UNITED STATES BUREAU OF RECLAMATION
NEW MELONES RESERVOIR – WATER RIGHT PERMITS 16597, 16600, 20245
(APPLICATIONS 14858, 19304, 14858B)

PETITION TO CHANGE STANISLAUS RIVER DISSOLVED OXYGEN COMPLIANCE POINT

I. INTRODUCTION.

Pursuant to the requirements of State Water Resources Control Board ("SWRCB") Decision 1422 ("D-1422), Decision 1616 ("D-1616"), Decision 1641 ("D-1641") and the Water Quality Control Plan, Central Valley Region, Fourth Edition, for the Sacramento River Basin (5A) and San Joaquin River Basin (5B) ("2004 CRWQCB Basin Plan"), the United States Bureau of Reclamation ("USBR") is required to release stored water from New Melones Reservoir to maintain a dissolved oxygen ("DO") concentration of 7.0 mg/L in the Stanislaus River as measured at Ripon.

The establishment of the 7.0 mg/L DO concentration is intended to preserve or enhance aquatic habitats, and spawning and rearing of salmon and steelhead. While the Stanislaus River contains fish and aquatic habitat that benefit from a minimum DO concentration of 7.0 mg/L, such fish and aquatic habitat are located far upstream of the Ripon compliance point during the summer months. As such, the USBR contends that the SWRCB should exercise its reserved jurisdiction to move the Stanislaus River DO compliance point from Ripon (River Mile 16) to Orange Blossom Bridge (River Mile 46.9) from June 1 through August 31.

II. BACKGROUND.

A. D-1422

In D-1422, the SWRCB required the USBR to release conserved water from New Melones Reservoir for water quality control purposes, including DO in the Stanislaus River. (D-1422, Condition 8). The SWRCB did not identify the DO concentration that the USBR would need to achieve in D-1422, but rather required the USBR to meet whatever DO concentration was required by any current and applicable Water Quality Control Plan. (Id.). Although no DO concentration requirement was established, D-1422 did establish that any Stanislaus River DO concentration requirement was to be met at Ripon, unless an alternative compliance location was approved by the SWRCB. (Id.).

The express purpose of the original request that a DO concentration in the Stanislaus River be met was "to protect the salmon fishery." (D-1422, p. 12, citing RT 526). However, it is unclear from the hearing transcripts and written testimony considered at the hearings which culminated in D-1422 how the DO requirement would

protect the salmon fishery generally, or why the compliance point was established at Ripon.

Mr. Maurice Fjelstad authored a large portion of Chapter 2 of the California Department of Fish and Game's ("CDFG") "Report to the California State Water Resources Control Board On Effects of the New Melones Project on Fish and Wildlife Resources of the Stanislaus River and Sacramento-San Joaquin Delta ("1972 CDFG Report") which dealt with the predicted impact of the New Melones Project on the existing fishery resources of the Stanislaus River. (RT 520). His testimony is cited by the SWRCB in D-1422 in that the DO concentration is necessary to protect the salmon fishery of the Stanislaus River. (D-1422, p. 12). However, the citation relied upon by the SWRCB is of little specific assistance as to the importance of the DO concentration to salmon as it was just one part of a general answer given by Mr. Fjelstad in response to the question "Could you tell the board the specifics of – well, what the salmon need to survive?" Mr. Fjelstad responded to this question as follows:

> "Well,..., the salmon's primary requirement is water at the right time and at the right place. They require suitable water temperature. Fifty to fifty-two degrees is ideal for spawning. The temperature during spawning should be below 58 degrees. After spawning, after incubation, the temperatures should remain below 70 degrees. They require suitable dissolved oxygen which should be no less than seven parts per million. And, as I said before, they require adequate flows for upstream migration, spawning, incubation of the eggs, and downstream migration." (RT 526).

