



May 18, 2019

To:

Barry Thom, Regional Administrator, U.S. National Marine Fisheries Service, West Coast Region
Paul Souza, Regional Director, U.S. Fish and Wildlife Service, Pacific Southwest Region

Ernest Conant, Regional Director, U.S. Bureau of Reclamation, Mid-Pacific Region

Karla Nemeth, Director, California Department of Water Resources

Charlton Bonham, Director, California Department of Fish and Wildlife

Re: Comments on the *“Reinitiation of Consultation on the Coordinated Long-Term Operation of the Central Valley Project and State Water Project - Final Biological Assessment”*, January 2019”.

We have reviewed the Final Biological Assessment (BA) on the reinitiation of consultation on the long-term operation of the Central Valley Project and State Water Project (CVP/SWP) and find that the impacts on Southern Oregon/Northern California Coast (SONCC) Coho Salmon in the Trinity River are not sufficiently evaluated and/or disclosed to support the conclusions drawn in the BA. Following is a summary of our major concerns identifying the inadequacy of the document, primarily concerning Trinity River Coho Salmon, but also concerns for other species. Additionally, a table with more specific comments is provided at the end of this letter. While it is our understanding that the Trinity component of this BA has recently been removed from consideration of this consultation, we have not seen any official documentation of this action and many of the comments are still pertinent to ESA coverage of flow management under the Trinity River Restoration Program.

In no way does this letter endorse or approve of other aspects of the BA as it relates to the Central Valley and resources outside of the Trinity and Klamath river basins. We have concerns with those other aspects of the BA that we will address separately.

Interpretation of the Trinity ROD. The BA contains text that states the Trinity ROD *“strictly limits Reclamation’s transbasin diversions to 55 percent of annual inflow on a 10 year average”* is incorrect. The ROD and its supporting documents identify instream flow volumes based on five water year types and a minimum carryover storage but does not identify a diversion percentage or a period that this is to be calculated over.

Without Action Alternative. The comparison of the proposed action (PA) to the Without Action scenario (WOA) should be removed from the document. The WOA approach to evaluate the impacts of the PA does not depict an actual no project action because the dams are still in place and have significant impacts (water temperature, physical processes, habitat availability) on the river. Comparing the PA to the WOA portrays the PA as benefiting the fishery resources of the Trinity River and minimizing the true impacts of the Trinity River Division of the CVP. This comparative methodology skews the impact analyses by reducing the PA relative impacts, leading to minimized impacts or even supposed benefits to listed species. At least this should be acknowledged in the document. A rather exhaustive list of potential impacts of summer/fall low flow conditions is provided but these conditions may be eliminated, or at least minimized, if the higher flows in the winter would restore natural riverine features such as deep holes, which would stratify under low flow conditions and provide thermal refugia to holding adults and rearing juveniles.

Trinity River Water Temperature Modeling. No information is presented in the BA or supporting appendixes concerning the effects of CVP/SWP water operations on meeting Trinity River water temperature objectives for adult and juvenile salmonids. The only information presented is mean monthly water temperatures below Lewiston Dam which is not the location where attainment of water temperature objectives should be evaluated. Additionally, mean monthly temperatures are not a useful metric for evaluating temperature impacts because of the potential sub-lethal and lethal effects of temperatures on aquatic organisms due to daily or weekly changes.

The California Regional Water Quality Control Board – North Coast Region established the following water temperature objectives for adult salmonids in the upper Trinity River, which were also incorporated into the Trinity ROD:

Daily Average Not to Exceed	Period	River Reach
60°F	July 1- Sept 15	Lewiston to Douglas City Bridge
56°F	Sept 15-Oct 1	Lewiston to Douglas City Bridge
56°F	Oct 1- Dec 31	Lewiston to North Fork Confluence

The water temperature objective for outmigrating juvenile Coho Salmon in the Trinity River was established under the Preferred Alternative of the Trinity River Mainstem Fishery Restoration EIS/EIR which was adopted by the Trinity ROD (USDOI 2000):

Water Year Type	Temperature Objective	Date	Reach
Ext. Wet, We and Normal	<59°F	June 4	Lewiston to Weitchpec
Dry and Critically Dry	<62.6°F	June 4	Lewiston to Weitchpec

The USGS Trinity River water temperature model (Jones et al 2016) should be used to evaluate the PA using the above adult and juvenile temperature metrics. This water temperature model accurately simulates daily mean water temperature along the Trinity River, from Lewiston Dam to the Klamath River confluence. Additionally, output from this model can be used to simulate water temperatures in the lower Klamath River.

