5) *chlorophyll a* exceedances (5 of 19 or 26.3%) and fourteen (14) non-detects, including a maximum value of 0.0080 mg/L that occurred on 14 January with a flow of 406 cfs (Table 3-5 and Figure 3-25). Exceedances occurred during the early winter monitoring in January and again in the late summer and fall.

Jimtown had seven (7) *chlorophyll a* exceedances (7 of 19 or 36.8%) and twelve (12) non-detects, including a maximum value of 0.0093 mg/L that occurred on 11 August with a flow of 50.4 cfs (Table 3-6 and Figure 3-25). Exceedances at Jimtown primarily occurred during the latter half of the monitoring period in the summer and fall.

Syar Vineyards had seven (7) *chlorophyll a* exceedances (7 of 19 or 36.8%) and twelve (12) non-detects, including a maximum value of 0.056 mg/L that occurred on 3 March with an estimated flow of approximately 284 cfs (Table 3-6 and Figure 3-25). The USGS near Windsor gaging station had been removed for the season, therefore estimated flow is based on a flow of 199 cfs at USGS RR at Healdsburg gage combined with a flow of 85.3 cfs at USGS Dry Creek near Mouth gage. Exceedances at Syar primarily occurred during the early winter and spring months and then in late summer and fall. (Table 3-6 and Figure 3-25)

Patterson Point had five (5) *chlorophyll a* exceedances (5 of 34 or 14.7%) and twenty-nine (29) non-detects, including a maximum value of 0.0040 mg/L that occurred on 3 August with a flow of approximately 43.8 cfs at Hacienda (Table 3-7 and Figure 3-25). Exceedances at Patterson Point occurred periodically throughout the monitoring season (Table 3-7).



Figures 3-25. Sonoma Water Seasonal Mainstem Russian River Grab Sampling *Chlorophyll a* Results in 2021.

3.2 Sonoma Water Russian River Estuary Water Quality Monitoring

The changes in lower Russian River minimum instream flow requirements authorized by the Order allowed flows at Hacienda to decline below D1610 minimum instream flows of 85 cfs for most of the monitoring season (Figure 2-4). Additionally, lower Russian River flows did briefly decline below the TUC minimum flows of 35 cfs, but did not drop below the instantaneous minimum flow of 25 cfs authorized by the Order (Figure 2-4). Long-term water quality monitoring and weekly grab sampling was conducted in the lower, middle, and upper reaches of the Russian River Estuary and the upper extent of inundation and backwatering during lagoon formation, referred to as the maximum backwater area (MBA). The three reaches of the estuary experience saline water conditions of various degrees with the upper reach extending up to the Duncans Mills area near the confluence with Austin Creek. The MBA does not experience any saline water migration and is located in the mainstem from Austin Creek to Vacation Beach in Guerneville. Long-term monitoring stations and grab sampling sites were located between Patty's Rock at Jenner and Vacation Beach in Guerneville, including in two tributaries.

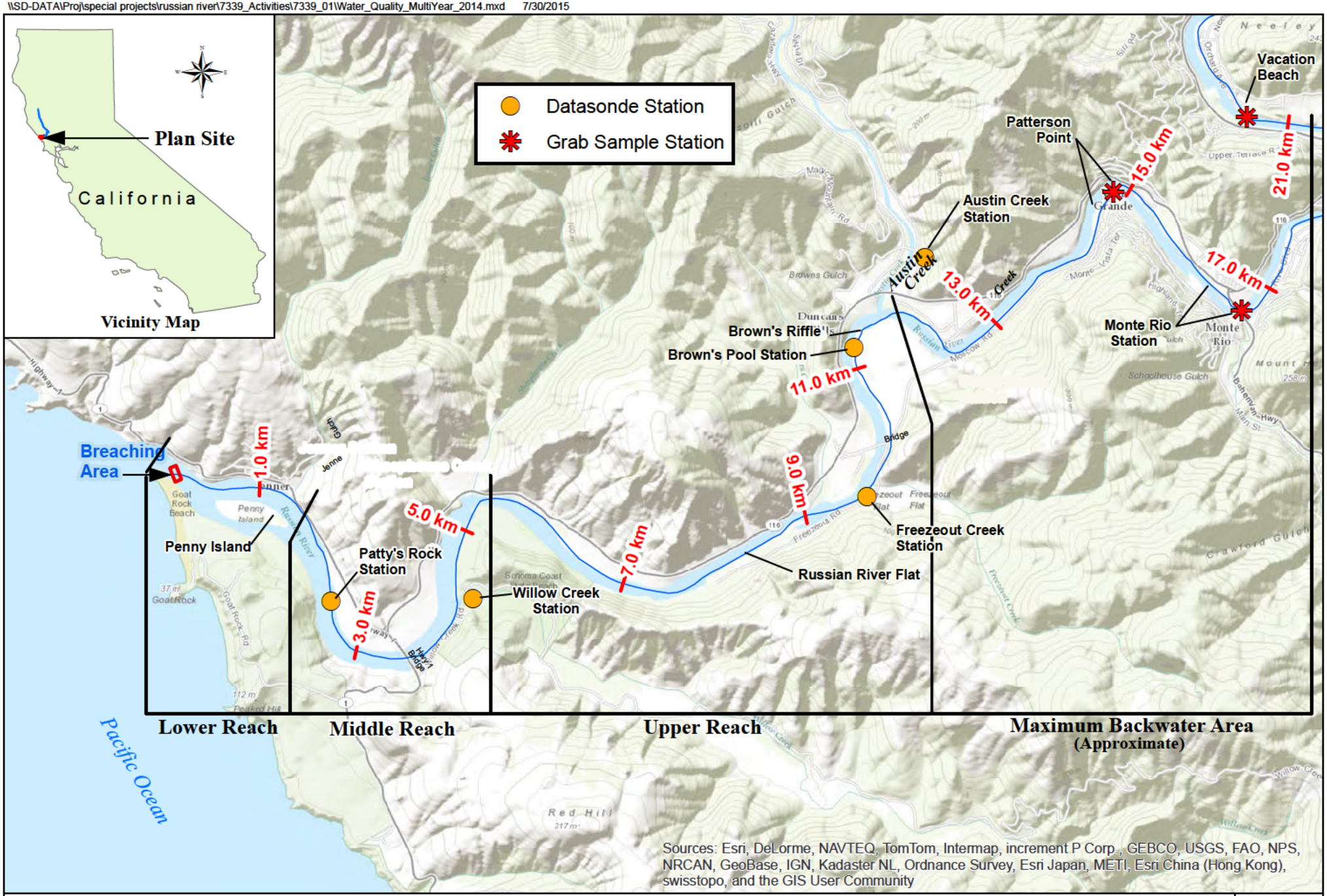
Saline water is denser than freshwater and a salinity "wedge" forms as freshwater outflow passes over the denser tidal inflow. During the lagoon management period (15 May to 15 October), the lower and

middle reaches of the Estuary up to Sheephouse Creek are predominantly saline environments with a thin freshwater layer that flows over the denser saltwater. The upper reach of the Estuary transitions to a predominantly freshwater environment, which is periodically underlain by a denser, saltwater layer that migrates upstream to Duncans Mills during low flow conditions and barrier beach closure.

Sonoma Water staff continued to collect long-term monitoring data to: establish baseline information on water quality in the Estuary and assess the availability of aquatic habitat in the Estuary; gain a better understanding of the longitudinal and vertical water quality profile during the ebb and flow of the tide; and track changes to the water quality profile that may occur during periods of low flow conditions, barrier beach closure, lagoon outlet channel implementation, and reopening. Long-term monitoring datasondes were deployed at five (5) stations in the Russian River estuary, including two tributary stations during the 2021 monitoring season (Figure 3-26). However, drought conditions precluded long-term deployment in Austin Creek as the station went dry in early 2021. Sonoma Water submits an annual report to the National Marine Fisheries Service (NMFS) and California Department of Fish and Wildlife (CDFW) documenting the status updates of Sonoma Water's efforts in implementing the Biological Opinion. The water quality monitoring data for 2021 is currently being compiled and will be discussed in the Russian River Biological Opinion 2021-2022 annual report, which will be posted to Sonoma Water's website when available: https://www.sonomawater.org/biological-opinion-outreach.

Sonoma Water staff conducted weekly grab sampling from 4 May to 19 October at three stations in the lower mainstem Russian River, including: Vacation Beach, Monte Rio, and Patterson Point (Figure 3-25). Additional grab sampling was conducted at Patterson Point for nutrients, *chlorophyll a*, total and dissolved organic carbon, total dissolved solids, and turbidity in March, April, November, and December. All samples were analyzed for bacterial indicators (Total Coliform, *E. coli*, and *Enterococcus*), nutrients, *chlorophyll a*, total and dissolved organic carbon, total dissolved solids, and turbidity. Sonoma Water submitted samples to the Sonoma County DHS Public Health Division Lab in Santa Rosa for bacteria analysis. Samples for all other constituents were submitted to Alpha Analytical Labs in Ukiah for analysis.

\\SD-DATA\Proj\special projects\russian river\7339_Activities\7339_01\Water_Quality_MultiYear_2014.mxd 7/30/2015



0 0.45 0.9 1.8 Kilometers

0 0.375 0.75 1.5 Miles

Russian River Estuary
Water Quality Monitoring Stations

This Map is for general reference only.

Figure 3-26

The grab sample sites are shown in Figure 3-26, and the results are summarized in Tables 3-8 through 3-13 and Figures 3-27 through 3-33. Highlighted values indicate those values exceeding California Department of Public Health Draft Guidance (CDPH guidelines) for Fresh Water Beaches for Indicator Bacteria (CDPH, 2011), EPA Recreational Water Quality Criteria (EPA, 2012), and EPA Ambient Water Quality Criteria Recommendations for Rivers and Streams in Nutrient Ecoregion III (EPA, 2000).

Lab analysis constraints in 2021 resulted in a method detection limit (MDL) for *chlorophyll a*, which is the level of accuracy for a given lab analysis to provide a valid concentration of a given constituent, that was higher than the EPA criteria for exceedances for *chlorophyll a* in rivers and streams. Put simply, the EPA exceedance criteria for *chlorophyll a* in rivers and streams is approximately 0.0018 mg/L, whereas the lab analysis MDL for *chlorophyll a* was 0.0030 mg/L. Therefore, some lab results for *chlorophyll a* that are listed as non-detect (ND) could potentially have concentrations above the criteria and below the MDL, which in turn could result in an under representation of the actual number of exceedances observed. However, for reporting purposes, only those exceedances that are quantified will be included in the summation.

Additionally, it must be emphasized that the draft CDPH guidelines and EPA criteria are not adopted standards, and are therefore subject to change (if it is determined that the guidelines or criteria are not accurate indicators) and are not currently enforceable.

Bacteria

Samples were collected in the lower river in 2021 for diluted and undiluted analysis of Total Coliform and *E. coli* for comparative purposes and the results are included in Tables 3-8 through 3-10 and Figures 3-27 and 3-28. Total Coliform and *E. coli* data presented in Figures 3-27 and 3-28 utilize undiluted sample results unless the reporting limit has been exceeded, at which point the diluted results are utilized. Samples collected for *Enterococcus* were undiluted only and results are included in Tables 3-8 through 3-10 and Figure 3-29. The CDPH guideline for Total Coliform is 10,000 MPN per 100 mL, and the EPA BAV is 235 MPN per 100 mL for *E. coli* and 61 MPN per 100 mL for *Enterococcus*.

NCRWQCB staff indicated in 2014 that *Enterococcus* was not being utilized as a fecal indicator bacteria for beach posting purposes in freshwater environments of the Russian River due to evidence that *Enterococcus* colonies can be persistent in the water column and therefore its presence at a given freshwater site may not always be associated with a fecal source. Sonoma Water staff will continue to collect *Enterococcus* samples and record and report the data however, *Enterococcus* results will not be relied upon when coordinating with the NCRWQCB and Sonoma County DHS about potentially posting warning signs at freshwater beach sites or to discuss potential adaptive management actions.

Total Coliform

There were two exceedances (2 of 87 or 2.3%) of the CDPH guideline for Total Coliform during the 2021 monitoring season at the lower river stations (Tables 3-8 through 3-10 and Figure 3-27). Both exceedances were observed at the Vacation Beach station (2 of 29 or 6.9%), including a maximum value of >24196 MPN/100mL which occurred on 22 June during open estuary conditions and a flow of approximately 70.3 cfs at the Hacienda USGS gage (Table 3-8 and Figure 3-27). The minimum concentration measured 461.1 MPN/100mL on 19 October during closed estuary conditions and a flow of approximately 48.1 cfs at the Hacienda USGS gage (Table 3-8 and Figure 3-27). Aside from the two

exceedances at Vacation Beach, Total Coliform concentrations remained low at all three stations during the monitoring season (Figure 3-27).

Table 3-8. 2021 Vacation Beach bacteria concentrations for samples collected by Sonoma Water. This site experiences freshwater conditions.

Vacation Beach	Time	Temperature	pH	Total Coliforms (Colilert)	Total Coliforms Diluted 1:10 (Colilert)	E. coli (Colilert)	E. coli Diluted 1:10 (Colilert)	Enterococcus (Enterolert)	USGS 11467000 RR near Guerneville (Hacienda)**
MDL*				<1	<10	<1	<10	<1	Flow Rate***
Date		°C		MPN/100mL	MPN/100mL	MPN/100mL	MPN/100mL	MPN/100mL	(cfs)
5/4/2021	13:00	22.4	8.1	816.4	1259	5.2	10	4.1	72.8
5/11/2021	12:20	22.4	7.5	1986.3	2481	8.5	<10	6.3	74.3
5/18/2021	11:10	19.8	7.7	1203.3	1421	13.2	10	24.3	91.6
5/25/2021	11:40	21.1	7.2	980.4	906	12.2	<10	6.3	86.6
6/1/2021	11:20	22.6	7.4	1553.1	1533	9.8	20	7.5	87.8
6/8/2021	10:20	20.6	7.6	1732.9	2064	30.9	52	49.5	120
6/15/2021	10:50	22.7	7.6	2419.6	2187	14.6	10	8.4	90.8
6/22/2021	10:20	23.4	7.9	>2419.6	**>24196**	30.5	31	**190.4**	70.3
6/29/2021	10:10	23.3	7.8	>2419.6	**14136**	21.8	10	31.3	63.6
7/6/2021	10:30	23.1	7.9	>2419.6	5172	48.7	<10	39.9	52.5
7/13/2021	10:40	23.2	7.8	>2419.6	4352	13.2	10	31.8	42.9
7/20/2021	11:40	23.6	8.0	>2419.6	1935	7.5	10	11.0	41.4
7/27/2021	10:50	22.4	7.6	2419.6	2909	9.7	20	13.2	36.5
8/3/2021	10:30	23.0	7.5	>2419.6	2014	67.6	75	22.6	43.8
8/10/2021	10:10	23.3	7.8	2419.6	1616	37.4	31	35.9	52.2
8/17/2021	10:10	23.5	7.7	>2419.6	1860	29.5	52	27.5	47.2
8/24/2021	10:20	21.0	7.7	>2419.6	2098	60.2	31	22.1	47.4
8/31/2021	10:30	22.0	7.7	2419.6	2359	29.5	31	**65.0**	33.8
9/7/2021	10:50	21.4	7.4	1413.6	2046	17.3	31	3.1	37.2
9/14/2021	10:40	21.2	7.6	>2419.6	1281	28.2	20	28.5	40.5
9/21/2021	10:40	19.9	7.3	1986.3	1658	31.8	20	26.9	48.6
9/23/2021	11:20	20.3	7.5	>2419.6	1119	40.8	20	28.5	42.5
9/28/2021	11:00	19.9	8.0	1732.9	1178	6.3	10	9.8	44.2
9/30/2021	12:00	19.9	7.4	1986.3	1500	24.1	10	7.2	44.4
10/5/2021	10:50	18.0	7.7	1413.6	1989	8.5	20	7.5	36.6
10/7/2021	10:40	17.2	7.8	1413.6	1497	31.5	52	8.6	38.6
10/12/2021	10:50	15.5	7.8	629.4	695	34.1	20	19.5	37.0
10/14/2021	10:50	15.5	7.4	727.0	762	24.9	52	22.6	38.1
10/19/2021	10:50	14.3	7.8	461.1	762	30.9	41	22.6	48.1
* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revision.									
** United States Geological Survey (USGS) Continuous-Record Gaging Station									
*** Flow rates are preliminary and subject to final revision by USGS.									
Recommended California Department of Public Health (CDPH) Draft Guidance - Single Sample Maximum (SSM):									
Total Coliform (SSM): 10,000 per 100ml									
Environmental Protection Agency (EPA) Recreational Water Quality Criteria - Beach Action Value (BAV):									
E. coli (BAV): 235 per 100 ml				*Enterococcus* (BAV): 61 per 100 ml					
(Beach notification is recommended when indicator organisms exceed the SSM for Total Coliform or the BAV for *E. coli*) - Indicated by red text									

The maximum Total Coliform concentration observed at Monte Rio was 4611 MPN/100mL, which occurred on 22 June during open estuary conditions and a flow of approximately 70.3 cfs at the Hacienda USGS gage (Table 3-9 and Figure 3-27). The minimum concentration measured 113.6 MPN/100mL on 15 June during open estuary conditions and a flow of approximately 90.8 cfs at the Hacienda USGS gage (Table 3-9 and Figure 3-27).

The maximum Total Coliform concentration observed at Patterson Point was >2419.6 MPN/100mL, which occurred twice on 17 August and 21 September during open estuary conditions and flows of approximately 47.2 and 48.6 cfs, respectively (Table 3-10 and Figure 3-27). The minimum concentration measured 435.2 MPN/100mL on 4 May during closed estuary conditions and a flow of approximately 72.8 cfs at the Hacienda USGS gage (Table 3-10 and Figure 3-27).

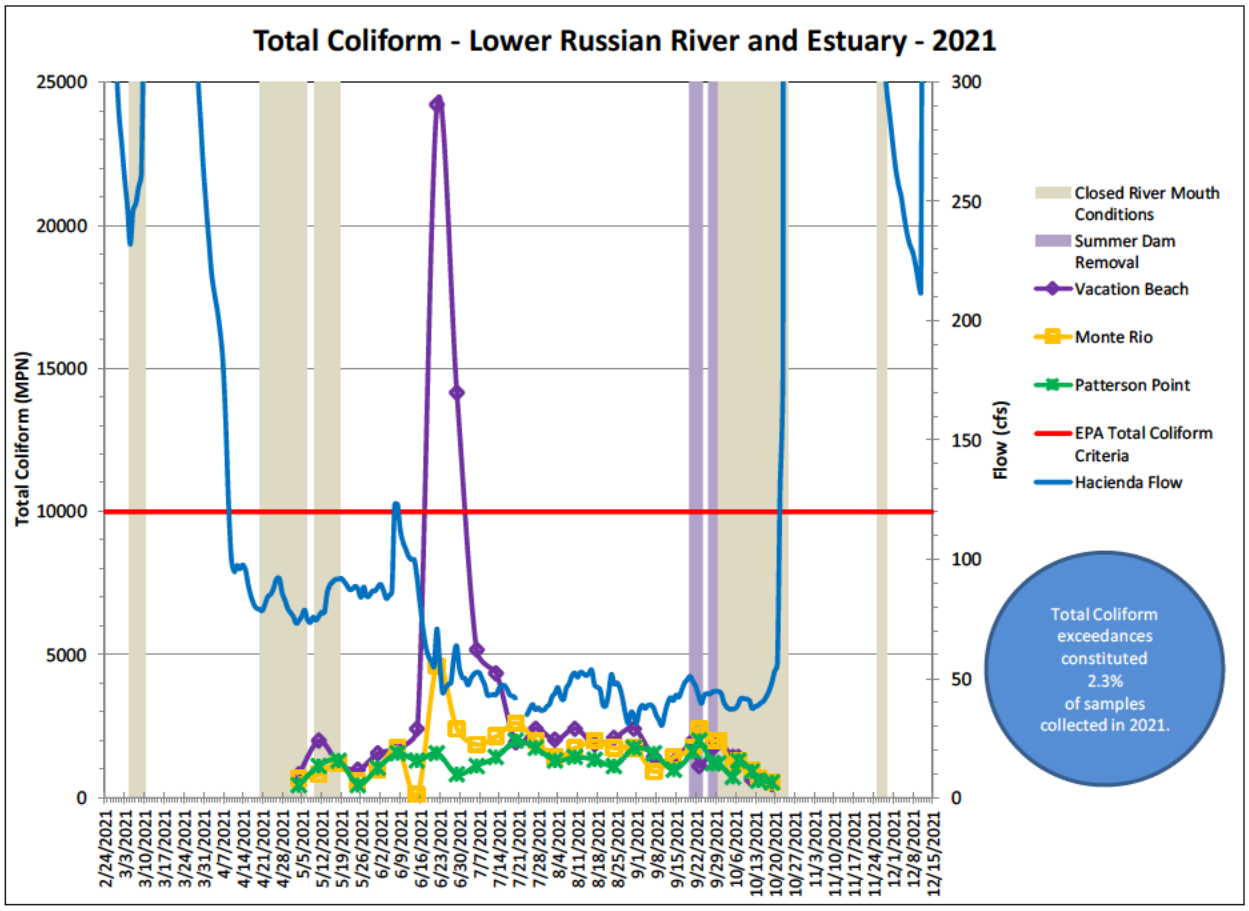


Figure 3-27. Total Coliform results for the Russian River from Vacation Beach to Patterson Point in 2021.

E. coli

There were no exceedances (0 of 87 or 0%) of the EPA criteria for *E. coli* during the 2021 monitoring season at the lower river stations (Tables 3-8 through 3-10 and Figure 3-28).

The maximum *E. coli* concentration observed at Vacation Beach was 67.6 MPN/100mL, which occurred on 3 August during open estuary conditions and a flow of approximately 43.8 cfs at the Hacienda USGS gage (Table 3-8 and Figure 3-28). The minimum concentration measured 5.2 MPN/100mL on 4 May during closed estuary conditions and a flow of approximately 72.8 cfs at the Hacienda USGS gage (Table 3-8 and Figure 3-28).

The maximum *E. coli* concentration observed at Monte Rio was 111.9 MPN/100mL, which occurred on 4 May during closed estuary conditions and a flow of approximately 72.8 cfs at the Hacienda USGS gage (Table 3-9 and Figure 3-28). The minimum concentration measured 2.0 MPN/100mL on 25 May during open estuary conditions and a flow of approximately 86.6 cfs at the Hacienda USGS gage (Table 3-9 and Figure 3-28).

Table 3-9. 2021 Monte Rio bacteria concentrations for samples collected by Sonoma Water. This site experiences freshwater conditions.

Monte Rio	Time	Temperature	pH	Total Coliforms (Colilert)	Total Coliforms Diluted 1:10 (Colilert)	E. coli (Colilert)	E. coli Diluted 1:10 (Colilert)	Enterococcus (Enterolert)	USGS 11467000 RR near Guerneville (Hacienda)**
MDL*				<1	<10	<1	<10	<1	Flow Rate***
Date		°C		MPN/100mL	MPN/100mL	MPN/100mL	MPN/100mL	MPN/100mL	(cfs)
5/4/2021	12:30	21.6	8.0	648.8	933	111.9	108	**128.1**	72.8
5/11/2021	12:00	22.0	7.5	816.4	1376	5.2	10	2.0	74.3
5/18/2021	10:50	19.9	7.4	1203.3	1137	14.6	41	4.1	91.6
5/25/2021	11:10	20.6	7.5	579.4	908	2.0	10	4.1	86.6
6/1/2021	10:50	22.5	7.6	980.4	1211	5.2	<10	4.1	87.8
6/8/2021	10:00	21.6	7.6	1732.9	1500	12.1	10	21.3	120
6/15/2021	10:20	22.7	7.5	113.6	1274	17.3	10	18.7	90.8
6/22/2021	10:00	23.2	7.8	>2419.6	4611	73.8	75	**128.1**	70.3
6/29/2021	9:40	23.0	7.6	2419.6	2143	93.2	110	29.5	63.6
7/6/2021	10:10	23.2	7.9	>2419.6	1860	24.9	52	7.5	52.5
7/13/2021	10:10	23.9	7.6	>2419.6	2143	10.7	10	13.4	42.9
7/20/2021	11:10	23.1	7.9	>2419.6	2613	8.4	<10	11.0	41.4
7/27/2021	10:20	21.9	7.5	1986.3	2098	5.2	<10	13.4	36.5
8/3/2021	10:00	22.5	7.7	1413.6	1616	10.9	10	14.5	43.8
8/10/2021	9:50	22.7	7.8	1732.9	1872	22.8	31	26.2	52.2
8/17/2021	9:50	22.9	7.7	1986.3	1935	13.2	10	27.2	47.2
8/24/2021	10:00	20.8	7.7	1732.9	1935	8.4	10	3.1	47.4
8/31/2021	10:00	21.7	7.8	1732.9	1565	10.9	20	20.3	33.8
9/7/2021	10:30	21.1	7.7	920.8	1396	28.8	10	17.5	37.2
9/14/2021	10:20	21.0	7.7	1413.6	1421	4.1	<10	12.1	40.5
9/21/2021	10:20	19.7	7.5	1732.9	1153	30.1	20	53.7	48.6
9/23/2021	10:50	20.0	7.8	2419.6	1664	75.9	75	59.1	42.5
9/28/2021	10:30	19.0	7.7	1986.3	1723	25.3	10	36.4	44.2
9/30/2021	11:40	18.8	7.3	1986.3	1860	67.6	31	53.8	44.4
10/5/2021	10:10	18.2	7.5	1119.9	1354	18.5	20	23.3	36.6
10/7/2021	10:10	17.2	7.6	1299.7	1483	50.4	63	20.3	38.6
10/12/2021	10:30	14.8	7.4	980.4	985	54.6	134	**76.2**	37.0
10/14/2021	10:30	14.8	7.4	686.7	738	42.0	52	21.8	38.1
10/19/2021	10:20	14.1	7.6	547.5	414	33.6	52	39.9	48.1

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revision.

** United States Geological Survey (USGS) Continuous-Record Gaging Station

*** Flow rates are preliminary and subject to final revision by USGS.

Recommended California Department of Public Health (CDPH) Draft Guidance - Single Sample Maximum (SSM):

Total Coliform (SSM): 10,000 per 100ml

Environmental Protection Agency (EPA) Recreational Water Quality Criteria - Beach Action Value (BAV):

E. coli (BAV): 235 per 100 ml *Enterococcus* (BAV): 61 per 100 ml

(Beach notification is recommended when indicator organisms exceed the SSM for Total Coliform or the BAV for *E. coli*) - Indicated by red text

The maximum *E. coli* concentration observed at Patterson Point was 72.3 MPN/100mL, which occurred on 21 September during open estuary conditions and a flow of approximately 48.6 cfs at the Hacienda USGS gage (Table 3-10 and Figure 3-28). The minimum concentration measured 1.0 MPN/100mL on 20 July during open estuary conditions and a flow of approximately 41.4 cfs at the Hacienda USGS gage (Table 3-10 and Figure 3-28).

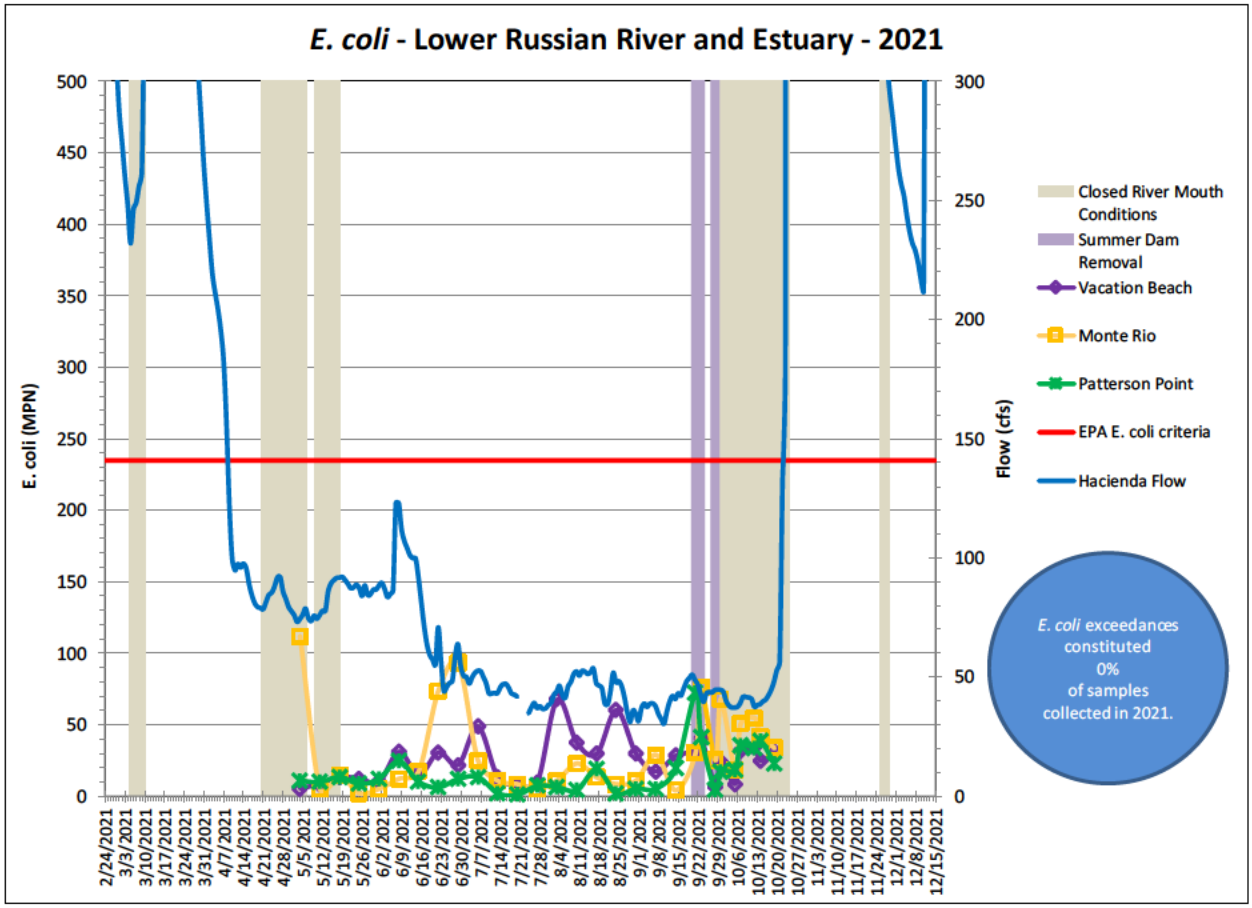


Figure 3-28. *E. coli* results for the Russian River from Vacation Beach to Patterson Point in 2021.

Enterococcus

There were eight (8) exceedances (8 of 87 or 9.2%) of the EPA criteria for *Enterococcus* at the lower river stations in 2021, with flows that ranged from 33.8 to 72.8 cfs at the Hacienda USGS gage (Tables 3-8 through 3-10 and Figure 3-29).

The Vacation Beach station had two (2) exceedances of the EPA criteria for *Enterococcus* (2 of 29 or 6.9%), including a maximum concentration of 190.4 MPN/100mL that occurred on 22 June during open estuary conditions and a flow of approximately 70.3 cfs at the Hacienda USGS gage (Table 3-8 and Figure 3-29). The minimum concentration measured 3.1 MPN/100mL on 7 September during open estuary conditions and a flow of approximately 37.2 cfs at the Hacienda USGS gage (Table 3-8 and Figure 3-29).

The Monte Rio station had three (3) exceedances of the EPA criteria for *Enterococcus* (3 of 29 or 10.4%), including a maximum concentration of 128.1 MPN/100mL that occurred twice, on 4 May and 22 June during closed and open estuary conditions and flows of approximately 72.8 and 70.3 cfs, respectively (Table 3-9 and Figure 3-29). The minimum concentration measured 2.0 MPN/100mL on 11 May during closed estuary conditions and a flow of approximately 74.3 cfs at the Hacienda USGS gage (Table 3-9 and Figure 3-29).

The Patterson Point station had three (3) exceedances of the EPA criteria for *Enterococcus* (3 of 29 or 10.4%), including a maximum concentration of 131.4 MPN/100mL on 31 August during open estuary conditions and a flow of approximately 33.8 cfs at the Hacienda USGS gage (Table 3-10 and Figure 3-29).

The minimum concentration at Patterson Point measured 2.0 MPN/100mL, which occurred twice on 13 July and 27 July during open estuary conditions and flows of approximately 42.9 and 36.5 cfs at the Hacienda USGS gage, respectively (Table 3-10 and Figure 3-29).

External factors including contact recreation, river mouth/estuary closure, and summer dam installation and removal in Guerneville likely had an effect on elevated *Enterococcus* concentrations observed in the Monte Rio to Patterson Point area during the 2021 monitoring season (Figure 3-29).

Table 3-10. 2021 Patterson Point bacteria concentrations for samples collected by Sonoma Water. This site experiences freshwater conditions.

Patterson Point	Time	Temperature	pH	Total Coliforms (Colilert)	Total Coliforms Diluted 1:10 (Colilert)	E. coli (Colilert)	E. coli Diluted 1:10 (Colilert)	Enterococcus (Enterolert)	USGS 11467000 RR near Guerneville (Hacienda)**
MDL*				<1	<10	<1	<10	<1	Flow Rate***
Date		°C		MPN/100mL	MPN/100mL	MPN/100mL	MPN/100mL	MPN/100mL	(cfs)
5/4/2021	12:00	21.1	8.2	435.2	650	10.9	10	8.4	72.8
5/11/2021	11:40	21.2	7.3	1119.9	1014	10	10	4.1	74.3
5/18/2021	10:20	19.9	7.4	1299.7	1274	13.5	41	4.1	91.6
5/25/2021	10:30	20.1	7.5	456.9	586	8.6	20	3.0	86.6
6/1/2021	10:20	21.7	7.5	1046.2	906	12.2	30	5.2	87.8
6/8/2021	9:20	21.5	7.4	1553.1	1354	24.6	10	28.8	120
6/15/2021	9:40	22.1	7.4	1299.7	934	10.0	<10	14.8	90.8
6/22/2021	9:30	22.9	7.7	1553.1	1119	6.2	20	8.5	70.3
6/29/2021	9:10	22.8	7.8	816.4	1250	12.0	<10	29.6	63.6
7/6/2021	9:30	23.1	7.9	1119.9	1553	13.4	10	3.0	52.5
7/13/2021	9:40	23.1	7.6	1413.6	248	2.0	<10	2.0	42.9
7/20/2021	10:20	22.8	7.9	1986.3	1935	1.0	<10	5.2	41.4
7/27/2021	9:50	22.1	7.6	1732.9	2143	7.3	20	2.0	36.5
8/3/2021	9:40	22.5	7.8	1299.7	1515	6.3	<10	8.5	43.8
8/10/2021	9:10	22.6	7.8	1413.6	1439	4.1	10	10.7	52.2
8/17/2021	9:10	22.8	7.8	>2419.6	1333	18.9	10	31.8	47.2
8/24/2021	9:30	20.7	7.6	1119.9	1314	2.0	20	5.1	47.4
8/31/2021	9:40	21.7	7.8	1732.9	1720	5.2	<10	**131.4**	33.8
9/7/2021	9:40	21.0	7.5	1553.1	1314	5.2	74	8.6	37.2
9/14/2021	10:00	20.9	7.7	980.4	882	19.3	10	14.5	40.5
9/21/2021	9:50	19.8	7.5	>2419.6	1627	72.3	52	**112.4**	48.6
9/23/2021	10:30	19.8	7.7	1986.3	2481	41.0	75	**73.3**	42.5
9/28/2021	9:40	19.1	7.7	1203.3	1529	4.1	<10	16.8	44.2
9/30/2021	11:10	18.7	7.3	1203.3	1112	17.3	10	17.3	44.4
10/5/2021	9:40	18.4	7.5	727.0	1483	18.5	148	22.6	36.6
10/7/2021	9:40	17.8	7.6	1299.7	1210	35.5	31	23.5	38.6
10/12/2021	10:00	15.5	7.6	920.8	1067	33.6	41	38.8	37.0
10/14/2021	10:10	15.1	7.2	613.1	414	38.8	41	33.6	38.1
10/19/2021	9:50	14.6	7.3	547.5	323	22.6	10	47.1	48.1

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revision.

** United States Geological Survey (USGS) Continuous-Record Gaging Station

*** Flow rates are preliminary and subject to final revision by USGS.

Recommended California Department of Public Health (CDPH) Draft Guidance - Single Sample Maximum (SSM):

Total Coliform (SSM): 10,000 per 100ml

Environmental Protection Agency (EPA) Recreational Water Quality Criteria - Beach Action Value (BAV):

E. coli (BAV): 235 per 100 ml *Enterococcus* (BAV): 61 per 100 ml

(Beach notification is recommended when indicator organisms exceed the SSM for Total Coliform or the BAV for *E. coli*) - Indicated by red text

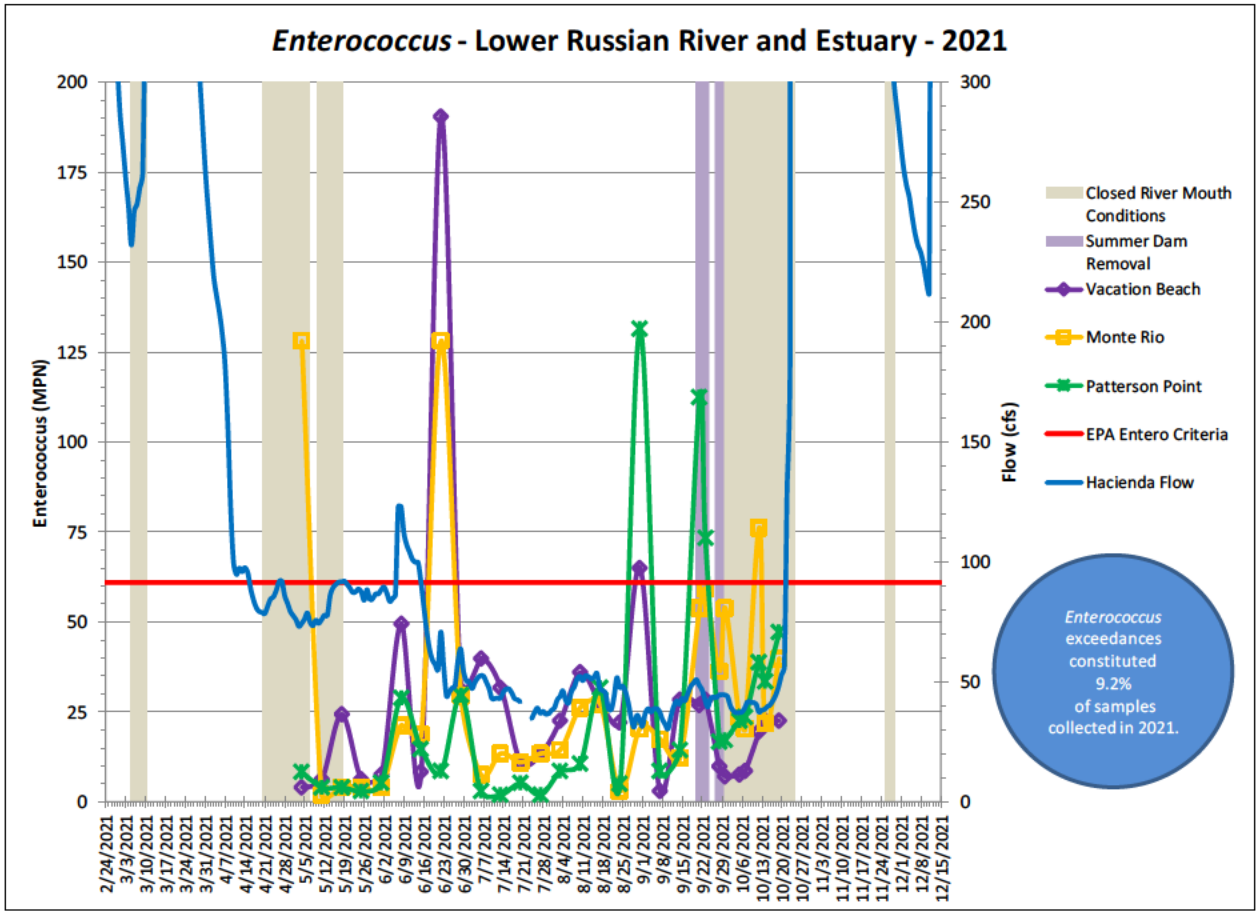


Figure 3-29. *Enterococcus* results for the Russian River from Vacation Beach to Patterson Point in 2021.

Total Nitrogen

There were seven (7) exceedances (7 of 92 or 7.6%) of the EPA criteria for total nitrogen at the lower river stations in 2021, with flows that ranged from 33.8 to 684 cfs at the Hacienda USGS gage (Tables 3-11 through 3-13 and Figure 3-30). Exceedances were observed at Vacation Beach and Patterson Point, but there were no exceedances of the total nitrogen criteria at Monte Rio (Figure 3-29).

The Vacation Beach station had two (2) exceedances of the EPA total nitrogen criteria (2 of 29 or 6.9%), including a maximum concentration of 0.90 mg/L that occurred on 14 October during open estuary conditions and a flow of approximately 38.1 cfs at the Hacienda USGS gage (Table 3-11 and Figure 3-30). The minimum concentration at Vacation Beach was ND, which occurred seven (7) times during open and closed estuary conditions and flows that ranged from approximately 36.5 to 120 cfs (Table 3-11).

There were no exceedances of the total nitrogen criteria at the Monte Rio station in 2021. The maximum total nitrogen concentration observed at Monte Rio was 0.35 mg/L on 20 July during open river mouth/estuary conditions with a flow of approximately 41.4 cfs at the Hacienda USGS gage (Table 3-12 and Figure 3-30). The minimum concentration at Monte Rio was ND, which occurred seven (7) times during open and closed estuary conditions and flows that ranged from approximately 36.5 to 120 cfs (Table 3-12).

The Patterson Point station had five (5) exceedances of the EPA total nitrogen criteria (5 of 34 or 14.7%), including a maximum concentration of 4.0 mg/L that occurred on 1 December during closed estuary

conditions and a flow of approximately 293 cfs at the Hacienda USGS gage (Table 3-13 and Figure 3-30). The minimum concentration at Patterson Point was ND, which occurred eight (8) times during open and closed estuary conditions and flows that ranged from approximately 36.5 to 120 cfs (Table 3-13).

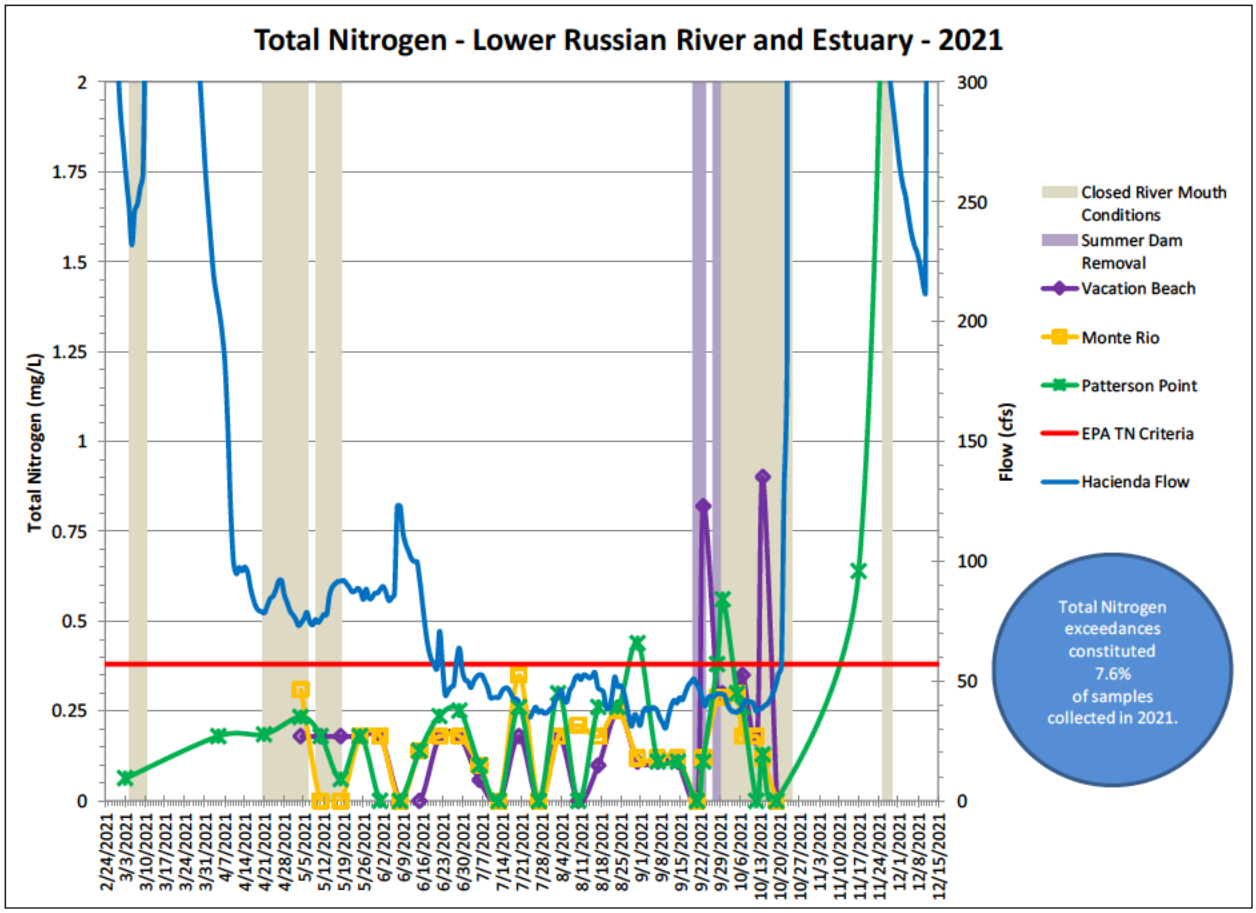


Figure 3-30. Total Nitrogen results for the Russian River from Vacation Beach to Patterson Point in 2021.

Total Phosphorus

All three lower river stations predominantly exceeded the EPA criteria for total phosphorous (66 of 92 or 71.7%) in 2021 with flows that ranged from 33.8 cfs to 684 cfs at the Hacienda USGS gage, continuing a trend of consistent exceedances observed in previous years (Tables 3-11 through 3-13 and Figure 3-31). Exceedances occurred primarily in the spring and summer months, with all three stations experiencing concentrations below the criteria in September and October (Table 3-11 through 3-13). Exceedances occurred during open and closed estuary conditions and generally trended downward through the monitoring season, until increasing with elevated storm flows in November and December as seen at Patterson Point (Figure 3-31).

Vacation Beach had nineteen (19) exceedances of the EPA total phosphorus criteria (19 of 29 or 65.5%), including a maximum concentration of 0.060 mg/L that occurred on 23 September during summer dam removal, open estuary conditions, and a flow of approximately 42.5 cfs at the Hacienda USGS gage (Table 3-11 and Figure 3-31). The minimum concentration at Vacation Beach was 0.013 mg/L, which occurred on 7 September during open estuary conditions and a flow of approximately 37.2 cfs. Finally,

the lowest flow recorded during sampling was approximately 33.8 cfs, which occurred on 31 August during open estuary conditions, with a concentration of 0.017 mg/L (Table 3-11).

Monte Rio had twenty-one (21) exceedances of the EPA total phosphorus criteria (21 of 29 or 72.4%), including a maximum concentration of 0.073 mg/L that occurred on 11 May during closed estuary conditions and a flow of approximately 74.3 cfs at the Hacienda USGS gage (Table 3-12 and Figure 3-31). The minimum concentration at Monte Rio was 0.015 mg/L, which occurred on 12 October during closed estuary conditions and a flow of approximately 37.0 cfs. Finally, the lowest flow recorded during sampling was approximately 33.8 cfs, which occurred on 31 August during open estuary conditions, with a concentration of 0.022 mg/L (Table 3-12).

Patterson Point had twenty-six (26) exceedances of the EPA total phosphorus criteria (26 of 34 or 76.5%), including a maximum concentration of 0.17 mg/L that occurred on 17 November during open estuary conditions and a flow of approximately 684 cfs at the Hacienda USGS gage (Table 3-13 and Figure 3-31). The minimum concentration at Patterson Point was 0.013 mg/L, which occurred on 14 October during closed estuary conditions and a flow of approximately 38.1 cfs (Table 3-13 and Figure 3-31). Finally, the lowest flow recorded during sampling was approximately 33.8 cfs, which occurred on 31 August during open estuary conditions, with a concentration of 0.439 mg/L (Table 3-13).

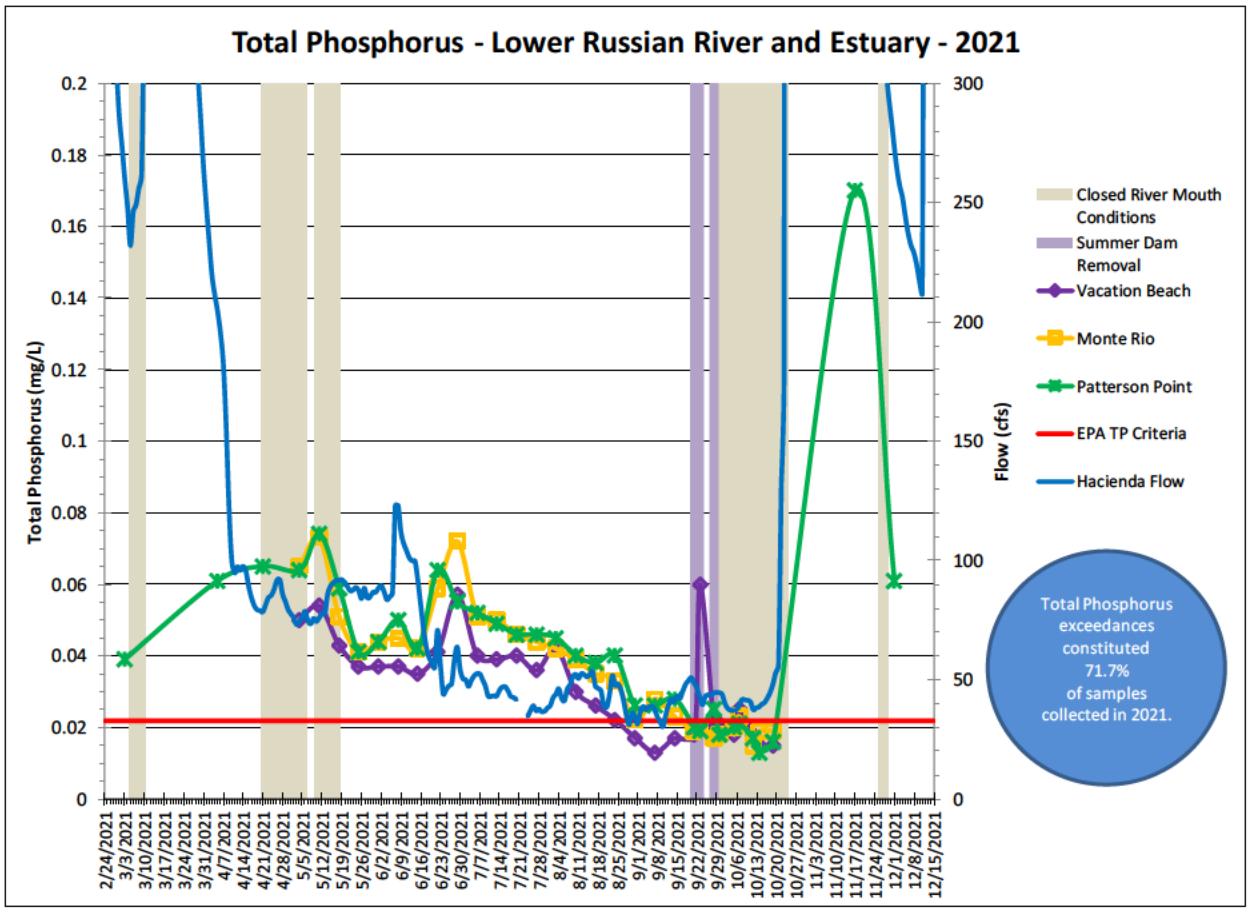


Figure 3-31. Total Phosphorus results for the Russian River from Vacation Beach to Patterson Point in 2021.

Turbidity

The EPA criteria for turbidity was exceeded four times at Vacation Beach and twice each at Monte Rio and Patterson Point (8 of 92 or 8.7%) during the 2021 monitoring season (Tables 3-11 through 3-13). Exceedances were observed to periodically occur throughout the monitoring season with open and closed estuary conditions, summer dam removal, and Hacienda flows ranging from 36.5 cfs to 684 cfs (Figure 3-32). Turbidity values were generally higher at Vacation Beach than at the other stations, and are a result of increased turbulence from streamflow over the Vacation Beach summer dam and through the fish ladder just upstream of the monitoring location.

The maximum turbidity value observed at Vacation Beach was 3.1 NTU on 23 September during open estuary conditions and summer dam removal, with a flow of approximately 42.5 cfs at the Hacienda USGS gage (Table 3-11 and Figure 3-32). The minimum value at Vacation Beach was 0.40 NTU, which occurred on 20 July during open estuary conditions and a flow of approximately 41.4 cfs. Finally, the lowest flow recorded during sampling was approximately 33.8 cfs, which occurred on 31 August, with a value of 0.87 NTU.

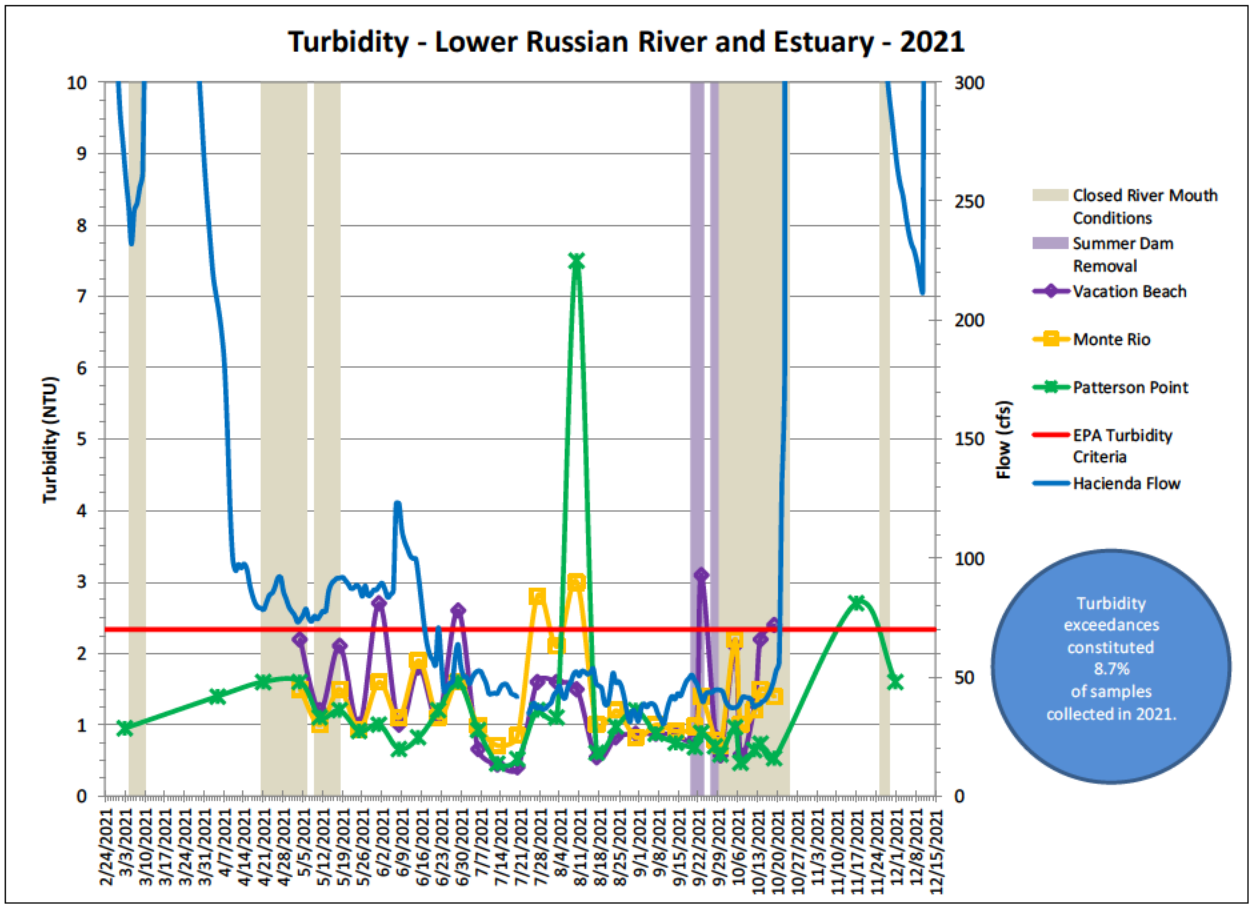


Figure 3-32. Turbidity results for the Russian River from Vacation Beach to Patterson Point in 2021.

The maximum turbidity value observed at Monte Rio was 3.0 NTU on 10 August during open estuary conditions and a Hacienda flow of approximately 52.2 cfs (Table 3-12 and Figure 3-32). The minimum value at Monte Rio was 0.71 NTU, which occurred twice during the monitoring season (Table 3-12). First on 13 July during open estuary conditions and flows of approximately 42.9 cfs and again on 30

September during closed estuary conditions and a flow of approximately 44.4 cfs. Finally, the lowest flow recorded during sampling was approximately 33.8 cfs, which occurred on 31 August, with a value of 0.82 NTU.

The maximum turbidity value observed at Patterson Point was 7.5 NTU on 10 August during open estuary conditions and a flow of approximately 52.2 cfs at the Hacienda USGS gage (Table 3-13 and Figure 3-32). The minimum value at Patterson Point was 0.46 NTU, which occurred on 13 July during open estuary conditions and a flow of approximately 42.9 cfs at the Hacienda USGS gage. Finally, the lowest flow recorded during sampling was approximately 33.8 cfs, which occurred on 31 August, with a value of 1.2 NTU.

Chlorophyll a

Algal (*chlorophyll a*) results exceeded the EPA criteria ten (10) times at Vacation Beach and five (5) times each at Monte Rio and Patterson Point (20 of 92 or 21.7%) under open and closed estuary conditions, summer dam removal, and Hacienda flows that ranged from 36.6 to 91.6 cfs (Tables 3-11 through 3-13 and Figure 3-33). *Chlorophyll a* values varied through the monitoring season with several ND values occurring at all three stations, including during estuary closure in May and October (Figure 3-33).

As mentioned above, lab analysis constraints in 2021 resulted in the MDL for *chlorophyll a* being higher than the EPA criteria for exceedances for *chlorophyll a* in rivers and streams. Therefore, some lab results for *chlorophyll a* that are listed as non-detect (ND) could potentially have concentrations above the criteria and below the MDL. However, for reporting purposes, only those exceedances that are quantified will be included in the summation.

The maximum *Chlorophyll a* concentration observed at Vacation Beach was 0.0083 mg/L on 23 September during closed estuary conditions, summer dam removal, and a Hacienda flow of approximately 42.5 cfs (Table 3-11 and Figure 3-33). The minimum value at Vacation Beach was ND, which occurred nineteen (19) times throughout the season during open and closed estuary conditions and flows that ranged from 33.8 to 120 cfs (Table 3-11). *Chlorophyll a* values at Vacation Beach were sporadic throughout the monitoring season before increasing during summer dam removal and estuary closure in October (Figure 3-33).

The maximum *Chlorophyll a* concentration observed at Monte Rio was 0.063 mg/L on 23 September during closed estuary conditions, summer dam removal, and a flow of approximately 42.5 cfs at the Hacienda USGS gage (Table 3-12 and Figure 3-33). *Chlorophyll a* exceedances occurred during the second half of the monitoring season in September and October during open and closed estuary conditions and summer dam removal (Figure 3-33). The minimum value at Monte Rio was ND, which occurred twenty four (24) times through the monitoring season during open and closed estuary conditions with flows that ranged from 33.8 to 120 cfs (Table 3-12).

The maximum *Chlorophyll a* concentration observed at Patterson Point was 0.0040 mg/L on 3 August during open estuary conditions and a flow of approximately 43.8 cfs at the Hacienda USGS gage (Table 3-13 and Figure 3-33). The minimum value at Patterson Point was ND, which occurred twenty nine (29) times through the season, during open and closed estuary conditions, summer dam removal, and flows

that ranged from 33.8 to 684 cfs (Table 3-13). *Chlorophyll a* exceedances were sporadic at Patterson Point through the monitoring season (Figure 3-33).

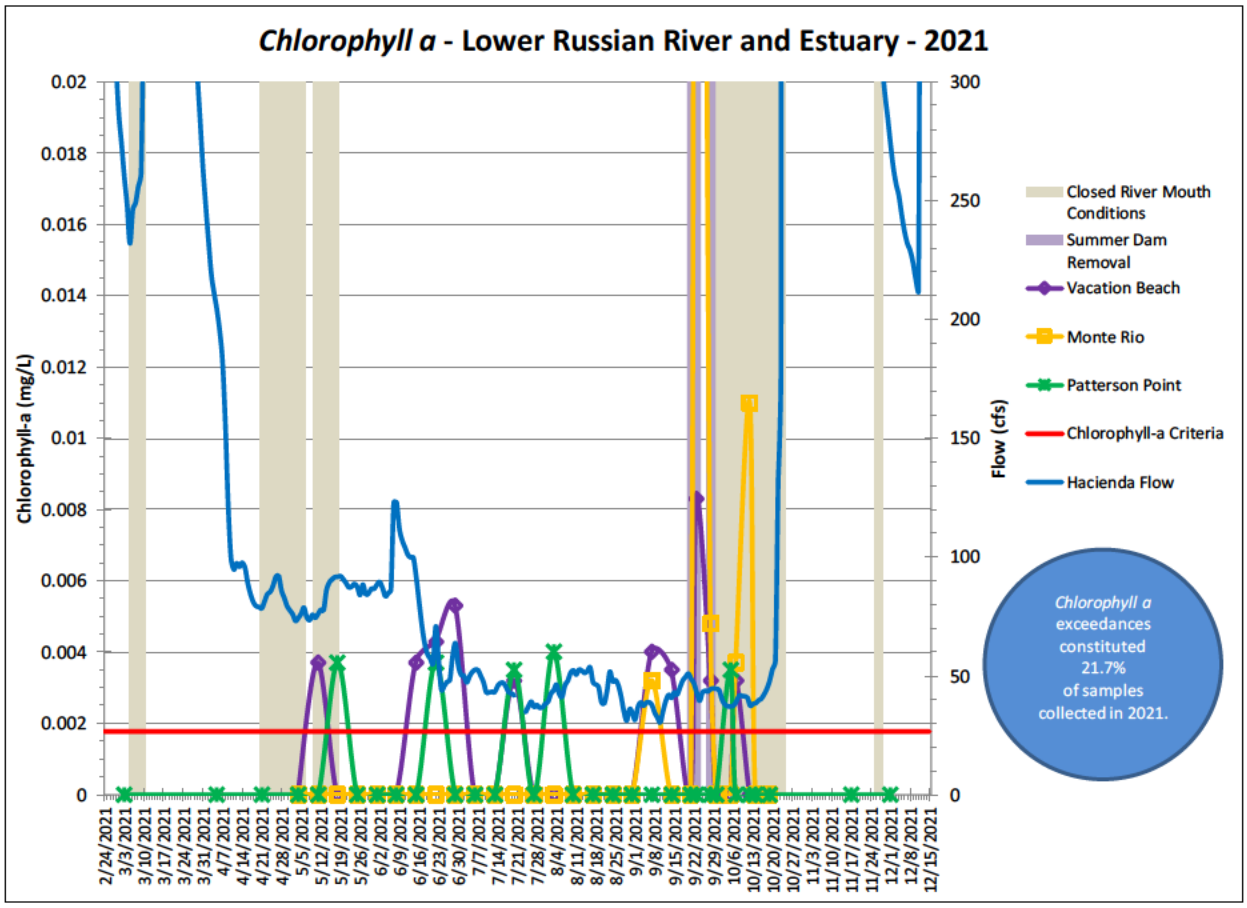


Figure 3-33. *Chlorophyll a* results for the Russian River from Vacation Beach to Patterson Point in 2021.

Table 3-11. 2021 Vacation Beach nutrient grab sample results. This site experiences freshwater conditions.

Vacation Beach	Time	Temperature	pH	Total Organic Nitrogen	Ammonia as N	Ammonia as N Unionized	Nitrate as N	Nitrite as N	Total Kjeldahl Nitrogen	Total Nitrogen**	Phosphorus, Total	Total Orthophosphate	Dissolved Organic Carbon	Total Organic Carbon	Total Dissolved Solids	Turbidity	Chlorophyll-a	USGS 11467000 RR near Guerneville (Hacienda)***
MDL*				0.20	0.10	0.00010	0.040	0.050	0.20	0.50	0.010	0.030	0.600	0.300	10	0.10	0.0010	Flow Rate****
Date		°C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	(cfs)
5/4/2021	13:00	22.4	8.1	0.18	ND	ND	ND	ND	ND	0.18	**0.050**	0.11	1.44	1.83	140	2.2	ND	72.8
5/11/2021	12:20	22.4	7.5	0.18	ND	ND	ND	ND	ND	0.18	**0.054**	0.12	1.66	1.74	160	1.2	**0.0037**	74.3
5/18/2021	11:10	19.8	7.7	0.18	ND	ND	ND	ND	ND	0.18	**0.043**	0.075	1.53	1.61	80	2.1	ND	91.6
5/25/2021	11:40	21.1	7.2	0.18	ND	ND	ND	ND	ND	0.18	**0.037**	0.069	1.20	1.69	140	1.0	ND	86.6
6/1/2021	11:20	22.6	7.4	0.18	ND	ND	ND	ND	ND	0.18	**0.037**	0.071	1.59	1.84	140	**2.7**	ND	87.8
6/8/2021	10:20	20.6	7.6	ND	ND	ND	ND	ND	ND	ND	**0.037**	0.052	1.30	1.68	120	1.0	ND	120
6/15/2021	10:50	22.7	7.6	ND	ND	ND	ND	ND	ND	ND	**0.035**	0.053	1.39	1.74	140	1.8	**0.0037**	90.8
6/22/2021	10:20	23.4	7.9	0.18	ND	ND	ND	ND	ND	0.18	**0.041**	0.073	1.72	2.16	150	1.1	**0.0043**	70.3
6/29/2021	10:10	23.3	7.8	0.18	ND	ND	ND	ND	ND	0.18	**0.057**	0.10	1.57	2.14	130	**2.6**	**0.0053**	63.6
7/6/2021	10:30	23.1	7.9	ND	ND	ND	0.057	ND	ND	0.057	**0.040**	0.074	1.59	1.96	140	0.66	ND	52.5
7/13/2021	10:40	23.2	7.8	ND	ND	ND	ND	ND	ND	ND	**0.039**	0.066	1.54	1.94	130	0.44	ND	42.9
7/20/2021	11:40	23.6	8.0	0.18	ND	ND	ND	ND	ND	0.18	**0.040**	0.063	1.49	1.77	140	0.40	**0.0032**	41.4
7/27/2021	10:50	22.4	7.6	ND	ND	ND	ND	ND	ND	ND	**0.036**	0.054	1.73	1.83	130	1.6	ND	36.5
8/3/2021	10:30	23.0	7.5	0.18	ND	ND	ND	ND	ND	0.18	**0.042**	0.056	1.33	1.84	140	1.6	ND	43.8
8/10/2021	10:10	23.3	7.8	ND	ND	ND	ND	ND	ND	ND	**0.030**	0.039	1.60	1.66	140	1.5	ND	52.2
8/17/2021	10:10	23.5	7.7	0.10	ND	ND	ND	ND	ND	0.10	**0.026**	0.031	1.56	1.60	140	0.54	ND	47.2
8/24/2021	10:20	21.0	7.7	0.14	ND	ND	0.11	ND	ND	0.25	**0.022**	0.031	1.21	1.51	150	0.83	ND	47.4
8/31/2021	10:30	22.0	7.7	ND	ND	ND	0.11	ND	ND	0.11	0.017	0.038	1.12	1.66	160	0.87	ND	33.8
9/7/2021	10:50	21.4	7.4	ND	ND	ND	0.11	ND	ND	0.11	0.013	ND	1.49	1.65	160	0.88	**0.0040**	37.2
9/14/2021	10:40	21.2	7.6	ND	ND	ND	0.11	ND	ND	0.11	0.017	ND	1.52	1.90	140	0.86	**0.0035**	40.5
9/21/2021	10:40	19.9	7.3	ND	ND	ND	ND	ND	ND	ND	0.018	ND	1.43	1.78	130	0.81	ND	48.6
9/23/2021	11:20	20.3	7.5	0.70	ND	ND	0.12	ND	0.70	**0.82**	**0.060**	0.038	1.30	1.76	130	**3.1**	**0.0083**	42.5
9/28/2021	11:00	19.9	8.0	0.18	ND	ND	0.12	ND	ND	0.30	0.020	0.039	1.24	1.62	140	0.84	**0.0032**	44.2
9/30/2021	12:00	19.9	7.4	0.18	ND	ND	0.12	ND	ND	0.30	0.021	0.031	1.37	1.55	150	0.57	ND	44.4
10/5/2021	10:50	18.0	7.7	0.18	ND	ND	0.12	ND	ND	0.30	0.018	ND	1.57	1.54	140	2.1	ND	36.6
10/7/2021	10:40	17.2	7.8	0.35	ND	ND	ND	ND	0.35	0.35	**0.025**	ND	1.25	1.60	150	0.58	**0.0032**	38.6
10/12/2021	10:50	15.5	7.8	0.18	ND	ND	ND	ND	ND	0.18	0.018	ND	1.13	1.45	140	1.3	ND	37.0
10/14/2021	10:50	15.5	7.4	0.79	ND	ND	0.11	ND	0.79	**0.90**	0.015	0.031	1.09	1.34	140	2.2	ND	38.1
10/19/2021	10:50	14.3	7.8	ND	ND	ND	ND	ND	ND	ND	0.015	0.12	1.14	1.46	140	**2.4**	ND	48.1

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revision.

** Total nitrogen is calculated through the summation of the different components of total nitrogen: organic and ammoniacal nitrogen (together referred to as Total Kjeldahl Nitrogen or TKN) and nitrate/nitrite nitrogen.

*** United States Geological Survey (USGS) Continuous-Record Gaging Station

**** Flow rates are preliminary and subject to final revision by USGS.

Recommended EPA Criteria based on Aggregate Ecoregion III

Total Phosporus: 0.02188 mg/L (21.88 ug/L) ≈ 0.022 mg/L

Chlorophyll *a*: 0.00178 mg/L (1.78 ug/L) ≈ 0.0018 mg/L

Total Nitrogen: 0.38 mg/L

Turbidity: 2.34 FTU/NTU

Table 3-12. 2021 Monte Rio nutrient grab sample results. This site experiences freshwater conditions.

Monte Rio	Time	Temperature	pH	Total Organic Nitrogen	Ammonia as N	Ammonia as N Unionized	Nitrate as N	Nitrite as N	Total Kjeldahl Nitrogen	Total Nitrogen**	Phosphorus, Total	Total Orthophosphate	Dissolved Organic Carbon	Total Organic Carbon	Total Dissolved Solids	Turbidity	Chlorophyll-a	USGS 11467000 RR near Guerneville (Hacienda)***
MDL*				0.20	0.10	0.00010	0.040	0.050	0.20	0.50	0.010	0.030	0.600	0.300	10	0.10	0.0010	Flow Rate****
Date		°C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	(cfs)
5/4/2021	12:30	21.6	8.0	0.26	ND	ND	0.053	ND	0.26	0.31	**0.065**	0.15	1.54	1.87	170	1.5	ND	72.8
5/11/2021	12:00	22.0	7.5	ND	ND	ND	ND	ND	ND	ND	**0.073**	0.18	1.40	1.85	150	1.0	ND	74.3
5/18/2021	10:50	19.9	7.4	ND	ND	ND	ND	ND	ND	ND	**0.051**	0.13	1.19	1.60	1100	1.5	ND	91.6
5/25/2021	11:10	20.6	7.5	0.18	ND	ND	ND	ND	ND	0.18	**0.041**	0.081	1.25	1.78	140	0.94	ND	86.6
6/1/2021	10:50	22.5	7.6	0.18	ND	ND	ND	ND	ND	0.18	**0.044**	0.088	1.31	1.86	140	1.6	ND	87.8
6/8/2021	10:00	21.6	7.6	ND	ND	ND	ND	ND	ND	ND	**0.045**	0.089	1.65	1.75	130	1.1	ND	120
6/15/2021	10:20	22.7	7.5	0.14	ND	ND	ND	ND	ND	0.14	**0.042**	0.078	1.42	1.85	140	1.9	ND	90.8
6/22/2021	10:00	23.2	7.8	0.18	ND	ND	ND	ND	ND	0.18	**0.059**	0.12	1.59	2.11	130	1.10	ND	70.3
6/29/2021	9:40	23.0	7.6	0.18	ND	ND	ND	ND	ND	0.18	**0.072**	0.077	1.58	2.40	130	1.6	ND	63.6
7/6/2021	10:10	23.2	7.9	0.10	ND	ND	ND	ND	ND	0.10	**0.051**	0.090	1.58	2.03	160	0.99	ND	52.5
7/13/2021	10:10	23.9	7.6	ND	ND	ND	ND	ND	ND	ND	**0.050**	0.083	1.59	1.90	140	0.71	ND	42.9
7/20/2021	11:10	23.1	7.9	0.35	ND	ND	ND	ND	0.35	0.35	**0.046**	0.083	1.45	1.85	150	0.85	ND	41.4
7/27/2021	10:20	21.9	7.5	ND	ND	ND	ND	ND	ND	ND	**0.044**	0.070	1.58	1.90	140	**2.8**	ND	36.5
8/3/2021	10:00	22.5	7.7	0.18	ND	ND	ND	ND	ND	0.18	**0.042**	0.064	1.36	2.03	150	2.1	ND	43.8
8/10/2021	9:50	22.7	7.8	0.21	ND	ND	ND	ND	0.21	0.21	**0.039**	0.051	1.36	1.73	140	**3.0**	ND	52.2
8/17/2021	9:50	22.9	7.7	0.18	ND	ND	ND	ND	ND	0.18	**0.035**	0.039	1.35	1.65	150	1.0	ND	47.2
8/24/2021	10:00	20.8	7.7	0.14	ND	ND	0.11	ND	ND	0.25	**0.033**	0.039	1.20	1.59	140	1.2	ND	47.4
8/31/2021	10:00	21.7	7.8	ND	ND	ND	0.12	ND	ND	0.12	**0.022**	0.038	1.23	1.72	160	0.82	ND	33.8
9/7/2021	10:30	21.1	7.7	ND	ND	ND	0.12	ND	ND	0.12	**0.028**	ND	1.47	1.67	170	1.0	**0.0032**	37.2
9/14/2021	10:20	21.0	7.7	ND	ND	ND	0.12	ND	ND	0.12	**0.023**	ND	1.51	1.89	130	0.91	ND	40.5
9/21/2021	10:20	19.7	7.5	ND	ND	ND	ND	ND	ND	ND	0.019	ND	1.40	1.76	150	0.98	ND	48.6
9/23/2021	10:50	20.0	7.8	ND	ND	ND	0.12	ND	ND	0.12	0.020	ND	1.44	1.74	170	1.4	**0.063**	42.5
9/28/2021	10:30	19.0	7.7	0.18	ND	ND	0.11	ND	ND	0.29	0.017	ND	1.34	1.65	150	0.79	**0.0048**	44.2
9/30/2021	11:40	18.8	7.3	0.18	ND	ND	0.11	ND	ND	0.29	0.018	ND	1.40	1.62	140	0.71	ND	44.4
10/5/2021	10:10	18.2	7.5	0.18	ND	ND	0.12	ND	ND	0.30	0.020	ND	1.43	1.66	150	2.2	ND	36.6
10/7/2021	10:10	17.2	7.6	0.18	ND	ND	ND	ND	ND	0.18	**0.023**	ND	1.23	1.63	140	1.0	**0.0037**	38.6
10/12/2021	10:30	14.8	7.4	0.18	ND	ND	ND	ND	ND	0.18	0.015	ND	1.16	1.46	140	1.2	**0.011**	37.0
10/14/2021	10:30	14.8	7.4	ND	ND	ND	0.12	ND	ND	0.12	0.019	0.039	1.12	1.41	150	1.5	ND	38.1
10/19/2021	10:20	14.1	7.6	ND	ND	ND	ND	ND	ND	ND	0.019	0.030	1.10	1.53	130	1.4	ND	48.1

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revision.

** Total nitrogen is calculated through the summation of the different components of total nitrogen: organic and ammoniacal nitrogen (together referred to as Total Kjeldahl Nitrogen or TKN) and nitrate/nitrite nitrogen.

*** United States Geological Survey (USGS) Continuous-Record Gaging Station

**** Flow rates are preliminary and subject to final revision by USGS.

Recommended EPA Criteria based on Aggregate Ecoregion III

Total Phosporus: 0.02188 mg/L (21.88 ug/L) ≈ 0.022 mg/L

Chlorophyll *a*: 0.00178 mg/L (1.78 ug/L) ≈ 0.0018 mg/L

Total Nitrogen: 0.38 mg/L

Turbidity: 2.34 FTU/NTU

Table 3-13. 2021 Patterson Point nutrient grab sample results. This site experiences freshwater conditions.