While Mr. Fjelstad further testified in detail about the specific needs of the various life-stages of salmon, as was also provided in Chapter 2 of the 1972 CDFG Report, neither Mr. Fjelstad nor the 1972 CDFG Report provide any further detail as to the what particular life stages of salmon require a minimum DO concentration.

This lack of a discussion about how DO affects any or all of the salmon life stages is critical, as virtually all of the other proposed requirements are associated with a specific life stage. For example, CDFG recommended a minimum flow of 200 cfs from Goodwin Dam to the confluence with the San Joaquin River between October and December for purposes of allowing upstream migration and spawning and incubation of eggs. (1972 CDFG Report, p. 2-11, 2-12 and Errata Sheet).CDFG recommended a minimum flow of 150 cfs from January 1 through February 28 between Goodwin Dam and the confluence with the San Joaquin River for incubation and a variety of flows between Goodwin Dam and Ripon during the January through June migration period. (1972 CDFG Report, p. 2-12 – 2-17 and Errata Sheet). CDFG further recommended a flow of 100 cfs between Goodwin Dam and the confluence with the San Joaquin River during July, August and September to control vegetative encroachment on spawning

gravels, maintain suitable temperature and maintain suitable DO. (1972 CDFG Report, p. 2-17).

While there is a specific reference to DO during the summer months, this reference is particularly vague when compared to the other recommendations. In fact, it is not at all clear whether or not the reference to DO in the summer months has anything to do with fall run salmon at all. CDFG specifically stated

> "Summer flows are essential...in maintaining suitable dissolved oxygen and temperature levels for resident fishes and any steelhead and spring-run salmon populations which might develop in the Stanislaus River and will sustain juvenile salmon that stay in fresh water for one year." (1972 CDFG Report, p. 2-17).

From the construction of the sentence, CDFG is certainly stating that DO will assist resident fish and any steelhead or spring-run salmon, but it is not clear if CDFG is stating that DO is needed by juvenile salmon, or if the recommended summer *flows* will "sustain" such fish. Indeed, given that Mr. Paul Jensen, testifying on behalf of CDFG, stated that "juvenile fall run king salmon would not normally be expected to be in the river much beyond June," (RT 620) and that therefore summer temperatures were not a concern or limiting factor for salmon, it seems that the statement on page 2-17 of the 1972 CDFG Report must be read to state that DO in the summer is only important for steelhead and spring-run salmon if such populations might develop. This conclusion is bolstered further by Mr. Jensen's testimony that "[i]n July, August and September the salmon are gone." (RT 635).

A complete review of the evidence and testimony submitted to the SWRCB does not resolve the ambiguity. Clearly, at least as a general matter, the CDFG is recommending that a DO requirement is needed to protect the salmon fishery in the Stanislaus River. However, since there is no specific discussion as to the specific life stage or stages that the DO requirement is to protect or promote, there is no geographic area at which such DO requirement must be met. As noted above, the specific purpose that the other recommended conditions – such as flow or temperature – was to promote or protect determined where, in a geographic sense, such condition would be applicable. Thus, flows recommended for upstream migration were applicable throughout the Stanislaus River, whereas other flow recommendations were applicable primarily between Goodwin Dam and Ripon.

Despite the lack of specificity as to the purpose of the DO requirement requested by CDFG (beyond the general "for the protection of the salmon fishery") and therefore the lack of geographic location(s) at which such requirement must be met, the SWRCB nonetheless agreed to condition the USBR's permits on, among other things, the requirement that the USBR make releases of conserved water from New Melones for the purpose of meeting DO. (D-1422, p. 31, Condition 5). Additionally, although there is apparently no discussion as to the purpose of the DO requirement, and therefore no

geographic area of compliance, the SWRCB nonetheless established the DO compliance point at Ripon. (Id.).[1]

B. D-1616

D-1422 dealt with the USBR's request for permits to divert water into New Melones for storage. In D-1616, the SWRCB considered the USBR's request for permits for direct diversion at New Melones.

