



United States Department of the Interior

BUREAU OF RECLAMATION
Mid-Pacific Regional Office
2800 Cottage Way
Sacramento, CA 95825-1898

IN REPLY REFER TO:
MP-440
WTR-4.10

AUG 10 2015

Ms. Barbara Evoy
Deputy Director for Water Rights
State Water Resources Control Board
P.O. Box 2000
Sacramento, CA 95812-2000

Subject: Petition for Temporary Urgency Change – CVP Permits 14858A et al, New Melones Project

Dear Ms. Evoy:

Please find enclosed the response to the objection raised to the Petition for Temporary Change (Petition) filed by the Bureau of Reclamation on June 17. The Petition requests that the State Water Resources Control Board temporarily change the dissolved oxygen condition in Permits 16597, 16598, 16599, and 16600 from a minimum of 7.0 mg/l to a minimum of 5.0 mg/l through November 30, 2015, due to the continuing drought. An objection to the Petition was received on July 13, raising concerns over effects on the environment and management of the New Melones Project.

Reclamation appreciates the assistance that the Division is providing in processing these Petitions. Reclamation's point of contact for these Petitions is Lisa Holm, Water Rights Specialist. Should you have any questions or concerns, please contact Lisa Holm at 916-978-5252, or by e-mail at lhholm@usbr.gov.

Sincerely,

Richard J. Woodley
Regional Resources Manager

Attachment

cc: Gary Bobker, Program Director
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Response to Objection of Petitions for Temporary Change – Permits 14858A et al, New Melones Project

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1. *The environmental information provided by petitioner significantly underestimates the potential adverse effects of relaxing the dissolved oxygen (DO) objective on fish species in the Stanislaus River, the lower San Joaquin River, and the south Delta.*

Timing and exposure – steelhead:

Juvenile steelhead may be rearing in the uppermost reaches of the river during the July-November period and adult steelhead may begin entering the river as early as October. Based on past multi-year observations (Kennedy and Cannon 2005, Kennedy 2008), oversummering juvenile salmonids are primarily found upstream of Orange Blossom Bridge (OBB; RM 46.9), which is 31 miles upstream of Ripon. Highest oversummering densities of juveniles and adults are typically observed immediately downstream of Goodwin Dam (RM 58.3), with relatively high densities also at Two-Mile Bar (RM 56.6). Adults are rarely seen in the summer at other locations. Low densities of juveniles are often found downstream to OBB; while juveniles are seldom observed at the two lowermost study sites (Valley Oak [RM 44.5] and Oakdale [RM 40]). Rearing juveniles are often associated with areas where gravel beds have been reconstructed and it is hypothesized that these areas provide: (1) improved DO conditions, (2) refuge from predators, and (3) increased food availability (SRFG 2004).

Although there is no DO monitoring station upstream of Ripon, DO measurements have been taken periodically in areas upstream during fisheries monitoring activities. Publicly available data from the Stanislaus River Weir (RM 31.4; September through November 2006, CFS 2006a-d) indicates that DO can be 0.5-1 mg/L higher at this location than at Ripon (RM 15.9). Higher DO at this location is likely attributable to factors such as physical channel characteristics (e.g., small-medium gravel substrate and increasing channel gradient) and cooler water temperature conditions¹. Since the primary rearing reach is twice as far upstream from Ripon as the Stanislaus River Weir and there are factors in this reach that contribute to better DO conditions (i.e., the channel gradient continues to increase with some plunging cascades that increases gas exchange and water temperatures also become several degrees cooler), DO is anticipated to be as high or higher in the primary rearing reach than at the Stanislaus River Weir.

Based on historical data, there is a very weak relationship between flow and DO during July-November ($r^2 = 0.05$, $p = 0$, $n = 56,263$; Figure 1) indicating a minimal influence of flow on DO during this period. By contrast, there is a strong negative relationship between DO and water temperature ($r^2 = 0.47$, $p = 0$, $n = 59,234$; Figure 2) indicating that water temperature has a much greater effect on DO during this period than flow. Flow during this period also has little linear relationship with water temperatures ($r^2 = 0.0968$, $p = 0$, $n = 56,000$; Figure 3), indicating that there is a minimal influence of flow on water temperatures that could indirectly affect DO during this period. With few exceptions, episodes of DO <6 mg/L are associated with sensor clogging or

¹ More oxygen dissolves into water when there is turbulence created by rocky bottoms or by steep gradients that brings more water into contact with the surface for gas exchange. Colder water can hold more gas (e.g., dissolved oxygen) than warmer water.

other maintenance issues rather than actual low DO in the water column. Under the range of flows available under existing drought-related low storage conditions, historical data indicate that slight changes in flows would not have any appreciable effect on DO levels.

