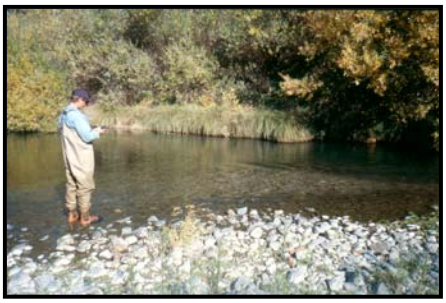
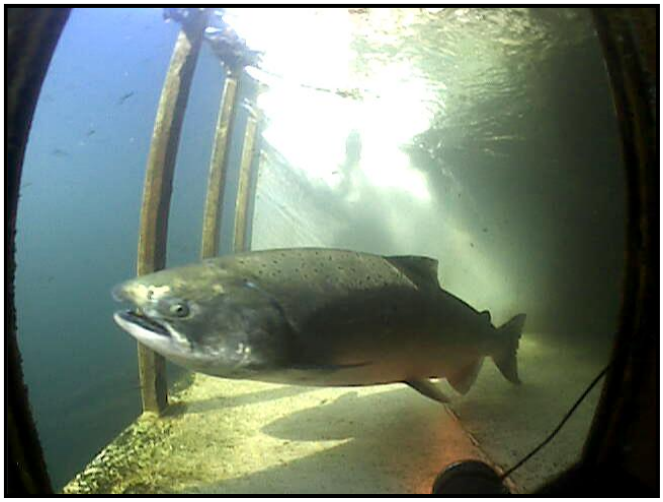
Fisheries Monitoring Plan to Meet State Water Resources Control Board Order WR 2009-0027-DWR





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May 24, 2009

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1.0 PURPOSE AND INTRODUCTION

This plan has been prepared by the Sonoma County Water Agency (Agency) to fulfill the requirements of the State Water Resources Control Board (SWRCB) Order WR 2009-0027-DWR (Order).

1.1 Lake Mendocino Storage Levels

Unusual hydrologic conditions in the Russian River Valley, coupled with reductions in water imported to the Russian River basin via the Potter Valley Project, have warranted immediate action to avoid significant risks to the storage levels in Lake Mendocino, including the possibility of the lake going dry in September. In 2007, the Agency filed a similar petition to mitigate impacts resulting from anticipated low lake levels. The approval of that petition by the SWRCB was critical to protecting the Chinook salmon in the Russian River during their fall migration and spawning. This year, the storage projections for Lake Mendocino are far more severe and the lake will likely go dry without changes to the summer release requirements to maintain minimum instream flows.

In April 2009, the storage level in Lake Mendocino was approximately 53,000 acre-feet (AF). This is roughly 17,000 AF lower than Lake Mendocino was in April 2007. Although Lake Mendocino storage is unusually low, cumulative inflow into Lake Pillsbury during the 2009 water year has been sufficient enough that, under SWRCB Decision 1610 (D-1610), 2009 is classified as a "Normal" water year and will likely retain this classification for the remainder of the year.

1.2 Water Year Classifications

The water year classifications (Normal, Dry, or Critical) specified in D-1610 are based on cumulative inflow into Lake Pillsbury beginning October 1. Analyses recently prepared by Agency engineering staff indicate that if significant inflows into Lake Mendocino, either from storm events or diversions by PG&E from the Eel River by the Potter Valley Project do not occur between now and June 1, then releases from Lake Mendocino to meet normal demands on, and minimum instream flow requirements for, the Russian River under D-1610 Normal year requirements will drain Lake Mendocino.

1.3 Temporary Urgency Change Petition Filed

To try to prevent these grave impacts, the Agency filed a Temporary Urgency Change Petition (TUCP) with the SWRCB on April 6, 2009, seeking immediate approval to reduce the minimum instream flow requirements for the Russian River in the Agency's water-rights permits in order to maintain sufficient storage in Lake Mendocino so that it does not go dry in the Fall of 2009. In the TUCP, the

Agency requested the SWRCB make the following temporary changes to the D-1610 instream flow requirements:

a. For April 6 through June 30, the D-1610 requirements for Dry conditions will apply in the Russian River. These requirements are 75 cubic feet per second (cfs) in the Upper Russian River (from its confluence with the East Fork to its confluence with Dry Creek) and 85 cfs in the Lower Russian River (downstream of its confluence with Dry Creek);
b. If, during the period from April 1 through June 30, total inflow into Lake Mendocino is less than or equal to 25,000 AF, then, for July 1 to October 2, the D-1610 requirements for Critically Dry conditions will apply in the Russian River. These requirements are 25 cfs in the Upper Russian River (from its confluence with the East Fork to its confluence with Dry Creek) and 35 cfs in the Lower Russian River (downstream of its confluence with Dry Creek); and
c. If, during the period from April 1 to June 30, 2009, total inflow into Lake Mendocino is greater than 25,000 AF, then, for July 1 through October 2, the D-1610 requirements for Dry conditions will apply in the Russian River.

1.4 Temporary Urgency Change Order Issued

On April 6, 2009, SWRCB Deputy Director for Water Rights, Victoria Whitney, issued the Order which granted the Agency's petition, subject to certain terms and conditions. Terms 4, 5, 6, and 7 of the Order require monitoring activities and consultation with fishery management agencies to ensure the protection of Russian River fisheries.

1.5 Fisheries Monitoring Requirements

On April 20, 2009, the California Department of Fish and Game (DFG) submitted a comment letter to the SWRCB regarding the effects of the TUCP on Russian River fisheries (Attachment A). On April 30, 2009, the National Marine Fisheries Service (NMFS) also submitted a comment letter to the SWRCB (Attachement B). Biologists and engineers from the Agency, DFG, NMFS, and SWRCB held a meeting on April 30, 2009 to discuss fishery issues. At a May 6, 2009 workshop held at the SWRCB office in Sacramento, staff recommended that the Agency, DFG, and NMFS work cooperatively to develop a fisheries management plan to document and respond to River conditions during the implementation of the Order. The SWRCB, DFG, NMFS, and North Coast Regional Water Quality Control Board (NCRWQCB) have requested water quality monitoring to address the affects of reduced flow. The Agency has prepared a separate water quality monitoring plan to compliment planned fish and habitat monitoring activities (Attachment C). This fisheries monitoring plan includes the following elements:

a. Background about the Agency's Russian River (River) fisheries monitoring efforts.
b. Summer 2009 juvenile steelhead monitoring.
c. Summer 2009 habitat monitoring. Fall 2009 adult Chinook salmon monitoring.
d. Reporting to update and consult DFG, NMFS, and SWRCB regarding habitat conditions, fish abundance, and fish health.

2.0 PREVIOUS SCWA FISHERIES MONITORING EFFORTS

2.1 Steelhead Distribution and Habitat Studies

In summer and fall 2001, the Agency conducted a flow-related habitat study in collaboration with the U.S. Army Corps of Engineers, NMFS, DFG, NCRWQCB, and Entrix Inc. The study evaluated habitat value for steelhead along the River and Dry Creek at a range of high and low flows. Habitat observations indicated that spawning and summer rearing habitat for steelhead was present in the upper main stem of the Russian River.

To further examine the extent of steelhead rearing habitat, the Agency conducted extensive snorkel surveys in the upper River during August 2002 (Cook 2003). Steelhead distribution and abundance varied substantially throughout a 106 km reach from Ukiah to Healdsburg (Figure 1). A total of 12 native and non-native species were observed. Steelhead composed <1% to 5% of the total fish counted. Steelhead were most abundant in the Canyon (265 fish/km) and Ukiah Valley (37 fish/km) reaches. Relatively few steelhead were observed in the Alexander Valley (<1 fish/km) and Healdsburg (7 fish/km) reaches.

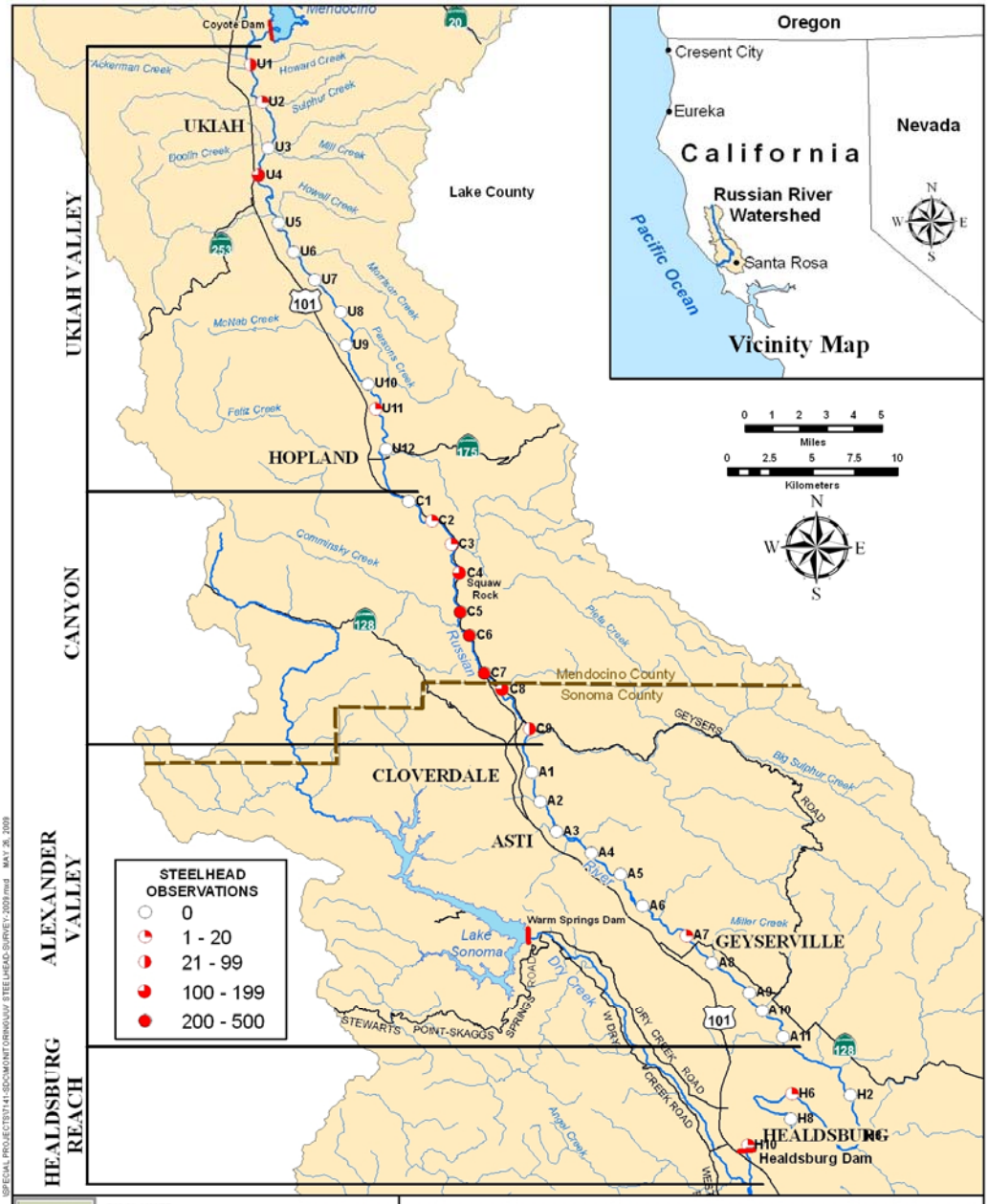

Figure 1
Upper Russian River Salmon Distribution Study
Steelhead Distribution and Relative Abundance