While granting the permits requested by the USBR, the SWRCB prohibited any direct diversion for consumptive use if the DO concentration, as measured at Ripon, is less than that specified in the April 1975 version of the SWRCB's Water Quality Control Plan, San Joaquin River Basin 5C. (D-1616, Condition 12 and 13). As in D-1422, the SWRCB left open the possibility that it would consider and approve an alternate location for measuring compliance with the Stanislaus River DO concentration requirement. (D-1616, Condition 13).

CDFG did initially protest the USBR's permit application, but the protest was resolved before the conclusion of D-1616 through an agreement between the USBR and CDFG. As such, the SWRCB made no specific statements or findings regarding either the purpose of the continued DO concentration requirement or the continued use of Ripon as the compliance point of such requirement.

C. Current Permit Conditions

The USBR's permits for the New Melones Project were modified by the SWRCB in D-1641. These modifications were minor and still require the USBR to release stored water and/or refrain from directly diverting water unless and until the DO concentration at Ripon is met. (D-1641, p. 160 and 162).

The DO concentration requirement itself has changed over time since it was first required in D-1422. Now, the DO concentration requirement at Ripon is that specified in the 2004 CRWQCB Basin Plan. According to this plan, DO objectives are established based upon general needs of the fishery resource specific to a particular river or stream in the basin. That is, as a general matter, streams are designated as "WARM," meaning the fishery resources of that water body are rely primarily on warm water habitat (such as sunfish or catfish), "COLD," meaning the fishery resources of that water body rely primarily on cold water habitat (such as rainbow trout or sculpins) and "SPWN," meaning the fishery resources of that water body utilize the water body for reproduction and early development (such as salmon or steelhead trout), and a general DO

[1] In a personal communication with Mr. John Renning of the USBR in 2004, he suggested that Ripon was chosen as the compliance point not because of salmon, but rather due to the existence of numerous canneries in Ripon. These canneries had discharges of effluent that were high in biological or chemical oxygen demand. Mr. Renning's suggestion makes sense, as the SWRCB noted in D-1422 that the then-applicable water quality control plan included a requirement in the Stanislaus River for DO "as a result of waste discharges..." (D-1422, p. 12).

concentration is established for each of these fishery purposes. Unless an exception is made that requires either less or more stringent concentrations, water bodies designated as WARM shall not have DO concentrations that fall below 5.0 mg/L and water bodies designated as COLD or SPWN shall not have DO concentrations fall below 7.0 mg/L. (2004 CRWQCB Basin Plan, page III-5.00).

Since the Stanislaus River is designated COLD and SPWN, the DO concentration requirement is 7.0 mg/L. (2004 CRWQCB Basin Plan, p. II-8.00). Although the 2004 CRWQCB Basin Plan does not establish compliance points, the DO concentration of 7.0 mg/L must be met at Ripon as required by the USBR's permits for the New Melones Project.

III. DO CONCENTRATION COMPLAINCE POINT AT RIPON IS NOT NEEDED YEAR ROUND TO PROTECT THE SALMON OR STEELHEAD FISHERY.

The CDFG originally recommended a DO concentration requirement in the Stanislaus River "to protect the salmon fishery." (D-1422, p. 12, citing RT 526). Similarly, the current DO concentration requirement established by the CWRQCB is designed to protect the cold-water fishery and spawning fishes, which in the Stanislaus are primarily salmon and steelhead. While it is undisputed that salmon and steelhead exist in the Stanislaus River and that a DO concentration in the Stanislaus River for the protection of such fishery is appropriate, the compliance point of Ripon is not always appropriate for the protection of such fishery.

Geographically, the Stanislaus River extends approximately 60 miles from Goodwin Dam to the confluence with the San Joaquin River. Ripon is located approximately 44 miles downstream of Goodwin Dam, and approximately 16 miles upstream from the confluence of the Stanislaus and San Joaquin Rivers. As noted earlier, many requirements regarding flow, temperature, water quality, gravel size and other items are designed and intended to support, enhance or protect certain specific salmonid life stages. Salmon and steelhead in the Stanislaus River have five basic life stages: adult migration, spawning, egg incubation, juvenile rearing, and juvenile migration. By examining the timing and locations of these five life stages of salmon utilizing the Stanislaus River, it can be seen that the DO concentration requirement is not needed at Ripon on a year-round basis.