Patterson Point	Time	Temperature	pH	Total Organic Nitrogen	Ammonia as N	Ammonia as N Unionized	Nitrate as N	Nitrite as N	Total Kjeldahl Nitrogen	Total Nitrogen**	Phosphorus, Total	Total Orthophosphate	Dissolved Organic Carbon	Total Organic Carbon	Total Dissolved Solids	Turbidity	Chlorophyll-a	USGS 11467000 RR near Guerneville (Hacienda)***
MDL*				0.20	0.10	0.00010	0.040	0.050	0.20	0.50	0.010	0.030	0.600	0.300	10	0.10	0.0010	Flow Rate****
Date		°C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	(cfs)
3/3/2021	9:50	11.6	7.4	ND	ND	ND	0.062	ND	ND	0.062	**0.039**	0.076	1.92	1.97	160	0.95	ND	276
4/5/2021	10:30	15.8	7.1	0.18	ND	ND	ND	ND	ND	0.18	**0.061**	0.14	1.73	2.06	160	1.4	ND	215
4/21/2021	9:50	18.6	7.5	0.14	ND	ND	0.045	ND	ND	0.185	**0.065**	0.17	1.66	1.91	170	1.6	ND	76.8
5/4/2021	12:00	21.1	8.2	0.18	ND	ND	0.053	ND	ND	0.233	**0.064**	0.14	1.66	1.95	150	1.6	ND	72.8
5/11/2021	11:40	21.2	7.3	0.18	ND	ND	ND	ND	ND	0.18	**0.074**	0.17	1.48	1.84	150	1.1	ND	74.3
5/18/2021	10:20	19.9	7.4	ND	ND	ND	0.060	ND	ND	0.060	**0.059**	0.12	1.32	1.70	140	1.2	**0.0037**	91.6
5/25/2021	10:30	20.1	7.5	0.18	ND	ND	ND	ND	ND	0.18	**0.041**	0.081	1.37	1.90	150	0.91	ND	86.6
6/1/2021	10:20	21.7	7.5	ND	ND	ND	ND	ND	ND	ND	**0.044**	0.10	1.35	1.84	140	1.0	ND	87.8
6/8/2021	9:20	21.5	7.4	ND	ND	ND	ND	ND	ND	ND	**0.050**	0.097	1.31	1.80	130	0.66	ND	120
6/15/2021	9:40	22.1	7.4	0.14	ND	ND	ND	ND	ND	0.14	**0.042**	0.078	1.50	1.79	130	0.82	ND	90.8
6/22/2021	9:30	22.9	7.7	0.18	ND	ND	0.057	ND	ND	0.237	**0.064**	0.14	1.63	1.98	130	1.2	**0.0037**	70.3
6/29/2021	9:10	22.8	7.8	0.18	ND	ND	0.071	ND	ND	0.251	**0.055**	0.11	1.78	1.99	130	1.6	ND	63.6
7/6/2021	9:30	23.1	7.9	0.10	ND	ND	ND	ND	ND	0.10	**0.052**	0.10	1.54	2.13	140	0.93	ND	52.5
7/13/2021	9:40	23.1	7.6	ND	ND	ND	ND	ND	ND	ND	**0.049**	0.095	1.50	1.90	150	0.46	ND	42.9
7/20/2021	10:20	22.8	7.9	0.26	ND	ND	ND	ND	0.26	0.26	**0.046**	0.083	1.48	1.85	160	0.52	**0.0035**	41.4
7/27/2021	9:50	22.1	7.6	ND	ND	ND	ND	ND	ND	ND	**0.046**	0.082	1.62	1.87	140	1.2	ND	36.5
8/3/2021	9:40	22.5	7.8	0.18	ND	ND	0.12	ND	ND	0.30	**0.045**	0.097	1.40	2.08	160	1.1	**0.0040**	43.8
8/10/2021	9:10	22.6	7.8	ND	ND	ND	ND	ND	ND	ND	**0.040**	0.055	1.46	1.80	140	**7.5**	ND	52.2
8/17/2021	9:10	22.8	7.8	0.26	ND	ND	ND	ND	0.26	0.26	**0.038**	0.047	1.46	1.71	170	0.61	ND	47.2
8/24/2021	9:30	20.7	7.6	0.14	ND	ND	0.12	ND	ND	0.26	**0.040**	0.055	1.27	1.62	150	0.97	ND	47.4
8/31/2021	9:40	21.7	7.8	ND	0.32	0.0087	0.11	ND	ND	**0.439**	**0.026**	0.046	1.22	1.65	160	1.2	ND	33.8
9/7/2021	9:40	21.0	7.5	ND	ND	ND	0.11	ND	ND	0.11	**0.026**	ND	1.75	1.65	160	0.88	ND	37.2
9/14/2021	10:00	20.9	7.7	ND	ND	ND	0.11	ND	ND	0.11	**0.028**	0.032	1.47	1.97	170	0.75	ND	40.5
9/21/2021	9:50	19.8	7.5	ND	ND	ND	ND	ND	ND	ND	0.020	ND	1.42	1.74	140	0.69	ND	48.6
9/23/2021	10:30	19.8	7.7	ND	ND	ND	0.11	ND	ND	0.11	0.019	ND	1.45	1.78	190	0.89	ND	42.5
9/28/2021	9:40	19.1	7.7	0.26	ND	ND	0.12	ND	0.26	**0.38**	**0.025**	ND	1.62	1.66	140	0.70	ND	44.2
9/30/2021	11:10	18.7	7.3	0.44	ND	ND	0.12	ND	0.44	**0.56**	0.018	ND	1.66	1.65	130	0.58	ND	44.4
10/5/2021	9:40	18.4	7.5	0.18	ND	ND	0.12	ND	ND	0.30	0.020	ND	1.45	1.70	150	0.96	**0.0035**	36.6
10/7/2021	9:40	17.8	7.6	0.26	ND	ND	ND	ND	0.26	0.26	0.021	ND	1.56	1.76	140	0.47	ND	38.6
10/12/2021	10:00	15.5	7.6	ND	ND	ND	ND	ND	ND	ND	0.017	ND	1.38	1.50	160	0.64	ND	37.0
10/14/2021	10:10	15.1	7.2	ND	ND	ND	0.13	ND	ND	0.13	0.013	ND	1.17	1.50	150	0.73	ND	38.1
10/19/2021	9:50	14.6	7.3	ND	ND	ND	ND	ND	ND	ND	0.016	ND	1.19	1.64	150	0.53	ND	48.1
11/17/2021	10:10	14.4	7.1	0.35	ND	ND	0.29	ND	0.35	**0.64**	**0.17**	0.43	4.18	4.91	190	**2.7**	ND	684
12/1/2021	10:20	12.3	7.5	3.9	ND	ND	0.12	ND	3.9	**4.0**	**0.061**	0.15	2.73	2.83	190	1.6	ND	293

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revision.

** Total nitrogen is calculated through the summation of the different components of total nitrogen: organic and ammoniacal nitrogen (together referred to as Total Kjeldahl Nitrogen or TKN) and nitrate/nitrite nitrogen.

*** United States Geological Survey (USGS) Continuous-Record Gaging Station

**** Flow rates are preliminary and subject to final revision by USGS.

Recommended EPA Criteria based on Aggregate Ecoregion III

Total Phosporus: 0.02188 mg/L (21.88 ug/L) ≈ 0.022 mg/L

Chlorophyll *a*: 0.00178 mg/L (1.78 ug/L) ≈ 0.0018 mg/L

Total Nitrogen: 0.38 mg/L

Turbidity: 2.34 FTU/NTU

3.3 Discussion and Observations

The mainstem Russian River experienced less rainfall and lower flows in 2021 compared to Normal Water Year flow rates. These lower flows from a dry winter and spring resulted in a Dry Water Year designation that allowed D1610 flows to be reduced to the Dry Water Year minimum flow rates. This Dry Water Year condition, coupled with significantly low levels of water supply storage in Lake Mendocino, precipitated the request and issuing of a TUC Order to reduce minimum instream flow requirements below D1610 Dry Water Year requirements to preserve water storage in Lake Mendocino.

Monitoring conducted for the TUC Order was similar (methods, locations) to monitoring conducted in past years when TUC Orders have been issued in response to dry watershed conditions and low reservoir storage levels, as well as to comply with Biological Opinion proposed mainstem flows.

Based on the assemblage of data collected by Sonoma County DHS, USACE, CDFW, USGS, and Sonoma Water, it does not appear that lower flows observed in 2021 negatively affected water quality or the availability of aquatic habitat, or provided a significant contribution to biostimulatory conditions when compared to data collected during years with Normal Water Year flow rates, such as 2019.

A brief comparison of several streamflow data points from 2019; a Normal Water Year under D1610, and 2021; a dry to critically dry water year, is provided for context. The 2019 data is available in the Russian River Water Quality Summary for the 2019 Temporary Urgency Change (Sonoma Water, 2020).

The 2019 daily average flows in the upper Russian River between Talmage and Diggers Bend generally ranged between 125 and 175 cfs during the months of July through October (Figure 3-34).

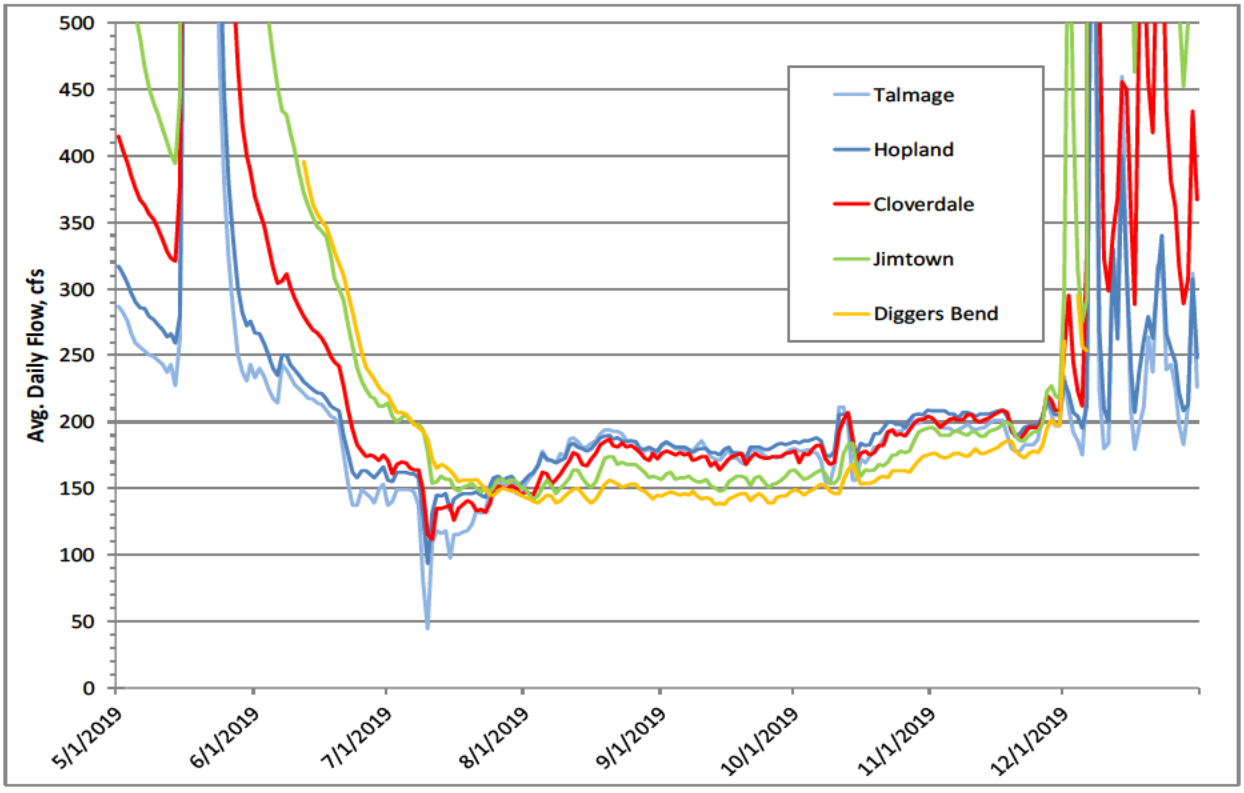


Figure 3-34. 2019 average daily flows in the Upper Russian River as measured at USGS gages above the Dry Creek confluence in cubic feet per second. Flow rates are preliminary and subject to final revision by USGS.

Whereas, 2021 daily average flows in the upper river between Talmage and Diggers Bend generally ranged between 25 and 75 cfs during the months of June through October until storms increased flows significantly in late October (Figure 3-35).

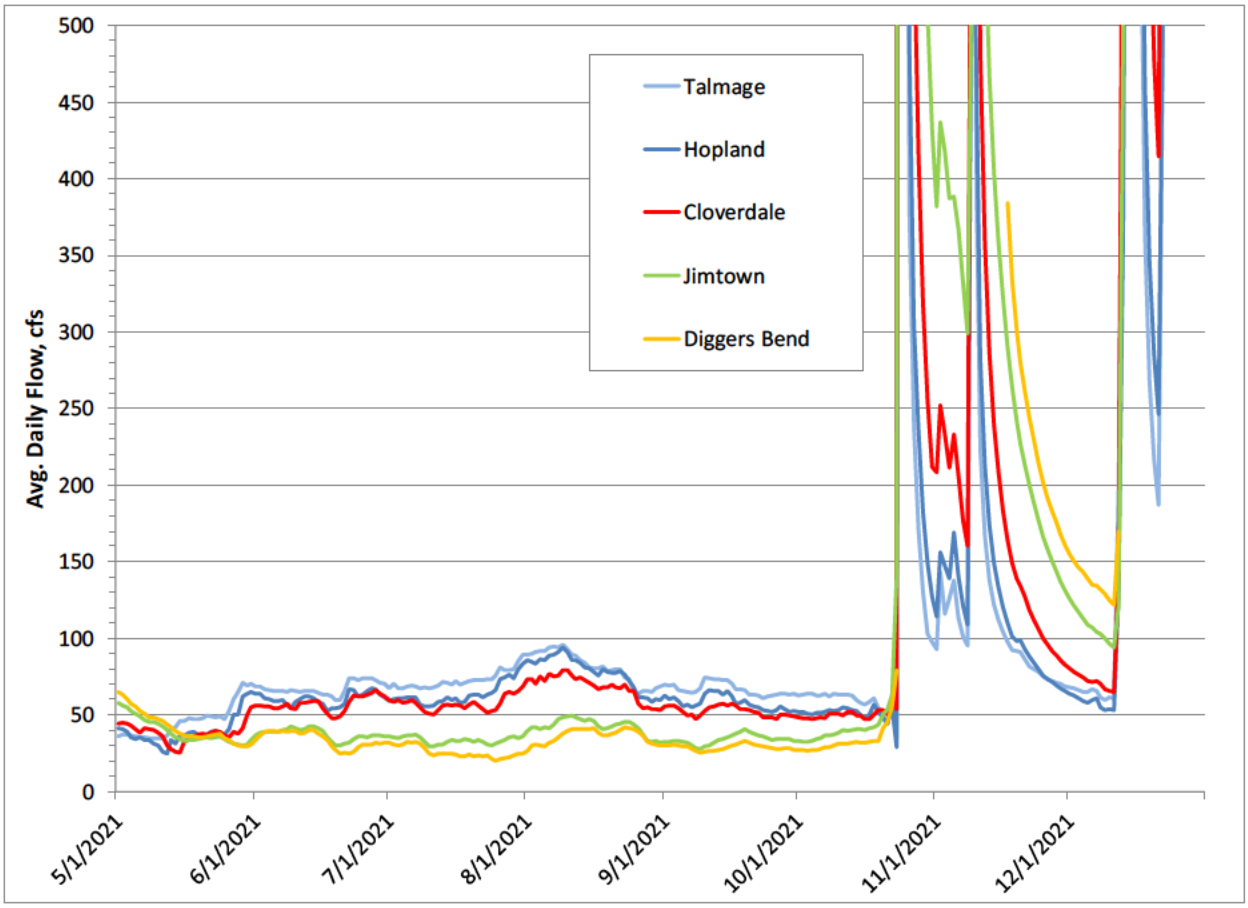


Figure 3-35. 2021 average daily flows in the Upper Russian River as measured at USGS gages above the Dry Creek confluence in cubic feet per second. Flow rates are preliminary and subject to final revision by USGS.

In the lower river, a late season storm in 2019 significantly elevated flows from approximately 600 cfs to over 3000 cfs at Hacienda in mid-May. Flows remained above 500 cfs into early June, resulting in mainstem flows decreasing to base summertime flows later in the dry season compared to previous years, including 2021 (Figure 3-36).

In contrast, a dry winter and spring in 2021 resulted in flows at Hacienda decreasing to about 75 cfs in early May. Flows continued to decrease through the season to between 30 and 50 cfs by late June, where they remained until late October storms significantly increased flows (Figure 3-36).

Summertime base flows in the lower river at Hacienda remained above 150 cfs in 2019, whereas summertime base flows in 2021 were generally below 50 cfs (Figure 3-36).

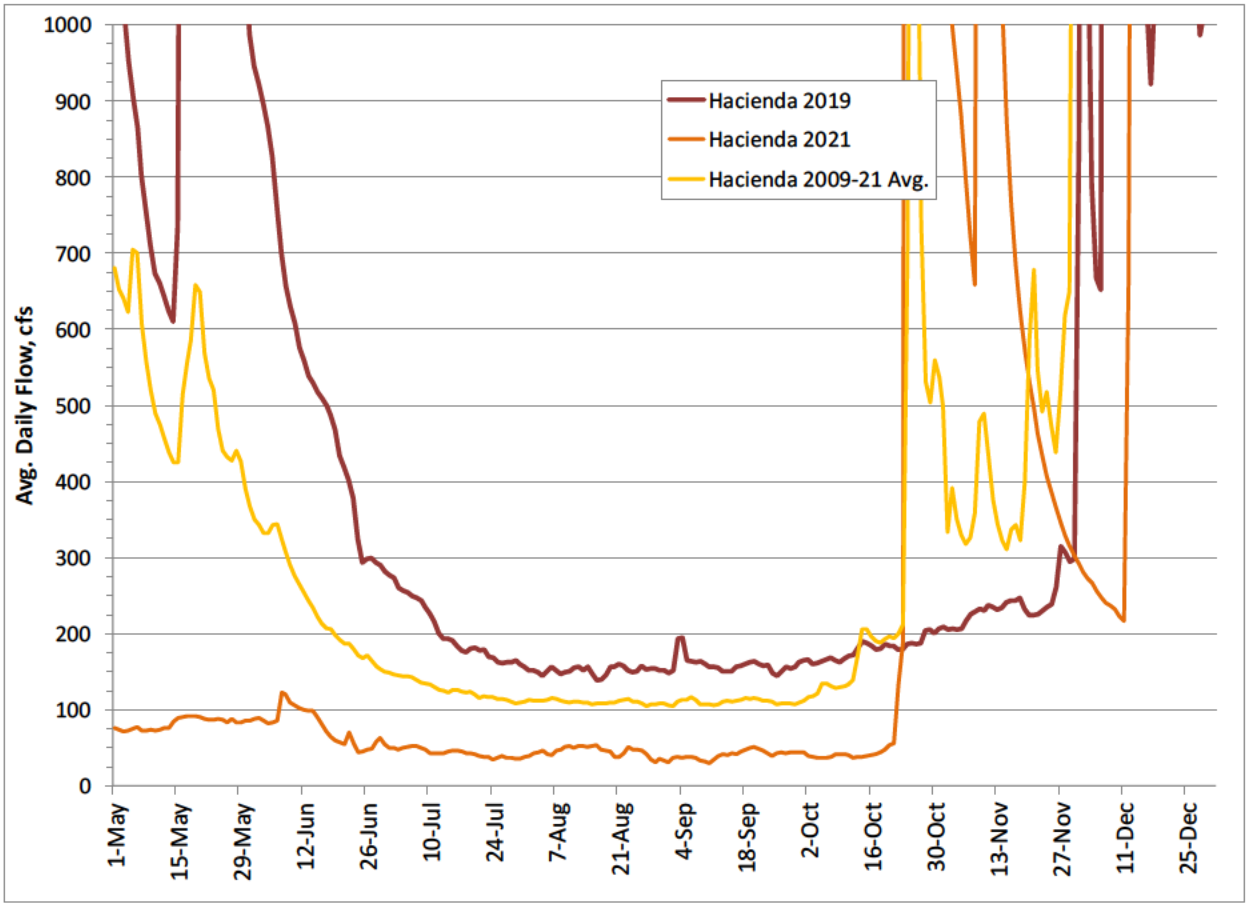


Figure 3-36. Comparison of 2019, 2021 and 2009-2021 average daily flows in the Lower Russian River as measured at USGS Hacienda gage in cubic feet per second. Flow rates are preliminary and subject to final revision by USGS.

Overall, observed exceedances of EPA and CDPH criteria in the upper and lower river were less frequent, and concentrations were generally lower in 2021 compared with 2019. Included below is a brief discussion and comparison of some of the data collected in 2019 and 2021 that demonstrate that lower flows in 2021 did not negatively affect water quality or the availability of aquatic habitat, or significantly contribute to biostimulatory conditions compared to Normal Water Years, including 2019.

In 2019, Sonoma County DHS reported three (3) total coliforms exceedances out of 153 total samples collected (2.0%) and two (2) *E. coli* exceedances out of 153 total samples collected (1.3%) at the ten beach monitoring stations. Conditions for total coliforms were similar in 2021 with the exception of the Cloverdale River Park station, which experienced twelve (12) exceedances of the total coliform criteria out of 21 samples collected (57.1%). The other nine stations had six (6) total coliform exceedances out of 165 total samples collected (3.6%). Even with the inclusion of Cloverdale River Park, total exceedances reported by Sonoma County DHS were only 18 out of 186 total samples collected (9.7%) at the ten beach monitoring stations. Similarly, in 2021 Sonoma County DHS reported eight (8) *E. coli* exceedance out of 186 total samples collected (4.3%) at the ten stations.

In 2019, Sonoma Water reported two (2) total coliforms exceedances out of 75 total samples collected (2.7%) and three (3) *E. coli* exceedances out of 75 total samples collected (4.0%) at the three lower river monitoring stations. Similarly in 2021, Sonoma Water reported two (2) total coliforms exceedances out

of 87 total samples collected (2.3%) and zero (0) *E. coli* exceedances out of 87 total samples collected (0%) at the three lower river stations.

DHS did not conduct cyanotoxin monitoring at the ten beach monitoring stations in 2019 or 2021 so there are no comparative values.

The TUC Order required recommendations for minimizing cyanoHAB outbreaks during the current and future water years under similar flow conditions to those experienced under the Order. Algae monitoring conducted in the Russian River since 2016 indicates that cyanoHABs will occur annually at some level regardless of changes to summertime reservoir releases. Nutrient monitoring indicates that during drought conditions and periods of low river flow sustained only by reservoir releases, the input of biostimulating nutrients is typically less than during periods of abundant rainfall and higher river flows. CyanoHAB formation is inevitable in the Russian River if there is water present in the system in the dry summer months. To minimize cyanoHAB outbreaks, efforts to reduce point source and over land addition of nutrients to the Russian River in general would be the most effective. Additionally, the presence of grazers as well as rearrangement of the littoral zone during high storm flows have been observed to affect the timing and composition of cyanoHABs.

As such, Sonoma Water staff would recommend continued coordination and comprehensive monitoring across agencies (including the North Coast Regional Water Quality Control Board and DHS) to assess river conditions and specifically those conditions that may contribute to an elevated potential for cyanoHAB outbreaks. These conditions include but are not limited to nutrient availability, invertebrate grazing, water clarity, temperature, the timing and intensity of storm events, streamflow, and the potential for changing hydrology and bed scour to influence development of algal biomass. Sonoma Water staff would continue to promote the preservation of the cold water pool in Lake Mendocino through responsible reservoir management and river flow operations. Staff would also support US Army Corps of Engineers (USACE) efforts to address elevated turbidity issues associated with Lake Mendocino releases and improve water clarity in the upper Russian River.

Total nitrogen exceedances and concentrations at the upper river stations were fairly consistent from 2019 to 2021, with 2019 having ten (10) exceedances of 49 total samples (20.4%) and 2021 having thirteen (13) exceedances of 76 total samples (17.1%). Hopland was also observed to have the most total nitrogen exceedances of the four upper river stations in 2019 and in 2021.

Total nitrogen exceedances in 2019 and 2021 were also consistent at the lower river stations of Vacation Beach, Monte Rio, and Patterson Point, with 2019 experiencing eight (8) exceedances of 75 total samples (10.6%) and 2021 experiencing seven (7) exceedances of 92 samples (7.6%). However, total nitrogen concentrations were observed to be slightly higher in 2021 than in 2019, especially during summer dam removal and closed estuary conditions in late September.

Total phosphorus concentrations and numbers of exceedances were fairly consistent from 2019 to 2021 in Hopland, Cloverdale, and Syar but were significantly lower in Jimtown and to a lesser degree at Syar in 2021. In 2019, Jimtown had six (6) exceedances of 12 samples collected (50%) and Syar had 11 exceedances of 18 samples collected (61.1%). Whereas in 2021, Jimtown had two (2) exceedances out of 19 samples collected (10.5%) and Syar had seven (7) exceedances out of 19 samples collected

(36.8%). Total phosphorus exceedances and concentrations at the three lower river stations were consistently high in 2019 and 2021, with values typically declining in September and October during both years. These exceedances in both 2019 and 2021 continue a pattern of chronic elevated total phosphorus in the lower river area.

Turbidity values in the upper river were significantly lower in 2021 than in 2019, especially at Hopland and Cloverdale. Turbidity values at Hopland exceeded the criteria through the entire 2019 season (12 of 12 or 100%), with most values being above 10 NTU including a maximum value of 29 NTU. Whereas in 2021, Hopland only had seven (7) exceedances of 19 samples (36.8%), with most values below 5 NTU and a maximum of 16 NTU. Cloverdale also exceeded the criteria through the entire 2019 season (7 of 7 or 100%) with a maximum value of 15 NTU. Although Cloverdale had a maximum value of 15 NTU in 2021 as well, it occurred during elevated early winter flows in January. Additionally, Cloverdale only experienced two (2) exceedances out of 19 samples collected (10.5%) in 2021. Jimtown had six (6) exceedances of 12 samples collected (50%) and a maximum value of 6.6 NTU in 2019, but zero (0) exceedances of 19 samples collected (0%) and a maximum value of 1.6 NTU in 2021. Syar had 14 exceedances of 18 samples collected (77.8%) with a maximum value of 30 NTU in 2019, but only had three (3) exceedances of 19 samples collected (15.8%) and a maximum value of 4.0 NTU in 2021.

Turbidity values were significantly lower at Vacation Beach, Monte Rio and Patterson Point in 2021 compared to 2019, especially during the first half of the monitoring season. Vacation Beach had 20 exceedances out of 25 samples collected (80%) in 2019 compared with four (4) exceedances of 29 samples collected (13.8%) in 2021. Monte Rio had nine (9) exceedances of 25 samples collected (36%) in 2019 compared with two (2) exceedances of 29 samples collected (6.9%) in 2021. Patterson Point had eleven (11) exceedances of 25 samples collected (44%) in 2019 compared with two (2) exceedances of 34 samples collected (5.9%) in 2021. The majority of exceedances at Monte Rio and Patterson Point in 2019 occurred during the first half of the season when flows were still elevated from late season storms in May. Whereas exceedances in 2021 occurred periodically through the season with flows ranging from 36.5 to 684 cfs.

A comparison of *chlorophyll a* exceedances between 2019 and 2021 is not possible due to the higher lab MDL for *chlorophyll a* concentrations in 2021 that did not allow a quantification of values that may fall between the EPA criteria of approximately 0.0018 mg/L and the MDL of 0.0030 mg/L. Even so, there were more exceedances at Hopland in 2021 (10 of 19 or 52.6%) than in 2019 (2 of 12 or 16.7%) and concentrations were generally higher in 2021. *Chlorophyll a* concentrations that were quantifiable in 2021 were also slightly higher in the upper river compared to 2019. This may have been influenced by the increased clarity of the water and lower turbidity in 2021 allowing for greater light penetration into the water column.

Again, a comparison of *chlorophyll a* exceedances between 2019 and 2021 is not possible due to the higher lab MDL for *chlorophyll a* concentrations in 2021. However, maximum *chlorophyll a* concentrations were somewhat similar in the lower river in 2021 compared to 2019, even with improved water clarity. In 2019, the maximum value at Vacation Beach was 0.0069 mg/L, compared with a maximum value of 0.0083 mg/L in 2021. In 2019, the maximum value at Monte Rio was 0.11 mg/L, compared with a maximum value of 0.063 mg/L in 2021. Finally, the maximum value at Patterson Point in 2019 was 0.0064 mg/L, compared with a maximum value of 0.0040 mg/L in 2021.

Chlorophyll a exceedances in the lower river in 2019 occurred predominantly during the first half of the season while flows were still elevated from late season storms. Whereas, *chlorophyll a* exceedances were periodic at Patterson Point and Vacation Beach in 2021, and occurred more predominantly during summer dam removal and estuary closure at Monte Rio in September and October.

Year to year variability in the percentage of exceedances, and concentrations and values, for the constituents discussed above can be attributed in large part to: the frequency, timing, and severity of storm events; fluctuating stream flow rates; atmospheric conditions; and contact recreation. Additionally, in the lower river the frequency and timing of barrier beach closures, the strength of tidal cycles, and summer dam removal also contribute to the year to year variability in exceedances, concentrations, and values.

4.0 Additional Monitoring

4.1 Sonoma Water and USGS Permanent and Seasonal Datasondes

In coordination with the USGS, Sonoma Water maintains three, multi-parameter water quality sondes on the Russian River located at Russian River near Hopland, Russian River at Digger Bend near Healdsburg, and Russian River near Guerneville (aka Hacienda). These three sondes are referred to as "permanent" because Sonoma Water contracts with the USGS to maintain them as part of Sonoma Water's early warning detection system for use year-round (Figure 4.1). The sondes take real time readings of water temperature, pH, dissolved oxygen content (DO), specific conductivity, turbidity, and depth, every 15 minutes. In addition, Sonoma Water maintains a permanent sonde on the East Fork of the Russian River approximately one-third of a mile (1/3 mi.) downstream of Lake Mendocino. However, this station is not a real-time station or part of the early warning detection system.

In addition to the permanent sondes, Sonoma Water, in cooperation with the USGS, installed four seasonal sondes with real-time telemetry at the USGS river gage stations at East Fork near Calpella (upstream of Lake Mendocino), Russian River near Cloverdale (north of Cloverdale at Comminsky Station Road), Russian River at Jimtown (Alexander Valley Road Bridge), and at Johnson's Beach in Guerneville (Figure 4.1). The three seasonal sondes at Calpella, Cloverdale, and Jimtown are included by the USGS on its "Real-time Data for California" website: https://waterdata.usgs.gov/ca/nwis/rt.

The data collected by the sondes described above are evaluated in Section 4.2 in response to the terms of the SWRCB TUC Order to evaluate whether and to what extent the reduced flows authorized by the Order caused any impacts to water quality or availability of aquatic habitat for salmonids. In addition, the 2021 data will help provide information to evaluate potential changes to water quality and availability of habitat for aquatic resources resulting from the proposed permanent changes to D1610 minimum instream flows that are mandated by the Biological Opinion and will be included in the Biological Opinion Annual Monitoring Report. The annual report will be available on Sonoma Water's website: https://www.sonomawater.org/biological-opinion-outreach.



Figure 4-1 Sonoma Water and USGS Russian River Permanent and Seasonal Datasonde Monitoring Stations

4.2 Aquatic Habitat for Salmonids

4.2.1 Introduction

In Term 7 of the Temporary Urgency Change Order (Order) the State Water Resource Control Board (SWRCB) tasked Sonoma Water with evaluating impacts associated with reductions in minimum instream flows authorized by the Order to water quality and the availability of aquatic habitat for Russian River salmonids. This section of the report summarizes temperature and dissolved oxygen (DO) conditions in the Russian River during the Order and relates these conditions to fisheries monitoring data collected by Sonoma Water.

4.2.2 Russian River Salmonid Life Stages

Salmonids in the Russian River can be affected by flow, temperature, and dissolved oxygen (DO) changes at multiple life stages. The Russian River supports three species of salmonids, coho salmon, steelhead, and Chinook salmon. These species follow similar life history patterns with adults migrating from the ocean to the river and moving upstream to spawn in the fall and winter. Females dig nests called redds in the stream substrate and deposit eggs simultaneously with fertilization by one or more males. Eggs then remain in the redd for several weeks before hatching. After hatching, the larval fish remain in the gravel for several more weeks before emerging. After emerging from the gravel these young salmonids are identified first as fry and then later as parr once they have undergone freshwater growth. Parr rear for a few months (Chinook) to approximately 2 years (steelhead) in freshwater before undergoing a physiological change identified as smoltification. At this stage, fish are identified as smolts and are physiologically tolerant of saltwater, and therefore ready for ocean entry (Quinn 2005). In the Russian River, smolts move downstream to the ocean in the spring (Chase et al. 2005 and 2007, Obedzinski et al. 2006). Salmonids spend several months to a few years at sea before returning to the river to spawn as adults. Because all three species of Russian River anadromous salmonids spend a period of time freshwater, individuals must cope with the freshwater conditions they encounter including flow, temperature, and DO. While all three species follow a similar life history, each species tends to spawn and rear in different locations and are present in the Russian River watershed at slightly different times. These subtle but important differences may expose each species to a different set of freshwater conditions.

Coho Timing and Distribution

Wild coho salmon populations in the Russian River are at alarmingly low levels and recovery measures rely mainly on fish released from Don Clausen Warm Springs Hatchery as part of the Russian River Coho Salmon Captive Broodstock Program (RRCSCBP). Data collected at Sonoma Water's Mirabel inflatable dam on an underwater video camera system from 2011 through 2013 indicate that adult coho salmon begin migrating past the dam in late October and continue through at least January and that the bulk of adult coho migrate through that portion of the river from November through February (in 2013, 97% of coho were observed after November 20 (Martini-Lamb and Manning 2014)). Spawning and rearing occurs in certain tributaries to the Russian River (NMFS 2008) and data from downstream migrant trapping in some of those tributaries indicate that coho smolt emigration starts before April and continues through mid-June (Obedzinski et al. 2006). Although coho smolts have been captured as late as mid-July in downstream migrant traps operated by Sonoma Water on the mainstem Russian River at

the Mirabel dam (Martini-Lamb and Manning 2011), most emigrate from the Russian River from March through May. Only the Russian River coho adult life stage is present in the mainstem during the Order; therefore, only temperature and DO data relating to this life stage will be analyzed for this report. There is limited coho spawning habitat upstream of Healdsburg therefore only the Hacienda and Digger bend sites will be summarized for coho.

Steelhead Timing and Distribution

Based on video monitoring at Sonoma Water's Mirabel inflatable dam and returns to the Warm Springs Hatchery, adult steelhead return to the Russian River later than Chinook. Deflation of the inflatable dam and removal of the underwater video camera system preclude a precise measure of adult return timing or numbers. However, continuous video monitoring at the inflatable dam during late fall through spring in 2006-2007, timing of returns to the hatchery, and data gathered from steelhead angler report cards (SCWA unpublished data, Jackson 2007) suggests that steelhead return to the Russian River from December through March with the majority returning in January and February.

Many steelhead spawn and rear year round in tributaries of the Russian River and in the upper mainstem Russian River (NMFS 2008, Cook 2003). Cook (2003) found that summer rearing of steelhead in the mainstem Russian River were distributed in the highest concentrations between Hopland and Cloverdale (Canyon Reach). Steelhead were also found in relatively high numbers (when compared to habitats downstream of Cloverdale) in the section of river between the Coyote Valley Dam and Hopland. The Canyon Reach is the highest gradient section of the mainstem Russian River and contains high velocity habitats that include riffles and cascades (Cook 2003). Due to flow releases from Lake Mendocino, both the Canyon and Ukiah reaches generally have cooler water temperatures when compared to other mainstem reaches.

The steelhead smolt migration in the Russian River begins at least as early as March and continues through June, with most steelhead emigrating from March through May (SCWA unpublished data, Martini-Lamb and Manning 2011). The Russian River steelhead juvenile and adult life stages are present in the mainstem during the Order while most smolts emigrate before the Order; therefore, only temperature and DO data relating to the juvenile and adult life stages will be analyzed for this report.

Chinook Timing and Distribution

Based on video monitoring at Sonoma Water's Mirabel inflatable dam, adult Chinook are typically observed in the Russian River before coho and steelhead. Chinook enter the Russian River as early as September and the migration is complete by early February. Generally the bulk of Chinook pass the Mirabel dam from October through December. Chinook are mainstem spawners and deposit their eggs into the stream bed of the mainstem Russian River and in Dry Creek during the fall (Chase et al. 2005 and 2007, Cook 2003, Martini-Lamb and Manning 2011). Chinook offspring rear for approximately two to four months before emigrating to sea in the spring. The bulk of Chinook smolt emigration occurs from April through mid-July. Russian River Chinook smolt and adult life stages are present in the mainstem during the Order; therefore, only temperature and DO data relating to these two life stages will be analyzed for this report.

4.2.3 Methods

Sonoma Water uses underwater video, downstream migrant traps, and water quality data collected in the Russian River to depict water quality conditions when salmonids where present. To estimate the number of adult Chinook that return to the Russian River upstream of the Mirabel inflatable dam, Sonoma Water typically operates an underwater video camera in the fish ladder located at the dam. Sonoma Water also operates downstream migrant traps to enumerate salmonid smolts. USGS stream gages and a Sonoma Water operated data sonde were used to provide water quality data in the mainstem Russian River.

Physical and water quality conditions (flow, water temperature, and DO) were collected at multiple sites in the Russian River. USGS stream gages located on the Russian River at Hacienda, Digger Bend, Jimtown, and Hopland provided flow, water temperature, and DO data. Data sondes that collected temperature and DO data in the mainstem Russian River were located near the confluence with Pieta Creek (approximately 5 miles downstream of Hopland, CA) and in the east fork Russian River 0.5 km downstream of Coyote Valley Dam, near Ukiah, CA. These sondes were operated by Sonoma Water. Water quality conditions at these sites were compared to literature-based thresholds then used to construct temperature and DO criteria for Russian River salmonids (Tables 4-1 through Table 4-4).

For the east fork downstream of Coyote Valley Dam, 12 days of data were missing in late August. Water temperature and dissolved oxygen was interpolated for these missing dates in order to calculate the 7-day running averages for these two parameters. Water temperature and dissolved oxygen were not reported for dates where the 7-day running average contained more than 3 days of interpolated data.

Table 4-1. Adult salmonid water temperature (°C) thresholds used for migration when describing water quality conditions during the term of the Temporary Urgency Change Order. Criteria are from SCWA (2016).

Description	Chinook	Coho	Steelhead
optimal upper limit	15.6	11.1	11.1
suitable upper limit	17.8	15.0	15.0
stressful upper limit	19.4	21.1	21.1
acutely stressful upper limit	23.8	23.8	23.8
Potentially lethal lower limit	23.9	23.9	23.9

Table 4-2. Juvenile salmonid rearing temperature (°C) thresholds used for describing water quality conditions during the term of the Temporary Urgency Change Order. Criteria are from SCWA (2016).

Description	Chinook	Coho	Steelhead
optimal upper limit	16.9	13.9	16.9
suitable upper limit	17.8	16.9	18.9
stressful upper limit	20.0	17.8	21.9
acutely stressful upper limit	23.8	23.8	23.8
Potentially lethal lower limit	23.9	23.9	23.9

Table 4-3. Salmonid smolting temperature (°C) thresholds used for describing water quality conditions during the term of the Temporary Urgency Change Order. Criteria are from SCWA (2016).

Description	Chinook	Coho	Steelhead
optimal upper limit	16.9	10.0	11.1
suitable upper limit	17.8	13.9	12.8
stressful upper limit	20.0	16.9	15.0
acutely stressful upper limit	23.8	23.8	23.8
Potentially lethal lower limit	23.9	23.9	23.9

Table 4-4. Dissolved oxygen (mg/L) thresholds for all salmonid life stages used for describing water quality conditions during the term of the Temporary Urgency Change Order. Criteria are from SCWA (2016).

Description	Dissolved Oxygen (mg/L)
optimal upper limit	>12
suitable	8.0-11.9
stressful	5.0-7.9
acutely stressful	3.0-4.9
Potentially lethal upper limit	<3

To evaluate temperature- and DO-related impacts from flow changes to the timing and magnitude of adult and smolt salmonid counts from counting stations, we compared count data (when available) to water quality information only where fish would either pass a water quality station before being detected at a particular counting station. For instance, because most steelhead rearing habitat in the mainstem Russian River occurs upstream of Hopland, this report presents the water quality data from the USGS Hopland gaging station when analyzing temperature- and DO-related impacts to juvenile steelhead. Salmonid smolts of all three species moving downstream out of Dry Creek and the upper Russian River pass our downstream migrant trap on the Russian River at Mirabel then pass the Hacienda USGS stream gage before entering the ocean. Therefore, we paired salmonid smolt data from the Russian River downstream migrant trap to Hacienda water quality data to describe the conditions these fish likely experienced as they moved downstream through the lower Russian River.

4.2.4 Results

Flow

The Spring 2021 TUCO went into effect on June 14 and expired on December 11, 2021. During that period, flow at Hacienda ranged from a high of 19,300 cfs on October 25, to a low of 30 cfs on August 29. Flow during the Order was typically between 41 cfs and 239 cfs (25th and 75th percentiles of the daily average flow at Hacienda). During the Order, the Russian River was generally controlled by reservoir releases and not strongly influenced by tributary in-flow until late October. After late October flow in the Russian River was mainly comprised of tributary inflow.

Temperature

Adult Salmonid Migration

The underwater video camera at the Mirabel dam was installed on September 1, 2021. However, a large storm occurred on October 24, 2021 (Figure 4-1). At approximately 2,000 cfs flow in the river becomes too high to operate the inflatable dam as well as the underwater video equipment used to count returning adult salmonids. Flow at the Hacienda gage approached 20,000 cfs following the rain event in late October and became much too high to operate the video equipment. Because this event occurred during the very early stages of the typical adult migration season, few adults were observed and will therefore not be reported.

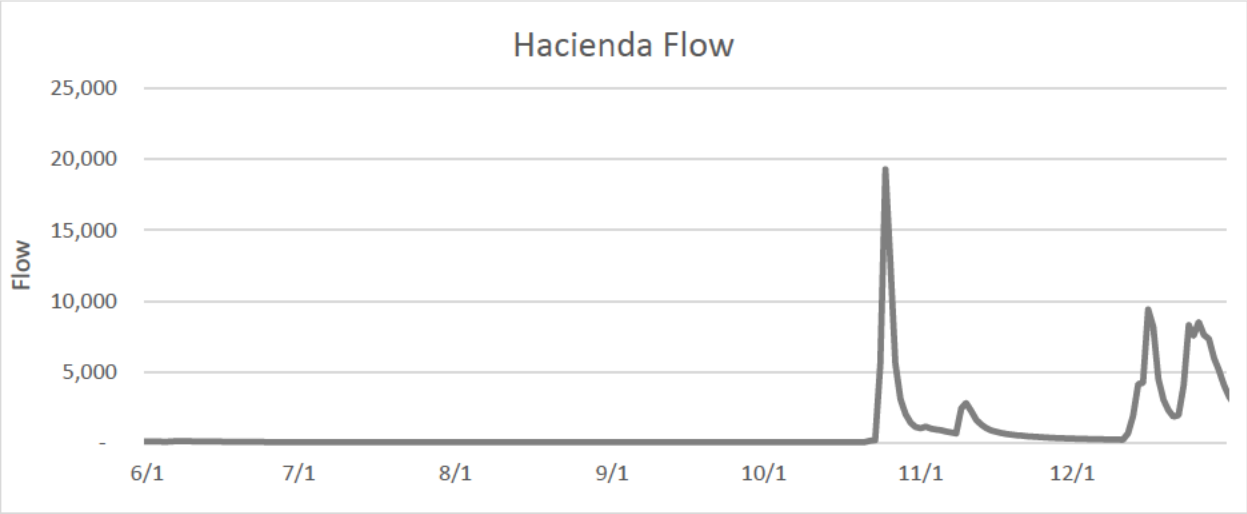


Figure 4-1. Flow in the Russian River at the USGS Hacienda stream gage (11467000).

Chinook

Water temperatures for Chinook salmon were favorable after mid-October when most Chinook are typically observed in the Russian River. At the Hacienda gage the temperature ranged from optimal to acutely stressful for adult salmonids (based on the criteria in Table 4-1 and Figure 4-2). However, temperatures at Hacienda were generally suitable to optimal when the majority of Chinook are typically observed at Mirabel (mid-October to mid-December). Moving upstream from Hacienda, Chinook would have experienced water temperatures similar to Hacienda at Digger Bend and Jimtown (Figures 4-2 through 4-5).

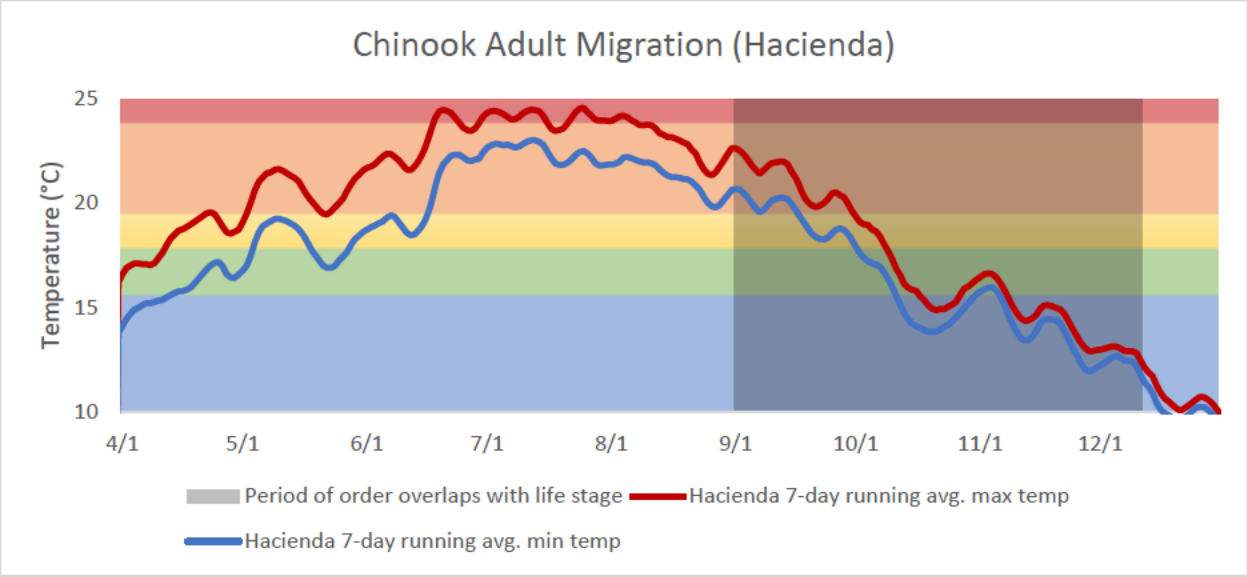


Figure 4-2. The 7-day running average of the minimum and maximum water temperatures collected at Hacienda (USGS gage number 11467000. Also show are optimal, suitable, stressful, acutely stressful, and lethal water temperature zones for adult Chinook based on Table 4-1.

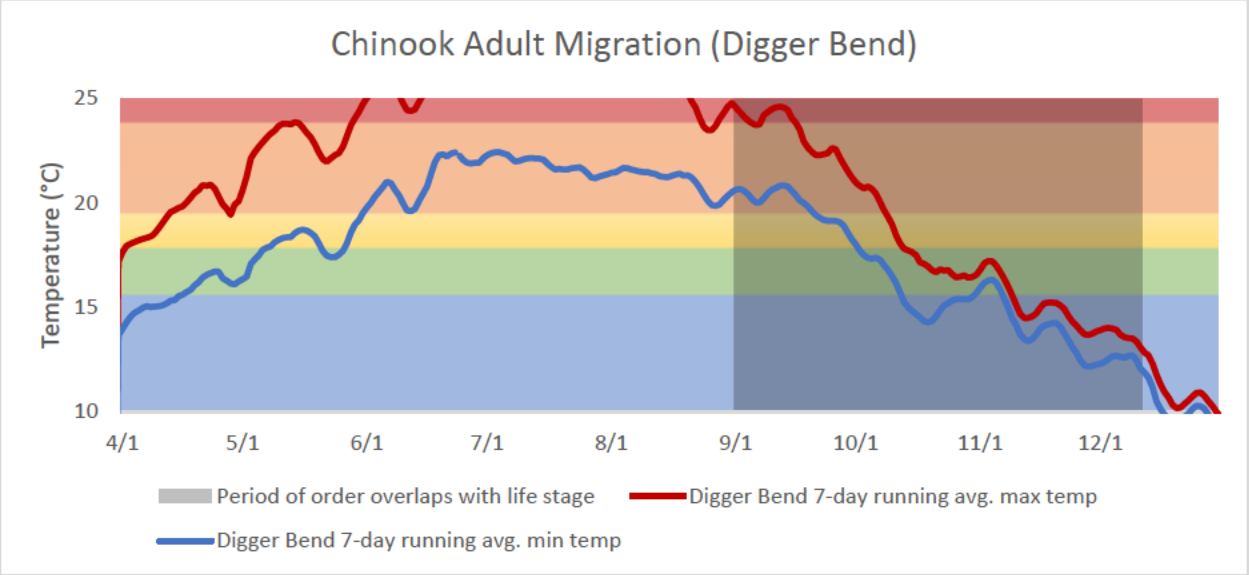


Figure 4-3. The 7-day running average of the minimum and maximum water temperatures collected at the USGS stream gage at Digger Bend (11463980) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook adult migration based on Table 4-1.

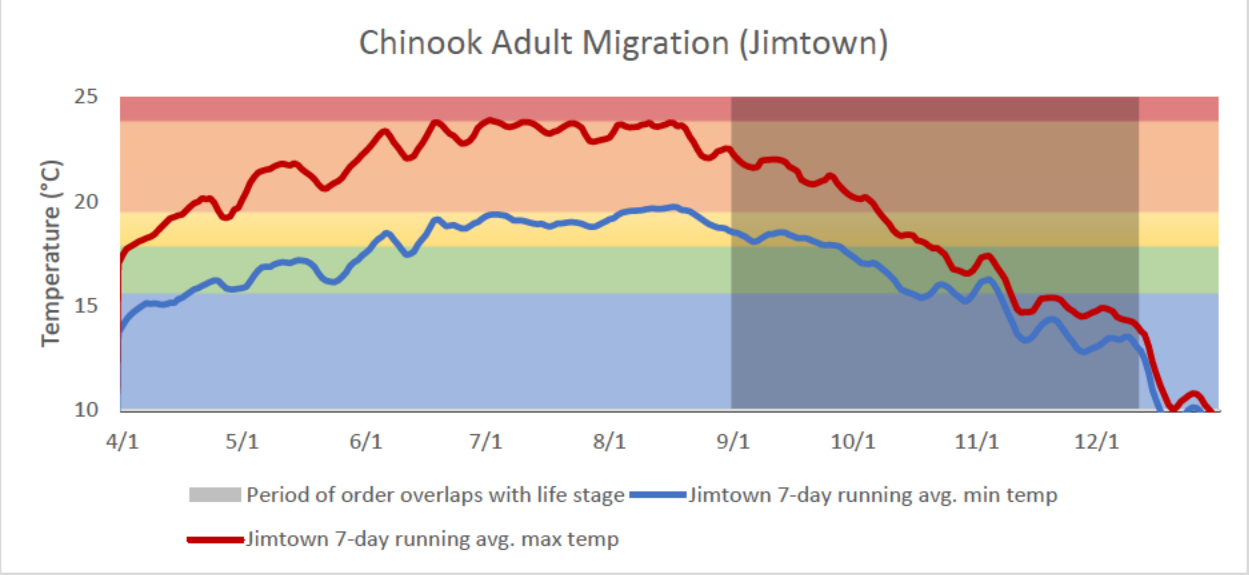


Figure 4-4. The 7-day running average of the minimum and maximum water temperatures collected at the USGS stream gage at Jimtown (USGS gage number 11463682) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook adult migration based on Table 4-1.

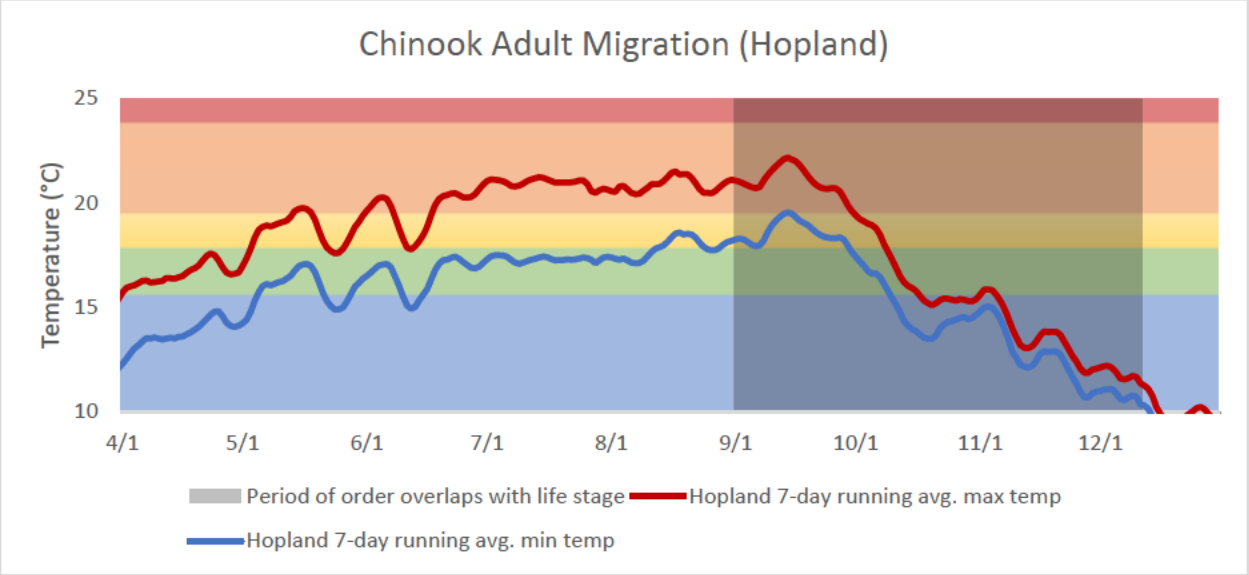


Figure 4-5. The 7-day running average of the minimum and maximum water temperatures collected at the USGS stream gage at Hopland (11462500) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook adult migration based on Table 4-1.

Water temperature data at in the mainstem near the confluence with Pieta Creek was not collected during the adult migration period. Water temperature in the east fork Russian River downstream of Coyote Valley Dam was acutely stressful when data was available during the Chinook migration period (Figure 4-6). The warmer water temperature in the east fork Russian River is related to releases from Coyote Valley Dam and conditions in Lake Mendocino.

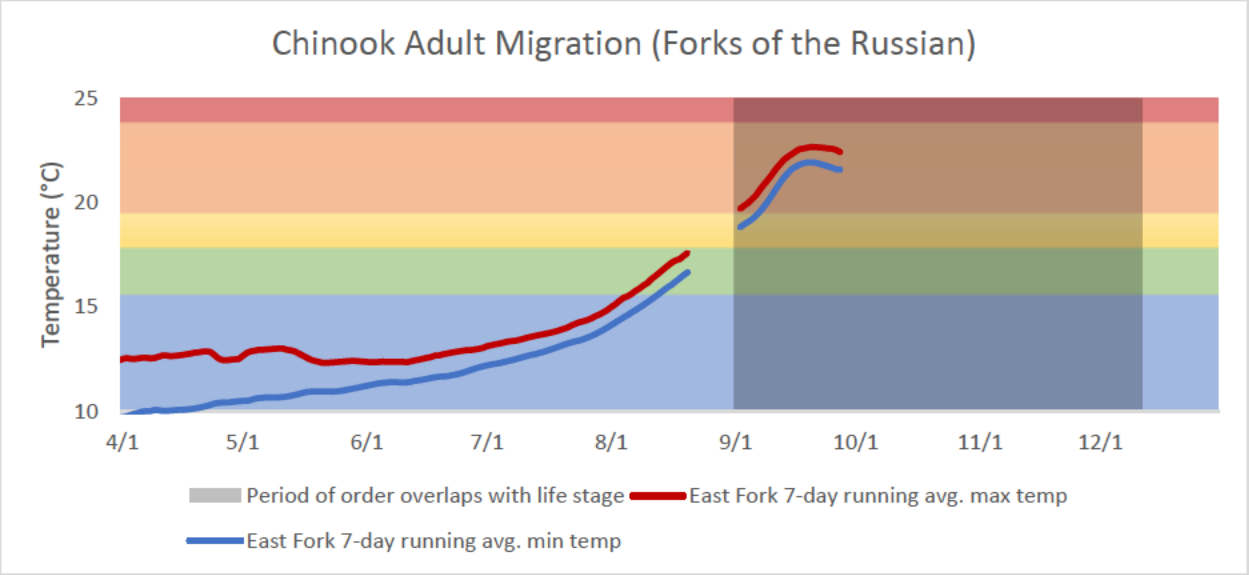


Figure 4-6. The 7-day running average of the minimum and maximum water temperatures collected in the East fork of the Russian River 0.5 km downstream of Coyote Valley Dam. Shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook adult migration based on Table 4-1.

Coho

Water temperatures for coho were generally favorable during the portion of the Order that overlaps with coho adult migration (November through December). At the Hacienda gage the temperature was

mainly in the suitable range for adult coho (based on the criteria in Table 4-1 and Figure 4-7). Moving upstream from Hacienda to Digger Bend, coho would have experienced water temperatures similar to Hacienda (Figure 4-8).

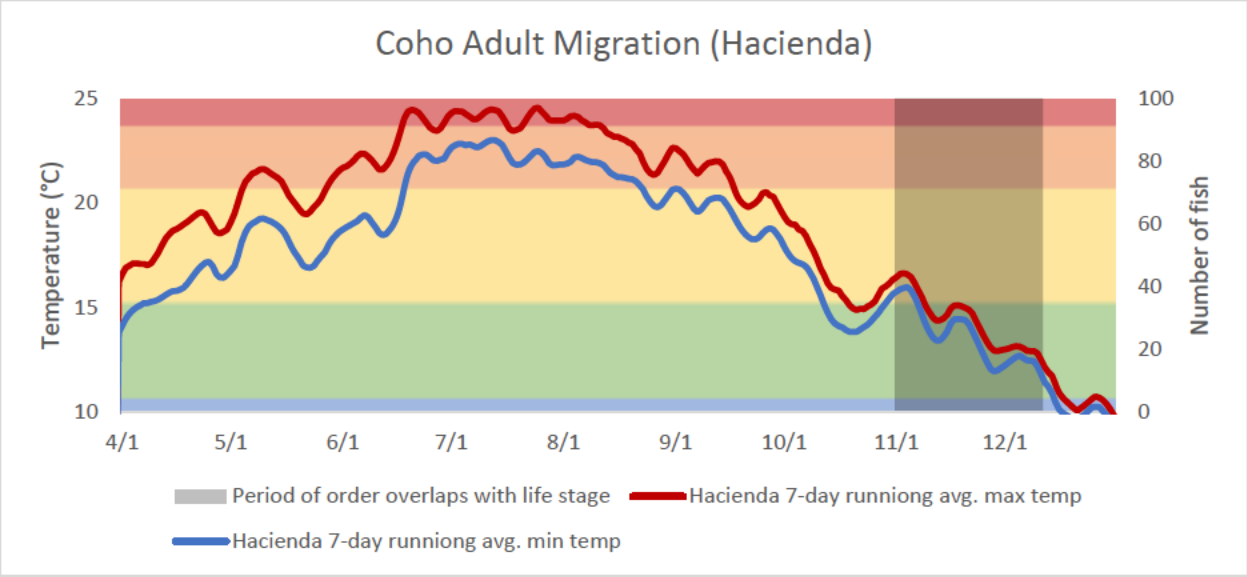


Figure 4-7. The 7-day running average of the minimum and maximum water temperatures collected at Hacienda (USGS gage number 11467000). Also show are optimal, suitable, stressful, acutely stressful, and lethal water temperature zones for adult coho based on Table 4-1.

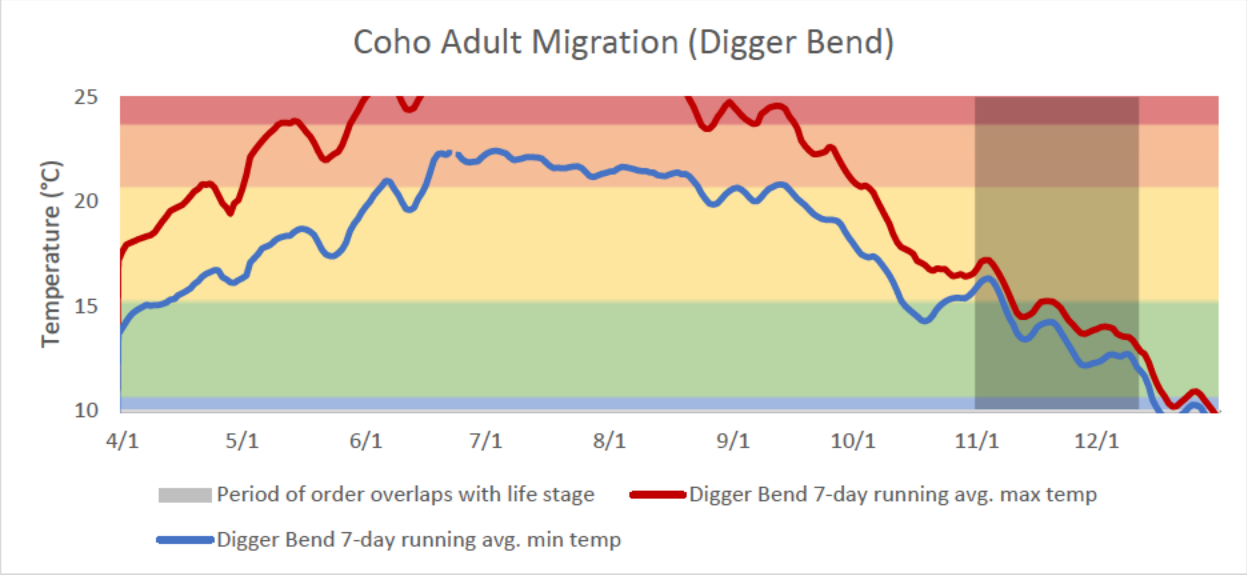


Figure 4-8. The 7-day running average of the minimum and maximum water temperatures collected at the USGS stream gage at Digger Bend (11463980) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for coho adult migration based on Table 4-1.

Steelhead

Water temperatures for steelhead were favorable during the portion of the Order that overlaps with the steelhead adult migration (December). At the Hacienda gage the temperature was suitable for adult steelhead based on our criteria (Table 4-1 and Figure 4-9). Moving upstream from Hacienda, steelhead

would have experienced water temperatures similar to Hacienda (Figures 4-9 through 4-12). Due to high stream flows, the data sonde in the east fork Russian River and in the mainstem Russian River at the confluence with Pieta Creek near Hopland, CA were removed prior to the adult steelhead migration period. Therefore, temperature data from these two locations are unavailable for the adult steelhead migration period.

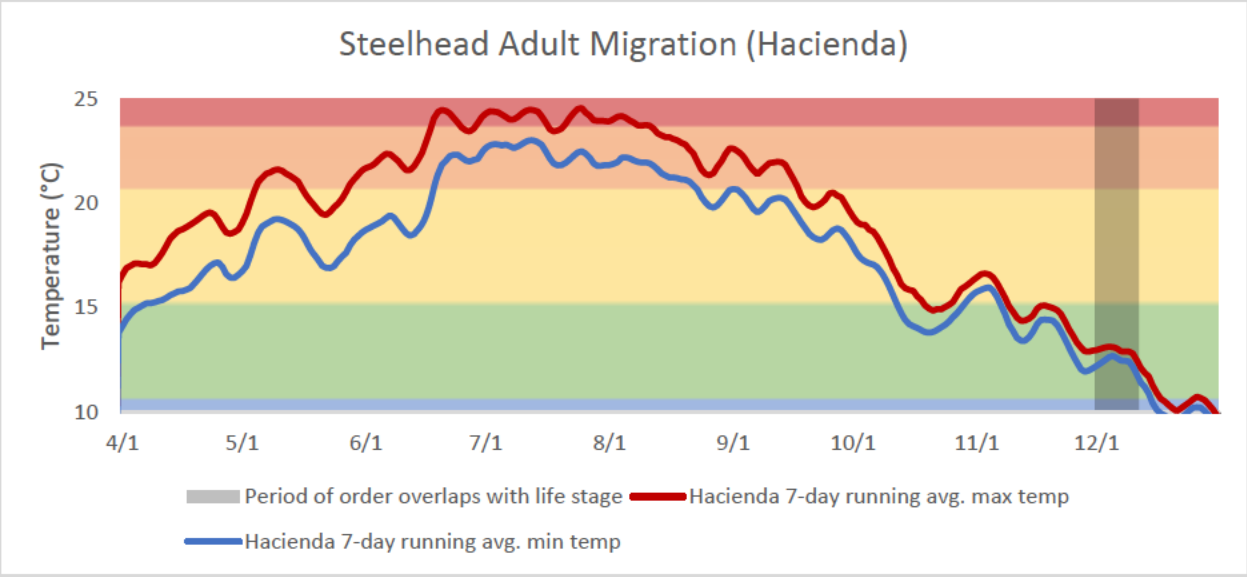


Figure 4-9. The 7-day running average of the minimum and maximum water temperatures collected at Hacienda (USGS gage number 11467000). Also show are optimal, suitable, stressful, acutely stressful, and lethal water temperature zones for adult steelhead based on Table 4-1.

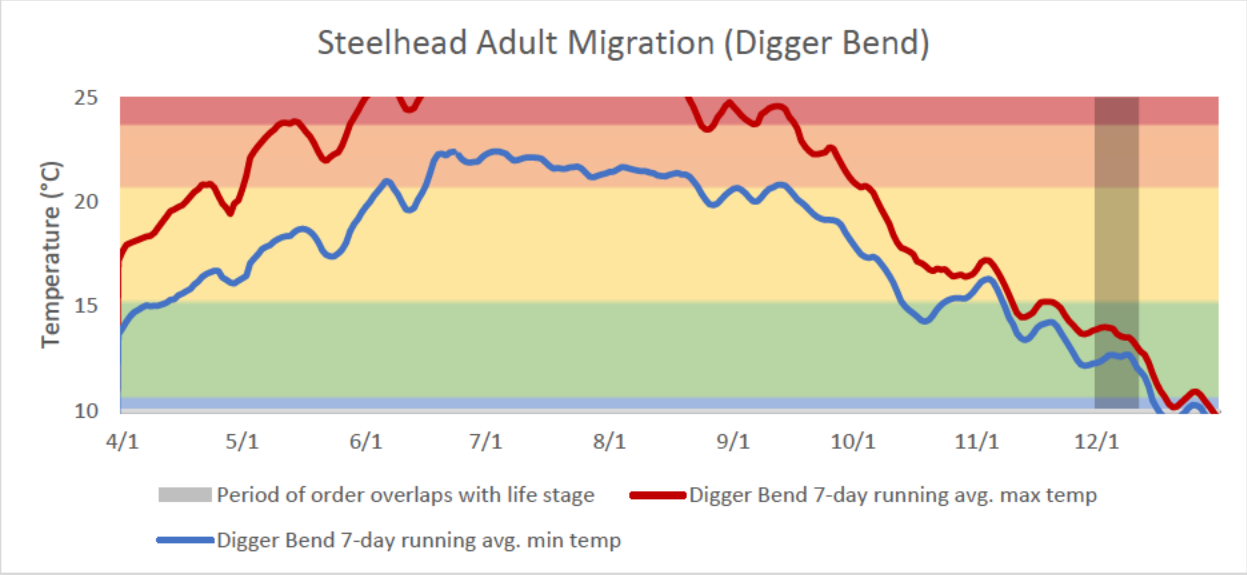


Figure 4-10. The 7-day running average of the minimum and maximum water temperatures collected at the USGS stream gage at Digger Bend (11463980) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for steelhead adult migration based on Table 4-1.

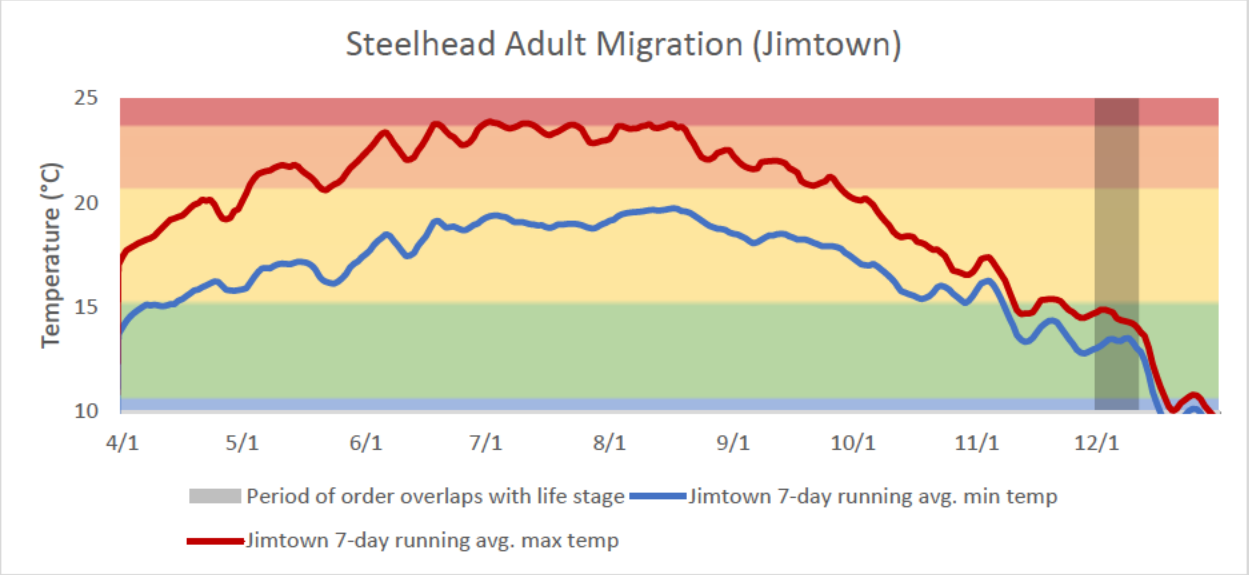


Figure 4-11. The 7-day running average of the minimum and maximum water temperatures collected at the USGS stream gage at Jimtown (USGS gage number 11463682) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for steelhead adult migration based on Table 4-1.

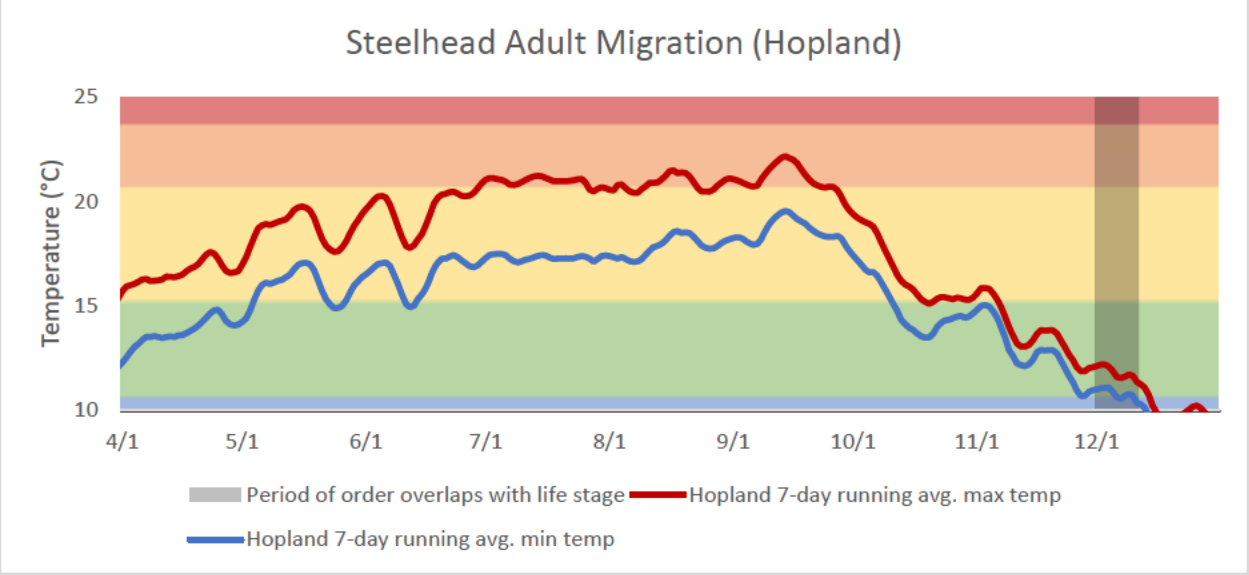


Figure 4-12. The 7-day running average of the minimum and maximum water temperatures collected at the USGS stream gage at Hopland (11462500) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for steelhead adult migration based on Table 4-1.

Salmonid Rearing

Salmonids must cope with water temperatures found at their rearing sites. In the Russian River basin much of the salmonid rearing habitat is in tributaries to the Russian River including Dry Creek, but Chinook and steelhead rear in the mainstem Russian River as well. Chinook emerge from redds constructed in the upper Russian River in the early spring and begin rearing in the shallow portions of the stream margins. In the mainstem Russian River, Chinook finish rearing in the early spring when water temperatures are still relatively cool. As a result, Chinook rear at more locations in the mainstem, but for a shorter time than steelhead. Therefore, we relate water temperature at several mainstem

Russian River sites to Chinook water temperature criteria. Steelhead rear in freshwater for one or more years and are primarily restricted to the tributaries of the Russian River and to the portion of Russian River where water released from the cold-water pool (the bottom portion of the lake) in Lake Mendocino has the greatest cooling effect on mainstem rearing habitat near Coyote Valley Dam. This cooling effect has largely diminished by the time water reaches Cloverdale approximately 50 km downstream. We relate steelhead water temperature criteria to water temperature collected in the east fork of Russian River downstream of Coyote Valley Dam, at Hopland, and in the Russian river near the confluence of Pieta Creek (approximately 5 miles downstream of Hopland, CA) as these sites are within the section of the Russian River that can provide year-round rearing opportunities for juvenile steelhead. Juvenile coho salmon do not rear in the mainstem of the Russian River.

Chinook

During 2021, water temperatures for rearing Chinook ranged from optimal to lethal depending on the site and time period within the Chinook rearing season. Although stressful and eventually acutely stressful conditions did occur at those sites in late spring and summer, water temperatures were generally in the optimal or suitable range for Chinook salmon rearing in the east fork Russian River downstream of Coyote Valley Dam, near the USGS stream gage at Hopland (gauge number 11462500), and near the confluence with Pieta Creek earlier in the spring (Figure 4-13 through 4-15). At Jimtown, Digger Bend, and Hacienda water temperatures became stressful and eventually acutely stressful or even potentially lethal by mid-June (Figures 4-16 through 4-18). However, It is important to note that Chinook in the Russian migrate downstream and out to sea in the spring thus avoiding high temperatures and by June the majority of Chinook smolts have emigrated from the Russian River (see Salmonid Smolt Outmigration).

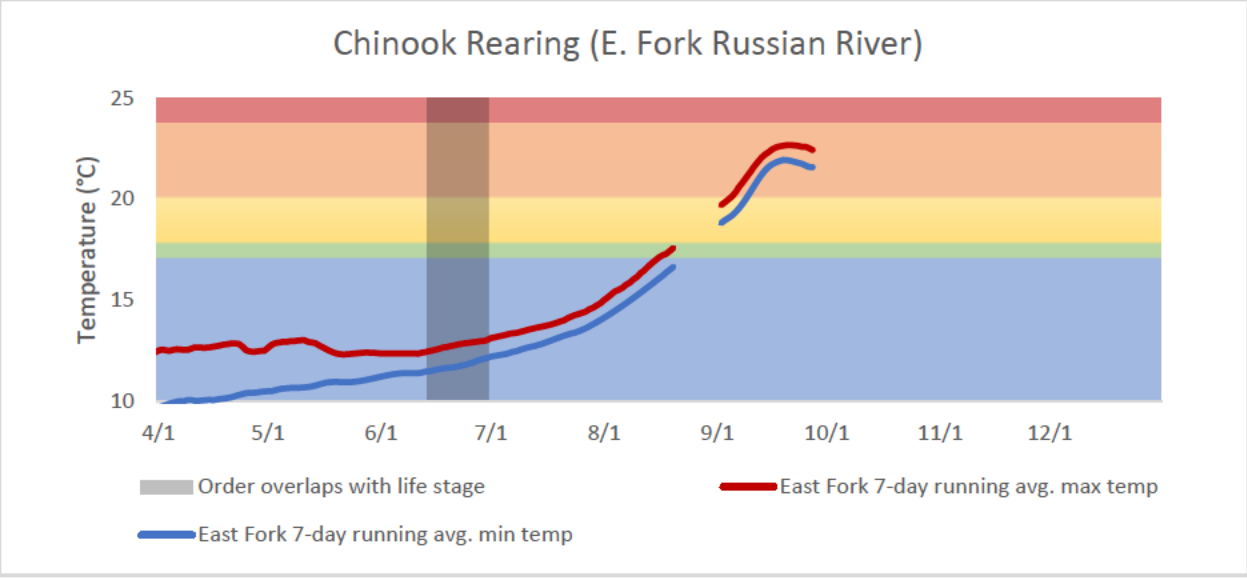


Figure 4-13. The 7-day running average of the minimum and maximum water temperatures collected by Sonoma Water in the east fork Russian River 0.5 km downstream of Coyote Valley Dam shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook rearing based on Table 4-2.

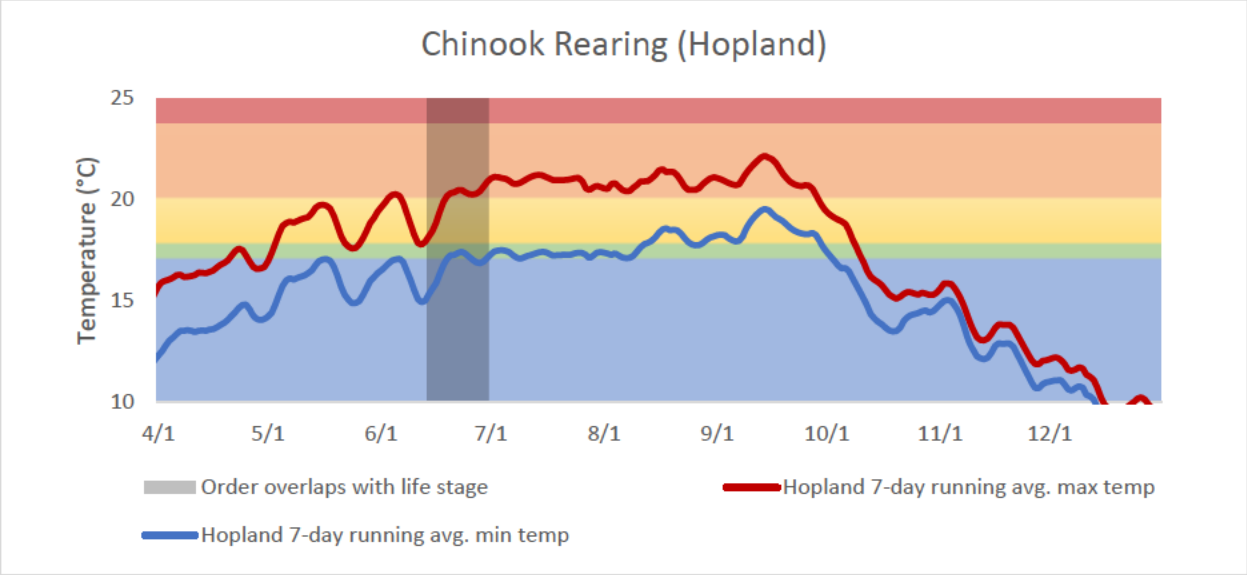


Figure 4-14. The 7-day running average of the minimum and maximum water temperatures collected at the USGS stream gage at Hopland (11462500) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook rearing based on Table 4-2.

