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21000	71	5	Chapter 3 comments – Environmental conditions The operation of the Sites Reservoir is likely to affect future water supply and groundwater quality in the Colusa Subbasin if it promotes more water transfers and related groundwater substitution extractions from the aquifer. The California Water Commission is likely to approve inbasin groundwater trading which also could lead to more groundwater pumping especially in areas where deep wells are needed to achieve desired pumping volumes and where groundwater quality may be sacrificed for water quantity. The unique aspect of concern for the operation of the Sites Reservoir is it provides a physical connection between inbasin surface water transfers and surface water export sales by Settlement Contractors. With the ability to store and deliver water via the Tehama Colusa Canal and the Glenn Colusa Irrigation District facilities surface water sales become fungible whether or not it is from a diverter on the	It is unlikely in-basin or out-of-basin transfers that involve groundwater substitution would increase as a result of the Project. These transfers can already occur with existing infrastructure. Out-of-basin transfers can occur by forgoing diversions from the Sacramento River. For example, GCID has transferred water to EBMUD by this mechanism (State Clearinghouse 2015). Water transfers within the Colusa Subbasin area are already possible using existing infrastructure. There is a 1,000-cfs, gravity-fed intertie connecting GCID Main Canal and TC Canal north of Funks Reservoir and a cross tie south of the city of Williams.. Please see Chapter 5, Surface Water Resources, Conveyance Systems for more details regarding connectivity of the Colusa Basin canal system. In-basin water transfers to TCCA members have been proposed in response to 2022 drought conditions using connections between the TCCA and GCID service areas or by reduction in Settlement Contractor diversions, depending on seller's location (Reclamation and	Reviewed by Client	The pdfs of these references should be found in the folder for Code 50,000: State Clearing House. 2015. 2015 EBMUD Water Transfers with GCID, SMWC, and RD 1004. State Clearing House Number 2011011010. Available: https://ceqanet.opr.ca.gov/2011011010/5. Accessed: April 13, 2022. U.S. Bureau of Reclamation and Tehama-Colusa Canal Authority. 2022. Initial Study/Environmental Assessment, 2022 Tehama-

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			Sacramento River in the Colusa Subbasin or from stored water in Sites that ultimately be delivered via the Tehama Colusa Canal and the Dunningan interconnect via the Colusa Basin Drain into the Sacramento River downstream. There is also economic incentive to engage in water quality arbitrage whereby fresh water is sold from the Sacramento River and salty groundwater is pumped via a groundwater substitution well or otherwise. The control over the conveyance system into Sites which ultimately makes its way back to the Sacramento River via the Dunningan interconnect would allow degraded quality groundwater to be blended in route to inbasin use or exported using the conveyance system to blend. There should also be some consideration how the likely development of inbasin groundwater trading may lead to overpumping and groundwater quality degradation since the Sites Reservoir may be a storage and water market transfer	TCCA 2022:2-6). Transfers are controlled by both environmental regulations and SGMA (e.g., Colusa Subbasin Groundwater Sustainability Plan, Davids Engineering, Inc. et al. 2021). As described in Chapter 8, Impact GW-2, Reservoirs, and Appendix 8B, the Project is likely to improve shallow groundwater conditions along the western margins of the Colusa Subbasin as a result of seepage from Sites Reservoir. In addition, groundwater pumping in the subbasin may decrease due to increased surface water supply during periods of drought.		Colusa Canal Authority In-Basin Water Transfers California. CGB-EA-2022-011. Available: https://files.ceqanet.opr.ca.gov/276019-1/attachment/_qqpFbRUREtzkX2DLNGokgPcLiTXxSq4UMXiGNGywM0JBbADw1Jn7hQN5wdJE9JG80aefdIyHzmA8cTv0. Accessed: April 14, 2022. Davids Engineering, Inc., ERA Economics, West Yost, Woodard & Curran, Inc., and the California State University, Sacramento (Davids

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			clearinghouse for Sacramento Valley water transfers.			Engineering, Inc. et. al.). 2021. Colusa Subbasin Groundwater Sustainability Plan. Prepared for Colusa and Glenn Groundwater Authorities. Available: https://colusagroundwater.org/projects/groundwater-sustainability-plan/. Accessed: April 1, 2022
21000	79	2	The EPA has identified several topics or resource areas in the SDEIS that would benefit from additional information or analysis in the Final EIS, including project operations, scope of analysis, climate impacts and greenhouse gas emissions, impacts to streams and wetlands, sediment management, and surface water quality. We have enclosed detailed comments and recommendations on these and other resource topics, and	The Authority and Reclamation appreciate EPA's engagement on the Project. Responses to specific comments are provided below.	Reviewed by Client	None

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			we have included a brief summary below. Please note that because the SDEIS does not identify Reclamation's Preferred Alternative, our comments apply to all alternatives.			
21000	89	1	I am Ronda Azevedo Lucas, an attorney recently retained by the Maxwell Unified School District ("MUSD") to represent them in the deliberations regarding the construction of Sites Reservoir Project ("Project"). On behalf of MUSD, I appreciate the opportunity to provide these comments on the Project's Revised Draft Environmental Impact Report/Supplemental Environmental Impact Statement, State Clearinghouse No. 2001112009 ("RDEIR/SDEIS") As you are well aware, MUSD has been very involved in this process, and has consistently stated its concern that the Project will result in significant environmental impacts to the community of Maxwell and its surrounding areas due to the Project's unanalyzed and therefore unmitigated impacts to traffic, school bus routes, safe passage issues, and	The Authority and Reclamation appreciates the Maxwell Unified School District's engagement on the Project. Responses to individual comments are provided below. Please see Master Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, for responses to general comments on the RDEIR/SDEIS and responses to comments in support or opposition of the Project. Please see Master Response 2, Alternatives Description and Baseline, for information on use and incorporation of mitigation measures. Please also see Master Response 9, Alternatives Development, regarding the development of the reasonable range of feasible alternatives. Traffic impact analysis is discussed in Chapter 18, Navigation, Transportation, and Traffic; impacts pertaining to school	Reviewed by Client	None

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			potential emergency response needs, including fire, sheriff and first responder personnel for the MUSD schools staff, students and residents within the community of Maxwell as required under the California Environmental Quality Act ("CEQA"). (Cal. Pub. Res. Code §§ 21000, et seq.; Cal. Code Regs., tit. 14, § 1520.) MUSD supports this Project provided the Project properly analyzes and mitigates its impacts on the community. However, the Project is unlike any entity that has ever come into the community, or arguably the entire county of Colusa, and presents some unique challenges MUSD has never before had to face. To be clear, MUSD is hoping to unequivocally support this Project but, at this date, cannot due to the lack of inadequate range of alternatives, proper analysis, and mitigation.	bus routes are addressed in Impact TRA-5 and Impact TRA-4 discusses emergency access. In addition, Chapter 26, Public Services and Utilities, Impact UTIL-1 pertains to public services such as schools, fire, and police, and Chapter 27, Public Health and Environmental Hazards, Impacts HAZ-4 and HAZ-5a, relate to adopted emergency response plans and emergency evacuation plans.		
21100	66	25	IV. The RDEIR/SDEIS Fails to Use an Accurate Environmental Baseline and Fails to Accurately Describe the Environmental Setting	Please refer to Master Response 2, Alternatives Description and Baseline, regarding the baseline and information regarding the biological	Reviewed by Client	N/A

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			(A) The RDEIR/SDEIS Fails to Use an Accurate Environmental Baseline The RDEIR/SDEIS also violates CEQA and NEPA because it fails to use an accurate environmental baseline. The environmental baseline is typically the conditions that exist when the Notice of Preparation is issued. Cal. Code Regs., tit. 14, § 15125(a). Here, however, the RDEIR/SDEIS improperly uses the following baseline that differ from conditions that existed when the Notice of Preparation was issued, including: (1) it uses the Trump Administration's 2019 Biological Opinions for operations of the Central Valley Project and State Water Project as part of the baseline; (2) it omits the SWRCB's 2018 Update of the Bay-Delta Water Quality Control Plan; and (3) it ignores the pending revision of water quality standards for the Sacramento River and flows into, through and from the Delta to San Francisco Bay as the final part of the SWRCB's forthcoming update of the Bay-Delta Water Quality Control Plan. Instead the RDEIR/SDEIS assumes that	opinions and Bay-Delta Water Quality Control Plan.		

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			other regulatory requirements would be identical in the future even as species spiral towards extinction because of unsustainable water diversions.			
21100	66	26	The RDEIR/SDEIS proposes to use the 2019 biological opinions for operations of the CVP and SWP as part of the environmental baseline, claiming that because these biological opinions were issued after the Notice of Preparation, they are anticipated to be implemented "into the future," and thus "an updated baseline is necessary to provide the most accurate picture of the Project’s impacts." RDEIR/SDEIS at 3-2 to 3-3. However, even before the RDEIR/SDEIS was released to the public on November 12, 2021, the federal government formally reinitiated consultation on the long-term operations of the CVP and SWP on October 1, 2021, beginning the process to develop new biological opinions. In addition, the Biden Administration has agreed to not defend these biological opinions in	Please refer to Master Response 2, Alternatives Description and Baseline, regarding the environmental baseline and information regarding the biological opinions and Bay-Delta Water Quality Control Plan.	Reviewed by Client	N/A

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			court, and the state and federal administrations have proposed interim operations that would modify and not fully implement the biological opinions in 2022. As a result, at the time the RDEIR/SDEIS was released to the public, the federal government had agreed that the 2019 Biological Opinions were "not an accurate picture" of how the CVP and SWP would be operated in the near term, let alone "into the future," and it is arbitrary and capricious to conclude otherwise. Including these blatantly unlawful biological opinions in the environmental baseline of the RDEIR/SDEIS violates CEQA and NEPA because this environmental baseline is not an accurate reflection of environmental conditions that would be affected by the proposed project and alternatives, and the document must be revised to analyze operations with a lawful environmental baseline that accurately reflects how the CVP and SWP could lawfully be operated.			

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21100	66	28	The environmental baseline is unlawful because it assumes that regulatory obligations that affect diversions from the Bay-Delta will not change in the future, even as fish species continue to spiral towards extinction and regulatory processes to update standards are underway. The RDEIR/SDEIS asserts that "[t]he reasonably foreseeable future conditions under the No Project Alternative would not be materially different from the conditions under the CEQA existing conditions baseline" because existing regulatory requirements, including the 2019 Biological Opinions, "would reasonably be anticipated to continue to be implemented into the future." RDEIR/SDEIS at 3-2 to 3-3. The SWRCB began its process of updating the Bay- Delta Water Quality Control Plan in 2008, adopted new regulatory requirements for Phase 1 of the updated Water Quality Control Plan in 2018, issued a framework in 2018 for completing the update of the Water Quality Control Plan, [Footnote 8: See supra note 1.] and has announced	Please refer to Master Response 2, Alternatives Description and Baseline, regarding the environmental baseline and information regarding the biological opinions and Bay-Delta Water Quality Control Plan. The document considers the forthcoming updates to the Bay-Delta Water Quality Control Plan in the discussion of cumulative projects in Chapter 31, Cumulative Impacts. Please see Master Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, regarding the water rights process and the authority of the State Water Board.	Reviewed by Client	N/A

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			that it anticipates adopting new water quality standards for the Sacramento River and the Bay-Delta estuary as part of the updated Water Quality Control Plan in 2023. [Footnote 9: See State Water Resources Control Board, Upcoming Actions to Update and Implement the Bay-Delta Plan, December 8, 2021, available online at: https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/20211207-slides-for-12-08-bay-delta-plan-inform-item_accessible.pdf. This document is incorporated by reference.] There is no justification for entirely excluding consideration of the forthcoming updates to the Bay-Delta Water Quality Control Plan in the RDEIR/SDEIS, particularly since the document will purportedly be used by the SWRCB.			
21100	68	5	Human health and safety water needs are now recognized as having been inadequately protected by water project operations. Many projects have regularly overdelivered and	In coordination with Reclamation, the Authority would construct, operate, and maintain an offstream reservoir to capture excess water from major storms and store the water until it is	Reviewed by Client	None

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			when followed by dry conditions in subsequent years have potentially lost the ability to meet even human health and safety needs. Over-deliveries have definitely resulted in failed ability to meet water quality control plan standards and sustain the survival of some endangered species.	most needed during dry periods. The Project is intended to provide increased water supply and improved reliability of water deliveries. IPlease see Master Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, for responses to general comments on the RDEIR/SDEIS.		
21100	70	6	Chapter 3 comments – Environmental conditions The comments on Page 3-3 regarding the relative slow growth of the Colusa and Glenn communities seems to contrary to the State of California's objectives for DEI economically focused economic opportunity and a reasonable affordable housing policy. Just because an area has had slow growth in the past it does not justify condemning an area to be an economic wasteland especially since it is the area of origin for most of the State's water resources and offers the best opportunity to meet the State's affordable housing objectives. For example, the City of Williams has	The content of Chapter 3, Environmental Analysis, is meant to explain and define the environmental baseline and No Project Alternative for the purposes of CEQA and NEPA compliance. This chapter identifies that "the physical environmental setting and land uses in Glenn and Colusa Counties, where Sites Reservoir would be located, are not expected to materially change under the No Project Alternative." Chapter 3 is not intended to pass judgement on the growth in the area as the commenter suggests. As identified in Chapter 30, Environmental Justice and Socioeconomics, Impacts SOC-1 and SOC-2, the regional and local economies are expected to	Reviewed by Client	None

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			grown significantly in the past decade and faces challenges to its water resiliency because it does not have access to the same Sacramento Surface water that Sites will store. The ER should consider the State's housing and affordable housing and DEI housing and economic policies when making these statements.	experience positive economic effects under the different alternatives associated with construction and operation of the Project. These positive economic effects are attributed to increased labor income and jobs in Glenn and Colusa Counties during construction and sources of labor income and jobs due to operation and maintenance of the associated facilities and recreational areas under operation as compared to the No Project Alternative. However, despite the economic benefits, the Project is not expected to change the environmental justice and socioeconomic baseline conditions . The Project would not affect the city of Williams water supply. Construction and operation of the Project would also not result in substantial displacement of people or housing and would not necessitate the construction of extensive replacement housing elsewhere. Potential impacts to housing are addressed in Chapter 25, Population and Housing.		

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21100	70	7	Chapter 3 comments – Environmental conditions The EIR/EIS does not acknowledge the cultural assets that come with the areas 150 year historical heritage or its rich ecological resources that are being increasing used for ecotourism and ecofriendly stakeholders. The area surrounding the proposed site encompassing the historical towns or Leesvile, Lodoga and Stonyford which have a rich pioneer heritage and current ranching related activities. Wilbur Springs has become a eco-focused resort and is used as an access point for many who want to enjoy the surrounding natural points of interest. Most importantly there does not appear to be any mention of the increased use of the Mendocino National Forest and/or the northern portion of the Berryessa Snow Mountain National Monument which has recently expanded and could expand more in the future. The access to Leesville, Lodoga and Stonyford is important to provide access for public	The EIR/EIS describes the Antelope Valley in numerous chapters including Chapter 15, Agriculture and Forestry Resources, which acknowledges the current grazing activities, and Chapter 22, Cultural Resources, that discusses cultural resources. As identified in Chapter 2, Project Description and Alternatives, Alternatives 1 and 3 would include a bridge across Sites Reservoir, providing east/west access between Lodoga and Maxwell. Alternative 2 would include a road around the south side of Sites Reservoir, also providing east/west access between Lodoga and Maxwell. Therefore, access to resources to the west of the reservoir (e.g., National Monument and National Forest) would be maintained. These resources are outside of the study area for Sites Reservoir because these resources would continue to exist as they do and would not be affected by the reservoir.	Reviewed by Client	N/A

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			use of the National Monument and National Forest.			
21100	71	6	Chapter 3 comments – Environmental conditions The comments on Page 3-3 regarding the relative slow growth of the Colusa and Glenn communities seems to contrary to the State of California's objectives for DEI economically focused economic opportunity and a reasonable affordable housing policy. Just because an area has had slow growth in the past it does not justify condemning an area to be an economic wasteland especially since it is the area of origin for most of the State's water resources and offers the best opportunity to meet the State's affordable housing objectives. For example, the City of Williams has grown significantly in the past decade and faces challenges to its water resiliency because it does not have access to the same Sacramento Surface water that Sites will store. The ER should consider the State's housing and affordable housing and	The content of Chapter 3, Environmental Analysis, is meant to explain and define the environmental baseline and No Project Alternative for the purposes of CEQA and NEPA compliance. This chapter identifies that "the physical environmental setting and land uses in Glenn and Colusa Counties, where Sites Reservoir would be located, are not expected to materially change under the No Project Alternative." Chapter 3 is not intended to pass judgement on the growth in the area as the commenter suggests. As identified in Chapter 30, Environmental Justice and Socioeconomics, Impacts SOC-1 and SOC-2, the regional and local economies are expected to experience positive economic effects under the different alternatives associated with construction and operation of the Project. These positive economic effects are attributed to increased labor income and jobs in Glenn and Colusa	Reviewed by Client	None

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			DEI housing and economic policies when making these statements.	Counties during construction and sources of labor income and jobs due to operation and maintenance of the associated facilities and recreational areas under operation as compared to the No Project Alternative. However, despite the economic benefits, the Project is not expected to change the environmental justice and socioeconomic baseline conditions . The Project would not affect the city of Williams water supply. Construction and operation of the Project would also not result in substantial displacement of people or housing and would not necessitate the construction of extensive replacement housing elsewhere. Potential impacts to housing are addressed in Chapter 25, Population and Housing.		
21100	71	7	Chapter 3 comments – Environmental conditions The EIR/EIS does not acknowledge the cultural assets that come with the areas 150 year historical heritage or its rich ecological resources that are being increasing used for ecotourism	The EIR/EIS describes the Antelope Valley in numerous chapters including Chapter 15, Agriculture and Forestry Resources, which acknowledges the current grazing activities, and Chapter 22, Cultural Resources, that discusses cultural resources. As identified in Chapter 2, Project Description and	Reviewed by Client	None

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			and ecofriendly stakeholders. The area surrounding the proposed site encompassing the historical towns or Leesvile, Lodoga and Stonyford which have a rich pioneer heritage and current ranching related activities. Wilbur Springs has become a eco-focused resort and is used as an access point for many who want to enjoy the surrounding natural points of interest. Most importantly there does not appear to be any mention of the increased use of the Mendocino National Forest and/or the northern portion of the Berryessa Snow Mountain National Monument which has recently expanded and could expand more in the future. The access to Leesville, Lodoga and Stonyford is important to provide access for public use of the National Monument and National Forest.	Alternatives, Alternatives 1 and 3 would include a bridge across Sites Reservoir, providing east/west access between Lodoga and Maxwell. Alternative 2 would include a road around the south side of Sites Reservoir, also providing east/west access between Lodoga and Maxwell. Therefore, access to resources to the west of the reservoir (e.g., National Monument and National Forest) would still be maintained. These resources are outside of the study area for the reservoir because these resources would continue to exist as they do and would not be affected by the reservoir.		
21100	72	10	III. The RDEIR/SDEIS fails to accurately assess environmental impacts. First and foremost, the regulatory baseline selected for analysis should not assume or include the United	Please refer to Master Response 2, Alternatives Description and Baseline, regarding the baseline and information regarding the biological opinions, D-1641, and WRO 90-5.	Reviewed by Client	N/A

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			States Bureau of Reclamation's ("USBR") 2019 Biological Opinions because they have been withdrawn for reconsultation, and are subject to Court Orders in PCFFA, et al. vs. Raimondo and CNRA vs. Raimondo. The environmental baseline should, however, include all state-mandated clean water standards of D-1641 and WRO 90-5.			
21300	67	14	The RDEIR/SDEIS then identifies the significant and unavoidable impacts which alone should terminate consideration of Sites: ES.5.1 Identified Significant and Unavoidable Impacts As shown in Table ES-2, the proposed Project action alternatives would likely result in the following potentially significant and unavoidable direct and indirect impacts. ES.5.1.6 Climate Change and Greenhouse Gas Emissions The greenhouse gas (GHG) emissions estimated for construction, operation, and maintenance of the Project when	There is no Section ES.5.1 or ES.5.1.6 in the Executive Summary of the RDEIR/SDEIS released in November 2021. The commenter is referring to content in the executive summary of the 2017 Draft EIR/EIS. Please refer to Master Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, regarding the 2017 Draft EIR/EIS. Please also refer to Master Response 1 for information regarding the role of the Authority and Reclamation in deciding whether to approve the Project, the determination of significant and unavoidable impacts, and developing findings and a statement of overriding considerations regarding significant	Reviewed by Client	N/A

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			compared to applicable county standards would contribute to a cumulatively considerable effect that would be significant and unavoidable.	and unavoidable impacts if the Authority and Reclamation decide to approve the Project notwithstanding its significant impacts. Chapters 21 and 28 discuss GHGs and climate change, respectively.		
21400	66	104	The RDEIR/SDEIS impermissibly defers formulation of mitigation measures. This problem is created, at least in part, by the document's failure to accurately describe the environmental setting and its relatedly inadequate analysis of impacts to vegetation, wetlands, and wildlife. In fact, for most wildlife species, the RDEIR/SDEIS includes analysis of the project's impacts as a mitigation measure. See, e.g., Mitigation Measure WILD-1.1, RDEIR/SDEIS at 10-37 ("Once property access is granted and prior to the start of construction, the Authority will retain qualified biologists to assess habitat suitability and conduct surveys for vernal pool branchiopods in the Project area . . . ."). By impermissibly deferring the impacts analysis until the project's mitigation phase, the RDEIR/SDEIS fails to	Please see Master Response 6, Vegetation, Wetland, and Wildlife Resources, regarding access and mitigation measures for impacts to vegetation, wetlands, and wildlife resources.	Reviewed by Client	None

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			include information about the nature and extent of impacts to vegetation, wetlands, and wildlife, which makes it impossible to describe how impacts will be mitigated with any particularity.			
21500	66	2	Unfortunately, our review of the RDEIR/SDEIS demonstrates that the document fails to comply with the requirements of the California Environmental Quality Act ("CEQA") and National Environmental Policy Act ("NEPA"). In particular, the RDEIR/SDEIS fails to consider a reasonable range of alternatives, fails to use a stable and accurate project description, uses an inaccurate environmental baseline, and fails to adequately account for and assess impacts of the project in light of climate change. Equally important, the RDEIR/SDEIS also fails to adequately analyze impacts to aquatic species like Chinook salmon, Delta Smelt, and Longfin Smelt, and to terrestrial wildlife including giant garter snake and migratory birds, fails to disclose significant environmental impacts of	Appendix 2A, Alternatives Screening and Evaluation, and Appendix 2B, Additional Alternatives Screening and Evaluation, provide information regarding the development of the reasonable range of feasible alternatives evaluated in the EIR/EIS. In addition, Master Response 9, Alternatives Development, provides further information. Chapter 11, Aquatic Biological Resources, analyzes impacts to aquatic species including Chinook salmon, delta smelt, and longfin smelt, in Impacts FISH-2 through FISH-4, FISH-8, and FISH-9. These impact discussions use multiple lines of evidence and quantitative and qualitative evaluations, as described in the Methods of Analysis section, including the table titled Methods for	Reviewed by Client	None

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			the project to these and other species, inappropriately defers the formulation of mitigation measures, and proposes inadequate mitigation measures. Despite the fact that state agencies and other commenters raised many of these issues in comments on the August 2017 Draft Environmental Impact Report/Environmental Impact Statement ("DEIR/DEIS"), the RDEIR/SDEIS fails to correct these errors. Because the RDEIR/SDEIS is riddled with significant errors, inadequacies, and omissions, the lead agencies must make substantial revisions to the document and recirculate the revised document for public review and comment.	Analysis of Potential Effects on Fish and Aquatic Resources. Please refer to Master Response 5, Aquatic Biological Resources, regarding best available tools and methodologies and the use of modeled results for the impact analysis of effects on aquatic biological resources and the development of mitigation measures. Master Response 5 also discusses the analyses and mitigation measures for longfin smelt and delta smelt. Chapter 10, Wildlife Resources, evaluates impacts on giant garter snake under Impact WILD-1i and migratory birds in Impacts WILD-1j and WILD-2. Regarding mitigation measures for vegetation, wetland, and wildlife resources, please see Master Response 6, Vegetation, Wetland, and Wildlife Resources. Chapter 10 and Master Response 6 explain how mitigation measures reduce impacts to a less-than-significant level. State Agencies and commenters raised issues related to different alternatives evaluated in the 2017		

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				Draft EIR/EIS. As identified in Chapter 1, Introduction, and Appendix 2B, Additional Alternatives Screening and Evaluation, the alternatives evaluated in the 2021 RDEIR/SDEIS and the Final EIR/EIS are different alternatives than those evaluated in the 2017 Draft EIR/EIS, and most of the previously commented issues are no longer applicable, given the refinements to the alternatives description. Furthermore, the Authority and Reclamation modified and refined the alternatives as a result of public comments on the 2017 Draft EIR/EIS, as described in Appendix 2B. Finally, Volume 3, Appendix 4A, Reclamation Responses to 2017 Draft EIS Comments, provides responses to the 2017 comments. Please see Master Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, regarding the 2017 Draft EIR/EIS.		
21500	66	17	The RDEIR/SDEIS makes clear that the project's design is not yet complete, and that major, impactful decisions related to roads, recreation areas,	Please see Master Response 2, Alternatives Description and Baseline, regarding the adequacy of the project description. Please see Master	Reviewed by Client	None

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			transmission lines, canal modifications, and other project components will occur in the future. Shielding these decisions from public review deprives the public of a meaningful opportunity to understand the project's impacts and comment in violation of CEQA and NEPA. Accordingly, a revised draft EIS/EIR must once again be recirculated for public comment when project design is complete.	Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, regarding requirements for recirculation and disclosure of significant impacts.		
21500	66	23	The RDEIR/SDEIS entirely fails to evaluate the long-term environmental impacts of the proposed project because it only analyzes environmental impacts based on anticipated conditions in the year 2020, 2021 or 2030, depending upon which part of the document is reviewed. Compare RDEIR/SDEIS at ES-7 (describing conditions in 2030) and id. at 3-5 ("Operations is assumed to begin in 2030 and would continue for the life of the Project.") with id. at 5A-2-2 ("Planning Horizon" defined as the year 2021) with id. at 3-2 ("the existing conditions baseline under	The EIR/EIS evaluates long-term impacts of the Project and identifies potential long-term impacts where appropriate throughout the document. For example, Chapter 9, Vegetation and Wetland Resources, evaluates the long-term loss of riparian and oak savanna habitat under Impact VEG-2 and long-term impacts on mature blue oak trees under Impact VEG-4. Another example is Chapter 10, Wildlife Resources, which evaluates long-term impacts on golden eagle under Impact WILD-1k. A third example is Chapter 11, Aquatic Biological	Reviewed by Client	None

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			CEQA has been updated to capture conditions through 2020."). Despite the clear mandate of CEQA to evaluate long-term impacts of the project, the RDEIR/SDEIS does not do so.	Resources, which evaluates the long-term effects of Project operations on winter-run Chinook salmon under FISH-2. The hydrologic modeling results assume existing or near-term future infrastructure, regulations, and demands. However, the use of 1922 – 2003 historical hydrology as input to CALSIM allows the impact assessment to capture future long-term variation in environmental effects. Furthermore, long-term effects associated with climate change are considered in Chapter 28, Climate Change.		
21500	66	110	VII. Recirculation of a Revised EIS/EIR is Required Because of the above-described deficiencies and because the RDEIR/SDEIS fails to disclose that the project and alternatives will cause significant environmental impacts and that the proposed mitigation measures are inadequate to reduce impacts to a less than significant level, recirculation of a revised RDEIR/SDEIS is legally required. See, e.g., Vineyard Area Citizens for Responsible Growth,	Please see responses to comments 66-1 through 66-109 for responses to comments regarding the above-described information by the commenter. Please see Master Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, regarding requirements for recirculation and disclosure of significant impacts. Please see Master Response 2, Alternatives Description and Baseline,	Reviewed by Client	None

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			Inc. v. City of Rancho Cordova, 40 Cal.4th 412, 447-449 (2007).	regarding use and incorporation of mitigation measures.		
21500	66	111	VIII. Conclusion The RDEIR/SDEIS clearly fails to comply with the requirements of CEQA and NEPA. Among other flaws, it fails to consider a reasonable range of alternatives, fails to articulate a stable and accurate project description, fails to adequately account for climate change, fails to adequately analyze impacts to wide range of aquatic and terrestrial species, and fails to propose mitigation to reduce significant impacts to a less-than-significant level. For these reasons and because the RDEIR/SDEIS is riddled with significant errors, inadequacies, and omissions, the agencies must make substantial revisions to the document and recirculate the revised document for public review and comment.	Please see response to comment 66-2 regarding the reasonable range of alternatives, the adequacy of the project description, climate change, impacts to aquatic and terrestrial species, and mitigation measures. Master Response 2, Alternatives Decription and Baseline, also addresses comments related to the range of alternatives, and project description. Also see Master Response 6, Vegetation, Wetland, and Wildlife Resources and Master Response 5, Aquatic Biological Resources address comments related to the approach to the analysis for biological resources.	Reviewed by Client	N/A
21500	67	1	The insufficiency of the Revised Draft Environmental Impact Report/Supplemental Draft	Please see Master Response 2, Alternatives Description and Baseline, regarding the adequacy of the impact	Reviewed by Client	None

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			Environmental Impact Statement is startling. The RDEIR/SDEIS relies on "out of date" Data on Delta Smelt, does not recognize Conflicts of Interest, is silent on conflicts with State Law (raising of Shasta Dam), ignores the fact that historic snow levels are dropping, includes no information of the current long term California Drought, is silent on climate change, does not mention the fact that California has been selling paper water on an overdrafted water resource system for decades, states Sites would be filled with surplus/excess Sacramento River water when there is no excess or surplus water in the River, offers no solutions to preserve, protect and restore Central Valley salmonid runs currently teetering on extinction, includes no recommendations for fish passage, either conventional or volitional, on dams that have blocked spawning & rearing rivers and streams for listed salmonid species like Shasta, Trinity, Oroville and New Bullards Bar, allows Sites to encroach on habitat for federally protected	analysis, and the assumptions of the environmental baseline. The No Project Alternative assumes that the conditions do not materially change from the 2020 environmental baseline except for climate change effects because the existing, ongoing plans and programs that serve as the basis for the environmental baseline would reasonably be anticipated to continue to be implemented into the future. Please also see Master Response 2 regarding the merits of the Project and alternatives. The Project is a separate project from the raising of Shasta Dam. As described in Chapter 5, Surface Water Resources, and Master Response 3, Hydrology and Hydrologic Modeling, the analysis in the EIR/EIS considers a hydrologic period of 82 years, which includes both wet years and dry (drought) years. Please see Master Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, regarding the water rights process.		

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			Golden Eagles, places the Sacramento River and Delta water systems in extended crisis mode and will drive their Coho & Chinook Salmon, steelhead, Sturgeon and Delta Smelt fisheries into extinction and then the RDEIR/SDEIS completely ignores all Tribal rights.	The hydrologic modeling results assume existing or near-term future infrastructure, regulations, and demands. However, the use of 1922 – 2003 historical hydrology as input to CALSIM allows the impact assessment to capture future long-term variation in environmental effects. Effects, including hydrologic effects associated with reduced snowpack and drought, due to climate change are considered in Chapter 28, Climate Change. Master Response 5, Aquatic Biological Resources, discusses the data used to evaluate impacts on delta smelt, methods of analysis, and the proposed mitigation measures for delta smelt. Master Response 5 also discusses other special-status fish species and CEQA and NEPA requirements, and the methods and uses of modeled results to analyze impacts to salmonids including redd dewatering, juvenile stranding, redd scour, and low-flow passage. The Project does not include activities related to existing dams or their		

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				potential effects on spawning and rearing in waterbodies like Shasta, Trinity, Oroville or New Bullards Bar. Chapter 10, Wildlife Resources, evaluates potential effects on golden eagle in Impact WILD-1k. The EIR/EIS addresses tribal issues from multiple perspectives, including the cultural resource (e.g., archaeological and buried human remains) perspective in Chapter 22, Cultural Resources; tribal cultural resources in Chapter 23, Tribal Cultural Resources; and Indian Trust Assets in Chapter 29, Indian Trust Assets.		
21500	67	17	As a result of the insufficient RDEIR/SDEIS for Sites Reservoir, the Sites Project Authority and Bureau of Reclamation have two choices, 1. to order the withdrawal of the Sites RDEIR/SDEIS because it fails to fully address the harmful impacts on the Sacramento River and the Delta and order a new revision to better address critical issues and re-release for additional public review and	Please see Master Response 5, Aquatic Biological Resources, for Project benefits to fisheries. Please see Master Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, regarding comments that oppose the Project and requirements for recirculation.	Reviewed by Client	None

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			comments, or 2., to cut their financial losses and outright reject and abandon the Sites Reservoir Project. The second option is the logical solution.			
21500	68	3	The documents are dishonest statements of the environmental consequences of the project alternatives should one be built and operated. The statements fail in their legislated duty. Both documents should be rejected for correction and re-released for public review as drafts.	Please see Master Response 2, Alternatives Description and Baseline, regarding the adequacy of the impact analysis. Please see Master Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, regarding requirements for recirculation. The comment does not identify the statements characterized as dishonest, nor the specific information that needs to be corrected in the EIR/EIS.	Reviewed by Client	None
21500	72	2	Overall, the NGO Coalition believes the RDEIR/SDEIS does not meet the legal requirements of the California Environmental Quality Act ("CEQA") and the National Environmental Policy Act ("NEPA") because it: -fails to consider a reasonable range of alternatives,	Thank you for your comments, individual comments are responded to below. In addition, please see Master Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, regarding general comments about environmental impact assessments and requirements for recirculation.	Reviewed by Client	none

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			-fails to provide an accurate and stable project description, -fails to accurately assess environmental impacts, -fails to adequately assess environmental impacts, -fails to account for National Wild and Scenic Protections, and finally -is critically deficient in important information and therefore recirculation of a revised EIS/EIR is required.	Please see Master Response 2, Alternatives Description and Baseline, regarding the adequacy of the project description. Please see Master Response 9, Alternatives Development, regarding the reasonable range of alternatives. Please see response to comment 72-148 regarding the National Wild and Scenic Protections. The EIR/EIS meets CEQA and NEPA requirements to evaluate and disclose the relative change to the physical environment as a result of implementation of the alternatives, identify potentially significant impacts or substantial adverse effects based on the relative change, and identify feasible mitigation measures.		
21500	72	149	VI. The RDEIR/SDEIS is deficient because it does not provide adequate mitigation for environmental impacts and is missing critical information, therefore recirculation of a Revised EIS/EIR is required. Due to the previously described deficiencies, and resulting	Please see responses to comments 72-3 through 72-148 for responses to comments regarding the commenters detailed comments related to mitigation for environmental impacts, as well as responses pertaining to the commenter-identified deficiencies. Please see Master Response 1, CEQA and NEPA Process, Regulatory	Reviewed by Client	None

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			RDEIR/SDEIS failure to disclose environmental impacts from the project and project alternatives, the NGO coalition believes that recirculation of a revised RDEIR/SDEIS is legally required. [Footnote 149: See, e.g., Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova, 40 Cal.4th 412, 447-449 (2007).] VII. Conclusion. Thank you for the opportunity to comment on the RDEIR/SDEIS for the proposed Sites Reservoir Project. Due to the multiple failures and deficiencies described in these comments, the NGO Coalition requests that the Sites Project Authority revise and recirculate the RDEIR/SDEIS to the public.	Requirements, and General Comments, regarding requirements for recirculation. Please see Master Response 2, Alternatives Description and Baseline, regarding use and incorporation of mitigation measures.		
21500	89	14	III. CONCLUSION Recirculation is required when the new information added to an EIR discloses: (1) a new substantial environmental impact resulting from the project or from a new mitigation measure proposed to	Please see responses to comments 89-1 through 89-13 for responses to comments regarding the commenter's detailed comments about schools and safety. Please see Master Response 1, CEQA and NEPA Process, Regulatory	Reviewed by Client	N/A

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			be implemented; (2) a substantial increase in the severity of an environmental impact unless mitigation measures are adopted that reduce the impact to a level of insignificance; (3) a feasible project alternative or mitigation measure that clearly would lessen the environmental impacts of the project, but which the project's proponents decline to adopts; or (4) that the draft EIR was so fundamentally and basically inadequate and conclusory in nature that public comment on the draft was in effect meaningless. (CEQA Guidelines § § 15126, et seq.;Mountain Lion Coalition v. Fish & Game Comm. (1989) 214 Cal.App.3d 1043; Laurel Heights Improv. Assn. v. Regents of Univ. of Calif. (1988) 47 Cal.3d 376). In this case, the RDEIR/SDEIS is incomplete and does not adequately analyze the Project's potential impacts related to schools, alternatives that would address these impacts and mitigation measures that would lessen these impacts. The safety of our students, staff and entire community is paramount to MUSD,	Requirements, and General Comments, regarding requirements for recirculation. Please see Master Response 2, Alternatives Description and Baseline, regarding use and incorporation of mitigation measures.		