This conclusion is supported by conditions observed so far this year. From July 1 through August 3, 2015, average Ripon flows have been approximately 150 cfs and average water temperatures have been approximately 80°F (range: 73.4 - 89.0°F). Despite these very low flows and high water temperatures, hourly DO levels have averaged 7.4 mg/L with minimum daily DO levels ranging from 5.0 - 7.2 mg/L. The lowest DO values observed were associated with a water quality station repair event near the end of July (pers. comm., Elizabeth Kiteck, Reclamation, August 3, 2015). Considering past and current DO levels and flow conditions, non-flow related factors appear to have an important influence on the extent of DO decreases below 7 mg/L at this location. Although we cannot predict how DO may respond to meteorological, flow, and other influencing factors over the next several months, we anticipate that any instances of DO <7 mg/L will be within the 5 - 6.9 mg/L range and will be of short duration.

Additionally, the Stanislaus Operations Group (SOG)—which includes Reclamation, NMFS, U.S. Fish and Wildlife Service, Department of Water Resources, California Department of Fish and Wildlife, and the State Water Resources Control Board— has been meeting to discuss real-time operational flexibility for water temperature management that will maintain adequate conditions for salmonids this summer through the fall pulse flow period in October. SOG's recommendations are provided to the Real Time Drought Operations Team (RTDOT), which ensures that maximum practicable protections will be provided for salmonids under current drought conditions.

In summary, this information indicates that although conditions are not ideal in the lower river as a result of the extended drought, there should be sufficient refugia to maintain threatened salmonid species. Therefore, our original determination that dissolved oxygen levels anticipated under the TUCP "may not impact juvenile or adult steelhead if they are holding farther upstream where temperatures are cooler and dissolved oxygen is expected to be higher" remains valid.

Timing and exposure – spring-run Chinook salmon:

Few Chinook salmon typically enter the river during the spring period (i.e., less than 10) with exceptions of about 30 in 2010 and almost 140 in 2013. Given flow and water temperature conditions in the spring of 2015, there is a low likelihood that adult salmon entered the river this spring. Any adult or yearling Chinook present in the river this summer and fall would be found in the primary holding and rearing reach upstream of OBB (RM 46.9) where DO is anticipated to be higher than at Ripon (see steelhead discussion above).

Timing and exposure – fall-run Chinook salmon: Central Valley fall-run Chinook salmon (*Oncorhynchus tshawytscha*) are not a listed species under the federal or state endangered species act (ESA); therefore, they were not included in our evaluation.

Effects of relaxing dissolved oxygen objective on fish populations:

Contrary to the objection’s claim that “there is no evidence that DO levels as low as 5 mg/L will maintain Chinook salmon populations on the Stanislaus River,” there is evidence in the documents they cited (i.e., USEPA 1986 and WDOE 2002) that DO levels of 5 mg/L will provide maintenance conditions for salmonids. The USEPA (1986) identified production impairment and mortality risk levels associated with various dissolved oxygen concentrations applicable to juvenile and adult salmonids (Table 1). These risk levels range from no impairment at 8 mg/L to avoidance of acute mortality at 3 mg/L. Although DO concentrations between 5-6.9 mg/L may result in slight to moderate production impairment, a minimal DO threshold of 5 mg/L will “protect the persistence of existing fish populations” (Table 1). Additionally, the USEPA (1986) indicates that acute lethality can be avoided at DO concentrations greater than 3 mg/L; while WDOE (2002) concluded (taking into consideration warm water temperatures) that juvenile salmonid mortality can be avoided if daily minimum DO is greater than 3.9 mg/L, and the monthly or weekly average of minimum concentrations remains above 4.6 mg/L. Therefore, DO levels between 5-6.9 mg/L are anticipated to “protect the persistence of existing” salmonids under current drought conditions.