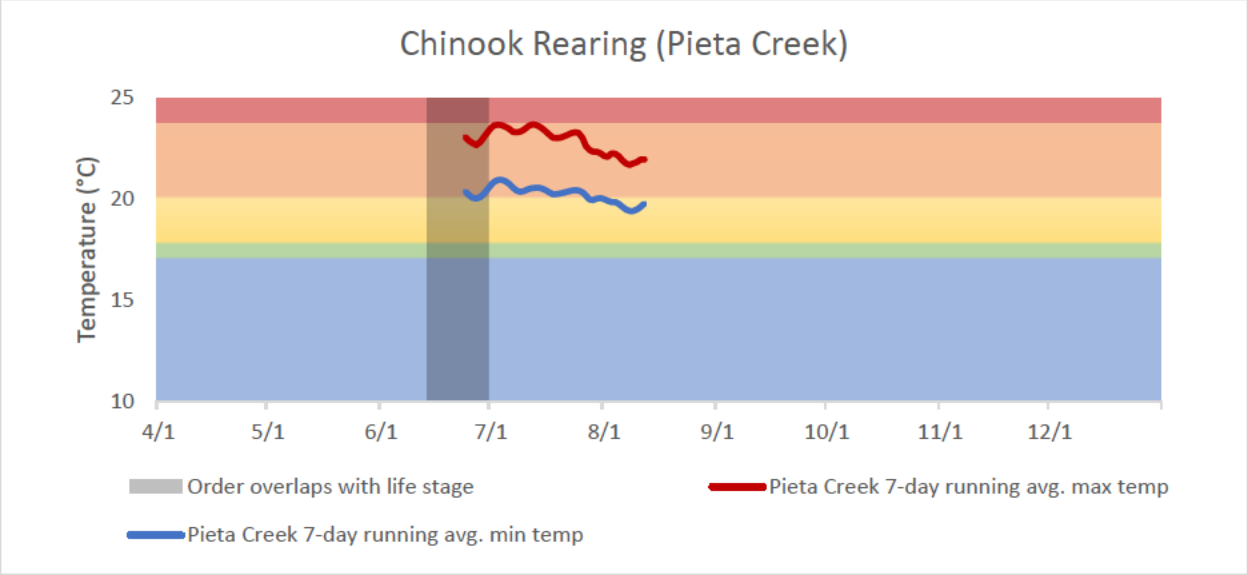


Figure 4-15. The 7-day running average of the minimum and maximum water temperatures collected in the Russian River near the confluence with Pieta Creek approximately 5 miles downstream of Hopland, CA shown with the optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook rearing based on Table 4-2.

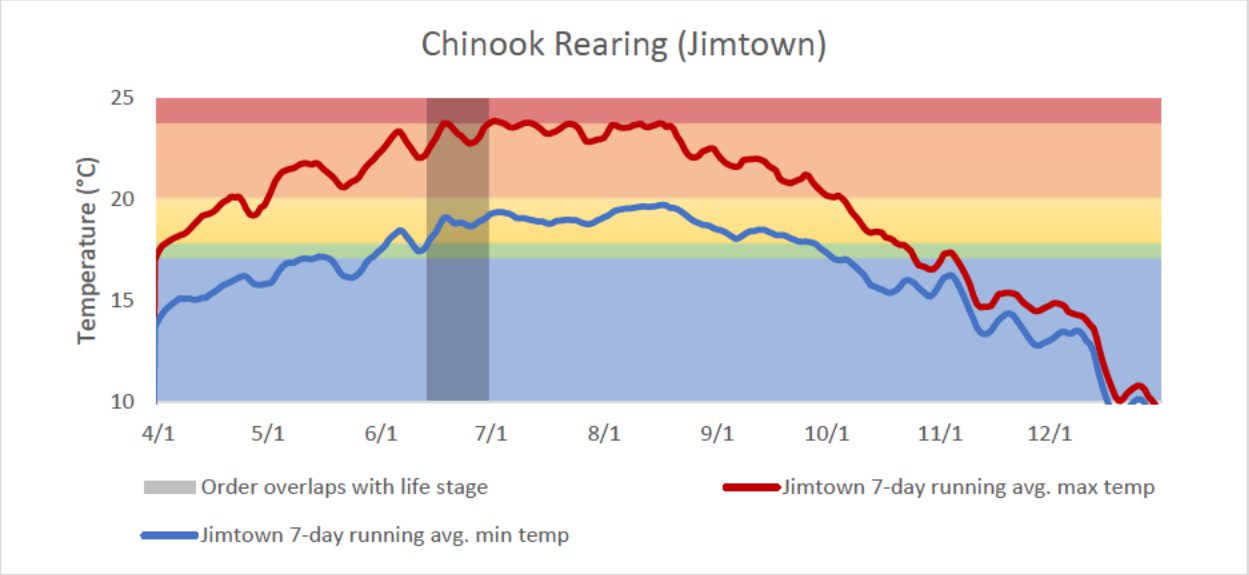


Figure 4-16. The 7-day running average of the minimum and maximum water temperatures collected at the USGS stream gage at Jimtown (USGS gage number 11463682) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook rearing based on Table 4-2.

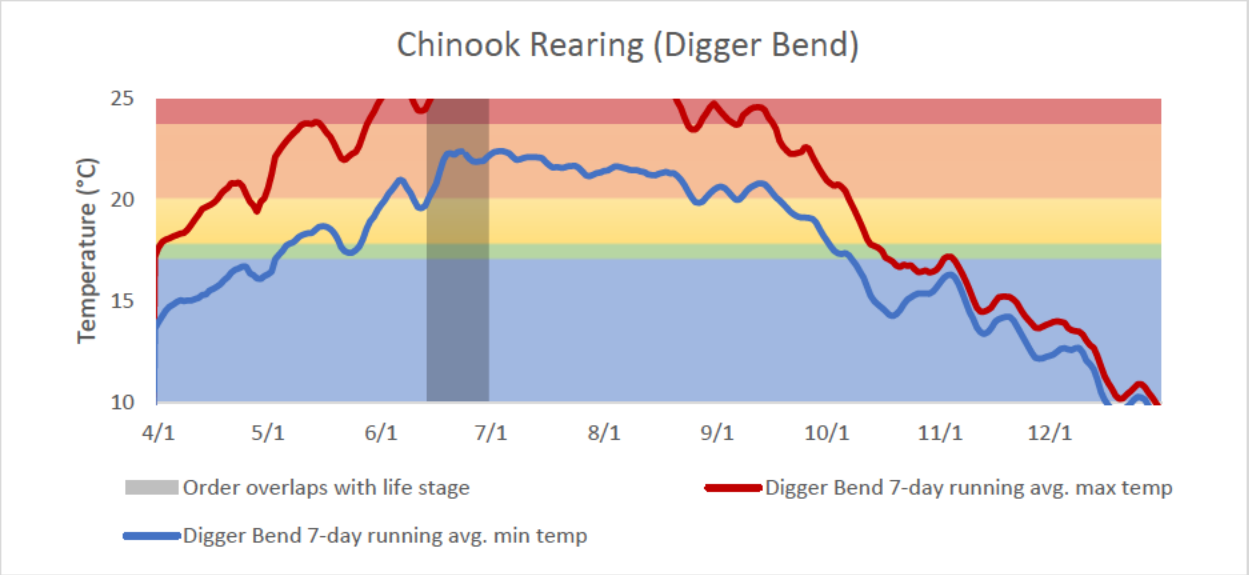


Figure 4-17. The 7-day running average of the minimum and maximum water temperatures collected at the USGS stream gage at Digger Bend (11463980) shown with the optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook rearing based on Table 4-2.

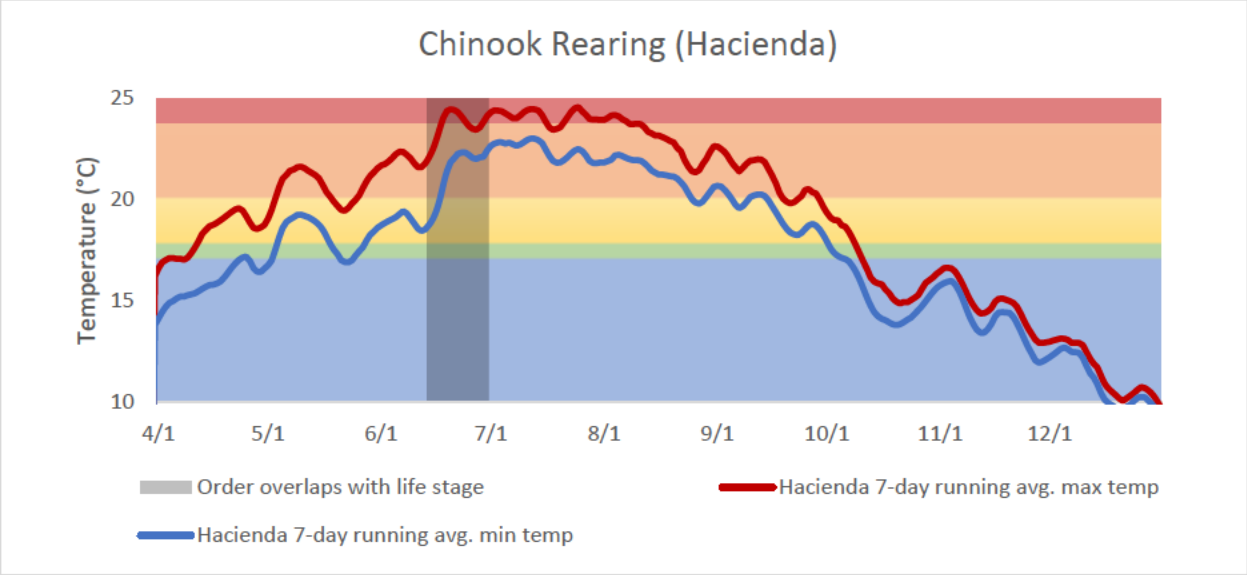


Figure 4-18. The 7-day running average of the minimum and maximum water temperatures collected at the USGS stream gage at Hacienda (gage number 11467000) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook rearing based on Table 4-2.

Steelhead

Steelhead parr rear year-round in the upper Russian River. During the Order water temperature in the east fork of the Russian River downstream of Coyote Valley Dam was optimal until September, then water temperatures gradually increased becoming acutely stressful by mid-September. By late September, water temperatures began to level off and were likely to begin cooling at about the time the data sonde was removed for the season. At the USGS stream gage at Hopland, water temperature was generally suitable to stressful for steelhead rearing (Figure 4-19 and 4-20).

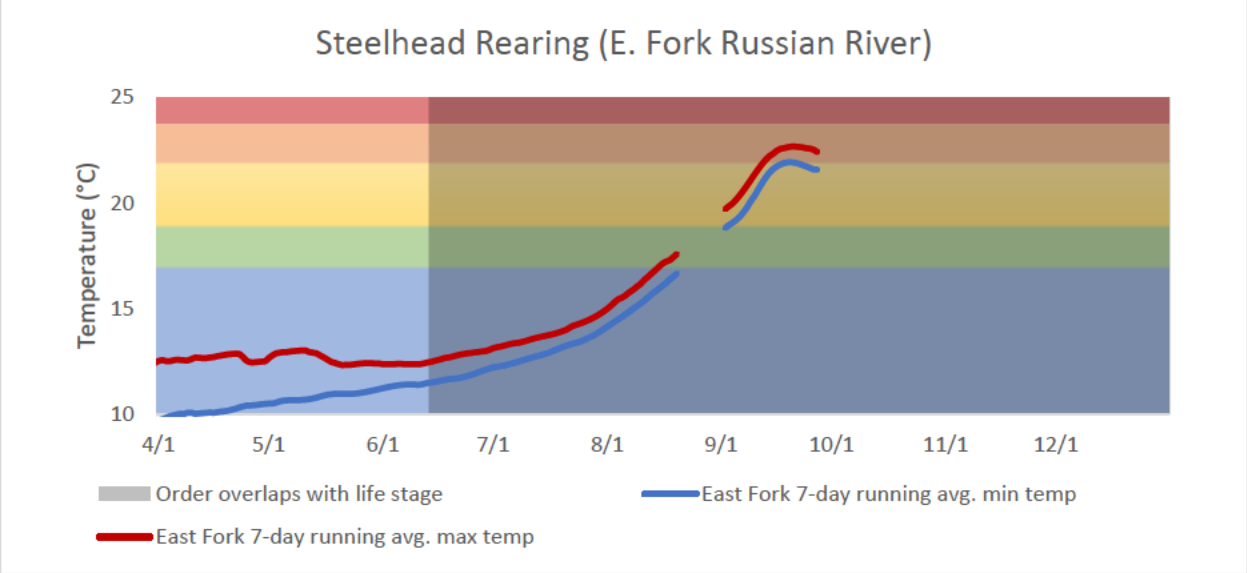


Figure 4-19. The 7-day running average of the minimum and maximum water temperatures collected by Sonoma Water at the east fork Russian River downstream of Coyote Valley Dam shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for steelhead parr based on Table 4-2.

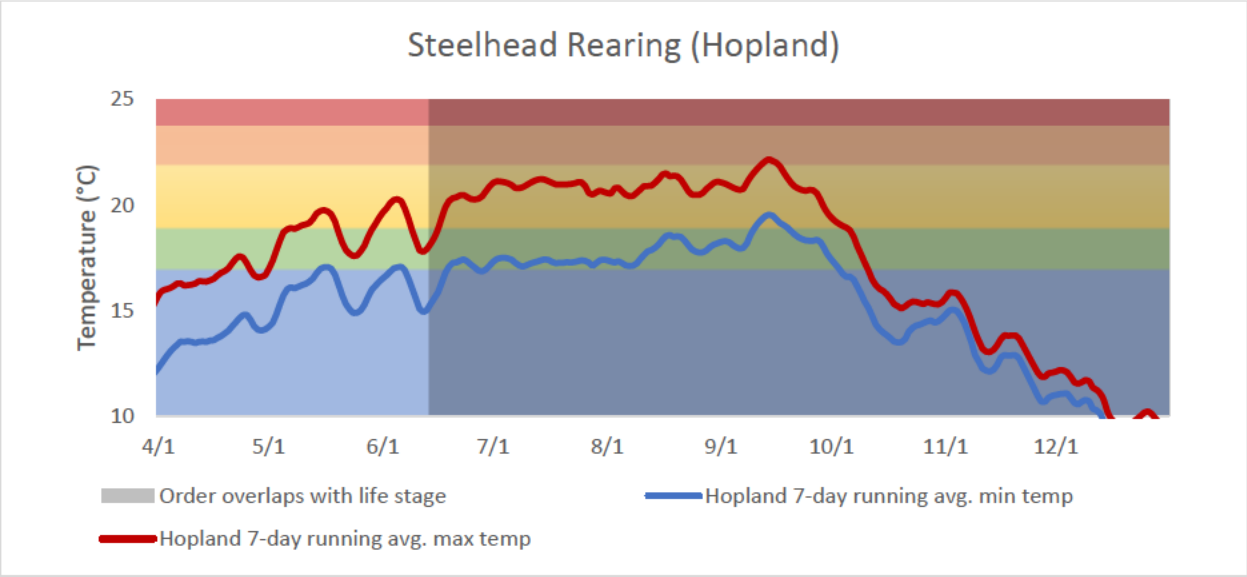


Figure 4-20. The 7-day running average of the minimum and maximum water temperatures collected at Hopland (USGS stream gage number 11462500) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for steelhead parr based on Table 4-2.

In the Russian River near Pieta Creek water temperature was stressful to acutely stressful for most of the period temperature data were collected at that location (Figure 4-21).

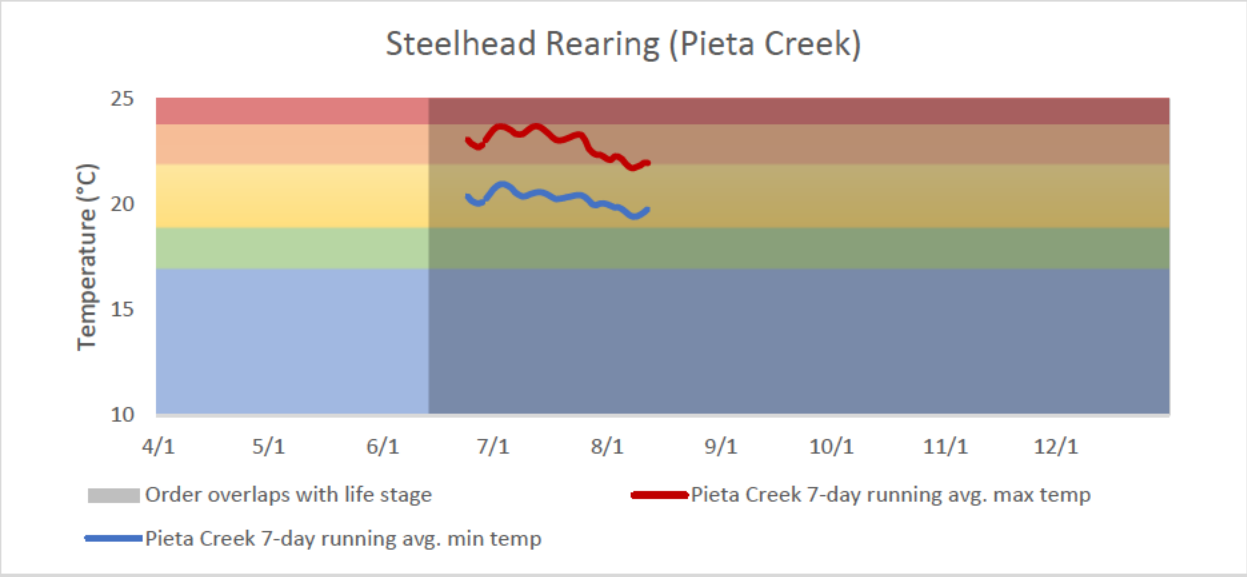


Figure 4-21. The 7-day running average of the minimum and maximum water temperatures collected in the Russian River near the confluence with Pieta Creek approximately 5 miles downstream of Hopland, CA shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for steelhead parr based on Table 4-2.

Salmonid Smolt Outmigration

For smolts produced in the upper portion of the watershed, we summarized Russian River water temperatures for the east fork Russian River downstream of Coyote Valley Dam, Hopland, confluence with Pieta Creek, Jimtown, and Digger Bend gages and show these temperatures with water temperature criteria for Chinook smolts. Typically, we relate Chinook smolt catches at Mirabel to water temperature collected at the Hacienda gage. However, in 2021, we ended fish trapping operations at Mirabel before the Order went into effect. It is noteworthy that many Chinook smolts (over 10,000 captured in the trap) emigrated from the Russian River before the order went into effect. Because so few coho and steelhead smolts apparently emigrated through the lower river during the period of time that the Order was in effect (based on the historical Mirabel trap catch), we did not evaluate lower river temperature effects on smolts of these two species and instead restricted our analysis to Chinook smolts

Chinook

Water temperature in the upper Russian River near the Coyote Valley Dam was generally favorable for Chinook smolts during the period that Chinook are expected to emigrate from that potion of the Russian river (April through June, Figure 4-22). However, water temperature became stressful to potentially lethal at some sites located downstream of Hopland (Figure 4-23 through Figure 4-27). It is important to note that Chinook have evolved to emigrate during the spring before water temperatures become lethal and that many Chinook were captured at the Mirabel fish trap emigrated before the Order went in effect in June (Figure 4-27).

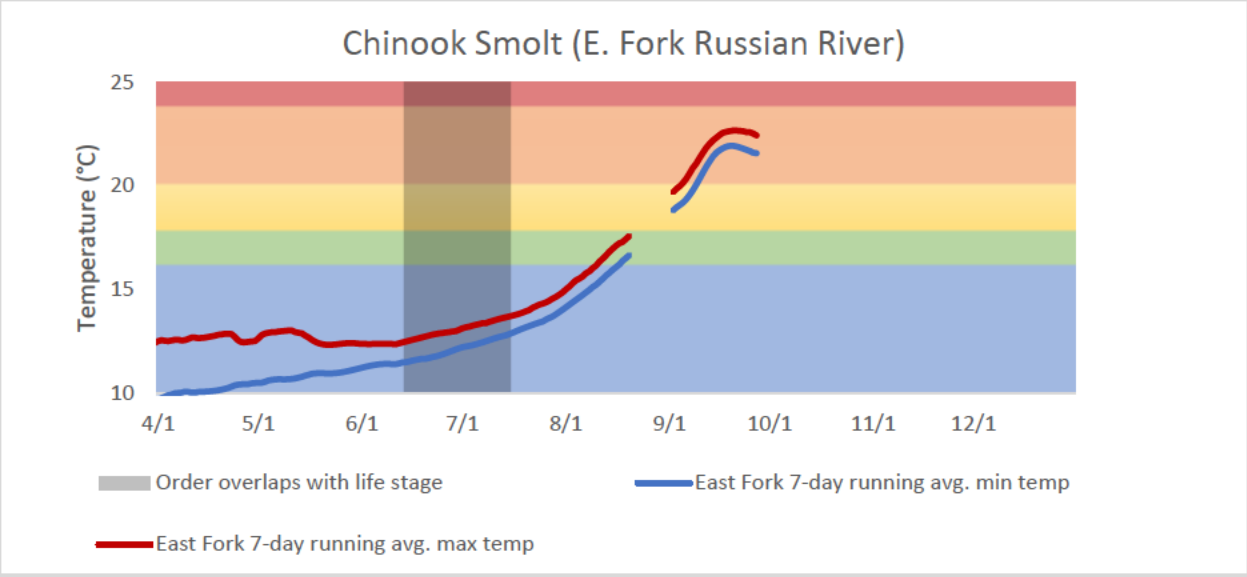


Figure 4-22. The 7-day running average of the minimum and maximum water temperatures collected by Sonoma Water at the east fork of the Russian River downstream of the Coyote Valley Dam. Shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook smolts based on Table 4-3.

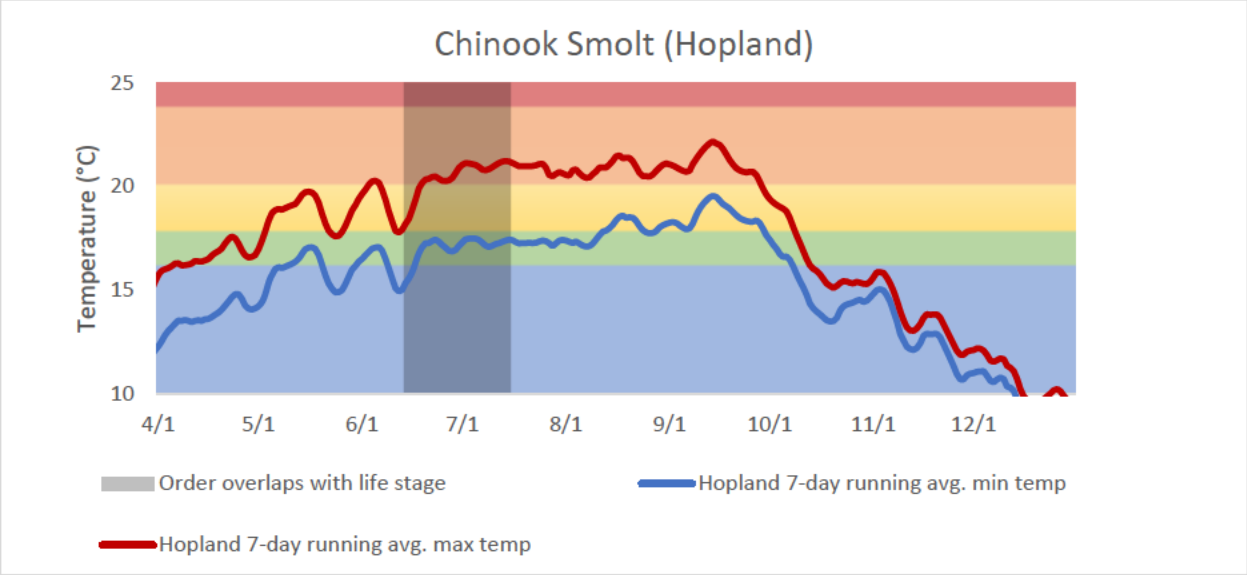


Figure 4-23. The 7-day running average of the minimum and maximum water temperatures collected at Hopland (USGS stream gage number 11462500). Shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook smolts based on Table 4-3.

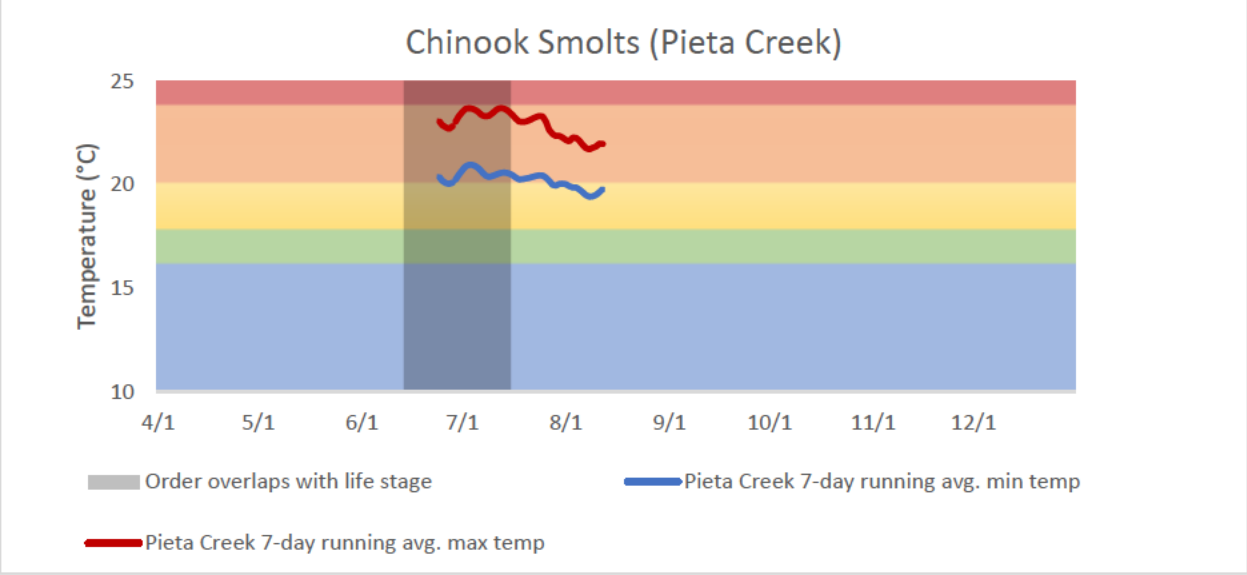


Figure 4-24. The 7-day running average of the minimum and maximum water temperatures collected in the Russian River near the confluence with Pieta Creek approximately 5 miles downstream of Hopland, CA shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook smolts based on Table 4-3.

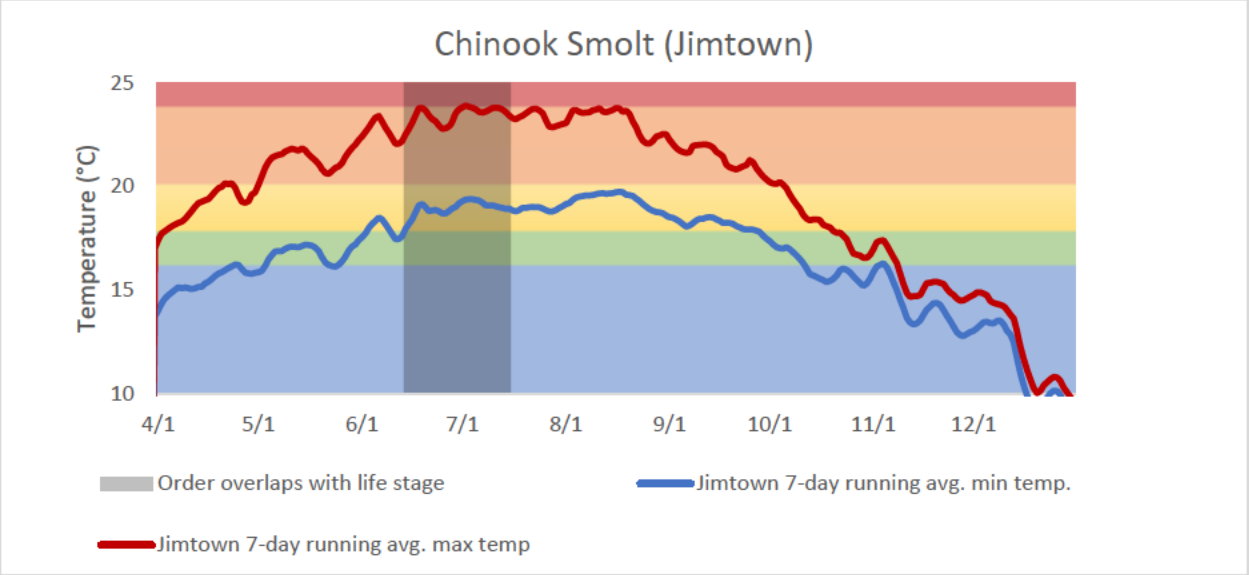


Figure 4-25. The 7-day running average of the minimum and maximum water temperatures collected at the Jimtown USGS stream Gage (1146382) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook smolts based on Table 4-3.

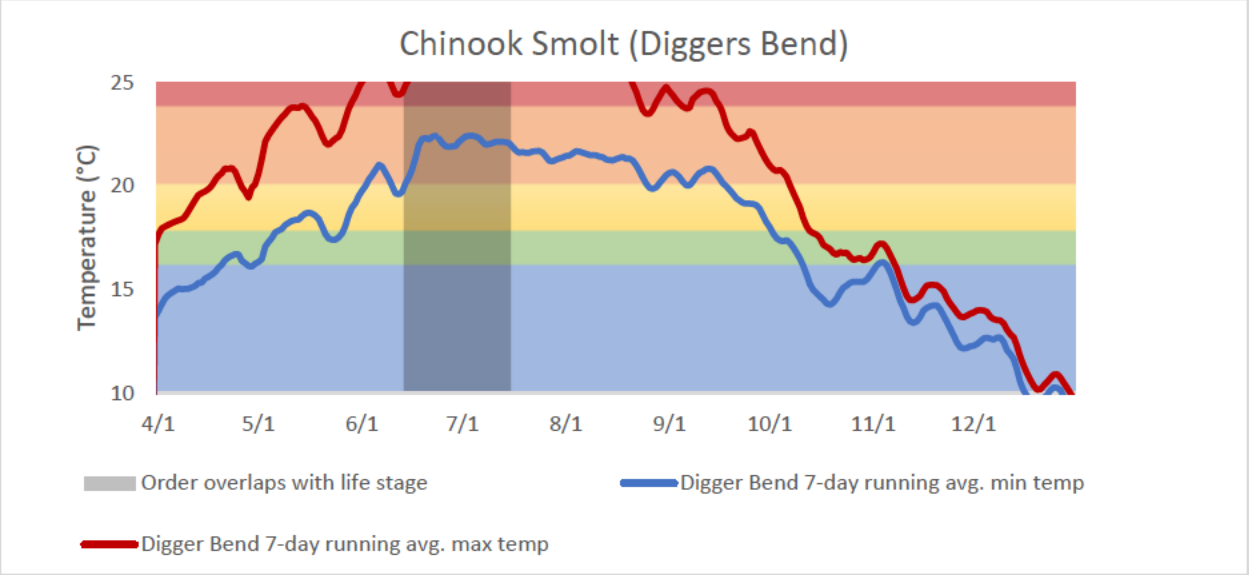


Figure 4-26. The 7-day running average of the minimum and maximum water temperatures collected at the Digger Bend USGS stream gage (11463980) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook smolts based on Table 4-3.

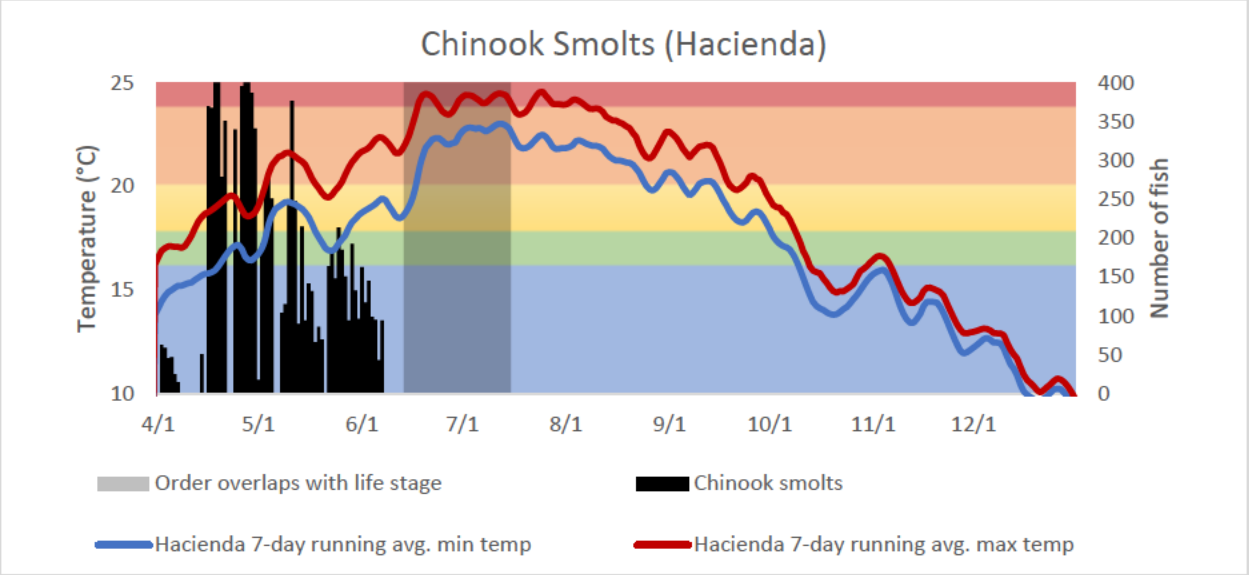


Figure 4-27. The 7-day running average of the minimum and maximum water temperatures collected at Hacienda (USGS gage number 11467000) shown with the Chinook smolt catch from the Mainstem Russian River near Mirabel and optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook smolts based on Table 4-3.

Dissolved Oxygen

At most sites, dissolved oxygen generally ranged from suitable to stressful for salmonids in the Russian River throughout the Order. However, dissolved oxygen was potentially lethal in the east fork Russian River downstream of Coyote Valley Dam (Figure 4-28). It is worth noting that dissolved oxygen in summer and early fall is typically poor immediately downstream of Coyote Valley Dam and that dissolved oxygen generally recovers fairly quickly downstream of the dam.

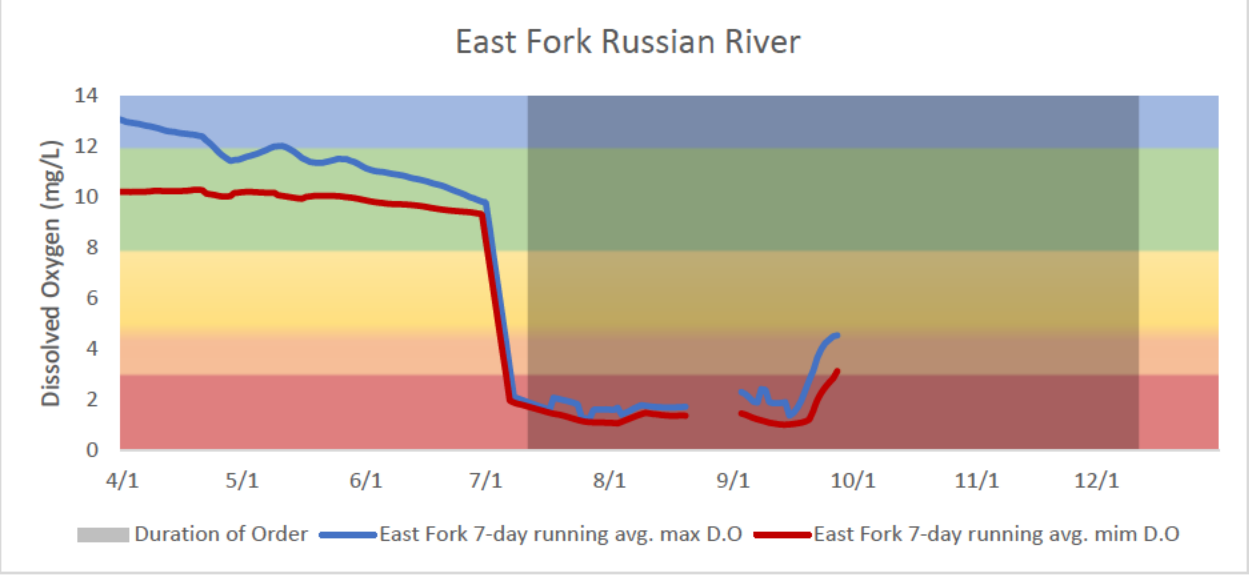


Figure 4-28. The 7-day running average of the minimum and maximum dissolved oxygen collected by Sonoma Water in the east fork of the Russian River downstream of Coyote Valley Dam shown with optimal, suitable, stressful, acutely stressful, lethal dissolved oxygen zones based on criteria in Table 4-4.

At Hopland, the Russian River near the confluence of Pieta Creek, Jimtown, Digger Bend, and Hacienda, maximum daily average dissolved oxygen levels were generally suitable whereas the minimum daily dissolved oxygen levels were often stressful (Figures 4-29 through 4-33).

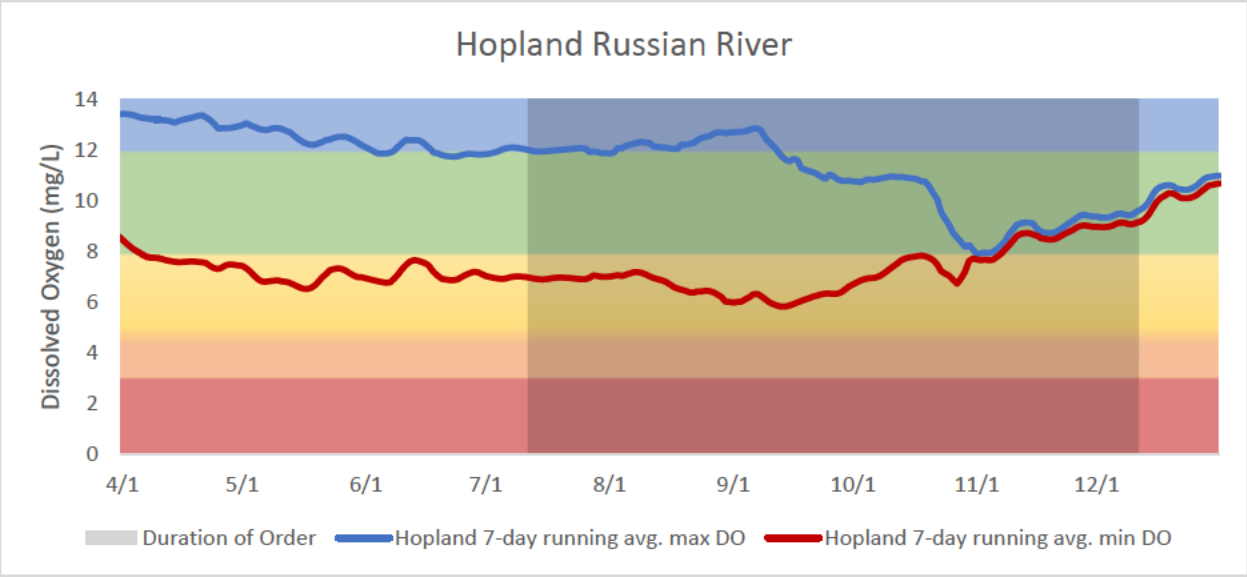


Figure 4-29. The 7-day running average of the minimum and maximum dissolved oxygen collected at Hopland (USGS stream gage number 11462500) shown with optimal, suitable, stressful, acutely stressful, lethal dissolved oxygen zones based on criteria in Table 4-4.

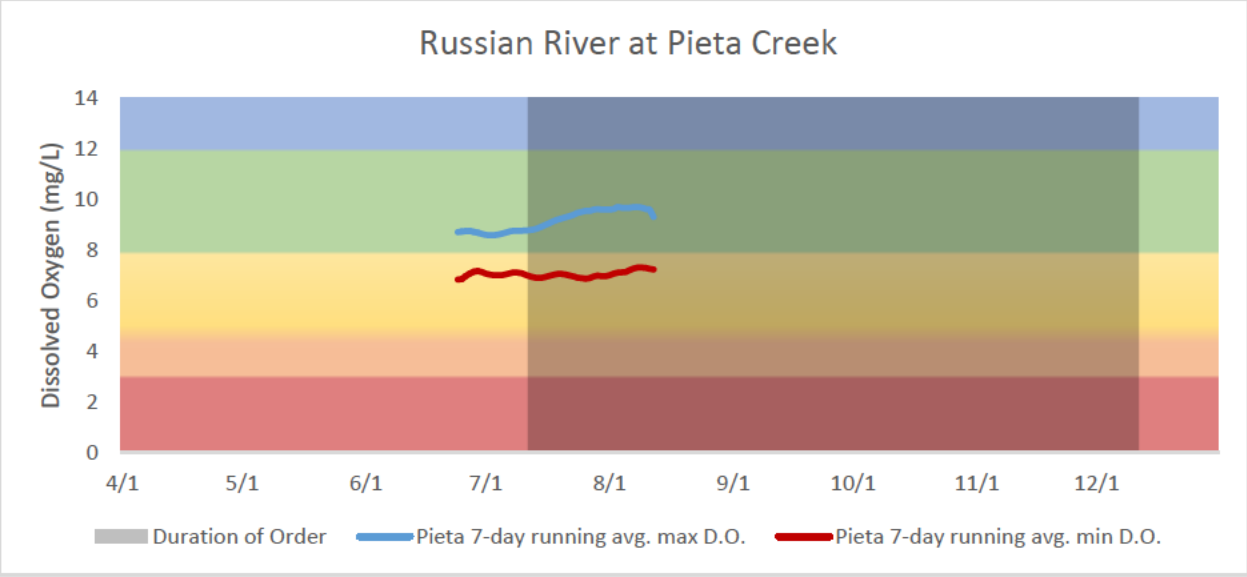


Figure 4-30. The 7-day running average of the minimum and maximum dissolved oxygen collected in in the Russian River near the confluence with Pieta Creek approximately 5 miles downstream of Hopland, CA shown with optimal, suitable, stressful, acutely stressful, lethal dissolved oxygen zones based on criteria in Table 4-4.

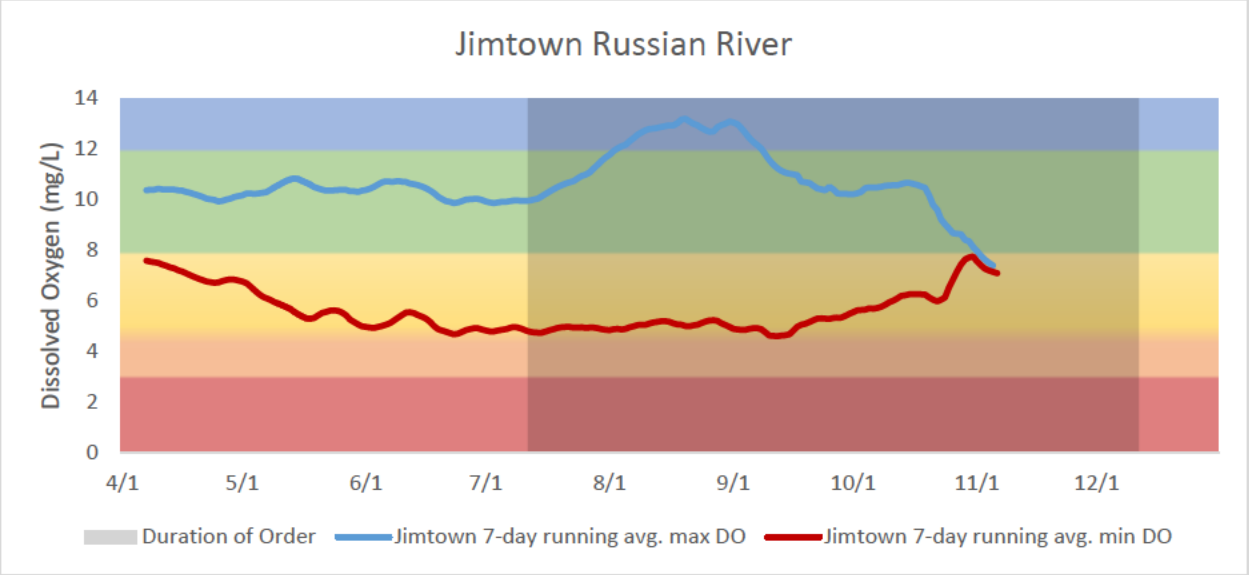


Figure 4-31. The 7-day running average of the minimum and maximum dissolved oxygen collected at the Jimtown USGS stream Gage (1146382) shown with optimal, suitable, stressful, acutely stressful, lethal dissolved oxygen zones based on criteria in Table 4-4.

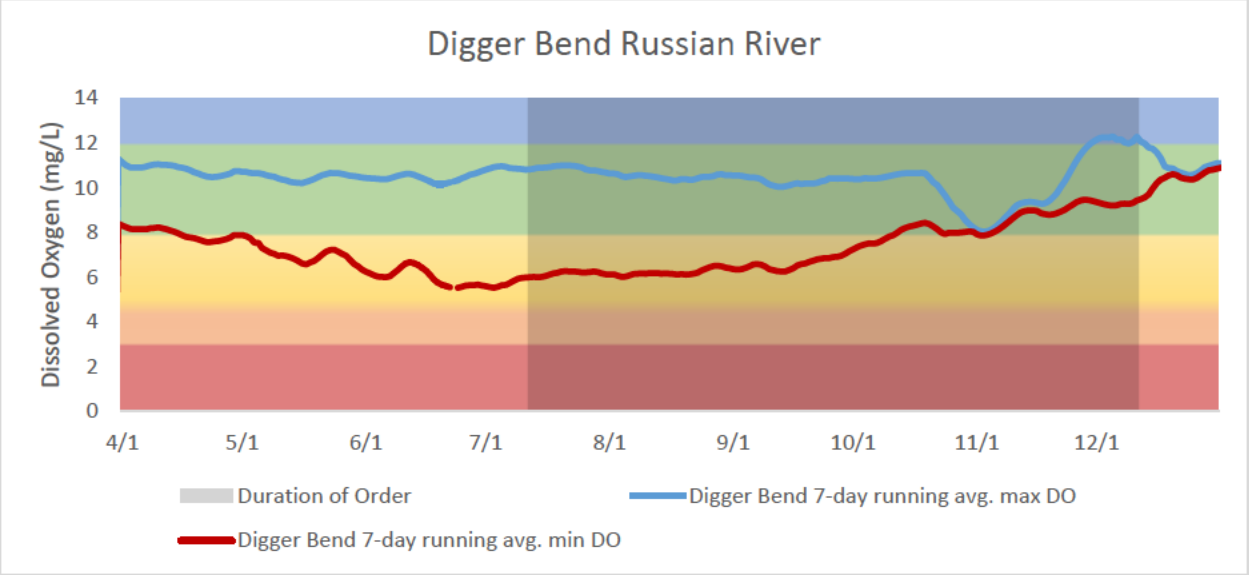


Figure 4-32. The 7-day running average of the minimum and maximum dissolved oxygen collected at the Digger Bend USGS stream gage (11463980) shown with optimal, suitable, stressful, acutely stressful, lethal dissolved oxygen zones based on criteria in Table 4-4.

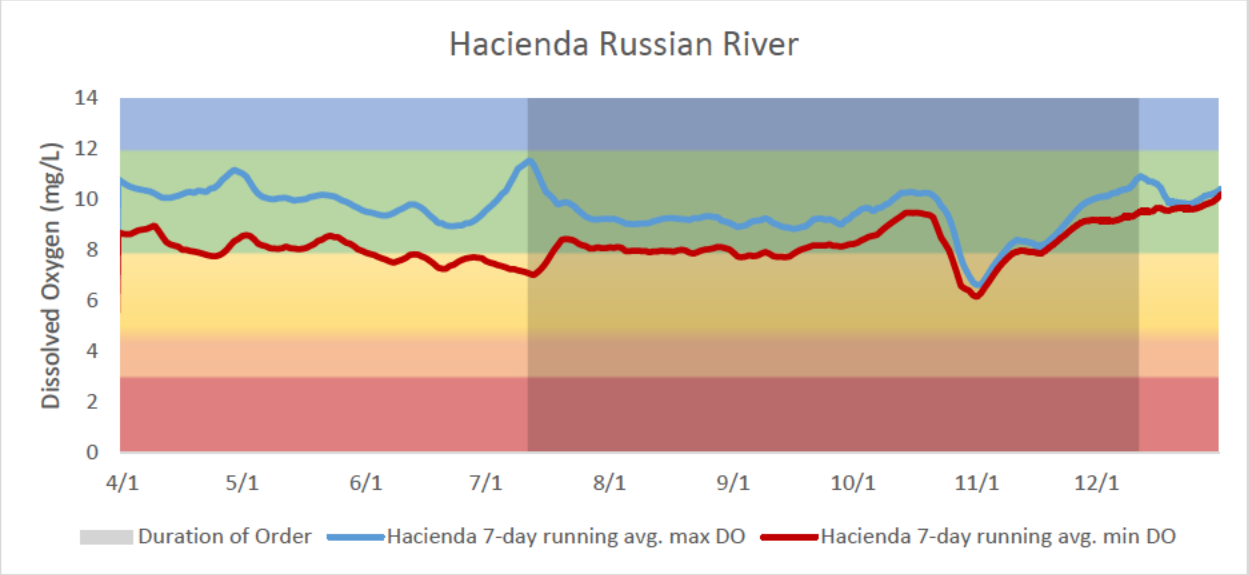


Figure 4-33. The 7-day running average of the minimum and maximum dissolved oxygen collected at the Hacienda USGS stream gage (1146700) shown with optimal, suitable, stressful, acutely stressful, lethal dissolved oxygen zones based on criteria in Table 4-4.

4.2.5 Summary

When Chinook were expected to begin migrating upstream in 2021, water temperature at Hacienda was acutely stressful, but temperature changed to suitable and optimal by mid-October when the bulk of adult Chinook typically enter the river. Water temperatures at sites upstream of Hacienda followed a similar trend where temperatures were potentially lethal, acutely stressful, or stressful early in the migration period then temperature conditions improved as air temperatures decreased with the onset of fall. In addition to atmospheric cooling, a large rain event in late October increased flow in the Russian River well above the minimum instream flow requirements set by the Order and likely contributed to the decrease in water temperature. The increase in flow was primarily due to tributary inflow meaning that water temperature in the river became less influenced by reservoir releases and more influenced by tributary input. Flow remained above the minimum instream flow requirements at Hacienda for the remainder of the order. November water temperatures were suitable to optimal for adult Chinook at all sites. By mid-November water temperatures were suitable or optimal for adult coho and adult steelhead at all sites. While temperatures were occasionally unfavorable for adult salmonids it is important to note that (1) these fish have evolved to cope with seasonally warm water temperatures by returning to the river in the fall when water temperatures are beginning to cool and (2) the vast majority of adult salmonids return to the Russian River after water temperatures in the river have become favorable.

For juvenile Chinook, water temperatures were favorable for rearing in the early spring at most sites before the Order went into effect but became unfavorable by the end of the rearing season. Fish that remained in the river and emigrated as smolts late in the rearing season encountered unfavorable water temperatures as they moved downstream and out to sea. It is important to note that Chinook have

likely adapted to warm temperatures in the Russian River and have adjusted their run timing to further cope with seasonally warmer water temperatures by emigrating earlier in the year.

For steelhead rearing, water temperatures in the east fork Russian River ranged from optimal to acutely stressful. The increase in water temperature at this site was likely due to depletion of the cold water pool in the reservoir. At Hopland, water temperature for steelhead rearing ranged from optimal to stressful with a brief period where the average maximum daily temperature was acutely stressful. In the Russian River near the confluence with Pieta Creek, water temperature was typically stressful to acutely stressful for rearing steelhead; however, water quality data was unavailable after mid-August. Water temperatures at Pieta likely followed a similar trend as water temperatures at Hopland and likely fell to optimal levels by mid-October due to cooling air temperatures.

Chinook salmon experienced suitable to acutely stressful water temperatures for smolt migration at Hopland. Water temperatures became acutely stressful and even potentially lethal after mid-June at the downstream monitoring sites; however, the bulk of Chinook smolts emigrate from the Russian River prior to mid-June when water temperatures are more favorable. In 2021, over 10,000 Chinook smolts were captured at the Mirabel downstream migrant trap (not adjusted for trap efficiency) before the downstream migrant trap was removed in early June.

Dissolved oxygen was poor during the Order in the east fork of the Russian River. The east fork data sonde is located 0.5 km downstream from the outlet of Coyote Valley Dam. Dissolved oxygen usually recovers near the confluence with the west fork of the Russian River (based on limited data collected in the past by Sonoma Water) so the length of stream that was impacted by low dissolved oxygen was likely relatively short. The 7-day running average of the minimum dissolved oxygen was stressful for salmonids at Hopland, in the Russian river near the confluence with Pieta Creek, Jimtown, and Digger bend. At Hacienda, the 7-day running average of the minimum dissolved oxygen was generally suitable for salmonids.

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Appendix A-9

Sonoma Water

April 8, 2022

Attn: Mr. Erik Ekdahl
Deputy Director of Water Rights
State Water Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000

VIA EMAIL

RE: Reporting Requirements for Term 7 of the State Water Resources Control Board Order 2021-0056-EXEC (June 14, 2021)

Dear Mr. Ekdahl:

In accordance with the requirements of the State Water Resources Control Board Order 2021-0056-EXEC received June 14, 2021 that approved the Temporary Urgency Change Petitions for water-right Permits 12947A, 12949, 12950, and 16596 (Applications 12919A, 15736, 15737, and 19351), please accept the final submittal of the following enclosed report by Sonoma Water:

- Term 7 – Fisheries Monitoring Summary Report

If you have any questions about the report, please do not hesitate to contact me at Shiyu.Xin@scwa.ca.gov.

Sincerely,

[redacted]

Shiyu Xin
Water Agency Engineer I

Enclosures

c: S. Boland-Brien, J. Ling - State Water Resources Control Board, Division of Water Rights
G. Davis, J. Jasperse, P. Jeane, D. Seymour, J. Martini-Lamb, D. Manning - Sonoma Water
C. O'Donnell, A. Brand - Sonoma County Counsel
R. Bezerra - Bartkiewicz, Kronick & Shanahan
R. Coey, J. Fuller – National Marine Fisheries Service
M. Kittel - California Department of Fish & Wildlife
M. St. John, B. McFadin – North Coast Regional Water Quality Control Board
E. Salomone – Mendocino County Russian River FCWCID

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State Water Resources Control Board
Order 6/14/2021

Term 7 – Fisheries Monitoring Summary Report



April 8, 2022

Prepared by

Sonoma County Water Agency

404 Aviation Blvd

Santa Rosa, CA 95403

Introduction

On May 14, 2021, the Sonoma County Water Agency (Sonoma Water) filed a Temporary Urgency Change Petition (TUCP) with the State Water Resources Control Board (SWRCB) to temporarily reduce minimum instream flows in the upper Russian River to address low storage in Lake Mendocino and avoid potential violations if the Incidental Take Statement contained in the National Marine Fisheries Service (NMFS) Biological Opinion for Water Supply, Flood Control Operations, and Channel Maintenance conducted by the U.S. Army Corps of Engineers, Water Agency, and the Mendocino County Russian River Flood Control and Water Conservation Improvement District in the Russian River watershed (Biological Opinion).

In summary, the Water Agency requested that the SWRCB make the following temporary changes to the Decision 1610 (D1610) instream flow requirements:

1. From the date of approval of the TUCPs through a term of 180 days, the minimum instream flow requirements will be set to the Critical water supply classification criteria of 25 [cubic feet per second (cfs)] in the Upper Russian River and 35 cfs in the Lower Russian River.
2. The minimum instream flow requirement will be implemented as a 5-day running average of average daily stream flow measurements with instantaneous minimum instream flows being no less than 15 cfs on the Upper Russian River and no less than 25 cfs on the Lower Russian River.

The SWRCB issued an Order (Order) approving the Water Agency's TUCP on June 14, 2021 (SWRCB 2021).

The SWRCB's Order included fisheries monitoring and reporting tasks which are summarized in term 2 and 4 of the Order and presented in the methods section of this report.

Methods

For this report, fisheries data from June 1 to December 31 is summarized. This period encompasses the Order, which was requested on May 14, issued on June 14, and expired on December 11. At times additional fisheries information collected before June 1, and after December 31, is included in this report to put fisheries data into a broader context. In the sections that follow, we outline the monitoring methods intended under Term 4 (Fisheries Monitoring) of the Order. In some cases, an extreme weather event in late October precluded our ability to accomplish the intended monitoring. Sites monitored are depicted in Figure 1.

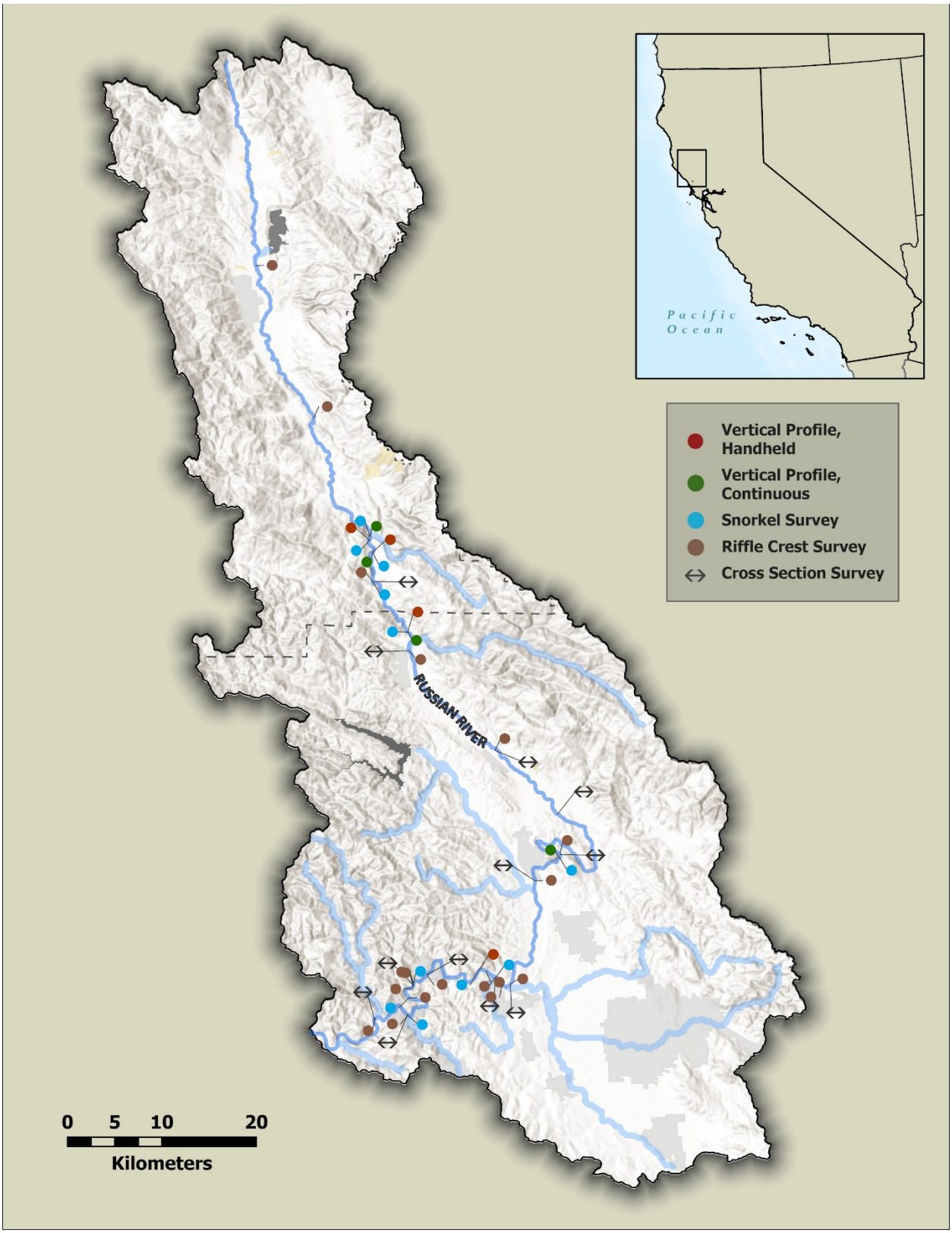


Figure 1. Fish and fish habitat survey sites for the June 2021 Russian River Temporary Urgency Change Order issued by the SWRCB.

Habitat measurements:

Upper Russian River

Transects

A total of six reaches were sampled on a biweekly basis (once every 2 weeks) from June 1, to October 1, 2012 in order to document stream conditions. Sites sampled were the confluence of the East Fork Russian River and West Fork Russian River (the Forks), Ukiah, Hopland, Commisky Station, Cloverdale, Alexander Valley and Healdsburg. Each site was approximately 500 meter long. At each site, habitat conditions and flow connectivity were documented via walking surveys and photo documentation. Measurements of width and depth at established cross-sections were also collected.

Water quality

Water temperature and dissolved oxygen measurements were collected with water quality loggers in four deep pools in the Upper Russian River. These pools were located at the mouth of Pieta Creek near Hopland, downstream of Leaping Lady Rock near Hopland, the old Highway 101 crossing near Preston (Geysers Road), and at Del Rio Woods County Park near Healdsburg. Vertical profiles were collected with a hand held water quality meter at Leaping Lady Rock and Acapulco Rock near Hopland, the old Highway 101 crossing near Preston, and at Hacienda near Forestville.

Lower Russian River

Transects

Sonoma Water visited critical riffles to assess adult salmonid passage opportunities in the lower Russian River biweekly starting during the week of October 1. Sites were based on consultation with NMFS. Sites included Monte Rio and Vacation beach, Russian River near the confluence with Hulbert Creek, Summer Crossing Road, Mom's Beach, Steelhead Beach, Mirabel. At each site riffle length, width, depth was measured, sites were documented with photographs.

Snorkel surveys

Upper Russian River:

Snorkel surveys were intended to document fish presence and species composition. Sites sampled included two pools near the mouth of Pieta Creek near Hopland, a pool near Commisky Station, the old Highway 101 crossing near Preston (Geysers Road), and at Del Rio Woods County Park near Healdsburg. Surveys were conducted once in June and once in August.

Lower Russian River:

Snorkel surveys were intended in up to six pools in the lower Russian River. These surveys were to take place between Mirabel Dam and the estuary in order to document the presence of adult salmonids. Snorkel surveys were planned to begin after adult salmonids had access to the river (i.e., when the sandbar at the mouth of the river is open) and would continue biweekly until a total of 100 adult salmonids moved past the counting station at the Mirabel fish ladder.

Video monitoring

Sonoma Water operates an underwater video camera at the Mirabel inflatable dam beginning September 1, and continuing until the Mirabel inflatable dam must be deflated to avoid damage from high flow events (in excess of 2,000 cfs). High flow events typically occur in early to mid-December. The underwater video camera is used to monitor the daily numbers of adult salmon and steelhead moving upstream through the fish ladder which provides fish passage at the Mirabel Dam.

Spawning surveys

Dry Creek

Kayak-based Chinook salmon spawning surveys have been successfully implemented in Dry Creek by Sonoma Water in previous years. For 2021 three kayak- based surveys were planned. The first was to begin on October 1, 2021 once at least 100 adult salmonids had moved past the Mirabel fish ladder and if adult salmon and steelhead could enter the Russian River estuary and if water clarity was suitable. These surveys begin at Warm Springs Dam and end at the confluence of Dry Creek with the Russian River in Healdsburg approximately 14 miles downstream. The number and location of salmon and steelhead redds and adults are recorded.

Alexander Valley and Upper Russian River

Once a total of 100 adult salmonids have moved past the Mirabel fish ladder and flows at the USGS gauge in Healdsburg exceed 100 cfs, Sonoma Water was to monitor the number of adult salmonids in representative reaches in Alexander Valley and the Upper Russian River via walk in spawner surveys. Regardless of adult salmonid counts, these surveys were to begin no later than November 1, 2021 and occur on a biweekly basis during the period of the Order.

Results:

Habitat measurements

Upper Russian River

Transect surveys

Riffle crest and cross-section measurements were taken at Ukiah, Hopland, Commisky Station, Cloverdale, Geyserville, Jimtown, Del Rio Woods, and Healdsburg (Figure 2). Riffle crest transects follow the riffle crest and are not necessarily perpendicular to flow while cross-section transects are perpendicular to flow. Measurements were taken every two weeks beginning in June and ending in September, 2021. Stream width was recorded for each transect as well as steam depth at multiple locations along each transect. In total, 53 riffle crest transects and 48 cross section transects were taken. Each sample site had a relatively small range of flow over the course of the sample period. As a result, average and maximum depths showed relatively little change over the course of the sample period (Figure 3 through Figure 14). Representative photos of each site monitored are included in the Appendix.

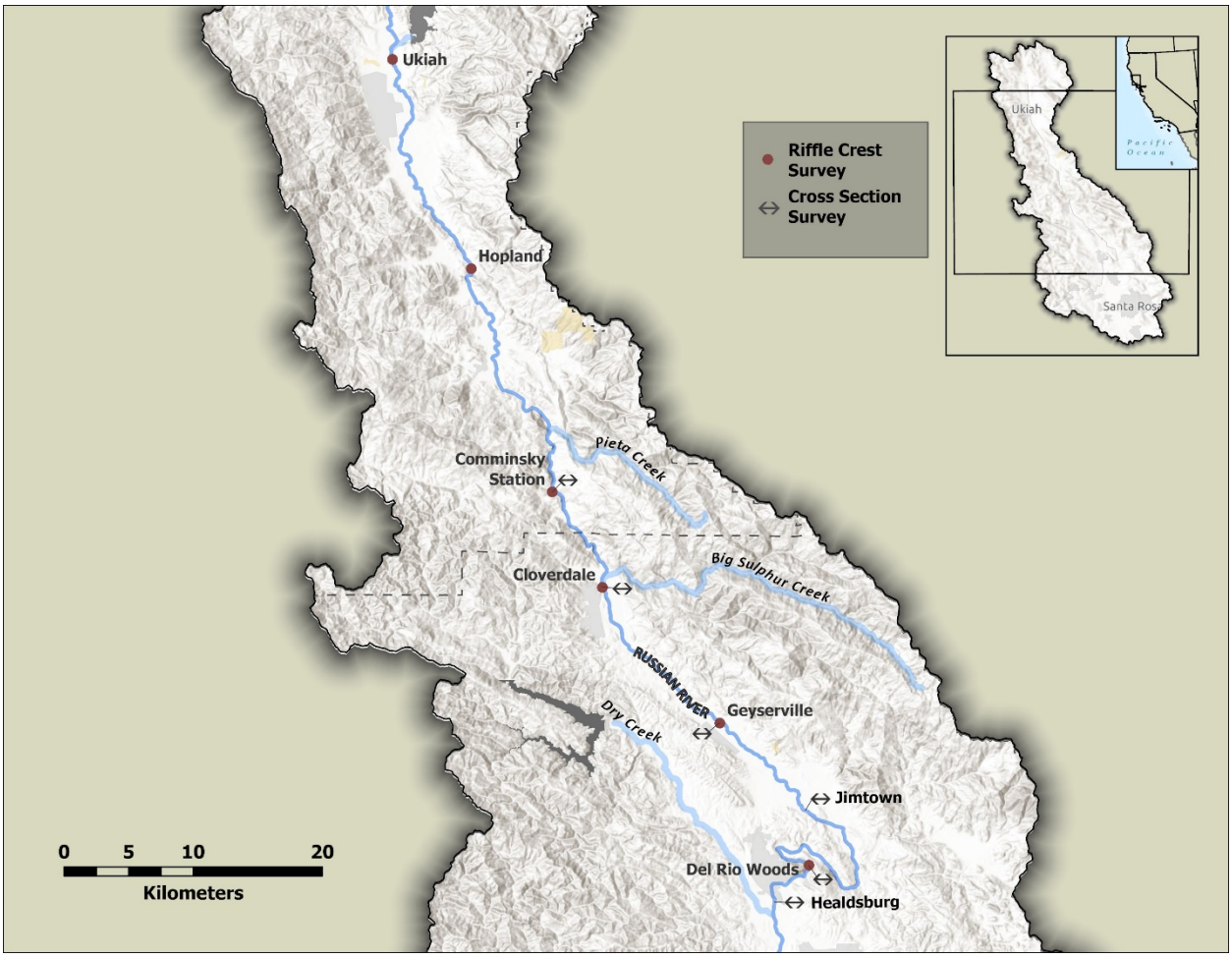
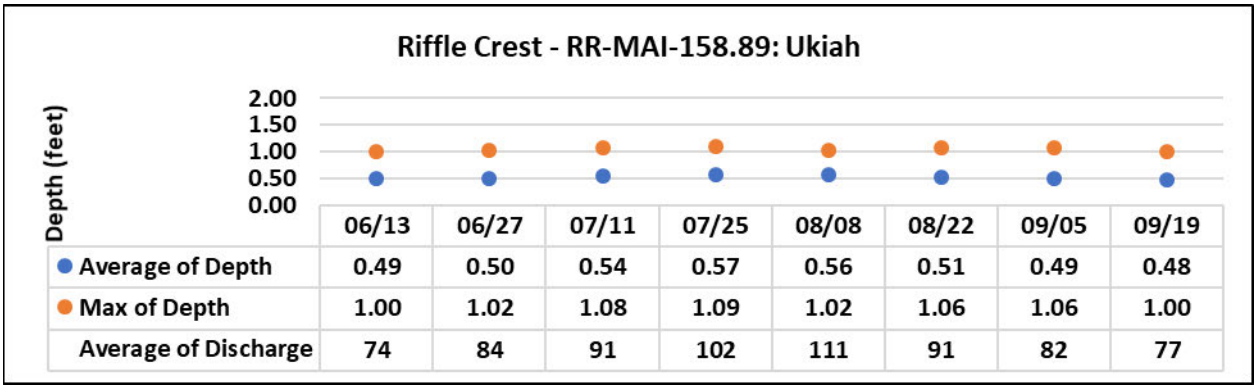
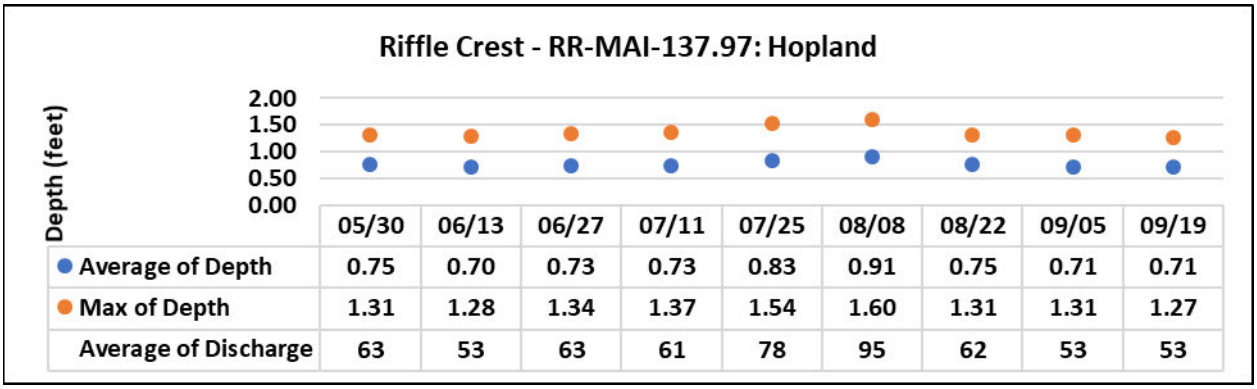


Figure 2. Riffle crest and cross-section measurements were taken at Ukiah, Hopland, Commisky Station, Cloverdale, Geyserville, Jimtown, Del Rio Woods, and at Healdsburg.



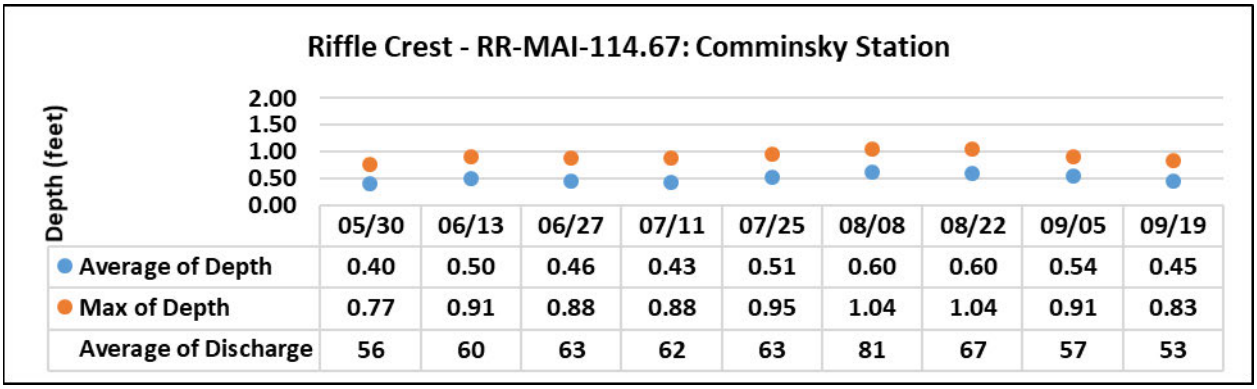
	06/13	06/27	07/11	07/25	08/08	08/22	09/05	09/19
Average of Depth	0.49	0.50	0.54	0.57	0.56	0.51	0.49	0.48
Max of Depth	1.00	1.02	1.08	1.09	1.02	1.06	1.06	1.00
Average of Discharge	74	84	91	102	111	91	82	77

Figure 3. The average depth and max depth for riffle crest surveys taken at the Ukiah sample site on the mainstem Russian River (rkm 158.89). Flow is the combination of the release from Coyote Valley dam and the flow in the West Fork of the Russian River (USGS gage number 11461000).



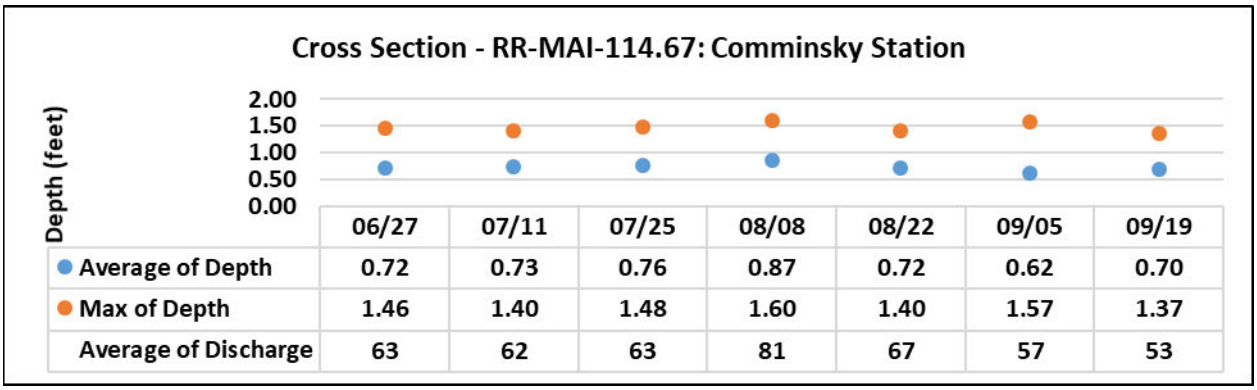
	05/30	06/13	06/27	07/11	07/25	08/08	08/22	09/05	09/19
Average of Depth	0.75	0.70	0.73	0.73	0.83	0.91	0.75	0.71	0.71
Max of Depth	1.31	1.28	1.34	1.37	1.54	1.60	1.31	1.31	1.27
Average of Discharge	63	53	63	61	78	95	62	53	53

Figure 4. The average depth and max depth for riffle crest surveys taken at the Hopland sample site on the mainstem Russian River (rkm 137.97). Flow is from the USGS Hopland stream gage (gage number 11462500).



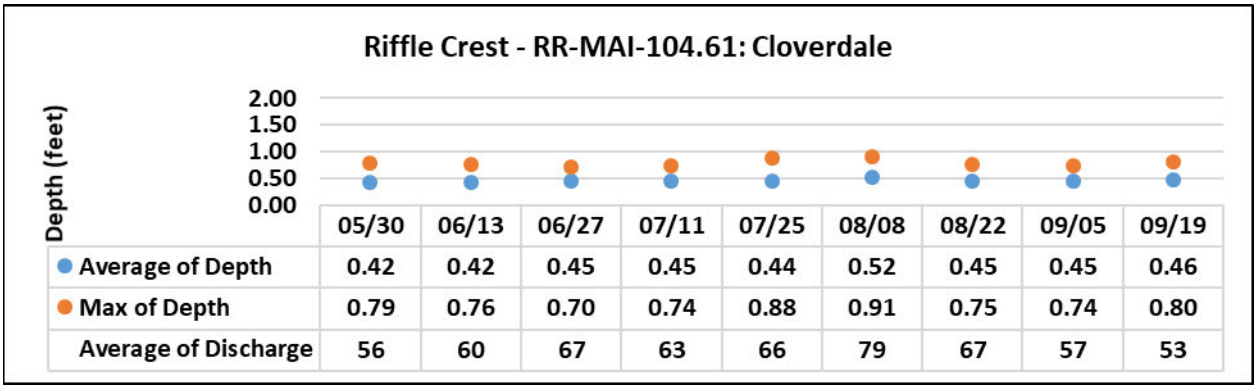
	05/30	06/13	06/27	07/11	07/25	08/08	08/22	09/05	09/19
Average of Depth	0.40	0.50	0.46	0.43	0.51	0.60	0.60	0.54	0.45
Max of Depth	0.77	0.91	0.88	0.88	0.95	1.04	1.04	0.91	0.83
Average of Discharge	56	60	63	62	63	81	67	57	53

Figure 5. The average depth and max depth for riffle crest surveys taken at the Commisky Station sample site on the mainstem Russian River (rkm 114.67). Discharge is from the USGS Cloverdale stream gage (gage number 11463000).