A. Fishery Resources

1. Fall-Run Chinook Salmon

a. Adult Fall-Run Chinook Migration

In 1972, the CDFG reported that adult salmon migrated up the Stanislaus River between early October and late December, with migration reaching a peak in Late October and early November. (1972 CDFG Report, p. 2-4). Although this description of migration timing is over 30 years old, it remains fairly accurate. Since 1972, data

collected by private fishery consultants, non-profit organizations, and the CDFG demonstrate the majority of adults migrate upstream from late September through December with peak migration occurring from late October through early November (Table 1, Cramer Fish Sciences [CFS] unpublished data; Fishery Foundation of California [FFC] unpublished data; CDFG annual spawning survey reports). Yet, some adult migration has been observed as early as September and as late as January (Table 1).

In terms of location, adult migration in the Stanislaus River extends upstream from the river's confluence with the San Joaquin River to the spawning grounds located between Riverbank (River Mile 33) and Goodwin Dam (River Mile 58.4).

Table 1. Generalized upstream migration timing pattern observed at the Stanislaus River Weir near Riverbank (River Mile 31.2) during 2003-2005.

Date	***% Adult Chinook***
Sep 1-15	0.02%
Sep 16-30	2.72%
Oct 1-15	18.35%
Oct 16-31	26.60%
Nov 1-15	32.69%
Nov 16-30	12.68%
Dec 1-15	5.60%
Dec 16-31	1.16%
Jan 1-15	0.15%
Jan 16-31	0.02%

b. Fall-Run Chinook Spawning

Adult fall-run Chinook salmon spawn soon after they complete their upstream migration and arrive at the spawning grounds. For Stanislaus River salmon, spawning generally takes place between October and December based on spawning surveys (Table 2). However, there is evidence from spawning surveys (Table 2) that indicates a small amount (i.e., 1.2%) of spawning activity may occur as early as September or as late as January. In addition, juvenile outmigration studies (CFS unpublished data) indicate that spawning activity can occur as late as February based on estimated incubation requirements (i.e., 40 to 60 days) and the presence of newly emerged fry observed in late April.

According to the Stanislaus River Fish Group's (SRFG) "A summary of fisheries research in the lower Stanislaus River" ("SRFG 2004"), the spawning reach is about 25 miles long and extends from Goodwin Dam (River Mile 58.4) downstream to Riverbank (River Mile 33).

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Table 2. Generalized timing pattern of spawning in the Stanislaus River based on redd counts from CDFG spawning surveys conducted 1998 to 2005. (CDFG annual reports).

Date	% redds observed
Before Oct 1	0.1%
Oct 1-15	1.5%
Oct 16-31	10.5%
Nov 1-15	29.4%
Nov 16-30	29.4%
Dec 1-15	19.0%
Dec 16-31	9.0%
Jan 1-15	1.1%

c. Fall-Run Chinook Egg Incubation

The duration of salmon egg incubation varies significantly with water temperature, and Chinook salmon eggs require the accumulation of 888 Fahrenheit degree days (e.g., 1°F above freezing for one day) from the time that they are deposited by spawning adults until juveniles hatch and emerge from the gravel. (Piper and others 1982). Temperatures vary between years, within years, and by location, but based on typical fall/winter temperatures in the Stanislaus this translates to an incubation period of approximately 40 to 60 days. Based on documented spawn timing (CDFG annual reports) and the estimated number of days until hatching and emergence based on degree days, egg incubation generally extends from October through March.