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			and our safety concerns are not adequately addressed in the RDEIR/SDEIS as currently constituted. Changes must be made to preserve the safety of these students, their families, our staff and the entire community of Maxwell and its surrounding areas and allow our students and staff to enjoy productive time at school. MUSD demands that the RDEIR/SDEIS be updated to include a proper traffic study, proper alternatives analysis with an adequate range of alternatives with respect to traffic impacts and legally sufficient mitigation measures for traffic impacts and impacts to public services including MUSD for the entire community.			
32100	78	43	Page 2-60 - Section 2.6.4.1 Water Operations: Although the draft REIR/SEIS states that Alternative 1 is the preferred alternative (page 2-5), the impact analysis in Chapter 11 Aquatic Resources presents two alternatives under Alternative 1 (1A and 1B). Alternative 1A includes no Reclamation investment and	Please see Master Response 2, Alternatives Description and Baseline, regarding the range of Alternatives and the change ipreferred project. Please see Master Response 5, Aquatic Biological Resources, and Chapter 11, Aquatic Biological Resources, regarding modeling results with respect to the preferred project	Reviewed by Client	N/A

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			Alternative 1B includes up to 7% Reclamation investment, which equates to about 91,000 AF of storage dedicated to Reclamation in Sites Reservoir. The DEIR/DEIS should clarify which alternative is the "preferred alternative" as the modeled impacts under Alternatives 1A and 1B were different. Specifically, conditions for salmonid juvenile rearing and migration would increasingly worsen under alternatives with higher Reclamation participation, i.e., 0% (Alternative 1A), 7% (Alternative 1B), and 25% (Alternative 3). [Commenting Water Board or Section within the State Water Board: Bay-Delta]	and Alternatives 1A and 1B. Also see Master Response 3, Hydrology and Hydrologic Modeling which describes the modifications to modeling for Shasta Lake Operations and resulting benefits to cold-water pool management, fall flow stability and Spring Pulse Flow actions that would occur under the Authority's and Reclamation's preferred alternative.		
32300	77	9	ATTMT 1. Chapter or Appendix - Section: Chapter 2 - Section 2.4, No Project/No Action Alternative. Page(s): pp. 2-7, 8. Comment and Recommendations: The RDEIR/SDEIS states, "Because none of the facilities would be constructed or operated, the No Project Alternative would not materially change conditions as compared to existing conditions. Section 3.2.1 describes how the	The EIR/EIS defines th existing conditions as the 2020 environmetnal baseline for the purpose of comparing the Project to the No Project Alternative. Please see Master Response 2, Alternatives Description and Baseline, for information regarding the baseline existing conditions and No Project Alternative/No Action Alternative.	Reviewed by Client	N/A

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			reasonably foreseeable future conditions under the No Project Alternative would not be materially different from the existing conditions that were used as the environmental baseline. The No Project Alternative assumes the same regulatory criteria as existing conditions" (pp. 2-7,8). The purpose in the California Environmental Quality Act (CEQA) of the No Project Alternative is to allow decision makers to compare the impacts of approving the Proposed Project with the impacts of not approving the Proposed Project. As a result, there could be a difference between existing conditions (i.e., baseline conditions) and the No Project Alternative. The No Project Alternative should include an analysis that is comparable to the other Project Alternatives, considering changing conditions such as climate change and/or include reasonably foreseeable future project or operational changes, such as the Delta Conveyance Project (DCP). Existing conditions should be a set point in time (typically the Notice of	Effects associated with climate change are considered in Chapter 28, Climate Change. The Methods of Analysis section of Chapter 28 provides a detailed explanation of the use of 2035 CT and why it was used in the quantitative evaluation. Refined 2035 CT model results are included in both Chapter 28 and Appendix 28A, Climate Change, and reflect the application of the refined operations description in Chapter 2, Project Description and Alternatives. In addition, WSIP 2070 modeling results are included in Appendix 28A and these results have been reviewed in light of the information contained in Chapter 28. Modifications to Chapter 28 have been made where appropriate, incorporating both the revised 2035 CT results and the WSIP 2070 results. None of the modifications to Chapter 28 result in changes to the conclusions in Chapter 28. The California Department of Water Resources (DWR) issued a Draft EIR for the Delta Conveyance Project in		

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			Preparation or the current conditions at the time of analysis). It is important a project assess the baseline conditions in the proposed area including the continuing trends in those conditions (i.e., the No Project Alternative) to evaluate both future impacts and benefits of a project. California Department of Fish and Wildlife (CDFW) recommends the Authority include a separate analysis in the Final Environmental Impact Report/ Final Environmental Impact Statement (FEIR/FEIS) considering a No Project Alternative which incorporates climate change projections and foreseeable future projects or operational changes that will impact water supply or water quality, additional to the existing baseline.	July 2022, and the US Army Corps of Engineers (USACE) issued a Draft EIS in December 2022. The DWR and USACE will determine whether to approve the proposed Delta Conveyance Project, an alternative or no project and issue a Final EIR and EIS. The Delta Conveyance Project is included as a reasonably foreseeable project in Chapter 31, Cumulative Impacts.		
32300	78	26	Page ES-7 - For the No Project Alternative, the Executive Summary identifies that most water users would use their total contract amounts and most senior water right users would also fully use or divert pursuant to their water rights. However, many	Please see Master Response 2, Alternatives Description and Baseline, for information regarding water use and contract amounts. Please also see Master Response 3, Hydrology and Hydrologic Modeling, regarding the modeled representation of the	Reviewed by Client	N/A

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			contractors and water right holders do not use their full contract amounts or water rights even when those supplies are available. This should be clarified. A summary of historical uses for the different groups of water users should be provided. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	baseline and water rights and contracts.		

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30000	63	3	In any event, those "environmental purposes" and safeguards should be spelled out and designed into the system as "including providing cold water within the Sacramento River to help meet the needs of the Sacramento-Shasta Temperature Management Plans, D-1641 and WRO 90-5 and other relevant water quality plans and standards, and to prevent temperature-dependent mortalities for anadromous salmonids and other aquatic species as specified in those plans and in any later Biological Opinions for ESA and/or CESA-listed aquatic species." Targeting ways for meeting these ecosystem needs, and especially for meeting mandatory water quality and temperature standards designed to meet those ecosystem needs, should be written into the Project's purpose, design and management criteria. This new approach would generate a great deal more -- and much broader -- public support. Protecting ESA- and CESA-listed species is not optional, but rather is	Please refer to Master Response 5, Aquatic Biological Resources, regarding benefits to aquatic biological resources, including the benefits to the cold-water pool. Please also refer to Master Response 5 regarding CEQA/NEPA analysis requirements and permitting/Endangered Species Act requirements. Chapter 6, Surface Water Quality, describes the temperature modeling performed under the conditions of Alternatives 1 and 3. As discussed in the Chapter 5 section Operation, Water Temperature, water temperature in Sites Reservoir was modeled using CE-QUAL-W2. The output was used to evaluate temperature on receiving waterbodies in Impact WQ-2. Multiple tables in Chapter 6 show modeled water temperature in different months, including summer months (e.g., the Estimated Change in Sacramento River Water Temperature (ºF) when Sites Reservoir Water is Released to the Dunnigan Pipeline under	Reviewed by Client	N/A

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			legally a higher priority for beneficial use of water throughout the hydrological system than any conceivable irrigation use, whether by contract or regular water right. Legally, the BOR and State must protect these species and abide by relevant Biological Opinions to their best ability of what is physically possible. Whether there are any actual "environmental benefits" for salmon in the Sacramento at all in the Project as currently designed is questionable in terms of providing more cold water for anadromous species during summer months. Additional water returned to the Sacramento from Sites Reservoir will likely be warmer water than the ambient temperatures of the river, not cold water, as it will have been sitting in a relatively shallow reservoir with considerable surface area through which to absorb solar energy through the summer. Exactly what will happen to that water, particularly in the middle of the summer when most needed, has not	Alternative 1A table). Under each species impact in Chapter 11, Aquatic Biological Resources, temperature is discussed as it affects fish. Specifically, the Chapter 11 Methods of Analysis, Operations section identifies that "For potential operational water temperature effects on fish in waterways upstream of the Delta, for each fish species and life stage, the analysis evaluated the frequency (and magnitude for salmonids and green sturgeon) of occurence of daily or monthly water temperature model outputs above a specific water temperature index value or outside a specific water temperature index range during different times of year and in locations that overlap with the fish presence. Additional information and results are located in Appendix 11D, Fisheries Water Temperature Assessment." Summer months have been specifically modeled, and potential impacts on fish are disclosed. Note that the necessary permit approvals and authorizations for the		

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			been specifically nor adequately modeled in the RDEIR/SDEIS.	Project clearly include compliance with the federal ESA and CESA.		
30000	68	9	Reasonable and foreseeable actions with- and without-the-project that will greatly affect project accomplishments are complicated, uncertain, and plagued with the reality of water scarcity. It is reasonable and foreseeable to anticipate intensifying and disruptive climate change, water shortages, intense demand and priority for new supplies to meet human health and safety needs, the failure of voluntary settlement agreements to help bridge the gap to improve protection for instream beneficial uses, and failed groundwater management requiring much increased groundwater recharge via diversion and spreading of high winter flows. Collectively these procedural deficiencies render the documents unacceptably misleading.	The remaining text of the Notice of Availability further explains the purpose of the Project: "Water that would be stored and released from Sites Reservoir would be used for local, State, and federal water use needs. These include municipal, industrial, and agricultural uses as well as to provide benefits to anadromous fish species in the Sacramento River watershed, wildlife refuges and habitats, and to help supply food for delta smelt in the Yolo Bypass." Please refer to Master Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, regarding relationships to other water-related policies, plans, and programs. Please also see Master Response 1 regarding significant and unavoidable impacts. Please refer to Master Response 5, Aquatic Biological Resources, regarding benefits to aquatic biological resources.	Reviewed by Client	N/A

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			Poor decisions will result in waste of public money and public trust resources. The Notice of Availability states "The project's purpose is to provide direct and real benefits to instream flows, the Sacramento-San Joaquin Delta ecosystem, and water supply reliability". Nothing about this project and operations are beneficial for fish save for fish which might inhabit Sites Reservoir. The Project stated purpose and the project's actual impacts do not match.			
30000	68	10	The RDEIR/SDEIS can only be viewed as a hopeful approach anticipating that "If we build it we will find a way to fill it". Today too many surface water supply projects are regularly meeting their need to capture storage by petitioning and getting approval for temporary urgency changes in order to divert water that is not permissible by their issued permits and	In coordination with Reclamation, the Authority would construct, operate, and maintain an offstream reservoir to capture excess water from major storms and store the water until it is most needed during dry periods. Please see Master Response 3, Hydrology and Hydrologic Modeling, which describes the modifications to modeling for Shasta Lake Operations and the resulting benefits to cold-water pool management, fall flow stability, and spring pulse flow actions	Reviewed by Client	N/A

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			licenses. This approach is decimating fishery resources. Future water supply projects shouldn't operate off continual to almost annual temporary urgency change petitions. The reasonable future is that those petitions will eventually be addressed as petitions for long-term change and likely not receive nearly as favorable terms and conditions as in the past.	that would occur under the Authority's and Reclamation's preferred alternative. Please also refer to Master Response 5, Aquatic Biological Resources, for an overview of project benefits. Environmental benefits from the Project are achieved through a number of mechanisms, including exchanges and direct releases from Sites Reservoir, either through the Colusa Basin Drain and Yolo Bypass (all three alternatives) or directly into the Sacramento River. Master Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, addresses relationships to other water-related policies, plans, and programs, as well as the water rights process.		
32000	63	1	Where are the Environmental Benefits of this Project? "Environmental benefits" and "environmental purposes" of the Project used in part to justify the Project are vague and largely undefined – and in several instances	The Project would work in conjunction with other reservoirs in the system (e.g., Shasta Lake), as described in Chapter 2, Project Description and Alternatives. As described in the Coordination with CVP and SWP section of Chapter 2, this would allow other reservoirs to be operated such	Reviewed by Client	N/A

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			(an noted in our other comments), illusory. Insofar as any of those benefits accrue to improve highly stressed in-river conditions (particularly high temperatures) and to benefit aquatic species (such as Chinook salmon and steelhead) in the Sacramento River, only Alternative 2 makes provisions for returning waters captured from the Sacramento in the winter directly back into the Sacramento (presumably in the summer and fall) to provide cold water benefits for ESA-listed winter run Chinook, spring-run Chinook and steelhead, and also non-listed but declining as well as economically valuable harvested fall-run Chinook in the river. Nowhere in the Project NEPA documents are these "environmental benefits" – particularly the use of stored Project water specifically for reduction of high-water temperatures in the summer that threaten anadromous fishes – spelled out or modeled in any detail.	that they could release water for cold-water pool purposes (e.g., Shasta Lake). In other words, the cold-water pool source and potential benefit under Alternative 2 would not be coming directly from release into the Sacramento River but rather the overall operation of Sites Reservoir in conjunction with the CVP and SWP. Please also refer to Master Response 5, Aquatic Biological Resources, regarding benefits to aquatic biological resources, including the benefits to the cold-water pool. Master Response 5, Aquatic Biological Resource, also provides a description of the methods and use of modeled results in the EIR/EIS.		

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32000	63	2	It appears its history that this Project was conceived and created almost entirely to augment irrigation water supplies, not to actually help solve any of the many serious environmental problems that the CVP and other related water projects have created by way of water over-appropriation, groundwater depletion, and cascading Bay Delta ecosystem collapses that are the underlying causes of the multiple and synergistic ESA- and CESA-listed species crises that are mere symptoms. In short, the Project is designed almost entirely to benefit irrigation, not to store water to meet watershed ecosystem or species conservation needs. We [Pacific Coast Federation of Fishermen's Associations] believe that there may be great merit in the basic concept of setting aside winter water for storage when not needed for fish, so that those waters can then be used to augment summer flows with additional cold water that salmonids need for summer survival. Especially as a way to adapt river conditions to	Please see Master Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, regarding the relationship with water-related plans, policies, and programs, as well as information regarding opposition or support of the Project. As described in Chapter 1, Introduction, the Project's objectives specifically identify ecosystem benefits and operational flexibility: OBJ-2: Provide public benefits consistent with Proposition 1 of 2014 and use WSIP funds to improve statewide surface water supply reliability and flexibility to enhance opportunities for habitat and fisheries management for the public benefit through a designated long-term average annual water supply. OBJ-3: Provide public benefits consistent with the WIIN Act by using federal funds, if available, provided by Reclamation to improve CVP operational flexibility in meeting CVP environmental and contractual water supply needs and improving cold-	Reviewed by Client	none

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			climate change, the basic concept of substitution flows does, in our view, have some merit. There will of course be some benefits to irrigation as well by making it easier for fish to survive in the system, not only directly (through higher and colder summer flows) but also important benefits in increasing the overall flexibility of management for the whole system, once ecosystem balance is re-achieved. But so far, this Project is not serving that purpose. Instead of designing this Project almost exclusively around meeting irrigation needs, leaving environmental benefits as a mere public relations afterthought, the Project should be specifically redesigned to provide identifiable "environmental benefits" as a first priority, then modeling can determine ways of better meeting irrigation needs without compromising those basic environmental benefits, rather than vice versa as is now the case.	water pool management in Shasta Lake to benefit anadromous fish. OBJ-4: Provide surface water to convey biomass from the floodplain to the Delta to enhance the Delta ecosystem for the benefit of pelagic fishes in the north Delta (e.g., Cache Slough). Please see Master Response 3, Hydrology and Hydrologic Modeling, regarding the modeled representation of the operation of the Project. Master Response 3 describes the modifications to modeling for Shasta Lake Operations and resulting benefits to cold-water pool management, fall flow stability, and spring pulse flow actions that would occur under the Authority's and Reclamation's preferred alternative. Also, please refer to Master Response 5, Aquatic Biological Resources for an overview of project benefits. Environmental benefits from the Project are achieved through a number of mechanisms, including exchanges and direct releases from		

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				Sites Reservoir, either through the Colusa Basin Drain and Yolo Bypass (all three alternatives) or directly into the Sacramento River.		
32000	63	4	Only Alternative 2 would even be capable, as a matter of basic engineering, of returning any of those stored flows directly back to the Sacramento River, as opposed to the nearest irrigation ditch. If these Sites-origin flows are intended to free up other, colder waters (e.g., from Shasta reservoir) to use to maintain cold water fish-flows, this goal has not been specified nor quantified in the RDEIR/SDEIS analysis, and there is thus no guarantee that such mitigation measures would ever occur. In what is clearly an over-appropriated hydrological system, there is always pressure to use whatever water is available for irrigation, rather than for the protection of ESA- and CESA-listed species. Without some guarantees built into Project operations parameters for such fish-flow	The Project would work in conjunction with other reservoirs in the system (e.g., Shasta Lake), as described in Chapter 2, Project Description and Alternatives. As described in the Coordination with CVP and SWP section of Chapter 2, this would allow other reservoirs to be operated such that they could release water for cold-water pool purposes (e.g., Shasta Lake). In other words, the cold-water pool source and potential benefit under Alternative 2 would not be coming directly from release into the Sacramento River but rather the overall operation of Sites Reservoir in conjunction with the CVP and SWP. In addition, the diversion criteria described in the Chapter 2, Diversion Criteria section are part of the Project. The operation of the Project, including the diversion criteria and the use of exchanges, is incorporated in the modeling as part of the Project	Reviewed by Client	None

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			mitigation measures, they remain uncertain and speculative.	and as described in Chapter 2. As such, the operation of the Project is not a mitigation measure. Furthermore, exchanges are not speculative because they currently occur and because the Project would be integrated into the overall system of the State of California. Please also refer to Master Response 5, Aquatic Biological Resources, regarding benefits to aquatic biological resources, including the benefits to the cold-water pool.		
32000	63	5	What is the net annual reduction of total water available, expected through: (a) ground seepage from the reservoir; (b) evaporation; (c) various conveyance losses? These types of water losses would all likely be increased by the process of diverting, storing and then channeling back waters stored in Sites Reservoir. Such water losses should be quantified at the very least so as to determine whether the Project as proposed would even be an effective or efficient way to manage water.	Please see Master Response 3, Hydrology and Hydrologic Modeling, regarding the various losses associated with ground seepage from the reservoir, evaporation, and conveyance.	Reviewed by Client	None

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32000	64	2	Chapter 2: Project Description and Alternatives Section 2.5.2.4. Operations and Management Plans We[Office of Environmental Health Hazard Assessment] recommend that Recreation and Reservoir Management Plans explicitly include the following: - Monitoring for both planktonic and benthic HABs including: (1) frequent visual assessments (such as weekly year-round) and (2) sampling for cyanobacteria and cyanotoxins (such as every two weeks during recreational season and monthly during winter) as well as any time year-round when visual indicators of HABs are present, with samples collected from shore at shoreline recreational sites and in open water areas likely used for boating or fishing. - Actions necessary to address potential HAB-related human and animal impacts such as through	In addition to water quality monitoring and implementation of the RMP HABs action plan, a measure for general informational signage on HABs has been added to the Reservoir Management Plan in Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, of the Final EIR/EIS. Under this measure, general informational signage on HABs will be placed in visible locations around the reservoir, as well as at Peninsula Hills Recreation Area, Stone Corral Creek Recreation Area, boating kiosks, the day-use boat ramp, and/or parking areas. The signage will include basic information regarding what HABs are; how to recognize a bloom; the potential health effects of cyanotoxins; the common signs and symptoms of exposure to cyanotoxins; how to avoid recreational exposure to cyanotoxins; and information about the potential health risks to pets. All reservoir personnel will be made aware of the potential health risks of cyanotoxins and will be provided with the appropriate personal protective	Reviewed by Client	N/A

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			posting general awareness or potential advisory signage for HABs at recreational areas, education on Healthy Water Habits, and the use of personal protective equipment (as needed) for Reservoir personnel.	equipment, as needed, to reduce the potential for exposure to cyanotoxins. This text revision does not change any impact determinations or conclusions. As noted in Appendix 2D of the Final EIR/EIS, the Reservoir Management Plan (RMP) is, and will continue to be, revised throughout the operation of the reservoir. Revisions to the RMP will account for changes to operations, site-specific conditions, adaptive management actions and decisions, and future changes to regulations or methodologies for evaluating water quality constituents. Refinement of the RMP may occur during consultation with agencies.		
32000	64	21	Impact HAZ-7: Result in an impact on public health due to an increase in harmful algal blooms We [Office of Environmental Health Hazard Assessment] recommend that the recreational HAB monitoring plan include HAB monitoring year-round although the frequency could be reduced (such as changing from bi-	Please refer to response to comment 64-2 regarding the reservoir management plan text changes and harmful algal blooms (HABs) monitoring. Also, note that the RMP (Appendix 2D, Best Management Practices, Management Plans, and Technical Studies) includes monitoring for	Reviewed by Client	N/A

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			weekly to monthly) for the winter period. Monitoring should consider the potential for benthic cyanobacteria, which may not be detected with surface water grab samples. Identification of cyanobacteria taxa present by microscopy can inform what toxins may be produced, and also help understand the overall dynamics in the system, such as cyanobacterial succession over time.	benthic HABs and coordination with the State Water Resources Control Board and the Central Valley Regional Water Quality Control Board for posting benthic HABs signage. The RMP will continue to be revised throughout the operation of the reservoir. Revisions to the RMP will account for changes to operations, site-specific conditions, adaptive management actions and decisions, and future changes to regulations or methodologies for evaluating water quality.		
32000	66	7	II. The RDEIR/SDEIS Fails to Use an Accurate and Stable Project Description (A) The RDEIR/SDEIS Fails to Use an Accurate and Stable Project Description Because the Project that the RDEIS/SDEIR Analyzes is Inconsistent with the Project Description The RDEIR/SDEIS violates CEQA because the document fails to use an accurate and stable project	Please see Master Response 2, Alternatives Description and Baseline, regarding a stable Project description and Mitigation Measure FISH- 2.1. Mitigation measures can be incorporated into the Project, eliminating the mitigation measure but retaining the substance of the requirement. Mitigation Measure FISH-2.1 was required to reduce potential life stage effects on salmonids by increasing the bypass flow requirement at Wilkins Slough based on peer-reviewed scientific	Reviewed by Client	None

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			description. In particular, the modeling of operations in the RDEIR/SDEIS, which is the basis for the analysis of potential environmental impacts throughout the document, does not include the proposed mitigation measure FISH-2 (Wilkins Slough Flow Protection Criteria). As a result, the quantitative analysis and modeling in the RDEIR/SDEIS does not analyze the project that is proposed in the RDEIR/SDEIS.	information. The Final EIR/EIS Project description now incorporates the requirements of Mitigation Measure FISH-2.1, which have been refined and made more restrictive. The bypass flow requirement at Wilkins Slough has been incorporated as an element of the Project because it has been developed as an integral component of how the Project is proposed to operate in terms of its water diversion criteria, rather than a separate measure that is applied distinctly from the Project operations and its diversion criteria. Please see Master Response 3, Hydrology and Hydrologic Modeling, regarding the modeled representation of Project operations. The impact analyses contained in the resource chapters evaluate the descriptions of Alternatives 1 through 3 contained in Chapter 2, Project Description and Alternatives. The exchanges and diversion criteria described in Chapter 2 are part of the alternatives. The operation of the alternatives, including the diversion criteria and the use of exchanges, is incorporated		

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				in the modeling of the alternatives. Chapter 2 is supported by Appendices 2C, Construction Means, Methods, and Assumptions, and 2D, Best Management Practices, Management Plans, and Technical Studies, as well as the modeled representation of the alternatives, described in Appendices 5A through 5C.		
32000	66	8	It is black letter law that "[a]n accurate, stable and finite project description is the sine qua non of an informative and legally sufficient EIR." County of Inyo v. City of Los Angeles, 71 Cal. App. 3d 185, 193 (1977). CEQA requires a clear explanation of the nature and scope of the proposed project, otherwise it "is fundamentally inadequate and misleading." See Communities for a Better Environment v. City of Richmond, 184 Cal.App.4th 70, 84-85 (2010). In this case, the RDEIR/SDEIS includes inconsistent bypass flow criteria that limit diversions from the Sacramento River in the operational criteria common to all the alternatives.	Please see response to comment 66-7 regarding the Project description and Mitigation Measure FISH-2.1.	Reviewed by Client	None

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			Compare RDEIR/SDEIS at 2-31 to 2-33 (identifying bypass flow criteria of 8,000 cfs at Wilkins Slough in April and May, and 5,000 cfs in other months) with id. at 11-131 (describing the proposed Wilkins Slough Fish Protection Criteria mitigation measure, which requires a 10,700 cfs bypass flow at Wilkins Slough during the months of March through May). Buried deep in the appendices, the RDEIR/SDEIS indicates that the proposed mitigation measure FISH-2 (Wilkins Slough Flow Protection Criteria) is not included in the modeling of the proposed project and alternatives. See, e.g., RDEIR/SDEIS Appendices at 5A1-29, 5A2-28 to 5A2-33. As a result, all of the modeling of proposed operations in the RDEIR/SDEIS common to all of the alternatives -- including modeling and analysis of environmental impacts on surface water supplies, on fish and wildlife, and on water quality -- does not actually model or analyze the effects of the proposed project or			

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			alternatives, and instead the analyses and modeling in the RDEIR/SDEIS are inconsistent with the actual proposed project (which includes this proposed mitigation measure). The document fails to analyze the likely environmental impacts of the proposed project and alternatives because, in light of the document's failure to articulate a stable project description, it fails to analyze the proposed project at all.			
32000	66	9	The inconsistent descriptions of the proposed project are grossly misleading to the public and decisionmakers in violation of CEQA. See, e.g., San Joaquin Raptor Rescue Center v. County of Merced, 149 Cal.App.4th 645, 655-56 (2007) (holding that the project description was inconsistent as to whether the project would increase mining production and violated CEQA, in part based on statements in public hearings on the CEQA document that demonstrated such inconsistencies); Communities for a Better Environment, 184 Cal.App.4th at 83-	Please see response to comment 66-7 regarding the Project description and Mitigation Measure FISH-2.1.	Reviewed by Client	None

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			84 (holding project description violated CEQA because of inconsistent statements regarding the objectives of the project).			
32000	66	11	The RDEIR/SDEIS assumes that there will be water exchanges with Shasta and Oroville reservoirs in certain years, which affects operations of those reservoirs and temperature-dependent mortality of salmon. RDEIR/SDEIS at ES-12, 2-35 to 2-37, 5A-2-30 to 5A-2-33. However, there are no proposed agreements for such exchanges between the CVP or SWP and Sites, and this element of the project is speculative. See id. at ES-10 ("exchanges of water may occur with the CVP and SWP") (emphasis added); id. At 2-35 (acknowledging that the Sites Reservoir Authority is in discussions with the U.S. Bureau of Reclamation ("Reclamation") and the California Department of Water Resources ("DWR") regarding potential exchanges). Equally important, the RDEIR/SDEIS does not	Please see response to comment 66-7 regarding the Project description. The Project would work in conjunction with other reservoirs in the system (e.g., Shasta Lake), as described in Chapter 2, Project Description and Alternatives. As described in the Coordination with CVP and SWP section of Chapter 2, this would allow other reservoirs to be operated such that they could release water for cold-water pool purposes (e.g., Shasta Lake). In addition, the diversion criteria described in the Chapter 2, Diversion Criteria section are part of the Project. The operation of the Project, including the diversion criteria and the use of exchanges, was incorporated in the modeling as part of the Project for the RDEIR/SDEIS and as described in Chapter 2. Exchanges have the potential to assist the CVP and SWP in meeting their regulatory obligations and their	Reviewed by Client	None

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			analyze the potential adverse effects that would result from such exchanges, including potential changes in river flows, redd dewatering, or reductions in juvenile salmon survival, and completely ignores the effects of exchanges with Folsom Reservoir. See RDEIR/SDEIS at 5-27; id. At 11-103 (admitting that the RDEIR/SDEIS needs to "better reflect the exchanges in the model," that these exchanges are difficult to model, and that the RDEIR/SDEIS underestimates the extent of potential exchanges that could occur under the proposed project). [Footnote 4: The RDEIR/SDEIS also admits that Sites Reservoir cannot release water to GCID and other participants located between the Hamilton City Pump Station and Knights Landing, and that deliveries of water to those participants would be made by GCID and Reclamation. RDEIR/SDEIS at 2-34. The RDEIR/SDEIS does not appear to analyze the effects of additional Shasta Dam releases by Reclamation to fulfill such exchanges, which could	authorized purposes, including to protect, restore, and enhance fish, wildlife, and associated habitats; provide water supply; and generate power. Exchanges are not speculative because they currently occur and because the Project would be integrated into the overall system of the State of California. The CVP and SWP each have responsibility for meeting objectives as defined in the Coordinated Operations Agreement, but they collaboratively decide the timing for each project to contribute toward meeting objectives. Therefore, there are times when releases from Shasta Lake may be prioritized over Folsom Lake and vice versa. Sites Reservoir exchanges with Folsom Lake were considered in the RDEIR/SDEIS as a potential benefit but were not included in the CALSIM modeling. Therefore, they are no longer included as part of the operations of the Project in the Final EIR/EIS, and modeling results have not changed. Please refer to Master Response 3, Hydrology and Hydrologic Modeling, for further descriptions of Shasta Lake		

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			be particularly impactful to the environment in drier years.] Because the RDEIR/SDEIS fails to provide an accurate and stable project description, the document fails to model and analyze the environmental impacts of the proposed project and alternatives, in violation of CEQA and NEPA.	and Lake Oroville exchanges. The modeling has been refined for the Final EIR/EIS and is reflected in the impact analysis throughout the document. The Chapter 5, Surface Water Resources, CALSIM section summarizes some of the modeling results and assumptions related to exchanges. The impacts related to changes in flow, redd dewatering, or reductions in juvenile salmon survival as a result of exchanges are addressed using modeling results and multiple lines of evidence in Chapter 11, Aquatic Biological Resources, including how Folsom Lake is currently operated to meet requirements, which would remain in place under operation of the Project. Please refer to Master Response 5, Aquatic Biological Resources, regarding benefits to aquatic biological resources, including the benefits to the cold-water pool.		
32000	66	12	Because these exchanges [between Shasta and Oroville Reservoirs] would be intended to "assist the CVP and SWP in meeting their regulatory	Please see response to comment 66-11 regarding exchanges. Please see Master Response 2, Alternatives Description and Baseline, and Master	Reviewed by Client	None

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			obligations," RDEIR/SDEIS at 2-35, these exchanges do not provide public benefits that justify public taxpayer expenditures for this project. These exchanges are effectively water supply benefits to the contractors of the CVP and SWP who are obligated to pay for meeting regulatory requirements of the CVP and SWP.	Response 3, Hydrology and Hydrologic Modeling, regarding exchanges. Sites Reservoir exchanges with Shasta Lake would improve Reclamation's ability to preserve cold water later in the summer. The modeling of Project exchanges with Shasta Lake were adjusted in the Final EIR/EIS to increase spring flow pulses and improve fall flows consistent with the operational criteria. Cold-water pool management continues to be an objective of exchanges that may occur under Project conditions.		
32000	66	13	(B) The RDEIR/SDEIS Fails to Use an Accurate and Stable Project Description Because the Overall Project Design is Not Final and Major Project Components Have Not Been Designed at All The RDEIR/SDEIS also fails to provide an accurate and stable project description because the overall project design is not yet final and major project components that will have significant environmental impacts have not been designed at	Please see Master Response 2, Alternatives Description and Baseline, regarding the appropriate level of detail in the Project description. The alternatives have been described to an appropriate level of detail to allow decision makers and the public to understand the nature and magnitude of impacts on the environment for each resource topic, to compare the different options available for accomplishing the Project, to identify feasible mitigation for potentially significant impacts, and to make a	Reviewed by Client	None

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			all. The RDEIR/SDEIS states that, "[a]s with any large infrastructure project, the Project must and will continue toward final design. Project components will be refined as the Project moves toward final design and as parcels become accessible to survey." RDEIR/SDEIS at 3-7; see also id. At 9-20 (explaining that estimates of acreage of impacts to plant habitats and wetlands is based on "preliminary engineering design"). While the RDEIR/SDEIS acknowledges that the overall project design is not yet final, it does not clearly describe what project components could change and how. It is impossible for the public to understand the environmental impacts of the project and to meaningfully comment when it is not yet clear what the project is.	decision about whether, and if so how, to approve the Project. Please also see Master Response 6, Vegetation, Wetland, and Wildlife Resources, regarding the impacts associated with footprints.		
32000	66	14	In addition to vague statements about the lack of finality of the project's design, the RDEIR/SDEIS highlights particular project components that have not been designed at all. For example, it appears that the locations for major sections of the project's 46	Please see Master Response 2, Alternatives Description and Baseline, regarding the appropriate level of detail in the Project description. The EIR/EIS includes specific information and data on the location, design, schedule, and operation for all Project	Reviewed by Client	None