Furthermore, NMFS and the USFWS performed evaluations (NMFS 2015 and USFWS 2015) of our previous memorandums and biological review (Reclamation 2015a-c) and each concluded that our Project Description (including modification of the D-1641 Ripon DO compliance standard) will result in effects that are consistent with the range of effects previously analyzed under existing biological opinions (NMFS 2009 and USFWS 2008). The analyses in these opinions considered that droughts would occur and concluded that implementation of the NMFS (2009) and USFWS (2008) Reasonable and Prudent Alternatives (RPAs) are not likely to jeopardize the continued existence of covered species (i.e., NMFS covered species: Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, California Central Valley steelhead, the Southern Distinct Population Segment of North American green sturgeon, and the Southern Resident killer whales; and USFWS covered species: Delta Smelt), and will not result in the destruction or adverse modification of their designated critical habitats.

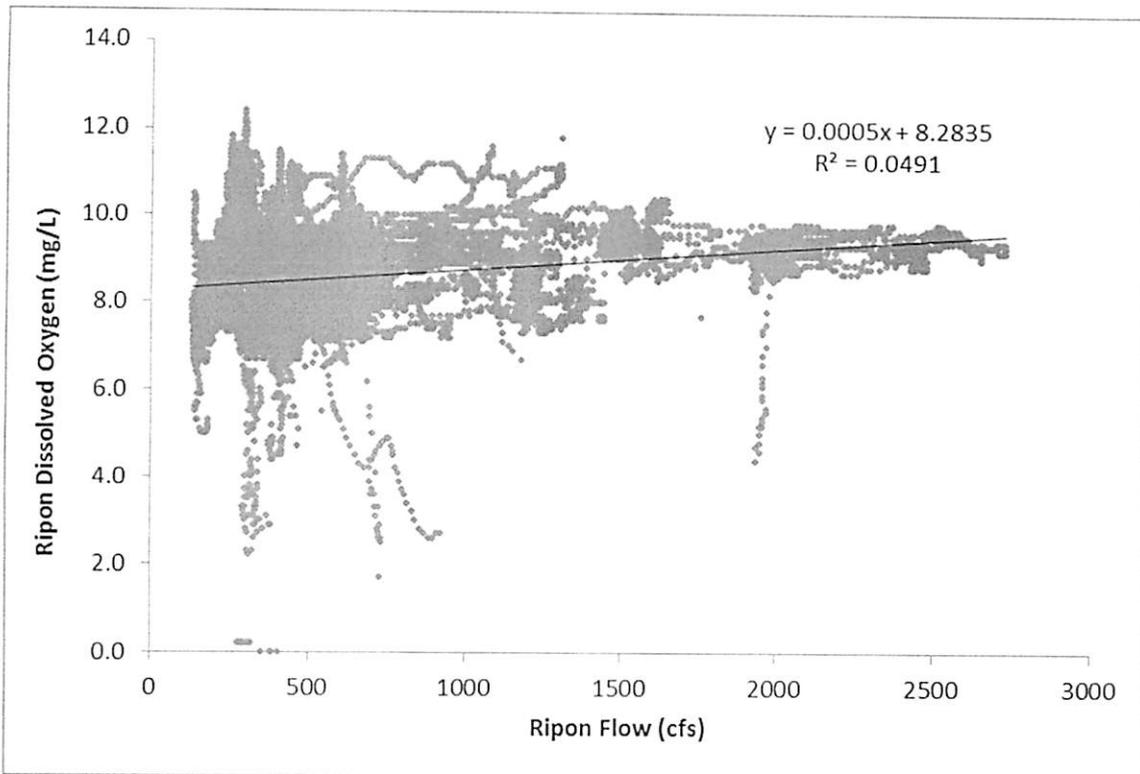


Figure 1. Relationship of Ripon hourly flow and hourly dissolved oxygen (DO) for available period of record, July-November (July 1-November 30, years 1999-2014, and July 1-August 3, 2015). Source: DO from RPN gage and flow from RIP gage, downloaded from CDEC.