Coho Salmon. The assertions that the PA, including the restoration actions implemented by the TRRP, *“will continue to result in increases in Coho Salmon populations”* and *“would have overall long term beneficial effects on the Coho Salmon designated critical habitat”* are flawed and not supported by the most recent data on natural origin adult Trinity River Coho Salmon returning to the Trinity River. Returns of natural origin Coho Salmon have reached record low levels. A detailed assessment on the status of the Trinity Coho Salmon population affected by TRD/CVP water operations must be incorporated as part of the BA.

Cumulative Impacts:

Carryover Storage – Drought Scenario The low end of month storage in August through October during Critical Dry Years indicates there could be severe violation of NCWQCB water temperature objectives which would lead to impacts on holding and early spawning Coho Salmon. This impact could be exacerbated by a multi-year drought where the exhaustion of the cold water pool could limit the ability to meet the juvenile and adult temperature standards in the Trinity River. The impacts of a low carry-over storage during a dry hydrologic period should be modeled as part of the cumulative effects to ensure that operations and carry-over storage levels are appropriate.

Accounting for Humboldt County’s 50,000 acre-feet water contract and the Lower Klamath Record of Decision. It does not appear that Humboldt County’s 50,000 acre-foot water contract and the Lower Klamath ROD were included in the modeling of water availability. The second Proviso in Section 2 the Trinity River Division Act (Public Law 84-386), which authorized the construction and operation of the Trinity River Division of the Central Valley Project, directs that not less than 50,000 acre-feet of water shall be released into the Trinity River and made available to Humboldt County and other downstream users. This volume of water needs to be accounted for in all modeling exercises.

Marijuana Cultivation. The impact of marijuana cultivation on water quantity and quality in tributary streams, critical habitats for Coho Salmon, should at least be listed with the other cumulative effects factors, if not evaluated as a component of the cumulative impacts affecting the Trinity River Coho Salmon population

Other Species:

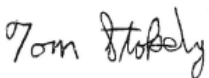
Eulachon. Impacts on the Eulachon southern DPS (threatened) needs to be thoroughly evaluated in this BA pertaining to the TRD operations since it was not covered under the Biological Opinion for the Trinity ROD. The conclusion that the *“proposed action may affect, but is not likely to adversely affect Eulachon critical habitat”* is not supported by the information that in some years the decrease in lower Klamath flows attributed to the proposed action can be as high as 23%, which would likely adversely affect Eulachon spawning habitat. Additionally, these larger decreases are mostly likely during dryer water years so there may also be temperature impacts.

Green Sturgeon. Impacts; on the and Green Sturgeon northern DPS (species of special concern) needs to be thoroughly evaluated in this BA pertaining to the TRD operations since they were not covered under the Biological Opinion for the Trinity ROD. Changes in hydrology and water temperature in the lower Trinity and lower Klamath river may impact this population.

Killer Whale. The impact analysis for the southern resident Killer Whale DPS only evaluates impacts on Central Valley salmon stocks. In the Analytical Approach – Aquatic Species (Section 5.1) Klamath-Trinity Chinook are listed, presumably to support the Killer Whale analysis, but no analyses presented for these stocks of Chinook Salmon. Since Klamath-Trinity Chinook Salmon stocks intermingle with Central Valley stocks and contribute to the food base for Killer Whales, they need to be included in this analysis.

Based on our review of the BA, we believe it is inadequate for the purpose of disclosing impacts of CVP/SWP water operations on the listed fishery resources of the Trinity River. We provide these comments so you can incorporate the necessary analyses needed to revise the document. Please feel free to contact me if you have any questions concerning our comments.

Sincerely,



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cc:

Trinity Management Council Members
Trinity County Board of Supervisors
Humboldt County Board of Supervisors
Interested Parties

Specific Comments on the “Reinitiation of Consultation on the Coordinated Long-Term Operation of the Central Valley Project and State Water Project - Final Biological Assessment”, January 2019”.