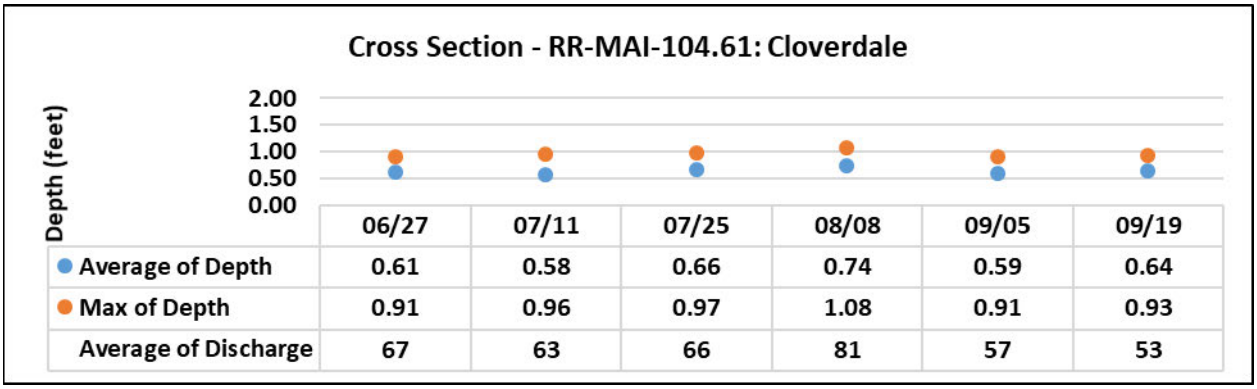
	06/27	07/11	07/25	08/08	08/22	09/05	09/19
Average of Depth	0.72	0.73	0.76	0.87	0.72	0.62	0.70
Max of Depth	1.46	1.40	1.48	1.60	1.40	1.57	1.37
Average of Discharge	63	62	63	81	67	57	53

Figure 6. The average depth and max depth for cross section surveys taken at the Commisky Station sample site on the mainstem Russian River (rkm 114.67). Discharge is from the USGS Cloverdale stream gage (gage number 11463000).



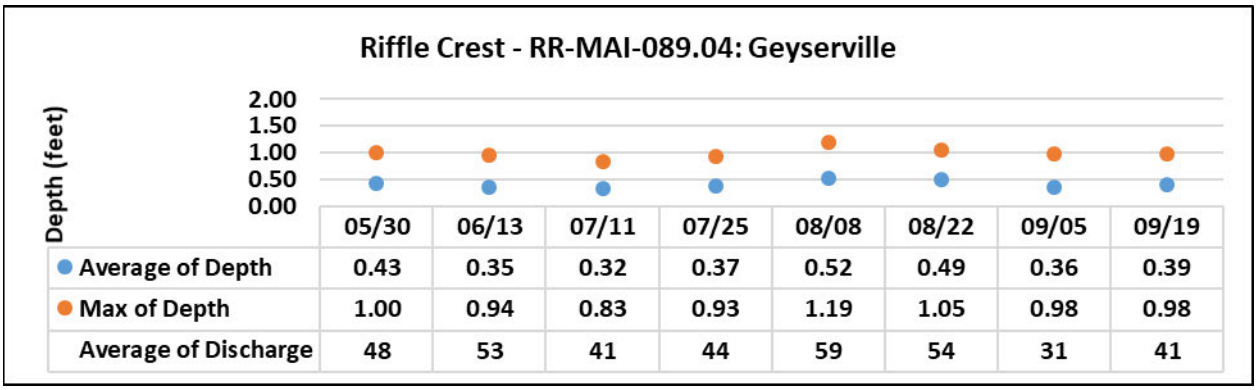
	05/30	06/13	06/27	07/11	07/25	08/08	08/22	09/05	09/19
Average of Depth	0.42	0.42	0.45	0.45	0.44	0.52	0.45	0.45	0.46
Max of Depth	0.79	0.76	0.70	0.74	0.88	0.91	0.75	0.74	0.80
Average of Discharge	56	60	67	63	66	79	67	57	53

Figure 7. The average depth and max depth for riffle crest surveys taken at the Cloverdale sample site on the mainstem Russian River (rkm 104.61). Discharge is from the USGS Cloverdale stream gage (gage number 11463000).



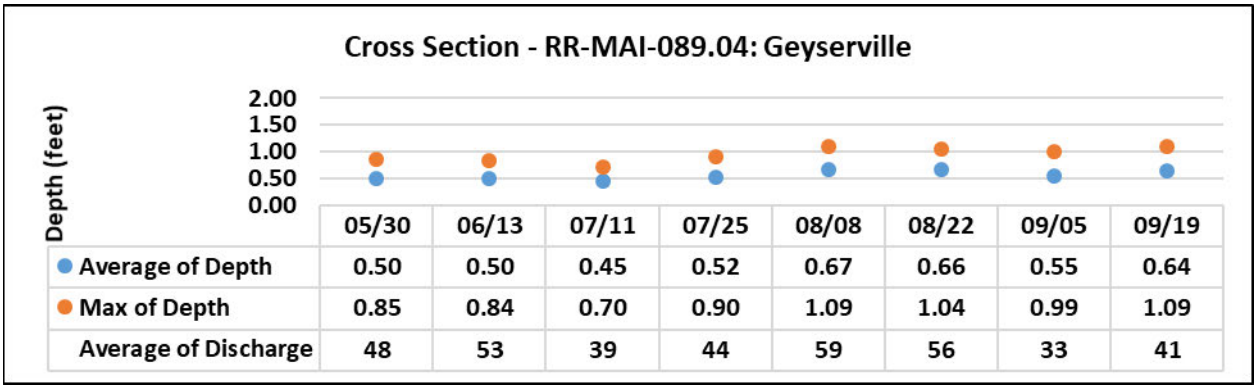
	06/27	07/11	07/25	08/08	09/05	09/19
Average of Depth	0.61	0.58	0.66	0.74	0.59	0.64
Max of Depth	0.91	0.96	0.97	1.08	0.91	0.93
Average of Discharge	67	63	66	81	57	53

Figure 8. The average depth and max depth for cross section surveys taken at the Cloverdale sample site on the mainstem Russian River (rkm 104.61). Discharge is from the USGS Cloverdale stream gage (gage number 11463000).



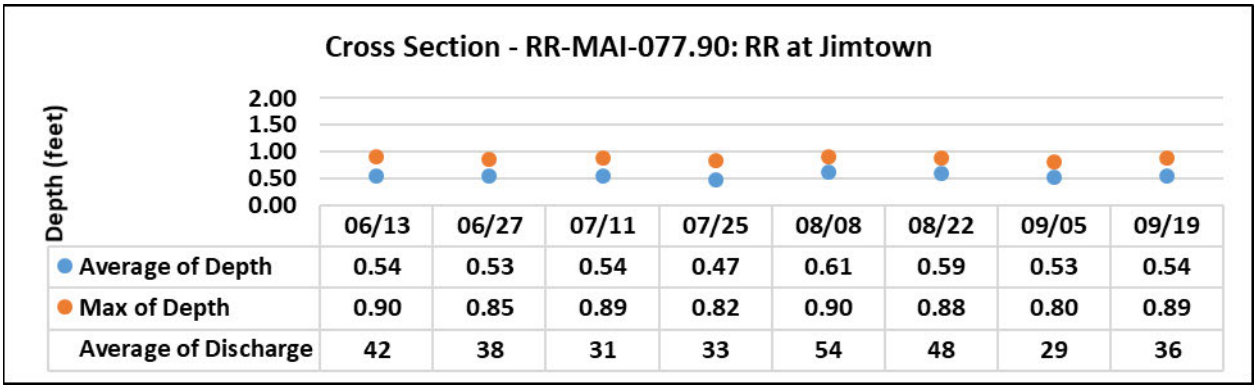
	05/30	06/13	07/11	07/25	08/08	08/22	09/05	09/19
Average of Depth	0.43	0.35	0.32	0.37	0.52	0.49	0.36	0.39
Max of Depth	1.00	0.94	0.83	0.93	1.19	1.05	0.98	0.98
Average of Discharge	48	53	41	44	59	54	31	41

Figure 9. The average depth and max depth for riffle crest surveys taken at the Geyserville sample site on the mainstem Russian River (rkm 89.04). Discharge is from the USGS Geyserville stream gage (gage number 11463500).



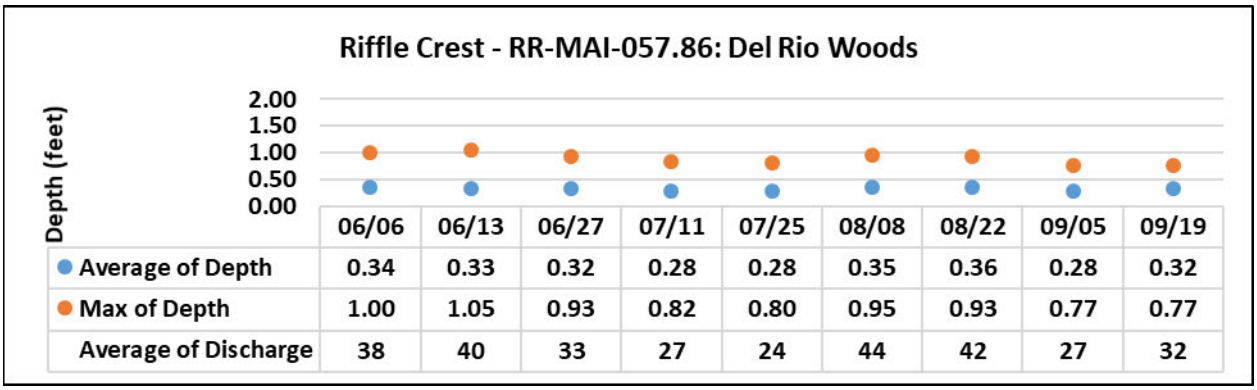
	05/30	06/13	07/11	07/25	08/08	08/22	09/05	09/19
Average of Depth	0.50	0.50	0.45	0.52	0.67	0.66	0.55	0.64
Max of Depth	0.85	0.84	0.70	0.90	1.09	1.04	0.99	1.09
Average of Discharge	48	53	39	44	59	56	33	41

Figure 10. The average depth and max depth for cross section surveys taken at the Geyserville sample site on the mainstem Russian River (rkm 89.04). Discharge is from the USGS Geyserville stream gage (gage number 11463500).



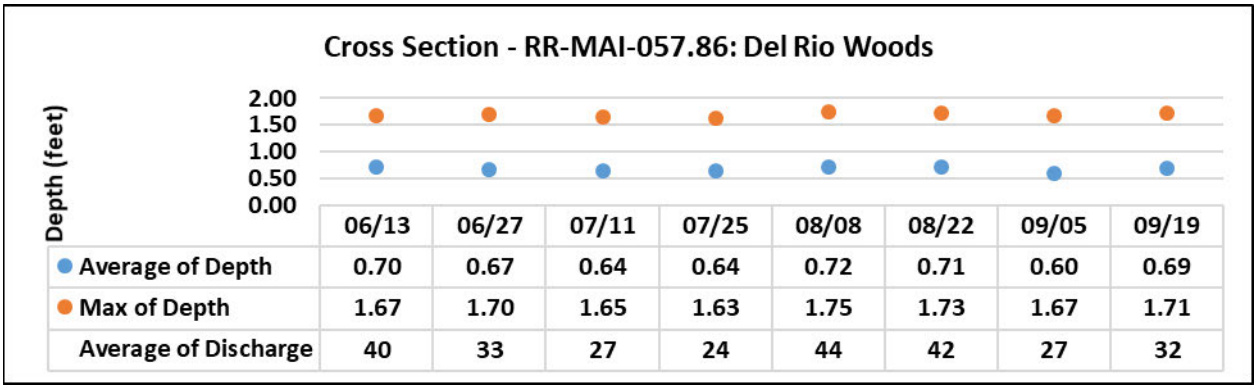
	06/13	06/27	07/11	07/25	08/08	08/22	09/05	09/19
Average of Depth	0.54	0.53	0.54	0.47	0.61	0.59	0.53	0.54
Max of Depth	0.90	0.85	0.89	0.82	0.90	0.88	0.80	0.89
Average of Discharge	42	38	31	33	54	48	29	36

Figure 11. The average depth and max depth for cross section surveys taken at the Jimtown sample site on the mainstem Russian River (rkm 77.90). Discharge is from the USGS Jimtown stream gage (gage number 1163682).



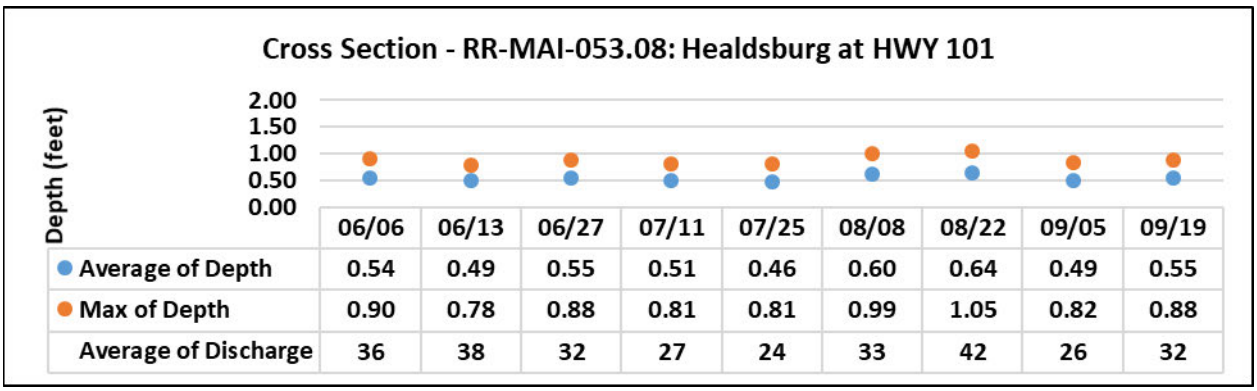
	06/06	06/13	06/27	07/11	07/25	08/08	08/22	09/05	09/19
Average of Depth	0.34	0.33	0.32	0.28	0.28	0.35	0.36	0.28	0.32
Max of Depth	1.00	1.05	0.93	0.82	0.80	0.95	0.93	0.77	0.77
Average of Discharge	38	40	33	27	24	44	42	27	32

Figure 12. The average depth and max depth for riffle crest surveys taken at the Del Rio Woods sample site on the mainstem Russian River (rkm 57.86). Discharge is from the USGS Digger Bend stream gage (gage number 11463980).



	06/13	06/27	07/11	07/25	08/08	08/22	09/05	09/19
Average of Depth	0.70	0.67	0.64	0.64	0.72	0.71	0.60	0.69
Max of Depth	1.67	1.70	1.65	1.63	1.75	1.73	1.67	1.71
Average of Discharge	40	33	27	24	44	42	27	32

Figure 13. The average depth and max depth for cross section surveys taken at the Del Rio Woods sample site on the mainstem Russian River (rkm 57.86). Discharge is from the USGS Digger Bend stream gage (gage number 11463980).



	06/06	06/13	06/27	07/11	07/25	08/08	08/22	09/05	09/19
Average of Depth	0.54	0.49	0.55	0.51	0.46	0.60	0.64	0.49	0.55
Max of Depth	0.90	0.78	0.88	0.81	0.81	0.99	1.05	0.82	0.88
Average of Discharge	36	38	32	27	24	33	42	26	32

Figure 14. The average depth and max depth for cross section surveys taken at the Healdsburg sample site on the mainstem Russian River (rkm 53.08). Discharge is from the USGS Healdsburg stream gage (gage number 11465350).

Supplemental water quality

On June 15, and June 16, 2021 we measured water temperature at visited seven sites, two of which had temperature stratification. We deployed continuous water temperature monitoring arrays at four sites in order to evaluate temperature stratification. Three of these water quality arrays included continuous measurements of dissolved oxygen. Sites were at the mouth of Pieta Creek near Hopland, downstream of Leaping Lady Rock near Hopland, the old Highway 101 crossing near Preston, and at Del Rio Woods County Park near Healdsburg (Figure 15). We had planned to put a water temperature monitoring array at Commisky Station. However, after diving that site we chose not to, as the pools were shallow and not stratified. Water quality loggers were recovered on October 20, 2021. The surface water quality sonde at Del Rio Woods was not recovered. While there was some stratification in pools sampled, the vertical temperature differential was minimal (Figure 16- Figure 19).

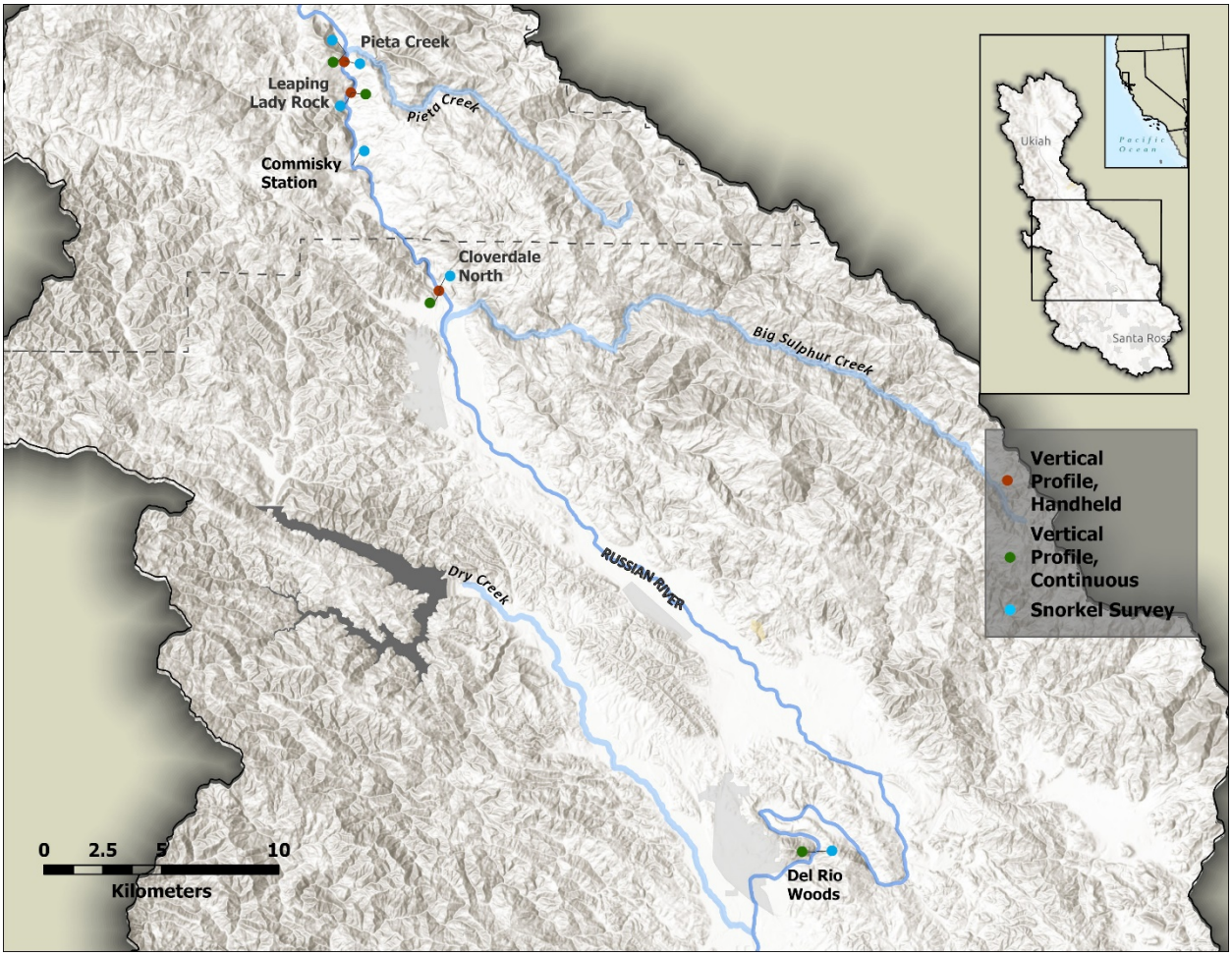


Figure 15. Upper Russian River water quality and snorkel survey sties sampled in summer 2021 for the SWRCB Russian River Temporary Urgency Change Order.

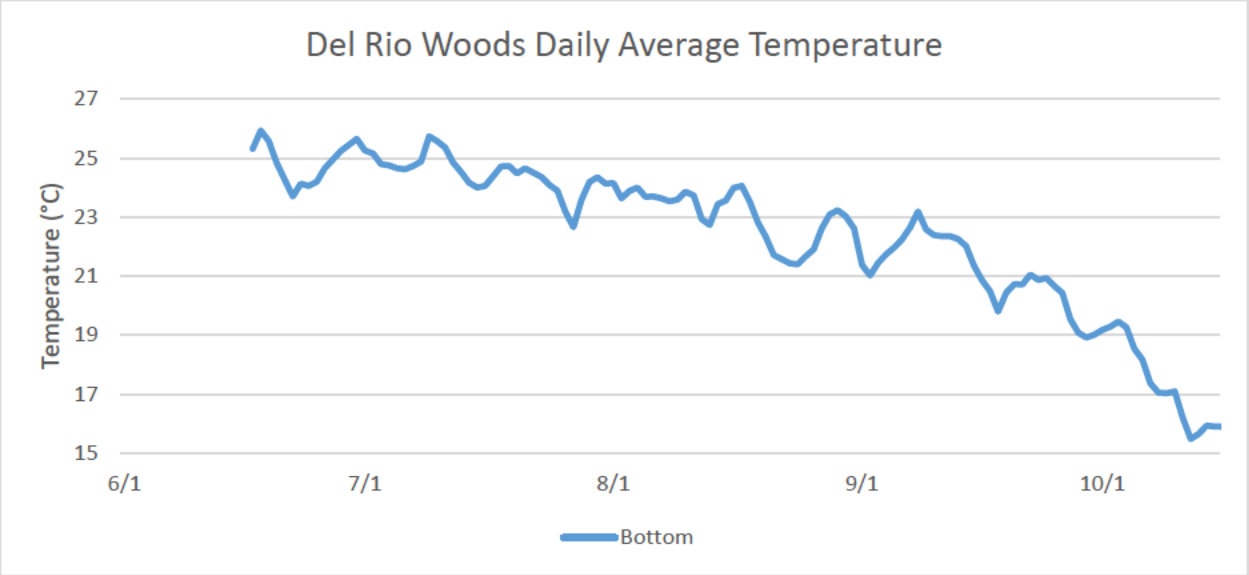


Figure 16. Daily Average temperature from water quality loggers deployed at Del Rio Woods (rKm 57.8).

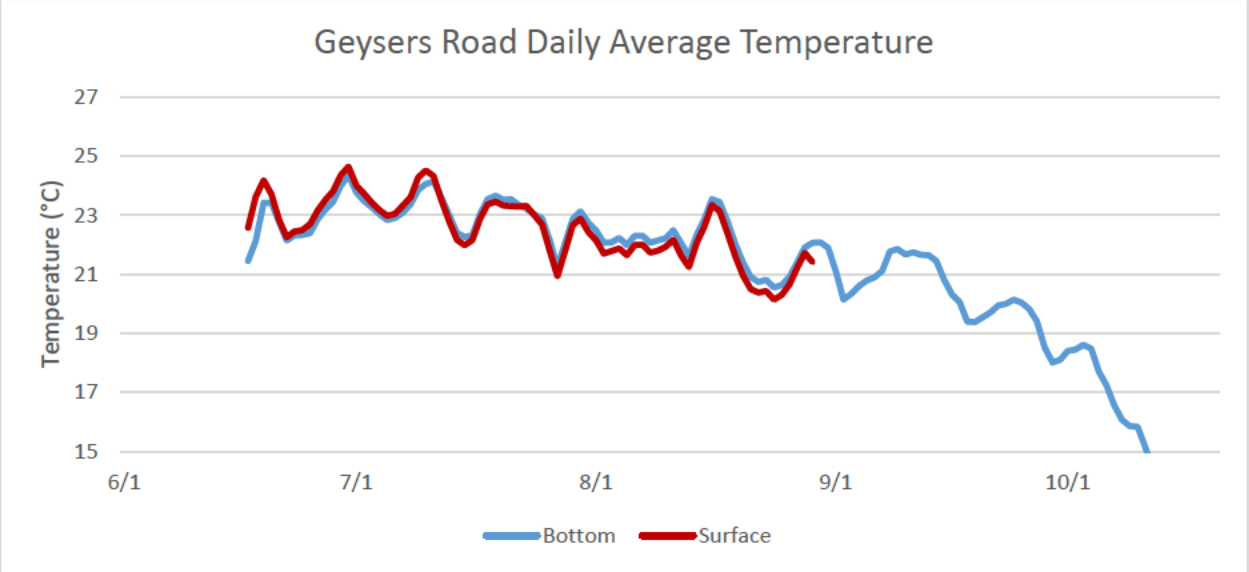


Figure 17. Daily average temperature from water quality loggers deployed at Geysers Road (rKm 107.0).

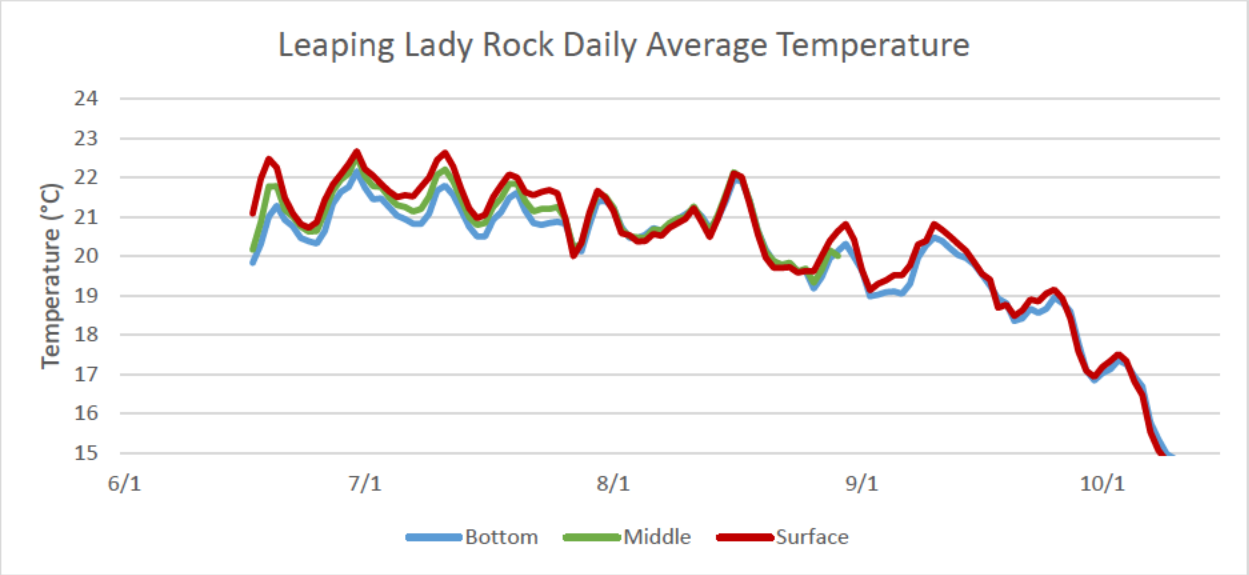


Figure 18. Daily average temperature from water quality loggers deployed downstream of Leaping Lady Rock (rKm 118.1).

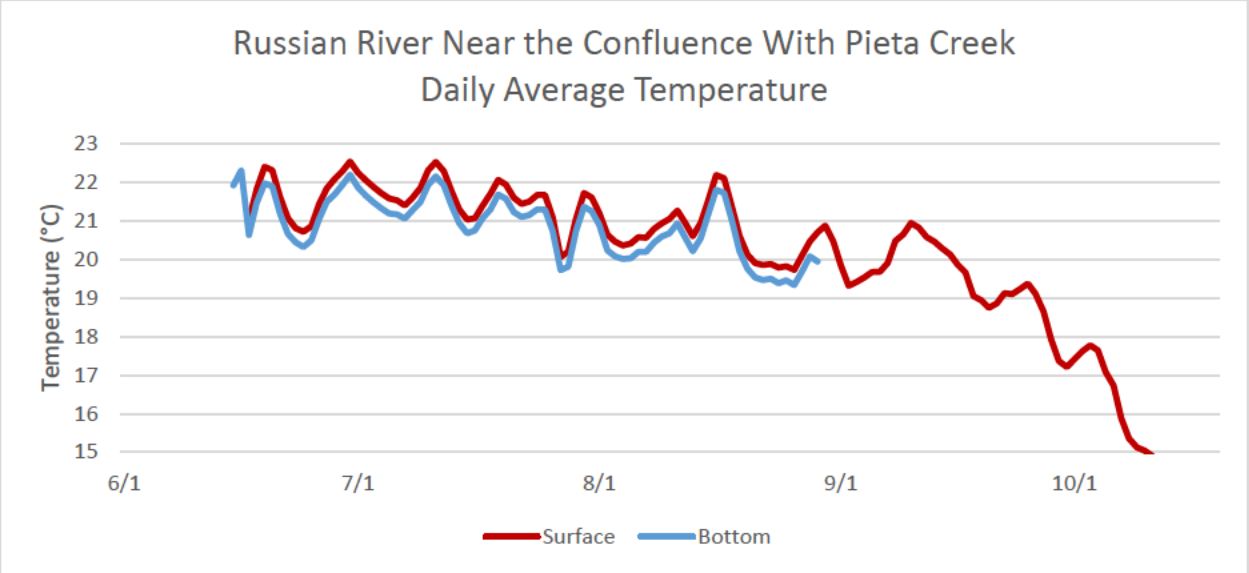


Figure 19. Daily average temperature from water quality loggers deployed in the Russian River at the confluence with Pieta Creek (rKm 120.4).

Data collected from dissolved oxygen loggers at Geysers Road, Leaping Lady Rock, and in the Russian River at the confluence with Pieta Creek showed that dissolved oxygen near the bottom of these pools was generally poor (Figure 20 - Figure 22). It is possible that the water quality loggers at Geysers Road and at Leaping Lady Rock were placed too close to the sediment and gave false dissolved oxygen readings or the dissolved oxygen probes themselves were failing. Dissolved oxygen measured with a handheld water quality device shows that dissolved oxygen was suitable on the day that vertical profiles were collected.

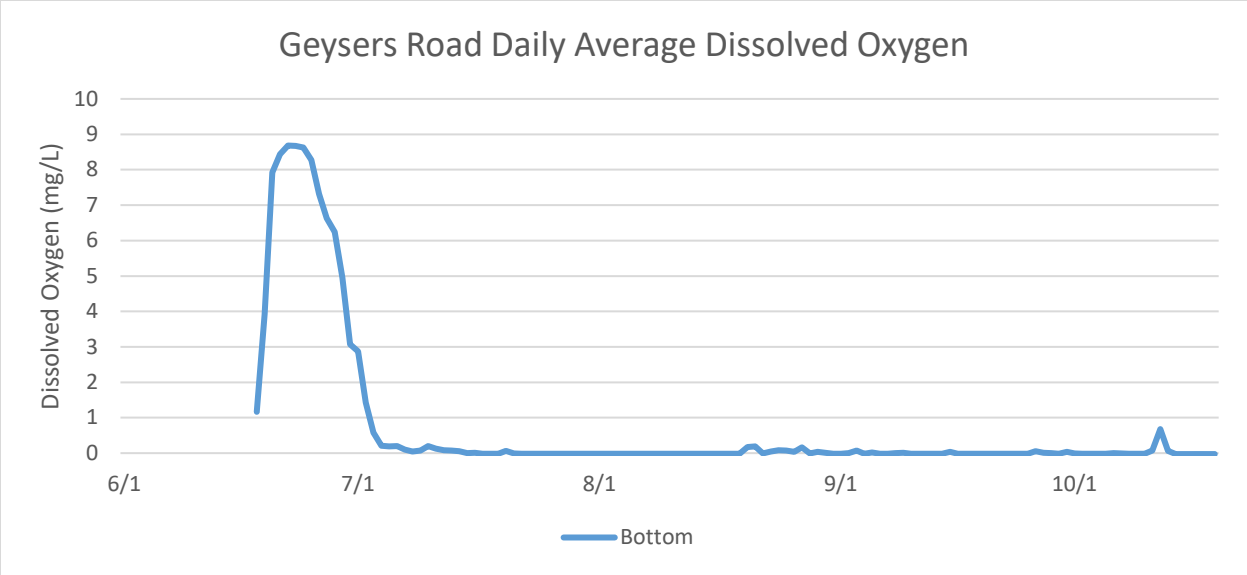


Figure 20. Daily average dissolved oxygen from water quality loggers deployed at Geysers Road (rKm 107.0).

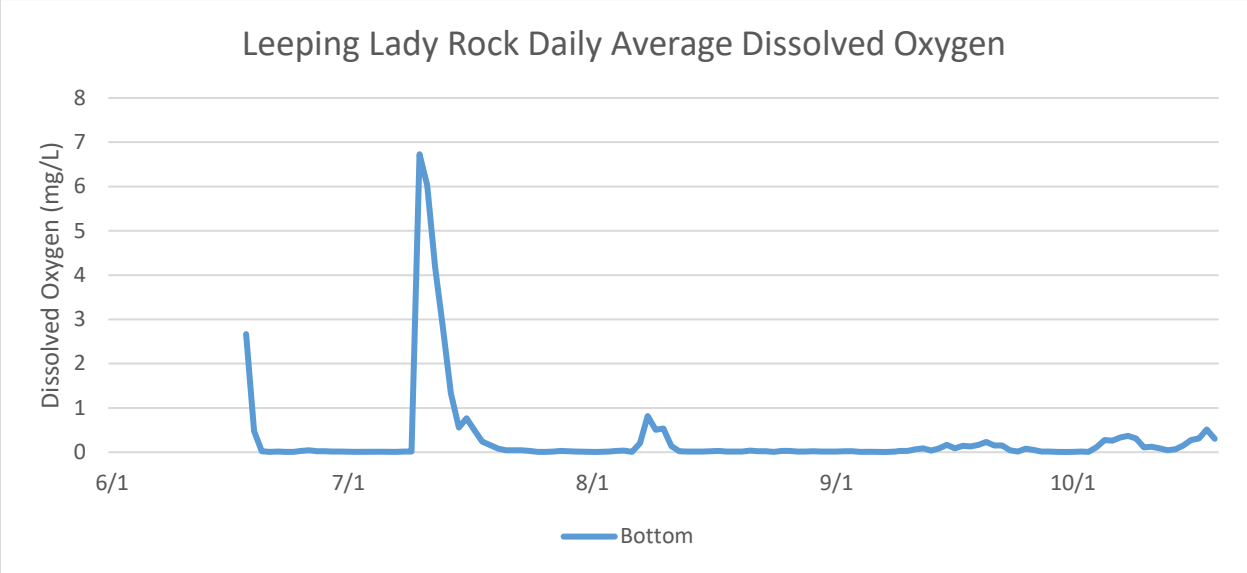


Figure 21. Daily average dissolved oxygen from water quality loggers deployed at Leaping Lady Rock (rKm 118.1).

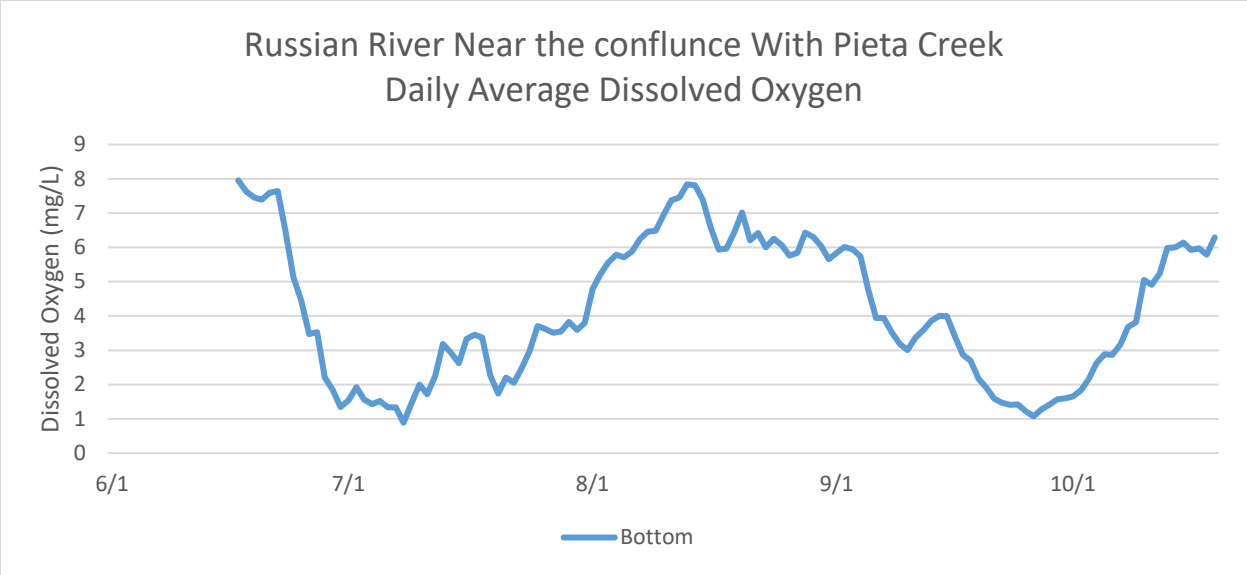


Figure 22. Daily average dissolved oxygen from water quality loggers deployed in the Russian River at the confluence with Pieta Creek (rKm 120.4).

During the week of July 18, 2021 water quality profiles were taken in a pool downstream of Leaping Lady Rock near Hopland, in a pool downstream of the confluence of Pieta Creek at Acapulco Rock, and in a pool at the old Highway 101 crossing off Geysers Road near Preston (Figure 13). Temperature ranged from 21.0°C to 23.9°C depending on the site and depth sampled. Water temperature was weakly stratified at all sites except Acapulco Rock (Figure 23). Dissolved oxygen ranged from 7.8 mg/l to 9.72 mg/L (Figure 24).

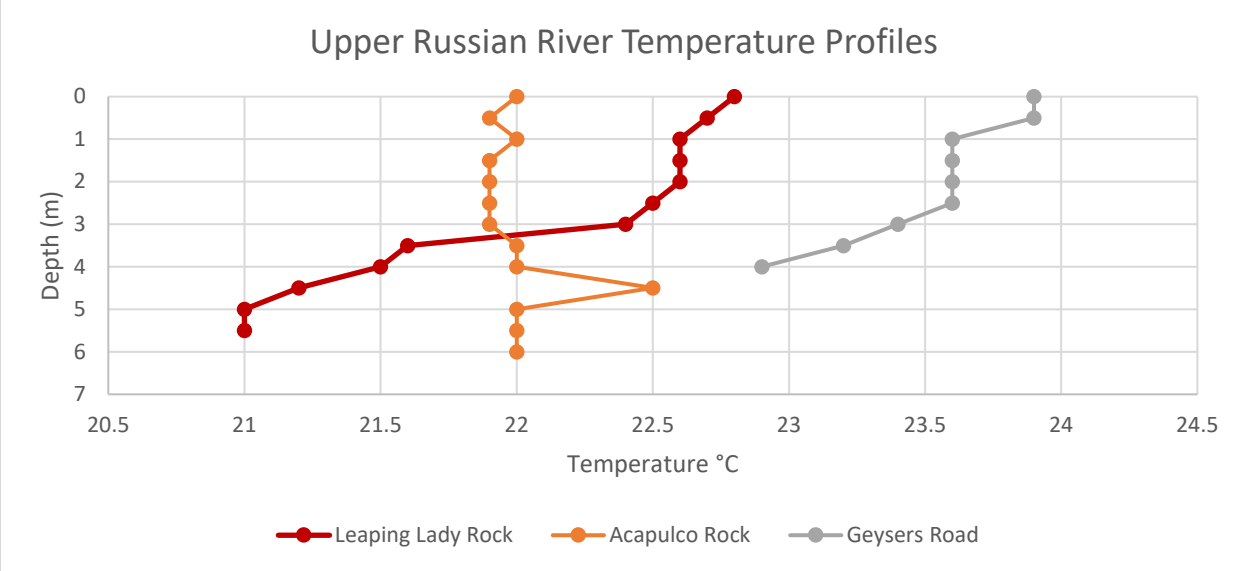


Figure 23. Water temperature profiles for a pool downstream of Leaping Lady Rock near Hopland, downstream of the confluence of Pieta Creek at Acapulco Rock, at the old Highway 101 crossing off Geysers Road near Preston, and at Hacienda Bridge near Forestville. Profiles were taken during the week of July 18, 2021.

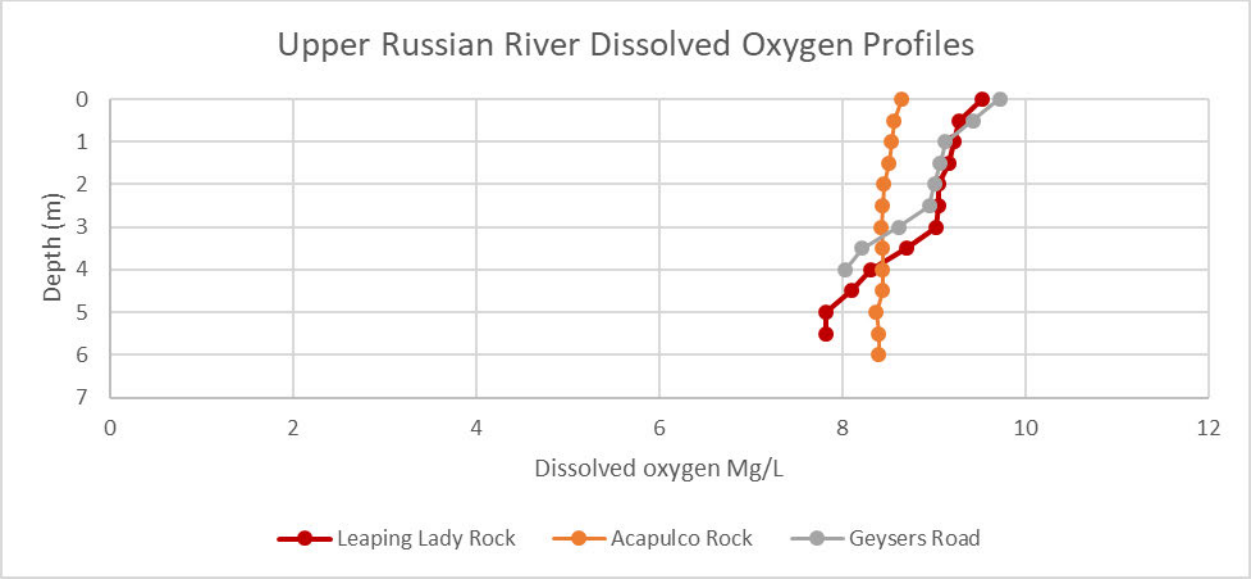


Figure 24. Dissolved oxygen profiles for a pool downstream of Leaping Lady Rock near Hopland, downstream of the confluence of Pieta Creek at Acapulco Rock, at the old Highway 101 crossing off Geysers Road near Preston, and at Hacienda Bridge near Forestville. Profiles were taken during the week of July 18, 2021.

Lower Russian River

Riffle Crest transects and longitudinal profiles were taken at Monte Rio and Vacation beach on September 30, 2021 and at Monte Rio, Vacation beach, Russian River near the confluence with Hulbert Creek, Summer Crossing Road, Mom's Beach, Steelhead Beach, Mirabel at collector 3, and Mirabel at collector 5 on October 5, 2021 (Figure 25). Figure 26-Figure 46 show transect and longitudinal depths for each site on these dates. Browns riffle near the confluence with Austin Creek was not surveyed because it was inundated due to the increase in stage in the estuary from a river mouth closure. Additional lower river surveys were canceled due to high flow following an atmospheric river which resulted in several inches of rain falling in a short time period in late October. Flow was 45 cfs and 37 cfs on September 30, and October 5, 2012, respectively, at the USGS Hacienda stream gage (gage number 11467000). Riffles with a maximum depth of less than 0.8 ft can cause fish passage issues for adult Chinook salmon (Thompson 1972). Many sites had maximum depths greater or equal to 0.8 feet; however, riffles at Vacation Beach, the Mainstem Russian river near the confluence with Hulbert Creek, and Steelhead Beach had maximum depths of 0.6 ft, 0.5 ft, and 0.7 ft respectively. In addition to these shallow riffles, the dam sill at vacation beach had a maximum depth of 0.4 ft across its width.

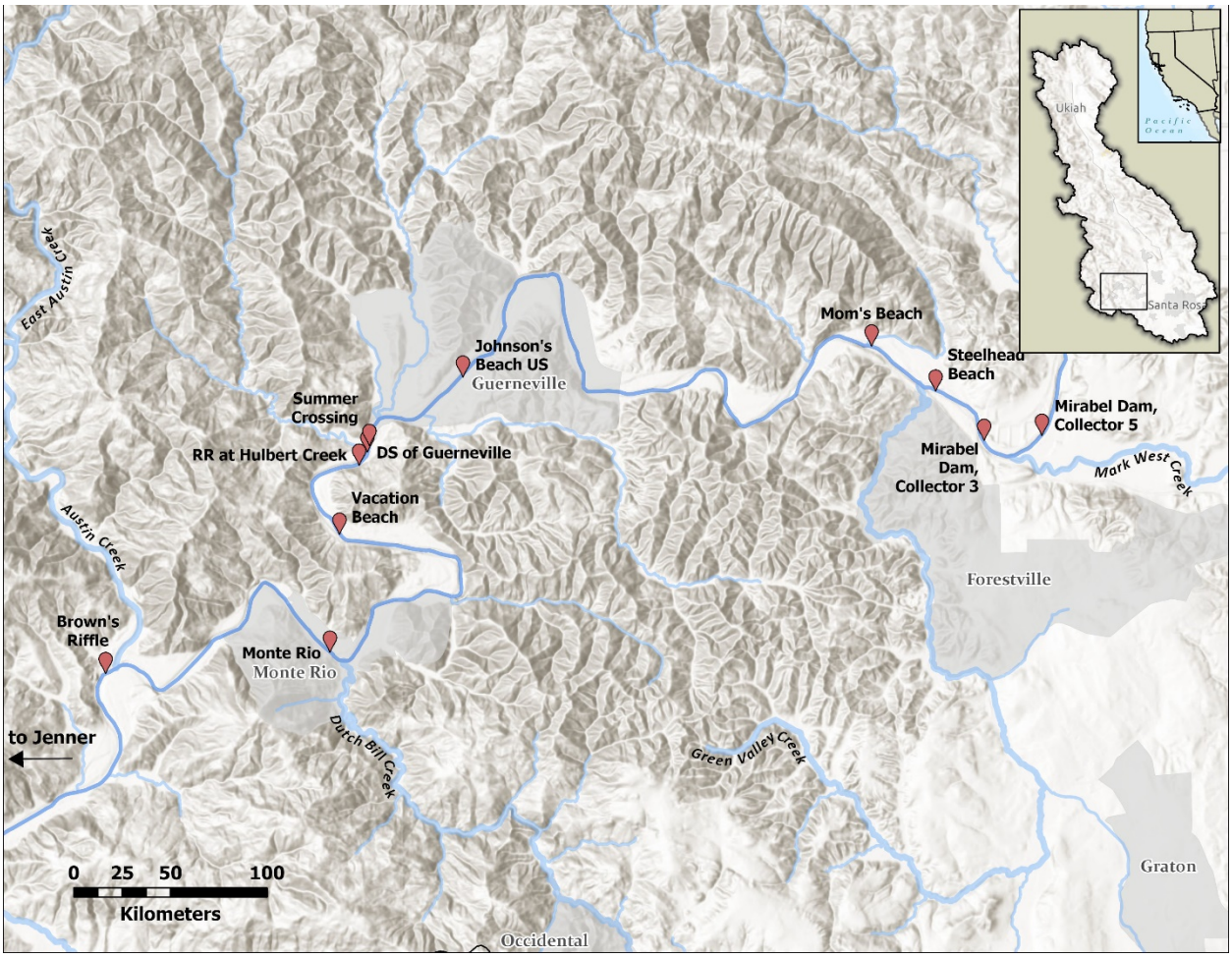


Figure 25. The sample sites at Brown's riffle, Monte Rio, Vacation beach, Russian River near the confluence with Hulbert Creek, Summer Crossing Road, Mom's Beach, Steelhead Beach, Mirabel.

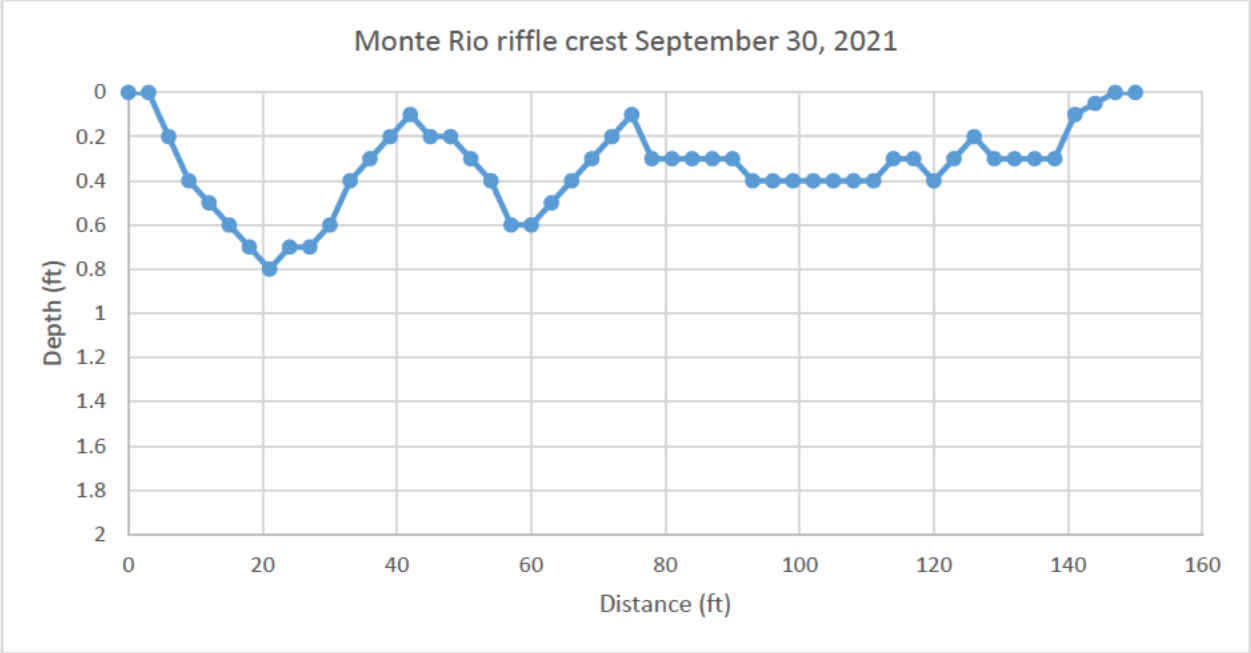


Figure 26. Riffle crest transect depths at Monte Rio on September 30, 2021. Flow at the USGS Hacienda stream gage (gage number 11467000) was 45 cfs.

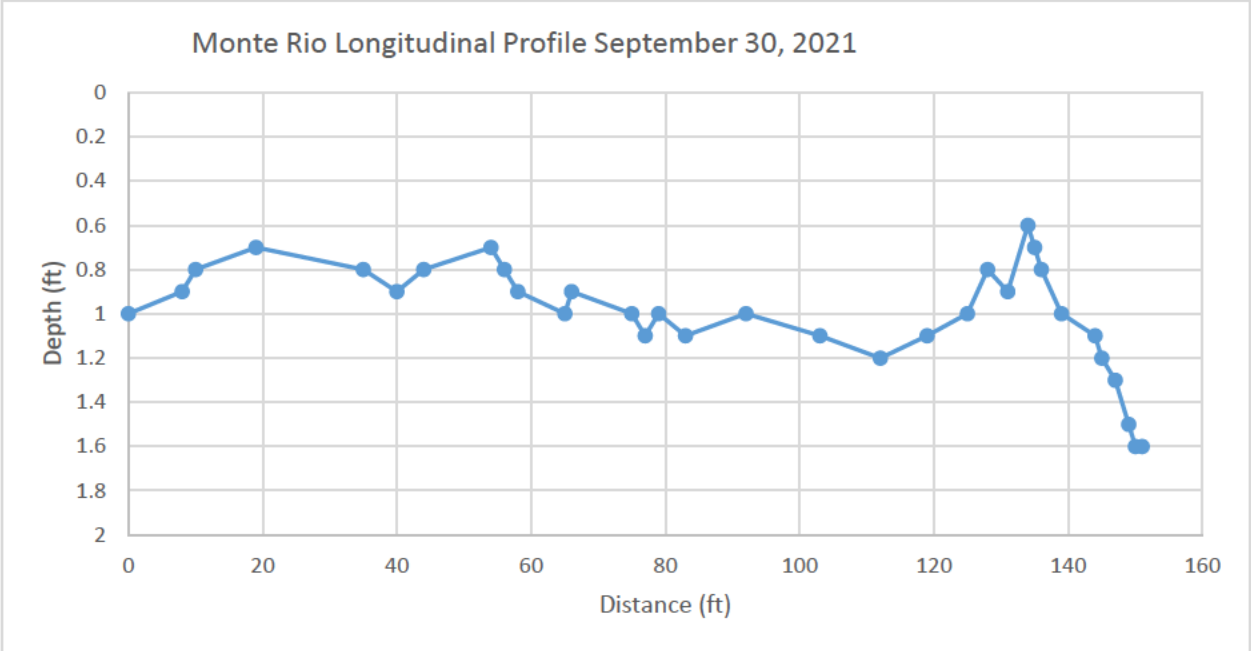


Figure 27. Longitudinal profile depths at Monte Rio on September 30, 2021. Flow at the USGS Hacienda stream gage (gage number 11467000) was 45 cfs.

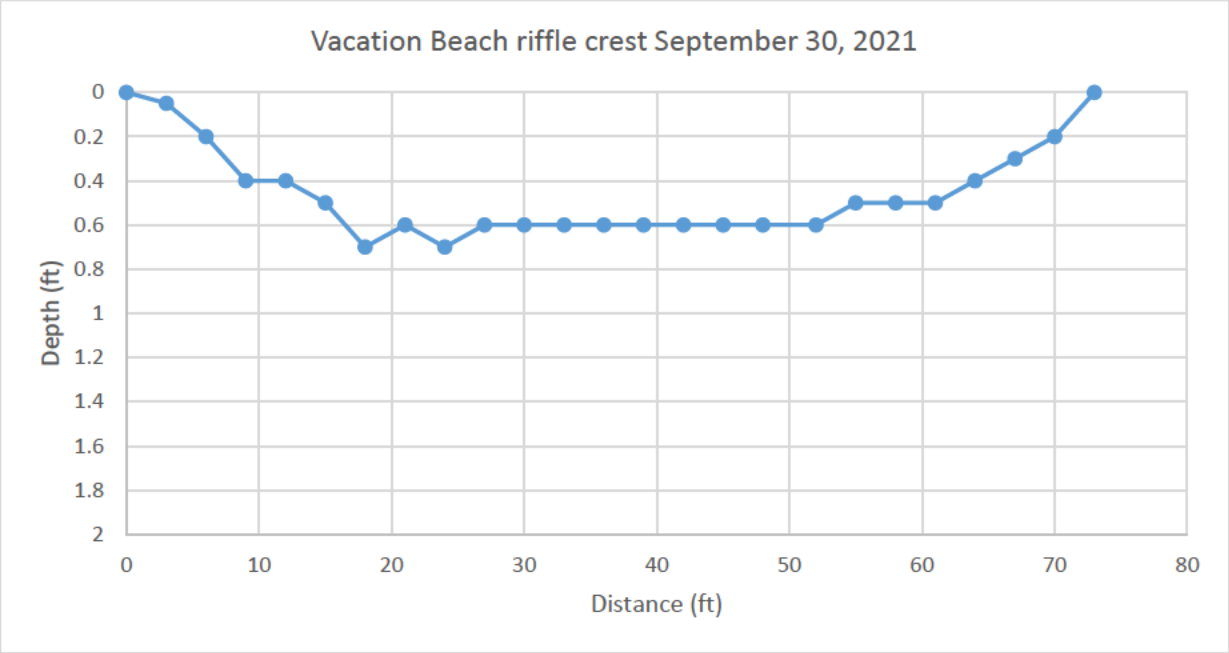


Figure 28. Riffle crest transect depths at vacation beach on September 30, 2021. Flow at the USGS Hacienda stream gage (gage number 11467000) was 45 cfs.

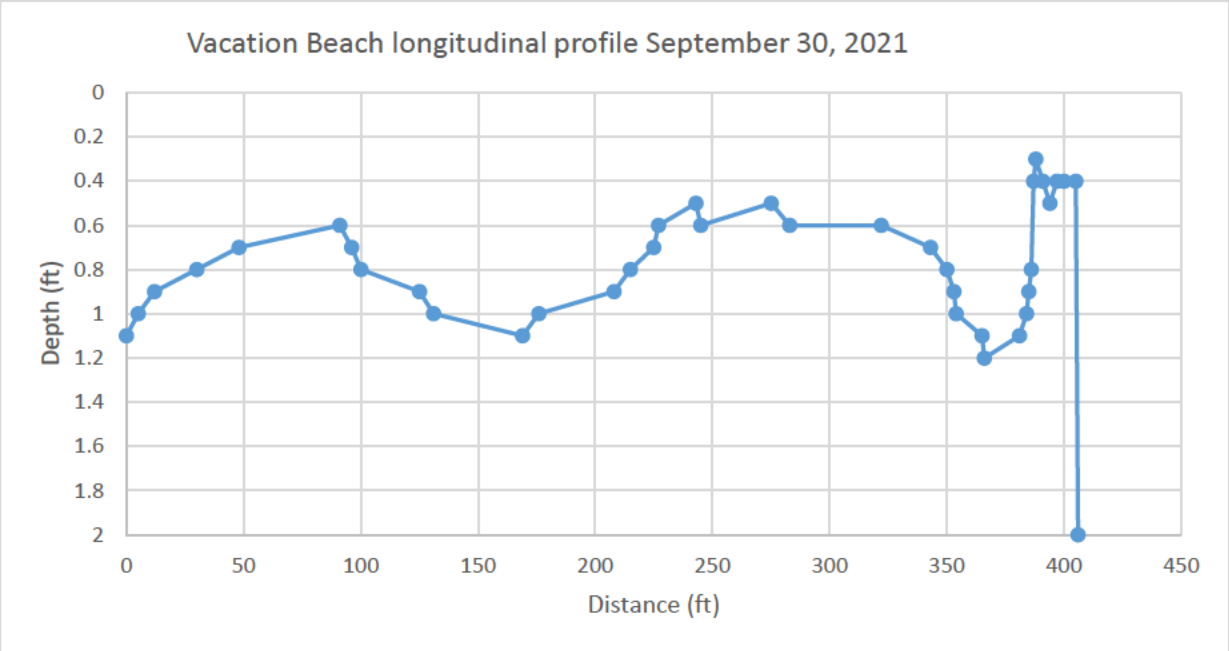


Figure 29. Longitudinal profile depths at Vacation Beach on September 30, 2021. Flow at the USGS Hacienda stream gage (gage number 11467000) was 45 cfs.

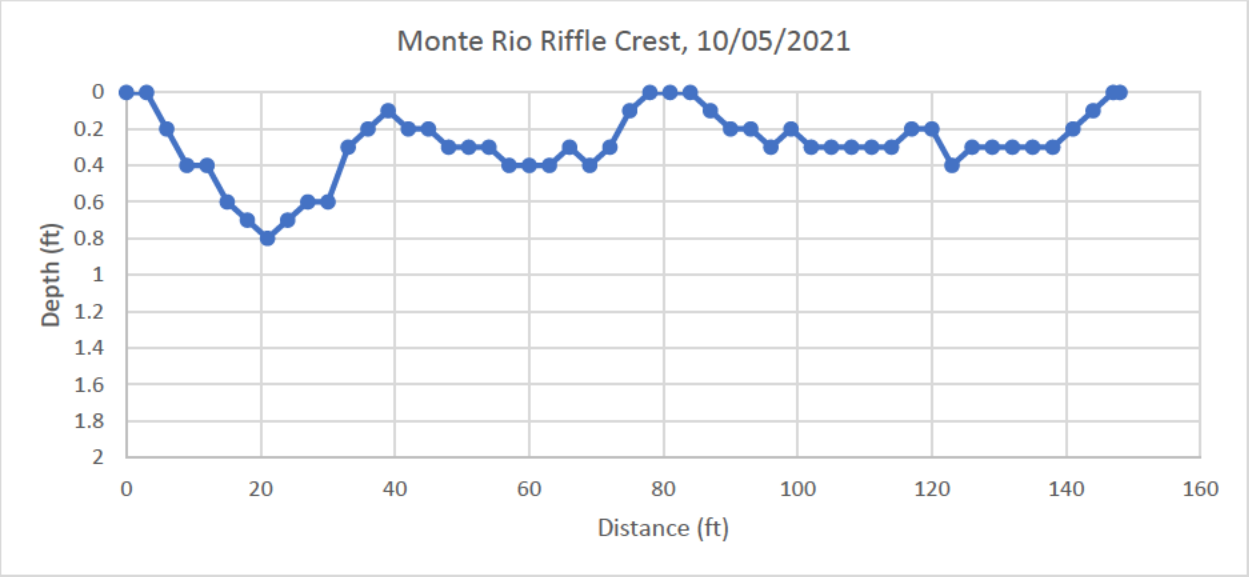


Figure 30. Riffle crest transect depths at Monte Rio on October 5, 2021. Flow at the USGS Hacienda stream gage (gage number 11467000) was 37 cfs.

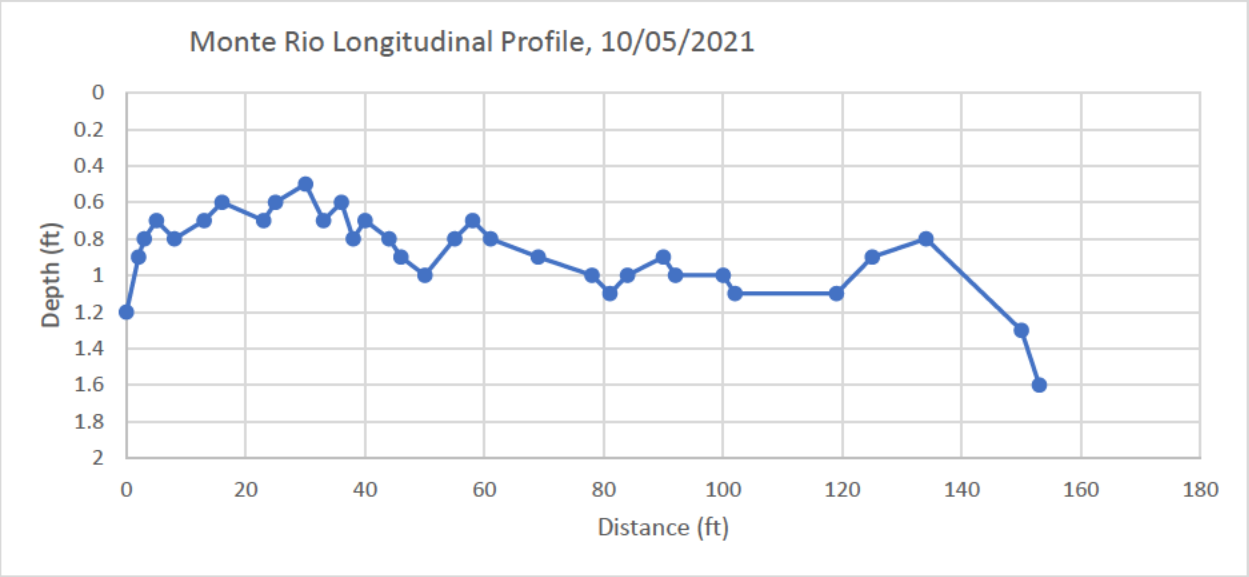


Figure 31. Longitudinal profile depths at Monte Rio on October 10, 2021. Flow at the USGS Hacienda stream gage (gage number 11467000) was 37 cfs.

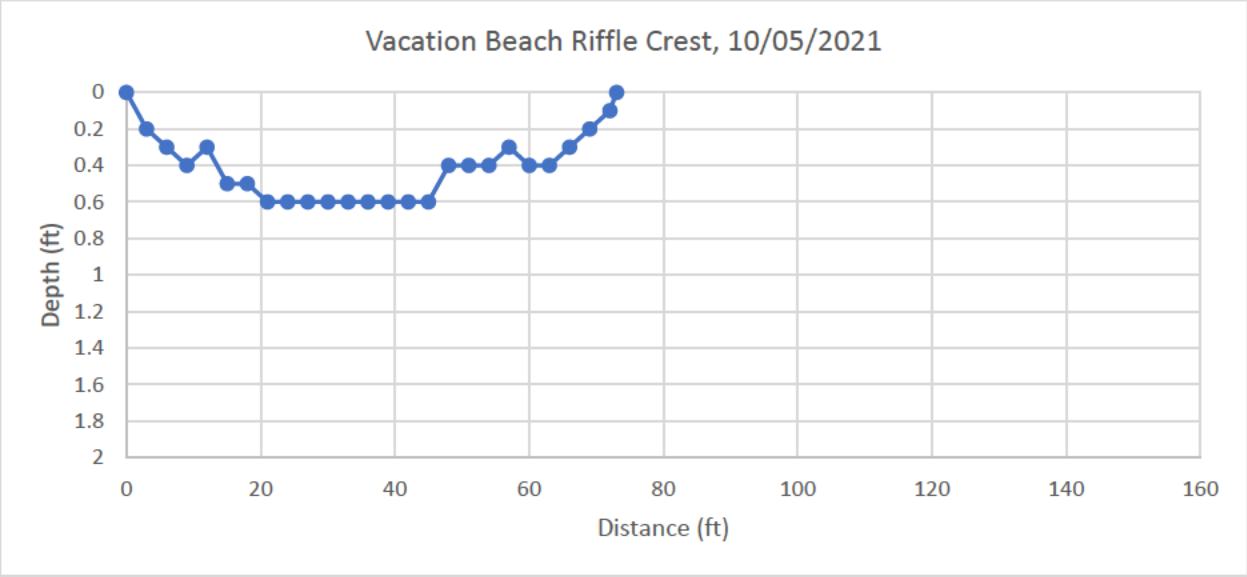


Figure 32. Riffle crest transect depths at Vacation Beach on October 5, 2021. Flow at the USGS Hacienda stream gage (gage number 11467000) was 37 cfs.

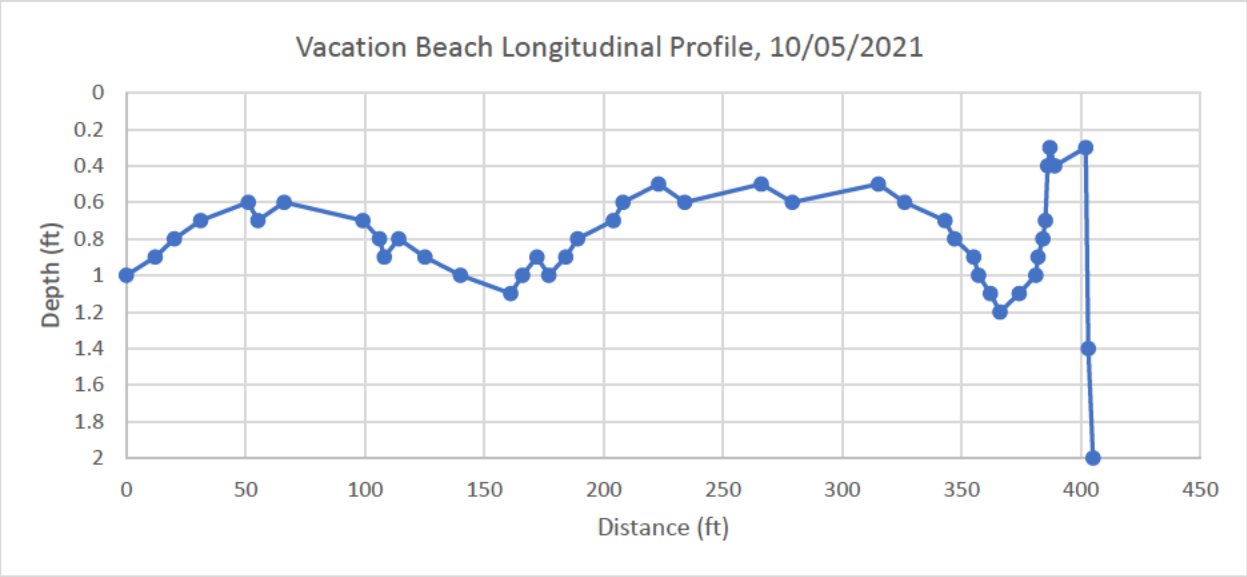


Figure 33. Longitudinal profile depths at Vacation Beach on October 10, 2021. Flow at the USGS Hacienda stream gage (gage number 11467000) was 37 cfs.

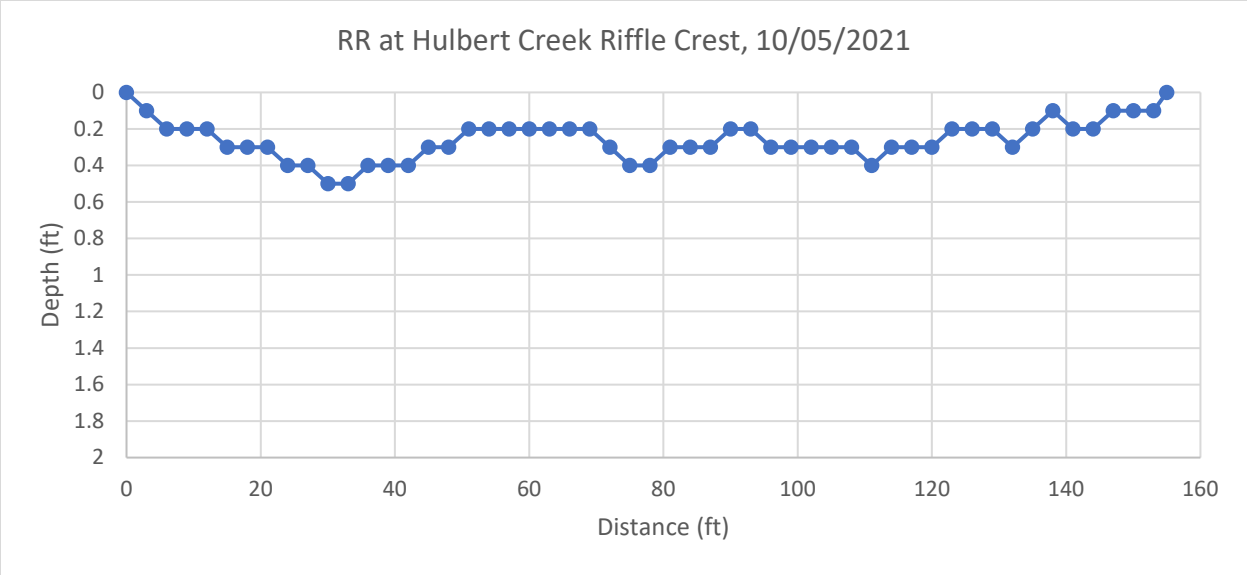


Figure 34. Riffle crest transect depths near the confluence with Hulbert Creek on October 5, 2021. Flow at the USGS Hacienda stream gage (gage number 11467000) was 37 cfs.

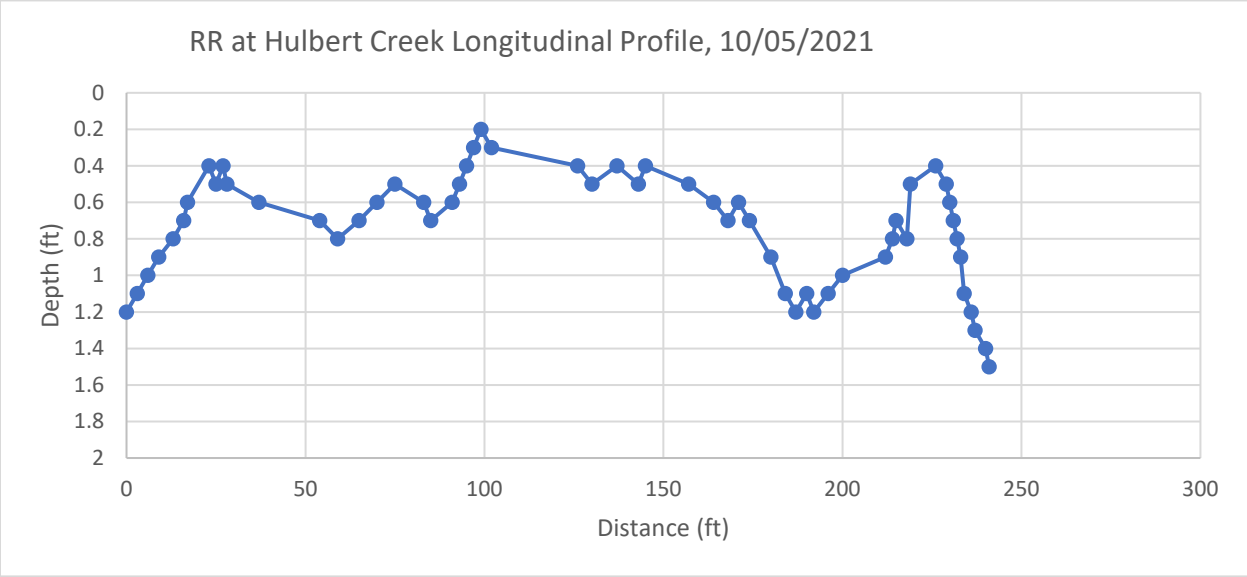


Figure 35. Longitudinal profile depths near the confluence with Hulbert Creek on October 10, 2021. Flow at the USGS Hacienda stream gage (gage number 11467000) was 37 cfs.

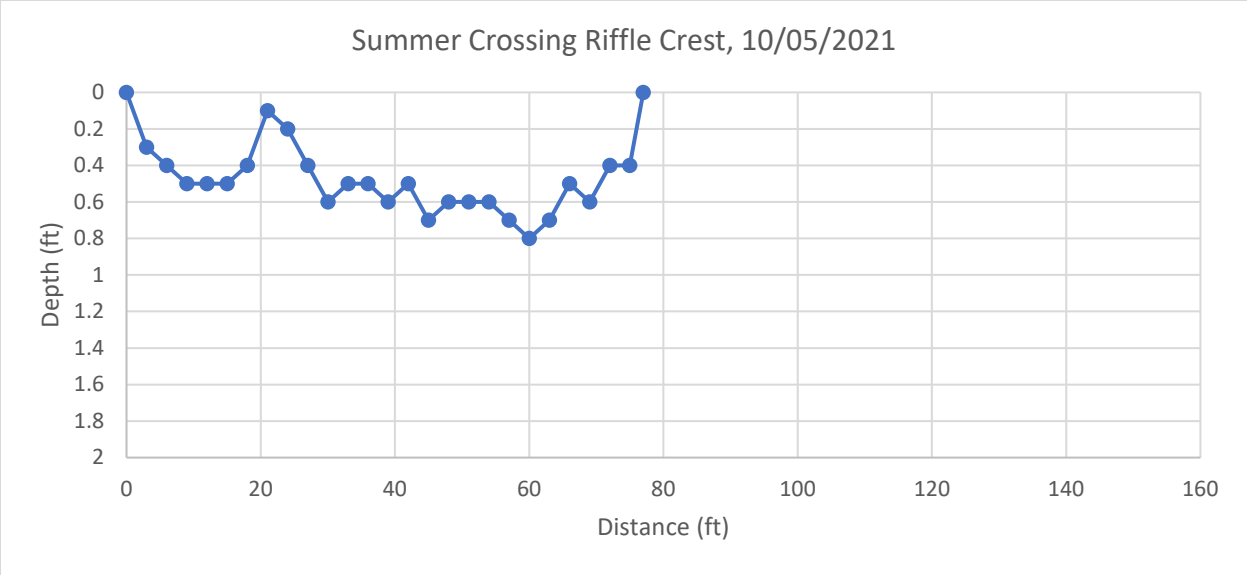


Figure 36. Riffle crest depths at Summer Crossing Road on October 5, 2021. Flow at the USGS Hacienda stream gage (gage number 11467000) was 37 cfs.

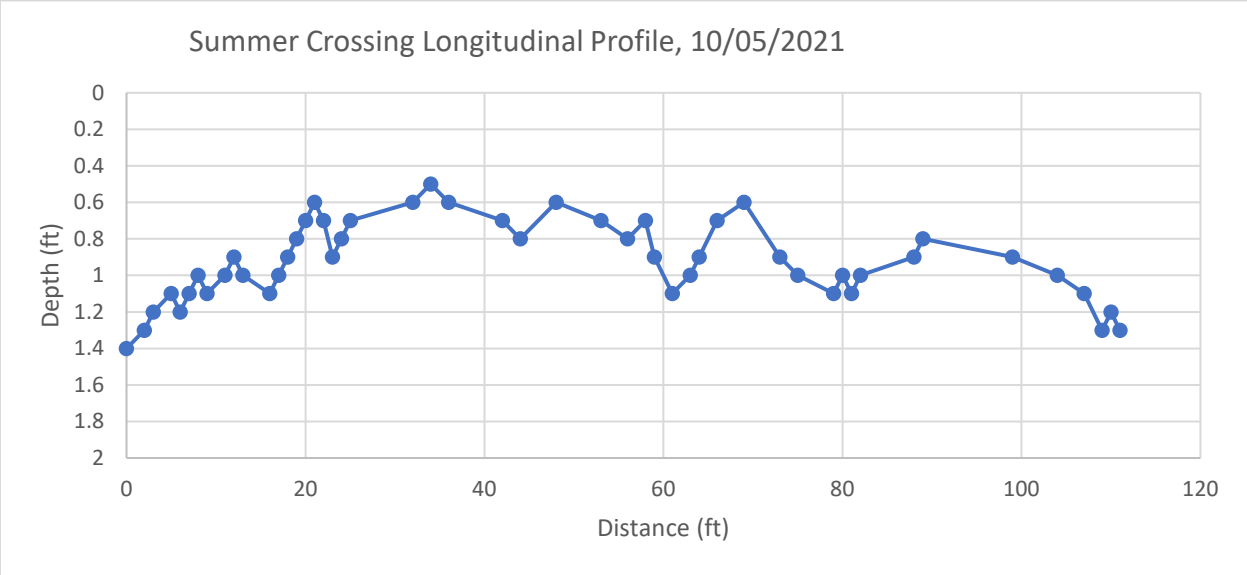


Figure 37. Longitudinal profile depths at Summer Crossing Road on October 10, 2021. Flow at the USGS Hacienda stream gage (gage number 11467000) was 37 cfs.