2.2 Mirabel Dam Video Counting Station

Underwater video cameras have been operated at the upstream ends of the Mirabel Inflatable Dam fish ladders since 2000. The video monitoring station is operated annually from August 15 until the dam is deflated with the onset of heavy rains (typically mid November to mid January). The station provides information on upstream migrating Chinook salmon. Steelhead typically migrate during winter after the dam is deflated, therefore, most of the steelhead run is not counted. Although Chinook salmon are observed in late August and September, the majority of the run passes the dam from mid-October to mid-November (Figure 2). Total annual counts of adult Chinook salmon have ranged from 1,101 fish in 2008 to 6,103 fish in 2003 (Table 1).

Figure 2. The cumulative percentage of adult Chinook salmon that passed Mirabel Dam from 2000 to 2008. The highlighted region indicates the period of most active fish passage.

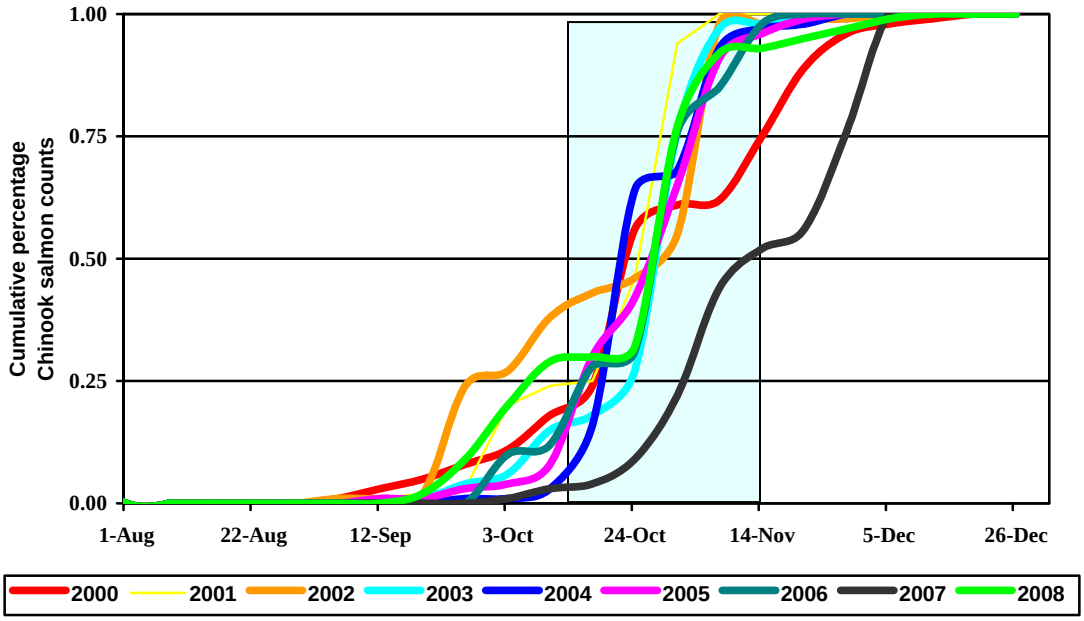

Table 1. Weekly Chinook salmon counts at the Mirabel Dam fish ladders from 2000 to 2008.

Week	2000	2001	2002	2003	2004	2005	2006	2007	2008
1-Aug	0	0	0	0	0	0	0		0
8-Aug	0	0	0	0	0	0	0		0
15-Aug	0	0	1	0	0	0	0	0	1
22-Aug	1	0	8	0	0	1	0	0	0
29-Aug	0	3	7	2	1	4	0	0	2
5-Sep	9	1	18	7	1	4	0	0	18
12-Sep	38	7	19	20	3	14	3	0	83
19-Sep	23	12	65	23	8	14	4	1	124
26-Sep	50	17	1,223	181	16	31	8	2	98
3-Oct	31	240	113	146	42	27	318	10	13
10-Oct	115	51	628	515	52	112	88	39	21
17-Oct	81	10	272	232	651	556	529	26	502
24-Oct	466	300	153	532	2,287	307	114	103	173
31-Oct	63	661	505	2,969	185	611	1,535	249	13
7-Nov	24	81	2,337	1,289	1,189	668	299	429	24
14-Nov	182		20	47	221	127	458	152	19
21-Nov	200		37	95	57	63	54	96	9
28-Nov	111		14	45	60	33		375	
5-Dec	19		54		16			477	
12-Dec	14							4	
19-Dec	17								
26-Dec	1								
2-Jan	0								
	1,445	**1,383**	**5,474**	**6,103**	**4,788**	**2,572**	**3,410**	**1,963**	**1,101**

2.3 Chinook Redd Surveys

To supplement the video count data, Chinook salmon redd surveys have been conducted from fall 2002 to 2008 in the upper Russian River and Dry Creek. The study area includes approximately 114 km of the Russian River mainstem from Riverfront Park (rkm 40) below Healdsburg upstream to the East and West Fork confluence (rkm 154) near Ukiah. Our previous investigations indicated that few spawning sites are present in the lower River. In 2003, the study area was expanded to include 22 km of Dry Creek below Warm Springs Dam (Lake Sonoma).

To determine the distribution and relative abundance of Chinook salmon spawning sites, the study area was surveyed once annually in November or December. The reach is kayaked by 2-3 observers over the course of several days. Coordinates of redds are recorded using a global positioning system (GPS)

and spawning site habitat characteristics (i.e., substrate size, water depth, and velocity, etc) are also noted.

2.4 Downstream Migrant Trapping

Since 2000, the Agency has collected data about juvenile salmonids emigrating past the Mirabel Dam Site. Multiple rotary screw traps provide information on species composition, size, relative abundance, and timing. Juvenile Chinook salmon emigrate from late February through June and peak numbers are observed from mid-April to mid-June (Table 2). Steelhead smolts also migrate past the dam site from March through June. Relatively few steelhead parr (age 1+) have been captured (Table 4). Young-of-the-year steelhead appear at the trap site in greatest numbers from late April to early June (Table 5). Coho salmon smolts have been captured in the current 2009 sampling season and their run timing appears to be similar to steelhead smolts

Table 2. Weekly numbers of juvenile Chinook salmon captured in rotary screw traps at the Mirabel Dam site from 2000 to 2008.

	2000	2001	2002	2003	2004	2005	2006	2007	2008
26-Feb			45	332					
5-Mar			74	841					
12-Mar			319	89					
19-Mar			181	169				257	114
26-Mar			797	346				940	80
2-Apr	41		908	377	82			730	224
9-Apr	158		757	176	115	446		564	100
16-Apr	154	122	2279	17	672	848		1011	866
23-Apr	204	720	2992	60	1911	618		759	1161
30-Apr	169	1338	4337	0	1845	353		1148	315
7-May	121	1154	1780	50	1631	132	69	782	258
14-May	174	226	2056	508	552	222	46	880	381
21-May	106	76	1755	690	158	35	217	698	91
28-May	92	64	704	1461	150	419	67	503	107
4-Jun	66	22	192	530	125	541		857	60
11-Jun	47		93	374	31	136		268	94
18-Jun	19		46	186	88	156		45	19
25-Jun	10		4	86	26	55		38	8
2-Jul				3					
	1,361	**3,722**	**19,319**	**6,295**	**7,386**	**3,961**	**399**	**9,480**	**3,878**

Table 3. Weekly number of steelhead smolts (age 2+) captured in rotary screw traps at the Mirabel Dam site from 2000 to 2008.

	2000	2001	2002	2003	2004	2005	2006	2007	2008
27-Feb			1	4					
5-Mar			1	3					
12-Mar			38	5					
19-Mar			15	3				24	0
26-Mar			24	39				99	1
2-Apr			31	39	3			24	3
9-Apr	19		33	18	14	0		25	0
16-Apr	24	7	30		11	18		43	4
23-Apr	24	16	23		14	9		61	8
30-Apr	21	16	23		10	7	9	14	12
7-May	8	9	7		3	3	10	17	4
14-May	14	4	9	26	1	1	5	11	0
21-May	9		9	16	1	3	6	3	1
28-May	6		3	6	1	0		2	0
4-Jun	1		0	2	2	3		1	0
11-Jun	4		1	1	1	2		0	0
18-Jun	2		0	0	2	1		0	0
25-Jun	2		0	0	0	1		0	0
	134	**52**	**248**	**162**	**63**	**48**	**30**	**324**	**33**

Table 4. Weekly number of steelhead parr (Age 1+) captured in rotary screw traps at the Mirabel Dam site from 2000 to 2008.