Page	Section	Comment	Other
1-7	1.2 Action Area	Lewiston Reservoir should be included as part of the Action Area.	
2-7	2.1.5 Water Operations Management	The text pertaining to diversions from the Trinity Basin to the Sacramento Basin (<i>The 2000 Trinity River Record of Decision (Trinity ROD) strictly limits Reclamation’s transbasin diversions to 55 percent of annual inflow on a 10 year average basis for the restoration and protection of the Trinity fishery,</i> ” is incorrect. The Trinity River Mainstem Fishery Restoration ROD provides for annual volumes to be released into the Trinity River from Lewiston Reservoir based on 5 water-year types and a minimum carryover storage volume of 600,000 AF. There is no provision of limiting transbasin diversions to 55% on a 10 year average in the ROD. See the Trinity River ROD for specific water year type volumes and carryover storage levels.	
2-7	2.1.5 Water Operations Management	The statement that Reclamation released fall augmentation flows “For the previous 15 years” is not correct. From 2003 to 2018, fall augmentation flows have been released eight times. See BOR Trinity River Restoration website years and volumes of fall flow augmentation.	http://www.trrp.net/restoration/flows/summary/
2-57	2.10.5 Water Operations Management	While the BA states that “ <i>Reclamation does not currently manage for Green Sturgeon. However, many operational changes made for Chinook Salmon or Steelhead also benefit Green Sturgeon.</i> ” pertaining to the southern Green Sturgeon DPS, there is no acknowledgement of the potential impacts on the green sturgeon population in the Klamath-Trinity Basin which is part of the northern DPS. The potential impacts of diversions from the Trinity River to the Sacramento River should be evaluated as green sturgeon were not evaluated in the Trinity ROD ESA consultation.	
2-84	2.16.3 Historical and Current Distribution and Abundance	The statement “ <i>Adult return numbers to the TRH provide rough estimates of the hatchery-origin coho salmon return numbers</i> ” is incorrect as sometimes large numbers of hatchery origin Coho Salmon spawn in the mainstem Trinity River below Lewiston Dam and, probably to a lesser extent, in upper Trinity River tributaries. If only the number Coho Salmon returning to the hatchery are used, the Wild (or natural) contribution to the Coho Salmon run will be significantly overestimated. For example, in 2017, 270 adult Coho Salmon of the inriver run returned to TRH (66%), but the hatchery contribution to the total run was 86% because of significant spawning of hatchery fish in the river (CDFW 2017). CDFW has these data going back to at least the early 1980s.	http://www.trrp.net/DataPort/doc.php?id=2409
2-86	2.16.5 Water Operations	The statement “ <i>Reclamation makes releases from Lewiston Dam in accordance with the Trinity ROD, which considers requirements for Coho in the Trinity River</i> ” may have been sufficient at the	

		time that the Trinity ROD was signed (December 2000) but the impacts of flows on Coho Salmon should be re-evaluated given the extensive river restoration work that has been implemented and the monitoring and evaluation efforts that provide updated information on habitat needs and availability.	
2-86	2.16.5 Water Operations	The statement <i>“Increases in Trinity River releases in the late summer and fall result in lower storage in Trinity Reservoir at the end of the water year. The decreases in storage accumulate from water year to water year when the reservoir does not refill resulting in lower end-of summer storages, negative impacts on cold water pool, and warmer stream temperatures for Coho and Fall-Run Chinook Salmon spawning in the Trinity River”</i> erroneously places the blame of decreased storage in Trinity Reservoir on releases into the Trinity River. While releases to the Trinity River must come from Trinity Reservoir, it is the trans-basin diversions that create decreases in storage. Additionally, the statement that increases in late-summer and fall result in lower storage is ignoring the fact that the fall flows to improve conditions in the lower Klamath River are covered by the Lower Klamath Record of Decision and should be accounted for in BOR operations.	https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=28314
2-89	2.18.5 Water Operations Management	While the flow increases associated with the Trinity ROD may benefit Eulachon, the levels of water diverted to the Sacramento may adversely affect Eulachon in the Klamath River and this should be evaluated. The potential impacts of diversions from the Trinity River to the Sacramento River should be evaluated as Eulachon were not evaluated in the Trinity ROD ESA consultation.	
3-17	3.3.1 Trinity	Some actions of the TRRP would still need to be implemented, for example gravel augmentation, since the continued existence of the dams blocks gravel recruitment below the dams.	
3-21	3.3.8 Non-Operational Actions	Need to include Trinity River Hatchery as an ongoing activity.	
4-5	4.1 Decreasing Operational Discretion	The upper range of flow volumes released into the Trinity River is for an Extremely Wet water year and not a Wet water year. Also, minimum carry-over storage levels should be included.	
4-5	4.1 Decreasing Operational Discretion	Releases into the Trinity to meet the requirements and obligations identified in the Long-term Plan to Protect Adult Salmon in the lower Klamath River ROD need to be included.	https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=28314