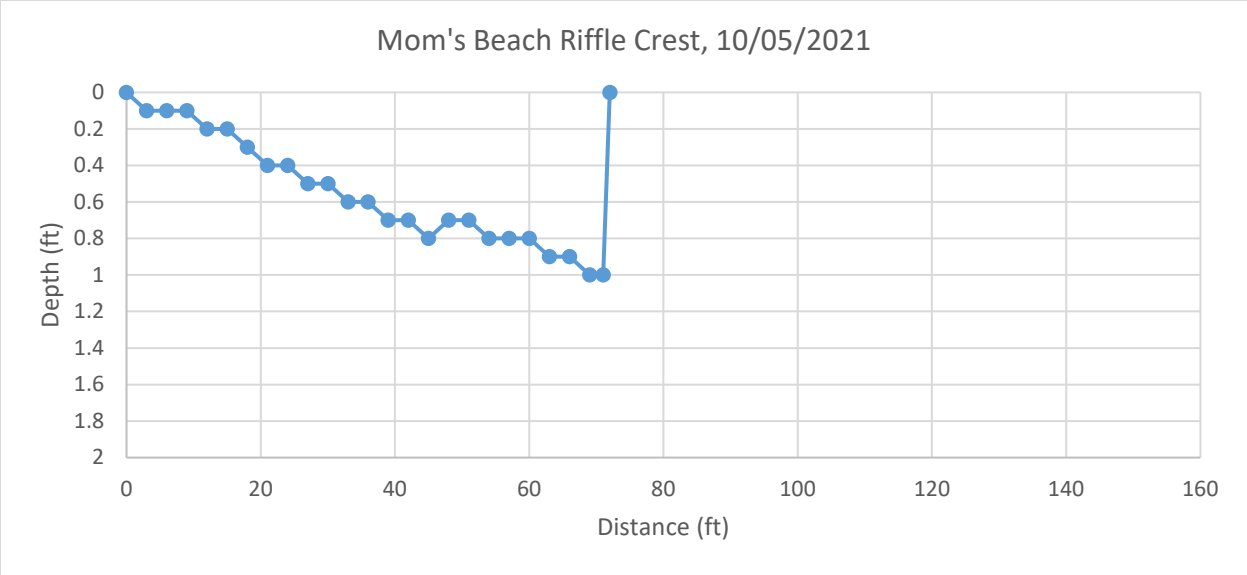


Figure 38. Riffle crest transect depths at Mom's Beach on October 5, 2021. Flow at the USGS Hacienda stream gage (gage number 11467000) was 37 cfs.

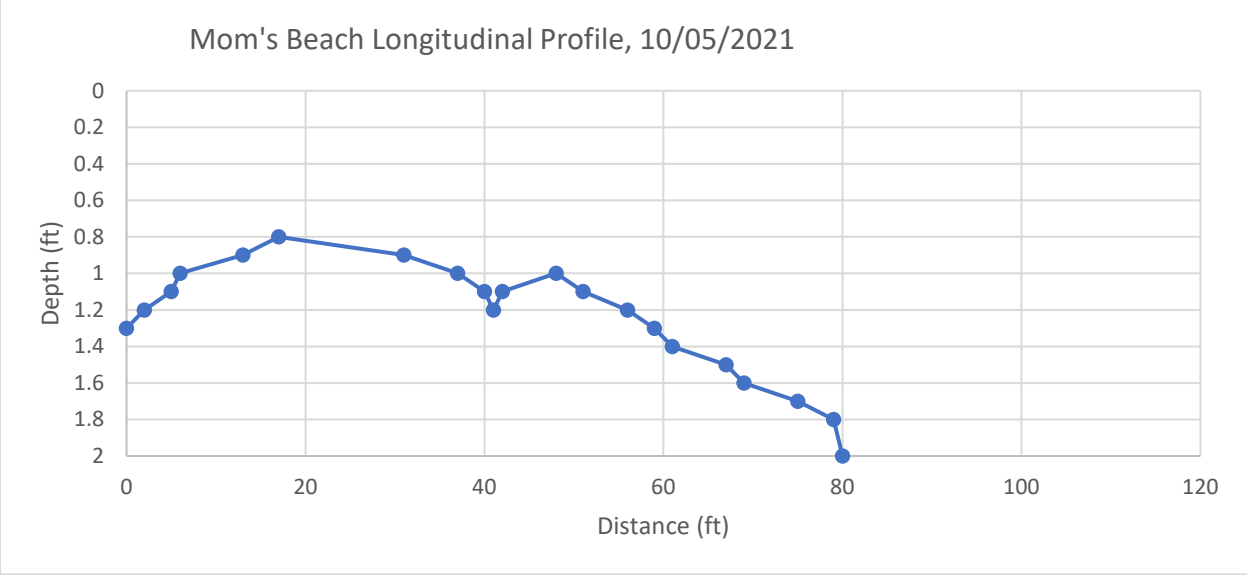


Figure 39. Longitudinal profile depths at Mom's Beach on October 10, 2021. Flow at the USGS Hacienda stream gage (gage number 11467000) was 37 cfs.

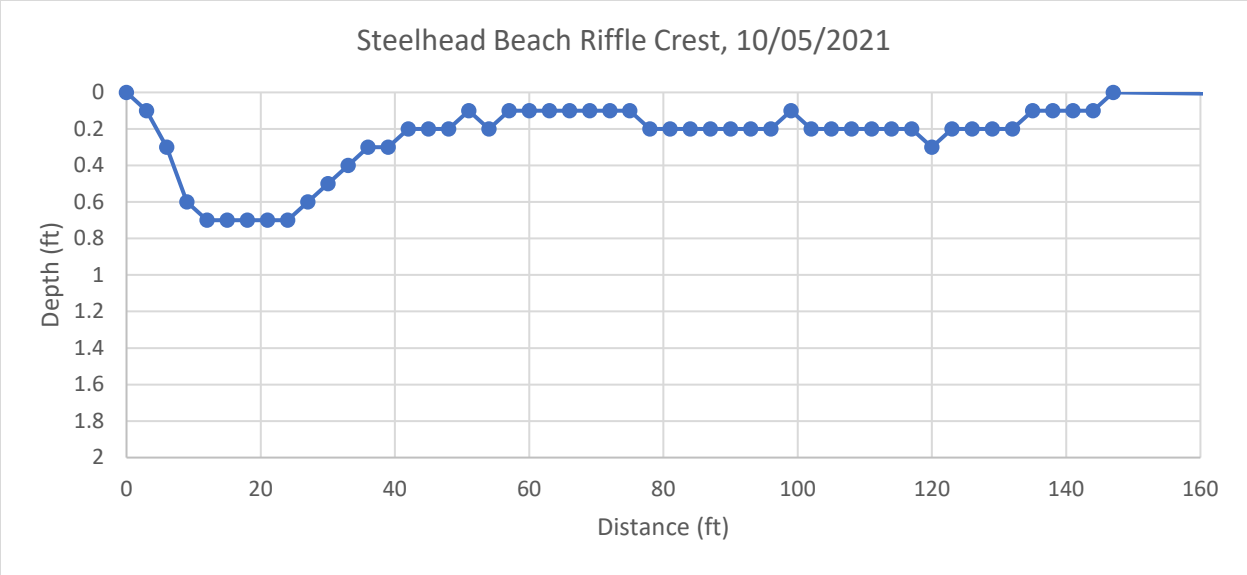


Figure 40. Riffle crest transect depths at Steelhead beach on October 5, 2021. Flow at the USGS Hacienda stream gage (gage number 11467000) was 37 cfs.

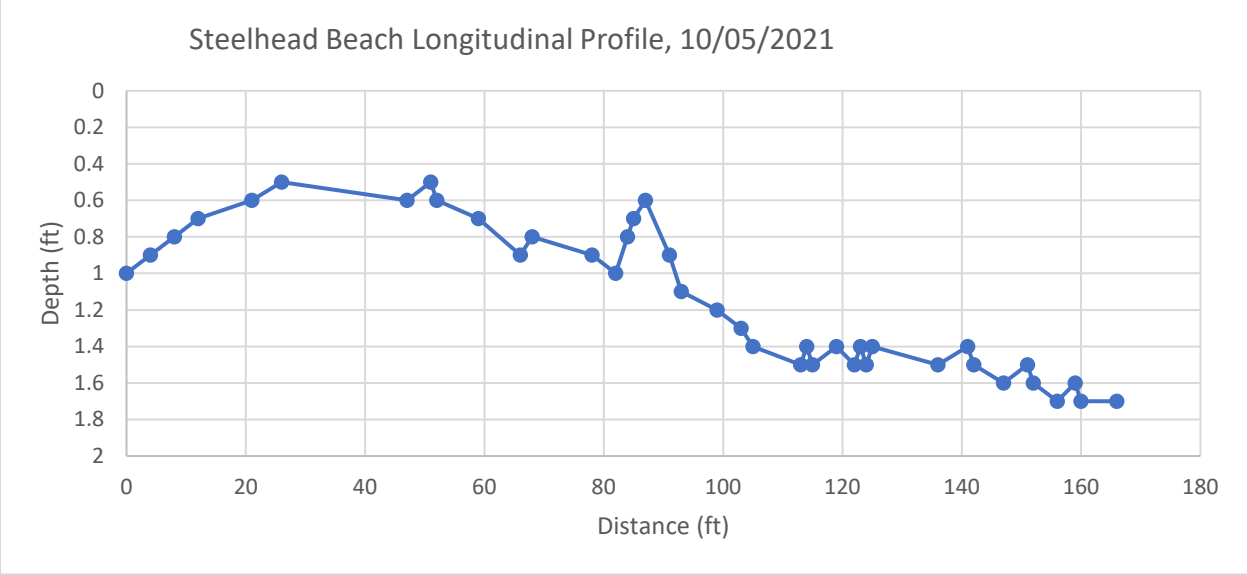


Figure 41. Longitudinal profile depths at Steelhead Beach on October 10, 2021. Flow at the USGS Hacienda stream gage (gage number 11467000) was 37 cfs.

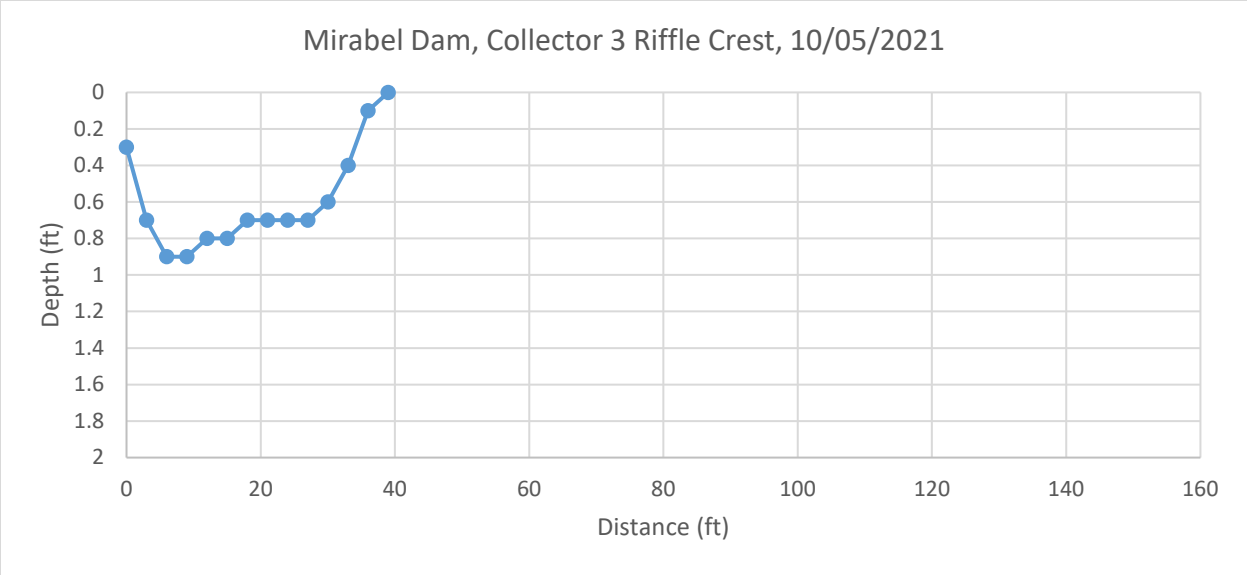


Figure 42. Riffle crest transect depths at Mirabel near collector well number 3 on October 5, 2021. Flow at the USGS Hacienda stream gage (gage number 11467000) was 37 cfs.

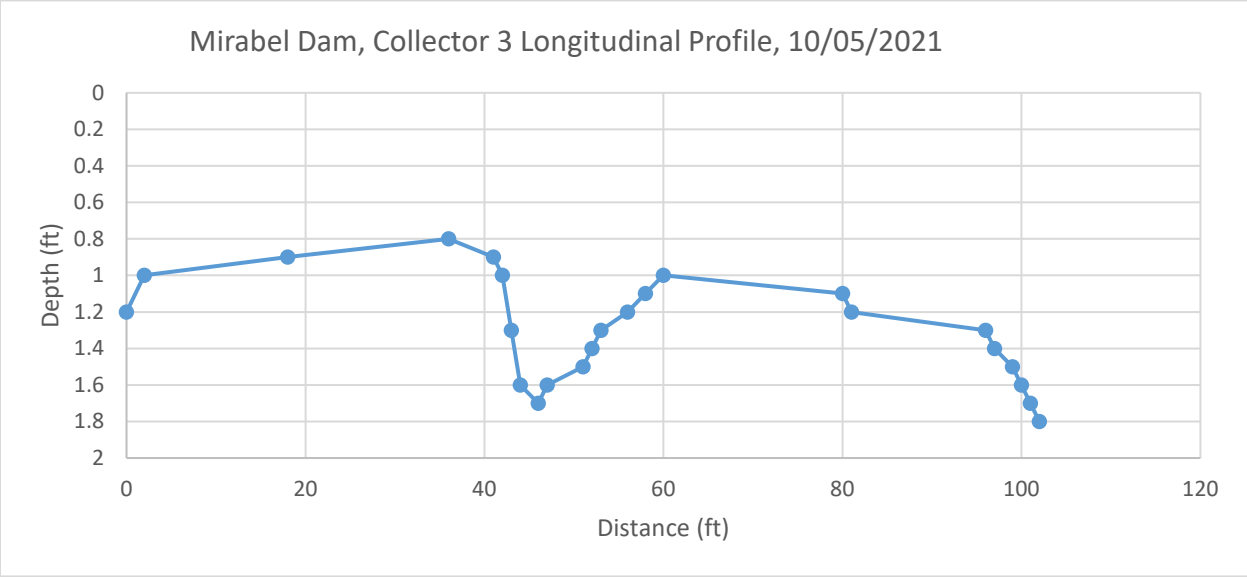


Figure 43. Longitudinal profile depths at Mirabel near collector well number 3 on October 10, 2021. Flow at the USGS Hacienda stream gage (gage number 11467000) was 37 cfs.

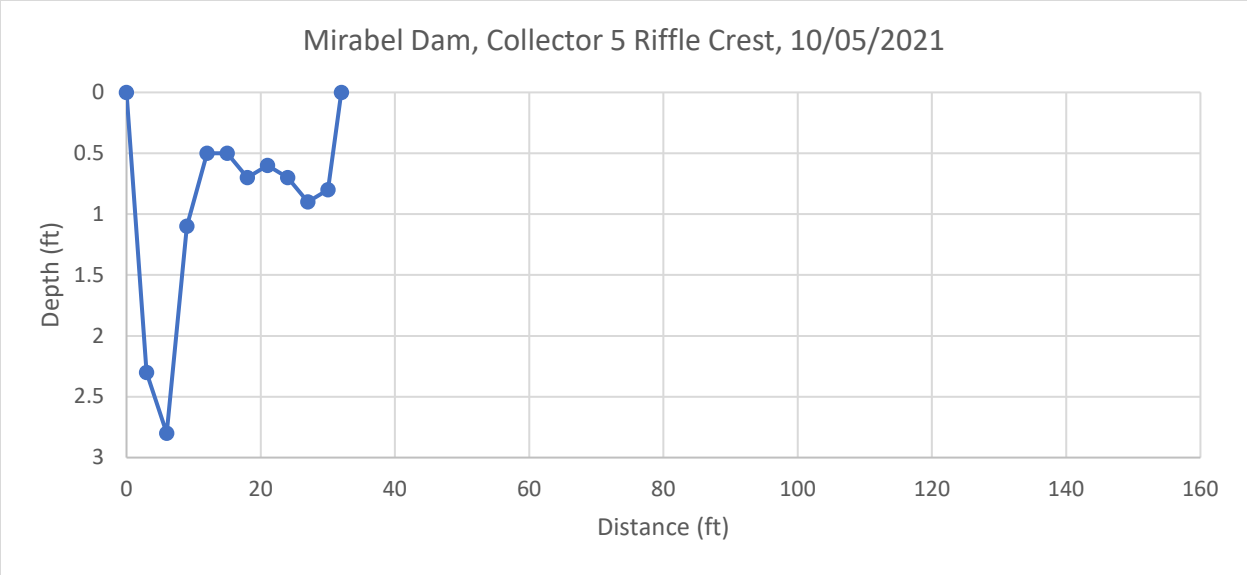


Figure 44. Riffle crest depths taken at Mirabel near collector well number 5 on October 5, 2021. Flow at the USGS Hacienda stream gage (gage number 11467000) was 37 cfs.

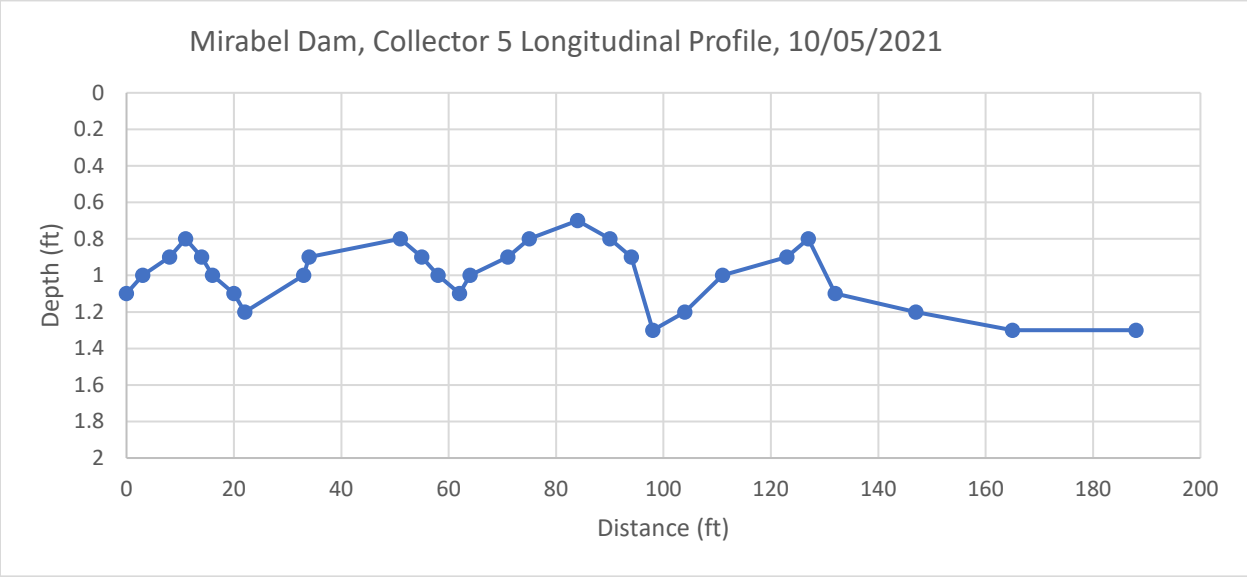


Figure 45. Longitudinal profile depths at Mirabel near collector well number 5 on October 10, 2021. Flow at the USGS Hacienda stream gage (gage number 11467000) was 37 cfs.

Snorkel surveys

Upper Russian River

On June 15, and June 16, 2021 snorkel surveys were conducted in the upper Russian River to document fish assemblages. Two pools near the mouth of Pieta Creek near Hopland were surveyed, as well as sites near Commisky Station, the old Highway 101 crossing near Preston, and at Del Rio Woods County Park near Healdsburg. A snorkel survey downstream of Leaping Lady Rock near Hopland was not conducted because visibility below the thermocline was poor. In total, 944 fish which were comprised of eight species, six of which are native to the Russian River were observed. A total of 4 steelhead parr at one sample site (Pieta Creek) were observed.

On August 22 a second snorkel survey was conducted in the mainstem Russian River near Pieta Creek, near Acapulco rock, and near Leaping Lady Rock. These sites are located near Hopland. An additional site was surveyed near Geyserville. In total 759 fish were observed comprised of 7 species (Table 2). Direct comparisons of fish counts should not be made between sites, sample events or between years as the sizes of reaches and water visibility differ between sample events.

Lower Russian River

A snorkel survey in the lower Russian River was conducted during the week of October 10. Sites sampled were Monte Rio, Vacation Beach, the Russian River at Hulbert Creek, Steelhead Beach, and Hacienda Bridge. A total of 287 fish were observed including 4 steelhead (3 hatchery and one of unknown origin, Table 1). Additional surveys were planned, but a large rain event in late October raised stream flow and turbidity to the point that snorkel surveys were no longer feasible.

Table 1. The number of fish observed at lower river sites sampled during the week of October 10, 2021

Species	Monte Rio	Vacation Beach	R.R. at Hulbert Creek	Steelhead beach	Hacienda Bridge
Channel Catfish					1
Common carp					4
Hardhead			1		
Largemouth bass					3
Sacramento Pikeminnow		5	2		5
Sacramento Sucker		150	20	30	50
Smallmouth Bass	5	2			5
Steelhead		4			

Table 2. The number of fish observed by size in upper river snorkel surveys conducted during the week of June 13 and August 22, 2021.

Date	Site	Bluegill	Cyprinid spp		Hardhead			Russian River Tule Perch		Sacramento Pikeminnow		Sacramento Sucker		Smallmouth Bass			Steelhead		Western Pond Turtle
06/13	Comminsky Station	<100 mm	<100 mm	<200 mm	<100 mm	>100 mm	>200 mm	<100 mm	>100 mm	<200 mm	>200 mm	<100 mm	>200 mm	<100 mm	<200 mm	>200 mm	<100 mm	<200 mm	>200
	RR at Pieta		20					30					50				4		
	D/S of Pieta at Acapulco Rock	10	300			20		50			10	50	50	5					1
	Comminsky Station		1									3	20						
	Geysers Road						100	50			10		100	5		5			1
	Del Rio Woods				10		13		7		4	5			10				
08/22	RR at Pieta		19																
	D/S of Pieta at Acapulco Rock	4	50	75			30	8		50	55		125					5	
	D/S of Leaping Lady Rock		160					30			10		50						
	Geysers Road		25				10	8			4		25	16					

Video monitoring

The video camera system was installed in the fish ladder at the Mirabel dam on September 1, 2021. Video was recorded continuously until an atmospheric river in late October increased stream flow (Figure 46). The Mirabel dam cannot be operated at flows above 2,000 cfs without risk of damaging the dam. In preparation of the impending atmospheric river the dam was deflated and the camera system was removed for the remainder of the season on October 23, 2021. Because of the early timing of this atmospheric river, few adult salmonids had passed upstream of the dam prior to the removal of the video camera. As a result, adult salmonid counts are not reported because doing so would misrepresent the number of fish that actually passed upstream of the dam.

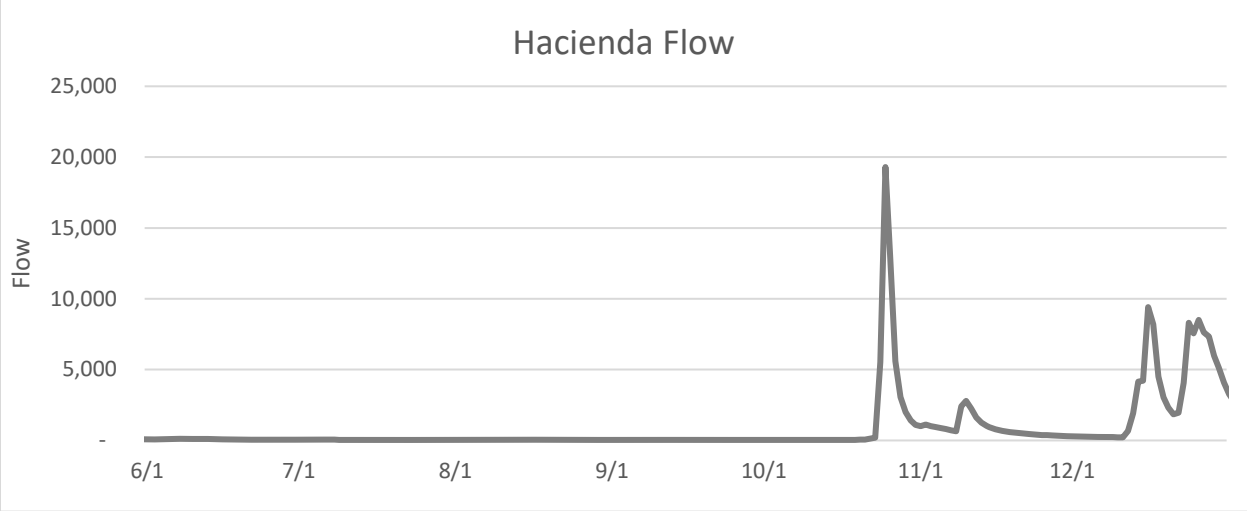


Figure 46. Flow in the Russian River at the USGS Hacienda stream gage (USGS gage number 11467000).

Spawning surveys

Dry Creek, Alexander Valley, and Upper Russian River

Spawner surveys in Dry Creek, Alexander Valley, upper Russian River were to begin after 100 adult salmonids passed through the video monitoring station at Mirabel. Spawner surveys were not conducted during the period of the Order because the dam was deflated and the camera system removed before 100 adult salmonids passed through the video monitoring station at Mirabel.

Summary

Other than a few exceptions, Sonoma water implemented the fisheries studies required by the Order. A large storm event in late October increased stream flow to the point that some studies could not be implemented. These included the upper river spawner surveys and, to a lesser degree, the underwater video camera, lower river critical riffle surveys, and lower river dive surveys.

In the upper Russian River, cross sections and riffle crest measurements were used to describe depths that fish might experience in representative riffles. During summer months, stream flow in the

mainstem Russian River is controlled by reservoir releases and, therefore, showed little variation in depth over the period covered by the Order.

During the summer of 2021, additional water quality loggers were deployed to augment water quality data collected at more permanent water quality monitoring sites operated by USGS and Sonoma Water. The additional data showed that some pools thermally stratified during the summer, although the temperature differential was small (typically less than 1 °C). It is important to note that these the pools where this supplemental monitoring occurred were chosen because of their greater depth as compared to other pools typical of the upper mainstem Russian. Therefore, it is unlikely that the small amount of thermal stratification observed at these sites was widespread. Furthermore, temperature below the thermocline was often above 21 °C, which is relatively warm for juvenile salmonids. It is interesting to note that thermal stratification was not present at Leaping Lady Rock from late July to late August and that the pool at Acapulco Rock lacked thermal stratification when the vertical profile was taken. The lack of thermal stratification in these pools may be related to the bed topography and resulting water velocity at these sites. It is also possible that high recreational use of these two site caused vertical mixing in these pools.

Dissolved oxygen was generally poor where dissolved oxygen monitors were present. It is possible that these were false readings due to the water quality monitors being placed too close to the silt located on the bottom of the pool or from failing equipment. However, there was evidence of low dissolved oxygen in the upper Russian River from the USGS permanent stream gages as well (SCWA 2022). It is worth noting that the vertical profiles taken with a handheld water quality device showed that dissolved oxygen was suitable when those measurements were taken indicating that a large portion of the pools had suitable dissolved oxygen.

Riffle depths for upstream migration were suitable at most locations despite the historically low flows present during the fall. On the days surveys were conducted, flow was less than 50 cfs yet most of the riffles had maximum depths that were equal to or greater than 0.8 ft. Some riffles in the lower mainstem Russian were shallower than 0.8 ft including riffles at Vacation Beach, near the confluence with Hulbert Creek, and at Steelhead Beach. Riffles with a maximum depth of less than 0.8 ft can cause fish passage issues for adult Chinook salmon (Thompson 1972). The dam sill at Vacation Beach was particularly shallow at 0.4 ft for its entire width. Riffles downstream of vacation beach became inundated and deepened due to lagoon formation following a river mouth closure. Without the river mouth being closed it is likely that there would have been additional riffles that had a maximum depth less than 0.8 ft in this section of river. Lower river surveys were canceled following an atmospheric river in late October that raised stream flow to nearly 20,000 cfs and made conditions unsafe for field surveys and certainly allowed free passage of adult salmonids.

Snorkel surveys documented the presence of fish in the upper and lower Russian River during the Order. In the upper Russian River, native and introduced fish were observed in large numbers both in the beginning and end of the summer. Native warm water fish have adapted to the local conditions and are able to take advantage of places that are too warm for salmonids. Juvenile steelhead rear in the upper Russian River by occupying the portion of the river that receives cool water releases from the bottom of Lake Mendocino. A few juvenile steelhead were observed in the upper Russian River and a few adult steelhead were observed in the lower Russian River during snorkel surveys, but the majority of fish observed were native warm water species.

The atmospheric river in late October caused problems for our adult salmon video monitoring system. The Mirabel dam cannot be operated at flows above 2,000 cfs without risk of damaging the dam. In preparation of the impending atmospheric river, the dam was deflated and the camera system was removed for the season. Few adult salmonids returned prior to the removal of the video camera. As a result, adult salmonid counts are not reported because doing so would misrepresent the number of fish that actually passed upstream of the dam.

Stream flow conditions did not allow spawner surveys in Dry Creek, Alexander Valley, and in the Upper Russian River. These surveys were to be started once 100 adult salmonids passed through the Mirabel under water video system, but the atmospheric river in late October increased stream flow to unsafe levels before 100 adult salmonids were counted at the Mirabel underwater video system. Furthermore, access to spawning habitat was no longer a concern once steam flows were elevated due to run off from the storm.

References

State Water Resources Control Board. 2021. Order WR 2021-0056-EXEC in the matter of permits 12947A, 12949, 12950, and 16596 (applications 12919A, 15736, 15737, 19351) Sonoma County Water Agency order approving temporary urgency change. Sacramento California.

Sonoma County Water Agency. 2016. Fish Habitat Flows and Water Rights Project Draft Environmental Impact Report. July 2016

Sonoma County Water Agency 2022. Russian River Water Quality Summary for the 2021 Temporary Urgency Change. March 2022.

Thompson, K. 1972. Determining stream flows for fish life. Pages 31-50 in Proceedings, instream flow requirements workshop. Pacific Northwest River Basins Commission, Vancouver, Washington.Water quality report

Appendix. Photographs of habitat conditions in the Russian River.

Upper Russian River Cross-Section Photo Documentation



Figure A 1. A photo of the Ukiah sample site on the mainstem Russian River (rkm 158.89) taken on June 13, 2021 when flow was 74 cfs. Flow is the combination of the release from Coyote Valley dam and the flow in the west fork of the Russian River (USGS gage number 11461000).



Figure A 2. A photo of the Hopland sample site on the mainstem Russian River (rkm 137.97) taken on June 13, 2021 when flow was 53 cfs. Flow is from the USGS Hopland stream gage (gage number 11462500).



Figure A 3. A photo of the Comminsky Station sample site on the mainstem Russian River (rkm 114.67) taken on June 13, 2021 when flow was 58 cfs. Discharge is from the USGS Cloverdale stream gage (gage number 11463000).



Figure A 4. A Photo of the Comminsky Station sample site on the mainstem Russian River (rkm 114.67) taken on July 12, 2021 when flow was 63 cfs. Discharge is from the USGS Cloverdale stream gage (gage number 11463000).



Figure A 5. A photo of the Cloverdale sample site on the mainstem Russian River (rkm 104.61) taken on June 13, 2021 when flow was 60 cfs. Discharge is from the USGS Cloverdale stream gage (gage number 11463000).



Figure A 6. A photo taken at the Geyserville sample site on the mainstem Russian River (rkm 89.04) taken on June 13, 2021 when flow was 53 cfs. Discharge is from the USGS Geyserville stream gage (gage number 11463500).



Figure A 7. A photo of the Jimtown sample site on the mainstem Russian River (rkm 77.90) taken on June 13, 2021 when flow was 38 cfs. Discharge is from the USGS Jimtown stream gage (gage number 1163682).



Figure A 8. A photo of the Del Rio Woods sample site on the mainstem Russian River (rkm 57.86) taken on July 12, 2021 when flow was 27 cfs. Discharge is from the USGS Digger Bend stream gage (gage number 11463980).



Figure A 9. A photo of the Healdsburg sample site on the mainstem Russian River (rkm 53.08) taken on July 12, 2021 when flow was 27 cfs. Discharge is from the USGS Healdsburg stream gage (gage number 11465350).

Lower Russian River Cross-Section Photo Documentation



Figure A 10. Brown's riffle located near the confluence with Austin Creek on September 30, 2021 showing inundation from the ponding effect when the mouth of the Russian River closed. Flow at the USGS Hacienda stream gage (gage number 11467000) was 45 cfs.



Figure A 11. A photo of the Monte Rio riffle crest cross section taken on September 30, 2021.



Figure A 12. Looking upstream from the Vacation Beach temporary crossing on September 30, 2021.



Figure A 13. Looking across the Vacation Beach dam sill on September 30, 2021.



Figure A 14. A photo of the riffle crest transect taken at Vacation Beach on October 5, 2021



Figure A 15. A photo of the longitudinal profile taken at Vacation Beach on October 10, 2021.



Figure A 16. A photo of the longitudinal profile taken at Monte Rio on October 10, 2021.



Figure A 17. A photo of the riffle crest transect taken on the Russian River near the confluence with Hulbert Creek on October 5, 2021.



Figure A 18. A photo of the longitudinal profile taken the Russian River near the confluence with Hulbert Creek on October 10, 2021.



Figure A 19. A photo of the riffle crest transect taken at Summer Crossing Road on October 5, 2021.



Figure A 20. A photo of the longitudinal profile taken at Summer Crossing Road on October 10, 2021.



Figure A 21. A photo of the riffle crest transect taken at Mom's Beach on October 5, 2021.



Figure A 22. A photo of the riffle crest transect taken at Steelhead beach on October 5, 2021.



Figure A 23. A photo of the longitudinal profile taken at Steelhead Beach on October 10, 2021.



Figure A 24. A photo of the riffle crest transect taken at Mirabel near collector well number 3 on October 5, 2021.



Figure A 25. A photo of the longitudinal profile taken at Mirabel near collector well number 3 on October 10, 2021.

Appendix A-10

Sonoma Water

November 16, 2021

Erik Ekdahl, Deputy Director of Water Rights
State Water Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000

RE: Petitions for Temporary Urgency Change—Permits 12947A, 12949, 12950 and 16596 (Applications 12919A, 15736, 15737 and 19351)

Dear Mr. Ekdahl:

Enclosed are the Petitions for Temporary Urgency Change to modify the index for determining water supply conditions and minimum instream flow requirements as established by Decision 1610 for Permits 12947A, 12949, 12950 and 16596. Accompanying the petitions are the following:

1) Supplement to the November 2021 Temporary Urgency Change Petitions
2) Environmental Information for Petition
3) Notice of Exemption
4) California Department of Fish and Wildlife Review Fee Payment
5) State Water Resources Control Board Petition Fee Payment

These petitions are submitted due to an exacerbated disconnection between the current index, Lake Pillsbury inflow in the Eel River, and water supply conditions in the Russian River watershed. The index has its basis in the historic contribution of inter-basin transfers of Pacific Gas & Electric's (PG&E) Potter Valley Project (PVP) hydroelectric facility from the Eel River to the East Fork of the Russian River and further downstream to Lake Mendocino. In October 2021, the hydroelectric plant was shuttered due to equipment failure of the transformer bank resulting in a severe reduction in the anticipated inter-basin transfers. Given the likely surrender by PG&E upon the expiration of the project's FERC license in April 2022, the expected fate of the hydroelectric plant is to remain idle due to the multi-year, multi-million-dollar necessary repairs.

Sonoma Water is currently operating under the modified permit conditions of a temporary urgency change order dated June 14, 2021 (and amended October 22, 2021) for Permits 12947A, 12949, 12950 and 16596. This order will expire after December 10, 2021.

On February 1st, the water supply condition for the Russian River was reclassified from 'Normal' to 'Dry' based on the cumulative inflow into Lake Pillsbury for the water year. This designation of 'Dry' water supply conditions would have continued through until the end of the year in the absence of the temporary urgency change petitions filed by Sonoma Water that were approved under the order dated June 14, 2021. Attributable to the hydrologic index implemented under this order and wide-spread water rights curtailments issued throughout the watershed, Lake Mendocino storage levels were prevented from reaching catastrophic levels this summer.

The shutdown of the PVP hydroelectric facility coincides with historically low storage levels in Lake Mendocino and Lake Sonoma due to the historic statewide drought. The Russian River watershed was under the highest category of drought, Exceptional Drought (D4), until the reprieve of the recent storms lowered the watershed into the next category, Extreme Drought (D3) (https://www.drought.gov/current-conditions).

Without the proposed changes in effect, there is an undue risk that water supply conditions as determined by the current hydrologic index will set minimum instream flows in the Russian River watershed that are not sustainable with the limited reservoir storage volumes in Lake Mendocino and Lake Sonoma that have been depleted after two years of drought conditions.

I look forward to working with the Division of Water Rights staff on this important conservation effort.

Sincerely,

[redacted]

Grant Davis
General Manager

c: S. Boland-Brien, J. Ling, S. McFarland – State Water Resources Control Board
R. Coey, J. Fuller – National Marine Fisheries Service
M. Kittle – California Department of Fish & Wildlife
M. St. John, B. McFadin – North Coast Regional Water Quality Control Board
P. Jeane, D. Seymour, T. Schram, J. Martini Lamb, J. Jasperse – Sonoma Water
C. O'Donnell, A. Brand – Sonoma County Counsel
R. Bezerra – Bartkiewicz, Kronick & Shanahan

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Please indicate County where your project is located here:

Sonoma / Mendo.

MAIL FORM AND ATTACHMENTS TO:
State Water Resources Control Board
DIVISION OF WATER RIGHTS
P.O. Box 2000, Sacramento, CA 95812-2000
Tel: (916) 341-5300 Fax: (916) 341-5400
http://www.waterboards.ca.gov/waterrights

PETITION FOR CHANGE

Separate petitions are required for each water right. Mark all areas that apply to your proposed change(s). Incomplete forms may not be accepted. Location and area information must be provided on maps in accordance with established requirements. (Cal. Code Regs., tit. 23, § 715 et seq.) Provide attachments if necessary.

☐ **Point of Diversion** Wat. Code, § 1701
☐ **Point of Rediversion** Cal. Code Regs., tit. 23, § 791(e)
☐ **Place of Use** Wat. Code, § 1701
☐ **Purpose of Use** Wat. Code, § 1701

☐ **Distribution of Storage** Cal. Code Regs., tit. 23, § 791(e)
☒ **Temporary Urgency** Wat. Code, § 1435
☐ **Instream Flow Dedication** Wat. Code, § 1707
☐ **Waste Water** Wat. Code, § 1211

☐ **Split** Cal. Code Regs., tit. 23, § 836
☐ **Terms or Conditions** Cal. Code Regs., tit. 23, § 791(e)
☐ **Other**

Application 15736 Permit 12949 License Statement

I (we) hereby petition for change(s) noted above and described as follows:

Point of Diversion or Rediversion – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Present:

Proposed:

Place of Use – Identify area using Public Land Survey System descriptions to ¼-¼ level; for irrigation, list number of acres irrigated.

Present:

Proposed:

Purpose of Use

Present:

Proposed:

Split

Provide the names, addresses, and phone numbers for all proposed water right holders.

In addition, provide a separate sheet with a table describing how the water right will be split between the water right holders: for each party list amount by direct diversion and/or storage, season of diversion, maximum annual amount, maximum diversion to offstream storage, point(s) of diversion, place(s) of use, and purpose(s) of use. Maps showing the point(s) of diversion and place of use for each party should be provided.

Distribution of Storage

Present:

Proposed:

Temporary Urgency
This temporary urgency change will be effective from 12/11/2021 to 6/8/2022 .

Include an attachment that describes the urgent need that is the basis of the temporary urgency change and whether the change will result in injury to any lawful user of water or have unreasonable effects on fish, wildlife or instream uses.

Instream Flow Dedication – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Upstream Location:

Downstream Location:

List the quantities dedicated to instream flow in either: ☐ cubic feet per second or ☐ gallons per day:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Will the dedicated flow be diverted for consumptive use at a downstream location? ◯ Yes ◯ No
If yes, provide the source name, location coordinates, and the quantities of flow that will be diverted from the stream.

Waste Water
If applicable, provide the reduction in amount of treated waste water discharged in cubic feet per second.

Will this change involve water provided by a water service contract which prohibits your exclusive right to this treated waste water? ◯ Yes ◯ No

Will any legal user of the treated waste water discharged be affected? ◯ Yes ◯ No

General Information – For all Petitions, provide the following information, if applicable to your proposed change(s).

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If by lease or agreement, state name and address of person(s) from whom access has been obtained.

Give name and address of any person(s) taking water from the stream between the present point of diversion or rediversion and the proposed point of diversion or rediversion, as well as any other person(s) known to you who may be affected by the proposed change.

All Right Holders Must Sign This Form: I (we) declare under penalty of perjury that this change does not involve an increase in the amount of the appropriation or the season of diversion, and that the above is true and correct to the best of my (our) knowledge and belief. Dated 11.16.21 at Santa Rosa, CA .

Right Holder or Authorized Agent Signature

Right Holder or Authorized Agent Signature

NOTE: All petitions must be accompanied by:
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Please indicate County where your project is located here:

Sonoma / Mendo.

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DIVISION OF WATER RIGHTS
P.O. Box 2000, Sacramento, CA 95812-2000
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☐ **Point of Diversion** Wat. Code, § 1701
☐ **Point of Rediversion** Cal. Code Regs., tit. 23, § 791(e)
☐ **Place of Use** Wat. Code, § 1701
☐ **Purpose of Use** Wat. Code, § 1701

☐ **Distribution of Storage** Cal. Code Regs., tit. 23, § 791(e)
☒ **Temporary Urgency** Wat. Code, § 1435
☐ **Instream Flow Dedication** Wat. Code, § 1707
☐ **Waste Water** Wat. Code, § 1211

☐ **Split** Cal. Code Regs., tit. 23, § 836
☐ **Terms or Conditions** Cal. Code Regs., tit. 23, § 791(e)
☐ **Other**

Application 12919A Permit 12947A License Statement

I (we) hereby petition for change(s) noted above and described as follows:

Point of Diversion or Rediversion – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Present:

Proposed:

Place of Use – Identify area using Public Land Survey System descriptions to ¼-¼ level; for irrigation, list number of acres irrigated.

Present:

Proposed:

Purpose of Use

Present:

Proposed:

Split

Provide the names, addresses, and phone numbers for all proposed water right holders.

In addition, provide a separate sheet with a table describing how the water right will be split between the water right holders: for each party list amount by direct diversion and/or storage, season of diversion, maximum annual amount, maximum diversion to offstream storage, point(s) of diversion, place(s) of use, and purpose(s) of use. Maps showing the point(s) of diversion and place of use for each party should be provided.

Distribution of Storage

Present:

Proposed:

Temporary Urgency
This temporary urgency change will be effective from 12/11/2021 to 6/8/2022 .

Include an attachment that describes the urgent need that is the basis of the temporary urgency change and whether the change will result in injury to any lawful user of water or have unreasonable effects on fish, wildlife or instream uses.

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Upstream Location:

Downstream Location:

List the quantities dedicated to instream flow in either: ☐ cubic feet per second or ☐ gallons per day:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Will the dedicated flow be diverted for consumptive use at a downstream location? ◯ Yes ◯ No
If yes, provide the source name, location coordinates, and the quantities of flow that will be diverted from the stream.

Waste Water
If applicable, provide the reduction in amount of treated waste water discharged in cubic feet per second.

Will this change involve water provided by a water service contract which prohibits your exclusive right to this treated waste water? ◯ Yes ◯ No

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☐ **Distribution of Storage** Cal. Code Regs., tit. 23, § 791(e)
☒ **Temporary Urgency** Wat. Code, § 1435
☐ **Instream Flow Dedication** Wat. Code, § 1707
☐ **Waste Water** Wat. Code, § 1211

☐ **Split** Cal. Code Regs., tit. 23, § 836
☐ **Terms or Conditions** Cal. Code Regs., tit. 23, § 791(e)
☐ **Other**

Application 19351 Permit 16596 License Statement

I (we) hereby petition for change(s) noted above and described as follows:

Point of Diversion or Rediversion – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Present:

Proposed:

Place of Use – Identify area using Public Land Survey System descriptions to ¼-¼ level; for irrigation, list number of acres irrigated.

Present:

Proposed:

Purpose of Use

Present:

Proposed:

Split

Provide the names, addresses, and phone numbers for all proposed water right holders.

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Distribution of Storage

Present:

Proposed:

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Upstream Location:

Downstream Location:

List the quantities dedicated to instream flow in either: ☐ cubic feet per second or ☐ gallons per day:

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Will the dedicated flow be diverted for consumptive use at a downstream location? ◯ Yes ◯ No
If yes, provide the source name, location coordinates, and the quantities of flow that will be diverted from the stream.

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If applicable, provide the reduction in amount of treated waste water discharged in cubic feet per second.

Will this change involve water provided by a water service contract which prohibits your exclusive right to this treated waste water? ◯ Yes ◯ No

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☐ **Waste Water** Wat. Code, § 1211

☐ **Split** Cal. Code Regs., tit. 23, § 836
☐ **Terms or Conditions** Cal. Code Regs., tit. 23, § 791(e)
☐ **Other**

Application 15737 Permit 12950 License Statement

I (we) hereby petition for change(s) noted above and described as follows:

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Present:

Proposed:

Place of Use – Identify area using Public Land Survey System descriptions to ¼-¼ level; for irrigation, list number of acres irrigated.

Present:

Proposed:

Purpose of Use

Present:

Proposed:

Split

Provide the names, addresses, and phone numbers for all proposed water right holders.

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November 2021

Sonoma County Water Agency

Supplement to the November 2021 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/river operations to protect municipal water supply and listed salmon species in the Russian River.

Based on Sonoma Water's water right permits 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 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. During a PVP Drought Working Group meeting on October 7, 2021, PG&E informed the group that the transformer bank at the PVP powerhouse had failed and would need to be replaced in order to convey water through the powerhouse for power generation. PG&E estimates it will take up to two years to replace the transformer bank at a cost of five to ten million dollars. It is highly uncertain whether PG&E will make the necessary repairs to continue power generation as its FERC operating license expires in April 2022. In January 2019, PG&E withdrew its Preliminary Application Document and Notice of Intent to relicense the project.

Currently, the PVP is rated at a flow rate up to 240 cubic feet per second (cfs) through the powerhouse for power generation. PG&E can bypass the powerhouse at flow rates up to 135 cfs to meet Federal Energy Regulatory Commission (FERC) license requirements for minimum instream releases into the East Branch Russian

River and water supply contract requirements with the Potter Valley Irrigation District (PVID).

PG&E's transfer obligations to meet FERC license requirements and PVID contract amounts until April 14 is 45 cfs. On April 15 the transfer requirement to the East Branch Russian River will be reassessed based on the water supply condition. PG&E has indicated that without the ability to generate hydropower, it is unlikely PG&E will make discretionary transfers of Eel River water 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 being met. Without the discretionary transfer of Eel River water to generate hydropower, the total transfer through the PVP will be reduced by up to 400 acre-feet per day.

Under these operating conditions of the PVP, 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. The same storage thresholds were requested by Sonoma Water in prior Temporary Urgency Change Petitions (TUCP) filed in December 2013 and January 2021, which the State Water Board approved in orders issued on December 31, 2013 and February 4, 2021, respectively.

The current drought has led Sonoma Water to file three TUCPs since June 2020. Projected critically low storage levels in Lake Mendocino were the drivers for the TUCPs. These low storage levels were due to dry watershed conditions and reduced transfers of Eel River water through the PVP as a result of variances filed with FERC by PG&E. Lake Mendocino and Lake Sonoma remain at or near their lowest levels for this time of year since filling in 1959 and 1986, respectively. Consequently, it is even more 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 water rights 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 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 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, the Decision 1610 required minimum Russian River flows are: 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*

[1] The Upper Russian River is the stream reach from the confluence of the East Fork Russian River and West Fork 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.

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 (located in the Eel River watershed) 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 based on the hydrologic conditions for the Russian River system. 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.

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 or 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

From October 1, 2020 to May 31, 2021, the cumulative inflow into Lake Pillsbury was 82,215 acre-feet. Consequently, the water supply condition is categorized as *Dry* for the remainder of 2021. Sonoma Water is currently managing the Russian River based on a *Critical* water supply condition as authorized by the June 14, 2021 State Water Board order approving Sonoma Water's May 2021 TUCP. These changes were necessary because of the critically dry hydrology and very low storage at Lake Mendocino. The State Water Board's June 14, 2021 order expires after December 10, resulting in the water supply condition changing back to *Dry* for the remainder of the year and the corresponding minimum instream flow requirements increasing from 25 cfs to 75 cfs on the Upper Russian River and from 35 cfs to 85 cfs on the Lower Russian River.

From October 1, 2021 to November 14, 2021, the cumulative in flow into Lake Pillsbury was 41,947 acre-feet. Consequently, the water supply condition will be categorized as *Normal* for at least through February 2022, with a minimum instream flow requirement of 150 cfs on the Upper Russian River and 125 cfs on the Lower Russian River. Without an additional temporary urgency change order approving the requested changes, there is a significant risk that using a 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 could require releases from the two reservoirs to meet minimum instream flow requirements that could deplete the reservoirs to severely low levels.

2.1 Potter Valley Hydroelectric Project

The PVP, owned and operated by PG&E, is located on the East Fork 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 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

is in the process of assessing the issue, but has indicated that it is unlikely it will repair the facility given the likelihood the FERC license for the PVP may be surrendered.

2.2 Lake Mendocino

As of November 15, 2021 the water supply storage level in Lake Mendocino was 19,995 acre-feet (AF). This storage level is approximately 29 percent of the available water conservation pool for this time of year. This is the second lowest storage level for this time of year since Lake Mendocino filled in 1959. Figure 2 shows observed storage in Lake Mendocino for 2014 through November 14, 2021.

In February 2021, the U.S. Army Corps of Engineers (USACE) approved a Planned Major Deviation (Deviation) of the Coyote Valley Dam/Lake Mendocino Water Control Manual for WY 2021 through 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 11,050 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, WY 2021 is the second driest year in the Ukiah Valley during the past 127 years of record, with WY 2020 being the fourth driest. As a result, storage at Lake Mendocino remained well below the flood control pool and the FIRO DSM was not utilized this year.

2.3 Lake Sonoma

As of November 15, 2021, the water supply storage level in Lake Sonoma was 122,322 acre-feet. This storage level is approximately 50 percent of the available water conservation pool. This is the lowest storage level for this time of year since Lake Sonoma filled in 1986. Figure 3 shows observed storage in Lake Sonoma for 2014 through November 14, 2021.

3.0 CRITERIA FOR APPROVING TEMPORARY UNGENCY 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 11, 2021, 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 monthly 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:

40,000 acre-feet as of January 1
59,000 acre-feet as of February 1
68,000 acre-feet as of March 1
69,500 acre-feet as of March 16
71,000 acre-feet as of April 1
70,000 acre-feet as of April 16
69,000 acre-feet as of May 1
67,500 acre-feet as of May 16
65,000 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
36,000 acre-feet as of February 1
52,000 acre-feet as of March 1
53,000 acre-feet as of March 16
54,000 acre-feet as of April 1
53,000 acre-feet as of April 16
52,000 acre-feet as of May 1
51,000 acre-feet as of May 16
50,000 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 necessarily 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) water year (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 1.

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-Marin Saving Water Partnership (Partnership). The Partnership represents thirteen 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 Water, Valley of the Moon and Marin Municipal Water Districts; Cal 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.

On April 21, 2021, Governor Newsom issued a regional drought emergency proclamation for the Russian River watershed in Sonoma and Mendocino counties. 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. The County of Mendocino acted similarly to declare a local drought emergency.

Recognizing the need to reduce diversions from the Russian River, Sonoma Water's contractors adopted a resolution at the May 3, 2021 Water Advisory Committee (WAC) meeting supporting the water saving efforts of the Partnership and urging a 20 percent reduction in customer water use. The WAC also approved temporary allocations of Sonoma Water deliveries for the period July through October necessary to achieve a 20 percent reduction from 2020 levels for the same period. Subsequent to the adoption of the WAC resolution, the contractors took action with their Boards and/or Councils for activation of the Water Shortage Contingency Plans for their respective agencies as needed to meet the reduction goal. Sonoma Water then filed a TUCP on May 13, 2021, including a proposed action for Sonoma Water and its contractors to reduce Russian River diversions by 20 percent from 2020 levels from July 1 through October 31, 2021.

The subsequent State Board Order WR 2021-0056-EXEC approving Sonoma Water's TUCP included Term 11 stating Sonoma Water and its contractors shall ensure a 20 percent reduction in Russian River diversions for the term of the Order as compared to the same period of the previous year (July 1 – December 10, 2021). Separately, on July 8, 2021, Governor Newsom issued Executive Order N-10-21, adding Marin County to a list of 50 counties in California where a state of emergency exists due to drought conditions, and whereby the Governor called for all Californians to voluntarily reduce their water use by 15 percent from their 2020 levels. As a result, all the Partners continue to implement Water Shortage Contingency Plan stages consistent with achieving a 20 percent or greater reduction in water use.

Outreach Campaigns

Prior to the Governor's April drought emergency proclamation, Sonoma Water, its water contractors, and the other member agencies of the Partnership began

implementing an aggressive water saving outreach campaign in winter 2021 to raise awareness of the continued dry-year conditions and low water supply levels in the region, asking customers to eliminate water waste and adopt habits to use less. The campaign started as a paid social media effort and expanded in spring to become a broader multi-media marketing campaign. The campaign, called *It's a Dry Year. Save Water With Us*, included broadcast and streaming radio, weekly print ads in the Santa Rosa Press Democrat newspaper, online digital advertisements for both mobile and desktop devices, sponsored media content, and the development of a dedicated webpage that included weekly water supply updates and current activities being undertaken to affect water use reductions.

An outreach subcommittee of the Partnership began meeting twice monthly in early spring to assess the effectiveness of initial outreach efforts and to continue to grow the campaign in step with changing water supply conditions. A decision was made to shift the campaign to drought messaging and adoption of a new tag line, *Drought is Here. Save Water*. Ad placements for the new campaign began in May 2021 and continued throughout summer into fall. In addition to paid advertising, earned media grew markedly in the spring through summer months and brought greater public awareness of the drought conditions locally. This included a series of news articles in the Santa Rosa Press Democrat newspaper in March and April that featured calls to action to save water. Local water supply conditions also received regional televised news coverage featuring Sonoma Water staff interviews that emphasized the urgent need for water savings.

To increase drought awareness and encourage further water savings from efficiency upgrades, the Partnership held three regional giveaway events on June 12, August 21, and October 9. Called the *Drought Drop By*, the events provided free water saving kits including efficient showerheads, faucet aerators, 5-minute shower timers, hose nozzles, water saving tips-cards, incentive program information for lawn removal, irrigation equipment and appliance upgrades, as well as buckets for capture and reuse of warm-up and rinse water from showers and sinks. The June 12 event occurred at 17 locations in Marin, Sonoma, and Mendocino counties, distributing over 5,600 kits to the public. An additional 3,300 kits were handed out across three counties in August, with 1,100 more kits distributed during the October event. Both the June and August events garnered

television news coverage that served to amplify the drought message and the need to save water.

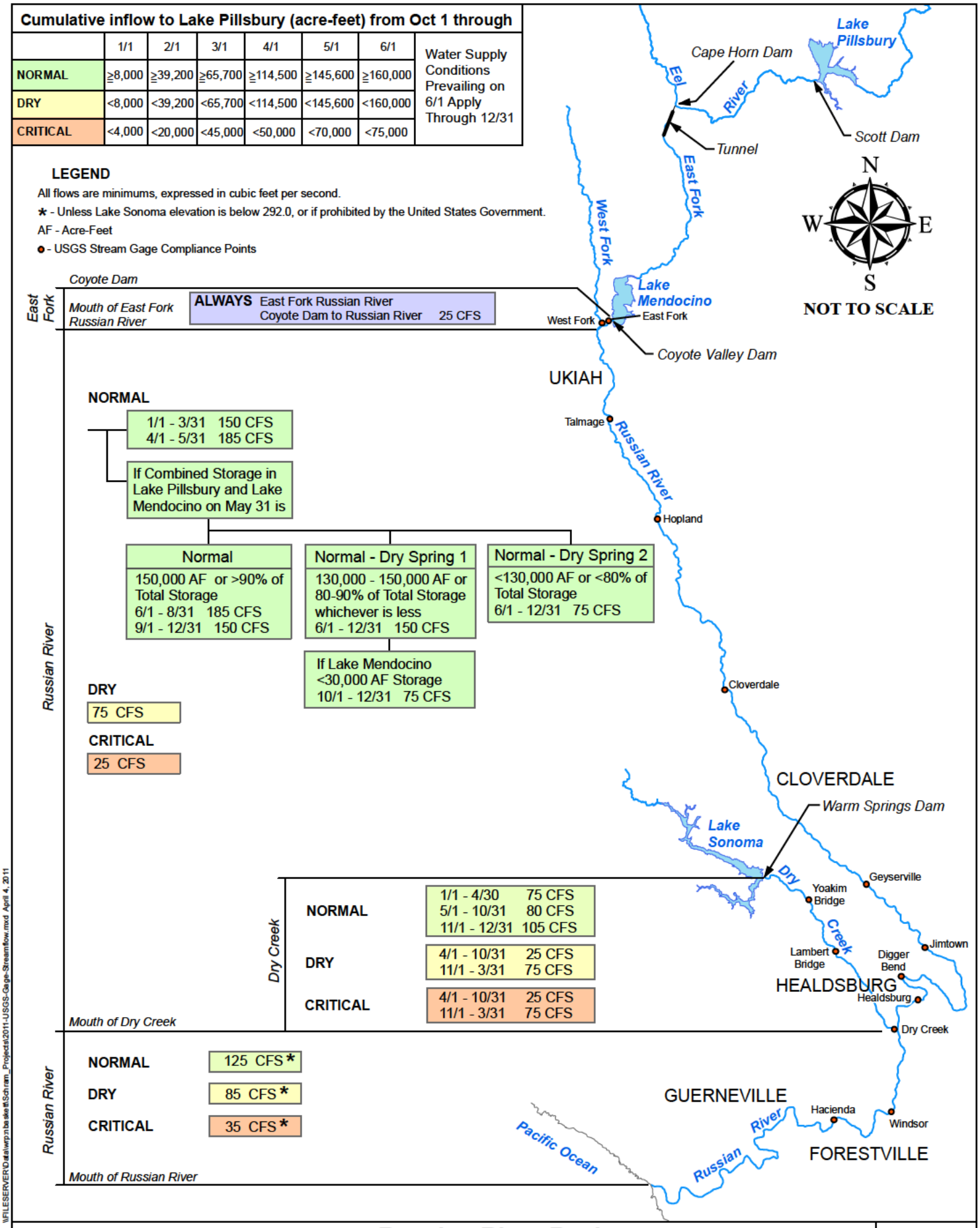
In addition to the *Drought Drop By*, the Partnership undertook several other outreach efforts. This included a regional *Saving Water Challenge* event from July through August, inviting participants to save water by implementing daily actions from a water saving tips list, with an opportunity to win water-saving prizes for entry. The Partnership also developed and marketed a *Trusted Messenger* video campaign featuring local businesses sharing the actions they and others are taking to save water. In October 2021, the Partnership sponsored a webinar series on the use of graywater as a drought-proof resource, providing instruction for Do-It-Yourself home installations of laundry systems, as well as permitted branched drain systems. Lastly, in late summer, work was undertaken to update the outreach campaign materials to keep the *Drought is Here, Save Water* message fresh, to add a focus on fall/winter cutbacks to outdoor irrigation, and to introduce a new *Super Water Saver* campaign for continued outreach through the winter months focused on indoor water saving actions. A media toolkit containing all these new materials was assembled and distributed to all the Partners for joint implementation of paid advertising including, print and digital news publications, social media platforms, and broadcast radio. Additional outreach work that has been completed from spring through fall includes the following:

- Printing and distribution of over 5,000 *Drought is Here, Save Water* yard signs
- Launched new Partnership website (https://www.savingwaterpartnership.org/) with easy to access drought information (ongoing)
- Water Supply Levels graphic updated weekly in the Santa Rosa Press Democrat newspaper and on Sonoma Water and Partnership's websites (ongoing)
- Water Saving Tips campaign at Sonoma County Fair's Summer Fun Fest
- Sonoma Water presentations to over two dozen community groups (ongoing)
- Over 150 media interviews conducted (ongoing)

Russian River Diversion Reduction

For the period July 1, 2021 through the issuance of the State Water Board's amended Order on October 22, 2021, (which temporarily suspended the 20 percent diversion reduction required of Term 11), Sonoma Water's contractors have achieved a 22.7 percent reduction in Russian River diversions as compared to the same period in 2020. This significant reduction in water use reflects both the efforts of customers who heeded the call for water savings and also from effective management and conjunctive use of local water supplies. The Partnership will continue implementing the *Drought is Here, Save Water* outreach campaign as water supply conditions warrant and consistent with meeting the Governor's statewide reduction goal.

Figures

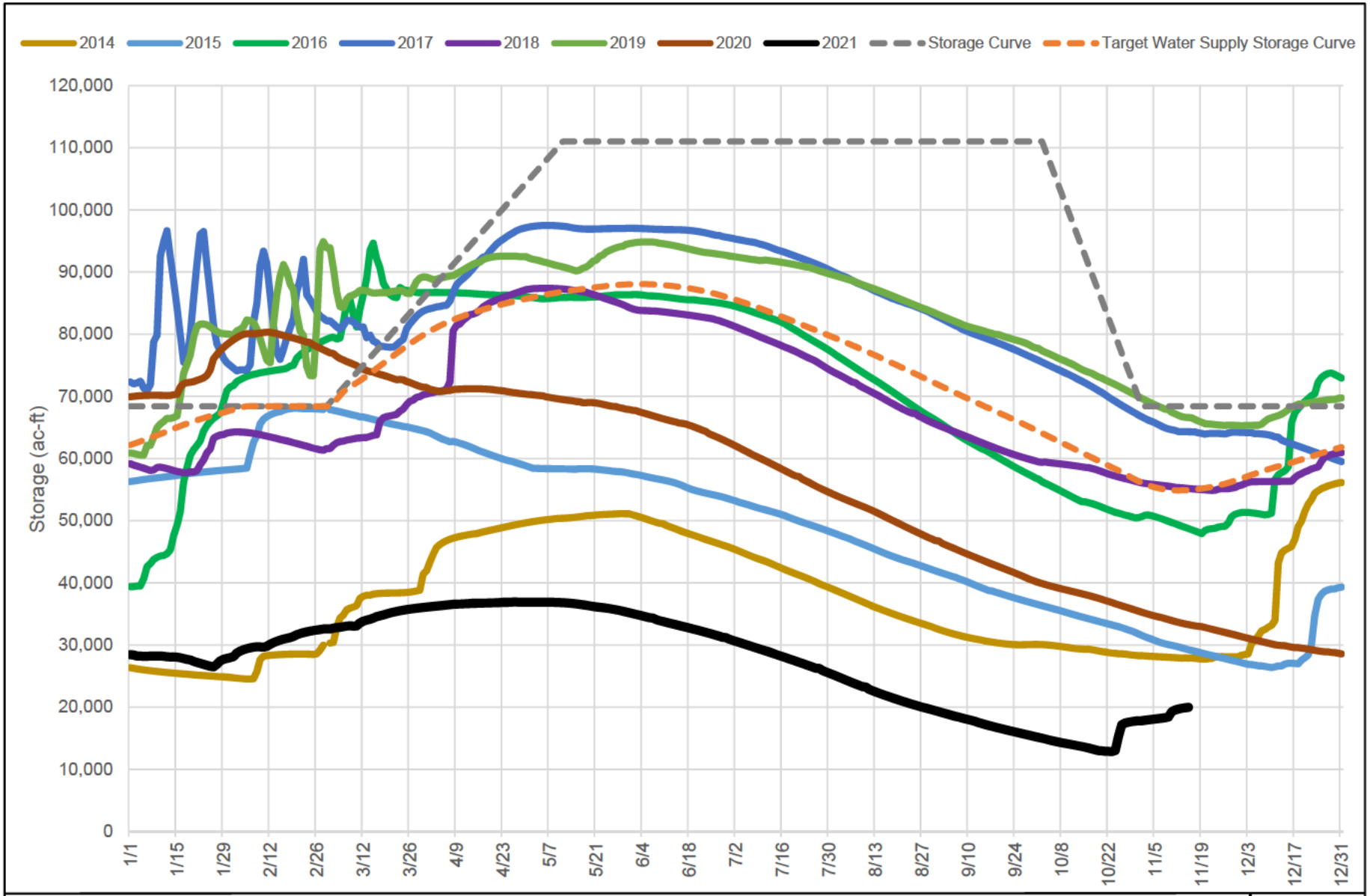


Sonoma Water

Russian River Basin Streamflow Requirements

Per State Water Resources Control Board Decision 1610, April 1986

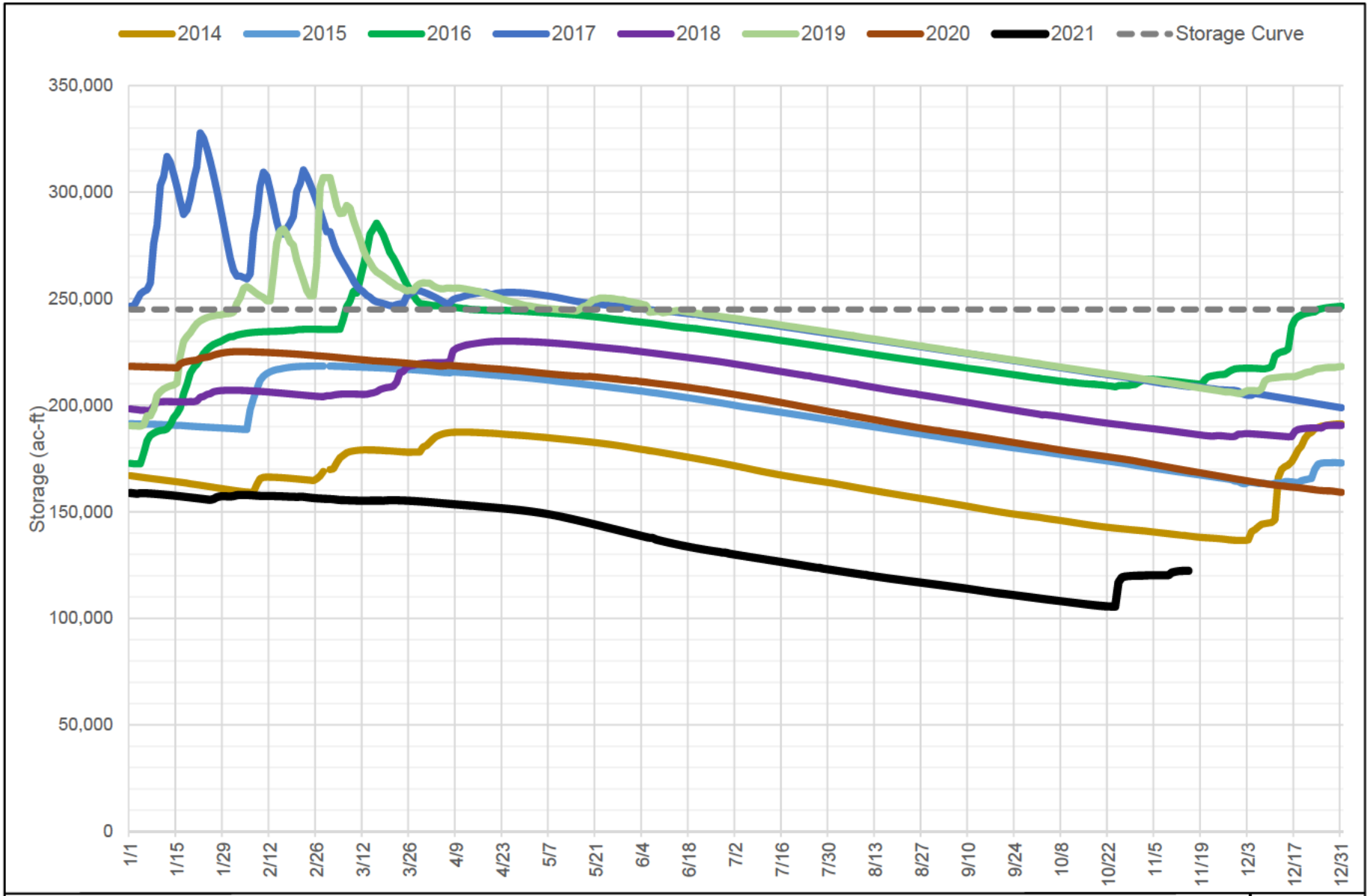
Figure 1



Sonoma Water

Lake Mendocino Storage Hydrograph (2014 - 2021)

Figure 2



Sonoma Water

Lake Sonoma Storage Storage Hydrograph (2014 - 2021)

Figure 3

Lake Mendocino Storage Threshold Analysis

The Lake Mendocino storage thresholds were determined 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 (1911 - 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 the Potter Valley Project (PVP), reservoir releases, major system tributaries and existing stream gage locations. Model reaches are defined as the length of river between each model junction. Within each reach gains associated with unimpaired flows and losses associated with municipal and industrial (M&I) diversions and/or other distributed demands are accounted for.

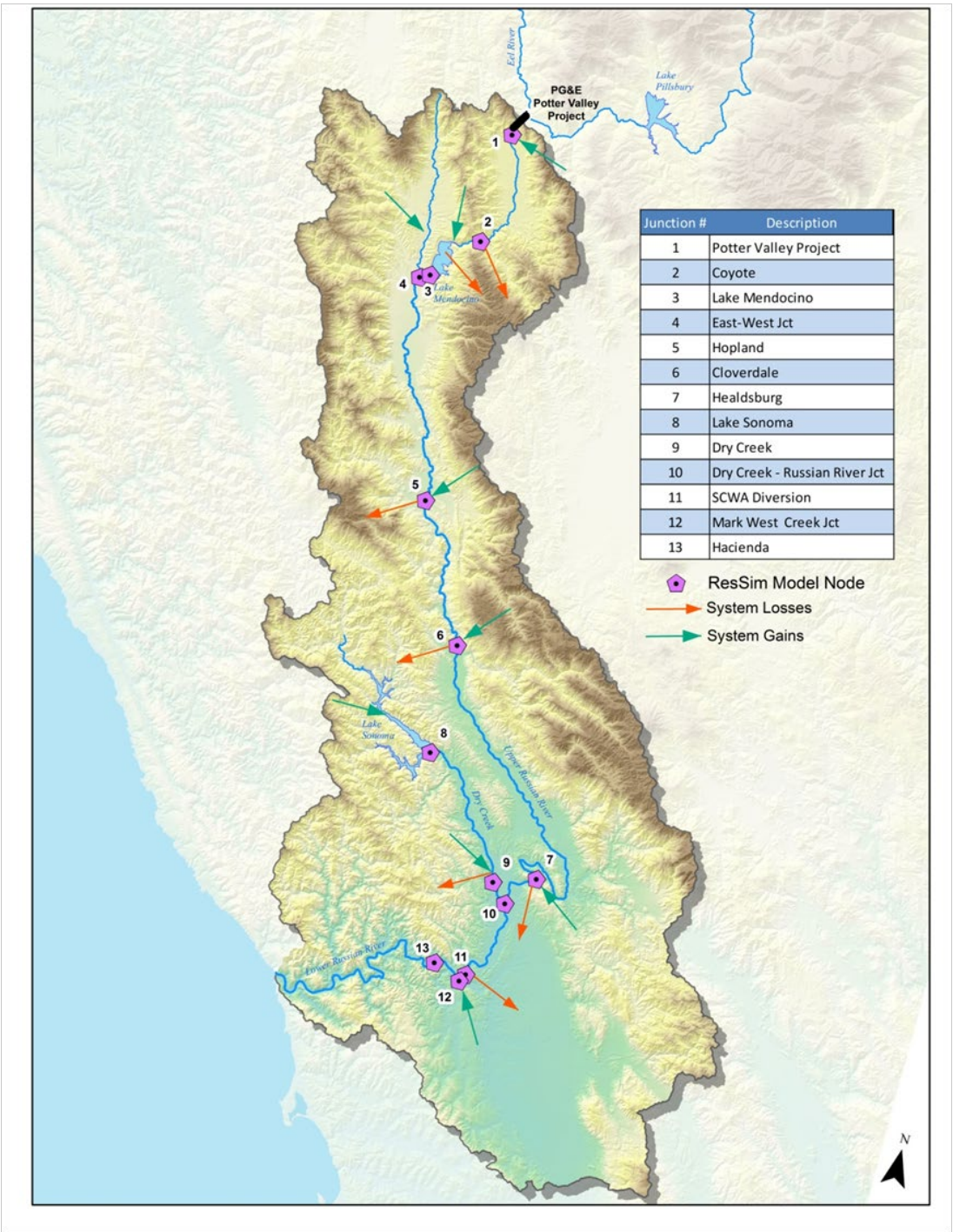


Figure 1: Russian River ResSim Model Schematic

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 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 water year 1911 through water year 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. Reservoir operations are defined by the 2004 FERC license amendment that implements the Reasonable Prudent Alternative recommended in the 2002 National Marine Fisheries Biological Opinion.

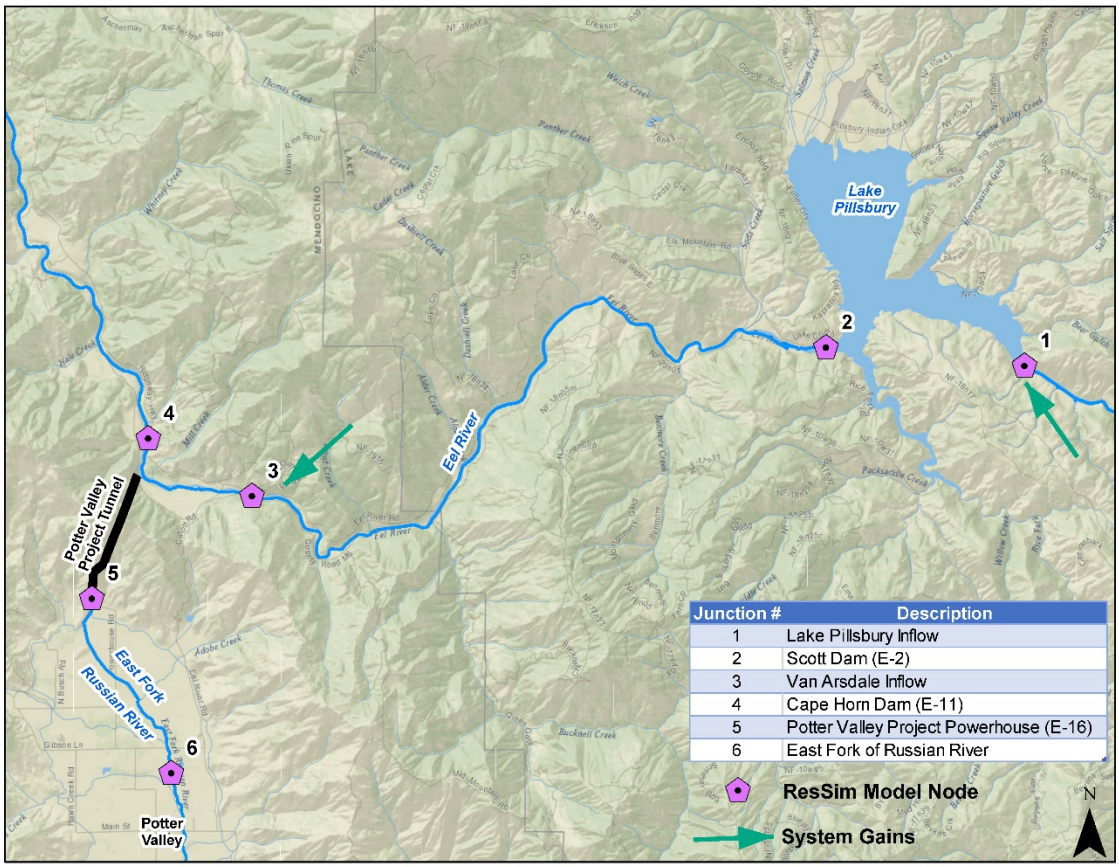


Figure 2: Potter Valley Project ResSim Model Schematic

Lake Mendocino Storage Thresholds

Based on a historical analysis of cumulative inflow into Lake Pillsbury from water year 1911 through water year 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 (WY1910 – WY2017) 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 2022. These storage thresholds, which were also requested in the Temporary Urgency Change Petition filed by Sonoma Water in December 2013, 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	6.5	11.2
1-Feb	78.4	13.1	8.4	80.4	14.0	5.7
1-Mar	86.0	9.3	4.7	86.1	7.4	6.5
1-Apr	86.9	10.3	2.8	89.3	7.0	3.7
1-May	86.9	11.2	1.9	90.2	6.0	3.7
1-Jun	87.9	10.3	1.9	93.5	2.8	3.7
Average	**85.5**	**10.6**	**3.9**	**86.9**	**7.3**	**5.8**

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

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 will apply to the Upper Russian River:

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

40,000 acre-feet as of January 1
59,000 acre-feet as of February 1
68,000 acre-feet as of March 1
69,500 acre-feet as of March 16
71,000 acre-feet as of April 1
70,000 acre-feet as of April 16
69,000 acre-feet as of May 1
67,500 acre-feet as of May 16
65,000 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
36,000 acre-feet as of February 1
52,000 acre-feet as of March 1
53,000 acre-feet as of March 16
54,000 acre-feet as of April 1
53,000 acre-feet as of April 16
52,000 acre-feet as of May 1
51,000 acre-feet as of May 16
50,000 acre-feet as of June 1

c. Normal water supply conditions exist in the absence of defined dry or critical water supply conditions.