Incubation occurs within the 25 mile spawning reach that extends from Goodwin Dam (River Mile 58.4) downstream to Riverbank (River Mile 33).(SRFG 2004).

d. Fall-Run Chinook Juvenile Rearing

Juvenile Chinook rearing in the Stanislaus River primarily occurs from mid December through May between Goodwin and Riverbank. However, some rearing may occur at different times and locations. For instance, some rearing may occur throughout the lower river below Riverbank from mid December through May when temperatures in the lower river are within tolerable ranges. However, the number of juveniles rearing in this lower reach is anticipated to be small based on abundance trends, migration timing, and fish size observed between Oakdale and Caswell; and any rearing that occurs below Orange Blossom Bridge is generally believed to be associated with fish migration or with displacement during pulse flows or flood control events

In addition, although most rearing juveniles migrate prior to June, some juveniles may continue to rear in the river above Orange Blossom Bridge (River Mile 46.9) throughout the summer and fall where temperatures are within tolerable ranges. However, based on snorkel surveys and outmigration data, it appears that very few juvenile salmon oversummer in the river. For instance, relatively low salmon densities are observed within the river after mid September (FFC unpublished data) and very few

juveniles are observed migrating the following winter (i.e., three to 29 individuals captured annually at Oakdale and Caswell combined; CFS unpublished data).

e. Fall-Run Chinook Juvenile Migration

For over a decade, rotary screw traps located at Caswell (River Mile 8.6) have collected data on out-migrating juvenile salmon. Rotary screw trap data indicate that about 99% of salmon juveniles migrate out of the Stanislaus River from January through May. (SRFG 2004). Fry migration generally occurs from January through March, followed by smolt migration from April through May. However, some juveniles have been captured at Caswell as early as December 22 (<1% migrating prior to January) and as late as July 3 (<1% migrating after May). (CFS unpublished data reports).

In the Stanislaus River, out-migration of juvenile salmon extends from rearing areas below Goodwin Dam (River Mile 58.4) to the river's confluence with the San Joaquin River (River Mile 0.0).

f. Summary Fall-run Chinook Salmon Life Stage Timing and Geographic Location

From the above information, fall-run Chinook salmon life stage timing and geographic location within the Stanislaus River can be generalized as follows:

Stage	Timing	Geographic Location
Adult Migration	Late September - December	Goodwin Dam to confluence
Spawning	October – December	Goodwin Dam to Riverbank
Egg Incubation	October – March	Goodwin Dam to Riverbank
Juvenile Rearing	mid December – May	Goodwin Dam to Riverbank
	June – mid December	Goodwin Dam to Orange Blossom Bridge
Juvenile Migration	January – May	Goodwin Dam to confluence

2. Steelhead

a. Steelhead Adult Migration

Steelhead adults typically migrate from the ocean and into tributaries to spawn. However, unlike salmon, some adult steelhead may repeat their migration downstream out of the river after spawning to return to the ocean. (Shapovalov and Taft 1954; McEwan 2001).

In the Stanislaus River, there is little data regarding the migration patterns of adult steelhead since adults generally migrate during periods when river flows and turbidity are high making fish difficult to observe with standard adult monitoring techniques. A counting weir has been operated on the Stanislaus River from September to March in 2003-2004, September to April in 2004-2005, and September to December in 2005. Only two adult steelhead upstream migrants have been observed during these three years of monitoring. Of these two adult upstream migrants, one was observed in early January 2005 and the other during mid October 2005. Based upon this very limited data, it appears that adult steelhead may migrate into the Stanislaus River from at least October through January (CFS unpublished data). On the neighboring Mokelumne River, a longer time series of data (i.e., 12 years) exists to describe adult steelhead migration timing in the San Joaquin Basin. Results from the Mokelumne River study suggest that 97.7% of adult steelhead migration occurs from late September through March, although some fish have been observed as early as August 16 (Table 3; East Bay Municipal Utilities District unpublished data).