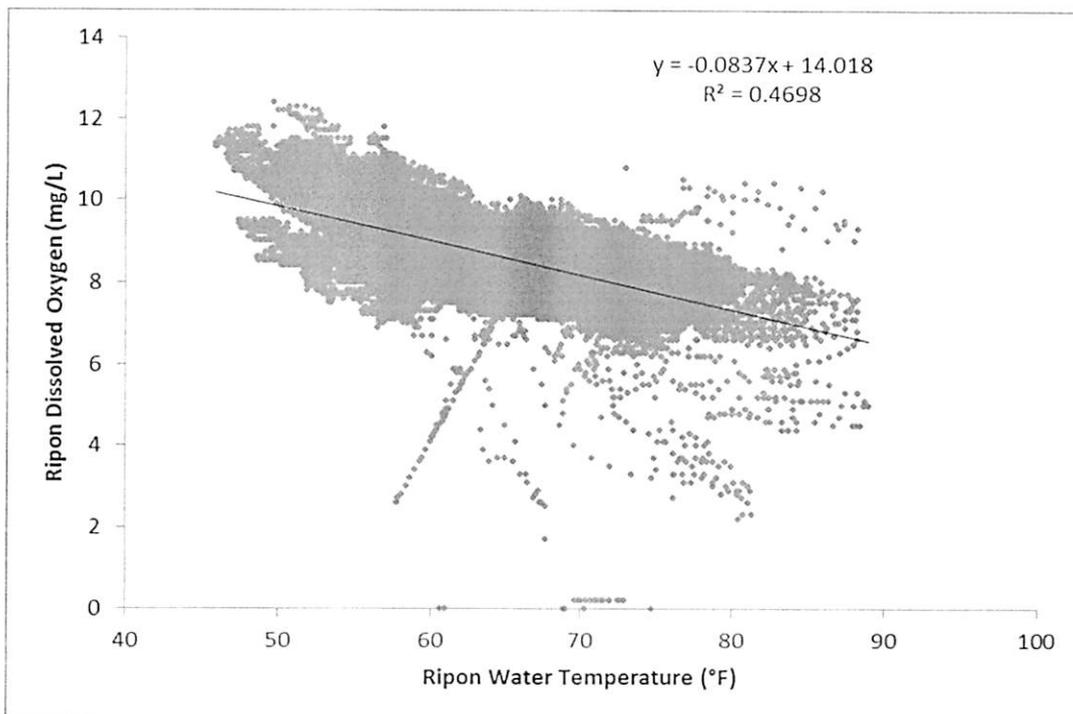


Figure 2. Relationship of Ripon hourly water temperature and hourly dissolved oxygen (DO) for available period of record, July-November (July 1-November 30, years 1999-2014, and July 1-August 3, 2015). Source: RPN gage, downloaded from CDEC.