4-7	4.2 Operational Tradeoffs	The statement <i>“Increases in Trinity River releases in the late summer and fall result in lower storage in Trinity Reservoir at the end of the water year. The decreases in storage accumulate from water year to water year when the reservoir does not refill resulting in lower end-of summer storages, negative impacts on cold water pool, and warmer stream temperatures for Coho and Fall-Run Chinook Salmon spawning in the Trinity River”</i> erroneously places the blame of decreased storage in Trinity Reservoir on releases into the Trinity River. While releases to the Trinity River must come from Trinity Reservoir, it is the trans-basin diversions that create decreases in storage. The volumes of water needed to meet Trinity flow volumes, lower Klamath River fall flow needs, and Trinity carryover storage need to be accounted for before excessive diversions are implemented.	
4-21	Table 4-6. Components of the Proposed Action	The Cold Water Management Tools are included as part of this consultation, but the Trinity and lower Klamath RODs are not; which is inconsistent with the operation of the Trinity River Division linkage with the CVP. Since these facilities are operated to meet water and power demands and water temperature/water quality needs in both the Trinity, lower Klamath, and Sacramento rivers the TRD operations need to be included in this consultation.	
4-22	Table 4-6. Components of the Proposed Action	The Trinity River Mainstem Fishery Restoration ROD and the Long-term Plan to Protect Adult Salmon in the Lower Klamath River ROD need to be included in this consultation because the operations of the Trinity River Division, specifically diversions to the Sacramento River and carry-over storage in Trinity Reservoir have direct effect on meeting the objectives of these two records of decisions to protect the fishery resources of the Trinity River.	
4-24	4.9.1 Upper Sacramento River (Shasta and Sacramento Divisions)	Whiskeytown Reservoir, Trinity River Reservoir, Lewiston Reservoir, and the power plants associated with these reservoirs need to be included in the Upper Sacramento River facilities because of the diversions that occur from the Trinity to the Sacramento. On page 4-26, Section <i>4.9.1.1 Seasonal Operations</i> contains the following text that demonstrates the linkage between the Trinity and Sacramento systems and why the Trinity needs to be incorporated into this BA: <i>“During the summer, operational considerations are mainly flows required for Delta outflows, instream demands, and temperature control. In river temperatures below Shasta Dam can be controlled via two methods. First is changing release volume or shifting releases between Trinity and Sacramento reservoirs,”</i>	
4-32	4.9.1.3.1 Summer Cold Water Pool Management	Proposed temperature profile data measurements shown in Table 4-8 indicate the integration of Trinity and Whiskeytown reservoirs in summer temperature management and these two facilities need to be included in the BA for the CVP.	

4-36	4.9.2.1 Seasonal Operations	The statement “ <i>The 2000 Trinity ROD strictly limits Reclamation’s transbasin diversions to 55 percent of annual inflow on a 10-year average basis to legal and trust mandates for the restoration and protection of the Trinity fishery</i> ” is incorrect . The only information in the Trinity River ROD that alludes percentage of water yield diverted can be found on page 19 ““ <i>TRD integration with CVP: The Preferred Alternative provides for the continued operation of the Trinity River Division of the CVP, including the continued export to the Central Valley of a majority of the waters flowing into the TRD (averaging 52%)</i> ”. This value is simply the difference in the weighted mean of the volumes proposed to be released into the Trinity River compared to the long-term yield at the time of the signing of the ROD. It is not sharing percentage over a 10year period as identified in the BA.	
4-36	4.9.2.1 Seasonal Operations	The statement “ <i>Reducing transbasin diversions was intended to improve the cold water pool in Trinity Reservoir to improve conditions for fall spawning down the Trinity River.</i> ” is incorrect . The reduction in transbasin diversions was needed to meet all flow dependent aspects of the Trinity River Restoration Program as well as minimum carryover storage levels.	
4-37	As a result, Trinity River export operations are completely integrated with Shasta Dam operations.	Following text from the BA shows the need to include TRD operations in this consultation “ <i>As a result, Trinity River export operations are completely integrated with Shasta Dam operations.</i> ”	
4-62	4.10 Items Not Included in This Consultation	In the section “Items Not Included in This Consultation” includes TRRP flows but TRRP flows along with flows to meet the Long-term Plan to Protect Adult Salmon in the Lower Klamath River ROD need to be included in this consultation because of the linkage between Trinity operations and the rest of the CVP; as noted above.	
5-2	5.1 Analytical Approach – Aquatic Species	Klamath-Trinity Green Sturgeon (Northern DPS) and Eulachon (southern DPS) should be included in the effects analysis in more detail due to their status as a species of special concern and threatened, respectively. No information is presented in the effects analysis pertaining to Trinity and Klamath Chinook Salmon Stocks, but they are listed in this section.	