State of California
State Water Resources Control Board
DIVISION OF WATER RIGHTS
P.O. Box 2000, Sacramento, CA 95812-2000
Tel: (916) 341-5300 Fax: (916) 341-5400
http://www.waterboards.ca.gov/waterrights

ENVIRONMENTAL INFORMATION FOR PETITIONS

This form is required for all petitions.

Before the State Water Resources Control Board (State Water Board) can approve a petition, the State Water Board must consider the information contained in an environmental document prepared in compliance with the California Environmental Quality Act (CEQA). This form is not a CEQA document. If a CEQA document has not yet been prepared, a determination must be made of who is responsible for its preparation. As the petitioner, you are responsible for all costs associated with the environmental evaluation and preparation of the required CEQA documents. Please answer the following questions to the best of your ability and submit any studies that have been conducted regarding the environmental evaluation of your project. If you need more space to completely answer the questions, please number and attach additional sheets.

DESCRIPTION OF PROPOSED CHANGES OR WORK REMAINING TO BE COMPLETED

For a petition for change, provide a description of the proposed changes to your project including, but not limited to, type of construction activity, structures existing or to be built, area to be graded or excavated, increase in water diversion and use (up to the amount authorized by the permit), changes in land use, and project operational changes, including changes in how the water will be used. For a petition for extension of time, provide a description of what work has been completed and what remains to be done. Include in your description any of the above elements that will occur during the requested extension period.

See 'Supplement to the November 2021 Temporary Urgency Change Petitions' for a summary of the requested changes.

Insert the attachment number here, if applicable: [ ]

Coordination with Regional Water Quality Control Board

For change petitions only, you must request consultation with the Regional Water Quality Control Board regarding the potential effects of your proposed change on water quality and other instream beneficial uses. (Cal. Code Regs., tit. 23, § 794.) In order to determine the appropriate office for consultation, see: http://www.waterboards.ca.gov/waterboards_map.shtml. Provide the date you submitted your request for consultation here, then provide the following information.

Date of Request: 11/5/2021

Will your project, during construction or operation, (1) generate waste or wastewater containing such things as sewage, industrial chemicals, metals, or agricultural chemicals, or (2) cause erosion, turbidity or sedimentation? ○ Yes ◉ No

Will a waste discharge permit be required for the project? ○ Yes ◉ No

If necessary, provide additional information below:

On November 5, 2021 at the weekly meeting with the fishery agencies and Bryan McFadin of the North Coast Regional Water Quality Control Board (NCRWQCB), this filing was discussed. These meetings are held per term 5 of the June 14, 2021 Temporary Urgency Change Order. This meeting addressed the pending filing of these temporary urgency change petitions and the potential impacts to water quality. An additional consultation meeting is planned for the week of November 15th for further discussions.

Insert the attachment number here, if applicable: [ ]

Local Permits

For temporary transfers only, you must contact the board of supervisors for the county(ies) both for where you currently store or use water and where you propose to transfer the water. (Wat. Code § 1726.) Provide the date you submitted your request for consultation here.

Date of Contact: [ ]

For change petitions only, you should contact your local planning or public works department and provide the information below.

Person Contacted: [ ] Date of Contact: [ ]

Department: [ ] Phone Number: [ ]

County Zoning Designation: [ ]

Are any county permits required for your project? If yes, indicate type below. ○ Yes ◉ No

☐ Grading Permit ☐ Use Permit ☐ Watercourse ☐ Obstruction Permit

☐ Change of Zoning ☐ General Plan Change ☐ Other (explain below)

If applicable, have you obtained any of the permits listed above? If yes, provide copies. ○ Yes ○ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable: [ ]

Federal and State Permits

Check any additional agencies that may require permits or other approvals for your project:

☐ Regional Water Quality Control Board ☐ Department of Fish and Game

☐ Dept of Water Resources, Division of Safety of Dams ☐ California Coastal Commission

☐ State Reclamation Board ☐ U.S. Army Corps of Engineers ☐ U.S. Forest Service

☐ Bureau of Land Management ☐ Federal Energy Regulatory Commission

☐ Natural Resources Conservation Service

Have you obtained any of the permits listed above? If yes, provide copies. ○ Yes ◉ No

For each agency from which a permit is required, provide the following information:

Agency	Permit Type	Person(s) Contacted	Contact Date	Phone Number

If necessary, provide additional information below:

Insert the attachment number here, if applicable: ☐

Construction or Grading Activity

Does the project involve any construction or grading-related activity that has significantly altered or would significantly alter the bed, bank or riparian habitat of any stream or lake? ○ Yes ◉ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable: ☐

Archeology

Has an archeological report been prepared for this project? If yes, provide a copy. ○ Yes ◉ No

Will another public agency be preparing an archeological report? ○ Yes ◉ No

Do you know of any archeological or historic sites in the area? If yes, explain below. ○ Yes ◉ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable: ☐

Photographs

For all petitions other than time extensions, attach complete sets of color photographs, clearly dated and labeled, showing the vegetation that exists at the following three locations:

☒ Along the stream channel immediately downstream from each point of diversion

☒ Along the stream channel immediately upstream from each point of diversion

☒ At the place where water subject to this water right will be used

Maps

For all petitions other than time extensions, attach maps labeled in accordance with the regulations showing all applicable features, both present and proposed, including but not limited to: point of diversion, point of rediversion, distribution of storage reservoirs, point of discharge of treated wastewater, place of use, and location of instream flow dedication reach. (Cal. Code Regs., tit. 23, §§ 715 et seq., 794.)

Pursuant to California Code of Regulations, title 23, section 794, petitions for change submitted without maps may not be accepted.

All Water Right Holders Must Sign This Form:

I (we) hereby certify that the statements I (we) have furnished above and in the attachments are complete to the best of my (our) ability and that the facts, statements, and information presented are true and correct to the best of my (our) knowledge. Dated 11.16.21 at Santa Rosa, CA.

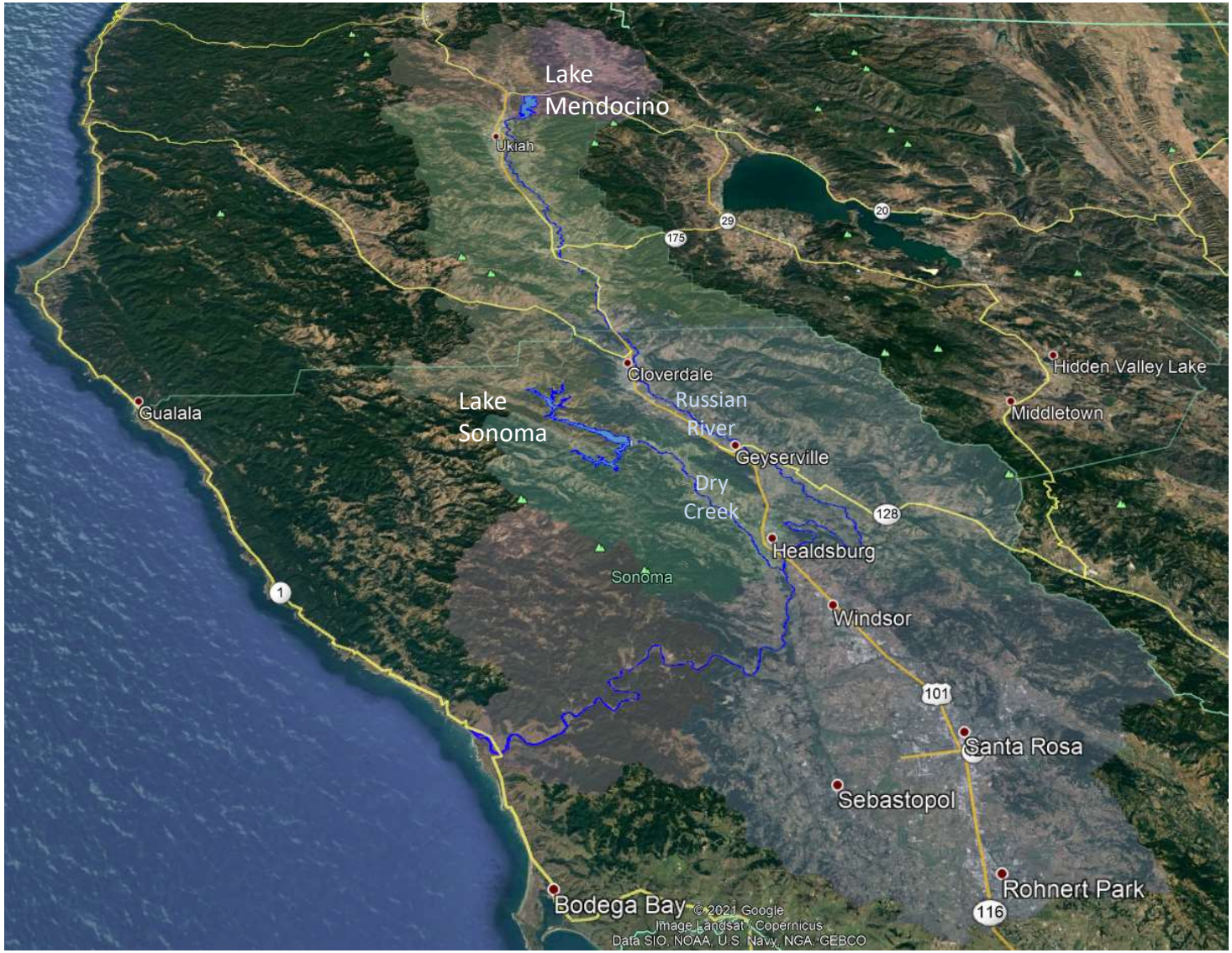
Water Right Holder or Authorized Agent Signature

Water Right Holder or Authorized Agent Signature

NOTE:

- **Petitions for Change may not be accepted unless you include proof that a copy of the petition was served on the Department of Fish and Game. (Cal. Code Regs., tit. 23, § 794.)**
- **Petitions for Temporary Transfer may not be accepted unless you include proof that a copy of the petition was served on the Department of Fish and Game and the board of supervisors for the county(ies) where you currently store or use water and the county(ies) where you propose to transfer the water. (Wat. Code § 1726.)**

SONOMA WATER
Russian River Watershed Place of Water Use



SONOMA WATER

Photographs of Russian River Downstream of River Diversion System at Mirabel Park on Oct 14, 2021

Mirabel Inflatable Dam





NOTICE OF EXEMPTION

TO: ☒ Office of Planning and Research
State Clearinghouse
1400 Tenth Street
Sacramento, CA 95814

☒ County Clerk
County of Sonoma
585 Fiscal Drive, Room 103
Santa Rosa, CA 95403

☒ County Clerk
County of Mendocino
501 Low Gap Road
Ukiah, CA 95482

FROM: Sonoma County Water Agency
404 Aviation Blvd.
Santa Rosa, CA 95403

Project Title: Petitions Requesting Approval of Temporary Urgency Changes in Water Right Permits 12947A, 12949, 12950, and 16596 in Mendocino and Sonoma Counties

Project Location- Specific: The proposed action would occur in Mendocino and Sonoma counties at Lake Mendocino, in the Upper Russian River from Coyote Valley Dam/Lake Mendocino to the confluence with Dry Creek, Dry Creek downstream of Warm Springs Dam/Lake Sonoma, and in the Lower Russian River from the confluence with Dry Creek to the Pacific Ocean. Figure 1 shows the minimum instream flow requirements for the Russian River system. Communities and cities along the Russian River include Ukiah, Hopland, Cloverdale, Geyserville, Healdsburg, Forestville, Mirabel Park, Rio Nido, Guerneville, Monte Rio, Duncans Mills, and Jenner.

Project Location – City: N/A **Project Location – County:** Mendocino and Sonoma

Description of Nature, Purpose and Beneficiaries of Project: The Sonoma County Water Agency (Sonoma Water) controls and coordinates water supply releases from the Coyote Valley Dam and Warm Springs Dam projects in accordance with the provisions of water rights Decision 1610, which the State Water Resources Control Board (State Water Board) adopted on April 17, 1986. Decision 1610 specifies the water supply conditions for the Russian River and the minimum instream flow requirements for the Upper Russian River, Dry Creek, and the Lower Russian River, which vary based on hydrological conditions and cumulative inflow into Lake Pillsbury as the hydrologic index (Figure 1).

Sonoma Water is filing temporary urgency change petitions (TUCP) requesting that storage thresholds in Lake Mendocino be used as the hydrologic index to determine the water supply condition in the Russian River watershed.

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/river operations to protect municipal water supply and listed salmon species in the Russian River.

In Sonoma Water's water right permits established under State Water Board's 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. PG&E has informed Sonoma Water that the transformer bank at the PVP powerhouse failed and will need to be replaced in order to convey water through the powerhouse for power generation. PG&E estimates it will take up to two years to replace the transformer bank at a cost of five to ten million dollars. It is highly uncertain whether PG&E will make the necessary repairs to continue power generation as its Federal Energy Regulatory Commission (FERC) operating license expires in April 2022. In January 2019, PG&E withdrew its Preliminary Application Document and Notice of Intent to relicense the project.

Currently, the PVP is rated at a flow rate up to 240 cubic feet per second (cfs) through the powerhouse for power generation. PG&E can bypass the powerhouse at flow rates up to 135 cfs to meet FERC license requirements for minimum instream releases into the East Branch Russian River and water supply contract requirements with the Potter Valley Irrigation District (PVID).

PG&E's transfer obligations to meet FERC license requirements and PVID contract amounts until April 14 is 45 cfs. PG&E has indicated that, without the ability to generate hydropower, it is unlikely PG&E will make discretionary transfers of Eel River water through the PVP above its 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 being met. Without the discretionary transfer of Eel River water to generate hydropower, the total transfer through the PVP will be reduced by up to 400 acre-feet per day.

Under these operating conditions of the PVP, 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.

In addition, current drought conditions continue to deplete storage in Lake Mendocino and Lake Sonoma. As of November 15, 2021, the water supply storage level in Lake Mendocino was 19,995 acre-feet (AF). This storage level is approximately 29 percent of the available water conservation pool for this time of year. This is the second lowest storage level for this time of year since Lake Mendocino filled in 1959. As of November 15, 2021 the water supply storage level in Lake Sonoma was 122,322 acre-feet. This storage level is approximately 50 percent of the available water conservation pool. This is the lowest storage level for this time of year since Lake Sonoma filled in 1986.

Consequently, Sonoma Water is requesting the State Water Board approve TUCPs that uses storage thresholds in Lake Mendocino as the hydrologic index to determine the water supply condition in the Russian River watershed.

Name of Public Agency Approving Project: State Water Resources Control Board – Division of Water Rights

Name of Person or Agency Carrying Out Project: Sonoma County Water Agency

Exempt Status (check one):

- ☐ Ministerial (Sec. 21080(b)(1); 15268);
- ☐ Declared Emergency (Sec. 21080(b)(3); 15269(a));
- ☒ Emergency Project (Sec.21080 (b)(4); 15269(b)(c)): Section 21080(b)(4) and State CEQA Guidelines 15269(c): Specific actions necessary to prevent or mitigate an emergency
- ☒ Categorical Exemption. State type and section number: State CEQA Guidelines 15307: Actions by Regulatory Agencies for Protection of Natural Resources; State CEQA Guidelines 15308: Actions by Regulatory Agencies for Protection of the Environment
- ☒ Exemption under Governor's April 21, 2021 emergency proclamation (Sec. 7): Government Code section 8571
- ☐ Statutory Exemptions. State Code number:

Reasons why project is exempt: The proposed action is statutorily exempt under California Environmental Quality Act (CEQA) Statute 21080(b)(4) and categorically exempt from CEQA under the State CEQA Guidelines Sections 15269(c), 15307 and 15308, and under Section 7 of the Governor's April 21 2021, emergency drought proclamation for the Russian River watershed, which remains in effect.

A. Actions to Prevent or Mitigate an Emergency

California Public Resources Code, Division 13, Section 21080(b)(4) provides that specific actions necessary to prevent or mitigate an emergency are exempt from CEQA. The emergency conditions are 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.

These emergency conditions also are demonstrated by Governor Newsom's April 21, 2021 proclamation of a drought emergency in Sonoma and Mendocino Counties due to drought conditions in the Russian River Watershed (Governor's Drought Proclamation). Section 7 of the Governor's Drought Proclamation suspends the requirements of CEQA for purposes of the State Water Board's consideration of modifying reservoir releases based on a representative hydrologic index, which would be a necessary element of an order granting the TUCP. The Governor has continued that proclamation for Sonoma and Mendocino Counties through further drought proclamations on May 10, July 8 and October 19, 2021.

In addition, the Sonoma County Board of Supervisors on April 27, 2021, proclaimed a local emergency due to drought conditions in the Sonoma County Operational Area (most recently continued on November 2, 2021) and the Mendocino County Board of Supervisors April 20, 2021, adopted a resolution declaring a local emergency and imminent threat of disaster in Mendocino County due to drought conditions.

B. Actions by Regulatory Agencies for Protection of Natural Resources and the Environment
CEQA Guidelines Sections 15307 and 15308 provide that actions taken by regulatory agencies to assure the maintenance, restoration or enhancement of a natural resource and the environment are categorically exempt. Sonoma Water is proposing temporary urgency changes to its water right Permits 12947A, 12949, 12950, and 16596 that the State Water Resources Control Board, as the regulatory agency, will consider and potentially approve. Those changes are necessary in order to maintain viable operations to support municipal use, protect listed salmon species, address water supply conditions at Lake Mendocino and Lake Sonoma, and prevent Lake Mendocino from declining to a storage level at which the reservoir may no longer be functional in light of the extremely dry hydrology the region experienced in water years 2020 and 2021. Approval of the TUCP would provide alternative storage thresholds and 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.

C. Governor's Drought Proclamation
Government Code section 8571 authorizes the Governor to suspend certain regulatory requirements, including CEQA, under emergency conditions. Section 7 of the Governor's April 21 Drought Proclamation suspended CEQA to address "the acutely dry conditions in the Russian River Watershed" through the State Water Board's consideration of modifications of reservoir releases "to ensure adequate, minimal water supplies for critical purposes." The Governor later issued drought proclamations on May 10, July 8 and October 19, 2021, but section 7 of his April 21 proclamation remains in effect. The TUCP's purpose is to modify the storage thresholds from Lake Pillsbury to Lake Mendocino to be used as the hydrologic index to determine the water supply condition in the Russian River watershed and is within the suspension of CEQA under section 7 of the Governor's Drought Proclamation.

Lead Agency Contact Person: Jessica Martini-Lamb **Area Code/Telephone/Extension:** 707-547-1903

Signature	General Manager *Title*	November 16, 2021 *Date*

☒ Signed by Lead Agency

☐ Signed by Applicant

Date received for filing at OPR:_____

Russian River Basin
Streamflow Requirements
Per State Water Resources Control Board Decision 1610, April 1986

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

	1/1	2/1	3/1	4/1	5/1	6/1	Water Supply Conditions Prevailing on 6/1 Apply Through 12/31
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	

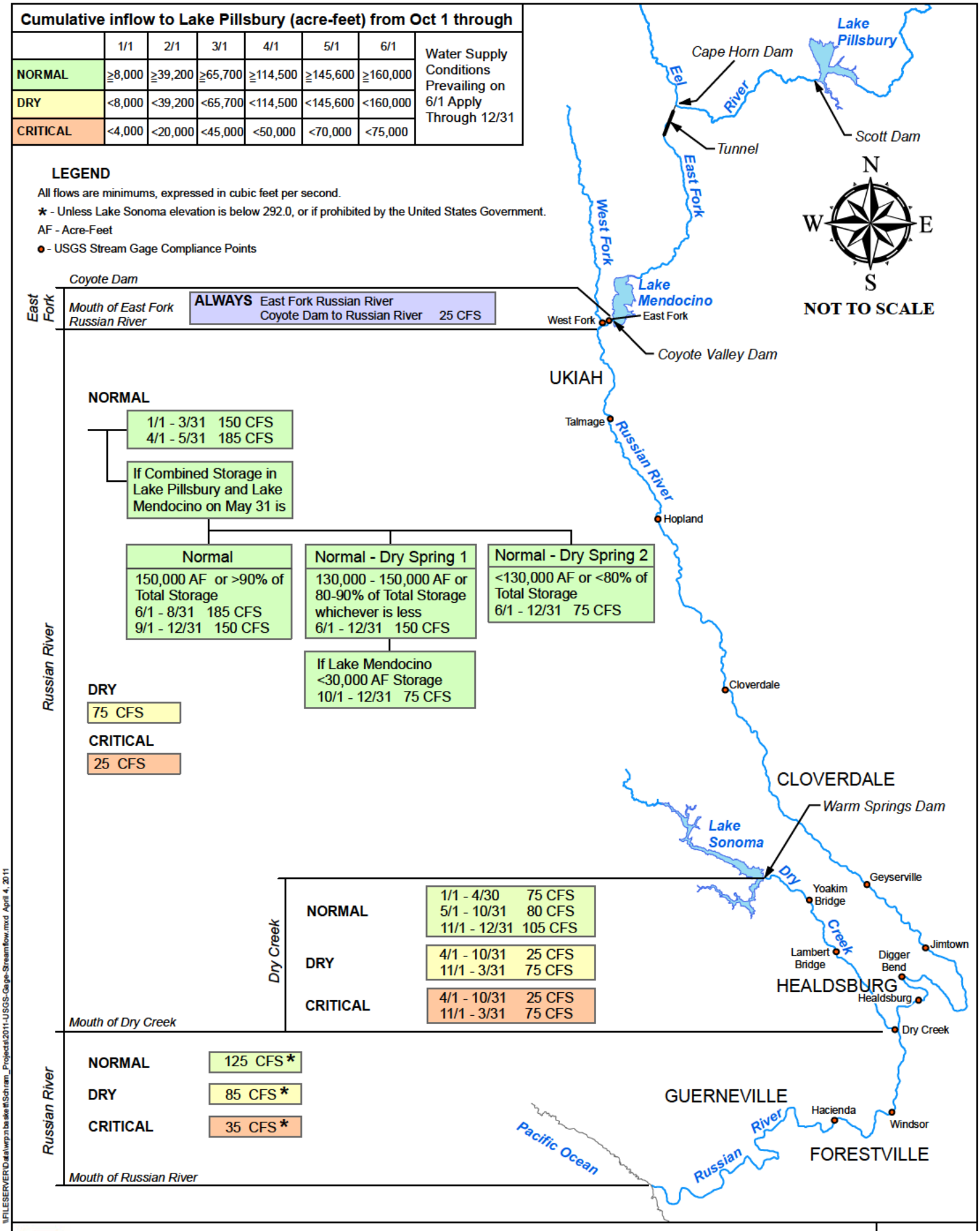
LEGEND

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



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

Russian River

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

Sonoma Water

Figure 1

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Appendix A-11

STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
STATE WATER RESOURCES CONTROL BOARD

DIVISION OF WATER RIGHTS

In the Matter of Permits 12947A, 12949, 12950, and 16596
(Applications 12919A, 15736, 15737, 19351)

Sonoma County Water Agency

ORDER APPROVING TEMPORARY URGENCY CHANGE

SOURCE: Dry Creek, Russian River, and East Fork Russian River

COUNTIES: Sonoma and Mendocino Counties

BY THE DEPUTY DIRECTOR FOR WATER RIGHTS:

1.0 SUBSTANCE OF TEMPORARY URGENCY CHANGE PETITION

On November 17, 2021, Sonoma County Water Agency (Sonoma Water) filed Temporary Urgency Change Petitions (TUCPs) with the State Water Resources Control Board (State Water Board), Division of Water Rights (Division) requesting approval of changes to the subject permits pursuant to California Water Code section 1435. The TUCPs request implementation of an alternative hydrologic index based on Lake Mendocino storage values starting December 11, 2021 (proposed hydrologic index). The proposed hydrologic index is requested in lieu of the hydrologic index contained in the subject permits that is based on cumulative Lake Pillsbury inflow (current hydrologic index). The hydrologic index is used to determine the applicable minimum instream flow requirements in Term 20 of Permit 12947A, Term 17 of Permits 12949 and 12950, and Term 13 of Permit 16596. Sonoma Water's proposed hydrologic index, for up to 180 days beginning December 11, 2021, is as follows:

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

40,000 acre-feet as of January 1
59,000 acre-feet as of February 1
68,000 acre-feet as of March 1
69,500 acre-feet as of March 16

71,000 acre-feet as of April 1
70,000 acre-feet as of April 16
69,000 acre-feet as of May 1
67,500 acre-feet as of May 16
65,000 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
36,000 acre-feet as of February 1
52,000 acre-feet as of March 1
53,000 acre-feet as of March 16
54,000 acre-feet as of April 1
53,000 acre-feet as of April 16
52,000 acre-feet as of May 1
51,000 acre-feet as of May 16
50,000 acre-feet as of June 1

c. Normal water supply conditions exist in the absence of defined dry or critical water supply conditions.

This temporary change is requested in response to the current extremely dry conditions, severely low storage levels in Lake Mendocino and Lake Sonoma, and the current hydrologic index not aligning with observed hydrologic conditions in the Russian River Watershed. The proposed change is also requested in response to the reported failure of the transformer bank of the Potter Valley Project (PVP) hydroelectric plant in October 2021 that will likely continue to result in a significant reduction in the inter-basin transfers of Eel River water into the Russian River Watershed.

2.0 BACKGROUND

Sonoma Water controls and coordinates water supply releases from Lake Mendocino and Lake Sonoma to implement the minimum instream flow requirements in accordance with its water rights, including permit terms implemented pursuant to Decision 1610, which the State Water Board adopted on April 17, 1986. Decision 1610 specifies minimum instream flow requirements for the Upper Russian River[1], Dry Creek, and the Lower Russian River[2]. These minimum instream flow requirements vary based on water supply conditions specified in Decision 1610 and are contained in Term 20 of Permit

[1] For purposes of this Order, Upper Russian River refers to the mainstem Russian River from its confluence with the East Fork Russian River to its confluence with Dry Creek.
[2] For purposes of this Order, the Lower Russian River refers to the mainstem Russian River from its confluence with Dry Creek to the Pacific Ocean.

12947A, Term 17 of Permits 12949 and 12950, and Term 13 of Permit 16596. Sonoma Water's operations are also subject to the National Marine Fisheries Service (NMFS) Russian River Biological Opinion issued in 2008.

2.2 Sonoma Water's Water Right Permits

The TUCPs involve the following water right permits held by Sonoma Water:

- Permit 12947A (Application 12919A), which authorizes direct diversion of 92 cubic feet per second (cfs) from the East Fork Russian River and storage of 122,500 acre-feet (AF or af) per year in Lake Mendocino from January 1 through December 31 of each year;

- Permit 12949 (Application 15736), which authorizes direct diversion of 20 cfs from the Russian River from January 1 through December 31 of each year;

- Permit 12950 (Application 15737), which authorizes direct diversion of 60 cfs from the Russian River from April 1 through September 30 of each year; and

- Permit 16596 (Application 19351), which authorizes direct diversion of 180 cfs from the Russian River from January 1 to December 31 of each year and storage of 245,000 AF in Lake Sonoma from October 1 of each year to May 1 of the succeeding year.

Term 20 of Sonoma Water's Permit 12947A states the following:

For the protection of fish and wildlife, and for the maintenance of recreation in the Russian River, permittee shall pass through or release from storage at Lake Mendocino sufficient water to maintain:

A. A continuous streamflow in the [East Fork Russian River] from Coyote Dam to its confluence with the Russian River of 25 cfs at all times.

B. The following minimum flows in the Russian River between the [East Fork Russian River] and Dry Creek:

1. During normal water supply conditions when the combined water in storage, including dead storage, in Lake Pillsbury and Lake Mendocino on May 31 of any year exceeds 150,000 af 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. *During normal water supply conditions and when the combined water in storage, including dead storage, in Lake Pillsbury and Lake Mendocino on May 31 of any year is between 150,000 af or 90 percent of the estimated water supply storage capacity of the reservoirs, whichever is less, and 130,000 af 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. *During normal water supply conditions and when the combined water in storage, including dead storage, in Lake Pillsbury and Lake Mendocino on May 31 of any year is less than 130,000 af 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*

4. *During dry water supply conditions* *75 cfs*

5. *During critical water supply conditions* *25 cfs*

C. *The following minimum flows in the Russian River between its confluence with Dry Creek and the Pacific Ocean to the extent that such flows cannot be met by releases from storage at Lake Sonoma under Permit 16596 issued on Application 19351:*

1. *During normal water supply conditions* *125 cfs*

2. *During dry water supply conditions* *85 cfs*

3. *During critical water supply conditions* *35 cfs*

Term 13 of Permit 16596 states the following:

For the protection of fish and wildlife in Dry Creek and the Russian River and for the maintenance of recreation in the Russian River, permittee shall pass through or release from storage at Lake Sonoma sufficient water to maintain:

A) *The following minimum flows in Dry Creek between Warm Springs Dam and its confluence with the Russian River:*

    1) *During normal water supply conditions:*

        75 cfs from January 1 through April 30
        80 cfs from May 1 through October 31
        105 cfs from November 1 through December 30

    2) *During dry or critical water supply conditions:*

        25 cfs from April 1 through October 31
        75 cfs from November 1 through March 31

B) *The following minimum flows in the Russian River between its confluence with Dry Creek and the Pacific Ocean, unless the water level in Lake Sonoma is below elevation 292.0 feet with reference to the National Geodetic Vertical Datum of 1929, or unless prohibited by the United States Government:*

    1) *During normal water supply conditions - 125 cfs*

    2) *During dry water supply conditions - 85 cfs*

    3) *During critical water supply conditions - 35 [cfs]*

Term 17 of Permit 12949 and Term 17 of Permit 12950 both state the following:

For the protection of fish and wildlife, and the maintenance of recreation in the Russian River, permittee shall allow sufficient water to bypass the points of diversion to maintain the following minimum flows to the Pacific Ocean:

(1) During normal water supply conditions: 125 cfs. . .

(2) During dry water supply conditions: 85 cfs

(3) During critical water supply conditions: 35 cfs

Water supply conditions established for the above flow requirements as required in Decision 1610 are defined in Term 20 of Permit 12947A, Term 17 of Permits 12949 and 12950, and Term 13 of Permit 16596 as follows:

1. *Dry water supply conditions exist when cumulative inflow to Lake Pillsbury beginning on October 1 of each year 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
   160,000 acre-feet as of June 1

2. *Critical water supply conditions exist when cumulative inflow to Lake Pillsbury beginning on October 1 of each year 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
   75,000 acre-feet as of June 1

3. *Normal water supply conditions exist in the absence of defined dry or critical water supply conditions. . .*

4. *The water supply condition designation for the months of July through December [shall] be the same as the designation for the previous June. Water supply conditions for January through June [shall] be redetermined monthly.*

5. *Cumulative inflow to Lake Pillsbury is the calculated algebraic sum of releases from Lake Pillsbury, increases in storage in Lake Pillsbury, and evaporation from Lake Pillsbury.*

Term 20 of Permit 12947A includes an additional provision:

6. *Estimated water supply storage space is the calculated reservoir volume below elevation 1,828.3 feet . . . in Lake Pillsbury and below elevation 749.0 [feet] in Lake Mendocino. Both elevations refer to the National Geodetic Vertical Datum . . . of 1929. The calculation shall use the most recent two reservoir volume surveys made by the U.S. Geological Survey (USGS), U.S. Army Corps of Engineers, or other responsible agency to determine the rate of sedimentation to be assumed from the date of the most recent reservoir volume survey.*

2.2 Current Drought Conditions and Response

The Russian River Watershed has experienced extremely dry conditions since 2020, with Water Year 2021 being the second driest year in the Ukiah Valley, and Water Year 2020 being the fourth driest, during the past 127 years of record. Lake Mendocino and Lake Sonoma are at or near their lowest levels since they began storing water in 1959 and 1984, respectively. As of November 15, 2021, the water supply storage level was 19,995 AF in Lake Mendocino, at approximately 29 percent of the available water conservation pool, which is the second lowest storage level for this time of the year since Lake Mendocino was filled in 1959. As of November 15, 2021, the water supply storage level was 122,322 AF in Lake Sonoma, which is the lowest storage level for this time of the year since Lake Sonoma was filled in 1986.

In addition to the extremely dry conditions in the past two years, the Russian River Watershed is expecting significantly less transfer water from the Eel River due to the PVP powerhouse failure. On October 7, 2021, Pacific Gas & Electric (PG&E) informed Sonoma Water that the transformer bank at the PVP powerhouse had failed and would need to be replaced to operate the powerhouse for power generation. Sonoma Water indicates it is highly uncertain that PG&E will make the costly repairs to continue power generation at PVP. PG&E's Federal Energy Regulatory Commission (FERC) license for PVP expires in April 2022, and PG&E withdrew its preliminary application document and notice of intent to relicense the project in January 2019.

In the TUCPs, Sonoma Water indicates the PVP can divert up to 240 cfs through the powerhouse into the East Fork Russian River under normal conditions. Sonoma Water also states that the PVP can separately bypass up to 135 cfs into the East Fork Russian River to meet both FERC license East Fork Russian River instream flow requirements and Potter Valley Irrigation District (PVID) water supply contract requirements. According to Sonoma Water, PG&E is currently bypassing 45 cfs into the East Fork Russian River to meet its stated FERC license obligations and PVID contract amounts until April 14, 2022. The transfer requirement to the East Fork Russian River will reportedly be reassessed based on the water supply conditions after that. PG&E has indicated that without powerhouse operation, it will be unlikely to make discretionary transfers of Eel River water through the PVP above its FERC license and contract obligations. Sonoma Water states that the total transfer through the PVP will be reduced by up to 400 AF per day without the discretionary transfer of Eel River water from hydropower generation, resulting in a significant reduction of a source of inflow to Lake Mendocino.

Sonoma Water states that under these operating conditions of the PVP, the influence of the Eel River water imports on Lake Mendocino water storage and 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. The TUCPs request that storage thresholds in Lake Mendocino be used directly as the hydrologic index to determine the

water supply condition in the Russian River Watershed. The same storage thresholds were requested by Sonoma Water in prior TUCPs approved in December 2013 and February 2021.

The current severe water supply shortage in the Russian River Watershed, particularly the Upper Russian River, resulting from two consecutive extremely dry years, has been recognized by both the state and local governments. On April 21, 2021, Governor Gavin Newsom proclaimed a regional drought emergency for the Russian River Watershed in Mendocino and Sonoma counties. The Governor has continued the drought emergency proclamation for Sonoma and Mendocino counties through further drought proclamations on May 10, July 8, and October 19, 2021. On April 20, 2021, Mendocino County declared a local emergency and imminent threat of disaster in Mendocino County due to drought conditions. On April 27, 2021, Sonoma County also adopted a resolution proclaiming a local drought emergency due to drought conditions in Sonoma County. On June 15, 2021, the State Water Board adopted an emergency regulation for the Curtailment of Diversions to Protect Water Supplies and Threatened and Endangered Fish in the Russian River Watershed (Cal. Code Regs., tit. 23, §§ 877-879.2). Consequently, on August 2, 2021, the State Water Board issued curtailment orders to Upper Russian River Watershed diverters. On August 10, 2021, the State Water Board issued curtailment orders to Lower Russian River Watershed diverters. Due to temporary high flows resulting from atmospheric river conditions, curtailments were temporarily suspended on October 21, 2021, in the Lower Russian River Watershed and on October 23, 2021, in the Upper Russian River Watershed. Temporary curtailment suspensions will likely remain in place through the month of December, based on current forecasts. Curtailments may resume in early January 2022 unless additional precipitation beyond what is currently forecasted occurs.

Sonoma Water has filed three previous sets of TUCPs since June 2020 to address the current drought. On July 28, 2020, in Order WR 2020-0102-EXEC (2020 TUCP order), the State Water Board approved Sonoma Water's TUCPs to temporarily reduce the minimum instream flow requirements in the Russian River. After the 2020 TUCP order expired on December 27, 2020, Sonoma Water filed another TUCP for Permit 12947A in January 2021 to change the hydrologic index that is the subject of this Order. The State Water Board issued an order approving the TUCP on February 4, 2021, and approved clarifying amendments to the order on February 11, 2021. Sonoma Water filed the third set of TUCPs in May 2021 to address the critical drought conditions in the whole Russian River Watershed. The TUCPs were approved on June 14, 2021, in Order WR 2021-0056-EXEC (June 2021 TUCP order), and amended on October 22, 2021, to adjust diversion reductions required under Condition 11 to reflect the temporary but continuing high flow conditions described above.

Decision 1610 established the current hydrologic index, in which water supply conditions are classified as "normal," "dry," or "critical" based on cumulative inflow into Lake Pillsbury (in the adjacent Eel River Watershed) beginning October 1 of each year. From October 1, 2020, to May 31, 2021, the cumulative inflow into Lake Pillsbury was

82,215 AF. Consequently, the water supply condition is categorized as dry for the remainder of 2021. Sonoma Water is currently managing the Russian River instream flows based on a critical water supply condition as authorized by the June 2021 TUCP order. The State Water Board's June 2021 TUCP order expires after December 10, 2021, at which point, under the current hydrologic index, the water supply condition would change back to dry for the remainder of the calendar year. The corresponding minimum instream flow requirements would become 75 cfs in Dry Creek and the Upper Russian River and 85 cfs in the Lower Russian River.

From October 1, 2021, to November 14, 2021, the cumulative in flow into Lake Pillsbury was 41,947 AF. Consequently, pursuant to the current hydrologic index under Decision 1610, the water supply condition would be categorized as normal for at least from January 1 through February 2022, with a minimum instream flow requirement of 150 cfs on the Upper Russian River and 125 cfs on the Lower Russian River. Without an additional temporary urgency change order approving the requested changes, Sonoma Water would be required to be released from Lake Mendocino and Lake Sonoma, actions which could deplete the reservoirs to severely low levels. As stated above, storage conditions at both Lake Mendocino and Lake Sonoma are currently exceptionally low.

The normal water supply conditions designated by the current hydrologic index were premised on the PVP's substantial transfers of water from the Eel River to the East Fork Russian River (see, e.g., Decision 1610, p. 5) and do not accurately reflect the present severe drought conditions in the Upper Russian River despite Lake Pillsbury cumulative inflows. Sonoma Water's proposed temporary urgency change would maintain the reasoning on which Decision 1610's minimum instream flow requirements are based by relying on the same statistical distribution of hydrologic conditions used by Decision 1610. Sonoma Water's proposed temporary urgency change would use Lake Mendocino storage, rather than cumulative inflow into Lake Pillsbury, as the basis for defining the applicable hydrologic condition. This proposed temporary urgency change would implement minimum instream flow requirements under Decision 1610 that would adjust to changes in the Upper Russian River Watershed hydrologic conditions. Streamflow requirements would increase if additional seasonal rainfall results in Lake Mendocino storage increasing or remaining above the volumes specified in the proposed hydrologic index.

3.0 COMPLIANCE WITH CALIFORNIA ENVIRONMENTAL QUALITY ACT

Ordinarily, the State Water Board must comply with applicable requirements of the California Environmental Quality Act (Pub. Resources Code, § 21000 et seq.) (CEQA) prior to issuance of any order approving a TUCP. (Cal. Code Regs., tit. 23, § 805.) However, the Governor's April 21, 2021 Drought Emergency Proclamation, ordering paragraph 7 suspended CEQA and regulations adopted pursuant to CEQA in Mendocino and Sonoma Counties, to the extent necessary for the State Water Board to

address drought-related impacts through "[m]odifying requirements for reservoir releases or diversion limitations" in the Russian River Watershed "to ensure adequate, minimal water supplies for critical purposes." Sonoma Water's requests to temporarily modify the hydrologic index in its water rights permits—and thereby temporarily modify reservoir release and instream flow requirements in the Russian River—due to historically dry conditions qualify for this suspension under the Governor's April 21, 2021 Drought Emergency Proclamation. In conjunction with approving this Order, the State Water Board will add the activities approved under this Order to its list of suspended projects on its website.

In addition to the Governor's suspension of CEQA covering the activities proposed and approved under this Order, Sonoma Water determined that the requested water right changes are categorically exempt under CEQA's emergency statutory exemption and Class 7 and 8 categorical exemptions. Sonoma Water filed a Notice of Exemption on November 16, 2021. The State Water Board has reviewed the information submitted by Sonoma Water and has made its own independent finding that the requested changes are statutorily and categorically exempt from CEQA. The changes sought by the TUCPs are consistent with the following statutory and categorical CEQA exemptions for the following reasons:

1) As mentioned above, on April 21, 2021, the Governor proclaimed a drought emergency in Mendocino and Sonoma counties due to drought conditions in the Russian River Watershed. The Governor's Drought Emergency Proclamation ordered the State Water Board to consider specific actions to "ensure adequate, minimal water supplies for critical purposes." Information provided by Sonoma Water demonstrates that continued releases of water to maintain minimum instream flows required by Sonoma Water's current water right permit terms could contribute to storage levels in Lake Mendocino and Lake Sonoma declining to unsafe levels. As discussed in this Order, if storage in Lake Mendocino and Lake Sonoma are depleted, there will be serious water supply impacts to human health and safety, and water will not be available to protect aquatic life, including threatened and endangered species in the Russian River. Approval of the TUCPs is therefore necessary to prevent and mitigate loss of, or damage to, the environment, fishery resources, property, public health and safety, and essential public services. Accordingly, the project is statutorily exempt from CEQA because it is necessary to prevent or mitigate an emergency—in this case, a proclaimed drought emergency—that poses a clear and imminent danger. (Pub. Resources Code, §§ 21060.3 & 21080, subd. (b)(4); Cal. Code Regs., tit. 14, § 15269, subd. (c).)

2) A Class 7 categorical exemption "consists of actions taken by regulatory agencies as authorized by state law or local ordinance to assure the maintenance, restoration, or enhancement of a natural resource where the regulatory process involves procedures for protection of the environment." (Cal. Code Regs., tit. 14, § 15307.) The proposed action is necessary for

maintenance of viable operations to support municipal use and protect listed salmonid species in the Russian River by preventing Lake Mendocino from declining to a storage level at which the reservoir may no longer be operational in light of the extremely dry condition the region has been experiencing. Accordingly, these changes are categorically exempt from CEQA pursuant to a Class 7 exemption.

3) A Class 8 categorical exemption "consists of actions taken by regulatory agencies, as authorized by state or local ordinance, to assure the maintenance, restoration, enhancement, or protection of the environment where the regulatory process involves procedures for protection of the environment." (*Id*., § 15308.) The proposed action will assure the maintenance of the environment (i.e., the instream environment of the Russian River) in the same way as stated for the Class 7 categorical exemption, and the proposed temporary changes are also therefore categorically exempt under Class 8.

4.0 PROCEDURAL REQUIREMENTS CONCERNING THE TEMPORARY URGENCY CHANGE PETITION

Pursuant to Water Code section 1438, subdivision (a), the State Water Board may issue a temporary urgency change order in advance of the required notice. The State Water Board will issue and deliver to Sonoma Water, as soon as practicable, a notice of the temporary urgency change order pursuant to Water Code section 1438. Pursuant to Water Code section 1438, subdivision (b)(1), Sonoma Water is required to publish the notice in a newspaper having a general circulation, and that is published within the counties where the points of diversion lie. In addition, the State Water Board will post the notice of the temporary urgency change order on its website and will distribute the notice through an electronic notification system.

Any interested person may file an objection to a temporary urgency change. (*Id.*, subd. (d).) The State Water Board must promptly consider the objection and may hold a hearing on any objection. *(Id.*, subd. (e).) The State Water Board exercises continuing supervision over temporary urgency change orders and may modify or revoke temporary urgency change orders at any time. (Wat. Code, §§ 1439, 1440.) Temporary urgency change orders automatically expire 180 days after issuance, unless they are revoked, an earlier expiration date is specified, or they are renewed. (*Id*., §§ 1440, 1441.)

5.0 CRITERIA FOR APPROVING THE PROPOSED TEMPORARY URGENCY CHANGE

Water Code section 1435 provides that a right holder who has an urgent need to change the point of diversion, place of use, or purpose of use from that specified in the

water right may petition for a conditional temporary change order. The State Water Board's regulations set forth the filing and other procedural requirements applicable to TUCPs. (Cal. Code Regs., tit. 23, §§ 805, 806.) The State Water Board's regulations also clarify that requests for changes to permits or licenses other than changes in point of diversion, place of use, or purpose of use may be filed, subject to the same filing and procedural requirements that apply to changes in point of diversion, place of use, or purpose of use. (*Id*., § 791, subd. (e).)

Before approving a TUCP, the State Water Board must make the following findings: (1) the right holder 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. (Wat. Code, § 1435, subd. (b)(1-4).)

A temporary change order does not result in the creation of a vested right, even of a temporary nature, but shall be subject at all times to modification or revocation in the discretion of the State Water Board. (Wat. Code, § 1440.)

5.1 Urgency of the Proposed Change

Under Water Code section 1435, subdivision (c), an "urgent need" means "the existence of circumstances from which the [State Water Board] may in its judgment conclude 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 . . . ."

In this case, an urgent need exists for the proposed change in the hydrologic index for determining minimum instream flow requirements in the Russian River. As described in the TUCPs, cumulative inflow into Lake Pillsbury does not reflect hydrologic or water supply conditions in the Russian River Watershed; storage levels in Lake Mendocino and Lake Sonoma are currently at or near the lowest levels for this time of the year since they were filled, but the current hydrologic index per Decision 1610 indicates conditions are dry for the remainder of this year and normal starting in January 2022. Furthermore, the Russian River Watershed is experiencing significant reductions of Eel River transfers through the PVP due to inoperability of the powerhouse for the foreseeable future. The current hydrologic index under Decision 1610, which is based on cumulative inflow into Lake Pillsbury, is not applicable to water supply conditions in the Russian River due to the changes in PVP operations.

Without the proposed change, Decision 1610's applicable minimum instream flow requirements may require releases of water from Lake Mendocino and Lake Sonoma at levels that would contribute to significant depletions of reservoir storage and potential elimination of water supplies for water users in Mendocino, Sonoma, and Marin Counties if the current drought continues into 2022. Such depletion or possible

elimination of stored water supplies would risk serious impacts to human health and safety and fishery protection. Extremely low storage levels may result in loss of the cold-water pool in Lake Mendocino that is needed to support listed Russian River salmonid fishery species in the fall, and may cause increased total dissolved solid or mercury concentrations if lake-bottom sediments become displaced due to reservoir operation at low storage levels.

Water Code section 1435, subdivision (c) also states that the State Water Board shall not find a petitioner's need to be urgent if it concludes that the petitioner has not exercised due diligence either in petitioning for a change pursuant to provisions other than a TUCP or in pursuing that petition for change. As noted in the State Water Board's February 2021 order approving Sonoma Water's TUCP for Permit 12947A, a number of factors have hindered action on Sonoma Water's long-term change petitions to modify Decision 1610 and Permits 12947A, 12949, 12950, and 16596. As required as a condition of that order, Sonoma Water has provided a schedule of milestones and completion dates for further actions necessary to act on its long-term change petitions. In its report dated April 1, 2021, Sonoma Water stated that it planned to submit amended petitions for long-term water right changes in Fall 2021, to recirculate a draft environmental impact report (EIR) for the proposed project in December 2021, and to both certify a final EIR and approve a final project in September 2022. Sonoma Water has been meeting with the State Water Board staff regularly on progress of its long-term petitions while it continues to work on the Fish Habitat Flows and Water Rights Project Draft EIR. However, Sonoma Water has stated that the long-term petitions and draft EIR have been delayed due to the dire drought last summer and changes in the PVP. Sonoma Water plans to provide an update on status of the long-term petitions and draft EIR in January 2022. In light of these circumstances and representations, the State Water Board finds that Sonoma Water has exercised due diligence. Sonoma Water must continue to diligently pursue its stated course of action, as outlined in its report and schedule, but there is also an urgent need now, during the current critical water conditions and ongoing drought emergency, to grant Sonoma Water's TUCPs.

5.2 No Injury to Any Other Lawful User of Water

Under Decision 1610 and the terms and conditions of its associated water rights permits, Sonoma Water is required to maintain specified flows in the Russian River from Lake Mendocino to the Russian River's confluence with the Pacific Ocean. This Order retains these existing minimum instream flow requirements but temporarily changes the circumstances under which "normal," "dry," or "critical" water supply conditions will apply. Minimum instream flows will continue to be maintained under this Order consistent with hydrologic conditions within the Russian River Watershed. It is anticipated that all other lawful users of water will be able to divert and use the amounts of water to which they are legally entitled during the period specified in this Order. Other legal users of water will not be injured by reduction in releases of previously stored water because water released from storage is not available for diversion by downstream users with an independent basis of right. (See, e.g., *North Kern Water*

Storage Dist. v. Kern Delta Water Dist. (2007) 147 Cal.App.4th 555, 570 [when the stored water is released for use, it is not part of the river's natural flow and rediversion of this water does not count toward the appropriator's current allocation of river water]; *State Water Resources Control Bd. Cases* (2006) 136 Cal.App.4th 674, 737-745 [a riparian or appropriator has no legally protected interest in other appropriators' stored water or in the continuation of releases of stored water].)

In conjunction with other actions in response to the current drought state of emergency within the Russian River Watershed, the State Water Board will supervise diversion and use of water under this Order for the protection of all other lawful users of water pursuant to Water Code section 1439.

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

Prior to approval of a TUCP, the State Water Board must find that the proposed change may be made without unreasonable effect upon fish, wildlife, or other instream beneficial uses. In addition, the State Water Board has an independent obligation to consider the effect of approval of Sonoma Water's petitions on public trust resources and to protect those resources where feasible. (*National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419 [189 Cal.Rptr. 346].) Public trust resources may include, but are not limited to, wildlife, fish, aquatic dependent species, streambeds, riparian areas, tidelands, and recreation in navigable waterways, as well as fisheries located in non-navigable waterways. It is also the policy of this state that all state agencies, boards, and commissions shall seek to conserve endangered species and threatened species and shall use their authority in furtherance of the purposes of the California Endangered Species Act (Fish & G. Code, § 2050 et seq.). State agencies should not approve projects that would jeopardize the continued existence of any endangered species or threatened species if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat that would prevent jeopardy. (Fish & G. Code, §§ 2053 & 2055.)

Although relying on Lake Mendocino storage thresholds to define the water supply conditions may result in lower instream flows in the Russian River than would ordinarily be required under Sonoma Water's permits, maintenance of stored water in Lake Mendocino and Lake Sonoma for subsequent release is crucial for ensuring sufficient water supplies for human health and safety use and maintaining habitat for threatened and endangered fish species during the critical life stages that occur during the fall. With the conditions imposed by this Order, including ongoing efforts to support water conservation and regular monitoring and reporting of conditions by Sonoma Water, the State Water Board finds that granting the proposed temporary changes will not have an unreasonable effect on fish, wildlife, or other instream beneficial uses and protects public trust resources to the extent feasible. The State Water Board will continue to evaluate conditions in the watershed throughout the duration of this Order and consider

other actions that may further the protection fish, wildlife, and other instream beneficial uses.

5.3.1 Consultation with Other Agencies

Sonoma Water has consulted with the California Department of Fish and Wildlife (CDFW), NMFS, and North Coast Regional Water Quality Control Board (North Coast Water Board) regarding filing the TUCPs and the effects of the proposed changes.

NMFS submitted a letter on December 3, 2021 in support of Sonoma Water's TUCPs 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. NMFS's 2008 Biological Opinion addresses the need for modifying minimum instream flow requirements to: 1) protect salmonid species listed under the federal Endangered Species Act, including threatened California Coastal (CC) Chinook salmon (*Onchorynchus [O.] tshawyscha*), endangered Central California Coast (CCC) coho salmon (*O. kisutch*), and threatened CCC steelhead trout (*O. mykiss*), residing in the Russian River; and 2) address water supply conditions at Lake Mendocino and Lake Sonoma to maintain viable operations that support municipal water distribution. The December 3, 2021 letter indicates that the proposed TUCPs meet both objectives towards preventing Lake Mendocino from declining to a storage level at which the reservoir may no longer be operational. NMFS has requested additional terms and conditions be included to any order issued by the State Water Board to provide water needed to protect listed salmonids in the Russian River. NMFS's requested terms and conditions in the December 3, 2021 letter are included in this Order to prevent unreasonable effects on fish and wildlife in the near term while preserving water needed for protecting salmonid species in the Russian River in the longer term.

To allow for adaptive management of releases from Lake Mendocino, this Order requires Sonoma Water to provide weekly updates to the State Water Board, CDFW, NMFS, and the North Coast Water Board regarding the current hydrologic and water quality conditions for the Russian River. This Order also requires Sonoma Water to initiate additional consultation with the North Coast Water Board on additional water quality monitoring activities if any water quality issues of concern are observed. This information will assist the State Water Board in determining whether additional actions or modifications to this Order are necessary.

5.3.2 CONSERVATION

Sonoma Water is actively engaged in water conservation to reduce demands on water stored in Lake Mendocino and Lake Sonoma for municipal supply. Sonoma Water and its water contractors have implemented water use efficiency programs to comply with the California Water Conservation Act since the establishment of the Sonoma-Marin Water Saving Partnership (Partnership) in 2010. The Partnership represents twelve

North Bay water utilities in Sonoma and Marin counties that have joined to provide regional solution for water use efficiency.

As stated in the TUCPs, Sonoma Water, its water contractors, and other members of the Partnership continued implementing an aggressive water saving outreach campaign since winter 2020. The campaign started as a paid social media campaign in winter and expanded in spring to become a broader multi-media effort. To increase drought awareness and encourage further water savings from efficiency upgrades, the Partnership held three regional giveaway events on June 12, August 21, and October 9, in addition to several other outreach efforts. Sonoma Water's contractors also spent additional funds for outreach beyond what is being coordinated by the Partnership and through Sonoma Water.

As part of its Urban Water Management Plan, Sonoma Water has also implemented a Water Shortage Contingency Plan (WSCP) that will, in certain water shortage circumstances, require a 20%, 30%, 40%, or greater percentage reduction in diversions. This plan has reportedly been incorporated into Section 3.5 of the Restructured Agreement for Water Supply with its contractors and similarly applied to its other wholesale customers. In addition to the declared drought emergency within the Russian River Watershed and the water shortage conditions noted by Sonoma Water, the Governor's October 19, 2021 drought emergency proclamation directed local water suppliers to execute their WSCPs and agricultural Drought Plans "at a level appropriate to local conditions that takes into account the possibility of a third consecutive dry year." Sonoma Water states that, as of the time of its filing the TUCPs on November 17, 2021, all members of the Partnership "continue to implement [WSCP] stages consistent with achieving a 20 percent or greater reduction in water use."

To ensure implementation of the Governor's October 19, 2021 proclamation, this Order includes a condition that requires Sonoma Water to report, within 30 days of the Order's issuance, on the status of implementation of its WSCP and the WSCPs of its contractors and other wholesale customers, consistent with the distinct possibility that drought conditions will persist or worsen in 2022. Sonoma Water shall provide monthly summaries to the State Water Board of reduction in total diversions by Sonoma Water and reduction in monthly deliveries to its water contractors and other wholesale customers as compared to the 2013 water use benchmark.

With the conditions imposed by this Order, including ongoing efforts to support water conservation and regular monitoring and reporting by Sonoma Water, the State Water Board finds that granting the proposed temporary changes will not have an unreasonable effect on fish, wildlife, or other instream beneficial uses and protects public trust resources to the extent feasible. The State Water Board will continue to evaluate conditions in the watershed throughout the duration of this Order and consider other actions that may further the protection fish, wildlife, and other instream beneficial uses. The State Water Board will review the monthly conservation efforts of Sonoma Water and will continue to evaluate whether additional conservation measures are

necessary to respond to dry conditions in the Russian River Watershed and/or low storage in Lake Mendocino and Lake Sonoma.

5.4 The Proposed Change is in the Public Interest

Approval of the TUCPs to temporarily change the hydrologic index will help conserve stored water in Lake Mendocino and Lake Sonoma to meet human health and safety needs, and to protect endangered and threaten species in the Russian River. Without the proposed changes, the resulting elimination of stored water in Lake Mendocino and the depletion of stored water in Lake Sonoma to unsafe levels will put residents in the counties of Mendocino, Sonoma, and Marin at risk should dry conditions persist into 2022. It is in the public interest to preserve water supplies for these beneficial uses given the extreme hydrologic circumstances and reduced water supplies.

Should the conditions that support the approval of this Order change, whether in alterations to water supply or identification of additional impacts to aquatic habitat, water quality, or other matters within the public interest, the State Water Board has the authority to revoke this Order or modify its terms and conditions as necessary to promote the interests of the public.

6.0 CONCLUSIONS

The State Water Board has adequate information in its files to make the evaluation required by Water Code section 1435. The findings of this Order are based on unique circumstances created by drought, and are independent from any findings to be made in connection with the related change petitions filed by Sonoma Water in 2009 and revised in 2016 pursuant to Chapter 10 of Division 2 of Part 2 of the Water Code.

I conclude that, based on the available evidence:

1. The right holder, Sonoma Water, has an urgent need to make the proposed changes;

2. The proposed changes will not operate to the injury of any other lawful user of water;

3. The proposed changes will not have an unreasonable effect upon fish, wildlife, or other instream beneficial uses; and

4. The proposed changes are in the public interest.

ORDER

NOW, THEREFORE, IT IS ORDERED THAT: the petitions filed by Sonoma Water for a temporary urgency change in Permits 12947A, 12949, 12950, and 16596 are approved and effective from December 11, 2021, through a period of 180 days.

All existing terms and conditions of the subject permits remain in effect, except as temporarily amended by the following terms:

1. The minimum instream flow requirements for the Upper Russian River, the Lower Russian River, and Dry Creek will be established using a hydrologic index based on water storage in Lake Mendocino. For the purposes of the requirements in Term 20 of Permit 12947A, Term 17 of Permit 12949, Term 17 of Permit 12950, and Term 13 of Permit 16596, the following definitions shall apply:

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

        40,000 acre-feet as of January 1
        59,000 acre-feet as of February 1
        68,000 acre-feet as of March 1
        69,500 acre-feet as of March 16
        71,000 acre-feet as of April 1
        70,000 acre-feet as of April 16
        69,000 acre-feet as of May 1
        67,500 acre-feet as of May 16
        65,000 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
        36,000 acre-feet as of February 1
        52,000 acre-feet as of March 1
        53,000 acre-feet as of March 16
        54,000 acre-feet as of April 1
        53,000 acre-feet as of April 16
        52,000 acre-feet as of May 1
        51,000 acre-feet as of May 16
        50,000 acre-feet as of June 1

    c. Normal water supply conditions exist in the absence of defined dry or critical water supply conditions.

2. From December 11, 2021, through April 30, 2021, and as water clarity and safety considerations allow, Sonoma Water shall conduct monitoring to evaluate accessibility to spawning habitat by adult salmonids in the following manner at the following locations:

   a. Upper mainstem Russian River

      If flow at the USGS Hopland gage (station number 11462500) falls below 100 cfs, Sonoma Water shall conduct on a biweekly[3] basis walking surveys of riffles between the confluence of the East Fork Russian River and West Fork Russian River (the Forks) and the confluence of Dry Creek and Russian River in Healdsburg. Proposed reaches include below the Forks, Leaping Lady Rock, Commisky Station Road, downstream of Crocker Road, downstream of Washington School Road, and Alexander Valley. A count of salmonid redds, live adult salmonids, and adult salmonid carcasses shall be documented for each riffle surveyed. In reaches with major tributaries, tributary connectivity to the mainstem shall be assessed with photo documentation and a written description of prevailing conditions as they relate to tributary access by adult salmonids. If tributary stream gage information is available, tributary stage and/or flow at the time of documentation shall also be noted. Proposed tributary confluences include West Fork Russian River, Pieta Creek, Cummiskey Creek, and Big Sulphur Creek.

   b. Lower mainstem Russian River

      If flow at the USGS Hacienda gage (station number 11467000) falls below 125 cfs, Sonoma Water shall conduct on a biweekly basis walking surveys of riffles to evaluate access to spawning habitat by adult salmonids between the confluence of Dry Creek and Russian River in Healdsburg and the upstream end of the Russian River estuary in Duncans Mills. Proposed reaches include Monte Rio, Vacation Beach, Hulbert Creek, and Steelhead Beach. At each site, Sonoma Water staff shall measure riffle length, width, depth, and document the site with photographs. Sonoma Water shall conduct visual surveys of likely holding pools located near riffle sites to document whether adult salmonids are congregating in pools.

   c. Dry Creek

      If flow at the USGS Hopland gage (station number 11462500) falls below 100 cfs, Sonoma Water shall conduct on a biweekly basis walking surveys of riffles in Dry Creek between Warm Springs Dam and Lambert Bridge. Proposed reaches include upstream of Yoakim Bridge and at Board

[3] Biweekly means once every two weeks throughout this Order.

Bridge. A count of salmonid redds, live adult salmonids, and adult salmonid carcasses shall be documented for each riffle surveyed.

3. Ramping

   a. To protect against stranding of fish when minimum instream flow requirements are reduced due to dry or critical water supply conditions as defined under this Order, Sonoma Water shall consult with NMFS Santa Rosa Office (North Coast team) and CDFW to determine the appropriate ramping rate and timing for flow reduction. Sonoma Water shall submit to the Deputy Director for Water Rights (Deputy Director) a summary report of consultation details and documentation showing NMFS and CDFW concurrence regarding the ramping rates.

   b. To assist hatchery smolt releases from Coyote Valley Fish Facility, Sonoma Water shall consult with CDFW on the timing and level of temporary and periodic flow increases from Lake Mendocino to be made between March 1 and the expiration of this Order, for the purpose of encouraging hatchery smolt outmigration from the East Fork Russian River and Upper Russian River.

4. Sonoma Water shall continue ongoing monitoring in coordination with the USGS at the existing multi-parameter water quality sonde sites on the Russian River. By April 22, 2022, Sonoma Water shall consult with the North Coast Water Board to discuss possible water quality impacts if critical or dry water supply conditions occur and whether additional water quality monitoring activities should be required to document water quality conditions in the Russian River. If any water quality issues of concern are observed from the continuous monitoring or water sampling required by this Order, Sonoma Water shall initiate earlier or additional consultation with the North Coast Water Board. The North Coast Water Board may also initiate additional consultation to discuss concerns based on available water quality information. Sonoma Water shall submit a summary report of consultation details and a description of proposed monitoring activities to the Deputy Director within one week of the consultation. Any necessary revisions to this Condition may be made following consultation with the North Coast Water Board and approval by the Deputy Director.

5. Sonoma Water shall continue to consult with NMFS, CDFW, and the North Coast Water Board on a weekly basis for fishery and water quality monitoring updates and any concerns relative to water quality and hydrologic condition of the Russian River. Sonoma Water shall submit a summary report of consultation details to the Deputy Director upon request.

6. Sonoma Water shall report to the Deputy Director, the North Coast Water Board, CDFW, and NMFS on a weekly basis regarding the current hydrologic condition of the Russian River system, including current reservoir levels and reservoir storage hydrographs for Lake Mendocino and Lake Sonoma, a 16-day cumulative rainfall forecast, current inflow from the PVP, and a summary of the available water quality data. Sonoma Water shall also make each report available on a publicly accessible website.

7. By August 1, 2022, Sonoma Water shall submit to the Deputy Director, CDFW, NMFS, and the North Coast Water Board a summary report of the fishery monitoring activities required by Condition 2 of this Order and water quality monitoring activities required by Condition 4 of this Order. The summary report shall include an evaluation of whether, and to what extent, the change in water supply conditions authorized by the Order caused any impacts to water quality, including any water quality impacts affecting the availability of aquatic habitat for salmonids.

8. Within 30 days of the issuance of this Order, Sonoma Water shall report on the status of implementation of its WSCP and the WSCPs of its contractors and other wholesale customers. The report shall include an explanation of whether the WSCPs' currently implemented water shortage levels and response actions reflect the possibility or likelihood of dry conditions continuing in 2022 and, to the extent they do not, a timeline for when the remaining WSCPs' water shortage levels and response actions will be adjusted and implemented. Sonoma Water shall provide monthly summaries to the State Water Board of reduction in total diversions by Sonoma Water and reduction in monthly deliveries to its water contractors and other customers as compared to the 2013 water use benchmark.

9. This Order does not authorize any act that results in the taking of a candidate, threatened, or endangered species, or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish & G. Code, § 2050 et seq.) or the federal Endangered Species Act (16 U.S.C. § 1531 et seq.). If a "take" will result from any act authorized under this Order, Sonoma Water shall obtain authorization for an incidental take permit prior to operation of the project. Sonoma Water shall be responsible for meeting all requirements of the applicable Endangered Species Act for the temporary urgency changes authorized under this Order.

10. The State Water Board reserves jurisdiction to supervise the temporary urgency changes under this Order, and to coordinate or modify terms and conditions, for the protection of vested rights, fish, wildlife, instream beneficial uses and the public interest as future conditions may warrant.

11. Sonoma Water shall immediately notify the Deputy Director if any significant change in storage conditions in Lake Mendocino or Lake Sonoma occurs that warrants reconsideration of this Order.

12. Based upon the methodology for characterizing Lake Mendocino and Lake Sonoma water inflows, releases, and rediversions specified by Condition 11 of the State Water Board's TUCP order dated February 4, 2021, and Condition 12 of the State Water Board's TUCP order dated June 14, 2021, Sonoma Water shall submit weekly reports of daily average release rates and characterization of those releases. Sonoma Water shall also make each report available on a publicly accessible website. Any amendments to either methodology requested by the Deputy Director shall be implemented within 15 days.

STATE WATER RESOURCES CONTROL BOARD

ORIGINAL SIGNED BY:

Erik Ekdahl, Deputy Director
Division of Water Rights

Date: DEC 10 2021

Appendix A-12

State Water Resources Control Board
Order 12/10/2021

Term 2 – Fisheries Monitoring Tasks



August 1, 2022

Prepared by

Sonoma County Water Agency

404 Aviation Blvd

Santa Rosa, CA 95403

Introduction

On November 17, 2021, the Sonoma County Water Agency (Sonoma Water) filed a Temporary Urgency Change Petition (TUCP) with the State Water Resources Control Board (SWRCB) to temporarily reduce minimum instream flows in the upper Russian River to address low storage in Lake Mendocino. The TUCP requested an implementation of an alternative hydrologic index based on Lake Mendocino storage (SWRCB 2021). The SWRCB issued an Order (Order) approving the Sonoma Water's TUCP on December 10, 2021 (SWRCB 2021). The SWRCB's Order included fisheries monitoring and reporting tasks which are summarized in term 2 of the Order and presented in the methods section of this report.

Methods

In the sections that follow, we outline the monitoring methods intended under Term 2 (Fisheries Monitoring) of the Order.

Habitat measurements

Lower Russian River

Transects

Sonoma Water visited critical riffles to assess adult salmonid passage opportunities in the lower Russian River biweekly starting when flow dropped below 125 cfs at the USGS Hacienda gage (station number 1146700). Sites were based on consultation with NMFS. Sites included Brown's Riffle near the confluence of the Russian River and Austin Creek, Monte Rio, Vacation Beach, the Russian River near the confluence with Hulbert Creek, and Steelhead Beach. At each site riffle length, width, and depth was measured, and sites were documented with photographs. Sonoma Water was also tasked with conducting visual surveys of likely holding pools located near riffle sites to document whether adult salmonids were congregating in pools.

Spawning surveys

Dry Creek

If flow at the USGS Hopland gage (station number 11462500) falls below 100 cfs, Sonoma Water was to conduct biweekly walking surveys of riffles in Dry Creek between Warm Springs Dam and Lambert bridge. A count of salmonid redds, live adult salmonids, and adult salmonid carcasses were to be documented.

Alexander Valley and Upper Russian River

If flow at the USGS Hopland gage (station number 11462500) falls below 100 cfs, Sonoma Water was to monitor the number of adult salmonids in representative reaches in Alexander Valley and the Upper Russian River via walk in spawner surveys. Proposed reaches included the confluence of the east and west fork of the Russian River, Leaping lady rock, Commisky Station Road, downstream of Crocker Road, downstream of Washington School Road, and Alexander Valley. A count of salmonid redds, live adult salmonids, and adult salmonid carcasses were to be documented. Sonoma Water was also tasked with photo documentation and written descriptions of prevailing conditions as they relate to tributary access by adult salmonids for survey reaches that contained major tributaries. Proposed tributaries included the west fork of the Russian River, Pieta Creek, Cummiskey Creek, and Big Sulphur Creek.

Results:

Habitat measurements

Lower Russian River

Riffle Crest transects and longitudinal profiles were taken at Vacation Beach and Steelhead Beach, on March 13, 2022 and in the Russian River near the confluence with Hulbert Creek on March 14, 2022 (Figure 1). Flow was 109 cfs and 103 cfs on March 13, and March 14, 2022, respectively, at the USGS Hacienda stream gage (gage number 11467000). Figure 1 through Figure 8 show transect and longitudinal depths for each site on these dates. Brown's riffle near the confluence with Austin Creek and Monte Rio were not surveyed because these sites was inundated due to the increase in stage in the estuary from a river mouth closure. Additional lower river surveys were canceled due to high flow following a rain event in mid-April that increased flow to over 1,000 cfs (Figure 8). No adult salmonids were observed holding in pools located adjacent to riffle sites.

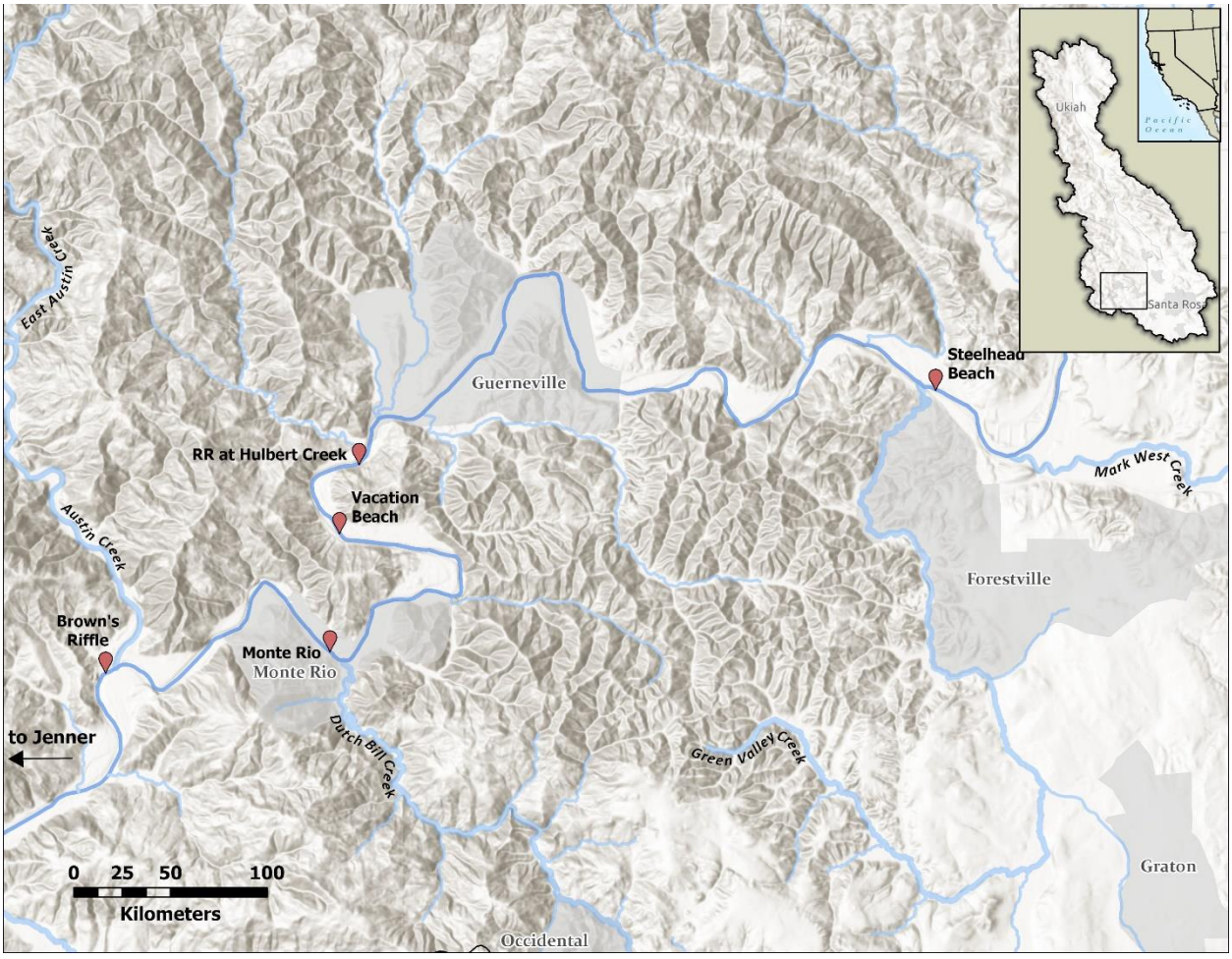

Figure 1. The sample sites at Brown's riffle, Monte Rio, Vacation Beach, Russian River near the confluence with Hulbert Creek, and Steelhead Beach.

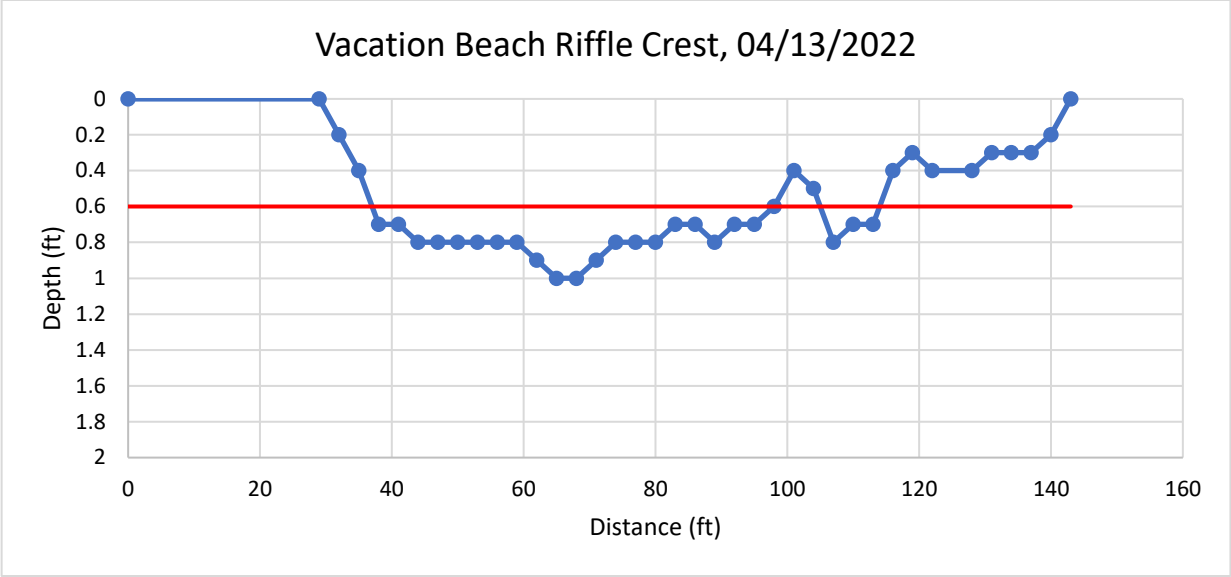

Figure 2. Riffle crest transect depths at Vacation Beach on April 13, 2022. Flow at the USGS Hacienda stream gage (gage number 11467000) was 109 cfs. The red line indicates the suggested passage depth from the literature.

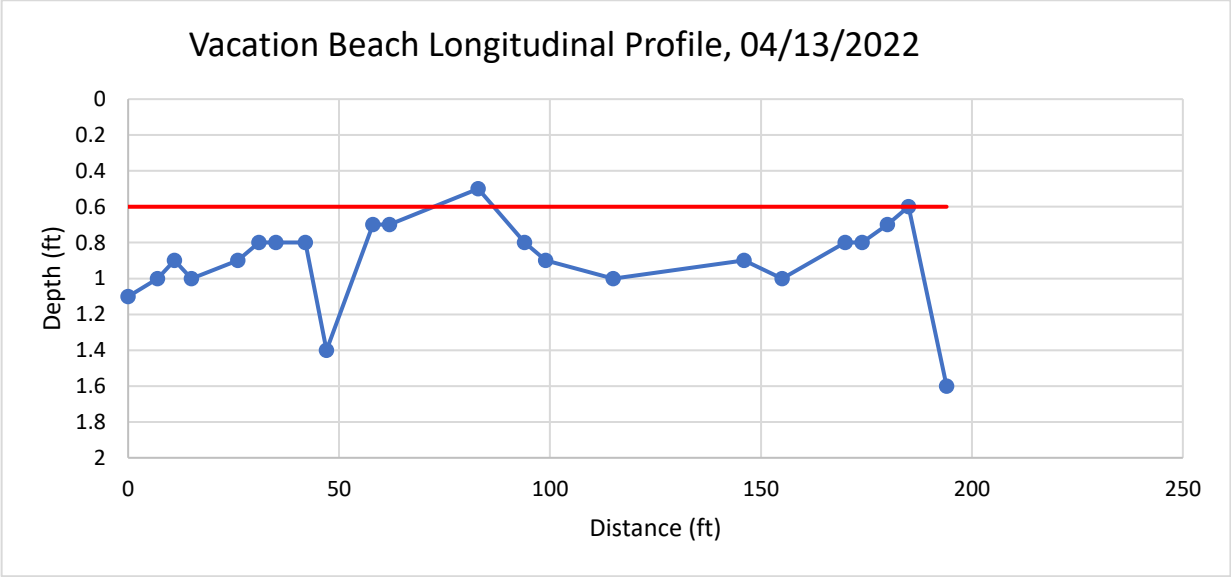

Figure 3. Longitudinal profile depths at Vacation Beach on April 13, 2022. Flow at the USGS Hacienda stream gage (gage number 11467000) was 109 cfs. The red line indicates the suggested passage depth from the literature.