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			miles of new paved and unpaved roads have not yet been determined. See, e.g., RDEIR/SDEIS at 9-15 ("The exact locations of the realigned Huffmaster Road, new Comm Road South, and new South Road are not yet finalized."); 9-44 ("exact locations of construction-related activities are not known for the new roads"). As the RDEIR/SDEIS acknowledges, these roadways could cause significant impacts to waterways, wetlands, and wildlife: New roadways would create physical barriers or impediments for some wildlife, including amphibians and reptiles, which may have a difficult time crossing the roadways. There are numerous waterways and wetlands in the study area, and new or larger roadways could disrupt existing connections between aquatic and upland habitats, and result in increased habitat fragmentation, which could affect seasonal movements of amphibians and reptiles. Roadways may deter some larger animals from moving through	components for each of the alternatives evaluated based on the current level of design detail. Where design detail was not available for facilities, such as the transmission corridors and roads, conceptual corridors were used to capture the maximum range of impacts. This corridor approach also is intended to provide flexibility to avoid resources as the design is refined. As described further in Chapter 9, Vegetation and Wetland Resources, because the exact corridor of the roads is not finalized, the analysis includes a wider corridor than expected for roads, such that the roads would be built within the corridor evaluated. From Chapter 9: "The exact locations of the realigned Huffmaster Road, new Comm Road South, and new South Road are not yet finalized. Therefore, corridors have been used to identify potential direct and indirect impacts. For example, on the South Road a 400-foot-wide conceptual road alignment plus a 300-foot-wide buffer has been identified to allow for design flexibility. Because the final South		

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			those areas, even if they are able to physically cross the roadways. In addition, some of the roadways may be fenced, which would create a greater impediment to large animals attempting to cross the road. New roadways would also increase the potential for wildlife to be struck by vehicles of workers traveling to operations facilities or visitors traveling to recreation areas, and the presence of fences could trap animals in the roadway and make them more prone to being struck by vehicles. RDEIR/SDEIS at 10-139. Yet there is no meaningful discussion of the impacts of specific roads to specific resources and no exploration of alternative routes that could minimize impacts because specific road locations have not been proposed.	Road corridor is unknown, the entire corridor was assumed to be permanently affected for the purposes of the impact analysis. Within the corridors, the actual permanent impact area would be only the footprint of roads and shoulders with additional temporarily affected areas for construction staging and equipment movement." The use of corridors for linear features, such as roads or pipelines, in CEQA/NEPA documents is typical and appropriate because it allows the public and decision makers to understand resources that may exist within a corridor and the potential impacts. This corridor approach serves to allow identification and evaluation of a maximum envelope of impact resulting from the roadways, such that the impacts from any particular road alignment and configuration within the corridor are appropriately captured by the environmental analysis. The disclosure of the potential impacts on vegetation and wetland resources associated with the		

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				corridors is included in Chapter 9, as appropriate.		
32000	66	15	The RDEIR/SDEIS suggests that the lack of information about roadway locations is not a problem because the lead agencies have estimated the maximum extent of impacts by assuming that resources within the broader "road alignment corridor" will be impacted and because "roads ...will be designed, to the extent practicable, to avoid direct and indirect impacts.." RDEIR/SDEIS at 9-45 to 9-46. This approach undermines core purposes of CEQA and NEPA. First, it fails to provide the public with an accurate assessment of the project's impacts, and instead provides only an unrealistic overestimate of impacts that is not reflective of the actual project. Second, it deprives the public of an opportunity to comment on alternative alignments or approaches that could reduce the roadways' environmental impacts, deferring the process of selecting roadway locations to an unspecified future date when there will be no	Please see response to comment 66-14 regarding the appropriate level of detail in the Project description and the road corridors evaluated in the EIR/EIS. Please also see Master Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, regarding the CEQA/NEPA process. The identification of a road alignment corridor does not undermine CEQA or NEPA. It allows for a conservative impact approach that appropriately captures the types and magnitude of impacts from potential roadway configurations.	Reviewed by Client	None

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			opportunity for public input and review pursuant to the procedures set forth in NEPA and CEQA.			
32000	66	16	Basic details about other key project components that could significantly impact the environment are also unknown. Large recreation areas are not yet designed, depriving the public of an opportunity to understand a realistic picture of their impacts and comment on alternative designs that could reduce those impacts. RDEIR/SDEIS at 9-24 ("The permanent footprint of these recreation areas is currently at a conceptual design stage, and the actual location of facilities is not yet known."). For electrical transmission lines, the RDEIR/SDEIS indicates that "[o]nly one of the two north-south transmission line alignments described in Chapter 2 would be constructed, and specific locations for the transmission line towers are currently unknown." RDEIR/SDEIS at 9-14. Transmission line can have serious impacts to birds and the towers can destroy vernal pool wetlands and other important	Please see response to comment 66-14 regarding the appropriate level of detail for the Project description. The Project would include construction of two primary recreation areas (the Peninsula Hills Recreation Area and the Stone Corral Creek Recreation Area), and a day-use boat ramp area, as described in Chapter 16, Recreation Resources. Impacts associated with construction and operation of recreation areas and transmission lines are evaluated in Chapter 10, Wildlife Resources, including mitigation measures. For example, Impact WILD-1j describes the potential impacts and provides mitigation measures to reduce impacts associated with transmission lines (e.g., Mitigation Measure WILD-1.27). Many impacts and mitigation measures in Chapter 10 address the construction and operation of the Project including recreation areas. Therefore, the public and decision	Reviewed by Client	None

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			landscape features. Yet the RDEIR/SDEIS does not provide the public with an opportunity to understand the project's impacts or suggest alternatives because it lacks basic information like the locations of transmission line towers. Similarly, the RDEIR/SDEIS discusses the need for upgrades to the GCID canal but indicates that the details will be worked out in the future. RDEIR/SDEIS at 2-9 ("The GCID system may require several upgrades to support the operation of Sites Reservoir. The specific details of these upgrades would be confirmed during future hydraulic modeling and assessment of system conditions."). There are likely threatened giant garter snakes in the GCID system, and the location, timing, and method of construction matters greatly for avoiding and minimizing impacts to this sensitive species. Once again, the RDEIR/SDEIS fails to provide the public with a meaningful opportunity to understand those impacts and suggest alternative	makers have had an opportunity to understand the types of impacts on birds associated with the Project including recreation area and transmission lines and the mitigation measure(s) needed to reduce impacts. Regarding the GCID system upgrades, Chapter 2, Project Description and Alternatives, describes upgrades that would result in potential environmental impacts associated with construction or operations: "…for purposes of assessing environmental impacts for this document, it is conservatively assumed that upgrades would be constructed at various locations along the GCID Main Canal, as described below. GCID would manage the facility upgrades using an approach consistent with its existing management practices." The upgrades described include replacing siphons and canal upgrades. Construction timeframes and means and methods are described in Chapter 2 and Appendix 2C, Construction Means, Methods, and Assumptions. Therefore, the EIR/EIS identifies and		

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			approaches because the document omits the most basic planning details.	describes construction and operations details of upgrades and analyzes the potential environmental effects associated with those upgrades throughout the document. Specifically, for potential impacts on giant gartersnake as a result of construction in or near the GCID Main Canal, please see Impact WILD-1i for a discussion of those impacts. To address these impacts, Mitigation Measure WILD-1.20 provides protective measures, such as timing of construction and preconstruction surveys, to avoid causing giant gartersnake injury and mortality.		
32000	69	1	Page ES-8 - Table ES-1: Releases into Funks and Stone Corral Creeks, should be based on the Historical ecological functions of each creek, not to create "Healthy Fish" habitat where none previously existed.	As described in Chapter 2, Project Description and Alternatives, "The Project has the capacity to make releases from Sites Reservoir into Funks and Stone Corral Creeks should they be necessary to comply with California Fish and Game Code Section 5937 and ensure no harm to downstream water right holders on these creeks (Footnote 4: The owner of any dam shall allow sufficient water at all times to pass through a fishway,	Reviewed by Client	None

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				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. During the minimum flow of water in any river or stream, permission may be granted by the department to the owner of any dam to allow sufficient water to pass through a culvert, waste gate, or over or around the dam, to keep in good condition any fish that may be planted or exist below the dam, when, in the judgment of the department, it is impracticable or detrimental to the owner to pass the water through the fishway).”		
32000	69	2	Page ES-10 - Facility Elements: The 100' buffer around the Reservoir and Facilities seems to be in some instances quite excessive.	As noted in the Chapter 2, Project Description and Alternatives, section titled Project Buffer, the 100-foot buffer could be less in some locations if a facility is near a property boundary and the associated uses do not conflict with those on the adjacent lands.	Reviewed by Client	None

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32000	69	6	Page ES-26 - Table ES-2 - Impact FISH-2: The information/data that evolved into creating an increase in the Wilkins Slough flow criteria needs to be wholly vetted by various peers in the industry before imposing a baseline criteria.	Please see Master Response 2, Alternatives Description and Baseline, regarding refinements to the alternatives description. As identified in Chapter 11, Aquatic Biological Resources, the Wilkins Slough criteria under alternative conditions were informed by peer-reviewed scientific literature (Michel et al. 2021). In addition, as described in Appendix 2B, Additional Alternatives Screening and Evaluation, the Authority worked with California Department of Fish and Wildlife (i.e., peers in the industry) during the value planning process regarding operational criteria.	Reviewed by Client	Michel, C., J. Notch, F. Cordoleani, A. Ammann, and E. Danner. 2021. Nonlinear survival of imperiled fish informs managed flows in a highly modified river. Ecosphere. DOI: 10.1002/ecs2.3498
32000	72	7	II. The RDEIR/SDEIS Fails to Provide an Accurate and Stable Project Description. [Footnote 3: For the entirety of Section II, the NGO Coalition requests the Sites Project Authority also refer to the analysis contained in the NRDC et al. RDEIR/SDEIS comments as well.] The RDEIR/SDEIS violates CEQA because it fails to use an accurate and stable project description. In particular, the modeling of operations in the	Please see Master Response 2, Alternatives Description and Baseline, regarding a stable Project description and Mitigation Measure FISH- 2.1. Mitigation measures can be incorporated into the Project, eliminating the mitigation measure but retaining the substance of the requirement. Mitigation Measure FISH-2.1 was required to reduce potential life stage effects on salmonids by increasing the bypass	Reviewed by Client	None

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			RDEIR/SDEIS, which is the basis for the analysis of potential environmental impacts throughout the document, does not include the proposed mitigation measure FISH-2, Wilkins Slough Flow Protection Criteria. As a result, the quantitative analysis and modeling in the RDEIR/SDEIS does not analyze the project that is proposed in the RDEIR/SDEIS. [Footnote 4: See, e.g., RDEIR/SDEIS Appendices at 5A1-29, 5A2-28 to 5A2-33.] Additionally, different RDEIR/SDEIS chapters and appendices use different modeling and analyses, making inconsistent analysis throughout the document and therefore not a stable project description.	flow requirement at Wilkins Slough based on peer-reviewed scientific information. The Final EIR/EIS Project description now incorporates the requirements of Mitigation Measure FISH-2.1, which have been refined and made more restrictive. The bypass flow requirement at Wilkins Slough has been incorporated as an element of the Project because it is has been developed as an integral component of how the Project is proposed to operate in terms of its water diversion criteria, rather than a separate measure that is applied distinctly from the Project operations and its diversion criteria. Please also see Master Response 3, Hydrology and Hydrologic Modeling, regarding the modeled representation of Project operations. The impact analyses contained in the resource chapters evaluate the descriptions of Alternatives 1 through 3 contained in Chapter 2, Project Description and Alternatives. The exchanges and diversion criteria described in Chapter 2 are part of the alternatives. The		

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				operation of the alternatives, including the diversion criteria and the use of exchanges, is incorporated in the modeling of the alternatives. Chapter 2 is supported by Appendices 2C, Construction Means, Methods, and Assumptions, and 2D, Best Management Practices, Management Plans, and Technical Studies, as well as the modeled representation of the alternatives described in Appendices 5A, Surface Water Resources Modeling of Alternatives; 5B, Water Resources System Modeling; and 5C, Upper Sacramento River Daily River Flow and Operations Model.		
32000	72	8	Despite the absence of a complete Reservoir Operations Plan, the RDEIR/SDEIS also assumes that there will be water exchanges with Shasta and Oroville reservoirs in certain years. [Footnote 5: RDEIR/SDEIS at ES-12, 2-35 to 2-37, 5A-2-30 to 5A-2-33, Because these exchanges would be intended to "assist the [Central Valley Project] and [State Water Project] in meeting their regulatory obligations," RDEIR/SDEIS at 2- 35, these	Please see response to comment 72-7 regarding the Project description. The Project would work in conjunction with other reservoirs in the system (e.g., Shasta Lake), as described in Chapter 2, Project Description and Alternatives. As described in the Coordination with CVP and SWP section of Chapter 2, this would allow other reservoirs to be operated such that they could release water for cold-water pool purposes (e.g., Shasta	Reviewed by Client	None

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			exchanges do not provide public benefits that justify public taxpayer expenditures for this project. These exchanges are effectively water supply benefits to the contractors of the CVP and SWP who are obligated to pay for meeting regulatory requirements of the CVP and SWP. Additionally, the NGO Coalition that this supposed benefit from the Project will incentive less spill at Oroville in the spring, an important seasonal time for cold-water fisheries.] However, there are no proposed agreements for such exchanges between the Central Valley Project ("CVP") or State Water Project ("SWP") and Sites, and this element of the Project is hypothetical. [Footnote 6: See id. At ES-10 ("exchanges of water may occur with the CVP and SWP") (emphasis added); id. At 2-35 (acknowledging that the Sites Reservoir Authority is in discussions with the U.S. Bureau of Reclamation ("USBR") and the California Department of Water Resources ("DWR") regarding potential exchanges).] Equally important, the RDEIR/SDEIS does not analyze the	Lake). In addition, the diversion criteria described in the Chapter 2, Diversion Criteria section are part of the Project. The operation of the Project, including the diversion criteria and the use of exchanges, was incorporated in the modeling as part of the Project for the RDEIR/SDEIS and as described in Chapter 2. Exchanges are not speculative because they currently occur under existing baseline conditions and because the Project would be integrated into the overall system of the State of California. Under baseline conditions, the CVP and SWP each have responsibility for meeting objectives as defined in the Coordinated Operations Agreement, but they collaboratively decide the timing for each project to contribute toward meeting objectives. Therefore, there are times when releases from Shasta Lake may be prioritized over Folsom Lake, and vice versa. Sites Reservoir exchanges with Folsom Lake were considered in the RDEIR/SDEIS as a potential benefit but were not included in the CALSIM modeling.		

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			potential adverse effects that would result from such exchanges, including potential changes in river flows, redd dewatering, or reductions in juvenile salmon survival, and completely ignores the effects of exchanges with Folsom Reservoir. [Footnote 7: See RDEIR/SDEIS at 5-27; id. At 11-103 (admitting that the RDEIR/SDEIS needs to "better reflect the exchanges in the model," that these exchanges are difficult to model, and that the RDEIR/SDEIS underestimates the extent of potential exchanges that could occur under the proposed project). The RDEIR/SDEIS also admits that Sites Reservoir cannot release water to Glenn-Colusa Irrigation District ("GCID") and other participants located between the Hamilton City Pump Station and Knights Landing, and that deliveries of water to those participants would be made by GCID and USBR. RDEIR/SDEIS at 2-34. The RDEIR/SDEIS does not appear to analyze the effects of additional Shasta Dam releases by the USBR to fulfill such exchanges, which could be	Therefore, they are no longer included as part of the operations of the Project in the Final EIR/EIS, and modeling results have not changed. Please refer to Master Response 3, Hydrology and Hydrologic Modeling, for further descriptions of Shasta Lake and Lake Oroville exchanges. The modeling has been refined for the Final EIR/EIS and is reflected in the impact analysis throughout the document. The Chapter 5, Surface Water Resources, CALSIM section summarizes some of the modeling results and assumptions related to exchanges. The impacts related to changes in flow, redd dewatering, or reductions in juvenile salmon survival as a result of exchanges is addressed using modeling results and multiple lines of evidence in Chapter 11, Aquatic Biological Resources, including how Folsom Lake is currently operated to meet requirements, which would remain in place under operation of the Project. Please refer to Master Response 5, Aquatic Biological Resources, regarding benefits to aquatic		

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			particularly impactful to the environment in drier years.] As a result of all these deficiencies, all of the modeling of proposed operations in the RDEIR/SDEIS does not actually model or analyze the effects of the proposed Project or alternatives, and instead is inconsistent with the actual proposed Project. Therefore, the document fails to analyze the likely environmental impacts of the proposed Project and alternatives altogether.	biological resources, including the benefits to the cold-water pool.		
32000	72	51	Again, without an adequate and stable description of all aspects of the Project plan, its likely impacts simply cannot be analyzed, and this violates the very purposes of both CEQA and NEPA. It is simply not enough to state, as is done above, [quote from RDEIR/SDEIS, pg. 11-86: "Potential exposure of juvenile salmonids to the Red Bluff and Hamilton City fish screens would be addressed by technical studies focused on diversions at these locations during high winter flow conditions when	Please see Master Response 2, Alternatives Description and Baseline, regarding a stable Project description. The quote identified by the commenter is selected from a much larger impact analysis in Chapter 11, Aquatic Biological Resources, Impact FISH-2, that includes multiple lines of evidence, including the spatial distribution of migrating fish within the Sacramento River channel at the Red Bluff and Hamilton City intakes, the operation of the intakes, peer-reviewed scientific literature, and	Reviewed by Client	None

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			Project diversions would occur (Appendix 2D)."] that all these issues would somehow be addressed later in time, i.e., long after the CEQA and NEPA stage has passed.	estimates of potential entrainment and impingement. The impact analysis concludes, based on multiple lines of evidence, that "Entrainment risk would be expected to be similar between NAA [No Project Alternative] and Alternatives 1, 2, and 3 for juvenile winter-run Chinook salmon." It further concludes that "The available information generally suggests that impingement and screen passage/contact-related negative effects of the operation of the Red Bluff and Hamilton City intakes would be limited, particularly given that these effects would only apply to the subset of juvenile winter-run Chinook salmon encountering the intakes. The Red Bluff and Hamilton City fish screens are designed to protective standards for Chinook salmon fry and so near-field effects would be expected to be limited." The potential for near-field effects, including entrainment, is analyzed in the RDEIR/SDEIS with best available information, indicating limited potential for effect of the Project. As		

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				noted in the Fish Monitoring and Technical Studies Plan and Adaptive Management for Diversions section of Appendix 2D, technical studies would verify the facilities' performance during high winter flow conditions under which the Project would be diverting in the future, a situation that currently does not occur. This would be part of adaptive management for the diversions. The technical studies would describe factors such as juvenile salmonid migration survival in high flow conditions prior to Project operations, compliance with protective criteria for screen hydraulics in high flow conditions, and changes resulting from initial and continued Project operations in high flow conditions. Additional studies would provide data and reports to document compliance with National Marine Fisheries Service (NMFS) and California Department of Fish and Wildlife (CDFW) fish screen performance criteria in high flow conditions when Project diversions would occur; the studies would be submitted to NMFS, U.S. Fish and		

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				Wildlife Service, and CDFW for review and to inform adjustments or refinements in Project operations for the protection of fish species. An Adaptive Management Science Team (AMS Team) would use the results to determine if and what actions may be needed (e.g., adjustments in diversion operations timing).		
32000	72	52	This effort to indefinitely defer actual analysis of entrainment impacts simply begs the question: "What happens if entrainment at these intakes is found to be unacceptably high?" The current Project plan does not seem to answer this question, but rather it goes through a convoluted reasoning process [Footnote 47: RDEIR/SDEIS, pgs. 11-91 to 97.] to justify the largely still unsupported assertion that: "The Red Bluff and Hamilton City fish screens are designed to protective standards for Chinook salmon fry and so near-field effects would be expected to be limited. Impingement could be monitored at the Red Bluff	The commenter suggests there is an effort to defer analysis of entrainment. Please see response to comment 72-51 regarding existing fish screens, entrainment, near-field effects, and potential impacts. Also see Master Response 5, Aquatic Biological Resources, for response to comments on entrainment. The cited information (RDEIR/SDEIS:11-91–11-97) in the comment is a review of the available literature to inform the potential for negative near-field effects, which, in association with fish screens meeting fish agency criteria, informs the conclusion that near-field effects would be limited. The commenter	Reviewed by Client	None

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			and Hamilton City intakes during high winter flow conditions when Project diversions would occur (Appendix 2D)." This is more like simply taking these pre-existing intakes as they now are, rather than bringing them up to higher standards based on best available design criteria -- and hoping for the best. At the least, if there is to be meaningful monitoring in accordance with Appendix 2D, there should be certain entrainment "triggers" and caps above which, if these levels are reached, the intakes will be redesigned or operated to minimize such problems.	does not provide any examples of information that would contradict the information provided for this conclusion. The AMS Team, as described in response to comment 72-51, would use the results of the technical studies and adaptive management to determine if and what actions may be needed similar to the commenter's suggestion that there be certain "triggers" and caps for entrainment.		
32000	72	87	The post-building data collection protocol is deficient. The Reservoir Management Plan (Page 2D-37) states that "[p]ast studies of metal concentrations in the Sacramento River have not focused on high flows that will be the source water for Sites Reservoir. Metal concentrations at the diversion(s) will be measured within 24 hours of the start of diversions at	Please refer to Master Response 4, Water Quality, for a discussion of metals monitoring, the application of the reservoir management plan related to metals monitoring, and coordination with agencies regarding monitoring.	Reviewed by Client	N/A

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			RBPP and every 2 weeks during continuous diversions." [Footnote 81: Emphasis added.] "After 2 years of measuring metal concentrations in the diversions, the frequency of measurements will decrease to monthly." The measuring of metal loads might be inconvenient during high flow precipitation events, but this is exactly the time to target the data collection. A set schedule of monitoring would inevitably miss the close relationship between flow and metals concentrations. Event based monitoring may require data collection biweekly, weekly, or daily as flow conditions vary.			
32000	73	2	The DEIR/S indicates that a draft of the Reservoir Operations Plan is expected to be completed in late 2021 (DEIR/S, p. 2-42), but it is not clear that has been completed. The lack of a Reservoir Operations Plan hinders the ability of the public to review the potential impacts of the project.	Please see Master Response 2, Alternatives Description and Baseline, regarding the reservoir operations plan.	Reviewed by Client	N/A

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32000	75	3	As noted in the RDEIR/SDEIS, the Sites Project proposes to divert excess flows from the Sacramento River. The unregulated flows downstream of the rim reservoirs constitute a significant portion of the SWP water supplies in addition to the water supply stored in Lake Oroville. The RDEIR/SDEIS notes that proposed diversions for the Sites Project would not impact SWP's ability to capture unregulated or excess flows. This commitment should be formalized in the Sites Project operations agreements with DWR and should include criteria that would protect the SWP water supplies and its ability to meet regulatory and contractual obligations. The operations agreements should also spell out how the Sites Reservoir operations would be accounted for and tracked to ensure ongoing SWP and CVP operations are not impacted.	Please see Chapter 5, Surface Water Resources, for a discussion of the Project's impacts on SWP water supplies. As described in Chapter 5, Impact HYDRO-1, "c." Please see Master Response 2, Alternatives Description and Baseline, regarding coordination with SWP and CVP and the Authority's standing as a junior water right holder for Sites Reservoir. Based on current discussions between the Authority and Reclamation, as well as with California Department of Water Resources, there will be accounting in the agreements. This type of accounting may be identified in the operations plan. As described in Master Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, the Project requires a water right and all agreements will be respect existing water rights. Consideration of a water right application is a discretionary action taken by the State Water Board that requires a determination that unappropriated water is available, a	Reviewed by Client	N/A

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				review of potential impacts to public trust resources, and a determination that the appropriation of water is in the public interest. The discretionary action by the State Water Board regarding issuance of the water right is a separate and distinct process from the CEQA and NEPA process.		
32000	75	4	The RDEIR/SDEIS also notes that the proposed operations of the Sites Project would rely on the SWP facilities, including Lake Oroville, to provide the water supply benefits to the Sites Project Storage Partners. The Sites Project operations agreements with DWR should ensure that the use of SWP facilities to provide benefits to Sites Project Authority or Storage Partners do not adversely impact SWP water supply or increase costs to the SWC [State Water Contractors] members. Similarly, the agreements should ensure that the SWP is not backstopping the Delta outflow benefits proposed to be provided by the Sites Project.	Please see response to comment 75-3 regarding agreements and the operations plan. Based on the analyses and modeling contained in the EIR/EIS, there are no adverse impacts on State Water Project facilities. Please see Appendix 5B4, Regional Deliveries, and Appendix 5B5, Water Supply.	Reviewed by Client	N/A

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32000	77	11	ATTMT 1. Chapter or Appendix - Section: Chapter 2 - Section 2.5.1.1, GCID Main Canal Diversion and System Upgrades. Page(s): p. 2-9. Comment and Recommendations: The RDEIR/SDEIS states that "The Project would involve the installation of a new 3,000-cfs GCID Main Canal head gate structure about 0.25 mile downstream of Hamilton City Pump Station" (p. 2-9). However, the existing head gate structure would be left in place to continue to serve as a bridge and continue to be operated during construction of the new head gate. The FEIR/FEIS should include the monitoring protocols necessary to ensure the new setbacks do not increase fish entrainment.	The Near-Field Effects subsections of Chapter 11, Aquatic Biological Resources, Impacts FISH-2 through FISH-11. FISH-13, FISH-14, and FISH-16 identify that there would be no increase in fish entrainment as a result of operation of the GCID head gate. Furthermore, Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, describes technical studies to take place as part of a collaborative science program following an adaptive management process, such as monitoring at the Hamilton City Pump Station, including entrainment/impingement monitoring. Appendix 2D describes that aquatic monitoring would be implemented by Reclamation, the Authority, and GCID and/or TCCA, with input from a multiagency *Adaptive Management Science Team (AMS Team)* that includes representatives from Reclamation, the Authority, GCID, TCCA, National Marine Fisheries Service, U.S. Fish and	Reviewed by Client	N/A

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				Wildlife Service, and California Department of Fish and Wildlife.		
32000	77	12	ATTMT 1. Chapter or Appendix - Section: Chapter 2 - Section 2.5.1.2, Funks Reservoir. Page(s): p. 2-13. Comment and Recommendations: The RDEIR/SDEIS states that "The Project would not alter the footprint of Funks Reservoir; however, 740,000 cubic yards of sediment that has accumulated since its constructed would be excavated from the reservoir" (p. 2-13). This could significantly impact native fish species that may be present in the reservoir. CDFW recommends listing existing fish population in Funks reservoir, detailing the work window when the excavation will occur, and where the excavated material will be deposited.	The dredging of Funks Reservoir and potential impacts on fish are evaluated in Chapter 11, Aquatic Biological Resources, Impact FISH-1. In addition, the Aquatic Species of Management Concern by Area of Occurrence table in Chapter 11 also identifies the fish that have the potential to occur in the Funks Creek and Stone Corral Creek systems. Chapter 2, Project Description and Alternatives, describes where the material would be stockpiled and describes the timing (work window) of the activities: "The excavated sediment would be stockpiled adjacent to Funks Reservoir as shown on Figure 2-15. The sediment may be used for construction purposes, if suitable, or graded in place and revegetated. The reservoir is usually dewatered from the end of December through early February for TC Canal maintenance purposes."	Reviewed by Client	None

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32000	77	13	ATTMT 1. Chapter or Appendix - Section: Chapter 2 - Section 2.5.1.4, Inlet/Outlet Works. Page(s): p. 2-17. Comment and Recommendations: Insufficient information was provided to assess whether the I/O Tower port elevations will provide sufficient flexibility in the management of water temperature and/or water quality. CDFW recommends conducting an analysis of operational flexibility resulting from the proposed port locations for inclusion in the FEIR/FEIS.	The I/O tower port elevations are incorporated into the analysis throughout the EIR/EIS, where applicable. The modeling performed for the EIR/EIS discloses potential impacts considering the I/O tower port elevations. The methodologies and impact analysis account for the ability of water to be withdrawn and discharged from different ports on the I/O tower, as would occur during operations. For example, in Chapter 6, Surface Water Quality, in the Methods, Water Temperature section, water temperature in Sites Reservoir was modeled using CE-QUAL-W2 and considered the multiple tiers in the I/O tower (centerlines at 340, 370, 390, 410, 430, and 450 feet elevation, with an additional outlet at 470 feet for Alternatives 1 and 3) and at the low-level intake with centerline at 311 feet. In addition, in the Chapter 6, Impact WQ-2, Harmful Algal Blooms section, the evaluation takes into consideration the operation of the I/O tower ports. Impacts WQ-1, WQ-2, and WQ-3 consider operation of different ports on the I/O tower with	Reviewed by Client	None

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				respect to temperature and water quality. In addition, see Master Response 4, Water Quality, for additional information regarding the I/O tower port elevations.		
32000	77	14	ATTMT 1. Chapter or Appendix - Section: Chapter 2 - Section 2.5.1.4, Dams and Dikes. Page(s): p. 2-20. Comment and Recommendations: The RDEIR/SDEIS states that "Water in Stone Corral Creek would be diverted directly into the creek diversion pipeline through the Sites Dam abutment and re-enter the creek channel on the east side of the Sites Dam work area. The outlet tunnel with two 84-inch-diameter fixed cone valves would accommodate these releases, and an energy dissipating chamber would reduce the velocity of the water released" (p. 2-20). CDFW recommends the FEIR/FEIS include provisions to monitor the velocities and temperatures of water releases into Funks and Stone Corral creeks.	As described in Chapter 2, Project Description and Alternatives, and Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, monitoring of releases into Funks and Stone Corral Creeks would occur downstream of the reservoir. This type of monitoring would likely include velocities and temperature such that fish can be maintained in good condition consistent with California Fish and Game Code Section 5937.	Reviewed by Client	None

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32000	77	15	ATTMT 1. Chapter or Appendix - Section: Chapter 2 - Section 2.5.1.5, Dunnigan Pipeline. Page(s): p. 2-22. Comment and Recommendations: The RDEIR/SDEIS states that "construction would include open cut of approximately 100 feet to cross Bird Creek in the dry season" (p. 2-22). CDFW recommends that the FEIR/FEIS include baseline conditions for Bird Creek in the Proposed Project analysis.	Bird Creek is described in Chapter 7, Fluvial Geomorphology, in multiple sections, including the Other Valley Drainages section and the Impact Analysis and Mitigation Measures section. Potential impacts related to Bird Creek are described in Chapter 7, Impact FLV-1.	Reviewed by Client	None
32000	77	16	ATTMT 1. Chapter or Appendix - Section: Chapter 2 - Section 2.5.1.6, Recreation Areas. Page(s): p. 2-22. Comment and Recommendations: CDFW recommends defining what exact uses are planned for the recreation area regarding angling and hunting. The reservoir is likely to attract a large contingent of migratory waterfowl, deer, dove, and turkey populations. The fluctuating water level will likely result in regions of green vegetation due to receding water, creating a potential for increased tule elk usage. CDFW recommends considering	The Authority and Reclamation are willing to work with California Department of Fish and Wildlife regarding potential opportunities for lawful public hunting at the reservoir in the recreation areas.	Reviewed by Client	None

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			coordination and use of lawful public hunting to manage increased populations.			
32000	77	17	ATTMT 1. Chapter or Appendix - Section: Chapter 2 - Section 2.5.1.7, New and Existing Roadways. Page(s): p. 2-23. Comment and Recommendations: The RDEIR/SDEIS states that "It is anticipated that all construction activities associated with the recreation areas would occur within the footprints of the recreation areas and the temporary and permanent access road areas" (p. 2-23). The RDEIR/SDEIS should include details on what restoration activities are planned for areas impacted by temporary access roads.	As the commentor states, temporary and existing roadway improvement are outlined in Chapter 2, Project Description and Alternatives. This includes planned construction of new and temporary roads and improvement of existing roads. Appendix 2D, Best Management Practices, Management Plans, and Technical Studies provides a list of best management practices, which includes BMP-36 for Control of Invasive Plant Species during Construction. BMP-36 states, "Upon completion of the Project, all areas subject to temporary ground disturbances will be recontoured to pre-Project elevations, as appropriate and necessary, and revegetated with native vegetation to promote restoration of the area to pre-Project or better conditions. An area subject to 'temporary' disturbance is any area that is disturbed to allow for	Reviewed by Client	None

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				construction of the Project, but is not required for operation or maintenance of any Project-related infrastructure, will not be subject to further disturbance after Project completion, and has the potential to be revegetated.” Language has been added to Chapter 2 and Chapter 18, Navigation, Transportation, and Traffic, of the Final EIR/EIS regarding the restoration of temporary roads. Appendix 2D also describes the Land Management Plan, which would apply to various areas around the reservoir, including the recreation areas. The description of this plan states, “Identification and mapping of sensitive habitats and vegetation, including special-status plant populations, sensitive natural communities, wetlands, and non-wetland waters, that were avoided during construction so that signs, fencing, or other exclusion practices are implemented during operation and maintenance activities and these areas are avoided.” In addition, the Recreation Management Plan, also		

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				described in Appendix 2D, would "Avoid and reduce disruption of sensitive habitats in recreation areas by: • Identifying and mapping sensitive habitats and vegetation, including special-status plant populations, sensitive natural communities, wetlands, and non-wetland waters, that were avoided during construction of recreation areas • Installing fencing, posting signage, or implementing other exclusion practices along the boundaries of sensitive habitats in the recreation areas to avoid and minimize disturbance to these habitats during operation and maintenance activities in the recreation areas." Applicable mitigation measures described in Chapter 9, Vegetation and Wetland Resources, and Chapter 10, Wildlife Resources, would apply where appropriate and would include restoration.		