5-3	5.5 Without Action Scenario	What would be the operation protocols for the Trinity River Division under the Without Action Scenario? Due to infrastructure constraints (maximum flow releases) at both Trinity and Lewiston dams there could be significant challenges in managing these structures without impacting the fishery resources of the river. This could range from releasing very high flows during the late fall and winter to protect the integrity of the dams which could lead to significant scour of redds to low flows during the summer, which would create temperature violations due to heating in Lewiston Reservoir.	
5-300	5.14.5 Chinook Salmon, Central Valley Fall-run/Late Fall-run ESU	Klamath-Trinity spring and fall Chinook Salmon should be included as part of the Southern Resident Killer Whale DPS evaluation. In the Analytical Approach – Aquatic Species (Section 5.1) Klamath-Trinity Chinook are listed, presumable to support the Killer Whale analysis, but no analyses are presented.	
5-445	5.18. Coho Salmon, Southern Oregon/Northern California Coastal ESU	The statement <i>“The proposed action provides beneficial effects to Coho Salmon due to higher flows and lower temperatures in the summer and fall, as compared to WOA”</i> is based on flawed logic that the dams would have no or insignificant impacts on Coho Salmon populations or habitat. The existence of Trinity and Lewiston dams, in addition to blocking 109 miles of spawning and rearing habitat and gravel transport and large wood transport, create conditions where during low flow summer/fall the water temperature will increase to detrimental levels. Indicating that the proposed action will be better for the fish ignores the fact that the existence and operation of the dam/diversions have contributed to their listing under ESA and a more legitimate evaluation would be to compare the proposed action to a state where the dams were not there. .	
5-447	5.18.3.1 Seasonal Operations	Coho Salmon spawning in the Trinity River typically occurs from November through January (Trinity River Flow Evaluation - USFWS &HVT 1999) and not February to April as noted in the document. The assertion that the proposed action would be better for eggs and alevin survival “ due to reduced fine sediment in the channel substrate, and an increased food base for these fish due to increased macroinvertebrate production” is not supported with any information and it is more likely that the larger winter/spring flows would provide for better riverine conditions for all aquatic organisms.	
5-451	5.19.1 Seasonal Operations	The description of the WOA operations, “uncontrolled flows would be released to the Trinity River,” is likely inconsistent with the 1955 Act that authorized the Trinity River Division because of the requirement to maintain fish and wildlife populations of the river. Gravel augmentation would	

		<p>need to occur because of the existence of Trinity and Lewiston dams to comply with the 1955 Act. See the Max Flow alternative of the Trinity River Mainstem Fishery Restoration EIR/EIR. This alternative was the most beneficial for the fishery resources of the Trinity River. For the Trinity, a more appropriate comparison would be the MAX Flow alternative to the proposed action which would show that the proposed action would not <i>“improve habitat by continuing implementation of a normal (reduced) hydrograph”</i>.</p> <p>Additionally, the hydrographs recommended in the Trinity ROD are not “normal (reduced) hydrographs”, the hydrographs were developed to meet specific objectives and it was the intent of the ROD that these hydrographs and objective would be evaluated through the TRRP adaptive management program. This is of importance with the winter/spring rearing flows since the intent of the major channel rehabilitation program was to eliminate (or at least reduce) the fry/juvenile rearing habitat bottleneck that existed due to the degraded (ditch shaped) river channel. Since the Trinity River Flow Study (1999) and the Trinity ROD (2000) a substantial body of literature has been developed on the importance of mimicking natural flow regimes to aquatic ecosystems. This should be one of the evaluation criteria used to evaluate the potential benefits or impacts on fishery resources in the BA.</p>	
6-1	Chapter 6 Cumulative Effects	<p>There are many issues not included in the cumulative effects section of the BA so it is assumed that they were not evaluated or at least not acknowledged as factors impacting Trinity River Coho Salmon. These are:</p> <ol style="list-style-type: none"> (1) the impact of the 600 TAF minimum carryover storage in meeting Trinity River water temperature objectives during multi-year droughts, (2) accounting for Humboldt County’s 50 TAF water contract for Trinity River/TRD water and its impact on water availability, and (3) the impact of the marijuana industry on Coho Salmon, especially in tributary streams. 	
7-9	7.2.10 Coho Salmon, Southern Oregon/North ern California Coastal ESU	<p>The statement that the “the inter-basin transfer of water to the Sacramento River likely will continue to affect Coho Salmon, primarily the upper and lower Trinity River populations, through changes in habitat that affect their ability to spawn and rear in the mainstem of the Trinity River” ignores the potential water temperature impacts that would affect Coho Salmon growth and survival. The “overall effects of the proposed action” may not be “beneficial” because the likely habitat bottle-neck of current rearing flows that have not been reevaluated and adjusted, as needed, following the substantial channel rehabilitation activities.</p>	