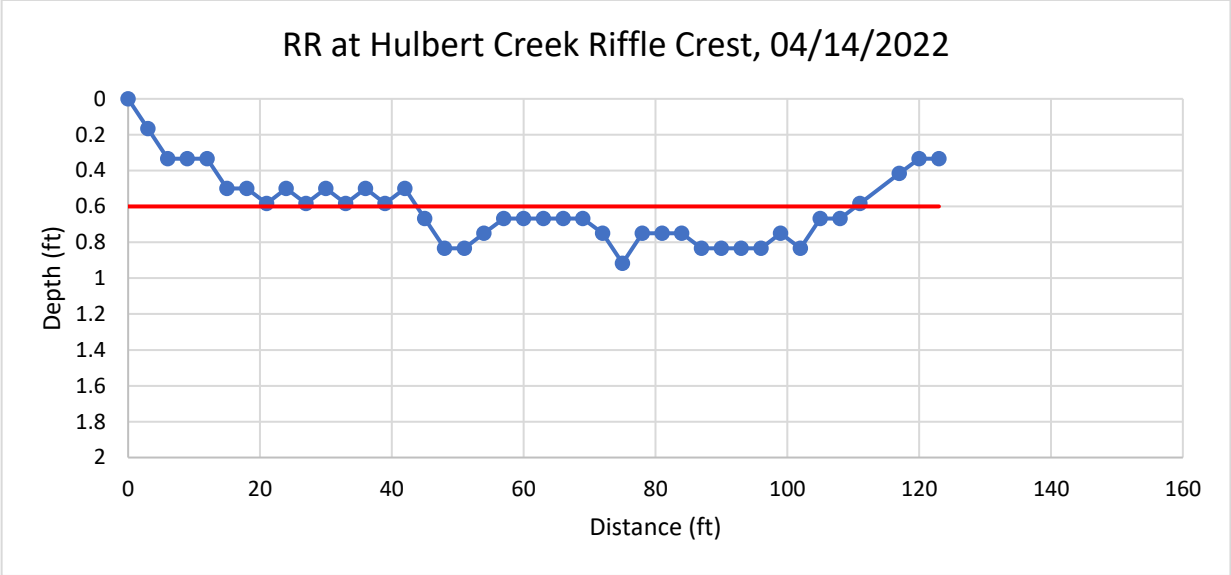

Figure 4. Riffle crest transect depths near the confluence with Hulbert Creek on April 14, 2022. Flow at the USGS Hacienda stream gage (gage number 11467000) was 113 cfs. The red line indicates the suggested passage depth from the literature.

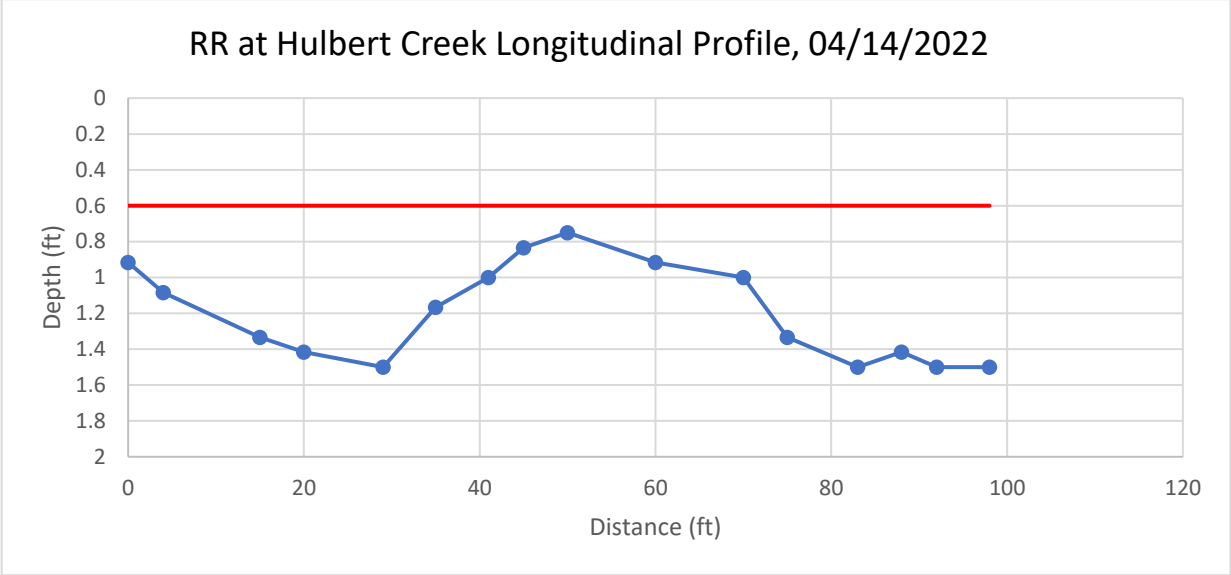

Figure 5. Longitudinal profile depths near the confluence with Hulbert Creek on April 14, 2022. Flow at the USGS Hacienda stream gage (gage number 11467000) was 113 cfs. The red line indicates the suggested passage depth from the literature.

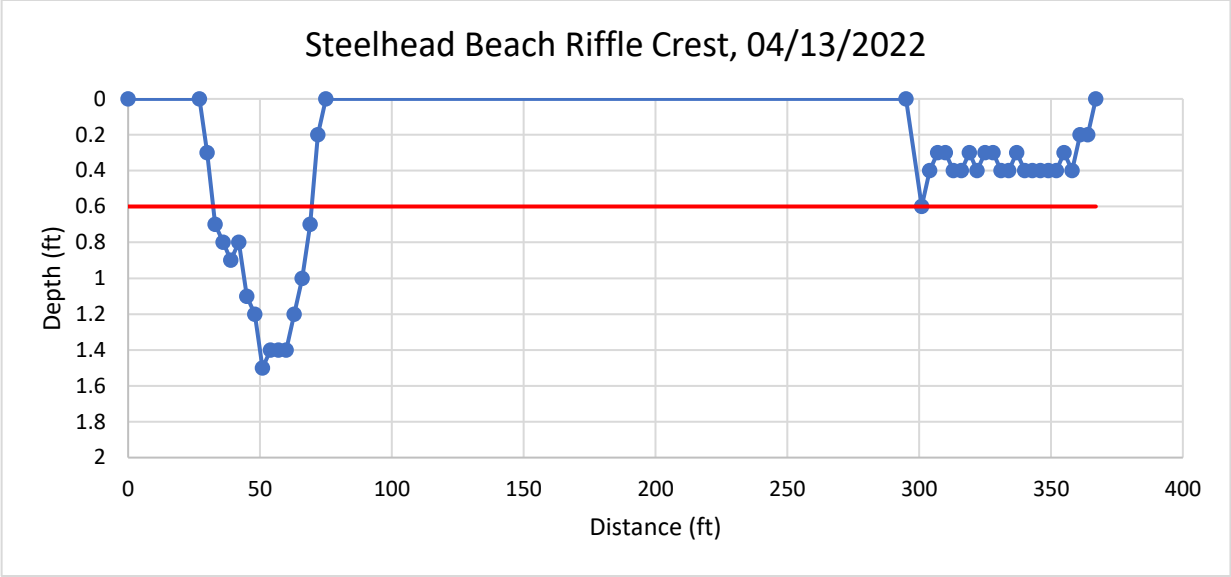

Figure 6. Riffle crest transect depths at Steelhead beach on April 13, 2022. Flow at the USGS Hacienda stream gage (gage number 11467000) was 109 cfs. The red line indicates the suggested passage depth from the literature.

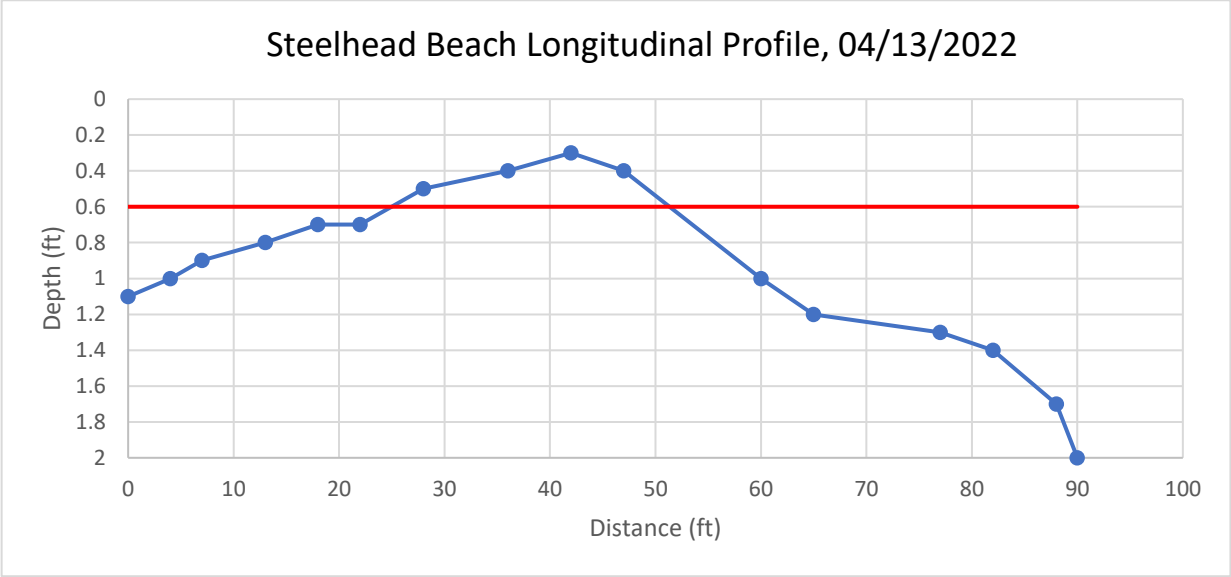

Figure 7. Longitudinal profile depths at Steelhead Beach on April 13, 2022. Flow at the USGS Hacienda stream gage (gage number 11467000) was 109 cfs. The red line indicates the suggested passage depth from the literature.

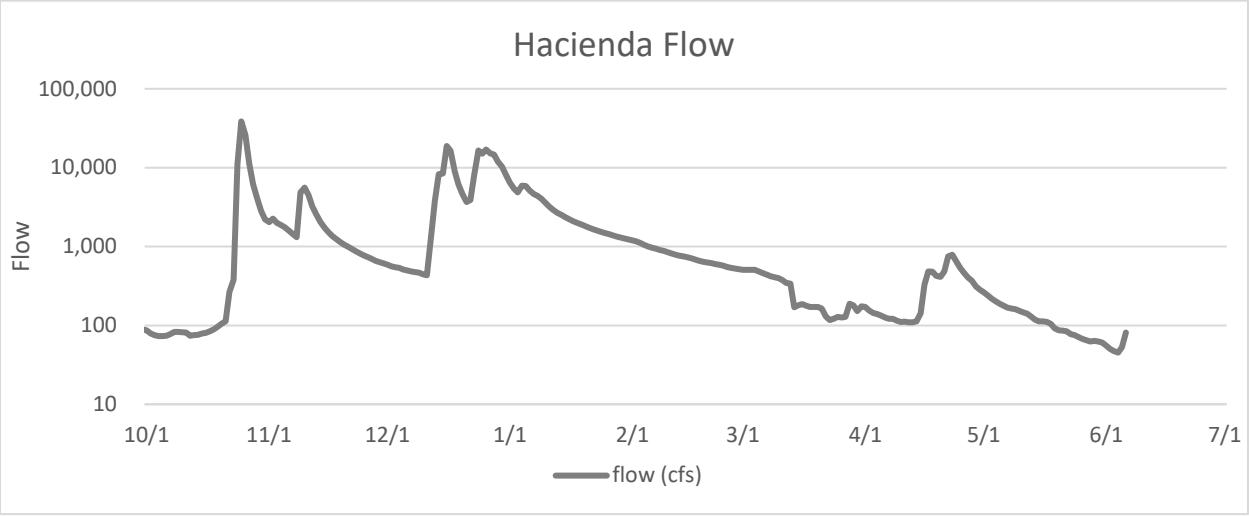

Figure 8. Flow in the Russian River at the USGS Hacienda stream gage (USGS gage number 11467000).

Spawning surveys

Dry Creek, Alexander Valley, and Upper Russian River

Spawner surveys were not conducted in Dry Creek due to poor visibility. Alexander Valley and the upper Russian River were surveyed on March 3, March, 15, March 29, and on April 12, 2022. Sites sampled include the Russian River at Alexander Valley Road, at Crocker Road, at Washington School Road, at Commisky Station Road, downstream of Leaping lady rock, and at the confluence of the east and west fork (Figure 9). On days surveys were conducted flow ranged from 29 to 144 cfs depending on location and date (Table 1). In total 38 adult salmonids and 81 redds were observed (Figure 10).

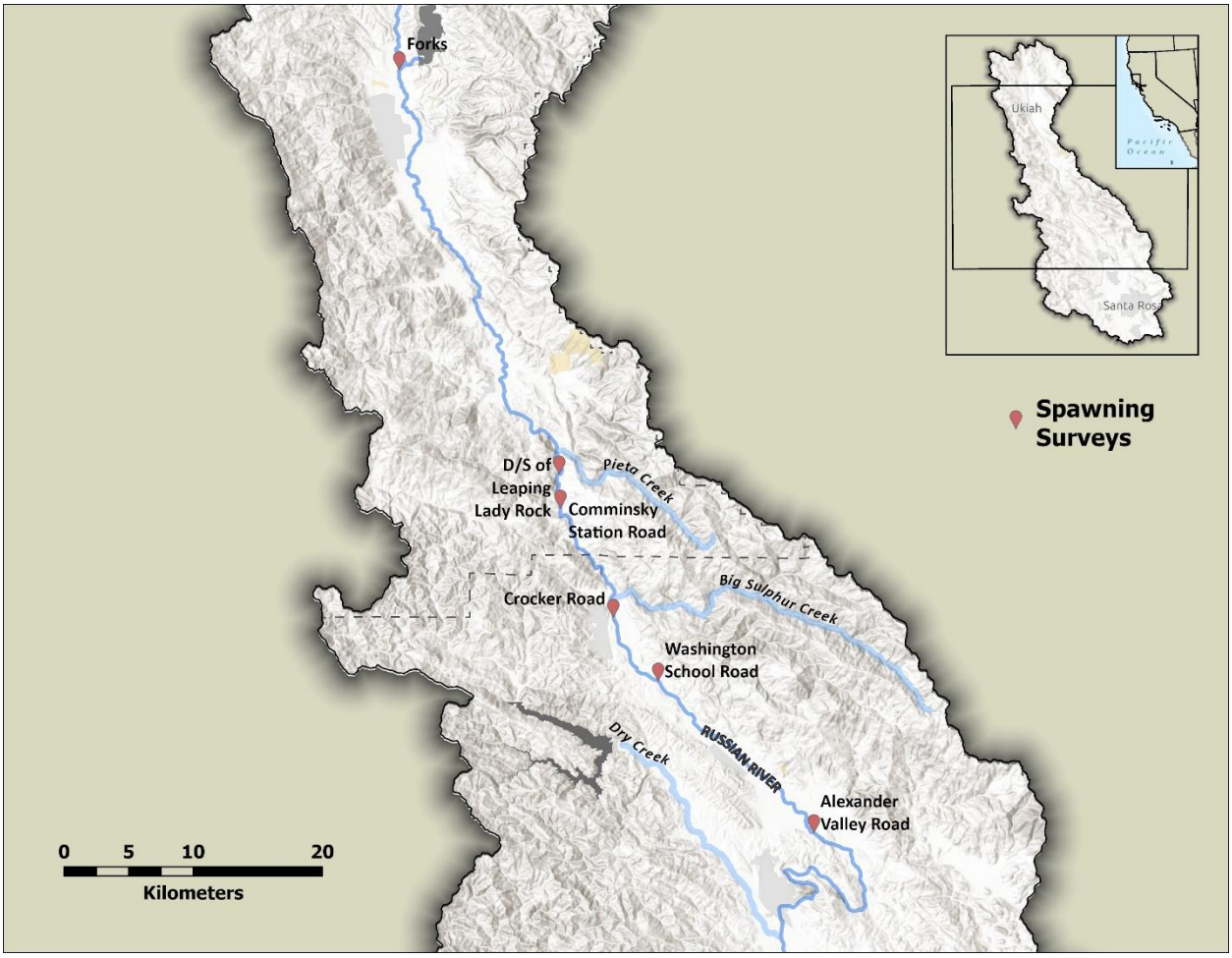

Figure 9. Spawner surveys were conducted in the mainstem Russian River at Alexander Valley Road, at Crocker Road, at Washington School Road, at Commisky Station Road, downstream of Leaping lady rock, and at the confluence of the east and west fork.

Table 1. The date of the Alexander Valley and upper Russian River salmon spawning surveys, USGS gage station number, and corresponding flow in cubic feet per second (cfs) on the survey date. Flow at the Forks is a combination of the flow in the west fork of the Russian River (USGS gage number 11461000) and the release from Lake Mendocino into the east fork of the Russian River.

Date	Station No.	Stream gage	Fow (cfs)
3/3/2022	11461000	Forks	46.6
	11462500	Hopland	72.7
	11463000	Cloverdale	108
	11463682	Jimtown	144
3/15/2022	11461000	Forks	45.7
	11462500	Hopland	44.8
	11463000	Cloverdale	60.4
	11463682	Jimtown	95.6
3/29/2022	11461000	Forks	45.45
	11462500	Hopland	49.1
	11463000	Cloverdale	64.6
	11463682	Jimtown	94.5
4/12/2022	11461000	Forks	47.2
	11462500	Hopland	26.9
	11463000	Cloverdale	39.9
	11463682	Jimtown	65.2

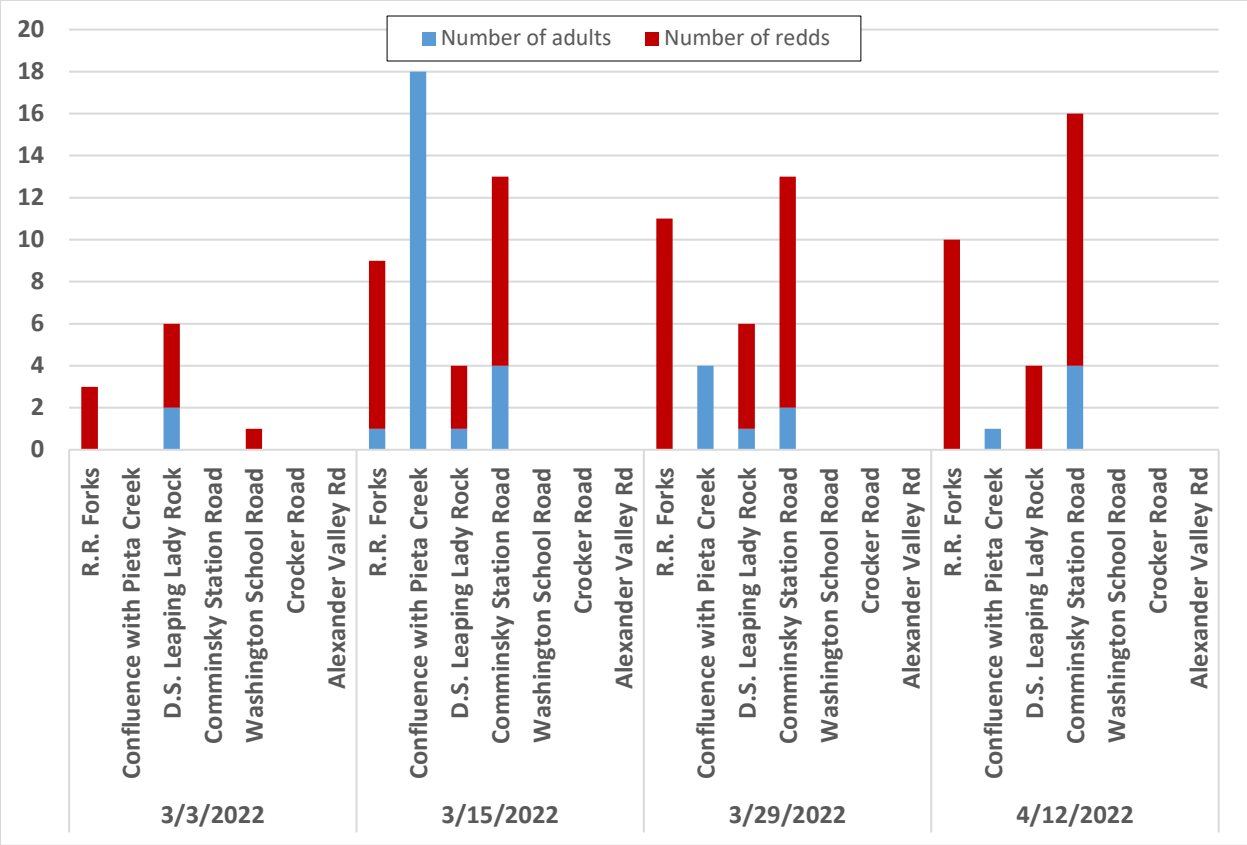

Figure 10. The number of adult salmonids and redds observed in Alexander Valley and the upper Russian River during spawner surveys in the spring of 2022.

Photographs were taken of tributary mouths for salmonid spawning survey reaches that contained major tributaries. These photographs were collected to document the prevailing conditions as they relate to tributary access by adult salmonids. Photographs were taken at the confluence of the east and west fork of the Russian River, and at Pieta, Cummiskey, and Big Sulphur Creeks (Figure 11 through Figure 21). The west fork appeared to be accessible by adult salmonids, at least at the mouth. Surveys were not conducted on the west fork upstream of the confluence with the Russian River. It appeared that adult salmonids would have difficulty accessing at Pieta, and Big Sulphur Creeks under the observed flows in the respective tributaries. Pieta Creek was disconnected from the mainstem Russian River and was not accessible to adult salmonids during the period of time that these surveys occurred.



Figure 11. A photo of the confluence of the east and west forks of the Russian River taken on March 15, 2022, when flow in the west fork was 15.7 cfs. The west fork is on the left side of the photograph.



Figure 12. A photo of the confluence of the east and west forks of the Russian River taken on March 29, 2022, when flow in the west fork was 16.8 cfs. The west fork is on the left side of the photograph.



Figure 13. A photo of the confluence of the east and west forks of the Russian River taken on April 12, 2022, when flow in the west fork was 11.7 cfs. The west fork is on the left side of the photograph.



Figure 14. A photo of the confluence Pieta Creek and the Russian River taken on March 15, 2022.



Figure 15. A photo of the confluence Pieta Creek and the Russian River taken on March 29, 2022.



Figure 16. A photo of the confluence Pieta Creek and the Russian River taken on April 12, 2022.



Figure 17. A photo of Cummiskey Creek taken near the mouth of Cummiskey Creek on March 15, 2022. As can be seen on the right side of the photo, Cummiskey Creek was disconnected from the Russian River.



Figure 18. A photo of Cummiskey Creek taken near the mouth of Cummiskey Creek on April 12, 2022. Note that Cummiskey Creek was disconnected from the Russian River.



Figure 19. A photo of Big Sulphur Creek taken near the mouth of Big Sulphur Creek on March 15, 2022 when flow in Big Sulphur Creek was 21.4 cfs.



Figure 20. A photo of Big Sulphur Creek taken near the mouth of Big Sulphur Creek on March 29, 2022 when flow in Big Sulphur Creek was 28.4 cfs.



Figure 21. A photo of Big Sulphur Creek taken near the mouth of Big Sulphur Creek on April 12, 2022, when flow in Big Sulphur Creek was 13.0 cfs.

Summary

In the lower Russian River, riffle depths for upstream migration were suitable at the locations sampled. On the days surveys were conducted flow at the USGS Hacienda stream gage (USGS gage number 11467000) was approximately 110 cfs. The riffles surveyed had maximum depths that were equal to or greater than 0.6 ft under these flow conditions. The literature suggests a depth of 0.6 ft is suitable for steelhead passage (Thompson 1972). Riffles downstream of Vacation Beach became inundated and deepened due to lagoon formation following a river mouth closure. Without the river mouth being closed it is likely that the riffles downstream of Vacation Beach would have been shallower than they were on the day they were visited. Additional lower river surveys were canceled following a rain event in mid-April that increased river flow to over 1,000 cfs.

High turbidity and poor visibility precluded us from conducting salmon spawner surveys in Dry Creek. Spawner surveys were successfully implemented in the upper Russian River and in the Alexander Valley reach. Redds and adult salmonids were observed during these surveys indicating that adult salmonids were able to access upper mainstem spawning habitat and successfully spawn. The adult salmonids that could be identified to species were steelhead and it is likely that the adult salmonids that could not be identified to species were also steelhead based on the time of year (i.e., spring) that these fish were

observed. The tributaries in the salmon spawning survey reaches include the west fork of the Russian River, Pieta creek, Cummiskey Creek, and Big Sulphur Creek. The west fork of the Russian River was accessible to adult salmonids at least at the mouth where it was visited. However, the other creeks surveyed are perched on top of large alluvial deposits. This places the mouth of the creek several feet in elevation above the Russian River's water surface (see photos of Pieta Creek, Figure 14-16). Access to these streams is more dependent on tributary flow to create adequate stream depth within the tributary than it is on flow in the mainstem Russian River. Based on the USGS rating curve taken at the Cloverdale gage Russian River flow would need to increase by over 900 cfs to raise the stage from 2 feet to 5 feet, which would be approximate stage increase necessary to bring the Russian River's water surface to the height of the perched tributaries such as Pieta Creek (Figure 22).

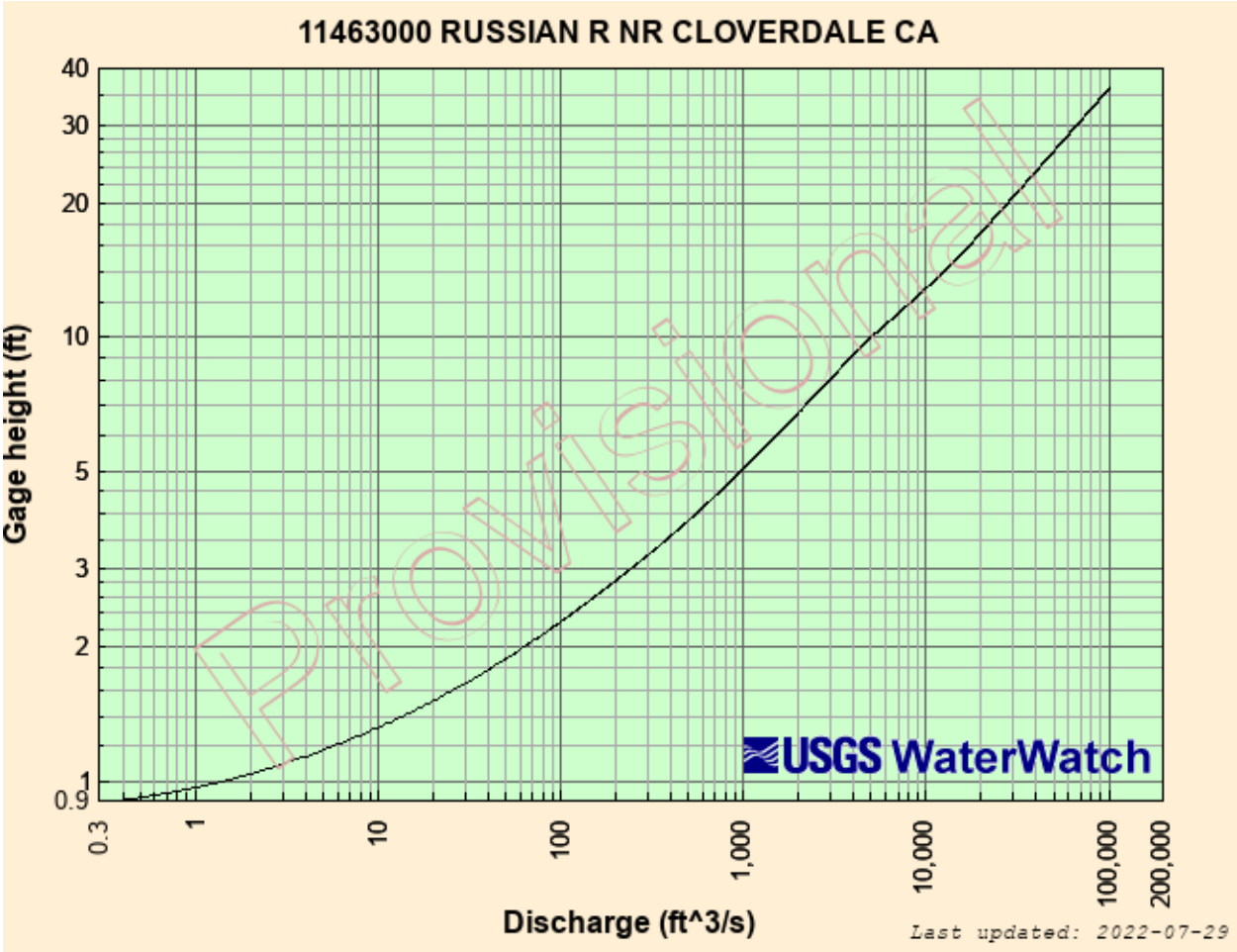

Figure 22. Provisional data from the USGS Cloverdale stream gage (stream gage number 11463000) accessed on July 29, 2022 showing the relationship of gage height to stream flow at the Cloverdale gage site.

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Thompson, K. 1972. Determining stream flows for fish life. Pages 31-50 in Proceedings, instream flow requirements workshop. Pacific Northwest River Basins Commission, Vancouver, Washington.Water quality report

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Appendix. Photographs of habitat conditions in the Russian River.

Lower Russian River Cross-Section Photo Documentation



Figure A 1. Brown's riffle located near the confluence with Austin Creek on April 13, 2022, showing inundation from the ponding effect when the mouth of the Russian River closed. Flow at the USGS Hacienda stream gage (gage number 11467000) was 113 cfs.



Figure A 2. Looking upstream from the Vacation Beach temporary crossing on April 13, 2022.



Figure A 3. Looking across the Vacation Beach dam sill on April 13, 2022.



Figure A 4. A photo of the riffle crest transect taken at Vacation Beach on April 13, 2022.



Figure A 5. A photo of the longitudinal profile taken at Vacation Beach on April 13, 2022.



Figure A 6. A photo of the Monte Rio riffle showing inundation from the ponding effect when the mouth of the Russian River closed. The photo was taken on April 14, 2022.



Figure A 7. A photo of the riffle crest transect taken on the Russian River near the confluence with Hulbert Creek on April 14, 2022.



Figure A 8. A photo of the longitudinal profile taken the Russian River near the confluence with Hulbert Creek on April 14, 2022.

Appendix A-13

Russian River Water Quality Summary for the 2021/2022 Temporary Urgency Change



Sonoma Water

July 2022

American Disabilities Act Compliance

This report for Sonoma Water's Russian River Water Quality Summary for the 2021/2022 Temporary Urgency Change has been prepared to be compliant with requirements under the Americans with Disabilities Act (ADA). The ADA mandates that reasonable accommodations be made to reduce "discrimination on the basis of disability." As such, Sonoma Water is committed to ensuring that documents we make publicly available online are accessible to potential users with disabilities, particularly blind or visually impaired users who make use of screen reading technology.

This disclaimer is provided to advise that portions of the document, including the figures, charts, and graphics included in the document are non-convertible material, and could not reasonably be adjusted to be fully compliant with ADA regulations. For assistance with this data or information, please contact Sonoma Water at (707) 526-5370 and reference the Russian River Water Quality Summary for the 2021/2022 Temporary Urgency Change Project, dated July 2022.

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1.0 Introduction

On 17 November 2021, the Sonoma County Water Agency (Sonoma Water) filed Temporary Urgency Change Petitions (TUCPs) with the State Water Resources Control Board (SWRCB) for modifications to water right Permits 12947A, 12949, 12950, and 16596 that would implement an alternative hydrologic index based on Lake Mendocino storage values starting December 11, 2021. These changes were 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/river operations to protect municipal water supply and listed salmon species in the Russian River. On December 10, 2021, the State Water Resources Control Board (SWRCB) Order was issued approving Sonoma Water's petition.

In summary, the SWRCB approved the following temporary changes to the Decision 1610 (D1610) instream flow requirements from 11 December 2021 through 9 June 2022 to the following:

(1) The minimum instream flow requirements for the Upper Russian River, the Lower Russian River, and Dry Creek will be established using a hydrologic index based on water storage in Lake Mendocino. For the purposes of the requirements in Term 20 of Permit 12947A, Term 17 of Permit 12949, Term 17 of Permit 12950, and Term 13 of Permit 16596, the following definitions shall apply:

   a. Dry water supply conditions exist when storage in Lake Mendocino is less than:
      i. 40,000 acre-feet as of January 1
      ii. 59,000 acre-feet as of February 1
      iii. 68,000 acre-feet as of March 1
      iv. 69,500 acre-feet as of March 16
      v. 71,000 acre-feet as of April 1
      vi. 70,000 acre-feet as of April 16
      vii. 69,000 acre-feet as of May 1
      viii. 67,500 acre-feet as of May 16
      ix. 65,000 acre-feet as of June 1
   b. Critical water supply conditions exist when storage in Lake Mendocino is less than:
      i. 31,000 acre-feet as of January 1
      ii. 36,000 acre-feet as of February 1
      iii. 52,000 acre-feet as of March 1
      iv. 53,000 acre-feet as of March 16
      v. 54,000 acre-feet as of April 1
      vi. 53,000 acre-feet as of April 16
      vii. 52,000 acre-feet as of May 1
      viii. 51,000 acre-feet as of May 16
      ix. 50,000 acre-feet as of June 1
   c. Normal water supply conditions exist in the absence of defined dry or critical water supply conditions.

This temporary change was requested in response to the current extremely dry conditions, severely low storage levels in Lake Mendocino and Lake Sonoma, and the current hydrologic index not aligning with

observed hydrologic conditions in the Russian River Watershed. The proposed change was also requested in response to the reported failure of the transformer bank of the Potter Valley Project (PVP) hydroelectric plant in October 2021 that would likely continue to result in a significant reduction in the inter-basin transfers of Eel River water into the Russian River Watershed.

2.0 2022 Russian River Flow Summary

In early January 2022, following a series of storms in October through December 2020, water storage levels in Lake Mendocino rose above 41,000 acre-feet, which is similar to storage levels experienced in 2016, a normal water year. However, storage declined through the month of February due to less than normal rainfall, and remained below 45,000 acre-feet through the month of March (Figure 2-1). Storage did increase in Lake Mendocino through May due to a late season storm event in April, as well as from higher inflow rates from Potter Valley than outflow rates through the reservoir, and peaked in early June at just over 50,600 acre-feet, where it remained relatively stable through the term of the Order (Figure 2-1).

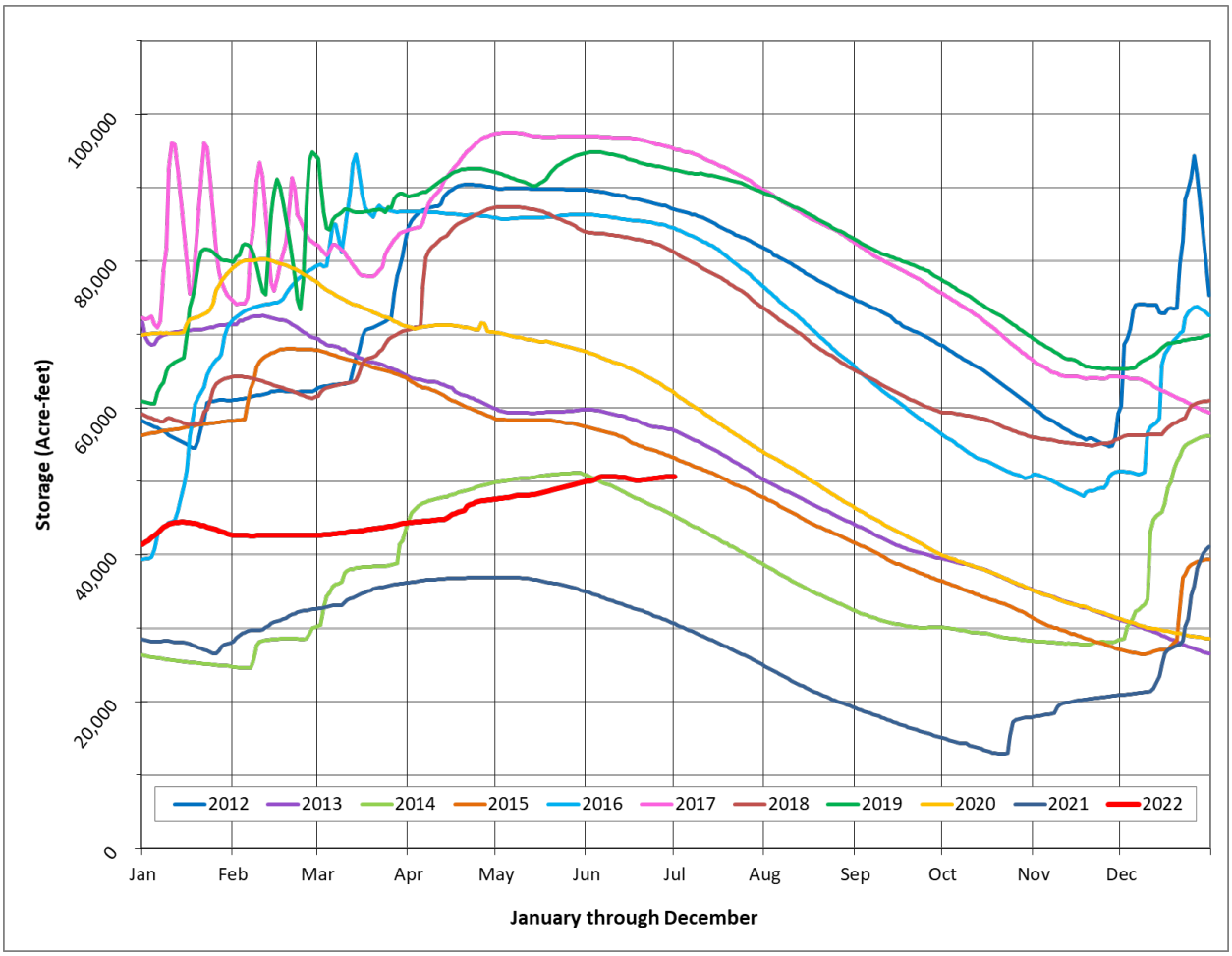

Figure 2-1. Lake Mendocino water storage levels, in acre-feet, from 2012 through 2022.

The 2022 average daily flows at the Talmage, Hopland, Cloverdale, Jimtown, Digger Bend, and Hacienda U.S. Geological Survey (USGS) gaging stations are shown in Figure 2-2.

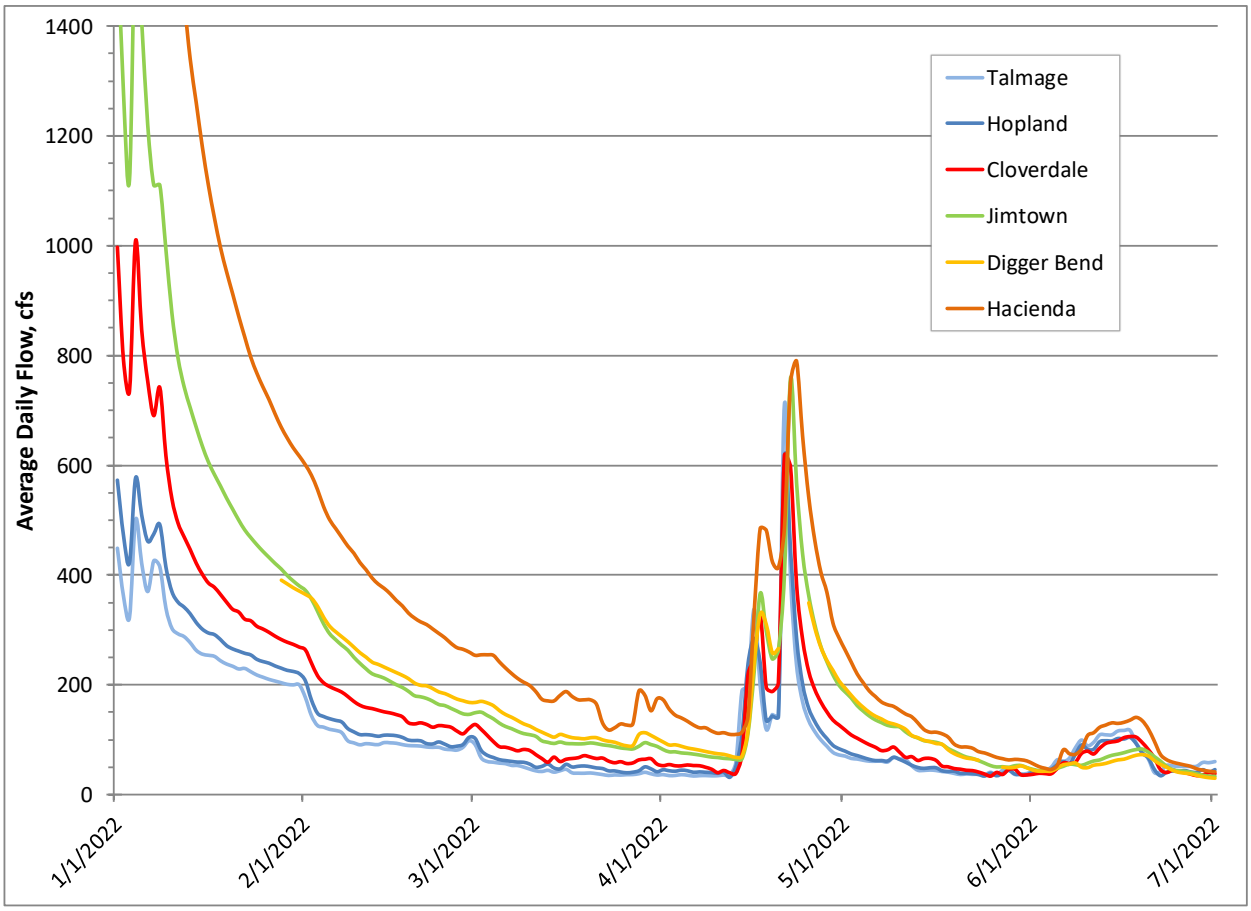

Figure 2-2. 2022 average daily flows in the Russian River as measured at U.S. Geological Survey (USGS) gages in cubic feet per second (cfs). Flow rates are preliminary and subject to final revision by USGS.

The changes in upper Russian River minimum instream flow requirements authorized by the Order generally allowed flows to decline below D1610 minimum instream flows of 150 cfs beginning in February and continuing through June. (Figure 2-3). Flows briefly increased above the D1610 minimum flow in mid-April during late season storm events, but quickly declined to flows below the D1610 minimum, but not below TUC minimum flows. Overall, flows did not decline below the TUC minimum daily average flows in the upper Russian River during the term of the Order (Figure 2-3).

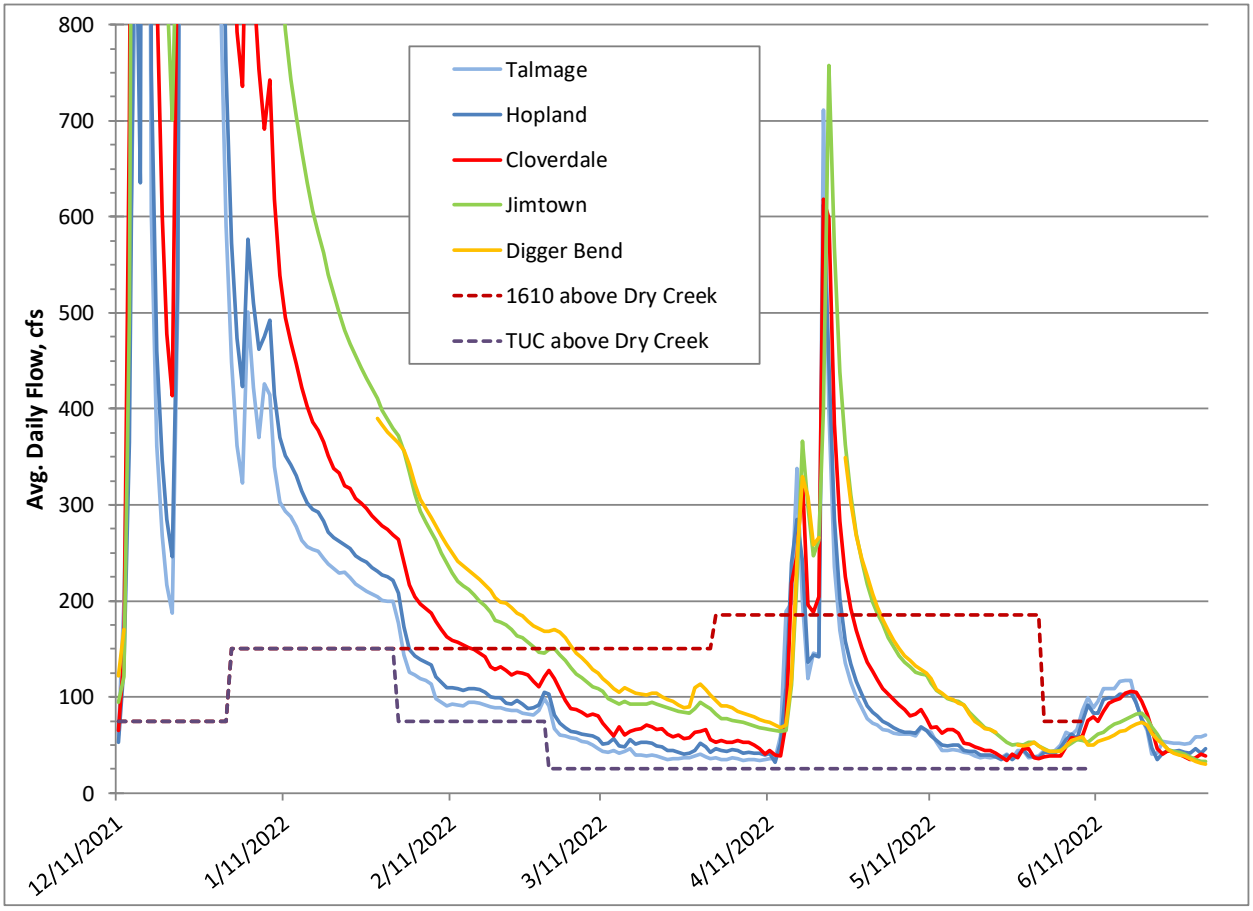

Figure 2-3. December 2021 through June 2022 average daily flows in the upper Russian River as measured at USGS gages above the Dry Creek confluence in cubic feet per second. Flow rates are preliminary and subject to final revision by USGS.

The changes in lower Russian River minimum instream flow requirements authorized by the Order allowed flows at Hacienda to decline below D1610 minimum instream flows of 125 cfs briefly in early April and again in mid-May through the end of the Order (Figure 2-4). However, lower Russian River flows did not decline below the TUC minimum daily average flows authorized by the Order (Figure 2-4).

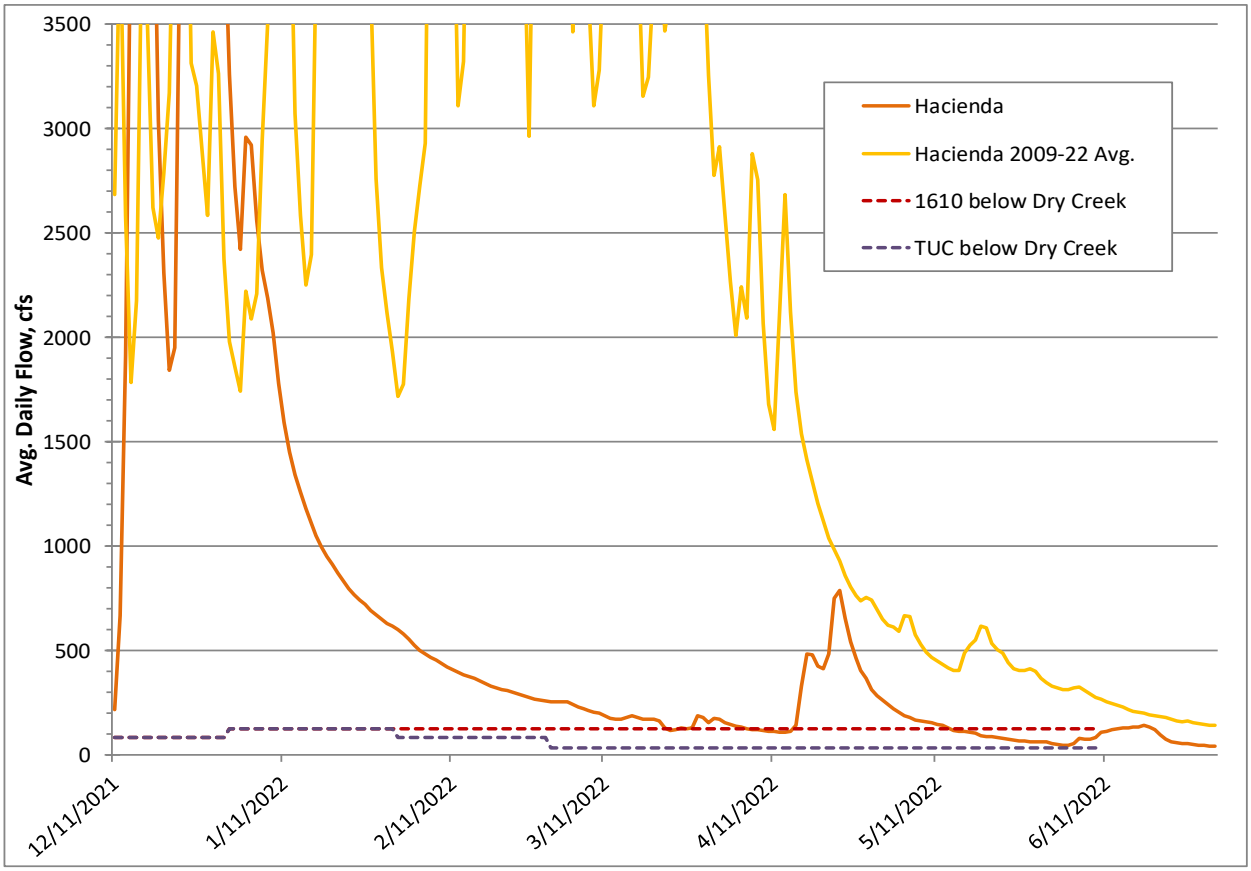

Figure 2-4. December 2021 through June 2022 average daily flows in the lower Russian River as measured at USGS gages below the Dry Creek confluence in cubic feet per second. Flow rates are preliminary and subject to final revision by USGS.

3.0 Water Quality Monitoring

Water quality data was collected at the USGS maintained gages to monitor TUC flows for potential effects to recreation and available aquatic habitat for salmonids. Datasonde data, including temperature and dissolved oxygen measurements, were collected at these and other stations to supplement existing data to provide a more complete basis for analyzing spatial and temporal water quality trends due to Biological Opinion-stipulated changes in river flow and estuary management. Analysis and discussion of the flow data and datasonde data for potential effects to aquatic habitat for salmonids is presented in Section 4.0 below.

4.0 Additional Monitoring

4.1 Sonoma Water and USGS Permanent and Seasonal Datasondes

In coordination with the USGS, Sonoma Water maintains three, multi-parameter water quality sondes on the Russian River located at Russian River near Hopland, Russian River at Digger Bend near Healdsburg, and Russian River near Guerneville (aka Hacienda). These three sondes are referred to as "permanent" because Sonoma Water contracts with the USGS to maintain them as part of Sonoma Water's early warning detection system for use year-round (Figure 4.1). The sondes take real time readings of water temperature, pH, dissolved oxygen content (DO), specific conductivity, turbidity, and depth, every 15 minutes. In addition, Sonoma Water maintains a permanent sonde on the East Fork of the Russian River approximately one-third of a mile (1/3 mi.) downstream of Lake Mendocino. However, this station is not a real-time station or part of the early warning detection system.

In addition to the permanent sondes, Sonoma Water, in cooperation with the USGS, installed four seasonal sondes with real-time telemetry at the USGS river gage stations at East Fork near Calpella (upstream of Lake Mendocino), Russian River near Cloverdale (north of Cloverdale at Comminsky Station Road), Russian River at Jimtown (Alexander Valley Road Bridge), and at Johnson's Beach in Guerneville (Figure 4.1). The three seasonal sondes at Calpella, Cloverdale, and Jimtown are included by the USGS on its "Real-time Data for California" website: https://waterdata.usgs.gov/ca/nwis/rt.

The data collected by the sondes described above are evaluated in Section 4.2 in response to the terms of the SWRCB TUC Order to evaluate whether and to what extent the reduced flows authorized by the Order caused any impacts to water quality or availability of aquatic habitat for salmonids.



Figure 4-1 Sonoma Water and USGS Russian River Permanent and Seasonal Datasonde Monitoring Stations

NORTH

0 1.25 2.5 5 Miles

Sonoma Water

4.2 Aquatic Habitat for Salmonids

4.2.1 Introduction

In Term 7 of the Temporary Urgency Change Order (Order) the State Water Resource Control Board (SWRCB) tasked Sonoma Water with evaluating impacts associated with reductions in minimum instream flows authorized by the Order to water quality and the availability of aquatic habitat for Russian River salmonids. This section of the report summarizes temperature and dissolved oxygen (DO) conditions in the Russian River during the Order and relates these conditions to fisheries monitoring data collected by Sonoma Water.

4.2.2 Russian River Salmonid Life Stages

Salmonids in the Russian River can be affected by flow, temperature, and dissolved oxygen (DO) changes at multiple life stages. The Russian River supports three species of salmonids, coho salmon, steelhead, and Chinook salmon. These species follow similar life history patterns with adults migrating from the ocean to the river and moving upstream to spawn in the fall and winter. Females dig nests called redds in the stream substrate and deposit eggs simultaneously with fertilization by one or more males. Eggs then remain in the redd for several weeks before hatching. After hatching, the larval fish remain in the gravel for several more weeks before emerging. After emerging from the gravel these young salmonids are identified first as fry and then later as parr once they have undergone freshwater growth. Parr rear for a few months (Chinook) to approximately 2 years (steelhead) in freshwater before undergoing a physiological change identified as smoltification. At this stage, fish are identified as smolts and are physiologically tolerant of saltwater, and therefore ready for ocean entry (Quinn 2005). In the Russian River, smolts move downstream to the ocean in the spring (Chase et al. 2005 and 2007, Obedzinski et al. 2006). Salmonids spend several months to a few years at sea before returning to the river to spawn as adults. Because all three species of Russian River anadromous salmonids spend a period of time in freshwater, individuals must cope with the freshwater conditions they encounter including flow, temperature, and DO. While all three species follow a similar life history, each species tends to spawn and rear in different locations and are present in the Russian River watershed at slightly different times. These subtle but important differences may expose each species to a different set of freshwater conditions.

Coho Timing and Distribution

Wild coho salmon populations in the Russian River are at alarmingly low levels and recovery measures rely mainly on fish released from Don Clausen Warm Springs Hatchery as part of the Russian River Coho Salmon Captive Broodstock Program (RRCSCBP). Data collected at Sonoma Water's Mirabel inflatable dam on an underwater video camera system from 2011 through 2013 indicate that adult coho salmon begin migrating past the dam in late October and continue through at least January and that the bulk of adult coho migrate through that portion of the river from November through February. Spawning and rearing occurs in certain tributaries to the Russian River (NMFS 2008) and data from downstream migrant trapping in some of those tributaries indicate that coho smolt emigration starts before April and continues through mid-June (Obedzinski et al. 2006). Although coho smolts have been captured as late as mid-July in downstream migrant traps operated by Sonoma Water on the mainstem Russian River at the Mirabel dam (Martini-Lamb and Manning 2011), most emigrate from the Russian River from March through May. Only the Russian River coho adult and smolt life stages are present in the mainstem during

the Order; therefore, only temperature and DO data relating to these life stages will be analyzed for this report. There is limited coho spawning habitat upstream of Healdsburg therefore only the Hacienda and Digger bend sites will be summarized for coho.

Steelhead Timing and Distribution

Based on video monitoring at Sonoma Water's Mirabel inflatable dam and returns to the Warm Springs Hatchery, adult steelhead return to the Russian River later than Chinook. Deflation of the inflatable dam and removal of the underwater video camera system preclude a precise measure of adult return timing or numbers. However, continuous video monitoring at the inflatable dam during late fall through spring in 2006-2007, timing of returns to the hatchery, and data gathered from steelhead angler report cards (SCWA unpublished data, Jackson 2007) suggests that steelhead return to the Russian River from December through March with the majority returning in January and February.

Many steelhead spawn and rear year round in tributaries of the Russian River and in the upper mainstem Russian River (NMFS 2008, Cook 2003). Cook (2003) found that summer rearing of steelhead in the mainstem Russian River were distributed in the highest concentrations between Hopland and Cloverdale (Canyon Reach). Steelhead were also found in relatively high numbers (when compared to habitats downstream of Cloverdale) in the section of river between the Coyote Valley Dam and Hopland. The Canyon Reach is the highest gradient section of the mainstem Russian River and contains high velocity habitats that include riffles and cascades (Cook 2003). Due to flow releases from Lake Mendocino, both the Canyon and Ukiah reaches generally have cooler water temperatures when compared to other mainstem reaches.

The steelhead smolt migration in the Russian River begins at least as early as March and continues through June, with most steelhead emigrating from March through May (SCWA unpublished data, Martini-Lamb and Manning 2011). Temperature and DO data related to Russian River steelhead adult, juvenile, and smolt life stages are summarized for this report as these life stages are present in the mainstem during the Order.

Chinook Timing and Distribution

Based on video monitoring at Sonoma Water's Mirabel inflatable dam, adult Chinook are typically observed in the Russian River before coho and steelhead. Chinook enter the Russian River as early as September and the migration is complete by early February. Generally the bulk of Chinook pass the Mirabel dam from October through December. Chinook are mainstem spawners and deposit their eggs into the stream bed of the mainstem Russian River and in Dry Creek during the fall (Chase et al. 2005 and 2007, Cook 2003, Martini-Lamb and Manning 2011). Chinook offspring rear for approximately two to four months before emigrating to sea in the spring. The bulk of Chinook smolt emigration occurs from April through mid-July. Russian River Chinook adult, juvenile, and smolt life stages are present in the mainstem during the Order; therefore, temperature and DO data relating to these life stages will be analyzed for this report.

4.2.3 Methods

Sonoma Water uses underwater video, downstream migrant traps, and water quality data collected in the Russian River to depict water quality conditions when salmonids where present. To estimate the number of adult Chinook that return to the Russian River upstream of the Mirabel inflatable dam,

Sonoma Water typically operates an underwater video camera in the fish ladder located at the dam. Sonoma Water also operates downstream migrant traps to enumerate salmonid smolts. USGS stream gages and a Sonoma Water operated data sonde were used to provide water quality data in the mainstem Russian River.

Physical and water quality conditions (flow, water temperature, and DO) were collected at multiple sites in the Russian River. USGS stream gages located on the Russian River at Hacienda, Digger Bend, Jimtown, and Hopland provided flow, water temperature, and DO data. A data sonde operated by Sonoma Water collected temperature and DO data in the east fork Russian River 0.5 km downstream of Coyote Valley Dam, near Ukiah, CA. Water quality conditions at these sites were compared to literature-based thresholds then used to construct temperature and DO criteria for Russian River salmonids (Tables 4-1 through Table 4-4).

Table 4-1. Adult salmonid water temperature (°C) thresholds used for migration when describing water quality conditions during the term of the Temporary Urgency Change Order. Criteria are from SCWA (2016).

Description	Chinook	Coho	Steelhead
optimal upper limit	15.6	11.1	11.1
suitable upper limit	17.8	15.0	15.0
stressful upper limit	19.4	21.1	21.1
acutely stressful upper limit	23.8	23.8	23.8
Potentially lethal lower limit	23.9	23.9	23.9

Table 4-2. Juvenile salmonid rearing temperature (°C) thresholds used for describing water quality conditions during the term of the Temporary Urgency Change Order. Criteria are from SCWA (2016).

Description	Chinook	Coho	Steelhead
optimal upper limit	16.9	13.9	16.9
suitable upper limit	17.8	16.9	18.9
stressful upper limit	20.0	17.8	21.9
acutely stressful upper limit	23.8	23.8	23.8
Potentially lethal lower limit	23.9	23.9	23.9

Table 4-3. Salmonid smolting temperature (°C) thresholds used for describing water quality conditions during the term of the Temporary Urgency Change Order. Criteria are from SCWA (2016).

Description	Chinook	Coho	Steelhead
optimal upper limit	16.9	10.0	11.1
suitable upper limit	17.8	13.9	12.8
stressful upper limit	20.0	16.9	15.0
acutely stressful upper limit	23.8	23.8	23.8
Potentially lethal lower limit	23.9	23.9	23.9

Table 4-4. Dissolved oxygen (mg/L) thresholds for all salmonid life stages used for describing water quality conditions during the term of the Temporary Urgency Change Order. Criteria are from SCWA (2016).

Description	Dissolved Oxygen (mg/L)
optimal upper limit	>12
suitable	8.0-11.9
stressful	5.0-7.9
acutely stressful	3.0-4.9
Potentially lethal upper limit	<3

To evaluate temperature- and DO-related impacts from flow changes to the timing and magnitude of adult and smolt salmonid counts from counting stations, we compared count data (when available) to water quality information only where fish would either pass a water quality station before being detected at a particular counting station. For instance, because most steelhead rearing habitat in the mainstem Russian River occurs upstream of Hopland, this report presents the water quality data from the east fork of the Russian River and from the USGS Hopland gaging station when analyzing temperature- and DO-related impacts to juvenile steelhead. Salmonid smolts of all three species moving downstream out of Dry Creek and the upper Russian River pass our downstream migrant trap on the Russian River at Mirabel then pass the Hacienda USGS stream gage before entering the ocean. Therefore, we paired salmonid smolt data from the Russian River downstream migrant trap to Hacienda water quality data to describe the conditions these fish likely experienced as they moved downstream through the lower Russian River.

4.2.4 Results

Flow

The winter 2021 TUCO went into effect on December 11, 2021, and expired 180 days later on June 9, 2022. During that period, average daily flow at Hacienda ranged from a high of 18,820 cfs on December 16, 2021, to a low of 45 cfs on June 4, 2022. Flow during the Order was typically between 141 cfs and 1,375 cfs (25th and 75th percentiles of the daily average flow at Hacienda). During the Order, the Russian River was generally influenced by tributary in-flow early in the winter and in April following rain events.

Temperature

Adult Salmonid Migration

The underwater video camera at the Mirabel dam was installed on September 1, 2021. However, a large storm occurred on October 24, 2021 (Figure 4-1). At approximately 2,000 cfs flow in the river becomes too high to operate the inflatable dam as well as the underwater video equipment used to count returning adult salmonids. Flow at the Hacienda gage approached 20,000 cfs following the rain event in late October and became much too high to operate the video equipment. Because this event occurred during the very early stages of the typical adult migration season, few adults were observed and will therefore not be reported.

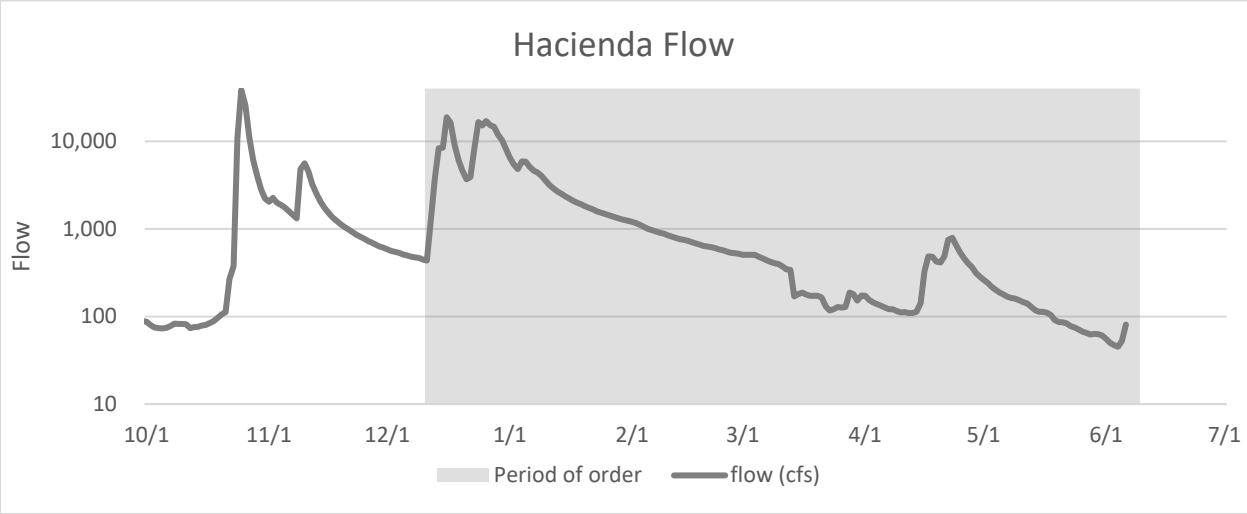

Figure 4-1. Flow in the Russian River at the USGS Hacienda stream gage (11467000).

Chinook

Water temperatures for Chinook salmon were favorable during the period of the order when Chinook are typically observed in the Russian River. Temperature was optimal for adult salmonids (based on the criteria in Table 4-1 and Figures 4-2 through 4-5).

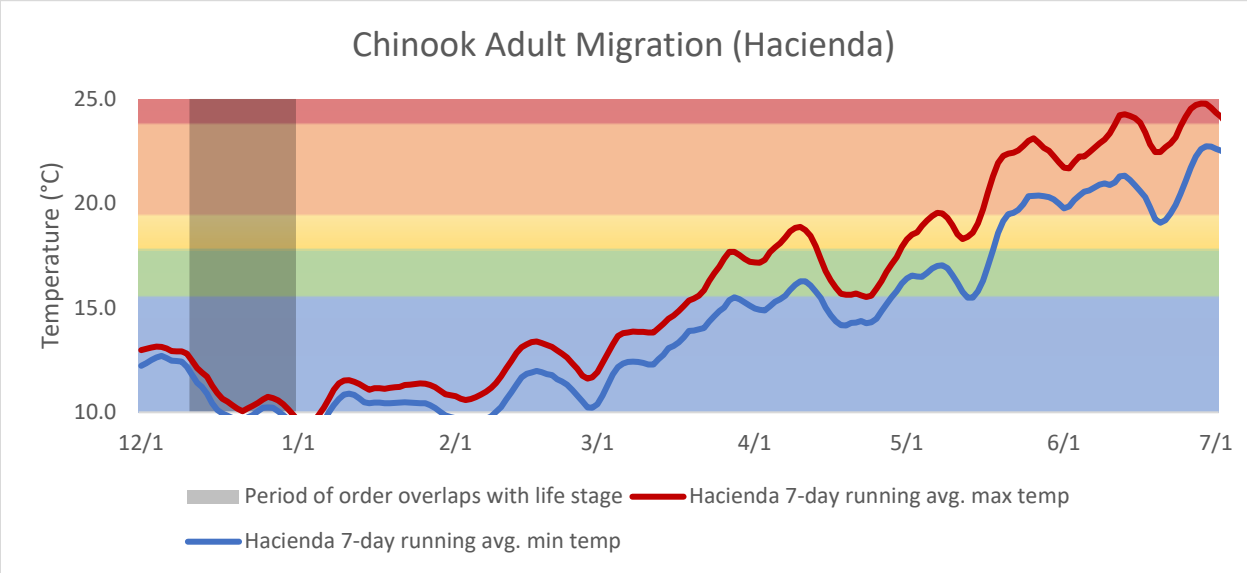

Figure 4-2. The 7-day running average of the minimum and maximum water temperatures collected at Hacienda (USGS gage number 11467000. Also show are optimal, suitable, stressful, acutely stressful, and lethal water temperature zones for adult Chinook based on Table 4-1.

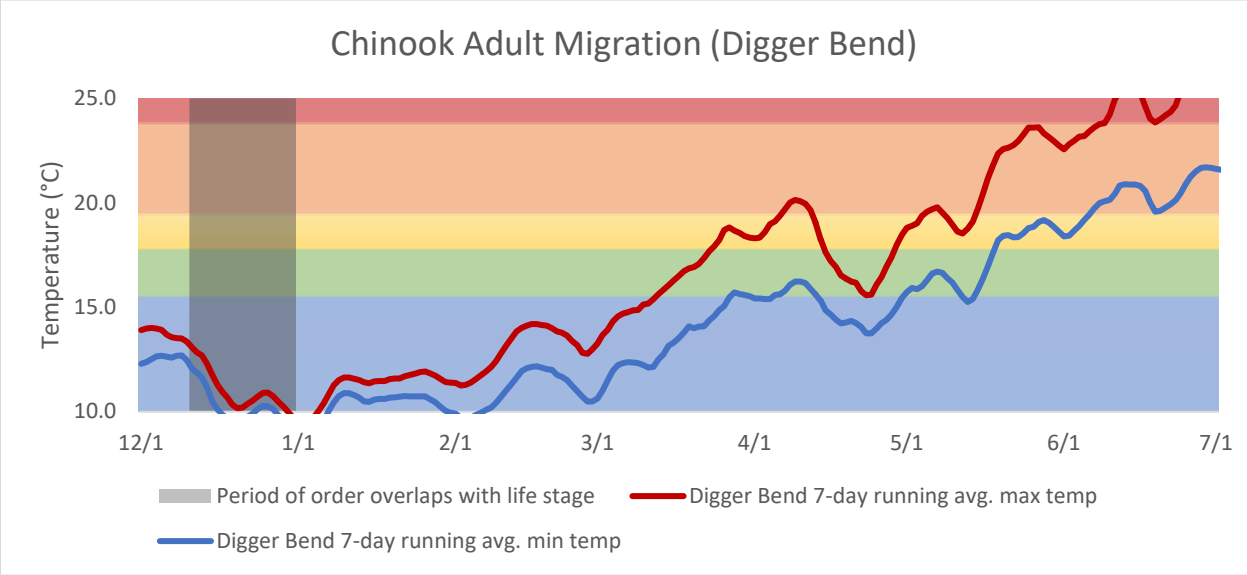

Figure 4-3. The 7-day running average of the minimum and maximum water temperatures collected at the USGS stream gage at Digger Bend (11463980) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook adult migration based on Table 4-1.

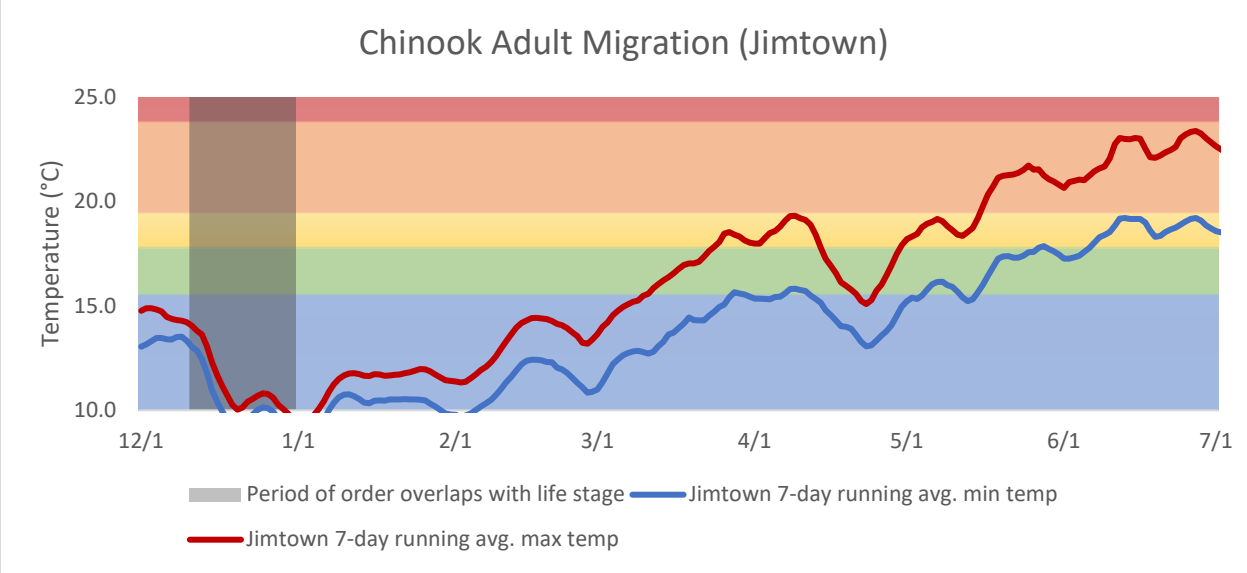

Figure 4-4. The 7-day running average of the minimum and maximum water temperatures collected at the USGS stream gage at Jimtown (USGS gage number 11463682) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook adult migration based on Table 4-1.

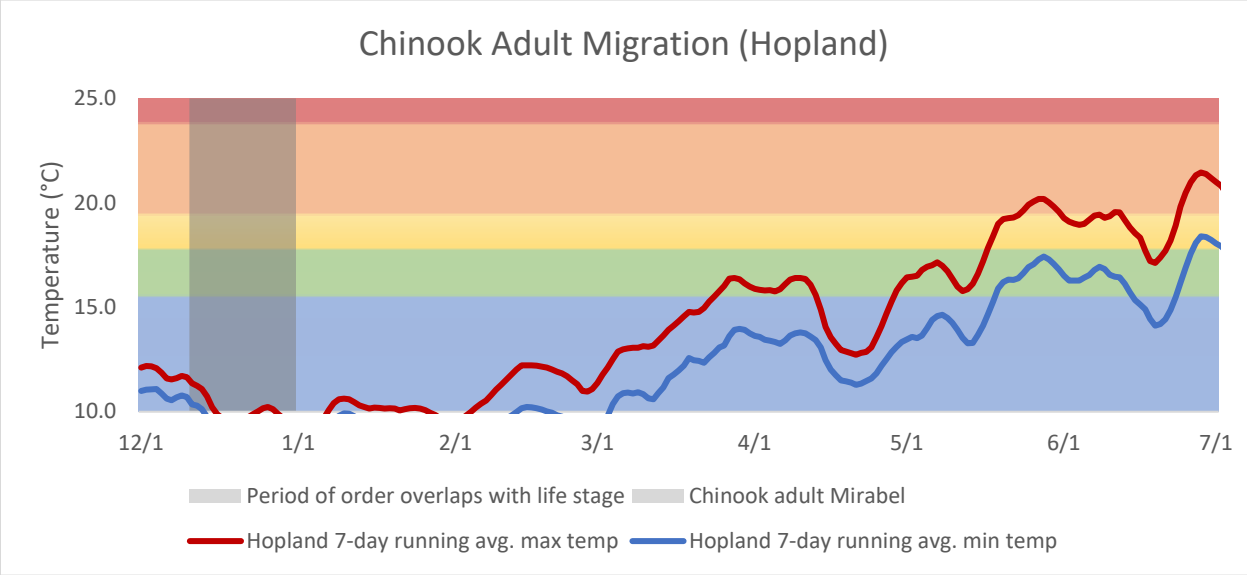

Figure 4-5. The 7-day running average of the minimum and maximum water temperatures collected at the USGS stream gage at Hopland (11462500) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook adult migration based on Table 4-1.

Coho

Water temperature for coho was generally favorable during the portion of the Order that overlaps with coho adult migration (December through March). At the Hacienda gage and at the Digger Bend gage temperature was mainly in the optimal and suitable range for adult coho (based on the criteria in Table 4-1, and Figure 4-6 and Figure 4-7).

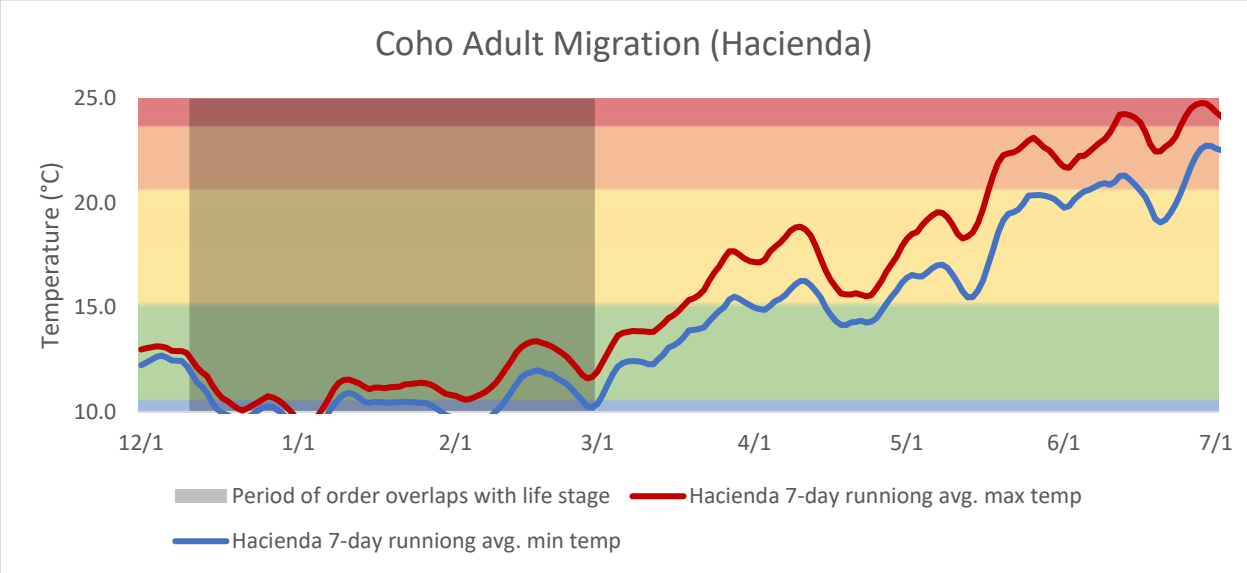

Figure 4-6. The 7-day running average of the minimum and maximum water temperatures collected at Hacienda (USGS gage number 11467000). Also show are optimal, suitable, stressful, acutely stressful, and lethal water temperature zones for adult coho based on Table 4-1.