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32000	77	19	ATTMT 1. Chapter or Appendix - Section: Chapter 2 - Section 2.5.2.1, Water Operations. Page(s): p. 2-29. Comment and Recommendations: The timing and magnitude of reservoir releases for Storage Partners along the Colusa Basin Drain (CBD), Yolo Bypass, and North Bay Aqueduct is unclear. The RDEIS/SDEIS states that reservoir releases for Storage Partners "would generally be made from May to November but could occur at any time of the year, depending on a Storage Partner's need and capacity to convey water to its intended point of delivery" (p. 2-29). However, all analyses related to flow deliveries through the Yolo Bypass were limited to the August-October time-period. CDFW recommends providing more detail about the timing and magnitude of releases for Storage Partners along the CBD, Yolo Bypass, and North Bay Aqueduct. If the timing and/or magnitude of these releases are substantially different from the proposed "habitat flows" from August-October, additional analyses on the potential impacts of moving	The majority of flows through the Yolo Bypass are anticipated to be for Proposition 1 flows, which are modeled to occur August through October, in accordance with the Sites Feasibility Study prepared for the California Water Commission. There is currently one Storage Partner who would potentially receive a relatively small delivery from the North Bay Aqueduct. There are no Storage Partners expected to take deliveries along the Colusa Basin Drain or Yolo Bypass. The EIR/EIS and modeling evaluated the anticipated flows through the Colusa Basin Drain, Yolo Bypass, and North Bay Aqueduct (e.g., Appendix 5A5, CALSIM II Model Delivery Specifications, and Appendix 11M, Yolo and Sutter Bypass Flow and Weir Spill Analysis).	Reviewed by Client	None

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			that water through the region is needed.			
32000	77	20	ATTMT 1. Chapter or Appendix - Section: Chapter 2 - Section 2.5.2.1, Diversion to Sites Reservoir. Page(s): p. 2-30. Comment and Recommendations: The RDEIR/SDEIS states that "up to 2,100 cfs, plus losses would be diverted at the RBPP for the Project" (p. 2-30). CDFW recommends the FEIR/FEIS explains what is meant by the term "losses" and quantifies the magnitude of these losses.	Please see Master Response 3, Hydrology and Hydrologic Modeling, for information on losses as represented by the model.	Reviewed by Client	None
32000	77	21	ATTMT 1. Chapter or Appendix - Section: Chapter 2 - Section 2.5.2.1, Water Operations, Bend Bridge Pulse Protection. Page(s): p. 2-31, 32. Comment and Recommendations: The RDEIR/SDEIS included a pulse protection that is flow based because real-time fish monitoring and presence-based pulse operational adjustments cannot be captured in a model. Commonly, the intention of a pulse flow protection measure is to protect pulses of fish migration rather	The Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, Fish Monitoring and Technical Studies Plan and Adaptive Management for Diversions section acknowledges the Authority will be conducting real-time fish monitoring and identifies the technical studies and monitoring required of the Project. The Authority will work with CDFW on	Reviewed by Client	None

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			than pulses of water, with flow-based pulse protection modeled as a proxy for real-time fish presence-based protection. Similarly, real-time fish monitoring and associated criteria are the norm rather than the exception for large scale diversion projects in the Sacramento-San Joaquin Delta ecosystem (CDFW 2019 State Water Project Incidental Take Permit (ITP), United States Bureau of Reclamation (USBR) 2019 Biological Assessment (BA)). CDFW supports the inclusion of pulse flow protection in the operation of the Proposed Project and anticipates working with the Authority to develop a process to implement this measure in real time based on fish presence.	implementation of pulse flow protection.		
32000	77	22	ATTMT 1. Chapter or Appendix - Section: Chapter 2 - Section 2.5.2.1, Diversion to Sites Reservoir. Page(s): p. 2-32. Comment and Recommendations: A ramping schedule will need to be developed to ensure that when pumping resumes upon cessation of the pulse event, flows in the river are not decreased at	The potential for near-field effects is analyzed in the RDEIR/SDEIS with best available information, indicating limited potential for effect of the Project. As noted in the Fish Monitoring and Technical Studies Plan and Adaptive Management for Diversions section of Appendix 2D, technical studies would verify the	Reviewed by Client	None

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			such a rapid rate that fish are adversely impacted.	facilities' performance during high winter flow conditions under which the Project would be diverting in the future, a situation that currently does not occur. This would be part of adaptive management for the diversions. As described in the RDEIR/SDEIS Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, technical studies will be undertaken to validate analyses conducted, refine and understand the mechanism(s) by which Project operations affect aquatic resources in high flow conditions, and explore ways in which Project operations can further benefit fish populations. Specific parameters for each technical study will be developed as part of individual study plans, with the approval of the permitting fish agencies (i.e., NMFS, U.S. Fish and Wildlife Service, and California Department of Fish and Wildlife [CDFW]). The Authority will develop a ramping schedule in consultation with agencies during the Endangered Species Act process.		

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32000	77	23	ATTMT 1. Chapter or Appendix - Section: Chapter 2 - Section 2.5.2.1, Diversion to Sites Reservoir. Page(s): p. 2-32. Comment and Recommendations: Three Core-1 Central Valley (CV) spring-run tributaries, two Core-2 CV spring-run tributaries, 3 Core-1 CV steelhead tributaries and 2 Core-2 CV steelhead tributaries (Antelope, Mill, Deer, Big Chico, and Butte Creeks) enter the Sacramento River downstream of Red Bluff Diversion Dam (RBDD). The Adaptive Management Plan and fish monitoring program should take these into consideration and use existing or new juvenile monitoring programs to inform Proposed Project operations.	Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, describes various technical studies and adaptive management related to fish and the operation of the Project. The studies and adaptive management would be informed by existing or new juvenile monitoring programs.	Reviewed by Client	N/A
32000	77	24	ATTMT 1. Chapter or Appendix - Section: Chapter 2 - 2.5.2.1, Water Operations. Page(s): p. 2-35. Comment and Recommendations: The RDEIR/SDEIS states, "The Authority is currently working with Reclamation and DWR to establish operating principles with both agencies that would describe the details of the	Please see Master Response 2, Alternatives Description and Baseline, regarding coordination with SWP and CVP and the Authority's standing as a junior water right holder for Sites Reservoir. Based on current discussions between the Authority and Reclamation, as well as with California Department of Water	Reviewed by Client	No

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			coordination and collaboration that would take place during the operation of the Project" (p. 2-35). Coordinating operations between the Proposed Project, Central Valley Project (CVP), and State Water Project (SWP) is complicated and there could be unintended consequences resulting from proposed water transfers and exchanges. Little detail is provided describing coordinated operations between the three entities, which hinders the evaluation of potential impacts of the Proposed Project. The information provided suggests that there may be impacts associated with the proposed coordinated operations.	Resources, there will be accounting in the agreements. This type of accounting may be identified in the operations plan. As described in Master Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, the Project requires a water right and all agreements will respect existing water rights. Please also see Master Response 2, Alternatives Description and Baseline, regarding the adequacy of the impact analysis. Please see Chapter 5, Surface Water Resources, for a discussion of the Project's impacts on SWP water supplies. As described in Chapter 5, Impact HYDRO-1, "All decreases in water supply modeled for Alternatives 1, 2, and 3 are considered negligible. On average, CVP and SWP deliveries are expected to increase with Alternatives 1, 2, and 3, with greater increases expected in association with CVP participation, particularly with Alternative 3."		

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32000	77	25	ATTMT 1. Chapter or Appendix - Section: Chapter 2 - 2.5.2.1, Shasta Lake Exchanges. Page(s): p. 2-36. Comment and Recommendations: The critical months for cold water pool management are incorrectly listed as August through September. CDFW recommends correcting this statement in the FEIR/FEIS and any subsequent analyses to cover the critical period for cold water pool management of August through November.	The text in Chapter 2, Project Description and Alternatives, identifies this time (August and September) as "critical" and then goes on to identify the late summer and fall (i.e., August through November). The impact analysis in Chapter 11, Aquatic Biological Resources, covers the entire year and evaluates temperature over all months of presence of each life stage of each fish species, including those required for cold-water pool management.	Reviewed by Client	None
32000	77	26	ATTMT 1. Chapter or Appendix - Section: Chapter 2 - 2.5.2.1, Funks Creek and Stone Corral Creek Releases. Page(s): p. 2-38. Comment and Recommendations: CDFW recommends the Proposed Project consider including all perennial creeks and rivers potentially impacted in the baseline studies. CDFW requests that all baseline data (not synthesized data) be shared with CDFW.	The creeks upstream of the inundation would remain as they currently are because they would not be inundated. Stone Corral and Funks Creeks are the two existing creeks that would experience a change in flow due to the Project, as a result of either inundation or impoundment of flows. Thus, the technical studies identified in Chapter 2, Project Description and Alternatives, and described in Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, are proposed. The technical studies plan	Reviewed by Client	None

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				will be developed during the permitting and design process and will be adopted prior to land acquisition. See the following sections in Appendix 2D: Fish Assemblage and Available Habitats, Flow Characterization and Geomorphic Study, Surface Water Ambient Monitoring Program Technical Study, and Temperature Study. The Authority will provide information relevant to supporting the Stone Corral and Funks Creeks studies identified in Appendix 2D in the appendices and/or attachments to each particular study.		
32000	77	27	ATTMT 1. Chapter or Appendix - Section: Chapter 2 - 2.5.2.4, Reservoir Management Plan. Page(s): p. 2-43. Comment and Recommendations: CDFW recommends the development of a site-specific Aquatic Invasive Species Management Plan, coordinated with CDFW.	Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, discusses the activities to be taken for the control of aquatic invasive species in the Invasive Aquatic Plants section and the Invasive Aquatic Invertebrates section. The Authority will coordinate with California Department of Fish and Wildlife as appropriate.	Reviewed by Client	None

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32000	77	28	ATTMT 1. Chapter or Appendix - Section: Chapter 2 - 2.5.2.4, Reservoir Management Plan. Page(s): p. 2-43. Comment and Recommendations: CDFW recommends the development of a site-specific Fisheries Management Plan, coordinated with CDFW.	The Chapter 2, Project Description and Alternatives, Reservoir Management Plan section describes the fisheries management documentation that would be part of reservoir management. The Authority will coordinate with California Department of Fish and Wildlife as needed regarding fisheries management at the reservoir.	Reviewed by Client	None
32000	77	29	ATTMT 1. Chapter or Appendix - Section: Chapter 2 - 2.5.2.4, Recreation Management Plan. Page(s): p. 2-43. Comment and Recommendations: CDFW recommends considering hunting and firearm use, and their respective limitations or regulations, within the Recreation Management Plan. CDFW recommends considering the management and regulation of public use facilities to discourage habituation of wildlife to people.	Please see response to comment 77-16 regarding recreational opportunities in the recreation areas. Please see Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, regarding activities the Authority will take in the Land Management Plan regarding measures and practices to avoid or minimize operations and maintenance impacts on special-status wildlife, and the and Recreation Management Plan regarding managing the public in recreation areas.	Reviewed by Client	None

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32000	77	41	ATTMT 1. Chapter or Appendix - Section: Chapter 6 - Section 6.3.2.8, Harmful Algal Blooms (HABs). Page(s): p. 6-37, 38. Comment and Recommendations: The RDEIR/SDEIS takes into consideration reservoir water levels and potential effects of HABs. However, it is unclear and unlikely that the reservoir modeling conducted can evaluate whether or not HABs or toxins will be released from the reservoir. CDFW recommends the creation of a monitoring plan of phytoplankton and cyanotoxins that includes the reservoir and downstream locations.	The modeling used to inform the harmful algal blooms (HABs) impact analysis for Sites Reservoir in Chapter 6, Surface Water Quality, is related to water temperature, which informs the potential for HABs to form, in addition to qualitative consideration of nutrient levels and water residence time. Modeled water surface elevations for Alternatives 1, 2, and 3 were considered within the context of the lowest I/O tower port elevations and the low-level intake to qualitatively assess the potential for releases of potentially high concentrations of cyanobacteria and cyanotoxins from the reservoir. The environmental fate and transport of HABs in reservoir releases was also considered (e.g., dilution, biodegradation, photodegradation). Please see Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, regarding monitoring protocols and potential locations of monitoring related to water quality constituents, including HABs. Text was added indicating that water samples will be	Reviewed by Client	None

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				collected at multiple locations within the reservoir and downstream for microscopic visualization. This text revision does not change or modify the impact determinations or conclusions made in the analysis. In addition, the Authority and Reclamation have added cyanobacteria and cyanotoxin monitoring to the stream bioassessment component of the Stone Corral Creek and Funks Creek Aquatic Study Plan and Adaptive Management (Appendix 2D) to specifically address uncertainty regarding cyanobacteria and cyanotoxins in Stone Corral and Funks Creeks due to the Project. Please refer to Master Response 4, Water Quality, for a discussion regarding the use of the I/O tower to control releases of water quality constituents.		
32000	77	84	ATTMT 1. Chapter or Appendix - Section: Chapter 11 - Impact Fish-6, Appendix 11L Sturgeon Delta Analyses. Page(s): General Comment. Comment and Recommendations: Spawning success and juvenile	The correlation of flow with recruitment referred to in this comment is largely driven by a few very high flow years, as shown in the Appendix 11L, Sturgeon Analyses, figure titled White Sturgeon Year-	Reviewed by Client	None

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			recruitment are poorly understood for both species of sturgeon due to the difficulty of monitoring the benthic, dispersed, and cryptic early life stages of these fishes. The best available evidence indicates that white sturgeon only have large, successful recruitment events approximately every 8-10 years, correlated with wet water years, especially those associated with high spring outflow (Fish 2010; Stevens and Miller 1970). It appears that green sturgeon show a similar pattern. Reports from the USFWS Red Bluff office show green sturgeon eggs captured on egg mats and larvae captured in both rotary screw traps and benthic D-nets show high numbers in wet years with high water levels (B. Poytress, USFWS, personal communication). Operations of Proposed Project that reduce flows during wet and above normal years, during the periods of egg development, larval rearing, and juvenile migration carry a strong risk of harming those early life stages and reducing these rare successful recruitment years. To minimize these	Class Index (YCI) for 1980–2011 as function of Mean April–May Delta Outflow (Upper Panel) and Mean March–July Delta Outflow (Lower Panel) in Cubic Feet Per Second (cfs). Such flows are largely unimpaired flows that result from major storm events and are not much affected by Project operations. Given differences in life cycle and habitat use between green sturgeon and white sturgeon, the applicability of the white sturgeon YCI to green sturgeon is unclear. However, larval abundance and distribution may be influenced by spring and summer outflow. There appears to be a positive relationship between spring and summer outflow of wet water years and larval abundance in the RBDD rotary screw trap data (Heublein et al. 2017, discussed in Appendix 11A). The effects of the Project operations on flow in the Sacramento River under the No Project Alternative and the Project alternatives are discussed in Chapter 11. In particular, the differences in flow between the No		

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			potential impacts, Proposed Project operations should time reservoir inflow so that it does not meaningfully reduce flows in the Sacramento River during critical sturgeon rearing and migration, especially during the wettest years. Additionally, monitoring of early life stage abundance or YCI should be funded through the Proposed Project in order observe the effects of Proposed Project operations on sturgeon and inform adaptive management of Proposed Project operations, as necessary.	Project Alternative and each of the alternatives are presented by month and water year type at four locations in the Sacramento River: Bend Bridge, RBDD, GCID, and Wilkins Slough in tables 11-57 through 11-60. These locations are representative of the portion of the Sacramento River in which larval and juvenile green sturgeon rear for several months post hatching before migrating to the delta. Generally, the differences between flow under the No Project Alternative and the alternatives are small, less the 5%; however, there are some exceptions. The only reduction in flow greater than 5%in a wet year is a reduction in flow in April at Hamilton City under Alternative 3 from 16,312 cfs (No Project Alternative/No Action Alternative) to 15,441 cfs (5.3%, Alternative 3). Given this is the only wet year reduction greater than 5% and the remaining flow is still relatively high, the effect on green sturgeon larval production is anticipated to be minimal.		

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				There are reductions in flow greater than 5%in other months and water-year types. Flow at RBDD for all alternatives in January, February, and March may see reductions between 5.3% and 8.1%. Except for March, these reductions do not persist downstream at Hamilton City or Wilkins Slough. Given that only migratory/pre-spawning adults are present in these reaches during these months, the flow reductions are not expected to have an adverse effect on juvenile production and survival. Potential effects of these flow reductions on migratory green sturgeon and white sturgeon adults are discussed in Chapter 11. Alternative 3 is estimated to reduce flows by greater than 5% in May of critically dry years and June of above normal, below normal, and critically dry years. Juvenile production does not appear to be associated with below normal and critically dry water years, and none of the reductions persist in the estimated effects at GCID and Wilkins Slough. Therefore, the effect of those reductions is		

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				expected to be localized with minimal effect on habitat for juvenile rearing. Finally, the pulse protection measures in the Project, and the Wilkins Slough requirement, which precludes diversions if they would reduce flow at Wilkins Slough below 10,700 cfs, are likely to ensure sufficient flows for adult green sturgeons to complete their spawning migrations and ensure pulse flows are available to stimulate downstream migration of larval and juvenile green sturgeon. Therefore, the impact of the Project to green sturgeon was determined to be less than significant (CEQA) and no adverse effect (NEPA). Please see Impact FISH-6, Operations Effects on Green Sturgeon, in Chapter 11. The Authority and Reclamation recognize the uncertainty in these determinations attributable to the paucity of information on green sturgeon life history and habitat use and are committed to support, collaborate with, and as appropriate augment ongoing research directed at improving understanding of the		

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				flow-survival relationship in the middle reach of the Sacramento River (Red Bluff Diversion Dam to Verona), including the roles of pulses, base flows, sediment levels, predation, and inundated acres of side-channel habitat, and to use the results to refine the criteria for managing diversions to protect the function of the Sacramento River between RBDD and Verona to support migration and rearing of juvenile salmon and sturgeon (See Appendix 2D.6.4).		
32000	77	109	ATTMT 1. Chapter or Appendix - Section: Chapter 28 - Section 28.4.1.3, Sites Reservoir Operation. Page(s): General Comment. Comment and Recommendations: The modeling conducted in the RDEIR/SDEIS compares both with and without climate change future scenarios for all alternatives. The results from the analyses were then used to qualitatively assess the impacts and benefits that the Proposed Project might have with climate change. The RDEIR/SDEIS states that overall, it is not expected to have adverse effects	The description of Project operations has been refined as described in Master Response 2, Alternatives Description and Baseline. The refinements include modification to the minimum Wilkins Slough flow criteria, which now require that diversions to Sites Reservoir may not cause flow at Wilkins Slough to decline below 10,700 cubic feet per second (cfs) from October 1 to June 14. The revised standard is modeled throughout the Final EIR/EIS and included in the modeling results in Chapter 28, Climate Change.	Ready for author review	N/A

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			on aquatic species under climate change (p.28-29). However, analyses in the RDEIR/SDEIS demonstrate that the Proposed Project operations will have an adverse impact on aquatic species and results from the climate modeling indicate the Proposed Project under climate change would likely exacerbate these adverse impacts. For example, the RDEIR/SDEIS states that it "would result in larger reductions to flow under climate change in Critically Dry Water Years from December to March and larger increases in August to make up for the significantly decreased flow" (p. 28-16). A reduction in flow in the months of December to March, particularly in critically dry years, which are predicted to increase under climate change, would have adverse effects on rearing and emigrating salmonids. Likewise, the RDEIR/SDEIS's analysis indicates that Delta outflow decreases with climate change, which could further exacerbate impacts to longfin smelt. CDFW recommends establishing more protective bypass	Therefore, the Authority and Reclamation have established more protective bypass flow criteria, as recommended by the commenter. In addition, the Authority will consider climate change in the context of operations and the Project objectives through the implementation of an adaptive management plan, as suggested by the commenter. Text in Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, has been revised accordingly. The text indicated by the commenter in the Aquatic Biological Resources subsection (formerly on page 28-29) discusses the Project impacts disclosed in Chapter 11, Aquatic Biological Resources, not potential effects under climate change. The Chapter 28 text has been revised to describe the results presented in Table 28-13, Sacramento River Flow near Wilkins Slough: Alternatives Compared with [No Project] (a) without Future Climate Change in 2035, (b) with Climate Change in 2035		

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			flow criteria and include in the Proposed Project's adaptive management plan strategies to address how the Proposed Project may alter future operations to account for the potential adverse effects of climate change.	and (c) with Climate Change in 2070 (c)— Critically Dry Years. The revisions describe the Project-related actions under climate change that contribute to the modeled results. In Critically Dry Water Years (e.g., 2015), water for diversion to Sites Reservoir is likely to be unavailable. The results seen in the Table 28-13 are primarily attributable to exchanges between Shasta Lake and Sites Reservoir to conserve cold-water pool for temperature control in late summer and fall months. Reclamation may decide to work with the Authority to provide additional temperature control in the upper Sacramento River. Reclamation could deliver water from Sites Reservoir in exchange for conserving cold water in Shasta Lake for temperature management. Under this Project-driven condition, flows upstream of Knights Landing would be reduced. The Project is required to and will comply with existing standards for the Sacramento River. Water temperatures in the Sacramento River are and will continue to be managed through water releases from Shasta		

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				and Keswick Dams in accordance with the State Water Resources Control Board water rights and water quality criteria related to the CVP and SWP operations under the Project, as well as relevant biological opinions. Reclamation's decision to provide additional temperature control through the use of Shasta Lake under Project conditions is currently and would continue to be required to be made in consultation with Reclamation's existing temperature task group and be subject to approval by the Central Valley Regional Water Quality Control Board, pursuant to Water Rights Order 90-5. The existing minimum bypass flows in the Sacramento River will remain unchanged under the Project (3,250 cfs at the Red Bluff Diversion Dam and 4,000 cfs downstream at the Hamilton City Pump Station). Please see Master Response 5, Aquatic Biological Resources, regarding baseline and specials-status species, project benefits to fisheries, and flow-		

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				related effects on longfin smelt and delta smelt.		
32000	78	10	Evaluation of the Effects of the Project The environmental document should fully describe how the Project is proposed to be integrated with other major existing and planned water infrastructure projects, many of which involve participants in the Sites project, including planned operations and accounting for those operations. The lack of explanation of how these projects would work together prevents a full understanding of the project. Further, the environmental document relies on the development of future plans to mitigate impacts of the project on water quality and fish and wildlife. The major details of these plans are needed in order to fully evaluate the effectiveness of these mitigation measures and the full impacts of the project.	The cumulative impact analysis in Chapter 31, Cumulative Impacts, provides a qualitative analysis of how the Project would interact with other water infrastructure projects. In addition, the modeling incorporates exchanges and diversion criteria to represent the integration of the Project with the CVP and SWP systems. Please also see Master Response 2, Alternatives Description and Baseline, regarding coordination with CVP and SWP and disclosure of impacts. The Project's impacts to water quality, fish and wildlife are described in Chapter 6, Surface Water Quality, Chapter 11, Aquatic Biological Resources, and Chapter 10, Wildlife Resources. Please see Master Response 4, Water Quality, Master Resource 5, Aquatic Resources, and Master Response 6, Vegetation, Wetland, and Wildlife Resources for	Reviewed by Client	None

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				additional information regarding the modeling analysis in the EIR/EIS. The plans identified in Chapter 2, Project Description and Alternatives, and Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, are part of the Project. These plans will be used to inform the operation of the Project and therefore are analyzed in the EIR/EIS. Specific mitigation measures are also identified in the EIR/EIS to reduce impacts.		
32000	78	29	Page 1-7 - The environmental document should identify and evaluate alternative operational criteria for the project that avoid additional modification of baseline flows in most water years to protect the aquatic ecosystem and fish populations in the Bay-Delta Watershed and to demonstrate proposed project feasibility taking into consideration possible updates to flow-dependent water quality objectives in the Bay-Delta Plan. Water diversions through	The Authority and Reclamation considered multiple operational scenarios over the course of the Project development that were designed to meet the Project objectives, purpose, and need; enhance Project benefits; and reduce or avoid impacts. The features of alternatives, including Sites Reservoir capacity, conveyance systems, and operational scenarios, were conceptually developed and refined over time to maximize the achievement of the objectives. Please	Reviewed by Client	None

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			infrastructure such as dams, reservoirs, and distribution facilities (canals, pumps, pipelines) have substantially modified the volume, timing, frequency, rate, and duration of river flows and these modifications are primary contributors to the decline, persistent low abundance, and high extinction risk for multiple native fish species and other aquatic organisms in the Bay-Delta watershed. A significant amount of scientific information indicates that existing river flows, Delta outflows, and interior Delta flows (baseline flows) are not sufficient for halting and reversing declines of multiple fish populations in the Bay-Delta watershed. Additional surface storage, conveyance, and operational flexibility in the Proposed Project allows for greater impairment of baseline flows (volume, timing, frequency, rate, and duration) in the Bay-Delta watershed and allows for increases in adverse impacts on depleted fish populations and other aquatic organisms. Modifications to the baseline hydrograph, volume, timing,	see Master Response 9, Alternatives Development, regarding operational criteria development. Please see Master Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, for information regarding the Bay-Delta Plan Updates and Master Response 2, Alternatives Description and Baseline, regarding what is included in the baseline. The environmental baseline includes the operations of the existing reservoir and the existing flows in the existing rivers and compares these conditions to conditions expected under Project operations. For example, in Chapter 11, Aquatic Biological Resources, Impacts FISH-2 through FISH-11 describe the relative changes between environmental baseline and Alternatives 1 through 3. Please also refer to Master Response 5, Aquatic Biological Resources, regarding the environmental baseline and special-status species.		

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			frequency, rate, and duration) in the riverine and tidal portions of the Bay-Delta watershed and subsequent impacts to ecological resources including fish populations should be estimated and disclosed in the context of changes from baseline and unimpaired flow conditions. Given the potential for additional degradation of baseline flows associated with the Proposed Project, and the relationship between flows and fish population viability, operational alternatives that avoid loss of baseline flows in most water years are needed to assess the feasibility of mitigating ecological and fishery impacts in the context of anticipated updates to the Bay-Delta Plan and to produce a record in support of multiple Board decisions. [Commenting Water Board or Section within the State Water Board: Bay-Delta]			
32000	78	30	Chapter 2 indicates that a benefit of the Sites Project is exchanges in releases from Shasta and Folsom for cold water pool maintenance and	Please refer to Master Response 5, Aquatic Biological Resources, for additional discussion of benefits to aquatic biological resources, including	Reviewed by Client	N/A

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			other environmental needs. However, the CalSim and HEC5Q modeling does not show noticeable benefits of such exchanges. Any assertions of cold water pool benefits should be supported with quantitative results that demonstrate such benefits. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	the benefits to the cold-water pool. As discussed in Master Response 5, improved cold-water pool conditions under Alternatives 1, 2, and 3 allow for lower water temperatures relative to the No Project Alternative in drier years during summer months, which coincides with winter-run spawning, egg incubation, and alevin development. As a result, reduced temperature-dependent winter-run egg mortality under Alternatives 1, 2, and 3 was found in Martin and Anderson egg mortality models, SALMOD, and IOS winter-run life cycle model in drier years.		
32000	78	31	Page 2-29 - The Project proposes to divert water during times that Shasta Reservoir should be minimizing loss of storage or gaining storage for temperature management during the summer and fall. The environmental document should include proposed operating constraints specifically designed to avoid impacts to Shasta and Trinity River storage, temperature management, and impacts to salmonid redd dewatering and	In coordination with Reclamation, the Authority would construct, operate, and maintain an offstream reservoir to capture excess water from major storms and store the water until it is most needed during dry periods. Please see Master Response 3, Hydrology and Hydrologic Modeling, which describes the modifications to modeling in the Final EIR/EIS for Shasta Lake Operations and the resulting benefits to cold-water pool	Reviewed by Client	None

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			stranding associated with these operations. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	management, fall flow stability, and spring pulse flow actions that would occur under the Authority's and Reclamation's preferred alternative. Also, please see Master Response 2, Alternatives Description and Baseline, regarding diversions and operational criteria that have been refined in response to comments and agency coordination. Please see Master Response 8, Trinity River, regarding the scope of analysis related to the Trinity River system and how effects would not occur on the Trinity River. The Project is not proposing to modify, change, remove, or add to any of these factors. Regardless of the Project, Reclamation would continue to operate the CVP Trinity River Division facilities consistent with all applicable statutory, legal, and contractual obligations, including but not limited to Reclamation's Trinity River water rights, 2000 Trinity River ROD, and Lower Klamath ROD and the provisions of the Trinity River Division CVP Act of 1955.		

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32000	78	32	Page 2-29 - More details should be provided about the timing and magnitude of releases for specific Storage Partners and the route that water would be conveyed to ensure that possible impacts associated with these issues can be fully evaluated and disclosed. In addition, the total quantity of diversions, including losses, should be identified and evaluated. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	Storage Partner deliveries are described in the RDEIR/SDEIS by subgroups, such as north-of-Delta and south-of-Delta deliveries. Each subgroup has similar hydrologic and environmental effects. Chapter 5, Surface Water Resources, contains a summary of water supply deliveries in the Summary of Water Supply Delivery Results section. This section includes deliveries to storage partners north and south of the Delta and to refuges. Storage Partner deliveries are also presented in Chapter 32, Other Required Analyses. Chapter 32 tables titled Summary of Simulated Sites Reservoir Annual Averages of Agricultural Deliveries (Thousand Acre Feet/Year) and Sites Reservoir Agricultural Deliveries Compared to Total Agricultural Deliveries break down Sites Reservoir deliveries for agriculture by Sacramento, San Joaquin/Tulare Lake, and San Francisco Bay hydrologic regions. Chapter 32 tables titled Summary of Simulated Sites Reservoir Annual Averages of Municipal and	Reviewed by Client	None

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				Industrial Deliveries (Thousand Acre Feet/Year) and Simulated Sites Reservoir Municipal and Industrial Deliveries Compared to Total Municipal and Industrial Deliveries break down Sites Reservoir deliveries for municipal and industrial purposes by San Francisco Bay, South Lahontan, and South Coast hydrologic regions. Additional information about deliveries is provided in Appendix 5B5, Water Supply. Chapter 5 provides a summary of the hydrologic modeling results, including diversions at Red Bluff (table titled Simulated Sacramento River Diversion at Red Bluff: No Project Alternative (cfs) and Change in cfs between No Project and Alternatives 1, 2, and 3 (cfs, Not Percent Change)), diversions at Hamilton City (table titled Simulated Hamilton City Diversion: No Project Alternative (cfs) and Change in cfs between No Project and Alternatives 1, 2, and 3 (cfs, Not Percent Change)), and releases at Sites Reservoir (table titled Simulated Sites Reservoir Release for All		

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				Alternatives (cfs)). The Sites Reservoir releases are broken down into releases to the Sacramento River (Chapter 5 table titled Simulated Sites Reservoir Release to Sacramento River (Release to Dunnigan Pipeline minus Release to Yolo Bypass) for All Alternatives (cfs)) and Yolo Bypass (Chapter 5 table titled Simulated Sites Reservoir Release to Yolo Bypass for All Alternatives (cfs)). Appendix 5B1, Project Operations, includes extensive CALSIM results for Sites Reservoir operations, including total Sites Reservoir diversions. Please refer to Master Response 3, Hydrology and Hydrologic Modeling, for a discussion of losses. Effects associated with these changes in hydrology and water supply are evaluated throughout the document.		
32000	78	33	Page 2-29 - The environmental document states that the Authority intends to apply for and obtain a water right permit from the State Water Board for operations of the Project and that actual operations will	Please see Master Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, regarding water rights. The Authority is seeking a water right from the State Water Resources	Reviewed by Client	N/A

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			depend upon the terms and conditions of the water right permit. As discussed above, in order to inform the State Water Board's decision making on appropriate operational constraints for the project, a reasonable range of operational constraints should be evaluated in the environmental document and the public should be given the opportunity to review and comment on those analyses before the environmental document is finalized. Specifically, a range of operations that include criteria that provide additional protection for fish and wildlife should be evaluated, including Sacramento River and Delta outflow bypass flows. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	Control Board. The analysis in the EIR/EIS is comprehensive and descriptive of the effects of the Project. Modifications to the Project during the permitting process, including the water rights process, could result in stricter diversion criteria and thus a lower level of effects than analyzed in the EIR/EIS. Please see Master Response 9, Alternatives Development, regarding the reasonable range of feasible alternatives.		
32000	78	34	Page 2-30 - The proposed Project states that "Sites Reservoir would be filled through the diversion of Sacramento River water that generally originates from unregulated tributaries to the Sacramento River	Please see Master Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, regarding water rights and water availability and Master Response 3, Hydrology and	Reviewed by Client	None

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			downstream from Keswick Dam. A limited volume of the diversions to Sites Reservoir would come from flood releases from Shasta Lake." The draft REIR/SEIS should be revised to include discussion as to how water targeted for diversion by the Project will generally be limited to water generated in the watershed below Keswick Dam. In the limited circumstances where flood releases from Shasta Lake of water originating above Keswick Dam will be relied upon, the draft REIR/SEIS should be revised to clearly define what constitutes "flood releases" and should explain how flood releases will be tracked to ensure the Project is diverting only "flood releases" to the extent it diverts water that originates above Keswick Dam. Additionally, even if a limited volume of water comes from flood releases, please note that the entire watershed from the lowest proposed point of diversion (Hamilton City) upstream should be considered when	Hydrologic Modeling, regarding the modeled representation of diversions. Diversions would take place when there is more water in the system than needed to meet all instream flow requirements, Delta objectives, and existing water-right obligations. The water diverted may come from either local runoff downstream of Shasta Lake or from Shasta Lake flood control releases. Flood control releases are part of Reclamation's flood operations for Shasta Lake. Other releases from Shasta Lake are made for specific purposes. The determination of when there is water available for diversion to Sites Reservoir storage is made within the CALSIM modeling. During real-time operations, Reclamation tracks whether releases from Shasta Lake are made for downstream purposes or for flood control purposes. Water released for downstream purposes would not be available for diversion to Sites Reservoir storage and is represented as such in the modeling.		

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			evaluating water availability, as well as downstream instream flow needs. [Commenting Water Board or Section within the State Water Board: PERMITTING AND SECTION]			
32000	78	35	Pages 2-31, 32 - The Bend Bridge Pulse Protection specifies criteria for qualified pulse flow events that would occur during October through May for the protection of migrating juvenile salmonids. For these criteria, the fish pulse protection is flow-based to simulate the effect of pulse flows on fish migration. The draft REIR/SEIS should identify fish pulse protection criteria and associated modeling rules to simulate implementation. If fish pulse protection criteria are based solely on real-time fish monitoring, flow-based modeling may overestimate actual river flows, which may be lower due to real-time decision making by water resource managers and advice from technical working groups. Pulse protection criteria should incorporate options for flow-based pulses to trigger	The pulse flow protection measure is not a simulation and is a measure to ensure pulses are protected so that fish may respond to the migration signals they provide. The pulse flow protection measure is also to ensure exposure of fish moving in response to these pulses to diversions is minimized. The pulse protection criteria have been modified to address the potential for missing the initial pulse and are no longer based solely on fish monitoring, as described in Chapter 2, Project Description and Alternatives, of the Final EIR/EIS. The criteria will consider predictions of storm-generated pulse events from the California Nevada River Forecasting Center. To address uncertainties in the forecasts, the criteria include monitoring of fish movement and real-time monitoring	Reviewed by Client	Already in EIR/EIS Chap.2: Poytress, W. R., J. J. Gruber, F. D. Carrillo, and S. D. Voss. 2014. Compendium Report of Red Bluff Diversion Dam Rotary Trap Juvenile Anadromous Fish Production Indices for Years 2002–2012. U.S. Fish and Wildlife Service. Red Bluff Fish and Wildlife Office, CA. 151 pp.

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			migration and pulse flows in response to real-time fish monitoring information. Identifying these criteria will allow modeling to more accurately reflect flow conditions resulting from pulse protection. The pulse flow event is defined as 3-day trailing averages at the Sacramento River at Bend Bridge and tributary flows. A 3-day "trailing" average has the potential to miss the initial "pulse", i.e., within the first three days of a precipitation event, of flow and fish migration. Alternative methods should be considered to protect the initial pulses of flow and migrating fish, such as using the California Nevada River Forecasting Center daily river forecast and/or fish monitoring data. The second bullet item describes a qualified pulse event as the 3-day trailing average flows at Bend Bridge (Sacramento River) flow greater than 8,000 cfs "and" tributary flow upstream exceeding 2,500 cfs. The inclusion of the conjunction "and" indicates that the pulse flow criteria for both the Sacramento River and tributaries must be met for a pulse	of flow at Bend Bridge. If a pulse is predicted, operators will be prepared to cease diversions if/when a signal is observed in real-time monitoring of gage data at Bend Bridge that verifies the prediction. Fish movement will also be monitored for a signal that the fish are moving and protections should be implemented. While the importance to the first storm event of the season for stimulating fish movement is generally accepted (e.g., Poytress et al. 2014), the causal mechanisms are not fully documented and the modeling suggested in the comment is not likely to be informative. The utility of fish movement as a trigger will be evaluated through the implementation of the adaptive management program and subject to modification to ensure the pulse protection criteria achieve the intended purpose.		