	2000	2001	2002	2003	2004	2005	2006	2007	2008
26-Feb		0	0	1					
5-Mar		0	0	0					
12-Mar		0	0	2					
19-Mar		0	2	1				1	0
26-Mar		0	0	0				10	0
2-Apr	0	0	1	0	0			0	0
9-Apr	0	0	0	0	0	0		0	0
16-Apr	0	0	0	0	1	1		3	1
23-Apr	0	0	0	0	2	0		9	0
30-Apr	0	0	1	0	0	0	0	2	0
7-May	0	0	1	0	0	0	0	1	0
14-May	0	0	0	0	0	0	0	0	0
21-May	0	0	0	2	0	2	0	0	0
28-May	0	0	0	0	1	0		0	0
4-Jun	0	0	1	0	0	1		0	1
11-Jun	0	0	0	0	0	0		4	2
18-Jun	0	0	1	1	8	1		1	0
25-Jun	0	0	0	0	7	2		0	0
	0	**0**	**7**	**7**	**19**	**7**	**0**	**31**	**4**

Table 5. Weekly number of young-of-the year steelhead captured at the Mirabel Dam site from 2000 to 2008.

	2000	2001	2002	2003	2004	2005	2006	2007	2008
26-Feb			0	0					
5-Mar			0	5					
12-Mar			1	1					
19-Mar			6	12				0	1
26-Mar			3	67				17	7
2-Apr	0		55	170	3			8	14
9-Apr	3		51	132	14	86		12	35
16-Apr	20	1	447	4	11	99		36	33
23-Apr	33	17	81	20	14	97		127	74
30-Apr	224	4	657	0	10	523	14	56	118
7-May	30	13	755	22	3	354	12	163	133
14-May	49	23	976	74	1	75	182	157	52
21-May	80	34	1315	244	1	23	26	185	101
28-May	74	32	806	223	1	110		173	59
4-Jun	102	26	466	55	2	135		684	75
11-Jun	40		164	29	1	40		172	48
18-Jun	58		59	27	2	28		4	26
25-Jun	50		1	2	0	7		22	10
	763	**150**	**5,843**	**1,087**	**63**	**1,577**	**234**	**1,816**	**786**

3.0 SUMMER 2009 JUVENILE STEELHEAD MONITORING

Objectives: Lower than normal summer flows, may alter the distribution and abundance of steelhead detected in the 2002 snorkel survey (Cook 2003). During August, 2009 we will conduct a snorkel survey to assess the distribution, relative abundance, and condition of juvenile steelhead between Mirabel Dam and Ukiah (Figure 3). Methods and sample sites will be similar to surveys conducted during the previously described 2002 study.

Methods: At ten 500-m-long sampling reaches (Figure 3), a crew of three biologists will simultaneously dive all available habitat units. To increase the accuracy of fish counts, each reach will be partitioned into 3 dive lanes. All fish observed during surveys will be identified to species when feasible. Several species of native minnows in the Russian River have similar characteristics and can be difficult to identify underwater. Divers will count all fish in three size classes (<100 mm TL, 101-300 mm TL, and >300 mm TL). In general, steelhead <100 mm TL are young-of-the-year, fish 101-300 mm in length are age 1-2, and fish greater than 300 mm are age 3+. At the end of a survey, fish data from all divers will be recorded on a data form for each segment (Attachment D). In addition, water temperature, transparency (Secchi depth), and dissolved oxygen will be recorded at each site (Attachment D).

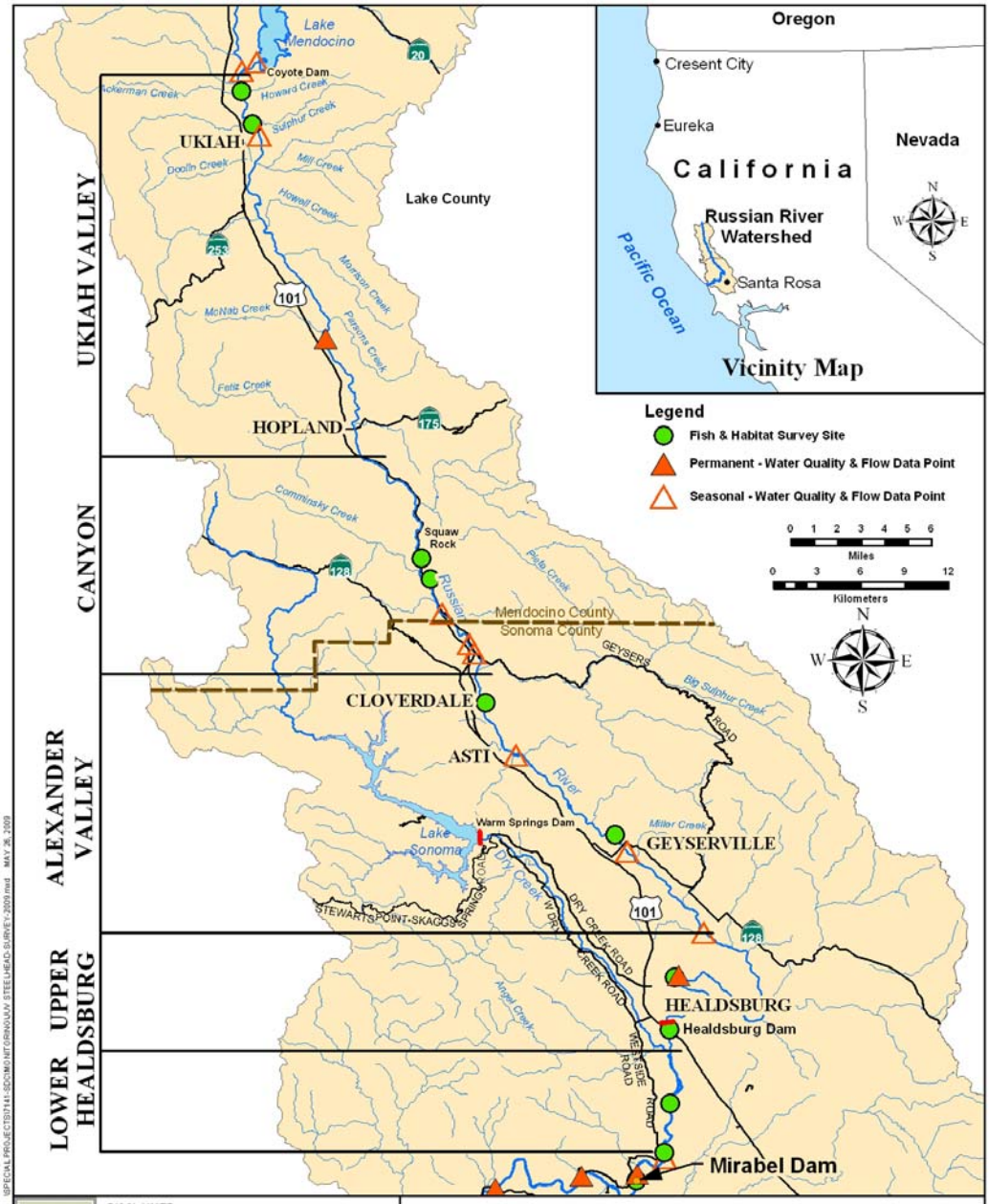

Figure 3
Juvenile Steelhead Snorkel Survey, Habitat Streamflow, and Water Quality Monitoring Sites

4.0 SUMMER 2009 HABITAT MONITORING

Objectives: Reduced River flow may impact fish through alterations to physical habitat characteristics such as stream width, depth, velocity, and shelter complexity. To document habitat conditions, we will measure habitat units at seven sites between Healdsburg and Ukiah on two separate occasions during late spring (June) and mid summer (August). The June and August sampling dates should allow us to characterize habitat conditions at flows of 75-100 cfs and 35-75 cfs, respectively. Specific sampling sites will correspond to juvenile steelhead monitoring locations in the Ukiah Valley, Canyon, Alexander Valley, Healdsburg, and Dry Creek to Wohler reaches (Figure 3).

Methods: Within each of the five reaches, two 500 m fish sampling sites will be established. The fish sampling sites in the Ukiah Valley, Canyon, and Dry Creek to Wohler reaches are in close proximity to each other. At these sites, a single habitat monitoring reach is sufficient to characterize the fish sampling sites. In the Alexander Valley and Healdsburg reaches, however, fish sampling sites are separated by a significant distance and we will establish two separate habitat monitoring sites. In all, habitat data will be collected at seven locations from 63 distinct habitat units.

Russian River mainstem habitat is composed primarily of pools, flatwaters (runs and glides), and riffles. Although each of these major habitat types can be subdivided into several categories (e.g., main channel and corner pools, high and low gradient riffles), higher level classification is sufficient to detect changes resulting from a reduction in flow. We will define habitat units using the methods of Flosi et al. (1998).

To collect information that can be related to fish abundance and distribution data, we will measure three habitat units of each type (i.e., 3 pools, 3 flatwaters, and 3 riffles) at each fish sampling site. Measurements will commence at the upstream boundary of a fish sampling site and progress downstream until three units of each type have been measured. At each unit we will measure length, width, average depth, maximum depth, average velocity, and instream shelter amount and type.

The length of each habitat unit will be measured using a hip-chain. Width, depth, and shelter type and quantity will be measured at cross-sections marked with rebar stakes at 10%, 25%, 50%, 75%, and 90% of the length of a unit. Marking transects with rebar will enhance consistency between the June and August sampling events but each site will also be marked using GPS.

Along each cross-section, wetted width and depth will be recorded at 0.5 m intervals. Shelter will be recorded for the area 5 m upstream and downstream of

each cross section. Water velocities will be collected at the 50 percent transect in flatwater and riffle habitats, and at the 10 percent transect in pools. Velocity measurements will be recorded at 0.5 m intervals at 0.6 percent of the water depth. Instream shelter within each habitat unit will be rated using the methods of Flosi et al. (1998). Shelter will be rated based on the percentage cover provided by boulders, large woody debris, overhanging vegetation, etc.

Permanent photo stations will also be established at each habitat unit. When possible, stations will be located at the top-of-bank or other elevated sites to provide an overall perspective of the habitat unit. Permanent sites will also be established at the upstream, middle, and at the downstream end of each unit. Photo monitoring stations will be marked using GPS.

5.0 ADULT CHINOOK SALMON MONITORING

Objectives: Adult Chinook salmon may become stressed or discouraged from migrating upstream due to warm or shallow water conditions resulting from lower than normal flow. We will monitor the abundance, distribution, and condition of Chinook salmon as they migrate upstream during early fall.