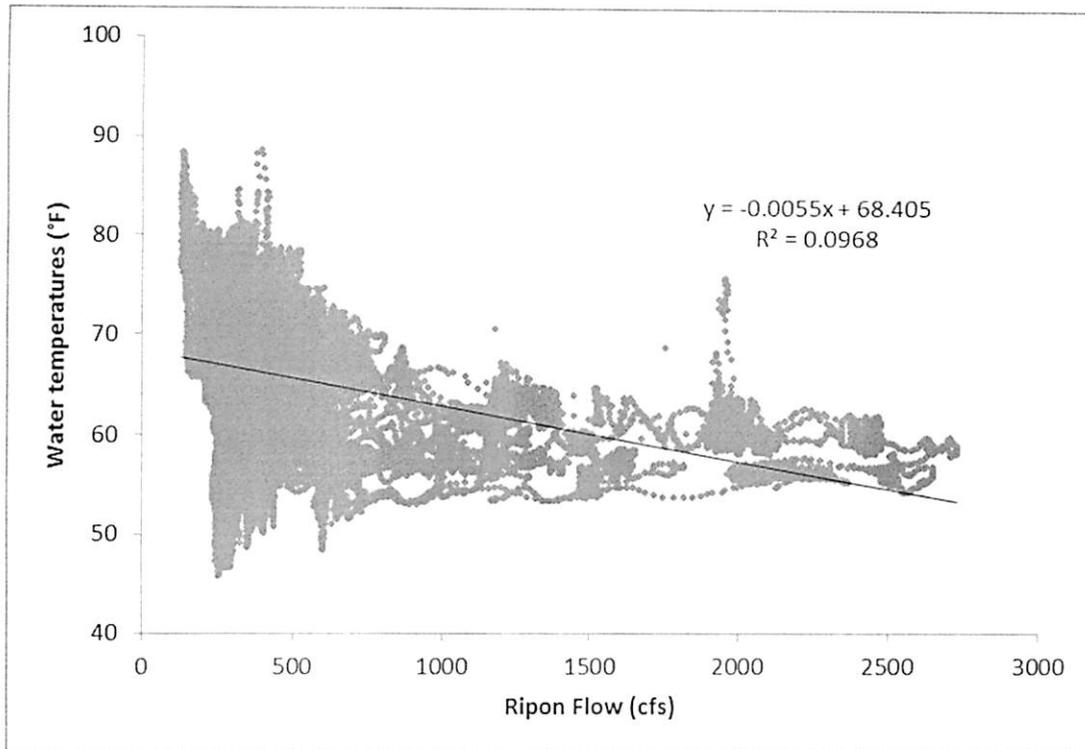


Figure 3. Relationship of Ripon hourly flow and hourly water temperature for available period of record, July-November (July 1-November 30, years 1999-2014, and July 1-August 3, 2015). Source: Water temperature from RPN gage and flow from RIP gage, downloaded from CDEC.

Table 1. Dissolved oxygen concentrations and their effects on salmonid life stages other than embryonic and larval (USEPA 1986, pages 30-31).

Production Impairment Risk Level	Definition	Water Column DO (mg/L)
No Production Impairment	Nearly maximal protection of fishery resources	8
Slight Production Impairment	High level of protection of important fishery resources, risking only slight impairment of production in most cases	6
Moderate Production Impairment	Protecting the persistence of existing fish populations but causing considerable loss of production	5
Severe Production Impairment	For low level protection of fisheries of some value but whose protection in comparison with other water uses cannot be a major objective of pollution control	4
Limit to Avoid Acute Mortality	Minimum dissolved oxygen concentration deemed not to risk direct mortality of sensitive organisms	3

2. *Previous actions by both petitioners and the SWRCB have contributed significantly to severely degraded environmental conditions on the Stanislaus River*

The objection cites deliveries to senior water rights holders OID and SSJID as contributing significantly to the reduction of coldwater storage in New Melones Reservoir. Reclamation makes deliveries to OID/SSJID pursuant to a water rights settlement contract with the districts. This contract does not grant Reclamation the discretion to unilaterally reduce deliveries to the districts.

The objection claims that the TUCPs granted to Reclamation and DWR by the SWRCB exacerbated low DO conditions and disrupted migration of salmonids from the Stanislaus and other San Joaquin River tributaries. However, had water been released from New Melones reservoir to meet the unrelaxed D-1641 water standards, New Melones storage would have been perilously low going into the fall. The conserved water from the TUCP has been held in storage and may be released this fall to fulfill the requirements of the NMFS Biological Opinion October pulse flow or may be held longer in storage in case of continuing drought conditions. DO conditions in the river have met the 7.0 requirement at Ripon through June 11, 2015.

The objection requests that Reclamation be required to maintain temperature control and water quality objectives throughout the remainder of 2015. However, since the advent of the RPAs in 2009, it has not been possible to fully meet the Biological Opinion temperature objectives at Orange Blossom and Knights Ferry, even in years when higher flows for flood control were being released.

References

CFS. Cramer Fish Sciences. 2006a. Stanislaus River Weir Update-November 20 through December 3, 2006. Stanislaus River Weir Email Summary dated December 6, 2006. <http://fishsciences.net/postcards/postcard6.htm>

CFS. Cramer Fish Sciences. 2006b. Stanislaus River Weir Update-October 9 through October 22, 2006. Stanislaus River Weir Email Summary dated October 23, 2006. <http://fishsciences.net/postcards/postcard3.htm>

CFS. Cramer Fish Sciences. 2006c. Stanislaus River Weir Update- September 25 through October 8, 2006. Stanislaus River Weir Email Summary dated October 10, 2006. <http://fishsciences.net/postcards/postcard2.htm>

CFS. Cramer Fish Sciences. 2006d. Stanislaus River Weir Update- September 6 through September 24, 2006. Stanislaus River Weir Email Summary dated September 27, 2006. <http://fishsciences.net/postcards/postcard1.htm>

Kennedy, T. 2008. Stanislaus River salmonid density and distribution survey report (2005-2007). Draft prepared by Fishery Foundation of California for the U.S Bureau of Reclamation Central Valley Project Improvement Act, June 2008. 16 pp.