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			protection to be initiated. In order to protect migrating fish from both the mainstem Sacramento River and the tributaries, however, pulse flow criteria should be established separately for the mainstem Sacramento River and the tributaries. In addition, the draft REIR/SEIS should explicitly state whether the tributary flow of 2,500 cfs criteria represents the combined flows for the three tributaries (Cow, Cottonwood, and Battle creeks) or for an individual tributary. [Commenting Water Board or Section within the State Water Board: Bay-Delta]			
32000	78	36	Page 2-33 - The minimum bypass flow in the Sacramento River at RBPP is proposed to be 3,250 cfs. The draft REIR/SEIS states that when the Sacramento River flows exceed 3,250 cfs at RBPP that diversions would occur "until the full 2,100 cfs diversion could be achieved at flows of approximately 7,860 cfs." Diversion at this rate represents about 27% of	Although the minimum bypass flow is 3,250 cubic feet per second (cfs), there are many reasons higher flows may be protected from diversions to Sites Reservoir storage. As described in Chapter 2, Project Description and Alternatives, flows past Red Bluff may need to be higher than 3,250 cfs for pulse flow protection, flow requirements at Hamilton City, and	Reviewed by Client	None

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			Sacramento River flows. Further, Figure 2-36 shows that any, and all, flows above the minimum bypass flows (3,250 cfs) will be diverted until the diversion rate reaches 1,801 cfs at the Sacramento River flow of 5,050 cfs, which represents a diversion of approximately 36%. A full analysis should be provided of the potential impacts of diverting over a third of the flow of the Sacramento River, including an analysis for all months and water year types, as well as possible shorter term impacts on rearing and migration of salmon and other native fishes. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	Delta requirements. The Project would operate in a manner that would not adversely affect the ability of others to meet all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time that diversion occurs. Flow in the Sacramento River below the RBPP is expected to decrease by no more than 7% in Critical Dry Water Years and no more than 4% in Wet Water Years. Please see Chapter 5, Surface Water Resources, for the simulated diversions from the Sacramento River by month. The effects of diverting Sacramento River water to Sites Reservoir storage are evaluated throughout the RDEIR/SDEIS. Effects on aquatic biological resources are evaluated in Chapter 11, Aquatic Biological Resources. Evaluations related to rearing and migration of salmon and other native species are provided throughout Chapter 11 and its appendices. The most pertinent sections in Chapter 11 are the following subsections under the section Far-Field Effects: Flow-Related		

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				Physical Habitat Conditions, Floodplain Inundation and Access, and Migration Flow Survival. The evaluations in these sections encompass all months and locations for which a species and life stage may be present. Also, potential effects under all water year types are considered. Changes that occur over time-steps shorter than monthly intervals were generally not evaluated because, in most cases, effects of such short-term effects were expected to be adequately captured in the monthly time-step results. The models for most evaluations are based on CALSIM II outputs, which have a monthly time-step. For evaluation in which shorter-term impacts were considered potentially important, including redd dewatering, juvenile stranding, and water temperature, daily time-step modeling was used.		
32000	78	37	Page 2-33 - The proposed minimum bypass flow in the Sacramento River at Hamilton City Pumping Station is 4,000 cfs. The draft REIR/SEIS states that when the Sacramento River flows	The commenter's example of 31% of river flow diverted represents a maximum value of a single diversion criterion. Table 11-7 presents monthly average total diversions (GCID and	Reviewed by Client	N/A

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			exceed 4,000 cfs at Hamilton City Pumping Station that diversions would occur "until the full 1,800 cfs diversion could be achieved at flows of about 5,800 cfs." The diversion at this rate represents about 31% of Sacramento River flows. Further, Figure 2-27 shows that any, and all, flows higher than the minimum bypass flows (4,000 cfs) will be diverted until the diversion rate reaches 1,800 cfs. An analysis of the impact of these high rates of diversion compared to the Sacramento River flow at Hamilton City Pumping Station has not been provided in the draft REIR/SEIS. Table 11-7 only provides the percentages of diversion at Hamilton City Pumping Station up to 24% or 25%. (June of Wet years, May and June of Below Normal, Dry, and Critical years). This issue needs further clarification. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	Sites diversions) at Hamilton City by water year type. Flow in the Sacramento River downstream of Hamilton City is expected to decrease by no more than 6% in Critical Dry Water Years and no more than 3% in Wet Water Years. Please see Chapter 5, Surface Water Resources, for the simulated diversions from the Sacramento River by month. Several diversion criteria (in addition to minimum bypass flow in the Sacramento River at Hamilton City) must be met before Sites may divert. These additional diversion criteria are summarized in the table titled Summary of Project Diversion Criteria in Chapter 2, Project Description and Alternatives. The impacts of these combined diversion criteria and the changes in hydrology expected to occur as a result of the Project are analyzed throughout the report. See response to comment 78-36 for description of sections in Chapter 11 that contain evaluations of flow-related effects. Changes to river flow are detailed in Appendix 5B2, River Operations. This appendix includes		

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				tables, monthly pattern plots and exceedance plots of reservoir storage, reservoir elevation, and river flow for each alternative. In addition, please see Master Response 2, Alternatives Description and Baseline, regarding refinements to Project operations, which include an increase in the Wilkins Slough flow criteria as part of the Project. Please note, too, that the figure titled Available Diversion Capacity versus Streamflow at the GCID Hamilton City Pump Station in Chapter 2, Project Description and Alternatives, shows the available diversion capacity at the GCID Hamilton City Pump Station and is intended to show that the rate of diversion at the Hamilton City Pump Station would be controlled by and scaled to the fish screen design.		
32000	78	38	Page 2-33 - The Hamilton City Pump Station is located at an oxbow channel away from the mainstem Sacramento River, thus experiences different hydraulic conditions. Diversion criteria at Bay-Delta the Hamilton City Pump Station should	The impact analysis in Chapter 11, Aquatic Biological Resources, describes the physical conditions (i.e., the oxbow channel) with respect to the potential effects on entrainment or impingement. The diversion criteria take into account the physical	Reviewed by Client	Vogel, D. A. 2008. Biological Evaluations of the Fish Screens at the Glenn–Colusa Irrigation District's Sacramento River

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			take into account additional bypass flow needs for an oxbow channel needed to protect fish species. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	conditions of the river and the operation of the diversion. As described in the Chapter 2, Project Description and Alternatives, Sacramento River Diversion and Conveyance to Regulating Reservoirs section, the fish screens at both facilities meet National Marine Fisheries Service and California Department of Fish and Wildlife criteria. These criteria include sweeping velocity, among other criteria. Note that the Hamilton City intake was subject to study and redesign as part of an earlier Fish Screen Improvement Project, part of which was construction of a rock training wall to enhance sweeping velocity past the screen (Vogel 2008:1).		Pump Station: 2002–2007. Natural Resource Scientists, Inc., Red Bluff, CA
32000	78	39	Page 2-33 - The operational criteria should identify ramping rates for diversions appropriate to protect native fish species that may be residing near or migrating past diversion facilities.	The Authority will develop a ramping schedule in consultation with agencies during the Endangered Species Act process.	Reviewed by Client	N/A

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			[Commenting Water Board or Section within the State Water Board: Bay-Delta]			
32000	78	40	Page 2-36 - The environmental document states that the critical months for cold water pool management are August through September. Cold water pool protection is important year-round and most important from April through November to protect winter-run, springrun, and fall-run Chinook salmon. High releases throughout this period reduce cold water supplies available later in the year. Cold water is needed throughout this period until ambient temperatures cool in the fall. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	The text in Chapter 2, Project Description and Alternatives, identifies this time (August and September) as "critical" and then goes on to identify the late summer and fall (i.e., August through November). The impact analysis in Chapter 11, Aquatic Biological Resources, covers the entire year and evaluates temperature over all months of presence of each life stage of each fish species, including those required for cold-water pool management.	Reviewed by Client	N/A
32000	78	41	Page 2-36 - The Project is proposing the use of “exchanges” of Sites water in-lieu of releases from Central Valley Project (CVP) and State Water Project (SWP) reservoirs. The draft REIR/SEIS is unclear as to how these	Please see Master Response 2, Alternatives Description and Baseline, regarding coordination with CVP and SWP, exchanges, and tracking water. As noted in Master Response 2, exchanges of water may occur with	Reviewed by Client	N/A

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			"exchanges" are coordinated between the proposed project and the CVP and SWP operators, and it does not specify how water being "exchanged" will be adequately tracked to ensure that these "exchanges" are reported adequately under a valid basis of right. Additional information should be added to better describe the "exchanges" that would occur with entities downstream from Sites Reservoir. Specifically, coordinated operations between the Proposed Project, CVP, and SWP should be identified in order to accurately simulate changes to river flows and water supplies throughout the watershed. [Commenting Water Board or Section within the State Water Board: Permitting and Section]	the Central Valley Project (CVP) and State Water Project (SWP) reservoirs, including Shasta Lake and Lake Oroville. Exchanges would only be conducted when they would be neutral or net beneficial to CVP and SWP operations and not affect the ability of the CVP or SWP to meet applicable laws, regulations, BiOps and ITPs, contractual deliveries, and court orders in place at the time.		
32000	78	53	The draft REIR/SEIS indicates that Funks Creek and Stone Corral Creek will be managed for flood purposes only and no water from any local drainages that will be inundated by Sites Reservoir will be collected in	Gauging stream inputs would be potentially inaccurate as the watershed surrounding the reservoir is large, and there are many pathways where water flows into it that would not be gaugeable (e.g., seeps,	Reviewed by Client	None

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			Sites Reservoir for diversion and use. The draft REIR/SEIS should include discussion as to how water entering Sites Reservoir from the local drainages will be monitored, recorded, and timely released through Sites Reservoir. [Commenting Water Board or Section within the State Water Board: Permitting and Section]	overland flow, small seasonal washes). As described in Chapter 2, Project Description and Alternatives, flow would be timed and released into Stone Corral and Funks Creeks in coordination with field studies and the resource agencies.		
32000	78	57	Ch 5 - A detailed discussion about the accounting of water diverted and released is needed. Ideally this accounting would be publicly available in real-time. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	Diversions at Red Bluff and Hamilton City are already metered and reported. Metering of releases from Sites Reservoir is anticipated and would be reported.	Reviewed by Client	None
32000	79	3	The EPA is concerned about the approach to project operations in the SDEIS, which have not yet been finalized but are critical to understanding the environmental impacts of Sites Reservoir. Operations are modeled using historical hydrology data that may not reflect	The RDEIR/SDEIS and Final EIR/EIS use existing conditions in 2020 to define the environmental baseline. This 2020 environmental baseline reflects a range of historical hydrologic conditions (e.g., watershed runoff); current physical conditions (e.g., dams); current regulatory operating	Reviewed by Client	None

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			current and future conditions, and diversion criteria are based on regulatory requirements that are currently being revised.	conditions of the CVP and the SWP; the water rights orders and decisions and water quality criteria from the State Water Resources Control Board (State Water Board); current municipal, environmental, and agricultural water uses; current land uses; and relevant current laws, regulations, plans, and policies. Several adjustments were made in the CALSIM II modeling between the RDEIR/SDEIS and the Final EIR/EIS to allow use of the most up-to-date modeling procedures and be representative of real-time operations. Please see Master Response 2, Alternatives Description and Baseline, and Master Response 3, Hydrology and Hydrologic Modeling, for information regarding the level of detail provided in the alternatives description and the modeled representation of the alternatives. Please also see Master Response 3 regarding the use of historical hydrologic data and the representation of existing regulatory requirements.		

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32000	79	7	Appropriate testing procedures and plans for sediment management and beneficial reuse have not been specified.	Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, provides a description of BMP-11, Management of Dredged Material, which identifies procedures for testing, containment, reuse, and disposal. Depending on the chemical composition of the sediment, beneficial use may be appropriate. Material not suitable for reuse will be disposed of at a permitted landfill site. Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, also provides a description of other measures to manage sediment: BMP-12: Development and Implementation of Stormwater Pollution Prevention Plan(s) (SWPPP) and Obtainment of Coverage under Stormwater Construction General Permit (Stormwater and Non-stormwater) (Water Quality Order No. 200922-000957-DWQ/ and NPDES No. CAS000002, as amended by Order No. 2010-0014-DWQ, Order No.	Reviewed by Client	None

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				2012-0006-DWQ, and any amendments thereto), BMP-14: Obtainment of Permit Coverage and Compliance with Requirements of Central Valley Regional Water Quality Control Board Order R5-2022-0006 (NPDES No. CAG995002 for Limited Threat Discharges to Surface Water) and State Water Resource Control Board Order 2003-0003-003-DWQ (Statewide General Waste Discharge Requirements For Discharges To Land With A Low Threat To Water Quality)		
32000	79	13	Operations Modeling and Diversion Criteria As noted in our [EPA] 2018 comment letter on the Draft EIS, important components of the Sites Project remain undefined pending outcomes of state funding processes, such as the California Proposition 1 Water Storage Investment Program, including a final Operations Plan. While the impacts of constructing the reservoir are significant, a thorough	Please see response to comment 79-3 regarding the environmental baseline and the adjustments made in the CALSIM II modeling between the RDEIR/SDEIS and the Final EIR/EIS. The Authority and Reclamation considered multiple operational scenarios over the course of the Project development that were designed to meet the Project objectives, purpose, and need; enhance Project benefits; and reduce or avoid impacts. The features of	Reviewed by Client	None

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			description of project operations is critical to guiding the environmental analysis presented in the SDEIS, as well as guiding other federal and state permit decisions.	alternatives, including Sites Reservoir capacity, conveyance systems, and operational scenarios, were conceptually developed and refined over time to maximize the achievement of the objectives. Please see Master Response 9, Alternatives Development, regarding operational criteria development, and Master Response 2, Alternatives Description and Baseline, regarding the preparation of the Reservoir Operations Plan.		
32000	79	14	The analysis presented in the SDEIS is based on modeled project operations generated by the California Department of Water Resources CalSim-II model, which is modified to include the proposed Sites Reservoir and conveyance facilities operating under specified diversion criteria (p. 2-31). The EPA is concerned that the modeling approach presented in the SDEIS does not represent the best available information on project operations. CalSim-II only evaluates historical hydrology through 2003 and does not include the more recent	Please see response to comment 79-3 regarding the environmental baseline and the adjustments made in the CALSIM II modeling between the RDEIR/SDEIS and the Final EIR/EIS. The operational criteria identified in Chapter 2, Project Description and Alternatives, have been refined since the RDEIR/SDEIS. Please see Master Response 2, Alternatives Description and Baseline, regarding refinements to project operations, and Master Response 3, Hydrology and Hydrologic Modeling, regarding information regarding CALSIM II and	Reviewed by Client	None

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			severe 2012-2016 drought. CalSim-II was replaced by CalSim 3.0 in 2017, which includes historical data through 2015, improved supply and demand estimation, finer spatial resolution, and a daily rainfall-runoff model. These factors suggest that CalSim 3.0 may be more a more appropriate operations model, and better suited to assessing potential effects of climate change on the proposed Sites Reservoir. Additionally, the EPA has concerns that the operating criteria identified on p. 2-31 used to model diversions to Sites are based on state and federal requirements that are currently being revisited.	modeling modifications. When the Notice of Intent was published for the Draft EIR (2001) and Notice of Preparation was published for the RDEIR/SDEIS (2017), CALSIM II was the only systems operation model that was jointly supported by DWR and Reclamation. As such, at the time of analysis, CALSIM II was the best tool available to evaluate Sites operations in the CVP and SWP systems.		
32000	79	15	Recommendations: In the FEIS, fully describe the finalized operations of the proposed project and ensure that any operations not contemplated in the diversion criteria or CalSim-II results are reflected in the water supply, surface water quality, and aquatic biological resources chapters. Consider using CalSim 3.0 (or most current version) to evaluate	Please see response to comment 79-14 regarding the use of CALSIM II and the refinements to operation criteria since the RDEIR/SDEIS. Please see Master Response 3, Hydrology and Hydrologic Modeling, which describes the modifications to modeling for the Final EIR/EIS, including baseline, Shasta Lake Operations, changes in	Reviewed by Client	None

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			whether modeled operations are affected by a longer temporal scope and other improvements over CalSim-II. Conduct a sensitivity analysis to evaluate the sensitivity of operations model results to reasonably foreseeable climate change impacts such as reduced and altered timing of runoff and increased crop and vegetation evapotranspiration.	diversion criteria, periods of releases, and other factors.		
32000	79	16	Consider modifying one alternative to include more stringent diversion criteria to meet Delta outflow objectives and protect Delta beneficial uses. In the 2018 Framework for the Sacramento/Delta Update to the Bay-Delta Plan [Footnote 1: https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/sed/sac_delta_framework_070618%20.pdf], the State Water Resources Control Board states that existing requirements are insufficient to protect the Bay-Delta ecosystem and proposes new inflow-based Delta outflow objectives of 55% of	Please see Master Response 9, Alternatives Development, regarding the reasonable range of feasible alternatives. Many commenters suggested modifications to reservoir operations should be made regarding decreases in diversions and/or increases in bypass flows compared to those evaluated in the RDEIR/SDEIS. The Authority and Reclamation worked with wildlife agencies to develop more restrictive criteria; the result of which has been analyzed in the Final EIR/EIS. Please see Master Response 3, Hydrology and Hydrologic Modeling, for a discussion of modifications to modeling based	Reviewed by Client	None

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			unimpaired flow withing an adaptive range of 45-65%.	on changes to diversions and other operations.		
32000	79	17	Consider modifying the Bend Bridge Pulse Protection diversion criterion (p. 2-31) to initiate pulse protection proactively using leading indicators, such as river stage forecasts from the National Oceanic and Atmospheric Administration's California-Nevada River Forecast Center, rather than lagging indicators such as visual observation of fish migration.	Please see Master Response 2, Alternatives Description and Baseline, regarding refinements to operations, including the Bend Bridge pulse protection diversion. Refinements have been made to the Bend Bridge pulse protection criteria. They are no longer based on a 3-day trailing average of flows at Bend Bridge. Instead, they will be based on a predicted storm-related flow event from the National Oceanic and Atmospheric Administration's (NOAA) California Nevada River Forecast Center. The Authority will use all available information and data sources to inform operations.	Reviewed by Client	None
32000	79	25	Sediment Management As discussed in Chapter 6 (Surface Water Quality), a large proportion of total concentrations of metals and pesticides in Sacramento River water under high discharge conditions are associated with sediments.	No regular sediment removal would be required for Sites Reservoir, Funks Reservoir, TRR East, or TRR West due to large reservoir volumes and distance from Sacramento River intakes. GCID and TCCA perform regular maintenance on their canals, which could include sediment	Reviewed by Client	N/A

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			Construction of the reservoir, access roads, and recreational facilities is also likely to result in erosion and mobilization of sediments in runoff. Sediments from the Sites watershed and Sacramento River would likely accumulate in Sites Reservoir and conveyance facilities, requiring active management and removal of sediment deposits. Conversely, waterbodies such as the Colusa Basin Drain (CBD) used to convey Sites deliveries, would experience higher flows that may increase mobilization of contaminated sediments into sensitive waterbodies like the Yolo Bypass and lower Sacramento River. Movement and resuspension of contaminated sediments can result in longer term ecological impacts via several mechanisms: sediment bioaccumulation into the food web such as for methylmercury and some pesticides, and acute and chronic toxicity resulting from discrete flushes (e.g., fall flush of the CBD through the Yolo Bypass containing higher concentrations of heavy metals and pesticides would directly impact	removal. The Authority will coordinate with GCID and TCCA on canal operations, which would include agreements on canal use. Discharges from Sites Reservoir are unlikely to affect quality of sediment in CBD. As described in Chapter 6, Surface Water Quality, CBD already contains elevated concentrations of metals and pesticides, which are generally expected to be higher than concentrations released from Sites Reservoir. Furthermore, releases from Sites Reservoir are unlikely to contain substantial amounts of suspended sediment because releases would occur after sediment from the Sacramento River source water has had time to settle. Increases in CBD flow associated with Sites Reservoir releases are unlikely to cause substantial mobilization of CBD sediment. Sites Reservoir releases would occur only when flow in CBD is low, to accommodate additional water without flooding any fields. The Chapter 5, Surface Water Resources,		

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			sensitive fish and other aquatic species). The SDEIS proposes best management practices in Appendix 2D (Best Management Practices, Management Plans, and Technical Studies) to ameliorate potential impacts from the project on water and sediment quality. Appendix 2D.3.3 (Metals) also discusses measurement of water quality metal concentrations; it does not specifically call for testing of metal concentrations in sediment or sediment elutriates. Appendix 2D.5 (Sediment Monitoring Plan and Adaptive Management for Sediment Diverted from the Sacramento River), discusses the sediment monitoring program but does not include background screening for potential contaminants of concern (PCOCs) and toxicity. The Delta Long Term Management Strategy [Footnote 3: Delta LTMS is an official Regional Dredging Team established to implement the National Dredging Policy: http://water.epa.gov/type/oceb/ocean	CBD Hydraulic Modeling section describes that during August and September the CBD carries high flows resulting from rice field agricultural drainage and often does not have capacity to convey reservoir releases of 1,000 cubic feet per second (cfs), which indicates that the Sites Reservoir discharge would not cause flows to go above those that already occur during the irrigation runoff season. Furthermore, the CBD hydraulic modeling described in Chapter 5 indicates that, when Sites Reservoir water would be released, the Knights Landing Outfall gate structure would cause a backwater with a flat water surface elevation up to CBD mile 25, which would tend to cause settling of suspended sediment. As described in Chapter 5, the highest CBD flows, which are the ones likely to move the most sediment, occur during winter runoff events, when no releases would be made from Sites Reservoir. During these high runoff events, CBD water is routed through		

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			dumping/dredgedmaterial/aboutactionagenda.cfm] (LTMS) includes a goal of maximizing beneficial reuse of dredged material in the Delta. Appendix 2D includes dredged material testing and disposal commitments. BMP-11 (Management of Dredged Material) states "Prior to dredging, a chemical evaluation of Funks Reservoir water and sediment will be conducted to determine contaminant concentrations. This will help evaluate the suitability of dredged material for beneficial use and determine compliance with water quality standards."	the Knights Landing Ridge Cut and into the Yolo Bypass. Contaminants adhered to suspended sediment diverted from the Sacramento River for Sites Reservoir storage are not expected to differ greatly from contaminants adhered to sediment present in the Sacramento River. Contaminants in bed sediment can affect surface water quality, but often contaminants remain bound to sediment, and water adjacent to buried sediment has limited capacity to mix with surface water. As such, the evaluation in Chapter 6 and the reservoir management plan (which includes monitoring upstream and downstream of the reservoir) focus on evaluation of surface water quality, including metals bound to suspended sediment, as an indicator of potential biological effects. The final reservoir management plan would be prepared after meetings and consultation with regulatory agencies and other stakeholders. Also note that sediment excavated from Funks Reservoir as described in Chapter 2, Project		

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				Description and Alternatives, suitable for beneficial use would only be used for Project purposes and would not be used in the Delta.		
32000	79	26	Recommendation: In the FEIS, include additional design BMPs that hydrologically disconnect, on a permanent basis, the associated existing and proposed new roads from the immediate reservoir watershed to prevent sediment erosion runoff into the reservoir.	Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, includes BMP-15, Performance of Site-Specific Drainage Evaluations, Design, and Implementation, which provides numerous measures for control of erosion effects, including erosion effects related to roadways. In addition, implementation of the following BMPs would also reduce potential adverse effects on water quality resulting from erosion runoff into the reservoir: BMP-12, Development and Implementation of Stormwater Pollution Prevention Plan(s) (SWPPP) and Obtainment of Coverage under Stormwater Construction General Permit (Stormwater and Non-stormwater) (Water Quality Order No. 2022-0057-DWQ and NPDES No.	Reviewed by Client	N/A

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				CAS000002 and any amendments thereto) BMP-14, Obtainment of Permit Coverage and Compliance with Requirements of Central Valley Regional Water Quality Control Board Order R5-2022-0006 (NPDES No. CAG995002 for Limited Threat Discharges to Surface Water) and State Water Resource Control Board Order 2003-0003-003-DWQ (Statewide General Waste Discharge Requirements For Discharges To Land With A Low Threat To Water Quality) (BMP-14 would require compliance with the existing permits and any amendments thereto).		
32000	79	27	Recommendation: To inform the development of a sediment monitoring plan, include an initial screening of metal concentrations in sediments as part of the project's assessment of the presence and movement of metals. Sediment monitoring in the Sacramento River at the Red Bluff	Please see response to comment 79-25 regarding sediment management, sediment discharges from Sites Reservoir, sediment in CBD, focus on surface water quality monitoring, and the reservoir management plan.	Reviewed by Client	N/A

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			Pumping Plant and Hamilton City Pump Station intakes should include a minimum level of sediment quality characterization for conventional contaminants, known PCOCs (especially bioaccumulative compounds), and baseline suspended sediment and solid-phase bioassays. Consider additional sediment monitoring locations at critical waterbody junctions along the project route to establish background levels, such as where Stony Corral Creek outflows and at the furthest downstream point of the CBD before entering the Yolo Bypass.			
32000	79	28	Recommendation: In the FEIS, set specific dredged material beneficial reuse goals consistent with the LTMS, and commit to placing material in accessible sites to promote beneficial reuse of material. Commit to testing sediment quality according to standardized and acceptable protocols, i.e., the Inland Testing Manual,[Footnote 4: https://dots.el.erdc.dren.mil/guidance.	Please see response to comment 79-7 regarding BMP-11, Management of Dredged Material, and sediment testing and beneficial reuse. It is estimated that at least 80% of dredged material from Funks Reservoir would be suitable for reuse on the Project after dewatering. Beneficial uses of this material may include pipeline backfill, Zone 4 random fill (the stockpiles would be close to Golden Gate Dam), Sites	Reviewed by Client	None

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			html] and evaluated against relevant sediment criteria, such as those used by the SF Bay Dredged Material Management Office for upland beneficial reuse sites. Discuss how placement of dredged material on peat soils would affect subsidence and levee stability. Proactively identify potential sites for dredged material acceptance, including already established sites such as Antioch Dunes, Montezuma Wetland Restoration Project, Cullinan Ranch Restoration Project, and Sherman Island (owned by DWR).	Lodoga Road embankment fill, quarry restoration, or other general fill. There is no plan for use of dredged material on peat soils, near levees, for levee construction, or at any location in the Delta.		
32000	79	43	Recommendation: Revise the Reservoir Management Plan to improve HAB monitoring. We recommend monitoring occur more frequently than monthly near the start of the bloom season to identify blooms, implement management measures as quickly as possible and extend monitoring until the bloom ends, usually occurring upon reservoir	The following recommended revisions have been made in Appendix 2D, Best Management Practices, Management Plans, and Technical Studies of the Final EIR/EIS: Cell density OR cyanotoxin concentrations as trigger levels (not "and" as is proposed). Text referring to planktonic HABs posting guidance in the table titled California Cyanobacteria and Harmful	Reviewed by Client	N/A

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			turnover in late fall/early winter (not October as speculated on p. 2D-31). Base the assessment of the presence of cyanobacteria on: • cell density OR cyanotoxin concentrations as trigger levels (not “and” as is proposed). • both planktonic (water column) and benthic HABs; • other indicators of benthic HABs, beyond confirmation by microscopy, such as the observation of benthic HABs or detached mats, or the detection of cyanotoxins characteristic of benthic HABs (e.g., anatoxin-a). • California Cyanobacteria and Harmful Algal Bloom Network Trigger Levels,[Footnote 12: California Guidance for Cyanobacteria HABs in Recreational Inland Waters, https://mywaterquality.ca.gov/habs/resources/habs_response.html] as amended, or updated. The California Water Quality Monitoring Council	Algal Bloom Network Trigger Levels for Posting Planktonic Advisory Signs has been revised to indicate that amendments or updates to those trigger levels would be used to determine if/when planktonic advisory signs at Sites Reservoir are necessary based on reservoir water quality. The Reservoir Management Plan (RMP) includes monitoring for benthic HABs and coordination with the State Water Resources Control Board and the Central Valley Regional Water Quality Control Board for posting benthic HABs signage. As noted in Appendix 2D of the Final EIR/EIS, the RMP is, and will continue to be, revised throughout the operation of the reservoir. Revisions to the RMP will account for changes to operations, site-specific conditions, adaptive management actions and decisions, and future changes to regulations or methodologies for evaluating water quality constituents. Refinement of the RMP may occur during consultation with agencies.		

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			periodically updates the guidelines and trigger levels to reflect evolving understanding of HABs.			

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31000	66	3	I. The RDEIR/SDEIS Fails to Consider a Reasonable Range of Alternatives CEQA and NEPA require that the RDEIR/SDEIS consider a reasonable range of alternatives. Cal. Pub. Res. Code §§ 21002, 21061, 21100; tit. 14, Cal. Code Regs. ("CEQA Guidelines") § 15126.6; 42 U.S.C. § 4332; 40 C.F.R. §§ 1502.1, 1502.14, 1508.25(b). However, the RDEIR/SDEIS fails to consider a reasonable range of alternatives because it only considers a single operational alternative, whereas other operational alternatives could reduce or avoid adverse environmental impacts. The failure to include any operational alternatives that could reduce or avoid adverse environmental impacts violates NEPA and CEQA. See, e.g., Citizens of Goleta Valley v. Board of Supervisors, 52 Cal.3d 553, 566 (1990) (EIR must consider a reasonable range of alternatives that offer substantial environmental benefits and may feasibly be accomplished); Muckleshoot Indian Tribe v. U.S. Forest Serv., 177 F.3d 800, 813 (9th	The Authority and Reclamation considered multiple operational scenarios over the course of the Project development that were designed to meet the Project objectives, purpose, and need; enhance Project benefits; and reduce or avoid impacts. The features of alternatives, including Sites Reservoir capacity, conveyance systems, and operational scenarios, were conceptually developed and refined over time to maximize the achievement of the objectives. This process is described in Appendix 2A, Alternatives Screening and Evaluation, and Appendix 2B, Additional Alternatives Screening and Evaluation. Please see Master Response 9, Alternatives Development, regarding operational criteria development.	Reviewed by Client	None

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			Cir. 1999) (NEPA analysis failed to consider reasonable range of alternatives where it "considered only a no action alternative along with two virtually identical alternatives"); Natural Res. Def. Council v. U.S. Forest Serv., 421 F.3d 797, 813 (9th Cir. 2005).			
31000	66	4	State agencies and members of the public, including many signatories to this letter, have repeatedly emphasized the need to analyze more than one operational alternative, first in scoping comments prior to release of the DEIR/DEIS, and subsequently in comments that the DEIR/DEIS failed to consider a reasonable range of alternatives because it only included a single operational alternative. For instance, the California Department of Fish and Wildlife ("CDFW") previously wrote that, ...the DEIR/DEIS does not include potentially feasible alternatives that would avoid or substantially lessen the Project's significant environmental impacts. CDFW continues to	This comment references the 2017 Draft EIR/EIS. The RDEIR/SDEIS evaluates a different operational scenario than previously described and evaluated in the 2017 Draft EIR/EIS. Please see response to comment 66-3 regarding the multiple operational scenarios considered by the Authority and Reclamation over the course of the Project. Please see Master Response 9, Alternatives Development, regarding operational criteria development.	Reviewed by Client	None

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			recommend that the DEIR/DEIS should include a more robust range of operational alternatives, as discussed in its comments to the NOP, provided on March 21, 2017. Of the five alternatives in the DEIR/DEIS, many of them are similar with respect to water operations (e.g. diversions, bypass criteria, deliveries are the same across alternatives.) CDFW recommends that alternatives should be split into two or more alternatives that encompass the entire range of possible water operations scenarios, including an alternative that minimizes operational impacts through more restrictive bypass flows and diversion criteria. Letter from CDFW to the Sites Project Authority dated January 12, 2018 ("CDFW Comment Letter"). Despite the prior comments on the need to analyze multiple operational alternatives, the RDEIR/SDEIS analyzes only a single set of operational criteria that is common to all the alternatives. See, e.g., RDEIR/SDEIS at ES-10, 2-6, 2-8, 2-28 to 2-33. Yet as discussed in			

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			more detail below, the proposed bypass flows and other operational criteria result in significant environmental impacts that are not disclosed in the RDEIR/SDEIS.			
31000	66	5	State agencies and public commentors previously highlighted the need to analyze more than one operational alternative because the DEIR/DEIS failed to disclose significant environmental impacts, which could be mitigated through alternative operational criteria such as increased bypass flows. See, e.g., CDFW Comment Letter at 2 (noting that the DEIR/DEIS failed to adequately analyze and disclose environmental impacts and stating that "CDFW does not consider proposed bypass flows identified in the DEIR/DEIS to sufficiently minimize or offset these impacts."). The RDEIR/SDEIS now admits that the operational criteria that were included in the DEIR/DEIS, and that are modeled in the RDEIR/SDEIS, would result in significant environmental impacts requiring mitigation. See RDEIR/SDEIS	The RDEIR/SDEIS evaluates different alternatives as compared to those evaluated in the 2017 Draft EIR/EIS. Please see response to comment 66-3 regarding the multiple operational scenarios considered by the Authority and Reclamation over the course of the Project. Please see Master Response 9, Alternatives Development, regarding operational criteria development. The commenter appears to be referring to Mitigation Measure FISH-2.1: Wilkins Slough Flow Protection Criteria, in Chapter 11 of the RDEIR/SDEIS, and discussed on page ES-26 of the RDEIR/SDEIS Executive Summary. In the Final EIR/EIS, the refinements include modification to the minimum bypass Wilkins Slough flow criteria, which now requires that diversions to Sites Reservoir may not	Reviewed by Client	N/A

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			at ES-26, 11-131. As discussed infra, even with the proposed mitigation measure (Wilkins Slough Flow Protection Criteria), all of the alternatives result in significant environmental impacts to several fish species. The RDEIR/SDEIS does not include the full range of bypass flows and other operational criteria proposed by CDFW or other commentators to mitigate these significant impacts as alternatives in the RDEIR/SDEIS.	cause flow at Wilkins Slough to decline below 10,700 cfs from October 1 to June. Also,the minimum flow requirements have been increased to 10,700 cfs for October 1 through June 14 and 5,000 cfs for September (there will be no diversion from June 15 to August 31 because the Sacramento River is fully appropriated). This incorporation of higher flow requirements into the Project description eliminates the need for Mitigation Measure FISH-2.1, and new modeling results indicate the corresponding impacts for Impacts FISH-2, FISH-3, FISH-4, and FISH-5 remain less than significant. Please refer to Master Response 2, Alternatives Description and Baseline, regarding refinements to Project operations, such as refinements to the Wilkins Slough bypass criteria. Please refer to Master Response 5, Aquatic Biological Resources, for a description of the development of mitigation measures regarding flow		

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				and the use of best available science and data to evaluate bypass flows. Please see Master Response 9, Alternatives Development, regarding the reasonable range of feasible alternatives and the operational criteria considered and evaluated over the years.		
31000	66	6	Similarly, as discussed infra, the State Water Resources Control Board ("SWRCB") began the regulatory process to update the Bay-Delta Water Quality Control Plan in 2008, issued a Framework in 2018 for completing the update of the Water Quality Control Plan, [Footnote 1: See State Water Resources Control Board, July 2018 Framework for the Sacramento/Delta Update to the Bay-Delta Plan, available online at: https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/sed/sac_delta_framework_070618%20.pdf. This document is incorporated by reference.] and has announced that it anticipates	Chapter 31, Cumulative Impacts, qualitatively considers amendments to the Bay-Delta Water Quality Control Plan and potential cumulative effects, as the amendments have not been approved by the State Water Resources Control Board. Please see Master Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, regarding the Project water rights and the consideration of the Water Quality Control Plan updates related to the water rights process. Please see Master Response 2, Alternatives Description and Baseline, which describes the baseline, and Master Response 9, Alternatives	Reviewed by Client	N/A

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			adopting new water quality standards for the Sacramento River and Delta as part of the updated Water Quality Control Plan in 2023. [Footnote 2: See State Water Resources Control Board, Upcoming Actions to Update and Implement the Bay-Delta Plan, December 8, 2021, available online at: https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/20211207-slides-for-12-08-bay-delta-plan-inform-item_accessible.pdf. This document is incorporated by reference.] The RDEIR/SDEIS fails to provide a reasoned explanation why it does not consider alternative operational criteria that would be consistent with the 2018 Framework for completing the update of the Bay-Delta Water Quality Control Plan, particularly since the final CEQA/NEPA document is intended to be used by the SWRCB in consideration of water rights permits. The RDEIR/SDEIS violates CEQA and NEPA because it fails to consider more than one operational alternative that could reduce or avoid significant	Development, describes the reasonable range of feasible alternatives and the operational criteria considered and evaluated over the years, including bypass flows. Please see response to comment 66-3 regarding the multiple operational scenarios considered by the Authority and Reclamation over the course of the Project.		