Methods: The previously described video counting station at Mirabel Dam will be operated beginning August 15. Starting September 1, fish presence in areas downstream and upstream of the Dam site will be evaluated at one and two week intervals by divers. During the early migration season from September 1 until 200 fish have passed the Dam site, three lower River sites will be sampled weekly; Johnson's Beach Dam, Vacation Beach Dam, and Mirabel Dam (Figure 4). To assess potential habitat conditions at lower flow, a site at Geyserville will also be sampled every two weeks during the early season. After 200 fish have passed Mirabel Dam, effort will shift to upstream sites at Mirabel Dam, Healdsburg Dam, Digger's Bend, and Geyserville (Figure 5). Snorkel survey sites and schedules may be adjusted after consultation with DFG and NMFS. Water temperature, visibility, and dissolved oxygen will be measured at each site. As in previous years, we will conduct a one-time spawning site distribution survey in the mainstem River and Dry Creek between October and December.

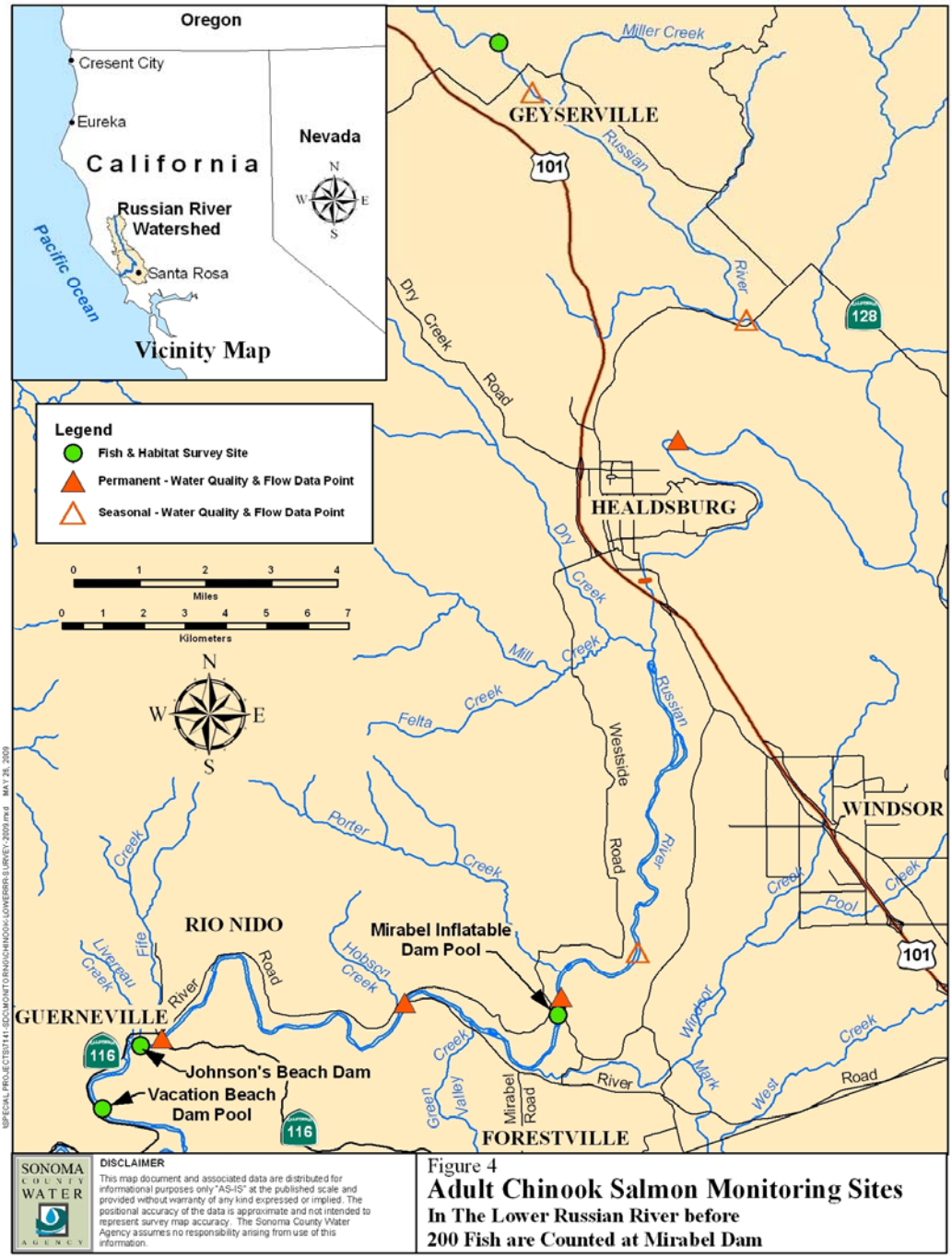

Figure 4
Adult Chinook Salmon Monitoring Sites
In The Lower Russian River before 200 Fish are Counted at Mirabel Dam

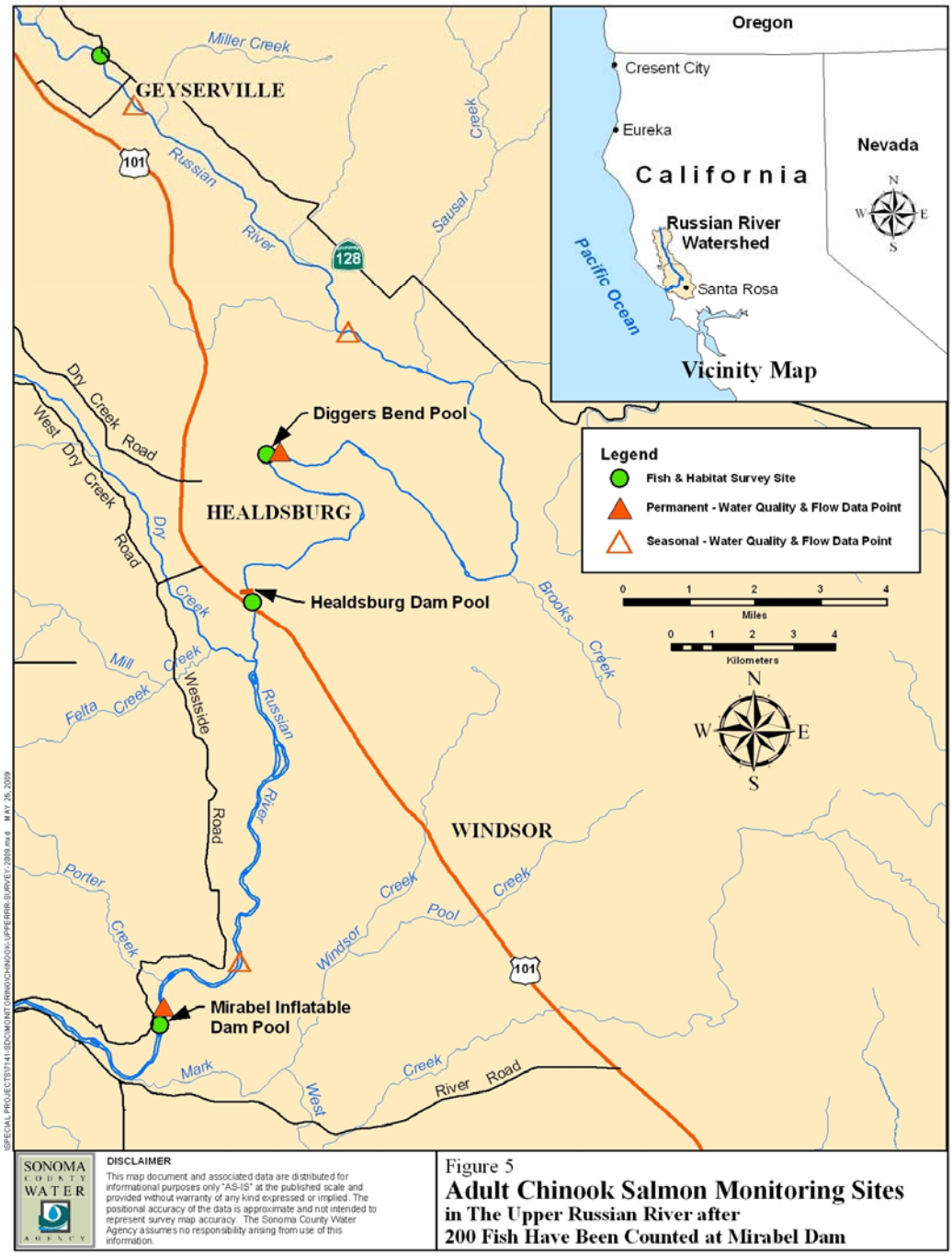

Figure 5
Adult Chinook Salmon Monitoring Sites in The Upper Russian River after 200 Fish Have Been Counted at Mirabel Dam

6.0 REPORTING

The Agency will update DFG, NMFS, SWRCB, and NCWRCB about fisheries and water quality monitoring weekly via pre-scheduled email and/or tele-conference calls. Weekly communications will commence on the morning of Tuesday, July 14 (one week after flow reduction to critical levels on July 6) and continue through Tuesday, October 13 (after termination of the Order on October 2). Summary data reports will be provided to the aforementioned agencies 30 days after the completion of the following milestones:

a. June habitat survey.
b. August juvenile fish and habitat survey.
c. September adult Chinook surveys.

A final report detailing all of the fish and habitat monitoring surveys will also be submitted to the aforementioned agencies by December 30 (90 days after termination of the Order).

7.0 REFERENCES

Cook, D. 2003. Upper Russian River steelhead distribution study. Sonoma County Water Agency. Santa Rosa, CA. 19 p. Available at: www.sonomacountywater.org

Cook, D. 2008. Chinook salmon spawning study Russian River fall 2002-2007. Sonoma County Water Agency. Santa Rosa, CA. 27 p. Available at: www.sonomacountywater.org

Flosi, G., S. Downie, J. Hopelain, M. Bird, R. Coey, and B. Collins 1998. California Salmonid Stream Habitat Restoration Manual, 3rd edition. State of California, The Resources Agency, California Department of Fish and Game, Inland Fisheries Division. Sacramento, CA.