	7.2.11 Coho Salmon, Southern Oregon/Northern California Coastal ESU Critical Habitat	<p>The following statement <i>“Under the proposed action, the TRRP is expected to continue to result in increases in Coho Salmon populations, through improving fish habitat conditions, such as Coho Salmon critical habitat and associated biological features”</i> is not supported by the most recent data on adult Trinity River Coho population which indicates that they are declining to record low numbers. See CDFW report Kier et al 2018.</p> <p>Therefore, the conclusion that the <i>“the proposed action would have overall long term beneficial effects on the Coho Salmon designated critical habitat”</i> is flawed because after 15+years of increased flows and habitat restoration implemented by the TRRP, the Trinity River Coho salmon population is at record low levels.</p>	<p>Figure 21: 15-year adult escapement and percentage of natural origin Coho Salmon to the Trinity River system of Willamette basin, 2000-2015.</p>
7-15	7.2.17 Eulachon, Southern DPS	<p>Information concerning Eulachon affects is inconsistent. It is stated <i>“under the proposed action, Lewiston flows would contribute less to flow entering the lower Klamath River during December”</i> but then the following statement is made <i>“Flows and water temperature differences under the proposed action are insignificant and, therefore, are not likely to adversely affect Eulachon spawning temperatures in the lower Klamath River.”</i> On page 5-457, the flow changes in the Lower Klamath River attributed to the proposed action range from <i>“0% to nearly 23%”</i> with the average of <10%.</p> <p>The conclusion that the <i>“proposed action may affect, but is not likely to adversely affect Eulachon critical habitat”</i> does not seem to be supported by the information that in some years the decrease in lower Klamath flows attributed to the proposed action can be a high as 23%, which would likely adversely affect Eulachon spawning habitat. Additionally, these larger decreases are mostly likely during dryer water years so there could also be a temperature impact.</p>	
7-15	7.2.19 Southern Resident Killer Whale	<p>There is no discussion of Klamath-Trinity spring and fall Chinook Salmon in the section pertaining to Southern Resident Killer Whales. Klamath-Trinity Chinook salmon stocks migrate along the coast of Oregon and California contribute as a food source for the Southern Resident Killer Whales.</p>	
Appendix D Modeling			
3	Current Operations	<p>In addition to the Trinity ROD, volumes identified in the ROD for the Long-term Plan to Protect Adult Salmon in the Lower Klamath River needs to be incorporated into the analysis of the proposed action.</p>	
4	Reclamation Temperature Model	<p>For assessing temperature impacts on the Trinity River and lower Klamath River, the USGS water temperature model that accurately simulates daily mean water temperature along the course of the Trinity River, from Lewiston Dam to the Klamath River confluence, should be used to evaluate</p>	<p>Jones, E.C., Perry, R.W., Risley, J.C., Som, N.A. and</p>