Response to Objection of Petitions for Temporary Change – Permits 14858A et al, New Melones Project

Kennedy, T. and T. Cannon. 2005. Stanislaus River salmonid density and distribution survey report (2002-2004). Final draft prepared by Fishery Foundation of California for the U.S Bureau of Reclamation Central Valley Project Improvement Act, October 2005. 54pp.

NMFS [National Marine Fisheries Service]. 2015 (July 1). Letter to Mr. David Murillo (Regional Director, Reclamation) and Mr. Mark Cowin (Director, DWR) from William Stelle (Regional Administrator, NMFS) Re: Contingency Plan for Water Year 2015 Pursuant to Reasonable and Prudent Alternative Action I.2.3.C of the 2009 Coordinated Long-term Operation of the Central Valley Project and State Water Project Biological Opinion, Including a Revised Sacramento River Water Temperature Management Plan. NMFS West Coast Region, Sacramento, CA. 12 pp. + Attachment.

NMFS [National Marine Fisheries Service]. 2009. Biological and Conference Opinion on the long-term operations of the Central Valley Project and State Water Project. NMFS Central Valley Office, Sacramento CA.
Reclamation [United States Bureau of Reclamation]. 2015a (May 22). Updated project description for July - November 2015 drought response actions to support Endangered Species Act Consultations. In letter to Larry Rabin (USFWS Acting Field Supervisor) from Ronald Milligan (Reclamation Operations Manager), Subject: Continuing drought response measures under the 2008 Coordinated Long-term Operation of the Central Valley Project (CVP) and the State Water Project (SWP) Biological Opinion (2008 BiOp) to address reinitiation statement regarding consecutive dry years.

Reclamation [United States Bureau of Reclamation]. 2015b (May 18). Updated project description for July - November 2015 drought response actions to support Endangered Species Act Consultations. In letter to Maria Rea (NMFS Assistant Regional Administrator) from Ronald Milligan (Reclamation Operations Manager) Subject: Contingency Plan for Water Year (WY 2015) pursuant to Reasonable and Prudent Alternative (RPA) Action I.2.3.C of the 2009 Coordinated Long-term Operation of the Central Valley Project (CVP) and the State Water Project (SWP) Biological Opinion (NMFS 2009 BiOp).

Reclamation. 2015c. Biological review for Endangered Species Act compliance of the WY 2015 updated drought contingency plan for July - November project description. Attachment in Reclamation 2015a and 2015b.

SRFG [Stanislaus River Fish Group]. 2004. A summary of fisheries research in the lower Stanislaus River (Working Draft), 10 March 2004. Source: http://www.delta.dfg.ca.gov/srfg/restplan/Fisheries_Research_03-08-04.doc

USEPA [United States Environmental Protection Agency]. 1986. Ambient water quality criteria for dissolved oxygen. Office of Water, Regulations and Standards Division. U.S. Environmental Protection Agency, Washington, D.C. EPA 440/5-86-003.

USFWS [United States Fish and Wildlife Service]. 2015 (June 26). Memorandum to Central Valley Operations Manager, Bureau of Reclamation, Central Valley Office from Acting Field Supervisor, U.S. Fish and Wildlife Service, Bay Delta Fish and Wildlife Office, Subject: Reinitiation of Endangered Species Act Consultation on the Coordinated Operations of the Central Valley Project and State Water Project. USFWS Bay Delta Fish and Wildlife Office, Sacramento, CA. 3 pp.

WDOE [Washington State Department of Ecology]. 2002. Evaluating criteria for the protection of freshwater aquatic life in Washington's surface water quality standards: Dissolved oxygen. Draft discussion paper and literature summary. Publication Number 00-10- 071. 90 pp.