ATTACHMENT A

DFG Comment Letter to SWRCB

State of California
Memorandum

Flex your POWER

Date: April 20, 2009

To: Ms. Victoria Whitney, Chief
State Water Resources Control Board
Division of Water Rights
Post Office Box 2000
Sacramento, CA 95812
Via e-mail: VWHITNEY@waterboards.ca.gov

From: Charles Armor, Regional Manager
Department of Fish and Game – Bay Delta Region, Post Office Box 47, Yountville, California 94599

Subject: Notice of State Water Resources Control Board, Division of Water Rights Order Approving a Temporary Urgency Change Petition by Sonoma County Water Agency Regarding Permits 12947A, 12949, 12950, and 16596 (Applications 12919A, 15736, 15737, 19351)

The California Department of Fish and Game (DFG) has reviewed Sonoma County Water Agency's (SCWA) petition to your agency for a temporary urgency change in their water rights permits. We have also reviewed the State Water Resources Control Board's (SWRCB) Order WR 2009-0027-DWR (Order). SCWA is requesting temporary changes to their water right permits because the combination of low precipitation during this past winter and the reductions in diversions from the Eel River at the Potter Valley Project (PVP) have resulted in low reservoir storage in Lake Mendocino. According to the Order, SCWA is requesting a reduction in flow from Lake Mendocino to the Russian River in order to "prevent depletion of storage which would severely impact threatened or endangered Russian River fish species, create serious water supply impacts in Mendocino County and in Sonoma County's Alexander Valley, and harm Lake Mendocino and Russian River recreation."

On April 6, the SWRCB issued the Order approving a Temporary Urgency Change Petition (TUCP) dated April 6, 2009, prepared by SCWA to temporarily reduce the Russian River instream flow requirements as follows:

1. From April 6 through June 30, 2009, 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) be reduced from 185 cubic feet per second (cfs) to 75 cfs, and the requirements for the lower Russian River (downstream of its confluence with Dry Creek) be reduced from 125 cfs to 85cfs; and

2. Dry Year Criteria. From July 1 through October 2, 2009, instream flow requirements for the upper Russian River be reduced from 185 cfs to 75 cfs, and the requirements for the lower Russian River be reduced from 125 cfs to 85 cfs, if during the period from April 1 through June 30 total inflow to Lake Mendocino is greater than 25,000 acre feet; or

3. Critically Dry Year Criteria. From July 1 through October 2, 2009, instream flow requirements be further reduced to 25 cfs for upper Russian River and 35 cfs for the lower Russian River, if during the period from April 1 through June 30 total inflow to Lake Mendocino is less than or equal to 25,000 acre feet.

The Order cites a document prepared by SCWA titled "Hydrologic Analysis of Lake Mendocino Storage Under Dry 2009 Conditions" (Hydrologic Analysis) dated April 2009. The Hydrologic Analysis projects that Lake Mendocino will go dry by early October 2009 if no action is taken to reduce the instream flow requirements. The order also states that it is uncertain if water could be released from Lake Mendocino to the East Fork Russian River if water levels dropped below 10,000 acre feet.

In 2007 DFG supported SCWA's petitioning to temporarily change SCWA's water right permits due to low water storage levels in Lake Mendocino as well as reduced diversions from the Eel River at the PVP. DFG supported the petition because reducing flows to 75 cfs provided a sufficient quantity of cold water in Lake Mendocino to achieve a substantial benefit for Chinook salmon. The 2009 water year is different than previous years as reservoir storage in Lake Mendocino is approximately 20,000 acre feet less than what it was at this time in 2007. In addition, in the *Dry Year* and *Critical Dry Year Criteria*, the Hydrologic Analyses' projections of amount of water remaining in the Lake Mendocino this fall depend on assumptions that are uncertain. These assumptions include: 1) inflow from Lake Pillsbury, which does not appear to be a proven supply, and 2) water conservation restrictions that SCWA will impose on water users that are not within their jurisdiction and/or within their service area (e.g., agricultural users and other water districts).

The difference between current conditions and 2007 conditions may be significant. This year, the amount of water available may not be sufficient to sustain cold water enhancement flows throughout the Chinook spawning season. A substantial reduction in cold water flow after the start of fall migration could result in high mortality of Chinook due to a combination of pathogens, high water temperatures, adverse water quality, and high fish densities. Similar conditions resulted in the 2002 fish kill in the Klamath River. This occurred when an above average number of Chinook salmon entered the Klamath River in the early fall. During this time river flow and the volume of water in the fish-kill area were atypically low. Combined with the above average run of salmon, these low flows and river volumes resulted in high fish densities. Fish passage may have also been impeded by low flow depths over critical riffles or lack of cues for fish to migrate upstream. Warm water temperatures in the river created ideal conditions for pathogens to infect salmon. The presence of a high density of hosts and warm temperatures caused rapid amplification of pathogens, which ultimately results in the mortality event.

DFG makes the following recommendations that we believe SWRCB should condition as Temporary Changes in SCWA's water rights permits:

1) The Order mandates the change from the Dry Year Criteria to the Critically Dry Year Criteria on July 1 be based on 25,000 acre-feet of inflow to Lake Mendocino

from the PVP. The Order provides no justification for using the amount of inflow to Lake Mendocino as a metric for switching to the Critically Dry Year Criteria. If the switch from a Dry Year Criteria to a Critically Dry Year Criteria is to "bank" water in Lake Mendocino for Chinook salmon, then it would be prudent to use water storage in Lake Mendocino as the metric for switching or not switching from the Dry Flow Criteria on July 1.

2) SCWA shall consult with DFG and NMFS while developing and implementing a temperature monitoring plan and a water quality monitoring plan with the Regional Water Quality Control Board and Division of Water Rights.

3) The tributaries to the Russian River are generally the principal spawning and nursery areas for steelhead and coho salmon. This year, late rain fall resulted in limited connectivity of Russian River tributaries to the mainstem during the typical spawning season for steelhead. Consequently, rather than spawning in the tributaries, substantial numbers of adult steelhead may have spawned in the mainstem Russian River. If spawning was successful, we would suspect that juvenile steelhead may be rearing in the mainstem Russian River. Monitoring juvenile salmonids (i.e., age 0 and age 1) rearing in the Russian River will provide important information when considering revisions to D1610. No later than June 1, SCWA shall install, maintain and operate an out-migrant trap in the Russian River in the vicinity of the Healdsburg above the Healdsburg Memorial Dam to monitor juvenile salmonid emigration in mainstem Russian River. The trap should be employed until at least July 15. Trapping results for all species shall be included in a report that shall be submitted to DFG and NMFS by December 31, 2009.

4) SCWA shall conduct habitat mapping surveys in the mainstem Russian River that map riffle-pool continuity, riffle depth, temperature stratification in pools, and other habitat variables.

5) If flows are converted from Dry Year Criteria to Critically Dry Year Criteria, flow in the East Fork Russian River immediately below the Coyote Valley Dam shall not be reduced by more than 10% of the flow per hour.

6) Copies of all reports and plans that are required by this Order shall be provided to DFG.

7) Condition 1(d) should be revised to include other variables to consider besides Chinook salmon counts when increasing releases from Lake Mendocino. Variables such as results from water quality monitoring, temperature monitoring, and water storage level in Lake Mendocino should be evaluated in addition to Chinook salmon counts before increasing flows to 125 cfs. We recommend that SCWA consult with NMFS and DFG by September 1 to evaluate these variables to determine if flows should be increased to 125 cfs.

8) The expiration date for this Order is October 2; however, Lake Mendocino may not get sufficient recharge by October 2 to provide sustained adequate flow throughout the spawning season for Chinook salmon. Consequently, outflow from Lake Mendocino, beyond the expiration date of the Order, may need to be adaptively managed depending on the results of the required monitoring.

9) The SCWA is still required to comply with Fish and Game Code 5937 which states that the "owner of any dam shall allow sufficient water at all times to pass through a fishway, or in the absence of a fishway, allow sufficient water to pass over, around or through the dam, to keep in good condition any fish that may be planted or exist below the dam." Water quality conditions during the Critically Dry Year Criteria are uncertain, and such low flows may cause or exacerbate pathogens in fish populations residing in the Russian River, which in turn could spread to migrating Chinook salmon. The Order should include an assessment of overall condition of health in fish collected in representative reaches of the Russian River. If samples of fish appear to be in poor health, these fish shall be collected and tested for pathogens that maybe associated with poor water quality conditions.

Thank you for considering our comments. DFG staff is available to assist the SWRCB and SCWA in managing and monitoring the anadromous and resident fisheries in the Russian River. If you have any questions or wish to initiate consultation with DFG, please contact Eric Larson, Biological Programs Manager, at (707) 944-5528.

cc: See Next Page

cc: Mr. Gary Stacey, Regional Manager
Department of Fish and Game
Northern Region
601 Locust Street
Redding, CA 96001

Mr. Dick Butler
National Marine Fisheries Service
777 Sonoma Avenue, Room 325
Santa Rosa, CA 95404

Bill Hearn
National Marine Fisheries Service
william.hearn@noaa.gov

Rick Rodgers
National Marine Fisheries Service
rick.rodgers@noaa.gov

Mr. Randy Poole, Director
Sonoma County Water Agency
Post Office Box 11628
Santa Rosa, CA 95406

David Manning
david.manning@scwa.ca.gov

Mr. Mark Neeley
North Coast Regional Water Quality Control Board
5550 Skylane Boulevard, Suite A
Santa Rosa, CA 95403

Stephen Bargsten
sbargsten@waterboards.ca.gov

ATTACHMENT B

NMFS Comment Letter to SWRCB

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
777 Sonoma Ave., Room 325
Santa Rosa, CA 95404-4731

April 30, 2009

Jeanine Townsend
Clerk to the Board
State Water Resources Control Board
1001 I Street
Sacramento, California 95814

Dear Ms. Townsend:

NOAA's National Marine Fisheries Service (NMFS) has reviewed the Sonoma County Water Agency's (SCWA) petition to your agency for a Temporary Urgency Change in their water rights permits. NMFS has also reviewed the State Water Resources Control Board's (SWRCB) Order WR 2009-027-DWR (Order). SCWA has requested temporary changes to their water right permits because the combination of low precipitation during this past winter and reductions in diversions from the Eel River at the Potter Valley Project have resulted in extremely low reservoir storage in Lake Mendocino at the beginning of the low flow season. For this time of year, storage in Lake Mendocino is lower than it has been since records began in1965. Current projections indicate that, without action, Lake Mendocino will likely be entirely drained by late September. This would likely eliminate most of the surface flow in the Russian River upstream of Healdsburg except for water derived from minor seepage from the adjacent aquifer, percolation from waste discharge ponds, and a few relatively small tributaries until late fall or winter rains begin. This would have impacts to fall run Chinook salmon which enter the river primarily in October and November. It would also impact steelhead that reside in the upper mainstem and the ecological functions that support anadromous fisheries resources (*e.g.,* native fishes and aquatic invertebrates).