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			environmental impacts of the proposed project and alternatives.			
31000	72	3	I. The RDEIR/SDEIS Fails to Consider A Reasonable Range of Project Alternatives. The California Environmental Quality Act ("CEQA") and the National Environmental Policy Act ("NEPA") require that the RDEIR/SDEIS consider a reasonable range of alternatives. [Footnote 1: Cal. Pub. Res. Code §§ 21002, 21061, 21100; tit. 14, Cal. Code Regs. ("CEQA Guidelines") § 15126.6; 42 U.S.C. § 4332; 40 C.F.R. §§ 1502.1, 1502.14, 1508.25(b).] However, the RDEIR/SDEIS fails to consider a reasonable range of alternatives because it only considers a single operational alternative, whereas other operational alternatives could reduce or avoid adverse environmental impacts. The failure to include any operational alternatives that could reduce or avoid adverse environmental impacts violates NEPA and CEQA. See, e.g., Citizens of Goleta Valley v. Board of Supervisors, 52	The Authority and Reclamation considered multiple operational scenarios over the course of the Project development that were designed to meet the Project objectives, purpose, and need; enhance Project benefits; and reduce or avoid impacts. The features of alternatives, including Sites Reservoir capacity, conveyance systems, and operational scenarios, were conceptually developed and refined over time to maximize the achievement of the objectives. This process is described in Appendix 2A, Alternatives Screening and Evaluation, and Appendix 2B, Additional Alternatives Screening and Evaluation. Please see Master Response 9, Alternatives Development, regarding operational criteria development.	Reviewed by Client	N/A

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			Cal.3d 553, 566 (1990) (EIR must consider a reasonable range of alternatives that offer substantial environmental benefits and may feasibly be accomplished); Muckleshoot Indian Tribe v. U.S. Forest Serv., 177 F.3d 800, 813 (9th Cir. 1999) (NEPA analysis failed to consider reasonable range of alternatives where it "considered only a no action alternative along with two virtually identical alternatives"); Natural Res. Def. Council v. U.S. Forest Serv., 421 F.3d 797, 813 (9th Cir. 2005).			
31000	72	4	The RDEIR/SDEIS should have evaluated reasonable and feasible alternatives that result in comparatively reduced water diversions from the Sacramento River (particularly during all but wet water year types and during periods of moderate and low flows), because they would result in reduced adverse effects on native fish and wildlife in the Sacramento River and Bay-Delta estuary. The best available science shows that increased flows in the	Please refer to Master Response 5, Aquatic Biological Resources, regarding the use of best available science and data to evaluate impacts associated with river flow on native fish. Please refer to Master Response 6, Vegetation, Wetland, and Wildlife Resources, regarding the adequacy of the terrestrial biological resources impact analysis and mitigation measures. Please refer to Master Response 9, Alternatives Development, regarding operational	Reviewed by Client	N/A

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			Sacramento River during the winter-spring period and increased Delta outflows are necessary to protect and restore native fish and wildlife populations and their habitats and comply with state and federal law.	criteria refinements and increased bypass flows and identified adverse effects on fish and wildlife disclosed in the EIR/EIS that would not be substantially lessened as a result of reduced water diversions.		
31000	72	5	Several commenters, including Pacific Coast Federation of Fishermen's Associations (PCFFA) et al. and the California Department of Fish and Wildlife ("CDFW"), submitted NEPA/CEQA scoping comments in January of 2018 specifically stating that the earlier NEPA/CEQA process was seriously flawed and must analyze more than one operational alternative in order to identify alternatives that would minimize or avoid adverse environmental impacts of the project. The RDEIR/SDEIS should evaluate one or more operational scenarios that do not result in substantial reductions in Delta outflow during the winter and spring months, as well as one or more operational alternatives that result in increased Delta outflow during these months. CDFW's scoping comments directed that several operational	The Authority and Reclamation considered multiple operational scenarios over the course of the Project development that were designed to meet the Project objectives, purpose, and need; enhance Project benefits; and reduce or avoid impacts. The features of alternatives, including Sites Reservoir capacity, conveyance systems, and operational scenarios, were conceptually developed and refined over time to maximize the achievement of the objectives. This process is described in Appendix 2A, Alternatives Screening and Evaluation, and Appendix 2B, Additional Alternatives Screening and Evaluation. Please see Master Response 9, Alternatives Development, regarding operational criteria development.	Reviewed by Client	N/A

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			scenarios should be analyzed, including one that was consistent with the water operational requirements being proposed for the California WaterFix project and another that would fully minimize operational impacts. Moreover, in 2016 and 2017, CDFW submitted potential operational criteria to the Project proponents that included Sacramento River bypass flows and Delta outflow requirements that were designed to reduce adverse environmental impacts of the project on salmon, sturgeon, longfin smelt, Delta smelt, and other native fish species. However, none of these proposed operational criteria were evaluated in the RDEIR/SDEIS. Instead, the RDEIR/SDEIS only analyzes what is clearly in effect just a single operational scenario in the alternatives that are analyzed. [Footnote 2: See, e.g., RDEIR/SDEIS at 3-102, 105-107.] As discussed on the pages that follow, that operational scenario results in significant adverse environmental impacts and could not	The RDEIR/SDEIS evaluates different alternatives as compared to those evaluated in the 2017 Draft EIR/EIS. Please refer to Master Response 2, Alternatives Description and Baseline, regarding refinements to Project operations. Please see Master Response 9, Alternatives Development, regarding the reasonable range of feasible alternatives and the operational criteria considered and evaluated over the years, including bypass flows. Please also refer to Master Response 9 regarding identified adverse effects on fish and wildlife disclosed in the EIR/EIS that would not be substantially lessened as a result of reduced water diversions. Chapter 31, Cumulative Impacts, qualitatively considers cumulative impacts associated with the construction and operation of the Delta Conveyance Project (a project that is similar to but different than the commenter-referenced-California WaterFix that would result in similar cumulative impact results).		

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			lawfully be permitted by state and federal agencies. As a result, the RDEIR/SDEIS violates NEPA and CEQA because it fails to consider a reasonable range of alternatives.			
31000	72	9	Key documents that make up the administrative record for this Project fail to consider the same project alternatives. The RDEIR/SDEIS considers four alternatives, including No Action, Alternative ("Alt") 1 (1.5 MAF reservoir), Alt. 2 (1.3 MAF reservoir), and Alt. 3 (1.3 MAF reservoir (with changes in partner investment compared to Alt. 2). The Final Feasibility Report prepared by the USBR in 2020 examines five alternatives, including, No Action, Alt. A (1.3 MAF reservoir with Delevan pipeline for intake and release), Alt. B (1.8 MAF reservoir with Delevan pipeline for release only), Alt. C (1.8 MAF reservoir with Delevan pipeline for intake and release), and Alt. D (1.8 MAF reservoir with Delevan pipeline for intake and release, for "Local Considerations"). [Footnote 8: North-of-the-Delta Offstream Storage	As described in Master Response 9, Alternatives Development, the features of alternatives, including Sites Reservoir capacity, conveyance systems, and operational scenarios, were conceptually developed and refined over time to maximize the achievement of the objectives. This process is described in Appendix 2A, Alternatives Screening and Evaluation, and Appendix 2B, Additional Alternatives Screening and Evaluation. Reclamation's federal feasibility process, the California Water Commission process, and the NEPA/CEQA processes are all separate though related. The processes move forward on different timelines and meet differing requirements of multiple entities. While Reclamation has issued a feasibility report with different alternatives when compared to those evaluated in the	Reviewed by Client	NA

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			Investigation Final Feasibility Report, USBR, December 2020.] The RDEIR/SDEIS considers 1.3 MAF and 1.5 MAF reservoir alternatives with no Delevan pipeline, while the feasibility study considers one 1.3 MAF reservoir alternative and three 1.8 MAF reservoirs, all with the Delevan pipeline. These two important documents fail to correlate. The feasibility report monetizes project benefits to determine the feasibility of the Project. And yet the alternatives reviewed in the report are not the same alternatives analyzed in the RDEIR/SDEIS. The documents' failure to consider the same alternatives makes it very difficult for the Coalition, let alone the general public, to understand the decision-making process for this Project.	RDEIR/SDEIS, Reclamation is able to do so consistent with the federal feasibility process. Reclamation will align the feasibility report with the EIS through the preparation of an addendum that evaluates the feasibility of a 1.5 MAF reservoir without the Delevan Pipeline. This addendum would be done prior to selection of a preferred alternative and addressed in the Record of Decision, if approved. Please see Master Response 2, Alternatives Description and Baseline, regarding the refinements to Project facilities and operations, and the timing of the CEQA and NEPA analyses and agency decisions.		
31000	78	7	Range of Alternatives The State Water Board acknowledges the significant benefit of a major new water supply project such as Sites Reservoir to enhance California's	The Authority and Reclamation considered multiple operational scenarios over the course of the Project development that were designed to meet the Project objectives, purpose, and need;	Reviewed by Client	N/A

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			water resiliency, where such projects can be designed and operated in a manner that does not exacerbate existing pressures on the Delta ecosystem. In order to provide for the timely processing of the Sites Project water right application and associated approvals, the draft REIR/SEIS should include an evaluation of a reasonable range of operational alternatives, specifically including operating constraints that would result in concentrating diversions during high flow periods when there is excess flow in the system and avoiding proposed diversions during lower flow periods when those flows provide for protection of water quality, fish, and wildlife. As described in the draft REIR/SEIS, the mitigation actions may not be sufficient to reduce operational impacts of the proposed project to less than significant for salmonids, delta smelt, and longfin smelt. Current science indicates that average Delta outflows as high as 42,800 cfs from January through June provide benefits to longfin smelt and other Delta species. Evaluating a	enhance Project benefits; and reduce or avoid impacts. The features of alternatives, including Sites Reservoir capacity, conveyance systems, and operational scenarios, were conceptually developed and refined over time to maximize the achievement of the objectives. This process is described in Appendix 2A, Alternatives Screening and Evaluation, and Appendix 2B, Additional Alternatives Screening and Evaluation. Please see Master Response 9, Alternatives Development, regarding operational criteria development. Please see Master Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, regarding the water rights process, and the State Water Resources Control Board's Scientific Basis Report and *July 2018 Framework for the Sacramento/Delta Update to the Bay-Delta Plan*. Please see Master Response 2, Alternatives Description and Baseline, regarding merits of the Project and alternatives, as well as refinements to Project operations.		

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			range of bypass flows needed to achieve outflows up to this level and other levels that current science identified in the State Water Board's 2017 Scientific Basis Report indicates is protective of Delta species is important to understand the benefits and tradeoffs of this Project. The alternatives evaluated in the draft REIR/SEIS all have very similar operational constraints, with relatively minimal bypass flow criteria. Additional operational alternatives should be evaluated in order to provide a reasonable range of alternatives to inform the public and other decision makers of the benefits and impacts of the Project.	Please see Master Response 9, Alternatives Development, regarding identified adverse effects on fish and wildlife disclosed in the EIR/EIS that would not be substantially lessened as a result of changed operational criteria. In the Final EIR/EIS, the refinements include modification to the minimum bypass Wilkins Slough flow criteria, which now requires that diversions to Sites Reservoir may not cause flow at Wilkins Slough to decline below 10,700 cfs from October 1 to June. Also, the minimum flow requirements have been increased to 10,700 cfs for October 1 through June 14 and 5,000 cfs for September (there will be no diversion from June 15 to August 31 because the Sacramento River is fully appropriated). This incorporation of higher flow requirements into the Project description eliminates the need for Mitigation Measure FISH-2.1, and new modeling results indicate the corresponding impacts for Impacts FISH-2, FISH-3, FISH-4, and FISH-5 remain less than significant. Please		

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				refer to Master Response 2, Alternatives Description and Baseline, regarding refinements to Project operations, such as refinements to the Wilkins Slough bypass criteria. Please see Master Response 5, Aquatic Biological Resources, for a discussion related to longfin smelt and Mitigation Measure FISH-9.1. Master Response 9 also discusses the reasonable range of feasible alternatives and the operational criteria considered and evaluated over the years, including refinements to Project operations such as refinements to the Wilkins Slough criteria.		
?31000	78	27	Page ES-7 - The alternatives evaluated in the draft REIR/SEIS appear to be minor variations of one alternative and do not appear to provide a reasonable range of alternatives pursuant to CEQA requirements or meet the State Water Board's informational needs.	Please see response to comment 78-7 regarding the multiple operational scenarios considered by the Authority and Reclamation over the course of the Project. Please see Master Response 9, Alternatives Development, regarding operational criteria development and the reasonable range of feasible alternatives pursuant to CEQA requirements. Please also see Master	Reviewed by Client	None

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			[Commenting Water Board or Section within the State Water Board: Bay-Delta]	Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, regarding the interaction between the EIR/EIS and the separate State Water Resources Control Board water rights process.		
31000	78	28	Page ES-7: It does not appear that the action alternatives incorporate reasonably foreseeable changes to regulatory instream flow requirements as described in the Board's scientific basis report in support of potential update and implementation of the Bay-Delta Plan. Potential changes include new and modified Sacramento River inflow, Delta outflow, and cold water habitat objectives, as well as other requirements to ensure the reasonable protection of fish and wildlife beneficial uses. The Board released a final report identifying the science upon which changes to the Bay-Delta Plan will be based. The draft REIR/REIS should analyze a range of bypass flows, diversion rates and amounts, that are consistent with the scientific basis report regarding	This EIR/EIS identifies a reasonable range of alternatives for analysis under CEQA and NEPA. As described in Chapter 2, *Project Description and Alternatives*, Appendix 2A, *Alternatives Screening and Evaluation*, and Appendix 2B, *Additional Alternatives Screening and Evaluation*, an extensive screening process was conducted through multiple water resource planning efforts and considered a wide variety of factors, including potentially significant environmental effects, to develop the alternatives evaluated in the RDEIR/SDEIS. Please refer to Master Response 9, Alternatives Development, regarding the reasonable range of feasible alternatives and consideration of bypass flows. Please also refer to Master Response 5, Aquatic Biological Resources, for a discussion of the use	Reviewed by Client	N/A

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			potential modification to flow requirements and cold water habitat objectives for the protection of fish and wildlife. This information is needed to evaluate water availability for permitting purposes and potential to meet state approved water quality objectives and standards for certification purposes. https://www.waterboards.ca.gov/water_issues/programs/peer_review/docs/scientific_basis_phase_ii/201710_bdphaseII_sciencereport.pdf. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	of best available science and data to evaluate bypass flows. Master Response 5 also identifies and describes the benefits to aquatic biological resources, including the benefits to the cold-water pool. Chapter 31, Cumulative Impacts, qualitatively describes the potential amendments to the Bay-Delta Water Quality Control Plan. Please also see Master Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, regarding the interaction between the EIR/EIS and the separate State Water Resources Control Board water rights process. Please also see Master Response 9, regarding the Bay-Delta Water Quality Control Plan updates.		
31000	81	8	Pages 2-56, 60 The document states that, “Alternative 1 is the Authority’s preferred alternative” but also that, “…two options have been identified under this alternative.” Which sub-alternative ("1A" or "1B") is preferred? Additionally, the lack of clarity	Alternative 1 includes a range of potential investment by Reclamation. For the purposes of modeling, two options have been identified under this alternative. Alternative 1A includes no Reclamation investment and Alternative 1B includes up to 7% Reclamation investment, which equates to about 91,000 AF of storage	Reviewed by Client	None

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			regarding CVP/SWP operation agreements with Sites Reservoir creates uncertainty in the modeling assumptions and the effects determinations. The preferred alternatives (including the specific sub-alternative) and the responsible federal agency for operations and ESA consultation should be identified as soon as possible.	allocation dedicated to Reclamation in Sites Reservoir. The modeling for no Reclamation investment (Alternative 1A) and up to 7% Reclamation investment (Alternative 1B) provides the range of potential impacts of Alternative 1. Alternative 3 has been identified as the Authority's preferred alternative in the Final EIR/EIS. Please see Master Response 2, Alternatives Description and Baseline, regarding the preferred alternative.		
31200	68	7	The documents fail to include and evaluate the one alternative that might be reasonable albeit costly. An alternative with a new single-purpose diversion/return canal, pumps, generators and fish screens designed to manage diversion of at least 20,000 cfs is what is needed to yield the volumes of deliverable water matched to a 1 MAF+ Sites Reservoir. The water resources infrequently available for new diversion require a big-gulp	The Authority and Reclamation previously investigated a dedicated intake on the Sacramento River (i.e., alternatives evaluated in the 2017 Draft EIR/EIS, Appendix 2A, Appendix 2B). The Authority and Reclamation determined through engineering and modeling that existing infrastructure (e.g., RBPP and GCID existing fish-screened diversion facilities and the respective existing canals, as well as Colusa Basin Drain) would meet the needs of the Project and reduce environmental effects (Appendix 2B).	Reviewed by Client	None

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			capability - at least 5 times greater than what is proposed.	Please see Master Response 9, Alternatives Development, regarding modifications to operational scenarios, the 2017 Draft EIR/EIS, and the 2019 Value Planning Process. A new diversion on the Sacramento River of at least 20,000 cubic feet per second (cfs), as suggested by the commenter, would be approximately 10 times the diversion capacity of the existing RBPP fish-screened diversion (as noted in the Chapter 2, Project Description and Alternatives, RBPP section, two additional 250 cfs, 600 horsepower vertical axial-flow pumps are to be installed into two existing concrete pump bays at the RBPP; the addition of these two pumps would increase the capacity from 2,000 to 2,500 cfs) or the GCID Main Canal at Hamilton City fish-screened diversion (3,000 cfs, Chapter 2, GCID Main Canal Diversion and System Upgrades section). The new diversion on the Sacramento River described by the commenter would require much larger facilities and footprints than are currently required for the Project (e.g.,		

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				a large new canal to convey water as proposed by the commenter and large new diversion structure on the Sacramento River). These larger facilities are not needed to operate the Sites Reservoir, as the Authority and Reclamation have shown they can use existing infrastructure to convey water, and larger facilities would not likely reduce potentially significant impacts disclosed in the EIR/EIS. As discussed in Chapter 2, CEQA Requirements, "An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the alternatives." Thus, a new single-purpose diversion/return canal, pumps, generators, and fish screens designed to manage a diversion of at least 20,000 cfs is not considered within the reasonable range of alternatives.		

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31200	72	6	In the prior round of NEPA documents, on January 15, 2018, PCFFA et al. and others submitted NEPA/CEQA scoping comments stating that the Project proponents must consider one or more alternatives that did not include a surface water reservoir and instead relied on groundwater storage, conjunctive use, and/or reoperation of reservoirs to improve water supplies and ecosystem protection. Such an alternative would likely cost dramatically less money to construct and operate, and could result in lower environmental impacts, making it a potentially feasible and reasonable alternative. However, the current RDEIR/SDEIS failed to consider such an alternative, in violation of NEPA and CEQA.	Please see Master Response 9, Alternatives Development, regarding the consideration of alternatives and the CALFED alternatives screening process.	Reviewed by Client	None
31200	77	10	ATTMT 1. Chapter or Appendix - Section: Chapter 2 - Project Description and Alternatives. Page(s): General Comment. Comment and Recommendations: Alternative 1, 2, and 3 in the RDEIR/SDEIS all have the same operational diversion criteria.	Please refer to Master Response 5, Aquatic Biological Resources, for a description of the development of mitigation measures regarding flow and the use of best available science and data to evaluate bypass flows. Master Response 5 also discusses the	Reviewed by Client	N/A

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			CDFW finds the Proposed Project, as currently described, and the mitigation measures currently proposed in the RDEIR/SDEIS are not sufficient to reduce impacts to less than significant for salmonids, Delta Smelt, and Longfin smelt. CDFW recommends the FEIR/FEIS include an Alternative with operational criteria that both meets Proposed Project objectives and includes bypass flow criteria at Wilkins Slough of at least 10,712 cfs across the entire salmonid migration period of October to June, in addition to the other currently proposed operational diversion criteria, to minimize impacts to aquatic resources.	impact analysis for longfin smelt and how implementation of Mitigation Measure FISH-9.1 would reduce the level of impact on the species to less than significant. Please refer to Chapter 11, Aquatic Biological Resources, regarding how the implementation of Mitigation Measures FISH-8.1 and WQ-2.2 would reduce operations impacts on delta smelt to a less-than-significant level. Please see Master Response 2, Alternatives Description and Baseline, regarding operational refinements and Master Response 9, Alternatives Development, regarding the reasonable range of feasible alternatives and the Project refinement of the Wilkins Slough criteria, as well as identified adverse effects on fish and wildlife disclosed in the EIR/EIS that would not be substantially lessened as a result of changed operational criteria.		
31200	78	50	Chapter 5: Surface Water Resources, Page 5-49 - Chapter 5 should include an analysis of the impact of Proposed Project alternatives (including an	Please see Master Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, regarding Water Quality	Reviewed by Client	Sites Project Authority (Authority). 2022. Sites Project

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			alternative that sufficiently anticipates updates to flow-dependent water quality objectives in the Bay-Delta watershed) on the Sacramento River and Delta hydrograph. This analysis should include an evaluation of monthly changes in the volume of river flows for all project alternatives. Results should be compared to the no action alternative and to unimpaired flows to estimate the contribution of Proposed Project operations to changes in the hydrograph. Results should be presented to show the full range of simulated changes to monthly river flows with in the CalSim II spatial domain and for the 82-year simulation period. This hydrologic analysis should then be used to support the aquatic biology analyses in Chapter 11. Substantial modification to the unimpaired hydrograph is a primary driver of reductions of native fish populations that should be evaluated in the environmental document from a project specific and cumulative perspective.	Control Plan updates as they relate to the Project. Please also see Master Response 1 regarding information about the water rights application and water rights process. The water availability analysis included in the Authority's water rights application to the State Water Resources Control Board includes a comparison of unimpaired flow at three points of interest and the aggregated face value of water rights in the Sacramento River watershed (Authority 2022). Please also see response to comment 78-51 regarding content contained in Chapter 5, Surface Water Resources, including changes in hydrology. The unimpaired hydrograph is not the current existing conditions and does represent future reasonably foreseeable conditions under the No Project Alternative. The hydrograph as it exists today and over the 82-year CALSIM II simulation period is an altered condition, and the potential Project impacts are measured against the altered conditions present in the		Authority Application to Appropriate Water and Petition for Partial Assignment and Release from Priority. May 10.

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			[Commenting Water Board or Section within the State Water Board: Bay-Delta]	No Project Alternative to analyze the impacts of the Project. Chapter 11, Aquatic Biological Resources, and particularly Appendix 11A, Aquatic Species Life Histories, identifies a number of stressors that have contributed to the reductions in native fish populations, including habitat modification and streamflow modification. This information is used to describe the context of the No Project Alternative. Please see Master Response 9, Alternatives Development, regarding the Bay-Delta Water Quality Control Plan updates, and Master Response 2, Alternatives Description and Baseline, regarding baseline conditions. Please also see Chapter 31, Cumulative Impacts, regarding requirements and methods.		

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40000	66	10	The RDEIR/SDEIS uses different modeling assumptions for project operations and alternatives in other chapters, which also do not reflect the proposed project or alternatives. For instance, in the analysis of the effects of diversions on salmon survival in the Sacramento River (Appendix 11P), the RDEIR/SDEIS states that it uses different modeling assumptions that are not reflected in the proposed project, including a requirement that Delta outflow is greater than 44,500 cfs in the months of April to May and that there are 7 days of surplus conditions in the Delta in order for the project to divert water. RDEIR/SDEIS at 11P-2 to 11P-3. These operational criteria are not currently part of the proposed project, see id. at 2-31, nor are they part of the CalSim modeling used in body of the RDEIR/SDEIS, see id. at 5A2-23. As a result, the modeling in Appendix 11P and the analysis of the effects of reduced flows on salmon survival in the Sacramento River fails to analyze the proposed project and alternatives.	The EIR/EIS uses appropriate models and assumptions depending on the tool used and the availability of information. All models and assumptions reflect the contents in Chapter 2, Project Description and Alternatives, and the description of Project operations. The quantitative analysis in Appendix 11P, Riverine Flow-Survival, relies on results from the Sites Reservoir Daily Divertible & Storable Flow Tool (DDSFT), not CALSIM II. The DDSFT estimated the volume of water available for diversion under recent hydrologic conditions, whereas CALSIM II is an operations model that assesses and operates to conditions in the CVP/SWP system. As the DDSFT does not actively simulate operations of the CVP/SWP system, it relies on results of operational actions to understand system conditions. The DDSFT consideration of 44,500 cubic feet per second (cfs) of Delta outflow in April and May reflects an operation within which CALSIM II operates as noted in Appendix 11P, Riverine Flow-Survival, table on the Regulatory Assumptions	Reviewed by Client	N/A

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				for Daily Divertible & Storable Flow Tool. As such, despite variances in methodology and modeled assumptions, both tools appropriately analyze the operation of the Project. This tool is used in conjunction with the CALSIM II model and other modeling tools to present a comprehensive evaluation.		
40000	66	37	V. The CALSIM Modeling Used in the RDEIR/SDEIS to Analyze Potential Environmental Impacts Appears to be Significantly Flawed, Making all of the Analyses Questionable It appears that the CALSIM modeling that is used in the RDEIR/SDEIS is significantly corrupted and flawed, raising serious questions about the accuracy of the analyses in the RDEIR/SDEIS. For instance, the modeling shows that, as compared to the No Action Alternative, Alternative 1A results in diversions of Sacramento River flows greater than 1,000 cfs on average in January (in Wet and Above Normal water years), February (in Wet, Above Normal, and Below Normal	The CALSIM II modeling is not significantly flawed. Please see Master Response 3, Hydrology and Hydrologic Modeling, regarding the use of CALSIM II for the purposes of representing the existing system and conditions under Project operations. The model accurately represents water routed through the Sacramento River and various other locations within the system, including spills over multiple weirs, depending on multiple variables, including hydrologic conditions and diversions. The model results show the change in flow along the Sacramento River varies, depending on location. The model results show Project diversions have the greatest in-river change to flow	Reviewed by Client	N/A

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			water years), and March (in Wet, Above Normal, Below Normal, and Dry water years). RDEIR/SDEIS at Table 5B1-3-1c. Similarly, the modeling shows that these diversions for Sites Reservoir under Alternative 1A would reduce flows in the Sacramento River at Hamilton City by more than 1,000 cfs in January (in Wet and Above Normal water years), February (in Wet, Above Normal, and Below Normal water years) and March (in Wet, Above Normal, Below Normal, and Dry water years). RDEIR/SDEIS at Table 5B2-13-1c. Yet inexplicably, the modeling in the RDEIR/SDEIS shows that diversions to Sites under Alternative 1A would cause substantially less reduction in flows in the Sacramento River at Wilkins Slough, with reductions in flow greater than 1,000 cfs only in March (Above Normal and Below Normal water years). Id. At Table 5B2-14-1c. Similarly, there is much less of a reduction in flow in the Sacramento River at Freeport under Alternative 1A. Id. At Table 5B3-1-1c (showing flow reduction is greater than 1,000 cfs	immediately downstream of the two diversion facilities (Red Bluff and Hamilton City), which would be expected under Project conditions. Downstream of Hamilton City, there are several weirs, allowing flow to enter the Sutter Bypass and Yolo Bypass, depending on conditions. Between Hamilton City and Wilkins Slough, there are four weirs over which Sacramento River water may spill: Ord Ferry, Moulton Weir, Colusa Weir, and Tisdale Weir. When Sacramento River flow is lower, less water is spilled into Sutter Bypass (through any one of the weirs listed above). As such, the reduction in differences in flow between Hamilton City and Wilkins Slough under Project operations is associated with a reduction in spills into Sutter Bypass. Furthermore, the same phenomenon occurs with spills over the Fremont Weir, based on the combination of Sacramento River, Feather River, and Sutter Bypass flow, and over the Sacramento Weir into the Yolo Bypass. These spills change the		

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			only in March (in Above Normal, Below Normal, and Dry water years). But Alternative 1A results in reductions in Delta outflow that are greater than 1,000 cfs in January (in Wet and Above Normal water years), February (in Wet, Above Normal, and Below Normal water years), and March (in Wet, Above Normal, Below Normal, and Dry water years). Id. At Table 5B3-5-1c. The modeling indicates that Alternative 1 reduces flows in the Sacramento River at Hamilton City and Delta outflow by similar amounts, but causes far lesser reductions in flow between these points. The modeling also shows that flows through the Yolo Bypass are reduced as a result of the proposed project and do not account for the change in flow between Freeport and Delta outflow. RDEIR/SDEIS at Table 5B3-3-1c. These results do not appear to be credible, and the RDEIR/SDEIS does not provide any explanation why the reduction in flow upstream caused by diversions under the proposed project	difference in flow observed in the modeled results for Project operations and the No Project Alternative between Wilkins Slough and Freeport. CALSIM II weir spill results are included in Appendix 5B2, River Operations, in the Final EIR/EIS.		

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			and alternatives would not result in similar reductions in flow at other locations downstream. [Footnote 10: The RDEIR/SDEIS shows that this is not the result of releases from Sites, as there is on average only 1 cfs of releases from Sites in January, 0 cfs in February, and 2 cfs in March. See RDEIR/SDEIS at Table 5B1-6-1c.]			
40000	66	38	[Exhibit 1: Table showing Diversions - data taken from multiple tables in RDEIR/SDEIS]	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to the commenter's letter.	Reviewed by Client	N/A
40000	66	43	The CALSIM modeling in the RDEIR/SDEIS is internally inconsistent and limited, and appears to be flawed and corrupted. All analyses in the RDEIR/SDEIS that use CALSIM to assess the effects of the project are unreliable.	Please see responses to comments 66-10 and 66-37 regarding the accuracy and reliability of the modeling. Please also see Master Response 3, Hydrology and Hydrologic Modeling, which discusses the adequacy and reliability of CALSIM II in evaluating Sites operations in the CVP and SWP systems.	Reviewed by Client	N/A
40000	68	2	The two draft documents fail to display tabular data for the no-action	Please refer to Master Response 3, Hydrology and Hydrologic Modeling,	Reviewed by Client	N/A

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			baseline and each alternative by years and months. Metrics missing include average monthly reservoir storage (TAF), average monthly Sacramento River flow and estuarine inflow and outflow (CFS), and average monthly river water temperatures. It is essential that this data be presented for appropriate river and estuarine stations. Reservoirs must include Sites, Funks, any new TRR, Shasta, Trinity and Whiskeytown.	regarding the presentation of model results. The EIR/EIS provides tabular data for No Project Alternative and Project alternatives in a variety of forms, including by years and months and average monthly results. For example, Appendix 5B2, River Operations, presents tabular data of flow at Sacramento River at Bend Bridge in tables titled Sacramento Flow River at Bend Bridge, No Action Alternative 051422, Monthly Flow (cfs) through Sacramento Flow River at Bend Bridge, Alternative 3 051722 minus No Action Alternative 051422, Monthly Flow (cfs); then monthly patterns by water year type in figures titled Sacramento Flow River at Bend Bridge, Long-Term Average Flow through Sacramento Flow River at Bend Bridge, Critical Year Average Flow; and exceedance plots in figures titled Sacramento Flow River at Bend Bridge, October through Sacramento Flow River at Bend Bridge, September.		
40000	72	29	CALSIM II and USRDOM Models May Produce Questionable Results.	Please refer to Master Response 3, Hydrology and Hydrologic Modeling, regarding the accuracy and reliability	Reviewed by Client	ESSA Technologies Ltd. 2008. *Appendix F:*

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			The RDEIR/SDEIS uses the CALSIM II and USRDOM models to estimate flow impacts on the Sacramento River. [Footnote 29: RDEIR/SDEIS Chap. 7, pg. 7-9.] Use of these models may produce questionable results. Much of the RDEIR/SDEIS analysis depends on the use of computer models with known deficiencies, particularly CALSIM II. CALSIM II's "daily flow disaggregation below Red Bluff Diversion Dam (RBDD) is known to be flawed...flows below RBDD are for testing and demonstration purposes only." [Footnote 30 ESSA Technologies, March 2008, SacEFT Analysis Results Appendix F, pg. F-3 (emphasis added).] According to a National Academy of Sciences assessment, many CALSIM II users believe that the model's primary limitation is its monthly time step and that the model should be used primarily for comparative analysis between scenarios, but its use for absolute predictions should be discouraged. This same assessment found that although use of models	of CALSIM II and Upper Sacramento River Daily Operations Model (USRDOM) and the use of these models because they are best available tools. At the time of RDEIR/SDEIS analysis, CALSIM II was the only systems operation model that was jointly supported by DWR and Reclamation. The SacEFT Analysis Results (ESSA Technologies Ltd. 2008, which is Appendix F to the Sacramento River Ecological Flows Study Final Report [ESSA Technologies Ltd. 2008]) and the Fish and Wildlife Coordination Act Recommendations for the Shasta Lake Water Resources Investigation Appendix (U.S. Department of the Interior, Bureau of Reclamation 2013, which is an appendix to the Shasta Lake Water Resources Investigation Draft EIS [U.S. Department of the Interior, Bureau of Reclamation 2013]) are describing the disaggregation of CALSIM II flows with the Sacramento River Water Quality Model (SRWQM). Instead of SRWQM, the RDEIR/SDEIS relies upon HEC5Q for its temperature		*SacEFT Analyses Results*. March. Available: file:///C:/Users/53145/Downloads/Sacramento_River_Ecological_Flows_Study-Revised_Appendix_F.pdf. ESSA Technologies Ltd. 2008. *Appendix F: SacEFT Analyses Results*. March. Available: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=5038. U.S. Department of the Interior, Bureau of Reclamation. 2013. *Fish and Wildlife*

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			like CALSIM II is justified despite flaws, these models do not go far enough toward an integrated analysis of reasonable and prudent alternatives, and improvements were needed. [Footnote 31: National Academy of Sciences 2010, A Scientific Assessment of Alternatives for Reducing Water Management Effects on Threatened and Endangered Fishes in California's Bay Delta.] Further, even the USBR admits that the CALSIM II disaggregation process used to simulate daily flows for modeling water quality "results in a crude representation of flow and temperature conditions on a daily time scale." [Footnote 32: United States Bureau of Reclamation (USBR), Fish and Wildlife Coordination Act Report Appendix, Shasta Lake Water Resources Investigation, June 2013.] The RDEIR/SDEIS asserts that the problems with CALSIM II have been rectified with a new model, USRDOM. No information is provided as to the provenance and accuracy of this model, or whether it has been peer reviewed. It is referenced with an	analysis and USRDOM for daily flow analyses. Please review the Appendix 5C, Upper Sacramento River Daily River Flow and Operations Model Introduction section and Methods section for more information. In A Scientific Assessment of Alternatives for Reducing Water Management Effects on Threatened and Endangered Fishes in California's Bay Delta (National Research Council 2010), the concluding remarks specifically note the lack of life-cycle models as an issue with the quantitative analysis, not the use of CALSIM II. Two life-cycle analyses, IOS and OBAN, for its quantitative analysis are used in the EIR/EIS.		*Coordination Act* *Recommendations for the Shasta Lake Water Resources Investigation Appendix: Shasta Lake Water Resources Investigation, California*. Draft. June. Prepared by U.S. Department of the Interior, Bureau of Reclamation, Mid-Pacific Region. Available: https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=14138. U.S. Department of the Interior, Bureau of Reclamation. 2014. Shasta Lake

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			ambiguous notation – CH2M HILL 2011 – but neither this document or anything approximating a peer review is available on the internet. The USBR provided a copy of the 2011 CH2M-HILL report on USRDOM, which states: USRDOM allows the user to establish bounds on availability and operating criteria for diversion of excess flows to NODOS. It simulates realistic daily flow conditions in the Sacramento River based on the operations specified by CALSIM II under projected conditions (future) or historical operations for use in river morphology and fisheries analyses for NODOS. It also can be used to evaluate NODOS performance for ecosystem restoration objectives. Finally, it can be used to demonstrate incremental environmental impacts of various NODOS scenarios. [Footnote 33: USRDOM Development, Calibration, and Application, USBR & CH2MHILL, Aug. 2011, pg. 1-1.] Based on this description, we must note that the ability of USRDOM to			Water Resources Investigation Final Environmental Impact Statement. December. Available: https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=22671. National Research Council. 2010. A Scientific Assessment of Alternatives for Reducing Water Management Effects on Threatened and Endangered Fishes in California's Bay-Delta. Washington, DC: The National Academies Press.