		<p>how changes in TRD water operations would affect Trinity and lower Klamath water temperatures and how these would impact fishery resources. Additionally, there is a Klamath River model that can use the Trinity water temperature model outputs to predict water temperatures in the lower Klamath River.</p> <p>The Reclamation Temperature Model is a monthly model which is not appropriate for modeling impacts on water temperature. Water temperature analyses should be based on daily time steps because of the potential sub-lethal and lethal effects of temperatures on aquatic organisms due to daily or weekly changes.</p>	<p>Hetrick, N.J., 2016, Construction, calibration and validation of the RBM10 water temperature model for the Trinity River, Northern California. U.S. Department of Interior, U.S. Geological Survey, Open-File Report 2016-1056, prepared in cooperation with the U.S. Fish and Wildlife Service and the Bureau of Reclamation, 56p.</p>
10	Facilities	<p>Lewiston Dam needs to be included in the list of facilities. How will it be operated, especially given the human encroachment that has occurred along the upper Trinity River. Lewiston Reservoir can create tremendous water temperature problems when flow through the reservoir is relatively low (<1500-2800 cfs depending on meteorological and hydrologic conditions) but this impact should not be depicted as a benefit the proposed action is addressing since if the dam wasn't there it would not be an issue.</p>	
14	Trinity River Restoration Program	<p>While the Trinity River Division (TRD) of the CVP would only be operated as a flood control structure, at least the gravel augmentation component of the Trinity River Restoration Program to comply with the 1955 Act authorizing the construction and operation of the TRD in protecting the fish and wildlife of the Trinity River.</p>	
17	REGULATORY STANDARDS	<p>The North Coast Regional Water Quality Control Board water temperature objectives for the Trinity River should be included in this table. The objectives are:</p>	<p>Water Quality Control Plan for the North Coast</p>

	North Coast Regio	<table border="1"> <thead> <tr> <th>Daily Average Not to Exceed</th> <th>Period</th> <th>River Reach</th> </tr> </thead> <tbody> <tr> <td>60°F</td> <td>July 1- Sept 15</td> <td>Lewiston to Douglas City Bridge</td> </tr> <tr> <td>56°F</td> <td>Sept 15-Oct 1</td> <td>Lewiston to Douglas City Bridge</td> </tr> <tr> <td>56°F</td> <td>Oct 1- Dec 31</td> <td>Lewiston to North Fork Confluence</td> </tr> </tbody> </table>	Daily Average Not to Exceed	Period	River Reach	60°F	July 1- Sept 15	Lewiston to Douglas City Bridge	56°F	Sept 15-Oct 1	Lewiston to Douglas City Bridge	56°F	Oct 1- Dec 31	Lewiston to North Fork Confluence	Region” Footnote 5, Table 3-1, page 3-8.00: Accessed at http://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/083105bp/04_water_quality_objectives.pdf
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56°F	Oct 1- Dec 31	Lewiston to North Fork Confluence													
17	REGULATORY STANDARDS	The Trinity ROD (see Trinity River Flow Evaluation for specifics) has temperature standards for outmigrating juvenile salmonids, including Coho Salmon (TRFE – USFWS and HVT 1999). The effects of the proposed action in meeting temperature objectives for outmigrating needs to be evaluated using the appropriate model (Jones et al 2016).	file:///C:/Users/JP OLOS2018/Documents/joe/Consulting/CVP%20BA/Trinity%20EIS-EIR/USFWS%20HVT%201999%20(June%20FINAL%20-%20locked)%20Trinity%20River%20Flow%20Evaluation%20Final%20Report.pdf												
30	Table 1-3. Trinity Lake Storage, End of Month Storage	The low end of month storage during Critical Dry Years indicates that there would likely be severe violation of WQCB water temperature standards. The impact of this on Trinity River water temperatures needs to be thoroughly evaluated, especially when occurrences of low carry-over storage occur during a dry hydrologic period.													
180	Table 12-2. Trinity River Flow below Lewiston, Monthly Flow	The mean monthly flows for the proposed action Wet and Above Norman water year types do not match the Trinity ROD flows so this should be explained. Additionally, since these are mean monthly flows there is the potential for flow induced scour and fry displacement/mortality if the releases are highly variable. Daily information should be provided and the potential for red scour and fry displacement/mortality be evaluated.													

929	Table 1-2. Trinity River below Lewiston Dam, Monthly Temperature	Model output of mean monthly water temperature below Lewiston Dam indicate that there will be severe water temperature issues under the PA in meeting WQCB adult water temperature standards during Below Normal (July-Oct), Dry (June-Nov), and Critically Dry (June-Nov). Releases from Lewiston typically must be less than 50F to meet the downstream objectives, although this depends on the hydrology and meteorology of an individual year. The modeling that is needed for this evaluation should estimate the temperature at the control points established for the WQCB standards.	
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