Juvenile anadromous salmonids migrate to the estuary and ocean during spring and early summer; therefore, to protect the spring 2009 migrants, it is prudent to maintain flows at dry year levels or even higher prior to July 1. If storage was not as low in Lake Mendocino, NMFS would argue that D1610 normal year criteria should be maintained at Healdsburg at least until mid-June.

NMFS is in favor of a plan to conserve water storage in Lake Mendocino because it is important to sustain flows that support the adult fall salmon run and steelhead summer rearing habitat in the river's mainstem. However, based on water supply analysis by SCWA, it may be that stream flow this year will be inadequate to support summer rearing habitat and fall salmon runs regardless of whether flows are immediately reduced to dry year levels and to proposed critically dry year levels beginning July 1. In Figure 3 of SCWA's Temporary Urgency Change Petition[1],

[1] Figure 3 within SCWA's document entitled: Hydrologic Analysis of Lake Mendocino Storage under 2009 Conditions.

SCWA projects storage of about 29,000 acre-feet in Lake Mendocino by mid-November if: 1) minimum flows in the Russian River are immediately reduced to dry year levels and further reduced to critically dry year levels[2] on July 1, and 2) there is a "*20% cumulative conservation of 2007 releases by both agricultural producers and water districts including the Agency* [SCWA] *on the Upper Russian River from May 15, the assumed end of the frost protection season, to November 15.*" In another graph that SCWA presented to NMFS and the Department of Fish & Game, Lake Mendocino storage was entirely exhausted by **mid-November** if: 1) minimum flows in the Russian River are immediately reduced to dry year levels and further reduced to critically dry year levels on July 1, and 2) there is **no** additional water conservation. Projections are even more dire if only a dry year scenario is maintained (*i.e.*, a summer minimum of 75 cfs at Healdsburg and 85 cfs at Hacienda Bridge) and there is no water conservation in the upper mainstem between Lake Mendocino and Healdsburg. Without the 20% water conservation in the upper mainstem throughout the summer and fall, a continuous dry year scenario throughout this summer and early fall would entirely empty Lake Mendocino by **mid-October**.

It is unclear how 20% cumulative conservation of 2007 releases by both agricultural producers and water districts can be achieved between May 15 and November 15 in the segment between Lake Mendocino and Healdsburg given that SCWA has very little or no leverage to force conservation by municipalities and agricultural operations in this area. SWRCB's Order Provision 15 states that SCWA will submit a plan for obtaining cooperation and participation from agricultural and municipal water users to reach conservation goals. It states that SCWA's plan shall include "*steps that SCWA will take to investigate the waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of water from the Russian River.*" Such efforts will clearly be needed to achieve conservation. However, it will also require both leadership and enforcement of state water law by the SWRCB. Without that leadership, enforcement of water code, and real efforts to promote water conservation, it may well be that Lake Mendocino will be effectively drained by early November, and without early seasonal rains the Russian River will run nearly dry.

The proposal to reduce flows to critically dry year levels (minimum of 25 cfs at Healdsburg and 35 cfs at the Hacienda Bridge in Forestville) will allow flows that have not been seen since the 1977 drought that preceded D1610. This introduces real uncertainty into the analysis of the impacts of reducing flows to critically dry levels. The human populations of Mendocino and Sonoma County have grown considerably since 1977. With that increased population there is increased potential pollution to the river from both rural and urban development. Therefore, reducing flows to critically dry levels will increase pollutant concentrations and possibly degrade water quality to the detriment of fisheries and other public uses (*e.g.*, swimming, boating, etc.). Yet not reducing flow to critically dry levels may well cause the complete draining of Lake Mendocino, if significant water conservation is not achieved in the upper river between the reservoir and Healdsburg. The water quality implications of a drained Lake Mendocino due to higher minimum flows and minimal conservation could be worse than a critically dry year scenario, which would likely sustain flows of about 40 cfs at Healdsburg (minimum flow of 25

[2] The petition calls for reduction to critically dry levels assuming inflow to Lake Mendocino is less than 25,000 acre-ft between April 1 and June 30; this has a very high probability.

cfs + 15 cfs compliance buffer) and 50 cfs at Hacienda Bridge (minimum flow of 35 cfs + 15 cfs compliance buffer).

The best short-term plan for this water supply problem may be to 1) achieve water conservation goals of 25%[3] in both Mendocino and Sonoma Counties, 2) continue to maintain Dry Year flow levels until July 1, and 3) adaptively manage flow releases between July 1 and the commencement of seasonal rains. With meaningful and substantial water conservation throughout the watershed, it may be possible to sustain minimum summer flows comparable to those referenced in NMFS Russian River biological opinion[4] (75 cfs at Healdsburg and 70 cfs at the Hacienda Bridge in Forestville) without draining Lake Mendocino. However, given that 1) it would be beneficial to the fall run salmon and future water supply to retain some water in Lake Mendocino by mid-October, and 2) the uncertainties regarding the likelihood that there will be sufficient resources to achieve necessary water conservation goals, it would be prudent to approve a minimum flow lower than 75 cfs at Healdsburg or 70 cfs at Hacienda Bridge. If a critically dry year minimum flow is adopted for the period July 1 through October 2, 2009, SCWA should be encouraged to maintain flows as near to those referenced in NMFS Russian River biological opinion as much as possible so as to limit impacts to water quality and other resources.

One purpose of temporarily reducing minimum flow requirements in the Russian River is to "bank" water in Lake Mendocino so that there would be ample storage to provide higher flows during the adult Chinook salmon migration in the Russian River. Therefore, it is important that SCWA release flows higher than the minimum dry year requirements (*e.g.*, 75 cfs at Healdsburg) when substantial numbers of Chinook salmon are in the Russian River (October through early December). We are concerned that low flows in the vicinity of 75 cfs in the middle and upper Russian River could limit movements of adult Chinook salmon with resulting potential losses to the fishery.

NMFS agrees and is supportive of the 17 conditions provided in Order WR 2009-0027-DWR, with only one exception. Condition 3 states, "*SCWA shall not release water from Lake Sonoma in excess of the flows required to satisfy existing water rights and the interim instream flow requirement established in this Order for the Russian River downstream of its confluence with Dry Creek.*" The release of up to 105 cfs from Lake Sonoma, while not providing optimal conditions, does support habitat for juvenile salmonids in Dry Creek. If appreciable water conservation (*e.g.*, 25%) can be achieved in Sonoma County with resulting reductions at SCWA's Mirabel/Wohler diversion site, then excess water associated with a release of 100 to 105 cfs from Lake Sonoma could contribute to higher sustained flows in the lower Russian River with resulting potential benefits to water quality, fisheries, and other resources.

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[3] reductions of 25% from usage during recent previous years (e.g., 2008 or perhaps the average annual usage during 2006-2008, etc.)

[4] NMFS. 2008. Biological opinion for water supply, flood control operations, and channel maintenance conducted by the 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. NMFS Santa Rosa Area Office, California. 366 pp.

Thank you for your consideration of this important matter. If you have questions concerning this letter please contact Dr. William Hearn at 707-575-6062.

Sincerely,

Dick Butler
Santa Rosa Area Office Supervisor
Protected Resources Division

cc: C. Armor, CDFG (Yountville)
R. Poole, SCWA
V. Whitney, SWRCB

ATTACHMENT C

SCWA Water Quality Monitoring Plan

SONOMA COUNTY WATER AGENCY

FILE:42-4.19&6.19-9 CORRESPONDENCE RELATED TO SWRCB ORDER APPROVING TEMPORARY URGENCY CHANGE IN PERMITS 12947A, 12949, 12950& 16596 (ORDER WR 2009-0027-DWR)

May 22, 2009

Ms. Victoria A Whitney
Deputy Director for Water Rights
State Water Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000

RE: Revised Water Quality and Temperature Monitoring Plan as Required by Water Rights Order 2009-0027-DWR

Dear Ms. Whitney:

Enclosed please find a revised Water Quality and Temperature Monitoring Plan (Plan) for the Russian River and Lake Mendocino. The Plan is submitted as meeting the requirements of the State Water Resources Control Board Division of Water Rights Order WR 2009-0027-DWR, Provisions 8 and 9. This plan was developed by the Sonoma County Water Agency (Agency) in consultation with the North Coast Regional Water Quality Control Board (NCRWQCB), NOAA National Marine Fishery Service (NMFS), the California Department of Fish and Game (DFG), the Sonoma County Environmental Health Department (DEH) and the State Water Resources Control Board Division of Water Rights (Division). The review of comments received and consultation with all parties noted above has resulted in this revised water quality sampling and monitoring plan.

The Plan incorporates many of the recommendations provided by staff from NCRWQCB, NMFS, DFG and DEH as discussed in consultation on May 14, 2009. However, based on rationale provided below, not all recommendations were included in the revised Plan.

Bacteria Monitoring

After review of the NCRWQCB recommendations, consultation with DEH, the Sonoma County Public Health Laboratory, aerial photography and Agency staff familiar with the recreational areas of the Russian River the Plan provides for bacteria monitoring at twelve sites in Sonoma and Mendocino Counties. Of the proposed twelve sites, eleven were recommended by the NCRWQCB. Several sites recommended by NCRWQCB staff have been excluded from the revised Plan based on the following reasons:

- Several of the sites are located on upper reaches of the river where flows will be at or near 100 cubic feet per second, well above the minimum in-stream flow requirements;
- Several of the sites have restricted or no legal public access and consequently lack high recreational use.
- Laboratory Resources – Discussions with staff at the Sonoma County Public Health Laboratory (Lab) indicate the number of samples proposed in the revised Plan is the maximum they are confident they will be able to process within the necessary reporting times, the Lab is under contract with the

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NCRWQCB, DEH and the Agency, is familiar with the seasonal pathogen program and has the necessary reporting protocols already in place;

The twelve proposed bacteria monitoring locations will be sampled on a weekly basis and during the Labor Day weekend.