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			evaluate Sites performance for ecosystem restoration objectives is only as good as the evaluator's basic assumptions. If the evaluator assumes that a less than 5 percent modification in current flows is minimal, they will assume less than significant impacts. It is just another modeling tool that can simulate changes but not necessarily determine whether those changes are significant. In response to a query, a Bureau of Reclamation employee stated that as far as they know, USRDOM has not been formally peer reviewed. Four other models utilized to analyze various Sites operations impacts on the Sacramento River are based on the CALSIM II/USRDOM models, which increases risk and uncertainty if these models are inadequate and/or inaccurate.			https://doi.org/10.17226/12881.
40000	77	30	ATTMT 1. Chapter or Appendix - Section: Chapter 5 - Hydraulic Modeling Results. Page(s): General Comment. Comment and	The presentation of model results in the Chapter 5, Surface Water Resources, Hydrologic Modeling Results section is provided for the	Reviewed by Client	N/A

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			Recommendations: The RDEIR/SDEIS presented hydrologic modeling results as averaged percent changes in flow and storage by water year type. Averaged results across water year type can obscure potentially significant impacts as there can be substantial hydrologic variation within the same water year type. CDFW recommends that the Proposed Project examine and present the results of individual years on the extreme ends of the water year type classification, wet and critically dry, to provide a better understanding of the magnitude of range in flow and storage under the different alternatives. The Proposed Project's hydrologic analysis suggests that the greatest impacts from Proposed Project operations occur in drier years. CDFW recommends that the Proposed Project analyze and discuss the potential impacts from Proposed Project operations under successive dry and critically dry years in the FEIR/FEIS, as there is the potential that under drought conditions impacts from the Proposed Project may be	reader to understand basic hydrologic effects that may occur because of the Project. It is not meant to be a detailed evaluation of all changes, nor is it an impact assessment. Other more specific and detailed metrics are used in other resource chapters for impact assessment, and more detailed model results are presented in Appendix 5B, Water Resources Modeling System. Other resource chapters describe the modeling results and statistics used in the various chapters' methods of analysis sections. For example, Chapter 11, Aquatic Biological Resources, may use mean values; for a discussion on the use of mean values in the results presentation for aquatic resources, please see Master Response 5, Aquatic Biological Resources. The hydrologic spectrum (extreme ends of the water year type classification) of results are presented in Appendix 5B. Exceedance plots are provided in Appendix 5B.5, Water Supply, for each model output parameter. Through examination of		

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			compounded and warrant additional avoidance, minimization, and mitigation measures.	the results, a reader may understand the range in flow and storage under the different alternatives. Additionally, in Appendix 5B.5, Water Supply flow and storage results are tabulated at 10% exceedance increments, which would include drier water year types. The analyses in the resource chapters generally do not focus on specific years because the main concern is whether the Project would alter the distribution of conditions. For example, if 15% of the years exceed some threshold under No Project Alternative and 15% of the years exceed the same threshold with the Project, there would be no impact, even if the particular years with the exceedances change as a result of the Project. With respect to successive drier conditions, it should be noted that the water year type calculations consider the hydrology from the previous water year. As such, a water year that is considered Critically Dry is likely to follow a year with dry hydrologic		

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				conditions. Furthermore, lower storage conditions only occur under successive Dry/Critically Dry Water Years. The exceedance plots and tabulated results in Appendix 5B.5, Water Supply, by exceedance probability provide an understanding of the effect (positive or negative) of the alternatives under successive drier conditions. Because the Project would divert little water during drier conditions, Project-related reductions in Sacramento River flow during Dry/Critical Water Years would be limited, as would be the effects associated with multiple dry years in a row. Multiple years with dry hydrologic conditions could, however, result in depletion of storage in Sites Reservoir. Depletion of Sites Reservoir storage is evaluated and could affect resources, such as water quality, which is considered in Chapter 6, Surface Water Quality.		
40000	77	31	ATTMT 1. Chapter or Appendix - Section: Chapter 5.3 - Section 5.3, Hydrologic Modeling Methods.	The combined average annual runoff volume for Funks and Stone Corral Creeks is roughly 14 TAF per year.	Reviewed by Client	N/A

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			Page(s): p. 5-26. Comment and Recommendations: The CalSim II model does not include inflow or outflow for Funks and Stone Corral creeks. The USRDOM should include estimates for these, as well as "emergency spill" operations, minimum flows in the creeks, and channel maintenance pulses (if proposed). As the operational requirements are drafted and refined, a detailed operations model is needed that includes all inflows and outflows of the Proposed Project.	This is a small volume compared to total reservoir storage of up to 1,500 TAF and it would have a minor effect on storage and therefore does not need to be incorporated into the CALSIM II modeling describing Project effects on Sacramento River flow, Yolo Bypass flow, and Sites Reservoir storage. Emergency spills are not part of the USRDOM modeling because, as described in the Chapter 5, Surface Water Resources, section titled Reservoir Emergency Releases, emergency spills are not expected to occur. This is because the primary inflow to the reservoir, diversions from the Sacramento River, would be controlled through pumping. Flow requirements for Funks and Stone Corral Creeks downstream of Sites Reservoir are further described, as identified in the Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, section titled Stone Corral Creek and Funks Creek Aquatic Study Plan and		

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				Adaptive Management. This section includes draft study plans to inform the development of flow requirements for Funks and Stone Corral Creeks. Using information from these field studies, along with currently available information, the Authority will prepare a Funks and Stone Corral Creeks flow schedule that could be incorporated into the Reservoir Operations Plan that will identify the approach for releases, including release schedules and volumes, a monitoring plan, and an adaptive management plan to maintain fish in good condition consistent with California Fish and Game Code Section 5937 in Funks and Stone Corral Creeks.		
40000	78	48	Chapter 5: Surface Water Resources, Page 5-49 - Hydrologic modeling results in the main body chapters and appendices should be presented using methods that demonstrate the full range of outcomes in modeling results. Hydrologic modeling results are currently summarized as averages by water year type and results are	The presentation of model results in the Chapter 5, Surface Water Resources, Hydrologic Modeling Results section is provided for the reader to understand basic hydrologic effects that may occur because of the Project. It is not meant to be a detailed evaluation of all changes, nor is it an impact assessment. Other	Reviewed by Client	N/A

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			presented for wet years and critically dry years only. To capture the full range of potential impacts, modeling results should include the full range of outcomes and be presented without averaging and without the filter of water year type (which is a proportional sum of monthly unimpaired flow plus a proportion of last year's water year index volume). Narrative descriptions of outcomes should present median, maximum, minimum, 90th and 10th percent quartile outcomes. Presenting results as averages by water year type narrows the range of results presented and can mask potential adverse effects of the proposed project. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	more specific and detailed metrics are used in other resource chapters for impact assessment, and more detailed model results are presented in the model results appendices (e.g., Appendix 5B, Water Resources Modeling System). Exceedance plots are provided for each model output parameter. Additionally, in Appendix 5B.5, Water Supply model results are tabulated at 10% exceedance increments. Please refer to Master Response 3, Hydrology and Hydrologic Modeling, regarding more information on the use of CALSIM II results. Results are used and presented depending on the impact mechanism evaluated; therefore, masking potential adverse effects, as suggested by the commenter, would not occur.		
40000	78	49	Chapter 5: Surface Water Resources, Page 5-49 - Modeling data should be displayed with exceedance tables, exceedance charts, and box and whisker plots to show the full	Regarding display of modeling data, please see response to comment 78-48. As noted in Master Response 3, CALSIM II modeling results are presented in Appendix 5B1, Project	Reviewed by Client	N/A

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			continuum of modeling results in an efficient format. Displaying modeling data using these methods efficiently discloses project impacts for all water years and does not obscure or skew potential impacts. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	Operations; Appendix 5B2, River Operations; Appendix 5B3, Delta Operations; Appendix 5B4, Regional Deliveries; and Appendix 5B5, Water Supply. Modeled results are presented with monthly tables, monthly pattern charts, and monthly exceedance charts. Monthly tables compare an alternative against the [No Project Alternative] (exceedance values, long-term average, and average by water year type). Monthly pattern charts (long-term average and average by water year type) present all alternatives. Monthly exceedance charts (all months) present all alternatives.		
40000	78	56	Chapter 5 - A more detailed description of the proposed bypass flows is needed, including how these bypass flows affect diversions, which is not clear in the modeling. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	A detailed description of the proposed bypass flows and diversion criteria is provided in Chapter 2, Project Description and Alternatives, and Master Response 2, Alternatives Description and Baseline. Master Response 2 addresses refinements to Project operations, including diversion criteria for proposed bypass flows. These criteria and the modeled representation of them are further	Reviewed by Client	N/A

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				detailed in Appendix 5A1, Model Assumptions.		
40000	78	105	Appendix 5A6, page 5A6-2 Appendix A6 states that the Reclamation Temperature Model was used to simulate temperatures on the Feather River and a reference to Appendix H of 2008 OCAP BA is provided. In Appendix H of the 2008 OCAP BA there is no mention of a temperature model for the Feather River. The model used to simulate temperatures on the Feather River should be correctly identified and documented. [Commenting Water Board or Section within the State Water Board: Bay Delta]	The reference in Appendix 5A6, Model Limitations and Improvements, has been updated in the Final EIR/EIS to Rowell (1990).	Reviewed by Client	Rowell, J. H. 1990. USBR Monthly Temperature Model–Sacramento River Basin. June. U.S. Bureau of Reclamation, Sacramento, CA..
41000	81	5	Page 2-31 The project description (page 2-31) estimates that Sites Reservoir annual diversions will range from 60-390 TAF attempting to fill a 1.3-1.5 MAF reservoir. The surface water resources analysis (page 5-29) reports that	Sites Reservoir would be mainly filled with diversions from the Sacramento River, as noted in the Chapter 2, Project Description and Alternatives, Diversion to Sites Reservoir section. The Project would only divert water as identified in the water right for the Project.. The Project would not use	Reviewed by Client	N/A

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			storage levels are expected to be greater than 1 MAF during wet conditions but could drop below 225 TAF during the fall of Critically Dry Water Years (Table 5-17). Will Sites be filled with other sources of water such as groundwater or other surface water rights not accounted for in the 60-390 TAF of diversions described above? Are the dead pool storage assumptions (120 TAF under the preferred alternative per page 5A1-27) already calculated into the 225 TAF referenced above? In summary, is it anticipated that Sites would be left with less than 105 TAF of accessible water during the Fall of Critically Dry Water Years?	groundwater. The dead pool storage assumptions are calculated into Sites Reservoir storage results presented in the EIR/EIS. Sites Reservoir may be drawn down below the operational dead pool in drought situations. In fall of Critically Dry Water Years, it is expected that Sites Reservoir storage would be low. As described in Master Response 2, Alternatives Description and Baseline, dead pool storage is 60 TAF in the Final EIR/EIS. Sites Reservoir's main release years and season are Dry/Critically Dry Water Years and summer, respectively.		
41000	81	6	Page 2-31 The project diversion criteria sets bypass flows of 3,250 cfs at Red Bluff Pumping Plant and 4,000 cfs at Hamilton City Pump Station. NMFS would suggest developing criteria beyond these minimum static flows. Targets should better reflect the intra-annual and inter-annual variability of	The bypass flow criteria at Red Bluff Pumping Plant and Hamilton City Pump Station are only two of several criteria that must be achieved before Sites Reservoir may divert. The entire set of these criteria is provided in the Chapter 2, Project Description and Alternatives, Diversion to Sites Reservoir section and also described	Reviewed by Client	N/A

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			a natural hydrograph with criteria that vary by season and water year. The criteria should also take into consideration Reclamation's Fall Base flows (e.g. when Shasta Storage is ≤ 2.2 MAF, flow is 3,250 cfs; ≤ 2.8 MAF, flow is 4,000 cfs; ≤ 3.2 MAF, flow is 4,500 cfs; > 3.2 MAF, flow is 5,000 cfs).	in Master Response 2, Alternatives Description and Baseline.		
41000	81	27	Pages 11-126 to 11-127 The SDEIS/REIR analysis applies the IOS (Interactive Object-Oriented Simulation) and OBAN (Oncorhynchus Bayesian Analysis) winter-run Chinook salmon life cycle models. As was previously communicated to Reclamation in conversations from January through April of this year, and in our July comment letter, NMFS recommends the use of the Sacramento River Winter-run Chinook Salmon Life Cycle Model (WRLCM) for a project of this nature and magnitude to adequately integrate effects of the alternatives on the species. Use of the WRLCM is consistent with NEPA regulations that, "...agencies may make use of any	Please refer to Master Response 5, Aquatic Biological Resources, regarding application of IOS and OBAN. Master Response 5 also address the unavailability of NMFS resources, including WRLCM, at the time of document preparation. As mentioned in Master Response 5, the Authority and Reclamation will work with NMFS to run the WRLCM during the permitting process. .	Reviewed by Client	N/A

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			reliable data sources, such as remotely gathered information or statistical models," (NEPA Implementing Regulations 40 CFR 1500–1508 § 1502.23) and the ESA consultation requirement that, "...each agency shall use the best scientific and commercial data available." (The Endangered Species Act § 7(a)(2) and 50 CFR 402.14(f)(8)). Application of the WRLCM to Sites Reservoir analysis contrasts with IOS and OBAN based on the following factors: Comparability - It is unclear in the SDEIS/REIR how IOS and OBAN will be synthesized into a single analysis or how they can be compared to related baseline or cumulative actions such as Central Valley Project Operations or the Delta Conveyance Project (both of which apply the WRLCM). ● Level of Model Review - The WRLCM has extensive documentation and monthly stakeholder outreach meetings to discuss model developments and applications. NMFS is not aware of similar levels of			

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			documentation and outreach for OBAN and IOS. ● Egg Incubation - Temperature dependent mortality modeling has evolved over the past five years. The WRLCM integrates the most recent peer-reviewed temperature dependent mortality relationships. ● Yolo Bypass - The WRLCM models the Yolo Bypass floodplain explicitly where the entrance to the floodplain habitat is dependent upon overtopping of the Fremont Weir during the specific month of dispersal, or otherwise tidal fry move to the delta and bay habitats to rear in that month. ● Delta Passage and Survival - WRLCM has monthly timesteps for Calsim hydrology and 15 minute steps for tidal fluctuations and exports as well as mechanistic components (enhanced particle tracking) which can perform better than statistical approaches at this model function.			

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			Although some inference is attempted in the SDEIS/REIR attempting to apply the WRLCM results for California WaterFix (to conclude that the Sites Reservoir alternatives would not substantially change delta rearing habitat for juvenile winter-run Chinook salmon), that modeling is dated and the project is not sufficiently similar to Sites Reservoir to conclude that the WRLCM results will be applicable here. In summary, the better compatibility, level of review, handling of egg incubation, representation of the Yolo Bypass, and resolution in the Delta are all relevant to the proposed Sites Reservoir and suggest the use of the more robust WRLCM. The built impacts and operations of the proposed project will continue indefinitely and therefore the best available scientific models should be applied to understand the effects on winter-run Chinook salmon populations. NMFS continues to emphasize the urgency to address concerns with the life cycle modeling framework for both the NEPA process			

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			and anticipated ESA consultation. NMFS is likely to require results from analyses that are provided by the WRLCM to adequately analyze effects for the jeopardy determination required in ESA consultation. To our knowledge, no other model provides the same suite of capabilities.			
43000	73	3	In addition, the modeling for reservoir operations does not use hydrologic data beyond 2003. A longer simulation period (e.g., through 2019), would add a further 16 years, potentially revealing recent changes in historical hydrology due to global climate change. Reservoir operations modeling should also use a daily time step to better reveal flow and water quality impacts. Monthly-averaged flows in the Sacramento River and Delta are not representative of the peak and low flows that can occur within a month.	Please refer to Master Response 3, Hydrology and Hydrologic Modeling, regarding the planning simulation period and time step. Please refer to Chapter 28, Climate Change, for the climate change modeling performed for each alternative under 2035 (2020–2049) CT conditions and WSIP 2070 (2046–2085) conditions. Please refer to Master Response 5, Aquatic Biological Resources, which addresses the use of monthly modeling results with different time steps for evaluating flow-related fisheries impacts.	Reviewed by Client	N/A
43000	81	25	Page 7-20 Alterations to the natural river hydrology and geomorphology can	Analysis of Yolo Bypass was included in Chapter 11 of the RDEIR/SDEIS, Aquatic Biological Resources, and the relative differences in Yolo Bypass	Reviewed by Client	N/A

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			have adverse impacts on native aquatic biota. Specifically, the Fluvial Geomorphology Chapter notes that the preferred alternative may reduce Yolo Bypass inundation from January through June by approximately one day across most water year types and reduce in Delta outflow during the wetter months. NMFS is concerned with the impact of Sites Reservoir operations on the performance of the Big Notch project and would like to discuss in more detail the modeling and how operations will be coordinated in real time.	inundation were provided showing the mean acreages of inundation in different months and water year types and the number of days and duration of inundation under the No Project Alternative and Alternatives 1, 2 and 3. As indicated in Chapter 11, minor reductions in the frequency of inundation events and acreage of suitable inundated habitat are possible under the Project compared to the No Project Alternative. Additional analysis of the Project effects on juvenile Chinook salmon entry into Yolo Bypass has been added to Chapter 11 of the Final EIR/EIS, which provides more detailed and race-specific results than those provided in the RDEIR/SDEIS, but does not change conclusions regarding effects of the Project on the fish. The analyses are described in detail in Appendix 11M, Yolo and Sutter Bypass Flow and Weir Spill Analysis, and rely on daily Fremont Weir Spill computations from CALSIM II, which include operation of the Fremont Weir Notch (a.k.a. the Big Notch Project) under the assumptions		

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				detailed in Appendix 5A7, Daily Pattern Development for the Estimation of Daily Flows and Weir Spills in CALSIM II. Additionally, the revised operational criteria in the Final EIR/EIS (see Master Response 2, Alternatives Description and Baseline), including pulse protection and Wilkins Slough bypass flows, provide protections for Fremont Weir Notch and limit the potential for negative effects on aquatic resources. As part of the Adaptive Management Plan monitoring will be conducted, in cooperation with the regulatory agencies, to determine how the Project effects the on aquatic biota and, if so, what the magnitude of that effect would be on entrainment of juvenile salmon into the Yolo Bypass. If there is an adverse effect, a science-based adaptive management approach will be employed to determine how to adjust diversions 158 river miles upstream of the Fremont Weir Notch to maintain its efficiency for aquatic biota as		

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				described in Appendix 2D, Best Management Practices, Management Plans, and Technical Studies. The Authority and Reclamation have been in discussions with various regulating agencies, including National Marine Fisheries Service, and will continue to work with regulating agencies through the permitting process and development of the Reservoir Operations Plan.		
43000	82	3	EBMUD would be interested in the flow schedules that would be incorporated into the Reservoir Operations Plan that identify the approach for releases, including release schedules and volumes, and interactions with DCC operations. Absent such plans, the RDEIR/SDEIS makes general statements such as "water would be held in storage in Sites Reservoir until requested for release by a Storage Partner. Water releases would generally be made from May to November but could occur at any time of the year, depending on a Storage Partner's need and capacity to convey water to	Modeling results for releases, described in Chapter 5, Surface Water Resources, and Appendix 5B1, Project Operations, show that water may be released from Sites Reservoir for export through the Delta during the transfer window, July to November. The modeling included maximizing releases through the Delta during Below Normal, Dry, and Critically Dry Water Years. Please see Master Response 2, Alternatives Description and Baseline, regarding the Reservoir Operations Plan, which will include flow schedules.	Reviewed by Client	N/A

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			its intended point of delivery." (pg. 2-29) Additional detail is needed to assess the significance of Sites Reservoir operations on central Delta flows that can influence migration pathway selection for adult and juvenile anadromous fish.			
44000	66	39	In addition, the RDEIR/SDEIS provides entirely inconsistent results of the effects of diversions to Sites under Alternative 1A on flows in the Sacramento River at Wilkins Slough. Compare RDEIR/SDEIS at Table 5B2-14-1c with id. at Table 5C-9-1c. These two tables [Exhibits 2 & 3] should show identical results because they are comparing the same alternatives, but they do not.	The results presented in Appendix 5B2, River Operations, Table 5B2-14-1c (Sacramento River at Wilkins Slough Flow, Alternative 1A 051722 minus No Action Alternative 051422, Monthly Flow (cfs)) are from the CALSIM II model. The results presented in Appendix 5C, Upper Sacramento River Daily River Flow and Operations Model, Table 5C-9-1c (Sacramento River Flow at Wilkins Slough, Alternative 1A 051722 minus No Action Alternative 051422, Monthly Flow (cfs)) are from USRDOM. Although USRDOM utilizes the operations modeled in CALSIM II, differences in results are expected. Please review the Appendix 5C Introduction section and Methods	Reviewed by Client	N/A

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				section for more information on the differences between the models.		
44000	66	40	[Exhibit 2: Table 5C-9-1c. Sacramento River Flow at Wilkins Slough, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)]	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to the commenter's letter.	Reviewed by Client	N/A
44000	66	41	[Exhibit 3 - Table 5B2-14-1c. Sacramento River at Wilkins Slough Flow, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)]	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to the commenter's letter.	Reviewed by Client	N/A
44000	72	30	When it comes to specific flows needed for specific purposes, averages are virtually useless. If CALSIM II says the average flow in the Sacramento River during the month of March is 10,000 cfs, the public has no way of knowing whether this average reflects 10,000 cfs of flow for all days of that month or 20,000 cfs of flows for half of the month and zero flows for the other half. A crude example perhaps, but a world of consequences, intended or not, can be hidden in documents based on the	Please refer to Master Response 3, Hydrology and Hydrologic Modeling, regarding the use of CALSIM II for the impact analysis. Results are used and presented in the EIR/EIS depending on the impact mechanism evaluated. The methods of analysis for the impact assessments vary, ranging from qualitative, to reliance on general conclusions from the CALSIM II results, to detailed post-processing of monthly CALSIM II or daily USRDOM results, to secondary modeling based on CALSIM II or	Reviewed by Client	D. Ford, L. Grober, T. Harmon, J.R. Lund (Chair), D. McKinney. 2006. Review Panel Report: San Joaquin River Valley CalSim II Model Review. January. CALFED Science Program – California Water and Environmental Modeling Forum.

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			monthly average flow. A 2006 review of the CALSIM II model for the San Joaquin River raised this significant issue: Users must take responsibility for model selection and application, and they must accept the responsibility for decisions that they make with information produced by the model. Relying on an external body to provide a blanket endorsement covering all possible applications is a dangerous practice. It tempts users to avoid accountability for their work. It tempts decisionmakers to place responsibility on general model reviews which are remote from a particular application. Further, it opens the door to intentional and unintentional abuse, negligence or complacency by model users and developers, or their managers who may shift responsibility to tools or some external general review panel for decisions made or actions recommended based on their use of a model. [Footnote 34: San Joaquin River Valley CALSIM II Model Review,	USRDOM results. The methods rely on the most appropriate and best available information and are described in each methodology section of the EIR/EIS chapters. The quoted text in the comment from California Bay Delta Authority Science Program and California Water and Environmental Modeling Forum [2006 review of the CALSIM II model] is retrieved from the Model Endorsements section. In the section, the authors do not “in any way certify or endorse the model [CALSIM II] presented. On the other hand, we do not disapprove of or discourage its use by knowledgeable users.” To continue the quoted text from the comment, “Good decisions require good information. Careful application of an appropriate model will yield that information. Certification of the model does not guarantee production of good information. Lack of certification does not preclude it” (D. Ford, L. Grober, T. Harmon, J.R. Lund (Chair), D. McKinney 2006). As noted Master Response 3, Hydrology and		https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/wq_control_plans/2006wqcp/exhibits/append2/sjrg/sjrg-47.pdf

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			D. Ford, L. Grober, T. Harmon, J.R. Lund (Chair), D. McKinney, California Bay Delta Authority Science Program and California Water and Environmental Modeling Forum, 2006.]	Hydrologic Modeling, the CALSIM II model is the best available science for this analysis. CALSIM II has been carefully applied to support the quantitative effects analysis. Appropriate use is documented in Appendix 5B, Water Resources Modeling System.		
44000	72	37	1. Accounting of Sacramento River Flows I've [Greg Kamman with CBEC Eco Engineering] completed a monthly accounting of long-term full simulation changes in Sacramento River flow for Alternative 1A minus No Action using data reported in Appendices 5B2 (River Operations) and 5B1 (Project Operations). Using these data, I was able to account for all flow changes due to project diversions and return flows on the Sacramento River except for those reported between Hamilton City and Wilkins Slough. I assume that increases in river flow under Alternative conditions may be due to reduced (relative to No Action) high flow diversions via the Ord Ferry, Moulton, Colusa, and Tisdale weirs.	Appendix 5B2, River Operations, in the Final EIR/EIS has been revised to include spills into the Sutter Bypass. These results complete the mass balance and the new information does not change the environmental impact findings/analysis.	Reviewed by Client	N/A

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			The reduction in flow diversions via the weirs is due to lower peak flows on the river resulting from upstream diversion to Sites Reservoir. The increase in river flow rates under Alternative conditions due to reductions in weir diversions occur in the winter months and in similar proportions to diversions reported for Freemont Weir -- the only weir diversions reported in appendices 5B1 and 5B2. Appendix 5A-7 describes daily spill pattern via Ord Ferry, Moulton, Colusa and Tisdale weirs and indicates that daily patterns were developed and integrated into the USRDOM and CalSim II modeling. However, no record of these daily spills is provided in DEIS/R appendices. This is the most logical explanation for the additional flow under Alt 1A as I don't see any major drainages contributing flow to the Sacramento River along this reach. At the very least, this unreported/unaccounted for change in flow should be addressed in the environmental document.			

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47000	77	37	ATTMT 1. Chapter or Appendix - Section: Chapter 6 - Surface Water Quality. Page(s): General Comment. Comment and Recommendations: Water quality analyses depend on models that use outputs from CalSim II, for which the output is on a monthly time step. However, daily and weekly changes to water quality can often have lethal or sub-lethal effects on aquatic resources, which a monthly time step cannot capture. Although the timestep for the Sacramento River temperature model (HEC-5q) is 6-hours, the inputs and outputs were monthly-averaged. To adequately analyze and disclose potentially significant impacts, CDFW recommends that the RDEIR/SDEIS's analyses of water quality impacts include a daily time series analysis. Additionally, the worst-case conditions must be analyzed on a daily time-step, e.g., Sacramento River daily maximum temperature increases in summer due to maximum allowable diversions.	Please refer to Master Response 3, Hydrology and Hydrologic Modeling, regarding the use of a monthly time step for the effects analysis. Although Chapter 6, Surface Water Quality, presents the HEC5Q water temperature model outputs as monthly means, the analysis of temperature-related effects on aquatic resources uses a daily time step, including the 7-day average daily maximum values (7DADM), for the Sacramento and American Rivers, the two rivers for which HEC5Q model outputs were available. Please refer to Appendix 11B, Upstream Fisheries Impact Assessment Quantitative Methods, for a description of the analysis; Appendix 11D, Fisheries Water Temperature Assessment, for results of the analysis; and Chapter 11, Aquatic Biological Resources, for a summary of results for each aquatic species and life stage evaluated.	Reviewed by Client	N/A

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48000	72	38	2. Sites Reservoir Temperature Modeling Appendix 6C presents River temperature modeling results including the Sacramento River at various locations between Keswick Reservoir (upstream) and Butte City (downstream). Butte City is located downstream of both Sites Reservoir diversion sites (Red Bluff and Hamilton City), but approximately 50-miles upstream of the location where return flows from Sites Reservoir enter the Sacramento River. It is my opinion that the RDEIR/SDEIS should have completed River temperature modeling for this 50-mile intervening stretch, as well as downstream of the Colusa Basin Drain (CBD) discharge point into the Sacramento River, to fully address changes in river water temperature and potential impacts to instream aquatic habitat. In short, temperature modeling presented in the RDEIR/SDEIS does not adequately evaluate how the project may impact Sacramento River water quality and habitat conditions downstream of	Although the HEC5Q water temperature model of the Sacramento River ends at Butte City, the Sites Reservoir Discharge Temperature Model (in Appendix 6D, Sites Reservoir Discharge Temperature Modeling) estimates the temperature effect of Colusa Basin Drain discharges into the Sacramento River. Therefore, the EIR/EIS evaluates water temperature using multiple tools from all locations that could be affected as a result of diversions or releases under operating conditions.	Reviewed by Client	N/A

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			Hamilton City and through the Yolo Bypass, as discussed below.			
48000	77	48	ATTMT 1. Chapter or Appendix - Section: Appendix 6D - Section 2.1.2, Modeling Input Data. Page(s): p. 6D-2. Comment and Recommendations: The only meteorological input mentioned for the CE-QUAL W2 model is evaporation, which itself was not mentioned or detailed in Appendix 5B or its references. Typically, reservoir temperature models also require wind direction and speed, air temperature, and solar radiation as meteorological inputs. CDFW recommends including more meteorological inputs to CE-QUAL W2 to increase confidence in the results or expand on the description of inputs if others were included in the model.	Appendix 6D, Sites Reservoir Discharge Temperature Modeling, in the Final EIR/EIS has been revised to include details regarding the meteorological boundary conditions. These include: hourly precipitation, dew point, average temperature, wind speed and direction, and percent cloud cover. The new information does not change the environmental impact findings/analysis	Reviewed by Client	N/A
48000	81	16	Page 6-33 Please provide a copy of the spreadsheet blending model for monthly water temperatures in TC Canal and CBD described in Section 6.3.2.5.	The Authority and Reclamation coordinated with the National Marine Fisheries Service (NMFS) on the information request as part of ongoing coordination. As directed by NMFS, Reclamation provided information related to the	Reviewed by Client	N/A

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				Endangered Species Act consultation initiation package (i.e., the Biological Assessment). The Authority and Reclamation appreciates the coordination efforts from NMFS on the Project.		
48000	81	17	Page 6-34 The water temperature modeling, "was based on the CALSIM flows at Wilkins Slough for Alternatives 1, 2, and 3 and the temperatures were based on measured data that were the same for all alternatives. The use of a single set of temperatures for the Sacramento River allows an evaluation of the effects due to Sites Reservoir releases not confounded by changes in temperature due to changes in Shasta Lake operations. More details regarding the monthly blending model are provided in Appendix 6D, Sites Reservoir Discharge Temperature Modeling." However, this modeling assumption makes it difficult to see the net impact of	Based on the model results, it is assumed that Sacramento River at Wilkins Slough water temperature in all alternatives would tend to equilibrium temperature conditions. As observed in Appendix 6C, River Temperature Modeling Results, the greatest difference in temperature at Butte City is less than 1°F. After 50 river miles, the differences would diminish as the river tends to equilibrium conditions. Therefore, the change to Shasta Lake operations would not affect Sacramento River temperature conditions where Colusa Basin Drain discharges into the Sacramento River.	Reviewed by Client	N/A

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			Shasta Lake operations as well as the proposed Sites Reservoir operations.			