Limited data exists to describe the timing and frequency of occurrence of downstream migration after spawning. During three years of weir monitoring, nine spawned out adults that may have been migrating downstream out of the river to return to the ocean have been observed as early as December 27 and as late as March 18. It is generally believed that downstream migration of spawned out adults occurs soon after they have spawned. Based on this coupled with the few observations at the weir, adult downstream migration may occur from December through March.

Adult migration takes place in the Stanislaus River between the confluence with the San Joaquin River (River Mile 0.0) and Goodwin Dam (River Mile 58.4).

Table 3. Generalized adult steelhead upstream migration timing pattern observed on the Mokelumne River at Woodbridge Dam during 1990-2001. Source: East Bay Municipal Utility District unpublished data.

Date	***% Adult Steelhead***
Aug 1-15	0.0%
Aug 16-31	1.1%
Sep 1-15	1.1%
Sep 16-30	4.6%
Oct 1-15	7.4%
Oct 16-31	8.3%
Nov 1-15	14.0%
Nov 16-30	8.3%
Dec 1-15	9.5%
Dec 16-31	10.9%
Jan 1-15	7.2%
Jan 16-31	10.3%
Feb 1-15	8.9%
Feb 16-28	3.2%

Mar 1-15	3.4%
Mar 15-31	1.7%

b. Steelhead Spawning

As a result of poor visibility from high flows and turbid water conditions, there is little hard data regarding the spawning of steelhead in the Stanislaus River. However, based upon observations in the nearby Sacramento Basin (Hallock and others 1961) and limited data from the Stanislaus River (i.e., CFS unpublished weir and juvenile migration data), it is believed that steelhead spawn primarily between December and March.

During three years of weir monitoring, spawned out steelhead kelts have been observed as early as December 27 and as late as March 18 suggesting that spawning extends from at least late December through mid March (Table 4). Fry emergence is also an indicator of spawn timing and typically occurs 47 to 122 days after spawning (Barnhart 1986; Shapovalov and Taft 1954). Newly emerged rainbow/steelhead trout fry (i.e., ≤45 mm) are typically observed in the Oakdale screw trap from March through May, and have been captured as early as January 24. Similarly, young rainbow/steelhead trout have been observed during snorkel surveys conducted by the FFC beginning in April. (Kennedy and Cannon 2002). These fry observations corroborate that spawning may extend from late December through mid March.

Table 4. Monthly observations of steelhead kelts at the Stanislaus River weir during three seasons of monitoring.

	2003-2004	2004-2005	2005-2006
December	1	0	0
January	2	1	No sample
February	2	0	No sample
March	1	2	No sample

Although no steelhead spawning surveys have been conducted in the Stanislaus River, it is believed that steelhead spawning primarily takes place between Goodwin Dam and Orange Blossom Bridge. (SRFG 2004).

c. Steelhead Egg Incubation

Steelhead egg incubation occurs from the time that eggs are deposited by spawning adults until they hatch and juveniles emerge. Length of time required for eggs to develop and hatch is dependant on water temperature and is quite variable; hatching varies from about 19 days at an average temperature of 60°F to about 80 days at an average of 42°F. (Barnhart 1986) After hatching, pre-emergent fry remain in the gravel living on yolk-sac reserves for another four to six weeks. (Shapovalov and Taft 1954); thus, incubation (i.e., deposition to emergence) may extend from 47 to 122 days. Based on estimated spawn timing, typical incubation temperatures, and emergent fry

observations (CFS unpublished juvenile migration data and FFC unpublished snorkel survey data observations), incubation in the Stanislaus River may occur from December through June.