Biostimulatory Response Water Quality Monitoring Program

On May 14, 2009, the recommended biostimulatory response water quality monitoring program was discussed to the extent that additional information was needed to determine an appropriate plan. Agency staff investigated adding chlorophyll-a probes to the Agency's sondes, however the probes only account for chlorophyll and not chlorophyll-a as was recommended. To correlate the chlorophyll results to chlorophyll-a, a specific site oriented calibration study would need to be conducted at each sampling location. Given that and the extraordinary cost of each probe the Agency determined that a grab sample program at numerous locations within the watershed would accomplish the goal of the NCRWQCB recommendations.

The Plan provides for sampling nutrients on a weekly basis at six locations from the outfall at Lake Mendocino to Johnson's Beach at Guerneville. As discussed on May 14, 2009, these locations should provide for an overall representation of water quality in the Russian River. In addition to the nutrients, chlorophyll-a will be sampled at five locations downstream of the outfall. The sites correspond with locations of permanent or seasonal sondes and bacteria sampling sites so correlations, if any, may be determined. One site was removed from the program due to restricted access and no recreational use.

Reporting

The Agency will provide results of all bacteria sample results as soon as made available to both the NCRWQCB and DEH so that the data can be provided on their respective websites for public review. The Agency will describe and provide links to both websites and upon written receipt of nutrient and chlorophyll-a results will update its website to include that data. A final written report will be submitted within three months following the end of the Order.

If you have any questions or comments, please do not hesitate to contact me directly.

Sincerely,

Don Seymour

Donald J. Seymour, P.E.
Water Agency Principal Engineer

c Pamela Jeane, Jim Zambenini, Ellen Simm, David Manning, Jeff Church, George Lincoln
Eric Oppenheimer, State Water Resources Control Board, Division of Water Rights
Catherine Kuhlman, Richard Fadness, North Coast Regional Water Quality Control Board
Walt Kruse, Christine Sosko, Jim Tyler, Sonoma County Department of Health Services
Alan Lilly, Bartkiewicz, Kronick & Shanahan

Enclosure: Revised Temperature and Water Quality Monitoring Plan

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Sonoma County Water Agency
Revised Temperature and Water Quality Monitoring Plan
For the Russian River during April – October 2009
May 22, 2009

Background

This revised Temperature and Water Quality Monitoring Plan (Plan) is submitted in accordance with State Water Resources Control Board (State Board) Division of Water Rights Order WR 2009-0027-DWR (Order), approving a Temporary Urgency Change in Permits 12947A, 12949, 12950, and 16596 for Sonoma County Water Agency (Agency). Provision 8 of the Order required the Agency to prepare a Temperature Monitoring Plan and Provision 9 required the Agency to prepare a Water Quality Monitoring Plan for the Russian River and Lake Mendocino. On April 20, 2009, the Agency submitted a plan to meet the requirements of Order WR 2009-0027-DWR. Following public comment during a public workshop on May 6, 2009 and comments relative to the original plan, the State Board asked the Agency to revise the plan in consultation with the North Coast Regional Water Quality Control Board (NCRWQCB), NOAA National Marine Fisheries Service (NMFS) and the California Department of Fish and Game (DFG).

On May 14, 2009, the Agency consulted with staff from the Sonoma County Environmental Health Department (DEH), NCRWQCB, NMFS, DFG with staff from the State Board and DFG also present via teleconference. The review of comments received and consultation with all parties noted above has resulted in this revised water quality sampling and monitoring plan.

Summary

The Plan incorporates the collection of data through permanent and seasonal instrumentation to collect both real time and baseline water quality information and provides for the analysis of water quality through sampling for public health guidance and overall water quality condition.

The revised water quality and temperature sampling locations are shown in Attachment A. A more detailed summary of the revised sampling program is provided in Attachment B. The individual components are explained below.

Agency Permanent and Seasonal Sondes

In coordination with the United States Geological Survey (USGS) the Agency maintains five multi-parameter water quality sondes on the Russian River located at Hopland, Diggers Bend in Healdsburg, the Agencies river diversion facility (RDS) at Mirabel, Hacienda Bridge and Johnson's Beach. These five sondes are referred to as "permanent" as the Agency maintains them as part of its early warning detection system. The sondes take real time readings of water pH, temperature, dissolved oxygen content (DO), specific conductivity, turbidity, and depth, every 15 minutes and transmit the raw data via telemetry to the Agencies operations center. In addition, the Hopland, Diggers Bend and Hacienda Beach data is provided in cooperation with the USGS on its "Real-time Data for California" website. For those interested in the complete

set of water quality data, the Agency offers an "email subscription" available to the public via the Agencies website.

In addition to the permanent sondes, the Agency seasonally deploys sondes at various locations within the watershed. This year the Agency in cooperation with the USGS is installing seasonal sondes with real-time telemetry at the USGS river gauge station north of Cloverdale at Commisky Station Road and at new gauge stations at the Alexander Valley Road Bridge and at Riverfront Park. However, the USGS is heavily burdened with ongoing activities in many of the coastal watersheds and these three sondes may not be installed until July. Once installed, the Agency will update its website links to include these three new seasonal stations.

In consultation with the NCRWQCB the Agency is deploying two seasonal sondes in the upper reach of the Russian River just below Coyote Dam. These sondes will be deployed at the Lake Mendocino outfall and just below the westfork confluence. The westfork confluence location is pending access over private property and thus collection of data will commence upon access and installation.

As part of its estuary monitoring program the Agency installs seasonal sondes in the lower portion of the Russian River below Duncans Mills. Sondes are deployed at Freezeout Creek, Heron Rookery, Sheephouse Creek, Bridgehaven, Patty's Rock and at the mouth of the Russian River at Jenner. These sondes take readings on water pH, temperature, DO, specific conductivity, salinity, and depth, every hour. Three of these sites are boat in only and thus data are stored in the unit until it can be retrieved by field personnel. SCWA personnel download the data in the field every two to three weeks.

Water Quality Sampling

The NCRWQCB in cooperation with the DEH conducts seasonal bacteriological and general water quality sampling at Russian River beaches which experience the greatest body contact recreation. In consultation with the NCRWQCB and DEH, the Agency will supplement the seasonal program with a bacteriological and biostimulatory response sampling program.

The NCRWQCB seasonal sampling locations consist of: Camp Rose; Memorial Beach; Steelhead Beach; Forestville Access Beach; Johnson's Beach; and Monte Rio Beach. In addition to the seasonal sampling locations noted above, the Agency will conduct supplemental weekly bacteriological sampling at: the Russian River near Commisky Station Road (aka Russian R NR Cloverdale); Cloverdale River Park; Geyserville Hwy 128 bridge; Alexander Valley Road bridge; and at the Hacienda Bridge, these locations were selected as additional public recreational sites. Bacteriological samples will be collected weekly beginning May 28, 2009 continuing until October 1, 2009 and during the Labor Day weekend. The samples will be analyzed using the Colilert-18 quantitray MPN method for total coliform and *E. coli* and the Enterolert quantitray method for Enterococcus. Daily sampling will be conducted following an acute exceedance of the California Department of Health Services – Draft Guidance for Fresh Water Beaches and continue until a "less than" result is confirmed.

In addition to the bacteriological sampling and in consultation with the NCRWQCB, NMFS and DFG, the Agency will conduct biostimulatory response water quality monitoring at the following locations: Lake Mendocino outfall; Russian River near Commisky Station Road (aka Russian R NR Cloverdale); Alexander Valley Road bridge; Healdsburg Veterans Memorial Beach; Hacienda bridge; and Monte Rio Beach. Water samples will be collected weekly and analyzed for: Ammonia-N; Nitrate-N; Total Organic Nitrogen; and Total Phosphorous. In addition, chlorophyll-a will be analyzed for at all stations except the Lake Mendocino outfall.

The Agency will also be conducting a separate but related estuary bacteriological and nutrient sampling program. Agency staff will collect bacteriological and nutrient samples once every three weeks at three locations in the estuary: (1) Freezeout Creek below Duncans Mills; (2) Bridgehaven; and (3) River mouth at Jenner. Similar to the previously described bacteriological and nutrient constituents the estuary samples will be analyzed for total coliform and *E.* coli using the Colilert-18 quantitray MPN method and Enterococcus using the Enterolert quantitray method for Enterococcus. Nutrients analyzed will be consistent as described previously.