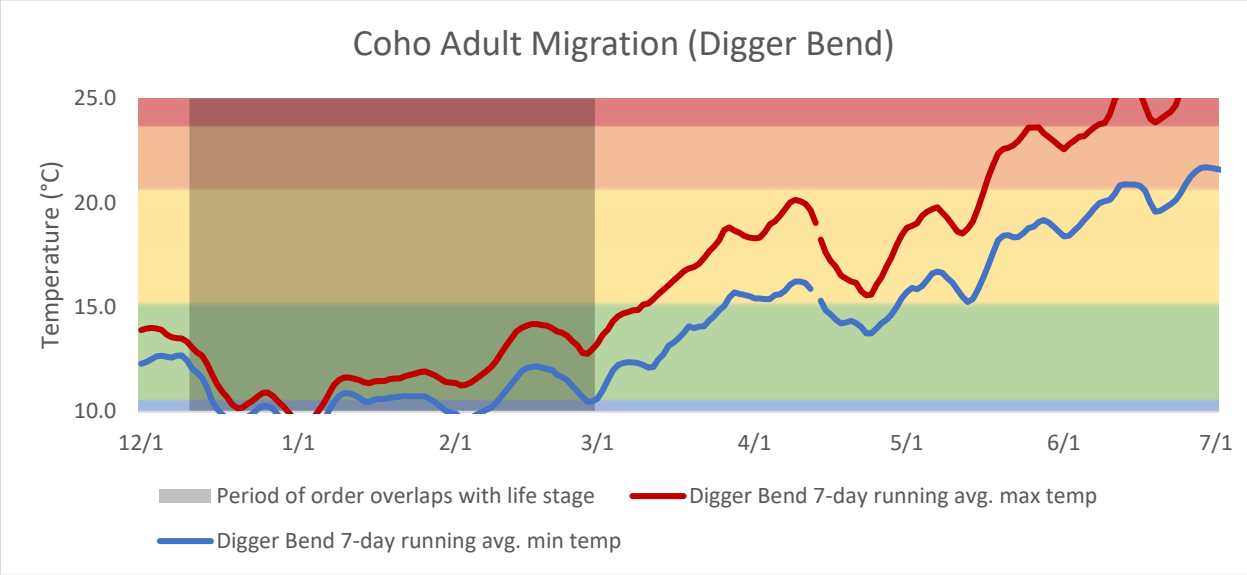

Figure 4-7. The 7-day running average of the minimum and maximum water temperatures collected at the USGS stream gage at Digger Bend (11463980) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for coho adult migration based on Table 4-1.

Steelhead

Water temperatures for steelhead were favorable during the portion of the Order that overlaps with the steelhead adult migration (December through March). Temperature was optimal to suitable for adult steelhead based on our criteria (Table 4-1 and Figure 4-9 through 4-12).

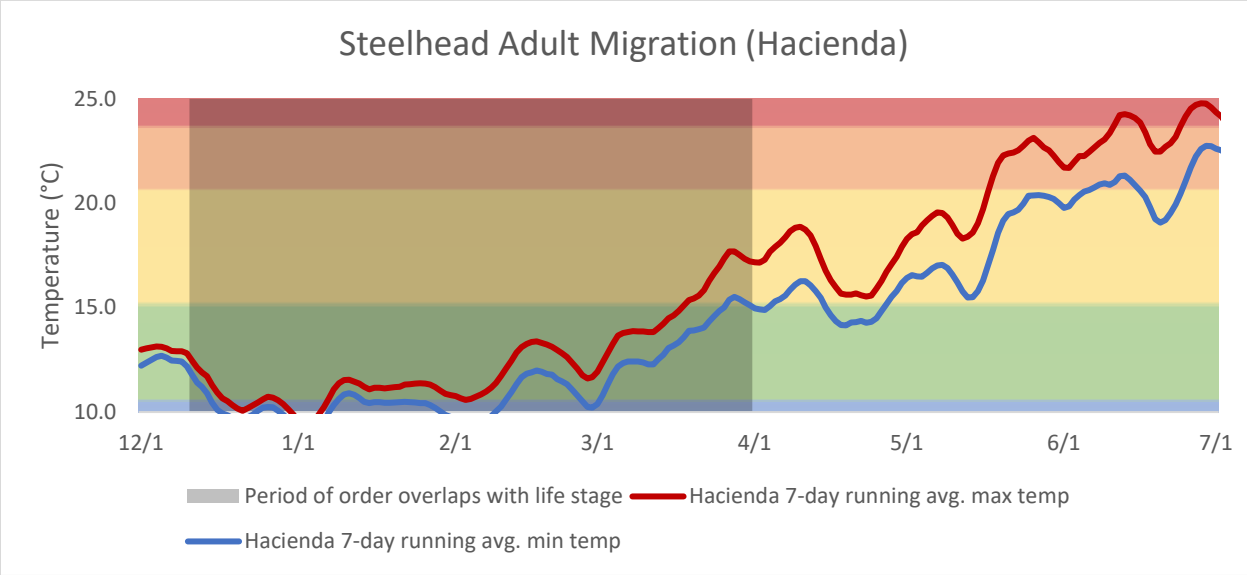

Figure 4-8. The 7-day running average of the minimum and maximum water temperatures collected at Hacienda (USGS gage number 11467000). Also show are optimal, suitable, stressful, acutely stressful, and lethal water temperature zones for adult steelhead based on Table 4-1.

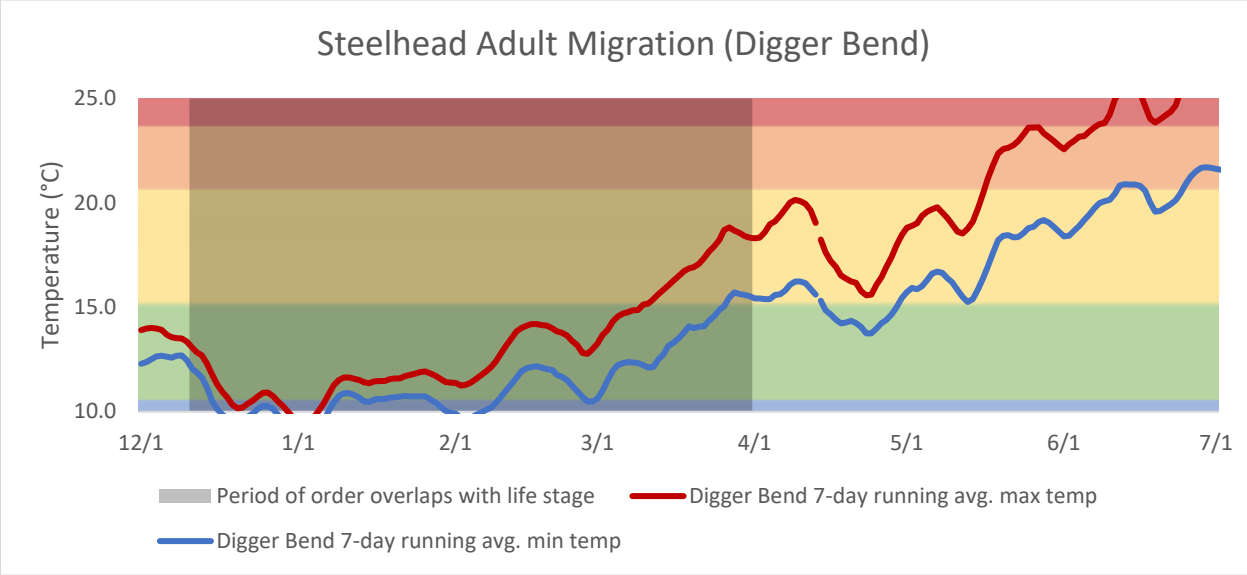

Figure 4-9. The 7-day running average of the minimum and maximum water temperatures collected at the USGS stream gage at Digger Bend (11463980) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for steelhead adult migration based on Table 4-1.

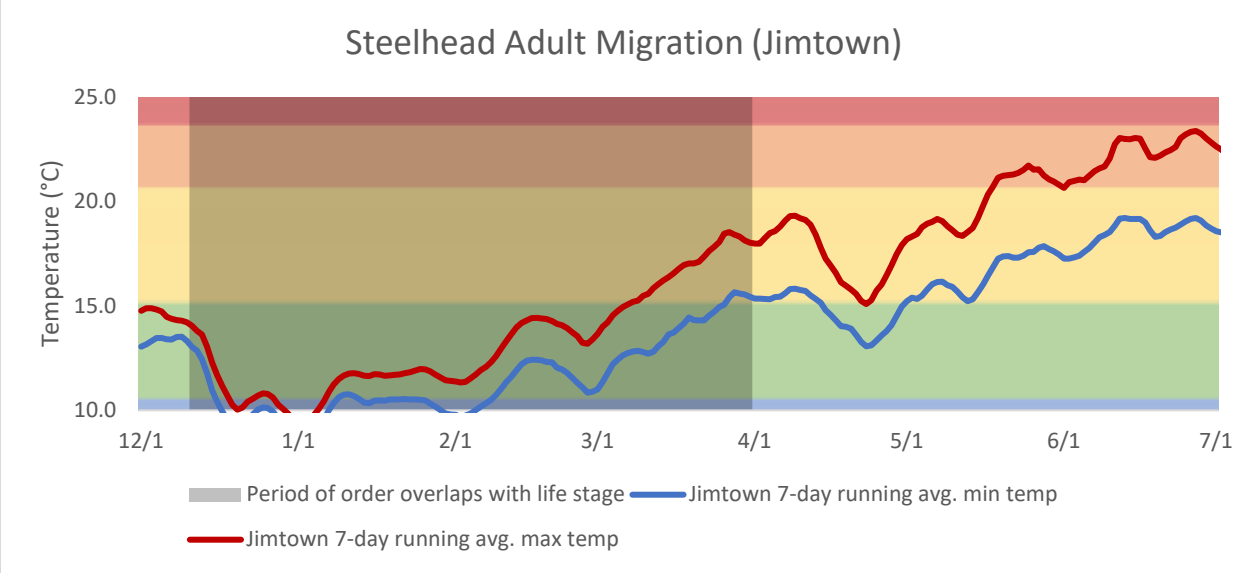

Figure 4-10. The 7-day running average of the minimum and maximum water temperatures collected at the USGS stream gage at Jimtown (USGS gage number 11463682) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for steelhead adult migration based on Table 4-1.

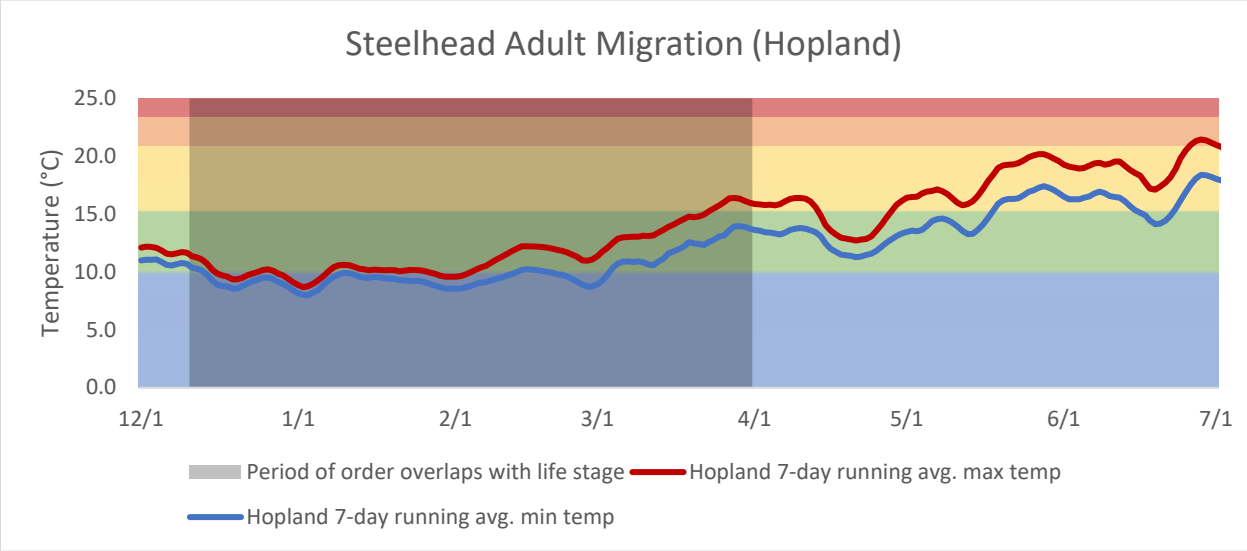

Figure 4-11. The 7-day running average of the minimum and maximum water temperatures collected at the USGS stream gage at Hopland (11462500) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for steelhead adult migration based on Table 4-1.

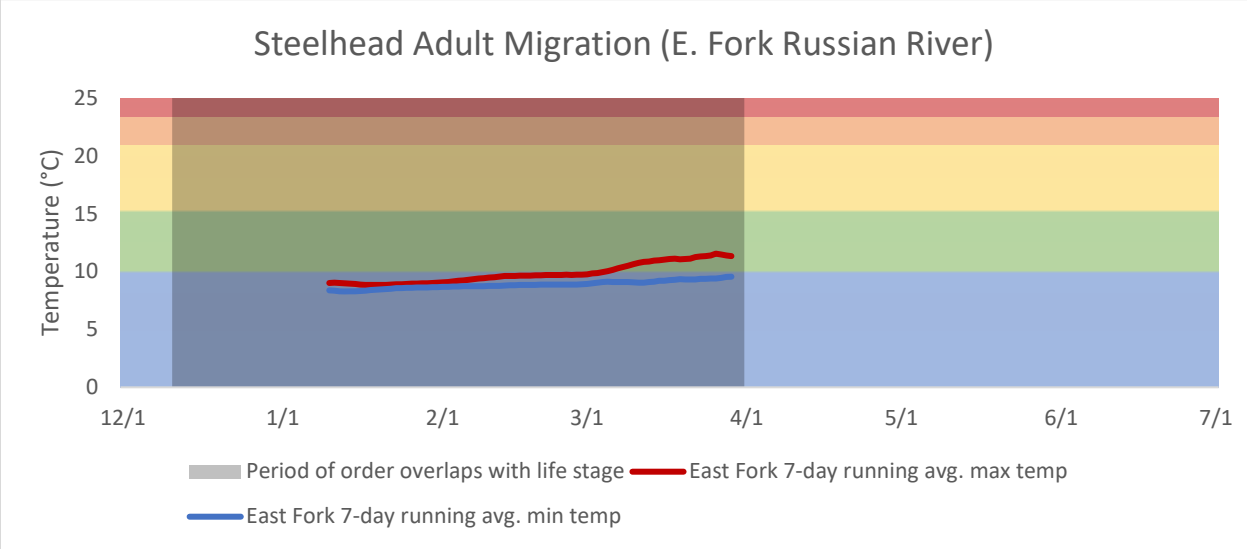

Figure 4-12. The 7-day running average of the minimum and maximum water temperatures collected by Sonoma Water in the east fork Russian River 0.5 km downstream of Coyote Valley Dam shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for steelhead adult migration based on Table 4-1.

Salmonid Rearing

Salmonids must cope with water temperatures found at their rearing sites. In the Russian River basin much of the salmonid rearing habitat is in tributaries to the Russian River including Dry Creek, but Chinook and steelhead rear in the mainstem Russian River as well. Chinook emerge from redds constructed in the upper Russian River in the early spring and begin rearing in the shallow portions of the stream margins. In the mainstem Russian River, Chinook finish rearing in the early spring when water temperatures are still relatively cool. As a result, Chinook rear at more locations in the mainstem, but for a shorter time than steelhead. Therefore, we relate water temperature at several mainstem

Russian River sites to Chinook water temperature criteria. Steelhead rear in freshwater for one or more years and are primarily restricted to the tributaries of the Russian River and to the portion of Russian River where water released from the cold-water pool (the bottom portion of the lake) in Lake Mendocino has the greatest cooling effect on mainstem rearing habitat near Coyote Valley Dam. This cooling effect has largely diminished by the time water reaches Cloverdale approximately 50 km downstream. We relate steelhead water temperature criteria to water temperature collected in the east fork of Russian River downstream of Coyote Valley Dam and at Hopland as these sites are within the section of the Russian River that can provide year-round rearing opportunities for juvenile steelhead. Juvenile coho salmon do not rear in the mainstem of the Russian River.

Chinook

During 2021, water temperatures for rearing Chinook ranged from optimal to acutely stressful depending on the site and time period within the Chinook rearing season (Figures 4-13 through 4-19). However, it is important to note that Chinook in the Russian migrate downstream and out to sea in the spring thus avoiding high temperatures and by June the majority of Chinook smolts have emigrated from the Russian River (see Salmonid Smolt Outmigration).

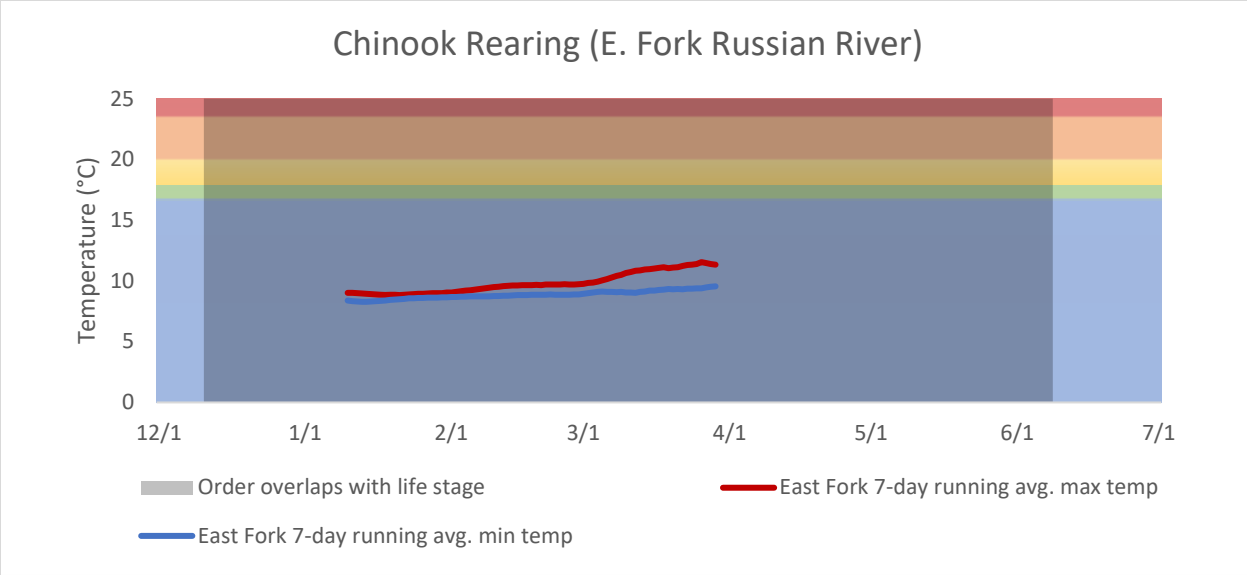

Figure 4-13. The 7-day running average of the minimum and maximum water temperatures collected by Sonoma Water in the east fork Russian River 0.5 km downstream of Coyote Valley Dam shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook rearing based on Table 4-2.

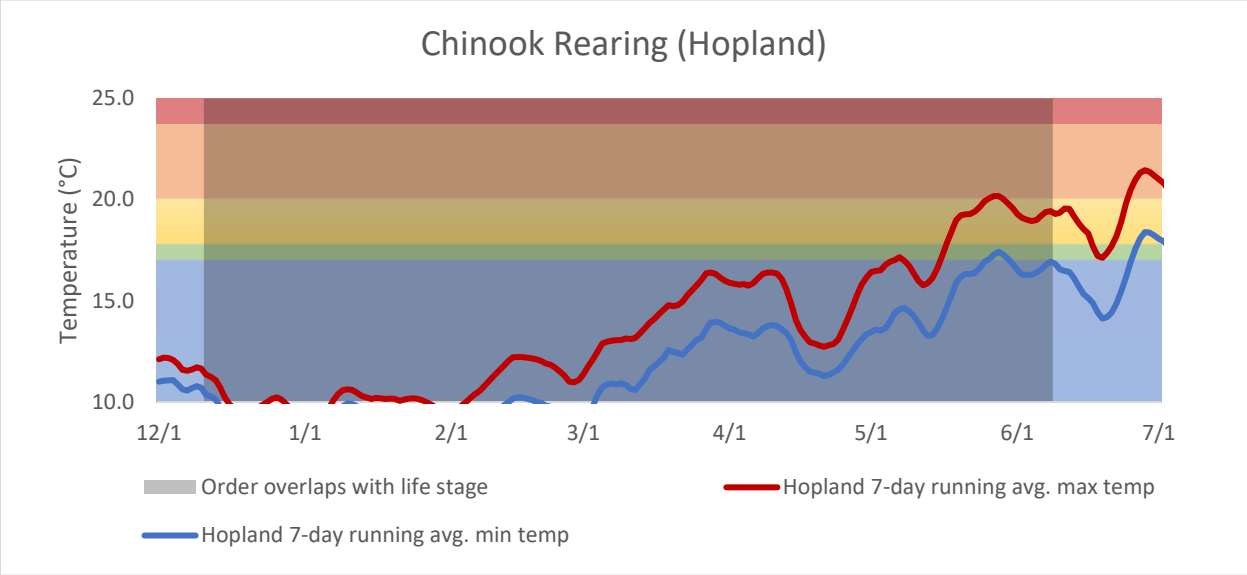

Figure 4-14. The 7-day running average of the minimum and maximum water temperatures collected at the USGS stream gage at Hopland (11462500) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook rearing based on Table 4-2.

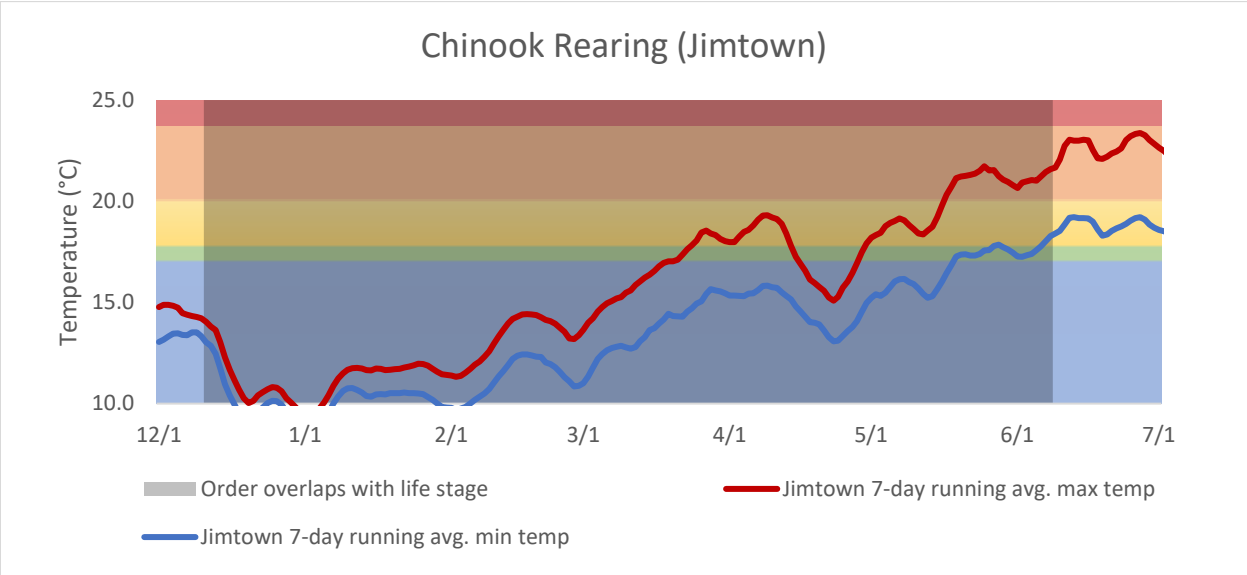

Figure 4-15. The 7-day running average of the minimum and maximum water temperatures collected at the USGS stream gage at Jimtown (USGS gage number 11463682) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook rearing based on Table 4-2.

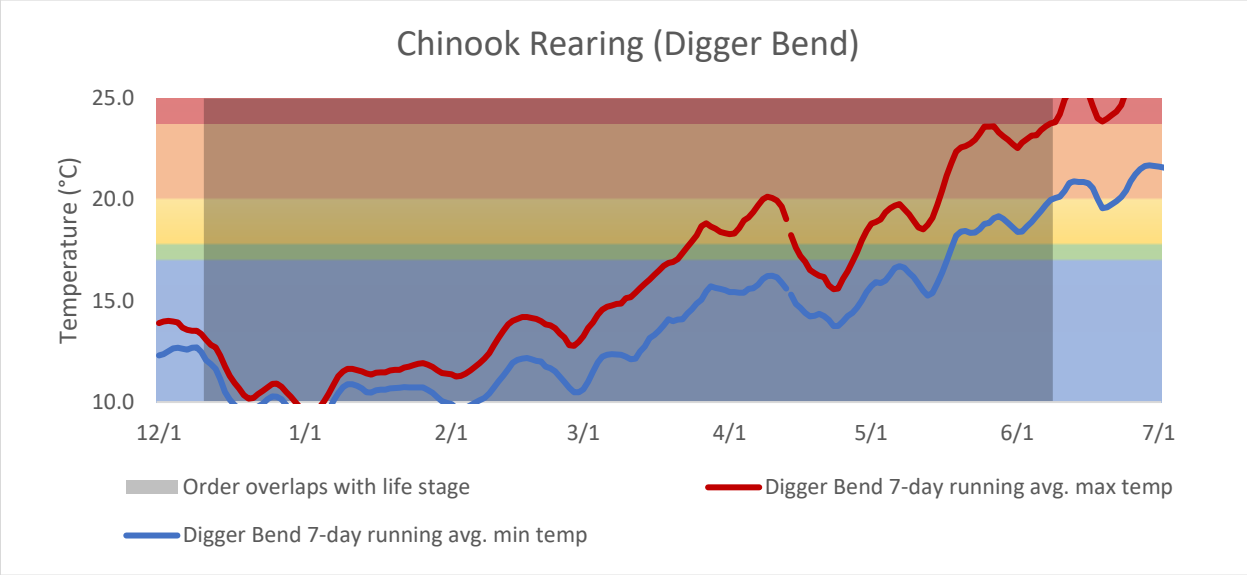

Figure 4-16. The 7-day running average of the minimum and maximum water temperatures collected at the USGS stream gage at Digger Bend (11463980) shown with the optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook rearing based on Table 4-2.

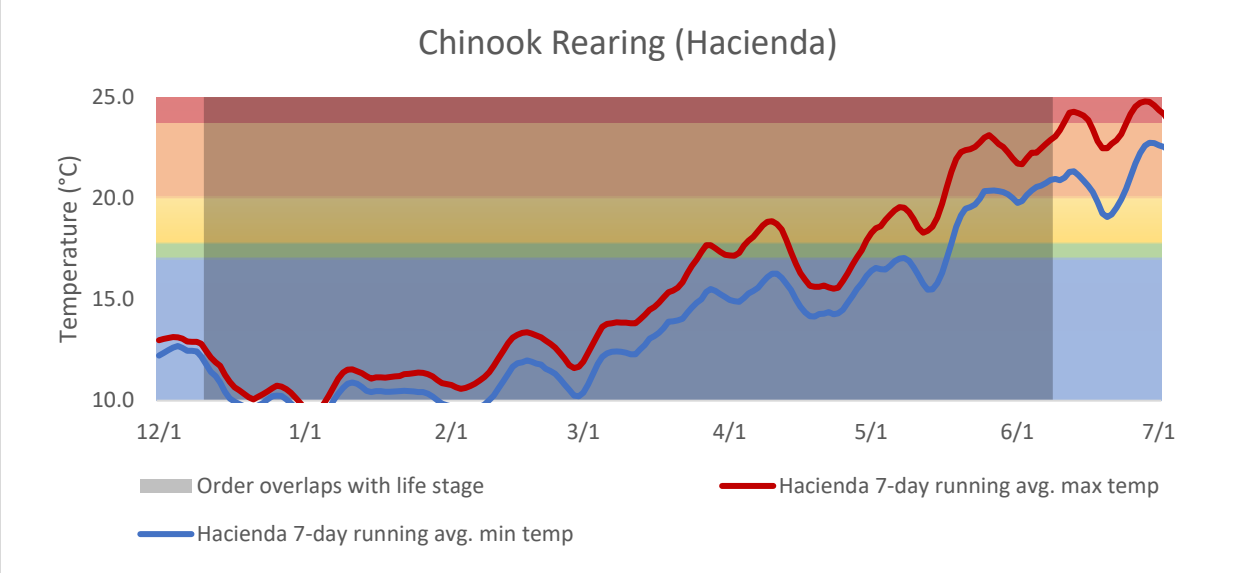

Figure 4-17. The 7-day running average of the minimum and maximum water temperatures collected at the USGS stream gage at Hacienda (gage number 11467000) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook rearing based on Table 4-2.

Steelhead

Steelhead parr rear year-round in the upper Russian River. During the Order water temperature in the east fork of the Russian River downstream of Coyote Valley Dam was optimal during the period that data was collected at this site (Figure 4-18). At the USGS stream gage at Hopland, water temperature was generally optimal to suitable for steelhead rearing (Figure 4-19).

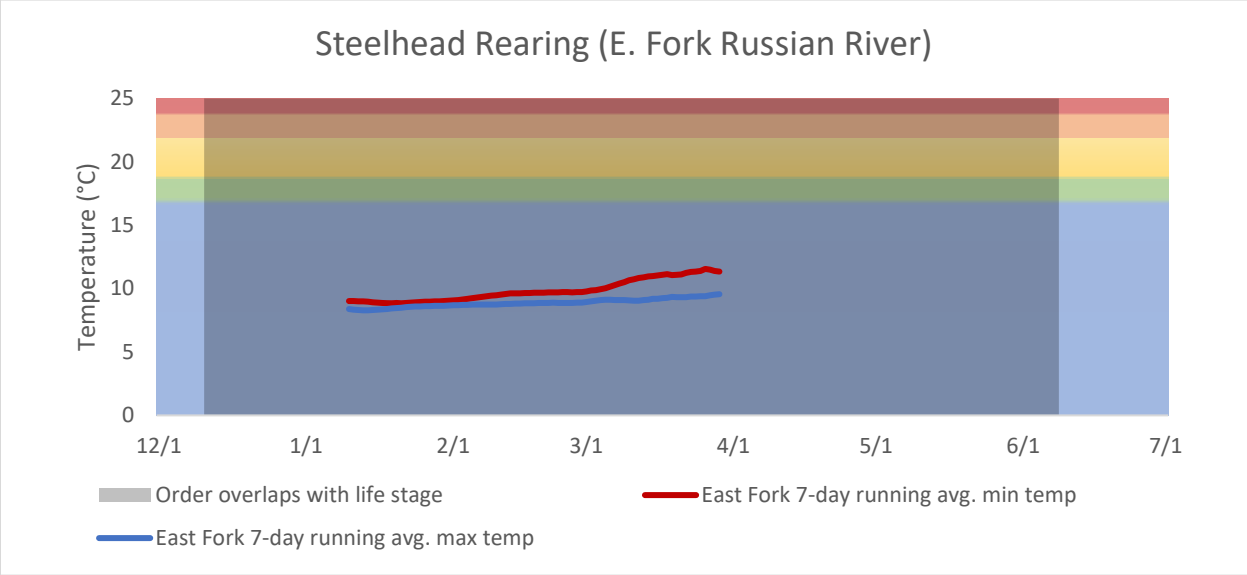

Figure 4-18. The 7-day running average of the minimum and maximum water temperatures collected by Sonoma Water at the east fork Russian River downstream of Coyote Valley Dam shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for steelhead parr based on Table 4-2.

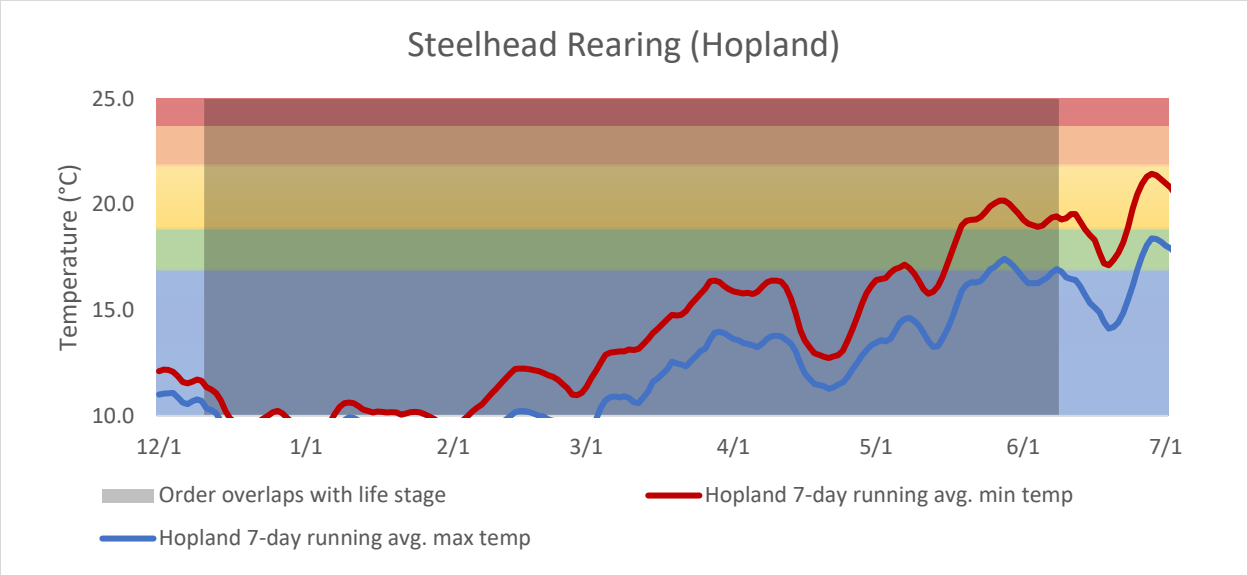

Figure 4-19. The 7-day running average of the minimum and maximum water temperatures collected at Hopland (USGS stream gage number 11462500) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for steelhead parr based on Table 4-2.

Salmonid Smolt Outmigration

For smolts produced in the upper portion of the watershed, we summarized Russian River water temperature for the east fork Russian River downstream of Coyote Valley Dam, Hopland, Jimtown, Digger Bend, and Hacienda gages and show these temperatures with water temperature criteria for Chinook and Steelhead smolts. For coho smolts we summarized water temperature for the Digger Bend,

and Hacienda gages since there is little coho spawning habitat upstream of Maacama Creek. Catches of Chinook, steelhead, and coho smolts from the Mirabel downstream migrant trap are shown with the Hacienda temperature data since the Hacienda gage is located near the Mirabel downstream migrant trap. The Mirabel downstream migrant trap was installed on April 7, 2022, and fished through July 7, 2022.

Chinook

Water temperature in the upper Russian River near the Coyote Valley Dam was not collected during the smolt outmigration period (April through June). Water temperature was generally favorable at the Hopland gage, however the seven-day running average of the maximum water temperature became stressful near the end of the smolt migration period. Water temperature became stressful to acutely stressful at sites located downstream of Hopland (Figure 4-20 through Figure 4-23). It is important to note that Chinook have evolved to emigrate during the spring before water temperatures become lethal that many Chinook were captured at the Mirabel fish trap emigrated before water temperature became acutely stressful (Figure 4-23).

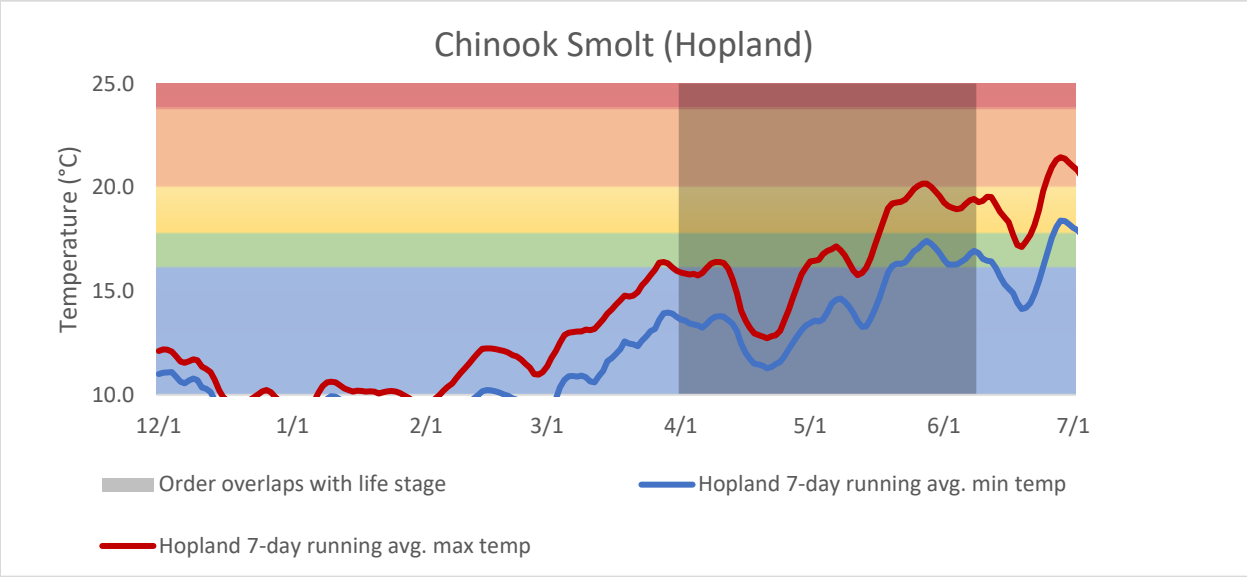

Figure 4-20. The 7-day running average of the minimum and maximum water temperatures collected at Hopland (USGS stream gage number 11462500). Shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook smolts based on Table 4-3.

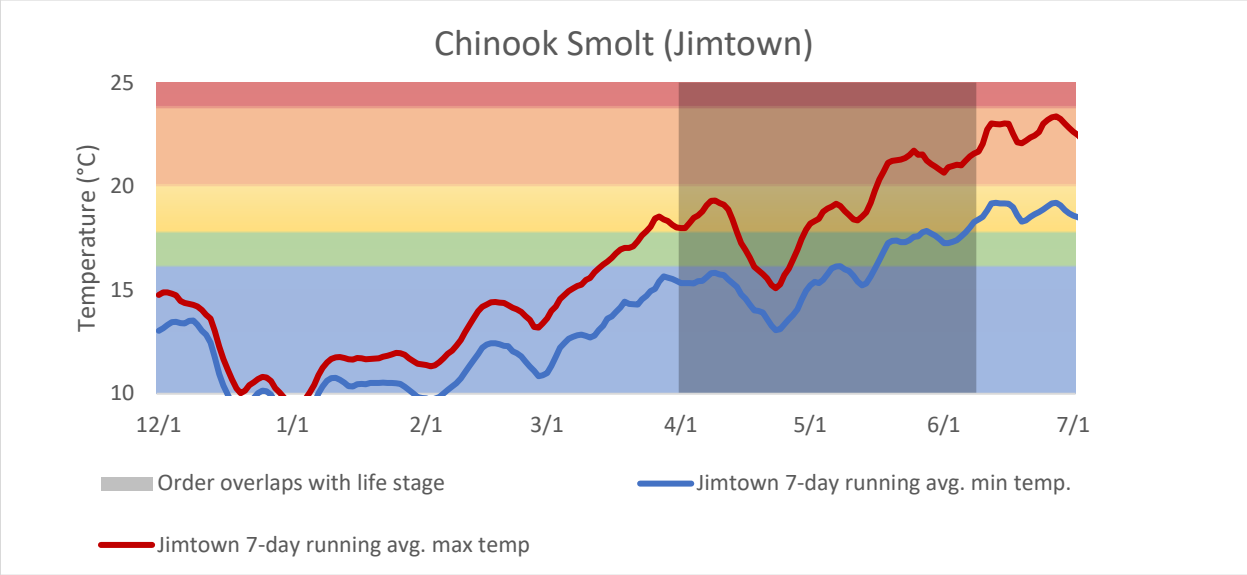

Figure 4-21. The 7-day running average of the minimum and maximum water temperatures collected at the Jimtown USGS stream Gage (1146382) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook smolts based on Table 4-3.

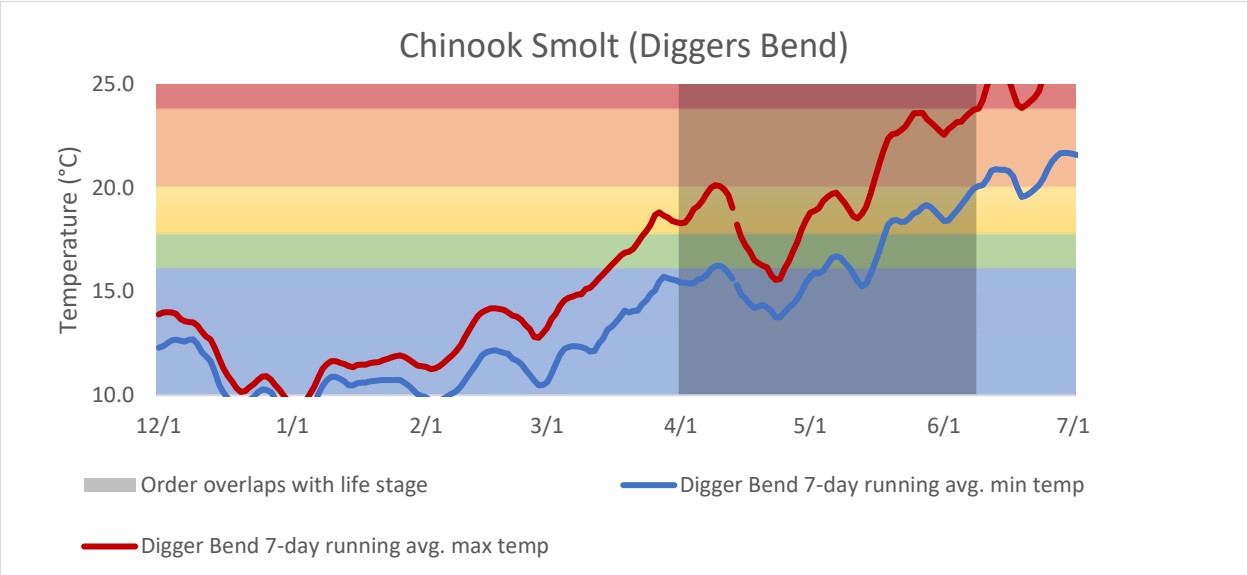

Figure 4-22. The 7-day running average of the minimum and maximum water temperatures collected at the Digger Bend USGS stream gage (11463980) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook smolts based on Table 4-3.

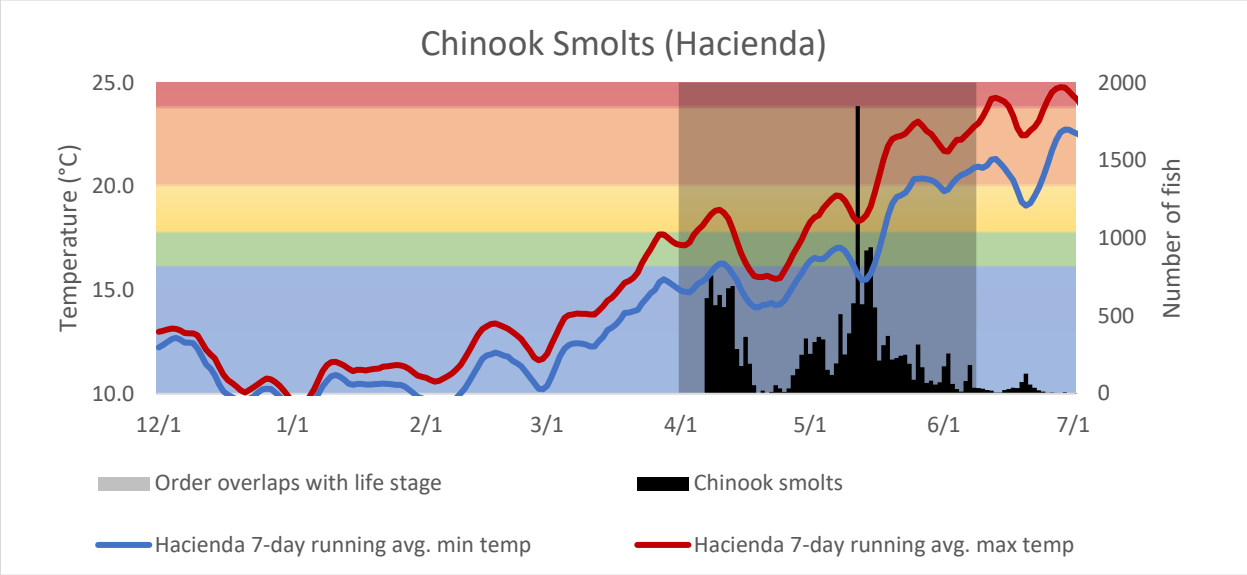

Figure 4-23. The 7-day running average of the minimum and maximum water temperatures collected at Hacienda (USGS gage number 11467000) shown with the Chinook smolt catch from the Mainstem Russian River near Mirabel and optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Chinook smolts based on Table 4-3.

Coho

Water temperature in the Russian River near Digger Bend and Hacienda ranged from suitable to acutely stressful with early months of the coho smolt emigration period being more favorable (Figure 4-24 and Figure 4-25). It is important to note that coho have evolved to emigrate during the spring before water temperatures become lethal and that many coho were captured at the Mirabel fish trap emigrated before the 7-day running average of the minimum daily water temperature became acutely stressful (Figure 4-25).

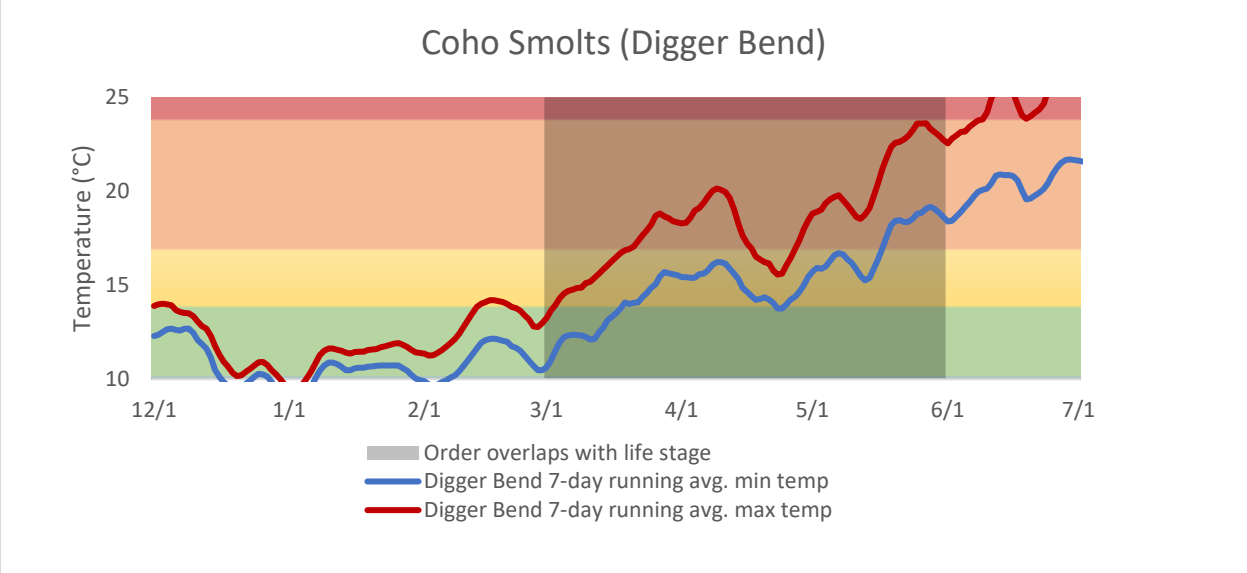

Figure 4-24. The 7-day running average of the minimum and maximum water temperatures collected at the Digger Bend USGS stream gage (11463980) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Coho smolts based on Table 4-3.

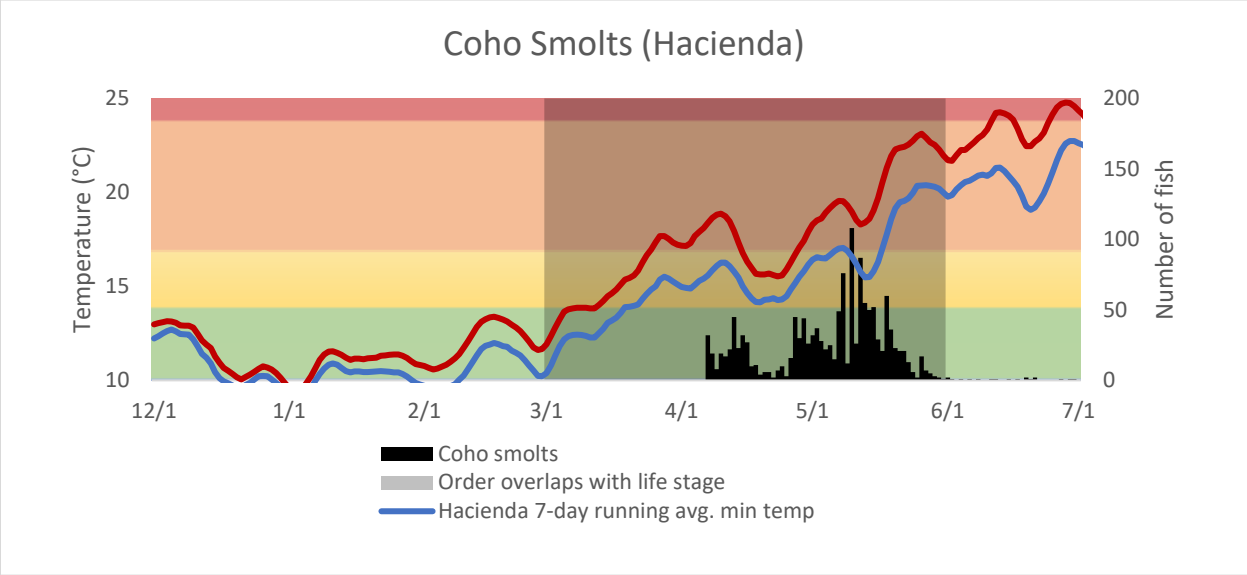

Figure 4-25. The 7-day running average of the minimum and maximum water temperatures collected at Hacienda (USGS gage number 11467000) shown with the Chinook smolt catch from the Mainstem Russian River near Mirabel and optimal, suitable, stressful, acutely stressful and lethal water temperature zones for Coho smolts based on Table 4-3.

Steelhead

Water temperature in the upper Russian River near the Coyote Valley Dam was generally favorable for steelhead smolts during the period that steelhead smolts are expected to emigrate and when data was available (March through April, Figure 4-26). However, water temperature became stressful to acutely stressful at sites located downstream of Hopland (Figure 4-27 through Figure 4-30). It is important to note that steelhead have evolved to emigrate during the spring before water temperatures become lethal and that many steelhead were captured at the Mirabel fish trap emigrated before water temperature became acutely stressful (Figure 4-30).

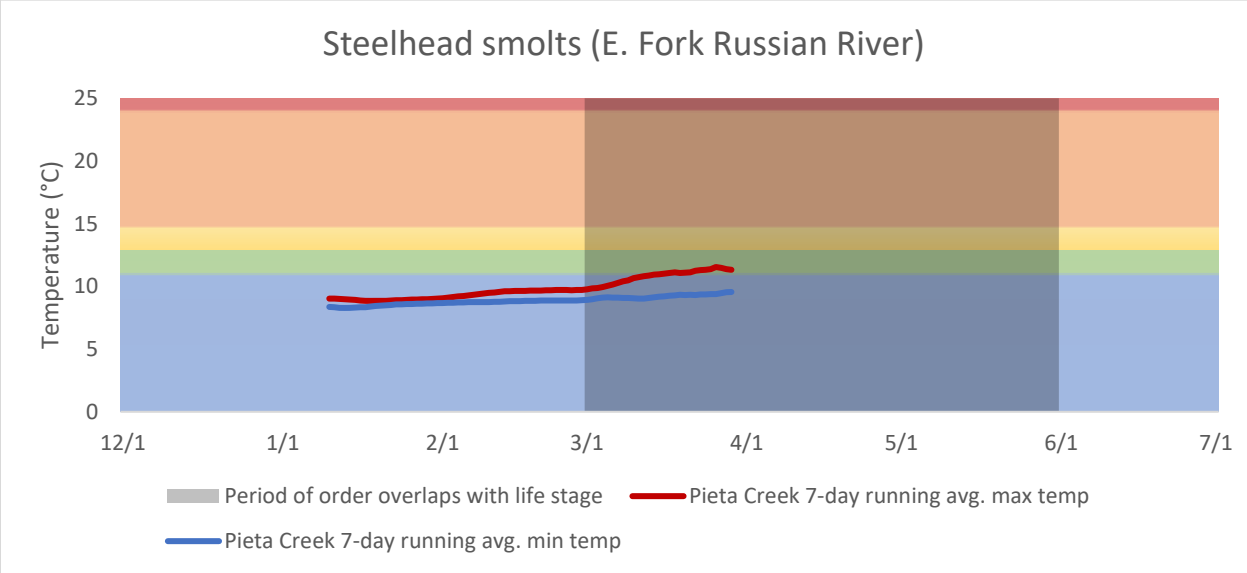

Figure 4-26. The 7-day running average of the minimum and maximum water temperatures collected by Sonoma Water at the east fork of the Russian River downstream of the Coyote Valley Dam. Shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for steelhead smolts based on Table 4-3.

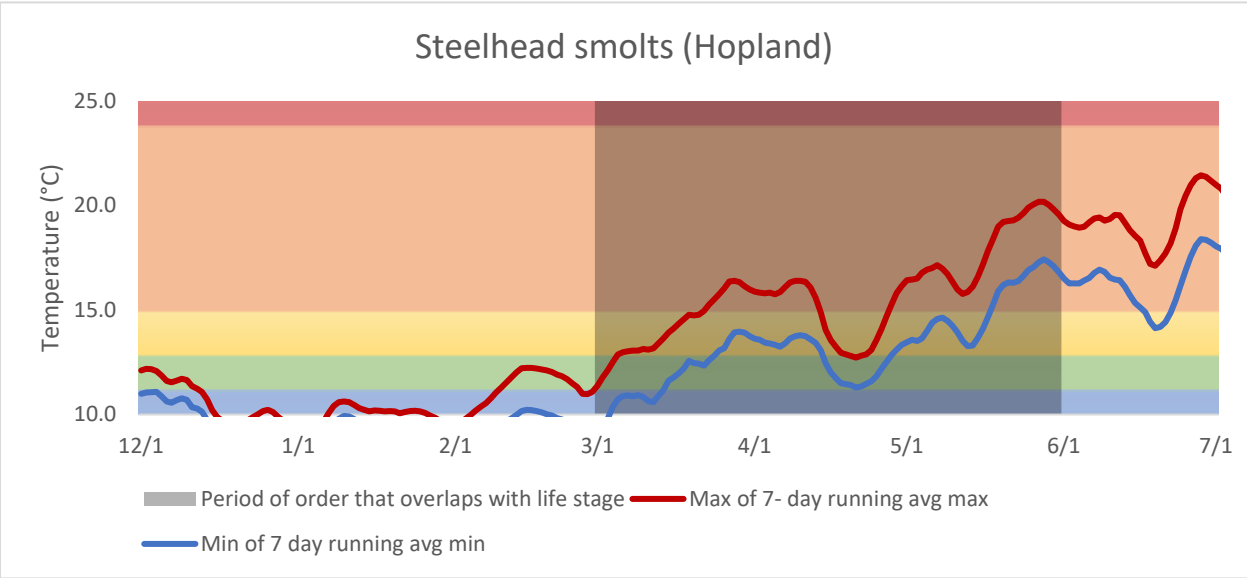

Figure 4-27. The 7-day running average of the minimum and maximum water temperatures collected at Hopland (USGS stream gage number 11462500). Shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for steelhead smolts based on Table 4-3.

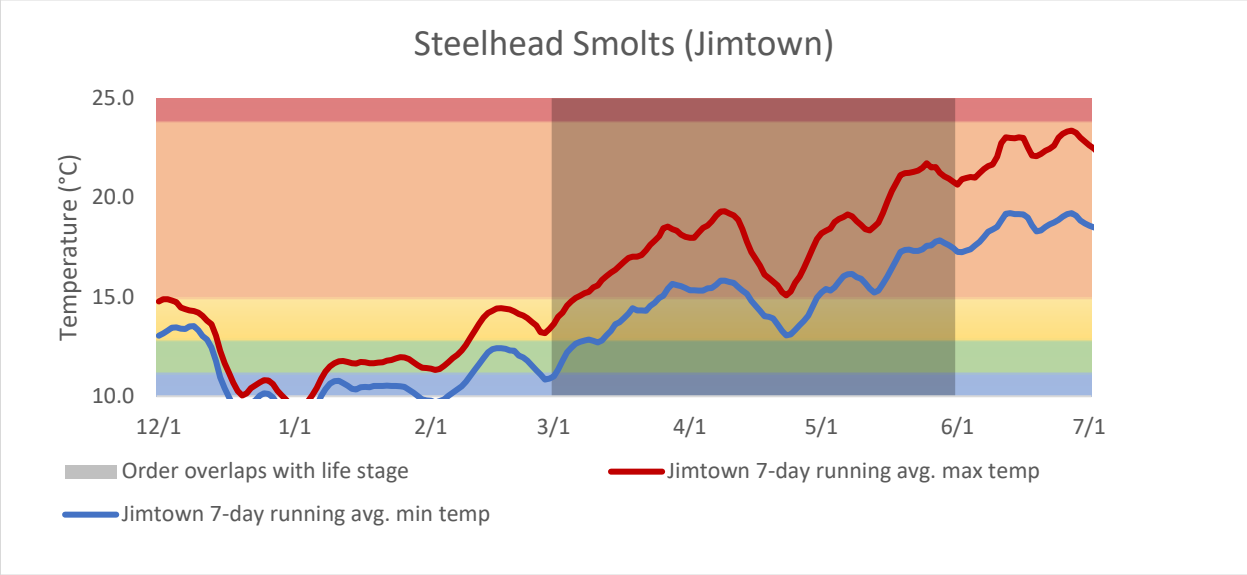

Figure 4-28. The 7-day running average of the minimum and maximum water temperatures collected at the Jimtown USGS stream Gage (1146382) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for steelhead smolts based on Table 4-3.

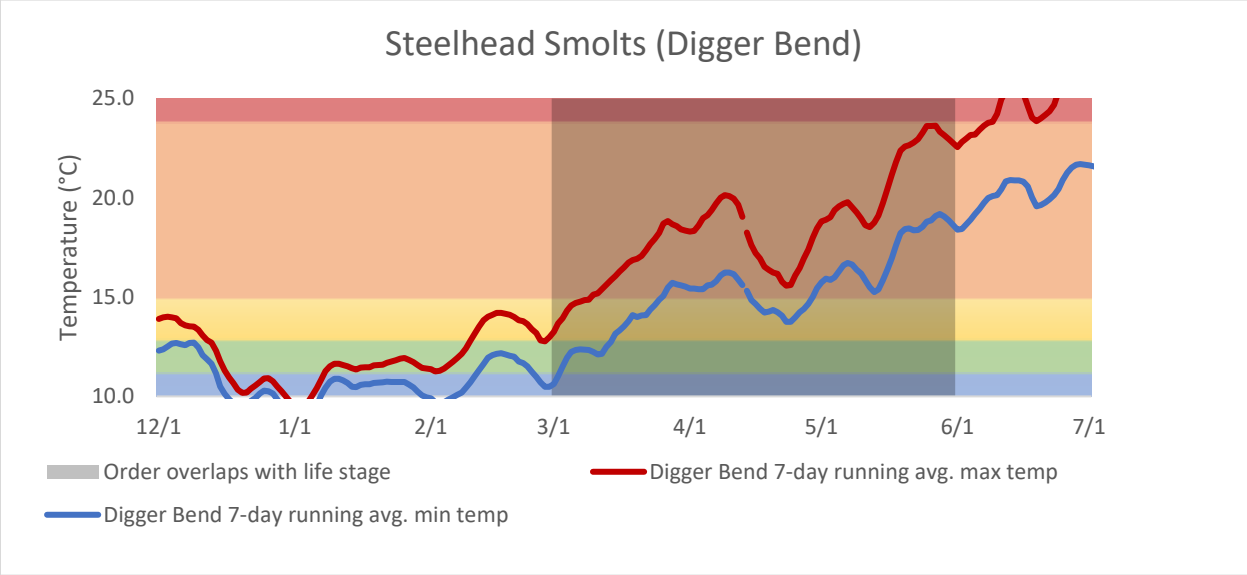

Figure 4-29. The 7-day running average of the minimum and maximum water temperatures collected at the Digger Bend USGS stream gage (11463980) shown with optimal, suitable, stressful, acutely stressful and lethal water temperature zones for steelhead smolts based on Table 4-3.

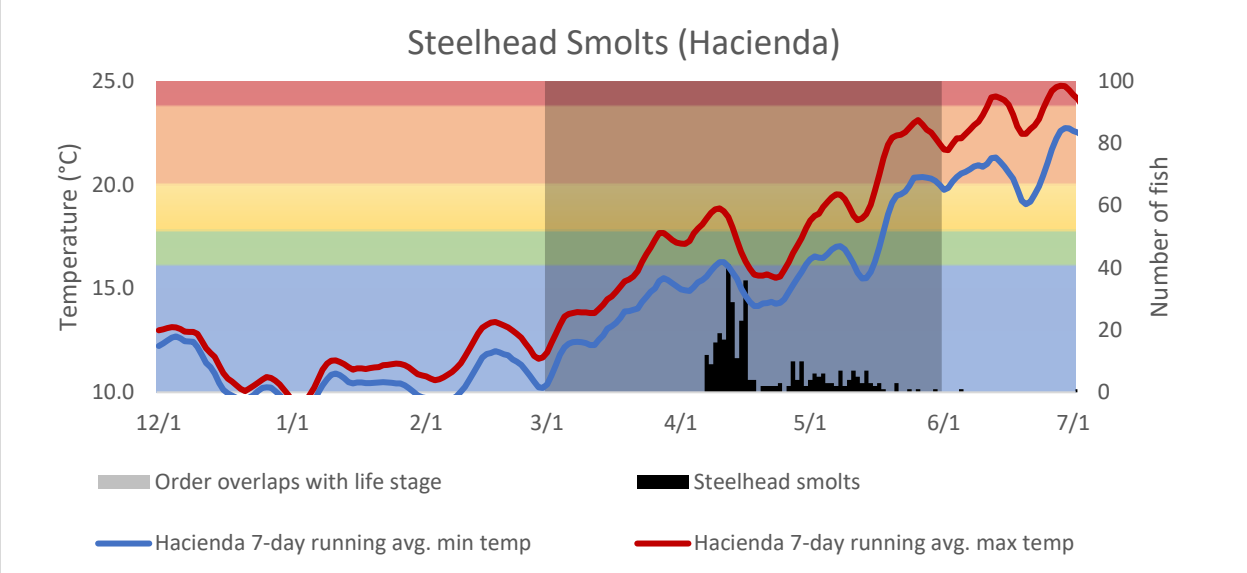

Figure 4-30. The 7-day running average of the minimum and maximum water temperatures collected at Hacienda (USGS gage number 11467000) shown with the Chinook smolt catch from the Mainstem Russian River near Mirabel and optimal, suitable, stressful, acutely stressful and lethal water temperature zones for steelhead smolts based on Table 4-3.

Dissolved Oxygen

At most sites, dissolved oxygen generally ranged from optimal to suitable for salmonids in the Russian River throughout the Order. In the east fork Russian River dissolved oxygen was favorable based on the limited data that was available for that site (Figure 4-31). At Hopland dissolved oxygen was generally favorable (Figure 4-32). However, dissolved oxygen became stressful at Jimtown, particularly later in the season (Figure 4-33). At Digger Bend and at Hacienda dissolved oxygen was generally favorable during the order (figure 4-34 and Figure 4-35).

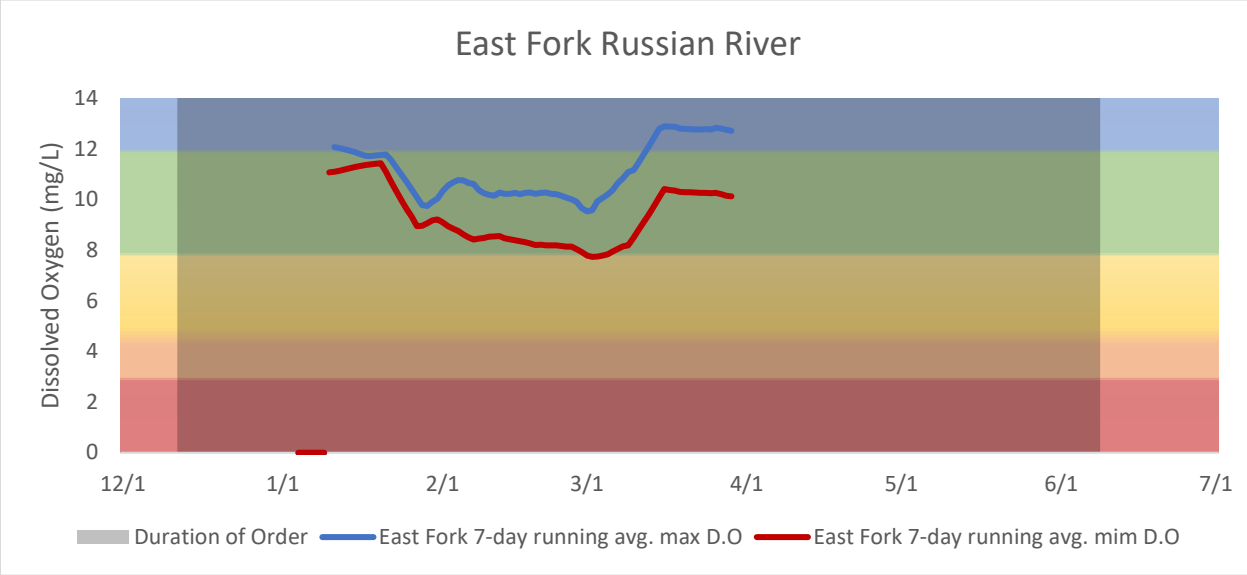

Figure 4-31. The 7-day running average of the minimum and maximum dissolved oxygen collected by Sonoma Water in the east fork of the Russian River downstream of Coyote Valley Dam shown with optimal, suitable, stressful, acutely stressful, lethal dissolved oxygen zones based on criteria in Table 4-4.

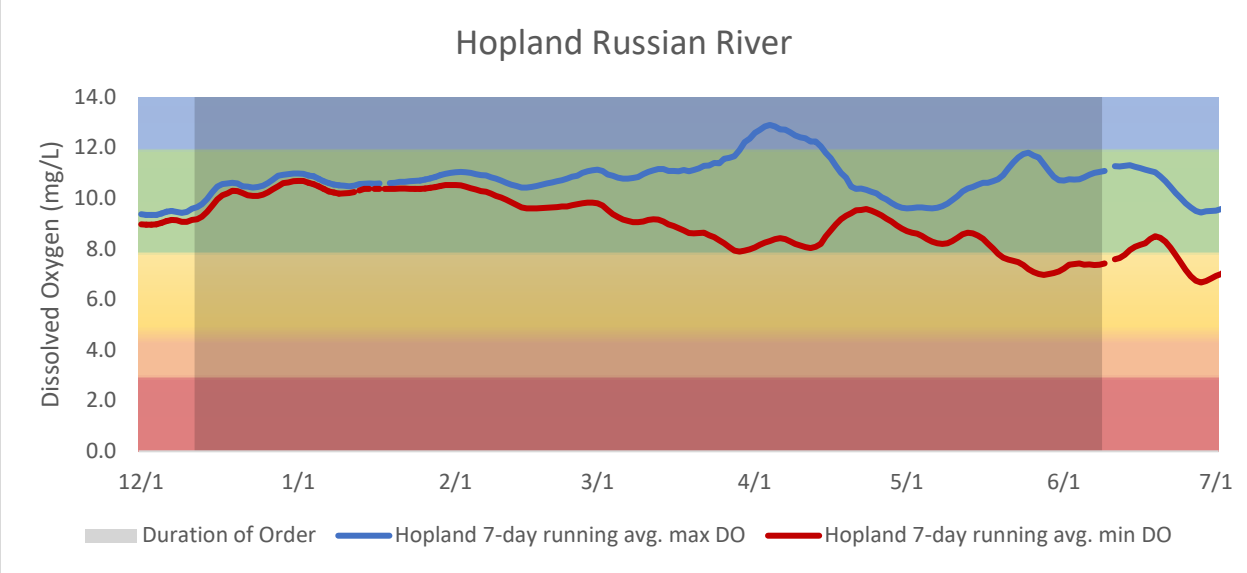

Figure 4-32. The 7-day running average of the minimum and maximum dissolved oxygen collected at Hopland (USGS stream gage number 11462500) shown with optimal, suitable, stressful, acutely stressful, lethal dissolved oxygen zones based on criteria in Table 4-4.

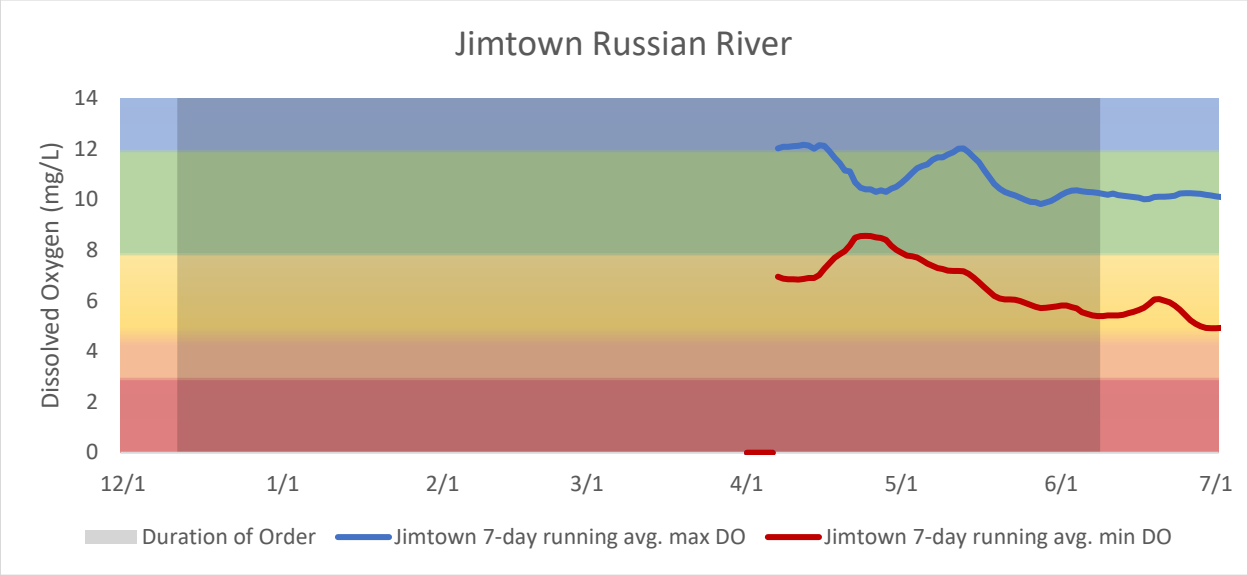

Figure 4-33. The 7-day running average of the minimum and maximum dissolved oxygen collected at the Jimtown USGS stream Gage (1146382) shown with optimal, suitable, stressful, acutely stressful, lethal dissolved oxygen zones based on criteria in Table 4-4.

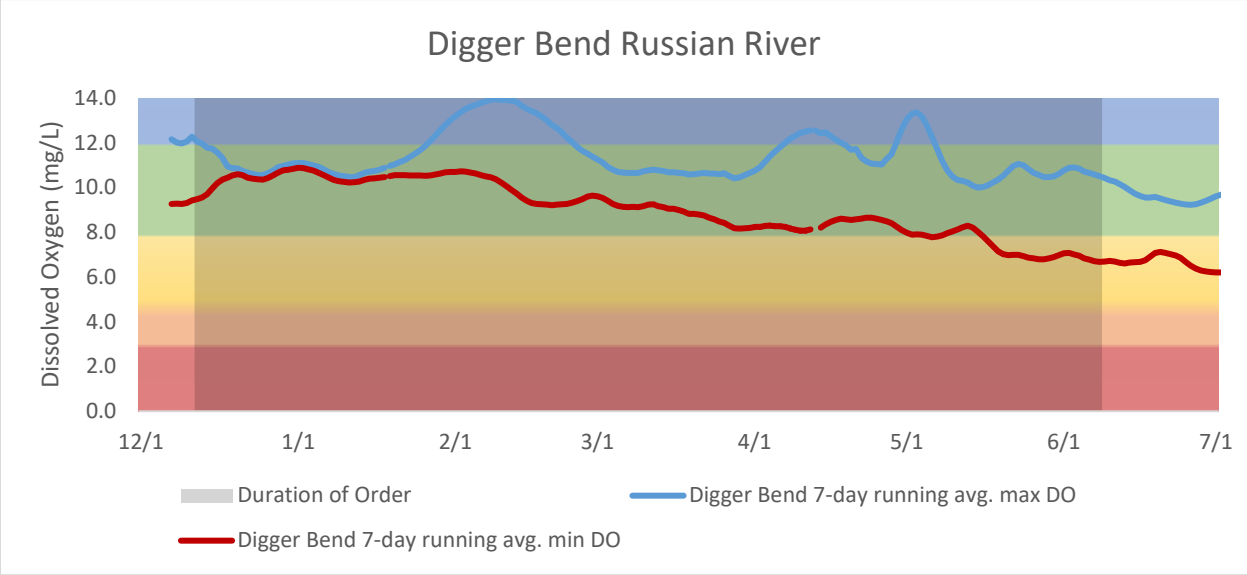

Figure 4-34. The 7-day running average of the minimum and maximum dissolved oxygen collected at the Digger Bend USGS stream gage (11463980) shown with optimal, suitable, stressful, acutely stressful, lethal dissolved oxygen zones based on criteria in Table 4-4.

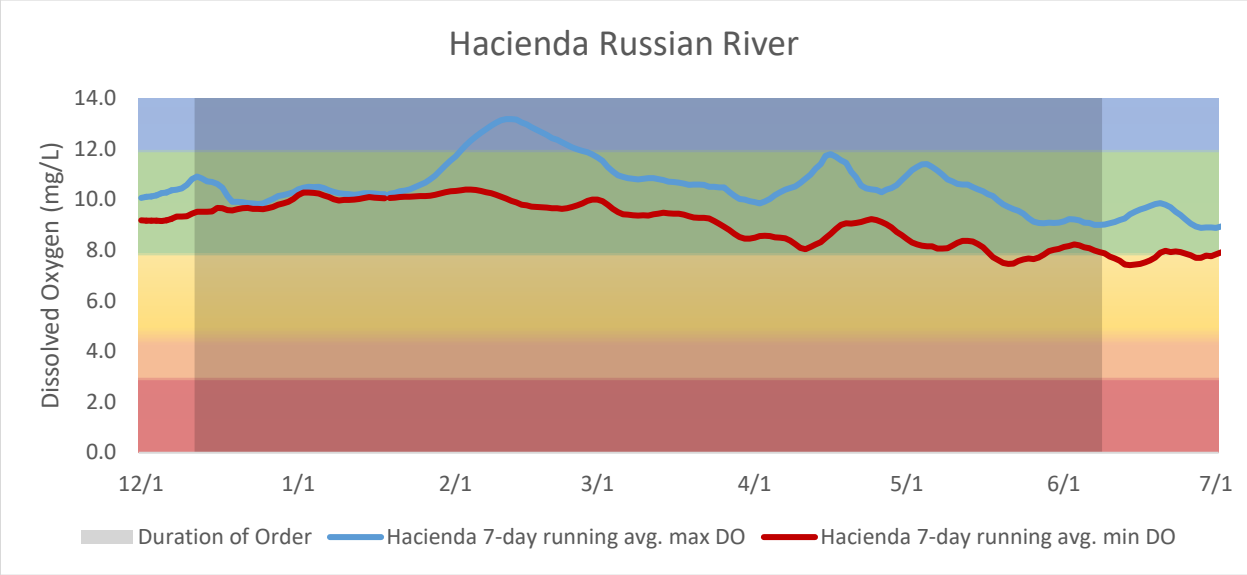

Figure 4-35. The 7-day running average of the minimum and maximum dissolved oxygen collected at the Hacienda USGS stream gage (1146700) shown with optimal, suitable, stressful, acutely stressful, lethal dissolved oxygen zones based on criteria in Table 4-4.

4.2.5 Summary

Water temperatures were generally favorable for salmonids during the Order since the Order spanned from the winter to late spring. However, some salmonids did experience unfavorable conditions near the end of their migration and rearing periods. Water temperature is mainly dependent on air temperature and varies thought the year with cooler temperature in the winter when air temperature is relatively cool and warmer temperatures in the summer when air temperature is warm. Cold water reservoir releases made from deep in the lakes provide cool water habitat immediately downstream of the Coyote Valley and Warm Springs dams and this habitat can remain cool despite warm air temperatures. Salmonids have adapted to cope with seasonally warm water temperatures by occupying the river at a time of year when water temperatures are favorable or in the case of rearing steelhead by occupying sections of the river that have cooler water temperatures from reservoir releases.

Water temperature was generally favorable for adult salmonids. During the time period that the Order was in effect and that adult Chinook were expected to be migrating upstream water temperature was optimal. For coho adults water temperature was in the optimal to suitable range during the portion of their migration period that overlapped with the Order. Adult steelhead return to the Russian River later in the winter than Chinook or coho. As a result, they must cope with slightly warmer temperatures near the end of their migration period. Water temperature for adult steelhead was generally optimal to suitable with temperatures reaching stressful levels by the end of the migration season. While temperatures were occasionally unfavorable for adult salmonids it is important to note that (1) these fish have evolved to cope with seasonally warm water temperatures by returning to the river during a time of year when water temperatures are cool and (2) most adult salmonids return to the Russian River during a time of year when water temperatures in the river are favorable.

For juvenile Chinook, water temperatures were favorable for rearing in the early spring at most sites but became unfavorable by the end of the rearing season. Fish that remained in the river and emigrated as smolts late in the rearing season encountered unfavorable water temperatures as they moved downstream and out to sea. It is important to note that Chinook have likely adapted to warm temperatures in the Russian River and have adjusted their run timing to further cope with seasonally warmer water temperatures by emigrating earlier in the year.

For steelhead rearing, water temperature in the east fork Russian River was optimal during the time period that data was available. At Hopland, water temperature for steelhead rearing was generally optimal during the Order with a brief period near the end of the Order where the 7-day running average of the average maximum daily temperature was stressful.

Chinook salmon smolts experienced optimal to suitable conditions with stressful water temperatures occurring later in the migration period. However, the bulk of Chinook smolts emigrate from the Russian River when water temperatures are more favorable. In 2022, over 78% (15,205) of the Chinook smolts captured at the Mirabel downstream migrant trap (not adjusted for trap efficiency) were captured before the 7-day average of the maximum daily water temperature reached acutely stressful levels.

Dissolved oxygen was generally suitable for salmonids during the Order. Dissolved oxygen in the east fork of the Russian River was optimal to suitable, although limited data that was available. The 7-day running average of the minimum dissolved oxygen was generally suitable for salmonids at Hopland, Digger Bend, and Hacienda with a period of stressful conditions near the end of the Order. Limited data was available for Jimtown early in the season; however the 7-day running average of the minimum dissolved oxygen was stressful for salmonids from early May to the end of the Order at this site.

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