d. Steelhead Juvenile Rearing

Juvenile rainbow/steelhead trout rearing in the Stanislaus River occurs year-round primarily between Goodwin Dam (River Mile 58.4) and Orange Blossom Bridge (River Mile 46.9). (CFS unpublished data; Kennedy and Cannon 2002). However, some rearing may occur at different times and locations. For instance, snorkel surveys by FFC indicate that the majority of steelhead rearing in the summer months takes place upstream of Orange Blossom Bridge, with the greatest abundance observed at Goodwin (River Mile 57.5) and Two-Mile Bar (River Mile 56.6). (Kennedy and Cannon 2002). In addition, some rearing may occur throughout the lower river below Orange Blossom Bridge during the winter months when temperatures in the lower river are within tolerable ranges. However, the number of juveniles rearing in this lower reach is anticipated to be small based on habitat suitability, angler observations, and limited snorkel survey data; and any rearing that occurs below Orange Blossom Bridge is generally believed to be associated with fish migration or with displacement during pulse flows or flood control events.

e. Steelhead Juvenile Migration

Over the past decade, the rotary screw traps at Caswell have typically been operated from January through June and the data indicates that steelhead outmigrate primarily from February through May (i.e., 95%). However, migration can begin as early as January and extend into June (CFS unpublished data reports).

The migration timing suggested by the Caswell data is also corroborated by observations made downstream at Mossdale on the San Joaquin River and in the neighboring Sacramento River Basin. To monitor emigration from the San Joaquin Basin, CDFG and the U.S. Fish and Wildlife Service (USFWS) operate a Kodiak trawl on the San Joaquin River near Mossdale on more of a year-round schedule and the trawl is believed to be more effective than rotary screw traps in capturing steelhead smolts. Similar to the timing suggested by catches at Caswell, steelhead were only captured from February through early June and 95% of the catch occurred from mid-March through May (USFWS unpublished data; Table 5). Additionally, Hallock and others (1961) found that juvenile steelhead in the Sacramento Basin migrated downstream during most months of the year, but the peak period of emigration occurred in the spring.

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Table 5. Generalized timing pattern of steelhead outmigration from the San Joaquin Basin developed from Mossdale trawl catch data collected by CDFG and the USFWS from 1996 to 2004.

Date	***% Juvenile Steelhead***
Feb 1-15	1.6%

Feb 16-29	0.0%
Mar 1-15	1.6%
Mar 16-31	3.1%
Apr 1-15	21.9%
Apr 16-30	29.7%
May 1-15	29.7%
May 16-31	10.9%
Jun 1-15	1.6%
Jun 16-30	0.0%

In the Stanislaus River, out-migration of juvenile steelhead extends from rearing areas below Goodwin Dam (River Mile 58.4) to the river's confluence with the San Joaquin River (River Mile 0.0).

f. Summary Steelhead Life Stage Timing and Geographic Location

From the above, steelhead life stage timing and geographic location within the Stanislaus River can be expressed as follows:

Stage	Timing	Geographic Location
Adult Migration	Late September – March	Goodwin Dam to confluence
Spawning	December - March	Goodwin Dam to Orange Blossom Bridge
Egg Incubation	December – July	Goodwin Dam to Orange Blossom Bridge
Juvenile Rearing	Year-round	Goodwin Dam to Orange Blossom Bridge
Juvenile Migration	February – May	Goodwin Dam to confluence

B. Change in DO Compliance Point is Appropriate

The above information shows that neither salmon nor steelhead are located anywhere in the Stanislaus River downstream of Orange Blossom Bridge from June through August each year. Orange Blossom Bridge is located 31 miles upstream of Ripon. Yet, even though no salmon or steelhead are located between downstream of Orange Blossom Bridge from June through August, the current USBR permits require the DO concentration objective of 7.0 mg/L to be met at Ripon during this time period. Since the express purpose of the DO concentration requirement in the Stanislaus River is to support, protect and enhance the river's salmon and steelhead fishery, it does not make any sense to require the USBR to continue to meet the DO concentration requirement at

Ripon during times of the year when there are no salmon or steelhead to benefit from such concentration.[2] In order to continue to protect the salmon and steelhead fishery while maximizing the available New Melones water for other beneficial uses,[3] the DO concentration compliance point for the period between June 1 and August 31 each year should be changed from Ripon to Orange Blossom Bridge.