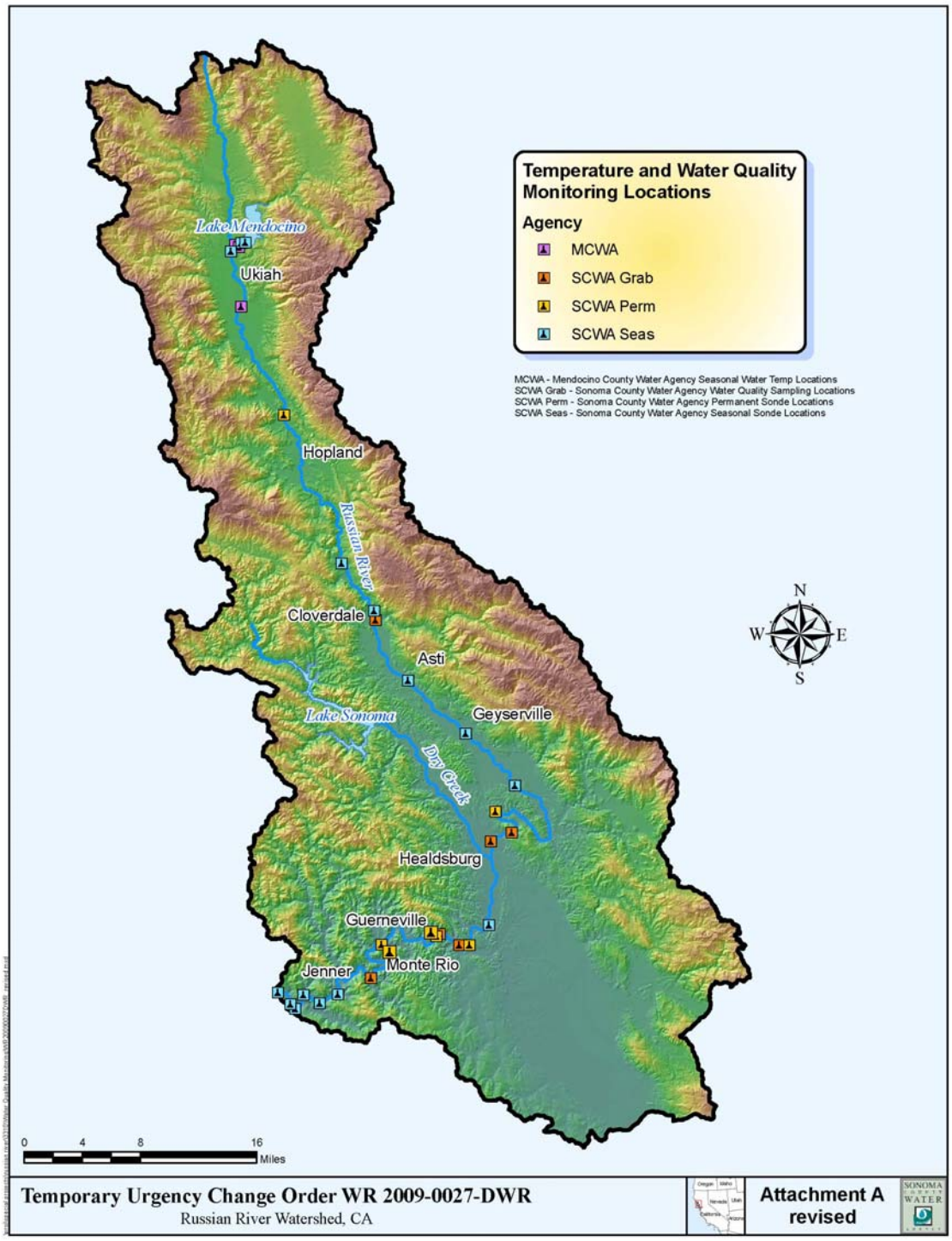
The NCRWQCB and the Agency will also collaborate on vertical profiling of Lake Mendocino water quality at or near the tower structure. The profiling will be conducted on a monthly basis and alternate between Agency and NCRWQCB staff.

Sonoma and Mendocino County Water Agency Seasonal Water Temperature Collection

In addition to temperature data collected by the sondes, the Agency will deploy seasonal water temperature sensors with data logging capabilities at Preston, Asti and Geyserville. The data will be downloaded and compiled every two to three weeks. The Mendocino County Water Agency deploys seasonal water temperature sensors with data logging capabilities at numerous locations throughout the watershed. In the Russian River they expect to deploy sensors in the East Fork of the Russian River below Coyote Dam, in the West Fork of the Russian River below Lake Mendocino Drive, in the Russian River at Talmage Road and in the Russian River at Commisky Station Road. The Mendocino County Water Agency has agreed to provide the raw data as downloads become available.

Data Analysis and Reporting

Results from bacteriological samples will be transmitted to both the DEH and NCRWQCB within one business day for posting to their respective websites and potential beach postings. The Agency will also update its website to include links to the DEH and NCRWQCB websites. The Agency will also submit results within one business day to the Mendocino County Environmental Health Department which expects to report exceedances on its beach hotline. Laboratory results from the nutrient and chlorophyll-a sampling will be posted on the Agencies website upon receipt of the written laboratory report. Online stream gauge and sonde data is evaluated by Agency staff multiple times daily and upon weekly consultation with DFG, NMFS, NCRWQCB and the DEH may result in the adaptive management of flows. A written report will be submitted to the NCRWQCB and DEH summarizing all collected data within three months of the end of the Order.


Temperature and Water Quality Monitoring Locations
Agency
MCWA
SCWA Grab
SCWA Perm
SCWA Seas
MCWA - Mendocino County Water Agency Seasonal Water Temp Locations
SCWA Grab - Sonoma County Water Agency Water Quality Sampling Locations
SCWA Perm - Sonoma County Water Agency Permanent Sonde Locations
SCWA Seas - Sonoma County Water Agency Seasonal Sonde Locations
Lake Mendocino
Ukiah
Hopland
Russian River
Cloverdale
Asti
Lake Sonoma
Geyserville
Dry Creek
Healdsburg
Guerneville
Monte Rio
Jenner
N
W
E
S
0
4
8
16
Miles
Temporary Urgency Change Order WR 2009-0027-DWR
Russian River Watershed, CA
Attachment A revised
SONOMA COUNTY WATER

Attachment B - revised

May 22, 2009

Summary of Water Quality and Temperature Monitoring for Order 2009-0027-DWR

Instrument or sensor based sampling

Location	depth	temperature	DO	pH	turbidity	specific conductance	salinity	sampling frequency	telemtry?	duration
SCWA Permanent and Seasonal Sonde YSI Water Quality Samplers										
Lake Mendocino Outfall	x	x	x	x		x	x	1 hour	n	May - Oct
Westfork Confluence***	x	x	x	x		x	x	1 hour	n	upon install - Oct
Hopland USGS site	x	x	x	x	x	x		15 min	y	permanent
RR near Cloverdale USGS site*	x	x	x	x	x	x		15 min	y	upon install - Oct
Alexander Valley Road Bridge*	x	x	x	x	x	x		15 min	y	upon install - Oct
Digger's Bend	x	x	x	x	x	x		15 min	y	permanent
Riverfront Park*	x	x	x	x	x	x		15 min	y	upon install - Oct
Mirabel (SCWA RDS Facility)	x	x	x	x	x	x		15 min	y	permanent
Hacienda Bridge	x	x	x	x	x	x		15 min	y	permanent
Johnson's Beach	x	x	x	x	x	x		15 min	y	permanent
Freezeout Creek	x	x	x	x		x	x	1 hour	n	April - Dec**
Heron Rookery	x	x	x	x		x	x	1 hour	n	April - Dec**
Sheephouse Creek	x	x	x	x		x	x	1 hour	n	April - Dec**
Bridgehaven	x	x	x	x		x	x	1 hour	n	May - Dec**
Patty's Rock	x	x	x	x		x	x	1 hour	n	April - Dec**
Mouth @ Jenner	x	x	x	x		x	x	1 hour	n	April - Dec**
***sondes at RR near Cloverdale, Alexander Valley Road Bridge and Riverfront Park are pending USGS installations**										
****Dec removal is storm and high river dependant**										
***** sonde at Westfork confluence is pending site access**										
SCWA Seasonal water temp locations										
Preston		x						15 min	n	June - Oct
Asti		x						15 min	n	June - Oct
Geyserville		x						15 min	n	June - Oct
MCWA Seasonal water temp locations										
EF Russian River below dam		x						90 min	n	June - Oct
WF Russian River		x						90 min	n	June - Oct
Russian River at Talmage Rd		x						90 min	n	June - Oct
Russian River at Commisky		x						90 min	n	June - Oct

Grab Sampling Program

Location	total coliform / E. coli	enterococcus	chlorophyll-a	temperature	DO	pH	turbidity	nutrients*	conductivity	Duration
SCWA Urgency Change Order Bacterialogical, Nutrient and Water Quality Grab Sampling										
Lake Mendocino Outfall								x		May 28 - Oct 1
RR near Cloverdale USGS site	x	x	x	x	x			x		May 28 - Oct 1
Cloverdale River Park	x	x		x	x					May 28 - Oct 1
Geyserville Hwy 128 Bridge	x	x		x	x					May 28 - Oct 1
Alexander Valley Road Bridge	x	x	x	x	x			x		May 28 - Oct 1
Camp Rose Rd. (Fitch Mountain)**	x	x		x	x					May 28 - Oct 1
Healdsburg Veterans Memorial Beach**	x	x	x	x	x			x		May 28 - Oct 1
Steelhead Beach**	x	x		x	x					May 28 - Oct 1
Forestville Access Beach**	x	x		x	x					May 28 - Oct 1
Hacienda Bridge	x	x	x	x	x			x		May 28 - Oct 1
Johnson's Beach**	x	x	x	x	x			x		May 28 - Oct 1
Monte Rio Beach (multiple sites)**	x	x		x	x					May 28 - Oct 1
***nutrients include Ammonia-N, Nitrate-N, Total Organic Nitrogen, Total Phosphorous**										
Note - SCWA samples Thursday weekly following Memorial Day until end of Order, and Labor Day weekend, daily sampling will follow acute exceedance of the California Department of Health Services - Draft Guidance for Fresh Water Beaches										
****The NCRWQCB and Sonoma County Environmental Health Department conduct seasonal bacterialogical sampling at these locations weekly from the Tuesday following Memorial Day until the Tuesday following Labor Day**										
SCWA Seasonal Estuary bacterial and nutrient grab sampling										
Freezeout Creek (below Duncans Mills)	x	x	x	x	x			x		June - Oct
Bridgehaven	x	x	x	x	x			x		June - Oct
Mouth @ Jenner	x	x	x	x	x			x		June - Oct
Note - SCWA samples once every three weeks for nutrients and total / *E. coli* and Enterococcus										
SCWA/NCRWQCB Vertical Temperature Profiles										
Lake Mendocino (2-4 locations)				x	x	x			x	May - September
Note - SCWA and NCRWQCB alternate conducting monthly vertical temperature profiles										

ATTACHMENT D

Snorkel Survey Data Sheet

SCWA: Snorkel Survey Data Sheet **Sheet of**

Date:	Begin Time:	Observers:	Input
Reach Location and GPS Coordinates:			
Weather: Clear Overcast Cloudy Drizzle			

Water Quality

Habitat Unit	Time	Surface (at 1m)		Mid-column			Bottom		Max. Depth (m)
		Temp (C)	DO (mg/l)	Temp (C)	DO (mg/l)	Depth (m)	Temp (C)	DO (mg/l)	

Dive Observations

Habitat Unit	Species	Divers	Time (min)	Fish Observations					Secchi (m)	Comments
				0	1-25	26-100	101-200	>200		