Such a change is not unprecedented. Currently, there are four locations where more stringent DO concentration requirements than the general requirements established by the CRWQCB apply during certain specific times of the year. In the Sacramento River, the DO concentration between Keswick Dam and Hamilton City is 9.0 mg/L from June 1 through August 31. (2004 CRWQCB Basin Plan, p. III-5.00). In the Feather River, the DO concentration between Fish Barrier Dam to Honcut Creek is 8.0 mg/L from September 1 to the following May 31. (Id.). In the Merced River, the DO concentration is 8.0 mg/L all year from Cressy to New Exchequer Dam. (Id.). Finally, in the Tuolumne River, the DO concentration from Waterford to La Grange is 8.0 mg/L from October 15 to the following June 15. (Id.). Except for these specified times and locations, the general DO concentration limits established by the CRWQCB apply.

In each of these four instances, while it is not entirely clear as to the rationale behind the establishment of the more stringent DO concentration requirements for these specific reaches of river,[4] it appears that the reaches themselves constitute the primary spawning and rearing areas for salmon and/or steelhead. (*See* S.P. Cramer & Associates for Tuolumne and Merced Rivers; "Factors Affecting Chinook Salmon Spawning in the Lower Feather River (Fish Bulletin 179; Vol. 1 (2001)) p. 272 for Feather River, and NMFS (1997) for Sacramento River [winter run Chinook salmon]). That is, the DO concentration selected was then applied only to that portion of the river necessary to achieve the goal associated with the establishment of the DO concentration in the first place.

The same type of analysis should apply in the Stanislaus River. There are no salmon or steelhead downstream of Orange Blossom Bridge between June 1 and August 31 of each year. As such, the establishment and maintenance of the 7.0 mg/L DO concentration for some 31 miles between Orange Blossom Bridge and Ripon does not provide any benefit to either the salmon or steelhead fishery. The SWRCB should exercise the jurisdiction it has expressly reserved itself and change the DO concentration

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[2] The DO concentration of 7.0 mg/L requirement adopted by the CRWQCB is far in excess of what is needed by non-salmonid fishery resources. According to the E.P.A., DO concentrations in excess of 6.5 mg/L have no negative impact on non-salmonid fish at any life stage. (USEPA 1986).

[3] It must be remembered that the USBR's permits require it to "release" water from water stored by the New Melones project to meet and maintain the DO concentration at Ripon. Since Orange Blossom Bridge is significantly closer to New Melones than is Ripon, it is expected that changing the compliance point will result in significant water savings during the critical summer months that could be made available for other beneficial uses consistent with the enumerated purposes of the New Melones project and the CVP. (CITE – USBR Declaration?)

[4] At least for the more stringent DO concentrations on the Tuolumne and Merced Rivers, there are no written records explaining how or why the reaches were chosen or the more stringent DO concentrations selected. (Personal communication between S.P. Cramer & Associates and Betty Yee of the CRWQCB, 2005).

compliance point between June 1 and August 31 of each year from Ripon to Orange Blossom Bridge.

IV. CONCLUSION

The over-riding legal and policy consideration regarding the development and use of water is to avoid waste and to maximize the reasonable and beneficial use of the scarce resource. In the case of the Stanislaus River salmon and steelhead fishery, the existing requirement that the DO concentration level be met year-round at Ripon is not in accordance with the overall policy of reasonable use. The needs of the salmon and steelhead fishery, for which the DO concentration level was specifically adopted, demonstrate that the compliance point for the DO concentration can be changed to Orange Blossom Bridge from June 1 through August 31 of each year. By so doing, the salmon and steelhead fisheries in the Stanislaus River will continue to be protected, and valuable water in New Melones reservoir can be applied to other beneficial uses that are not presently being met in full.

The USBR strongly urges the SWRCB to amend its permits for both storage at New Melones and direct diversion from the Stanislaus River at New Melones to change the DO compliance point from Ripon to Orange Blossom Bridge between June 1 and August 31 of each year.

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