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51100	19	1	The Draft EIR is an improvement from the 2017 version in that it at least acknowledges some water quality issues, but it continues to ignore other water quality issues, makes inaccurate and misleading statements, and offers conflicting and contradicting strategies to attempt to lessen significant and substantial adverse impacts.	Your comment regarding a more detailed approach to water quality analysis has been noted. The water quality impact analysis in Chapter 6, Surface Water Quality, concludes less than significant effects on surface water quality with respect to salinity, water temperature, HABs, invasive aquatic vegetation, nutrients, organic carbon, and dissolved oxygen. The analysis acknowledges the potential for significant water quality impacts related to methylmercury, metals in Stone Corral Creek, and metals and pesticides in Yolo Bypass, and introduces mitigation measures WQ-1.1, WQ-2.1, and WQ-2.2, respectively, to address these potentially significant impacts. Responses to each comment are provided below. Responses demonstrate that the analysis does not ignore water quality issues, is based on sound science and thorough analysis, and provides feasible mitigation strategies for reducing	Reviewed by Client	N/A

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				impacts that have been identified as significant.		
51100	19	2	The data in the WDL for the Sacramento River and Cottonwood Creek demonstrate that high concentrations of metals can be expected during the high flow months of winter (December through March) when diversions would be occurring to the proposed Sites Reservoir. Higher concentrations of metals are likely during the higher flows that can occur during these months. Such higher flows were not targeted by the limited sampling effort presented in the WDL. The high concentrations of metals in the source water will adversely impact water quality in the proposed reservoir for most, if not all, the proposed beneficial uses of the stored water. Some metals from both the Sacramento River and Cottonwood Creek, whose concentrations did not exceed criteria in the limited sampling efforts, had concentrations that nearly exceed the criteria and standards.	Please refer to Master Response 4, Water Quality, for a discussion of the evaluation approach related to metals in Chapter 6, Surface Water Quality. Although water quality measurements did not target high flows, multiple measurements were taken during higher flows. Master Response 4 discusses available data and how the available data were used to develop exponential equations to estimate metal concentrations as functions of tributary input and flow, allowing estimation of concentrations under more extreme conditions than what was present during measurements. Under conditions of high flow and tributary input, the estimated values can be higher than measured values. Master Response 4 also contains a discussion of metal effects on beneficial uses.	Reviewed by Client	N/A

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			These and other metals whose concentrations did not exceed the criteria may have higher concentrations during the higher flow periods that the proposed project would be diverting. Again, these higher flow periods were not targeted during the limited sampling effort.			
51100	19	3	Even some of the minimum concentrations of metals found in the source waters exceed criteria and standards, which means that the source waters never meet these goals and standards - the criteria are always exceeded and the water is never suitable for the beneficial use or uses the criteria or standards were designed to protect. Water quality in the proposed reservoir for these parameters will exceed the criteria and standards all the time	Use of water for beneficial uses is controlled by regulatory standards. As discussed in Master Response 4, several metals have ideal concentration goals that are close to zero, but these are not regulatory standards. Although the Sacramento River does not meet all water quality goals (e.g., California drinking water public health goal for arsenic of 0.004 micrograms per liter [µg/L]) and during high flows it occasionally exceeds water quality standards for aquatic life protection, the water quality in the river does not prevent beneficial uses, including recreation, habitat, agricultural supply, and drinking water supply.	Reviewed by Client	N/A

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				Please see Master Response 4, Water Quality, for a discussion of regulatory standards used for evaluation, which are primarily California Maximum Contaminant Levels for drinking water and freshwater chronic standards for aquatic life protection. The metals evaluation focused on the more conservative standards, which were generally those for aquatic life protection. Please see Chapter 6, Surface Water Quality, Impact WQ-2 and Master Response 4, Water Quality, regarding why the standards for total concentrations chosen for the evaluation performed in Chapter 6 conservatively overestimate exceedances of standards. As described in Chapter 6, Surface Water Quality, and Master Response 4, it is not expected that any of the metal concentrations in Sites Reservoir would continually exceed water quality criteria for aquatic life. Master Response 4 also explains why beneficial uses are unlikely to be affected beyond impacts identified in Chapter 6 of the RDEIR/SEIS. This is		

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				primarily because metal concentrations are likely to decline substantially as a result of settling of suspended sediment, metal concentrations (aside from mercury) would not impact users of the reservoir, and releases from Sites Reservoir would be diluted.		
51100	19	4	Since water quality in the proposed reservoir will reflect that of the source waters, the reservoir will have concentrations of numerous metals, including aluminum, arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, selenium, silver, and zinc, that exceed a number of criteria and standards developed to protect beneficial uses. The State Water Resources Control Board (SWRCB 2011) states that "when multiple constituents have been found together in groundwater or surface waters, their combined toxicity should be evaluated" and that "theoretical risks from chemicals found together in a water body shall be considered additive for all chemicals having similar toxicologic	Please see response to comment 19-3 and Master Response 4, Water Quality, regarding meeting water quality standards and providing beneficial uses including agricultural water supply, wildlife, fisheries, recreation, and drinking water supply. In addition, Master Response 4 discusses why the selected metals were those most likely to experience an increase in exceedance of water quality standards and therefore provide a reasonable representation of the potential water quality impacts associated with operational effects on metal concentrations. Master Response 4 also explains why determination of the combined effects of metals on aquatic resources	Reviewed by Client	N/A

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			effects or having carcinogenic effects." Thus, the adverse effects from the metals delivered to the proposed reservoir from the source waters may have an even greater adverse impact and pose an unacceptable level of risk. Beneficial uses potentially impacted by metals in the proposed reservoir include agricultural water supply (direct toxicity or uptake by crops making the crops unsuitable for use), wildlife (such as fish-eating birds), fisheries, recreation (including sport fishing and water contact activities such as swimming), and drinking water supplies for communities that divert water from the Sacramento River.	is difficult due to the variable nature of the interaction of effects.		
51100	19	5	Releases from the proposed reservoir would occur during the summer when metals concentrations in the Sacramento River are much lower due to the majority of flow being from Shasta Reservoir, with much better water quality, though still carrying a metals load. High metals concentrations in the proposed reservoir releases could adversely	The possibility of increases in Sacramento River metal concentrations was evaluated in Chapter 6, Surface Water Quality, under Impact WQ-2. The analysis indicates that, aside from mercury, there could occasionally be small increases in metal concentrations in the Sacramento River, with the largest increases likely to occur when the	Reviewed by Client	N/A

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			affect water quality in the Sacramento River during the summer months by increasing metals loads beyond acceptable limits and adversely impact beneficial uses.	concentrations in the Sacramento River are lowest. When concentrations are high in the Sacramento River, releases from Sites Reservoir would have minimal effect on metal concentrations in the river. This topic is also discussed in Master Response 4, Water Quality. Releases of Sites Reservoir water to the Sacramento River are not expected to increase exceedances of water quality standards in the river.		
51100	19	6	Though high concentrations of metals that exceed water quality criteria exist in source waters to proposed project, they cannot be regulated by governmental entities since they are natural occurrences. However, once contained artificially in a reservoir, they are subject to jurisdictional control by regulatory agencies. Any releases of water from the proposed reservoir will likely be subject to review by water quality regulatory agencies to ensure that such releases do not adversely affect downstream resources due to the heavy metals loads in releases. The SWRCB has an	The Authority and Reclamation acknowledge and agree the operation of Sites Reservoir, including consistency with the antidegradation policy, will be reviewed by regulatory agencies in accordance with applicable permitting requirements (see Chapter 4, Regulatory and Environmental Compliance: Project Permits, Approvals, and Consultation Requirements, regarding permits, approvals, and consultation processes that are potentially applicable to the Project and agencies that are anticipated to rely on the EIR/EIS for decision-making and	Reviewed by Client	N/A

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			antidegradation policy that prohibits discharges that would degrade water quality to a level below water quality objectives because no capacity would exist for degradation that will be caused by the next downstream or downgradient uses – the ability to beneficially use the water would have been impaired, even though water quality objectives would not yet have been exceeded (SWRCB 2011). The contribution of additional metal loads from releases from the proposed Sites Reservoir during the summer could cause concentrations of metals in the Sacramento River to exceed criteria and standards or at least be subject to the antidegradation policy due to an incremental increase in metals in the Sacramento River from the proposed project. Thus, the proposed project may face prohibition of releases if stored water does not meet water quality criteria or standards or if releases can cause criteria or standards to be exceeded by downstream inputs (i.e., antidegradation policy).	implementation). Please see Chapter 6, Surface Water Quality, Impact WQ-2 and Master Response 4, Water Quality, regarding effects on water quality relative to water quality standards. In addition, please see the Antidegradation Policy section in Chapter 6, which discusses the how the antidegradation policy is considered and applied.		

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51100	19	7	During dry years, the adverse impacts associated with the project can be expected to be even greater. Flows in the Sacramento River from upstream reservoirs on the Sacramento River (i.e., Shasta Reservoir, Whiskeytown Reservoir) will be minimized during the winter months in an effort to restore water storage levels in those reservoirs. Likewise, during wet or even normal runoff years, releases from the upstream reservoirs during the winter will be curtailed during high runoff periods to prevent downstream flooding. In any of these scenarios, tributary influences, such as Cottonwood Creek, on water quality in the Sacramento River will be much greater. The proposed project would still attempt to capture as much runoff from the Sacramento River as possible, but the water diverted to the proposed project will have even greater concentrations of metals due to the majority of flow being from tributary streams (e.g., Cottonwood Creek) during dry and possibly even wet or normal runoff years. Similarly, during the summer in dry years,	The CALSIM hydrologic modeling results provide estimates of the proportion of water originating from tributaries as opposed to upstream reservoirs during all water year types, including Dry Water Years. As described in Chapter 6, Surface Water Quality, and Master Response 4, Water Quality, these CALSIM proportions are used to estimate metal concentrations in the water diverted from the Sacramento River for Sites Reservoir storage. As described in Chapter 5, due to restrictions on diversions from the Sacramento River, diversions for Sites Reservoir storage would be much greater during Above Normal and Wet Water Years than during Dry Water Years. Metal concentrations in the Sacramento River are a function of both river flow and percent of water from tributaries. If diversions to storage occurred during dry years, the estimated concentrations would rise due to more tributary input, but not due to higher river flow.	Reviewed by Client	N/A

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			releases from upstream reservoirs (i.e., Shasta Reservoir, Whiskeytown Reservoir) will be minimized. Releases to the Sacramento River from the proposed project (whether directly to the Sacramento River or indirectly through the CBD or GCID) will have a greater impact on water quality in the Sacramento River due to less dilution being available due to curtailed flows in the river from upstream reservoirs (i.e., Shasta and Whiskeytown reservoirs).	The CALSIM results also include Sacramento River flows and discharges from Sites Reservoir, so the fraction of Sacramento River water originating from Sites Reservoir can be estimated. These estimates are incorporated into the Chapter 6 analysis under Impact WQ-2. As described and incorporated into Chapter 6, when Sites Reservoir water would bed released to the Sacramento River, it would constitute 6%–7% of the Sacramento River flow on average, but 14%–15% when discharges are relatively high compared to river flow (i.e., 90th percentile values, which occur during dry conditions), depending on whether Alternative 1, 2, or 3 was implemented.		
51100	19	8	The limited data that are available are sufficient to show that water quality in the proposed reservoir will have concentrations of a large number of metals that exceed many water quality criteria and standards, including those established for the protection of agricultural water	Please see Master Response 4, Water Quality, and responses to comment 19-3 and 19-4 regarding water quality standards for evaluation and beneficial uses. Please also see Chapter 6 discussion for Impact WQ-2 regarding effects on water quality	Reviewed by Client	N/A

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			supply, wildlife and fisheries, and drinking water. Metals bioaccumulation in the reservoir food web could produce adverse impacts to fish-eating birds and other animals, as well as humans, and adversely affect any potential recreational benefit from the project. Releases from the proposed reservoir could adversely affect downstream resources, including agricultural water supply, wildlife and fisheries, and drinking water supplies for communities that divert water from the Sacramento River.	relative to water quality standards for beneficial uses.		
51100	19	9	The Basin Plan lists other chemicals that adversely affect water quality in the Sacramento River, including chlorpyrifos and diazinon. The California State Water Resources Control Board lists a number of other “constituents of concern” in the study area, including chlordane, DDT, mercury, PCBs, and dieldrin. In addition, sewer outfalls from the cities of Redding and Red Bluff contribute other contaminants, such as pharmaceuticals, to the Sacramento	As described in the Chapter 6, Surface Water Quality, Pesticides section and in Impact WQ-2, pesticide concentrations in the Sacramento River at the locations of Sites Reservoir diversion are generally low and would not result in high concentrations of pesticides in the reservoir or downstream. The graphs provided in Appendix 6E, Water Quality Data, provide additional information regarding pesticides. There is some potential the Yolo	Reviewed by Client	.

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			River. Other than diazinon and a brief discussion of chlorpyrifos, DDT, and dieldrin, no information is provided in the EIR about effects to the proposed project from these chemical contaminants.	Bypass habitat flows could cause relocation of pesticides present in Colusa Basin Drain or the Yolo Bypass, potentially resulting in impacts on aquatic resources. Impacts are identified in Chapter 6 as less than significant with implementation of Mitigation Measure WQ-2.2. Contaminants that occur primarily in sediment and not the water column (including polychlorinated biphenyls [PCBs], dichlorodiphenyltrichloroethane [DDT], chlordane, and dieldrin) were dismissed from evaluation as described in the Chapter 6, Selection of Water Quality Constituents to Evaluate section. This is because these pesticide contaminants would not be expected to be any more concentrated in Sites Reservoir than in the Sacramento River or Colusa Basin Drain and would be expected to mostly remain adsorbed to sediment. Similarly, as described in Chapter 6, wastewater treatment plant (WWTP) and industrial discharges were not		

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				considered in the analysis because the contaminant load from these discharges would not be affected by the Project, nor would dilution of existing WWTP discharges be compromised. Reduction in Sacramento River flow due to the Project would occur when flow is high, and increases in Sacramento River flow would occur when flow is low, potentially improving dilution needed for existing WWTP discharges..		
51100	19	12	Table 6-5 also shows that total mercury concentrations have been measured as high as 14.4 ng/L in the Sacramento River at Red Bluff but only 0.52 ng/L in Lake Oroville. Yet these relatively low concentrations of total mercury from the water in Lake Oroville have been sufficient to cause fish from this reservoir to exceed the numeric criterion and objectives for all trophic levels of fish, including both sport and prey fish, for the protection of human health and wildlife as contained in the Sacramento–San Joaquin River Delta Estuary TMDL for Methylmercury and Water Quality	Expected mercury concentrations were determined for the Project based on the qualitative assessment described in Chapter 6, Surface Water Quality, Methods of Analysis section and in Appendix 6F, Mercury and Methylmercury, which presents mercury data and other information from reservoirs in California to compare with the Sites Reservoir in terms of location, size, expected reservoir surface elevation fluctuations, mercury sources, and fish species present. Expected mercury/methylmercury concentrations for Sites Reservoir	Reviewed by Client	N/A

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			Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California—Tribal and Subsistence Fishing Beneficial Uses and Mercury Provisions. Fish tissue concentrations as high as 0.7 mg/kg have been found in fish from Lake Oroville (DWR 2007). Since mercury concentrations of up to only 0.52 ng/L in Lake Oroville have been sufficient to cause numeric criterion and objectives to be exceeded in this reservoir, concentrations of mercury as high as 14.4 ng/L in water diverted to the proposed reservoir from the Sacramento River at Red Bluff will undoubtedly cause highly significant impacts and substantial adverse effects in the proposed reservoir and in downstream releases. [DWR 2007. Mercury Contamination in Fish from Northern California Lakes and Reservoirs. July 2007]	cannot be compared to the No Project Alternative because the Sites Reservoir would not exist under the No Project Alternative. Accordingly, no impact determination for this water quality constituent in Sites Reservoir water or fish tissue is made. Regardless, the analysis acknowledges that, both in the short term and long term, there would be more methylmercury generated within the reservoir than would be degraded, particularly in the short term. The analysis acknowledges that the expected average and reasonable worst-case fish tissue concentrations of methylmercury would exceed the 0.2 milligram per kilogram (mg/kg) (wet weight) California sport fish objective. Similarly, the impact analysis discusses the potential for releases from Sites Reservoir to result in bioaccumulation of methylmercury in fish at other locations (i.e., Funks and Stone Corral Creeks, Colusa Basin Drain, Yolo Bypass, and the Delta). The implementation of Mitigation Measure WQ-1.1 would minimize		

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				bioaccumulation of methylmercury by requiring steps be taken to reduce, monitor, and manage mercury in the reservoir. The California Office of Environmental Health Hazards Assessment methylmercury fish consumption advisories would continue to be implemented in the study area during operation of the reservoir, and these advisories would serve to protect people against the overconsumption of fish with increased body burdens of mercury for those following these recommendations.		
51100	19	14	The DEIR states on page 6-22 states that "the effects of mixtures of metals on organisms in the Sacramento River are poorly understood." Nonetheless, the SWRCB states that when multiple constituents are found together, the combined toxicity of the multiple constituents should be evaluated. "In the absence of scientifically valid data to the contrary, Section 2550.4(g) of Chapter 15. Article 5 regulations referenced in the SWRCB's Site Investigation and Cleanup Policy	Please see Master Response 4, Water Quality, for a discussion of additive effects. The applicability of the policies identified in the comment is limited because Sites Reservoir would not be a cleanup site, hazardous waste site, or Superfund site (see Chapter 27, Public Health and Environmental Hazards, for more information regarding hazardous material sites).	Reviewed by Client	N/A

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			requires that theoretical risks from chemicals found together in a water body shall be considered additive for all chemicals having similar toxicological effects or having carcinogenic effects. This requirement is also found in the California hazardous waste management regulations (Title 22 of CCR, Section 66264.94(f) and in the USEPA Risk Assessment Guidance for Superfund (RAGS).” This DEIR did not consider the combined effects of metals and is therefore deficient.			
51100	19	15	The DEIR states on page 6-22 that metal concentration measurements are shown in Appendix 6E but that “this is not an exhaustive presentation of all measurements, but instead is provided to show patterns of metal concentrations at the Sites Reservoir intake locations (near Red Bluff and Hamilton City), in the CBD, and upstream of one of the potential release locations (upstream of the CBD).” The DEIR should not selectively filter the available data in order to support its contentions, but should	There was no selective filtering of existing publicly available data. Data were identified and used based on the best publicly available data sources for the most relevant locations. Data from earlier than 2000 were not utilized because metal concentrations in the Sacramento River have changed with time, and the data period from 2000 to 2020 (a period of 21 years) provide a sufficient representation of what would be expected under the No Project Alternative. Chapter 6, Surface Water Quality, text has been	Reviewed by Client	N/A

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			show all data even though the data may prove contentions incorrect.	modified to make it more clear that the best data sources were used for the most relevant locations and explain why old (pre-2000) data were not used; the text modifications do not change the impact determinations or conclusions in the chapter.		
51100	19	16	The DEIR states on page 6-23 that "for most metals there is little difference in concentration between upstream and downstream locations on the Sacramento River." This is not true at all. Data in WDL show substantial differences between upstream and downstream locations. For example, comparing the data for the Sacramento River at Keswick to that at Red Bluff show total aluminum as 492 ug/L vs. 3,630 ug/L, total copper as 4 ug/L vs. 14.7 ug/L, total iron as 294 ug/L vs. 4,160 ug/L, and total lead as 1.56 ug/L vs. 3.14 ug/L, all substantial differences. The differences in concentrations for these and other constituents is attributed to tributary stream inflows, with the most significant in terms of both flow and	Text has been clarified in Chapter 6, Surface Water Quality. The similarity between upstream and downstream locations described in the text is for the locations with data presented in Appendix 6E, Water Quality Data, between Red Bluff and the CBD discharge site. The text revision does not change the impact determinations or conclusions in the chapter.	Reviewed by Client	N/A

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			contribution of these constituents being Cottonwood Creek.			
51100	19	17	The DEIR states on page 6-31 that “contaminated sediments could move into Sites Reservoir as suspended sediments during high flows, but the main supplies of contaminated sediments and their potential effects would remain in the Sacramento River channel because the amount of sediment contained in the diversions to Sites Reservoir would be small compared to what is contained in the Sacramento River channel.” The concentration of contaminated or suspended sediments would be exactly the same in the water diverted to Sites Reservoir and that in the Sacramento River at the point and time of diversion – there is no difference in sediment load. The only difference is that the Sacramento River will carry a substantially greater load of sediment due to the substantially greater flow in the Sacramento River than the amount of	The comment is correct that there would be no difference in sediment concentration between the Sacramento River at the point of diversion and the canals immediately downstream of the points of diversion. The purpose of the text the comment references is to make it clear that contaminants closely associated with sediment are not expected to be any more concentrated in Sites Reservoir than in the Sacramento River. Text in Chapter 6, Surface Water Quality, has been clarified in the Final EIR/EIS; the clarifications do not change the conclusions or impact determinations contained in the chapter.	Reviewed by Client	N/A

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			water diverted to the proposed reservoir.			
51100	19	18	The DEIR states on page 6-31 that "wind, rain, and wave action commonly erode bare soil adjacent to reservoirs and could cause erosion along the edge of Sites Reservoir when it is not full. These phenomena may temporarily increase turbidity along the reservoir's edge prior to settling of the sediment, but this increase would not markedly affect beneficial uses of the reservoir (i.e., recreation, water supply, fisheries and wildlife)." Erosion of soils in the exposed inundation zone will re-suspend soils laden with metals and other contaminants, which may then contribute to impacts in the reservoir or downstream releases.	Please see Master Response 4, Water Quality, which explains that resuspension of sediment along the shoreline would be unlikely to substantially change concentrations in Sites Reservoir because the amount of sediment involved would represent a small fraction compared to the suspended sediment concentrations diverted from the Sacramento River during high flows.	Reviewed by Client	N/A
51100	19	19	Page 6-33 states that "when Sites Reservoir would release water to the Sacramento River, it would constitute 6%–7% of the Sacramento River flow on average and 12%–13% when discharges are relatively high compared to river flow," and therefore	The calculations of evapoconcentration are included in the quantitative analysis of metal concentrations in Sites Reservoir and the Sacramento River, as described in the Chapter 6, Surface Water Quality, Pesticides and Metals other than	Reviewed by Client	N/A

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			“water quality in Sites Reservoir would have limited effect on the water quality in the Sacramento River.” However, page 6-32 states that evapoconcentration could increase constituent concentrations in Sites Reservoir by up to 48%. Therefore, water released from Sites Reservoir to the Sacramento River could contribute higher concentrations of constituents such as metals. The DEIR does not evaluate the effects from these higher concentrations on water quality and beneficial uses of the Sacramento River. Also, during “operational exchanges” when additional water is released from Sites Reservoir and water is held back in Shasta or Oroville reservoirs, the percent of water from Sites Reservoir constituting the total flow in the Sacramento River will be increased, potentially adversely affecting water quality in the river and impacting downstream water users.	Mercury section, and are incorporated in the metals analysis for Impact WQ-2. Operational exchanges are included in the CALSIM modeling results that are used in the quantitative assessment of dilution of the discharges from Sites Reservoir by the Sacramento River. As such, effects of evapoconcentration, operational exchanges, higher concentrations of metals in the Sites Reservoir release, and effects on Sacramento River water quality and beneficial uses are considered in the evaluation of impact WQ-2. Please also see Master Response 4, Water Quality, for a discussion of metals and metalloids other than mercury.		
51100	19	20	Page 6-37 discusses Harmful Algal Blooms in relation to “whether cyanobacteria and cyanotoxins may	The text in Chapter 6, Surface Water Quality, has been revised in the Final EIR/EIS to clarify that reference to	Reviewed by Client	N/A

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			be released from the reservoir with dead pool withdrawals" and "the elevation of the low-level intake from which dead pool withdrawals would be released." "Dead pool" usually refers to water in a reservoir that cannot be drained by gravity through a dam's outlet works. How is the project planning on withdrawing water from the dead pool?	dead pool withdrawals is referring to operational dead pool. As indicated in Chapter 2, Project Description and Alternatives, Sites Reservoir is currently estimated to have a dead pool of approximately 17.7 thousand acre-feet (TAF), below which water cannot physically be removed from the reservoir using the I/O tower. However, the Authority is currently planning to operate to a dead pool of up to 60 TAF under normal conditions. The text revisions in Chapter 6 do not result in modifications to impact determinations or conclusions in the chapter.		
51100	19	21	Page 6-42 states that the "metals analysis relies on best available data provided by DWR's WDL" and that "these data were collected intermittently over multiple years, with measurements representing a wide range of flow conditions." This is not true. The statement of "best available data" is an attempt to portray the WDL data as robust, which it is not. While the data were collected	The information used to conduct the evaluation in Chapter 6 is sufficient to provide decision makers with an understanding of the relative change in metals concentrations between the No Project Alternative and the Project. Although water quality measurements did not target high flows, multiple measurements were taken during higher flows. Master Response 4, Water Quality, discusses	Reviewed by Client	N/A

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			"intermittently over multiple years," the data are better described as "spotty." Sample collection for this sparse data did not target a "wide range of flow conditions," but rather were based on a fixed schedule regardless of flow conditions. The metals data from DWR's Water Data Library (WDL) "provide a general understanding of how metal and pesticide concentrations may vary with flow and location, allow the identification of trends, and support the impact analysis and conclusion." Water quality data in the WDL for diversion locations of the project are extremely limited. From the Sacramento River below the Red Bluff Diversion Dam, only 26 samples were collected by DWR between the years of 2000 and 2020 (Table 1) during the project's primary months of diversion to storage (January through March, p. 6-32). In eight of the 20 years of data collection from this monitoring station, only one sample was collected during the primary months of diversion to storage; only two years saw four samples collected (both were	available data and how the available data were used to develop exponential equations to estimate metal concentrations as functions of tributary input and flow, allowing estimation of concentrations under more extreme conditions than what was present during measurements. Please see Master Response 4 for a review of the number of data points and the methodology described and used in Chapter 6, Surface Water Quality, for pooling data to maximize the number of data points at higher flows. Master Response 4 also includes a review of the equations to estimate metal concentrations at flows or percentages of tributary inflows higher than what occurred at the time of the measurements. Also, please see Appendix 6E, Water Quality Data, for a tabulation of the number of data points from each measurement site and graphical representation of the relationship between measured metal concentrations and flow in the Sacramento River at Keswick. As		

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			drought years); in the remaining years only two to three samples were collected during the months of January through March. This pattern of data collection is even more sparse for the Sacramento River at Hamilton City (Table 2). Only 20 samples were collected from the Hamilton City monitoring site during the project's primary months of diversion to storage. Only one sample was collected from this site in 10 of the 20 years of data collection; three samples were collected in two of the monitoring years, and four samples were collected in one year (which was a drought year). This scant yearly data collection does not "provide a general understanding of how metal and pesticide concentrations may vary with flow and location, allow the identification of trends, and support the impact analysis and conclusion." Collection of these 26 samples was not timed to address variations in concentrations due to variations of flow, but were grab samples collected on a more or less set schedule without the intent to provide	described in Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, the Authority will be conducting water quality measurements for a variety of constituents.		

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			sufficient data for impact analysis for any type of storage project. Concentrations of many of the metals analyzed from these samples were found to be higher when flows were higher during sample collection. However, variation in concentrations due to flow was not considered during sample collection, and even higher concentrations of metals may be found with flows higher than those during the limited sample collection.			
51100	19	22	The project proposes to collect additional samples for metals at a frequency sufficient to better understand the relationship with variations in flow, but this is only after the project has been constructed. These post-project data would "refine the understanding of metals as more data would likely improve the accuracy of equations used in this analysis for estimating metal concentrations," which is commendable but too late to better understand the adverse effects prior to construction of the project. The project proponents have been	Please refer to responses to comments 19-15 and 19-21 regarding the use of publicly available water quality data in the impact analysis.	Reviewed by Client	N/A

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			pursuing this project for over 20 years. They were also made aware of water quality issues related to this project from comments on the 2017 DEIR, providing ample time for additional data collection to further elucidate the issues prior to preparation of the current DEIR, but no data were collected by the project proponents. Failing this, now they propose to collect this needed data but only after the project is completed to determine the severity of the problems. This is backwards. CEQA requires impact analysis prior to approval and construction of a project, not afterwards. This project should not be constructed and then data collected to see if it will work or to determine the adverse impacts, but rather data should be collected and evaluated prior to approval of this project to determine adverse impacts and potential mitigation			
51100	19	23	Based on the limited available data, the project focuses on only four metals (aluminum, copper, iron, and lead) considered to be of greatest	Please refer to Master Response 4, Water Quality, which elaborates on the following information regarding regulatory standards appropriate for	Reviewed by Client	N/A

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			concern due to seasonal changes in concentration and concentrations above standards (p. 6-42). The only "standards" considered are a "California MCL," "California Secondary MCL," and Freshwater Chronic Standard for Aquatic Life Protection. There are a large number of other numeric water quality thresholds applicable to this project, including California and Federal Drinking Water Standards (MCLs), California Public Health Goals (PHGs), California State Notification and Response Levels for Drinking Water, Suggested No-Adverse-Response Levels (SNARLs), Cancer Risk Estimates, Health-based criteria from USEPA Integrated Risk Information System (IRIS), Proposition 65 Safe Harbor Levels, California Toxics Rule Criteria to Protect Human Health and Aquatic Life, USEPA Recommended Criteria to Protect Human Health and Aquatic Life, Agricultural Use Protective Limits, and Taste and Odor Based Criteria. These assessment thresholds have been summarized by the SWRCB and are presented below	use in the impact evaluation of metals and metalloids other than mercury. California MCLs and standards for aquatic life protection are the primary regulatory standards recommended for evaluation of metal concentrations for municipal water supply and protection of aquatic life and consumption of aquatic life. The metals evaluation focused on the more conservative standards, which was generally the standard for aquatic life protection. Master Response 4 lists multiple reasons alternative values were not included in the impact analysis.		

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			in Tables 3 and 4. These are the thresholds to which the proposed project should be compared, but apparently not utilized in the DEIR analyses.			
51100	19	24	In addition to the four metals considered in the DEIR, arsenic, cadmium, manganese, nickel, and zinc concentrations in water from the Sacramento River below the Red Bluff Diversion Dam as well as at Hamilton City exceed various criteria (Tables 3 and 4). The tables also show potential metal concentrations in Sites Reservoir due to evapoconcentration, as discussed on page 6-32 of the DEIR.	Please see Master Response 4, Water Quality, for a discussion of water quality standards and metals selected for detailed evaluation and a description of the methodology for the metals analysis, which includes estimates of variable inflow concentrations and the variable effect of evapoconcentration. The inflow concentration would not continually equal the maximum measured value, and effects of evapoconcentration would not always be at the maximum estimated value from the entire 1922–2003 time series.	Reviewed by Client	N/A
51100	19	25	Cottonwood Creek is the main tributary contributor to winter flows in the Sacramento River at Red Bluff and is primarily responsible for elevated metals concentrations in the river. As an example of the influence of Cottonwood Creek on metals	Please see Master Response 4, Water Quality, for an in-depth discussion of how the available data were used to estimate metal concentrations in the diversions for Sites Reservoir storage based on flow and the percentage of tributary inputs, including	Reviewed by Client	N/A

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			concentrations in the Sacramento River at Red Bluff, on March 1, 2006 when the total aluminum concentration in Cottonwood Creek was measured as 3,739 ug/L, the concentration in the Sacramento River was 2,240 ug/L (Table 5). But, similar to previous monitoring in the Sacramento River, monitoring of Cottonwood creek did not target higher flows and even higher concentrations of metals are likely to be found with the higher flows. Nor did monitoring in Cottonwood Creek always coincide with sample collection in the Sacramento River. For example, on May 5, 2005, a total aluminum concentration of 14,345 ug/L was analyzed from Cottonwood Creek, but no corresponding sample was collected from the Sacramento River. Estimating the total aluminum concentration using the concentration reported from Cottonwood Creek multiplied by the ratio of concentrations in the Sacramento River and Cottonwood Creek ((Cottonwood Cr) x (Sacramento River/Cottonwood Creek)) from	Cottonwood Creek The evaluation in Chapter 6 of the RDEIR/SDEIS used best available measured metals data from multiple locations to develop equations of the inflow metals concentrations to Sites Reservoir as a function of the Sacramento River flow and the percent of flow from tributaries, including Cottonwood Creek. The equations for estimating inflow concentrations are conservative because they were adjusted upward to be more responsive to increases in river and percent tributary flow, they allow estimated concentrations to exceed the maximum measured values, and they assume no settling of suspended sediment in the conveyance system on the way to Sites Reservoir. Measured data were not used directly in the quantitative evaluation in Impact WQ-2. Instead, the measured data were used to develop equations to estimate concentrations over a range of flows and percentages of tributary contributions to flow.		

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			March 1, 2006 yields an estimated concentration in the Sacramento River of 8,594 ug/L for May 5, 2005. This total aluminum concentration is much higher than the few measured analyses from the Sacramento River, and serves to reiterate the likelihood that even higher concentrations of metals would undoubtedly be found with more frequent monitoring and targeting of higher flows, which are the flows that would be diverted to the proposed reservoir. This same relationship applies to other metals and demonstrates that the analysis in the DEIR was not "conservative" but used the little available data to underestimate metal concentrations likely to occur. Since the project proponents have failed to collect any water quality data in the 20 years they have been promoting this project, using data projections such as that discussed above is the most appropriate measure to arrive at a reasonable evaluation.			

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51100	19	26	The concentration of metals in Sites Reservoir was then calculated using the projected maximum Sacramento River concentration and applying the 48 percent evapoconcentration factor described in the DEIR. Using the "conservative" approach of the DEIR, the projected metals concentrations in the Sacramento River at Hamilton City during the May through September release period was next calculated using the maximum metal concentrations in the Sacramento River at Hamilton City (from WDL). The projected metals concentrations in the river at Hamilton City were calculated using 13 percent of the Sites Reservoir concentration after evapoconentration (Table 5) and 87 percent of the Sacramento River at Hamilton City concentration (WDL). The Sacramento River at Hamilton City site was used with the assumption that water quality in the river at Hamilton City would be similar to downstream water quality near Dunnigan, the river release site for Alternative 2. The projected metals concentrations in the Sacramento	Please see Master Response 4, Water Quality, for a description of the process for selecting metals and water quality standards for evaluation and for a description of the methods for estimating metal concentrations, which includes a number of factors (e.g., estimates concentrations for a full time series corresponding to the 1922–2003 CALSIM simulation period and includes the full time series of variable estimated inflow concentrations). The comment utilizes an alternative approach to evaluating the effect of the Project on metal concentrations. The approach described in this comment assumes a projected maximum total metal concentration would be entering Sites Reservoir at all times, that there would be no reduction in concentration associated with settling of suspended sediment, that the maximum estimated evapoconcentration for the 1922–2003 simulation period would apply at all times, and that Sites Reservoir releases would always constitute the	Reviewed by Client	N/A

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			River at Hamilton City, even with dilution of Sites Reservoir releases with Sacramento River water, exceed various water quality objectives or promulgated criteria (Table 6). Similar results can be expected for discharges from Sites Reservoir to the Colusa Basin Drain. Table 6 shows that concentrations of metals in the CBD, when mixed with 13 percent of water from Sites Reservoir and assuming average metal concentrations in the CBD (p. 6E-10), exceed water quality objectives or promulgated criteria for aluminum, arsenic, copper, iron, lead, manganese, and nickel. Introduction of water from Sites Reservoir to the CBD results in even higher concentrations in the CBD of most metals, including aluminum, cadmium, chromium, copper, iron, lead, manganese, nickel, selenium, and zinc.	90th percentile of the estimated percentages in the Sacramento River at all times. This combination of worst-case conditions is very unlikely to co-occur because each one of the worst-case conditions is unlikely to occur individually, let alone all of them at the same time. For example, to not have any settling of metals in the reservoir, the reservoir would need to be undergoing active filling, and this would not co-occur with maximum evapoconcentration, which would happen when the reservoir is not receiving inflow. The calculations associated with this comment assume concentrations in the Sacramento River receiving water would be equal to the maximum values measured at Hamilton City during May through September. Many of these maximum measured metal concentrations already exceed water quality standards. Maximum concentrations are associated with high flow conditions in the Sacramento River, when Sites Reservoir discharges would not be		

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				needed. Most of the measurements of maximum concentration occurred on May 19, 2005, when flow in the Sacramento River at Keswick was 25,400 cubic feet per second (cfs). It is unlikely that Sites Reservoir would discharge to the Sacramento River when flows are this high because the Project is meant to typically discharge when Storage Partners would require water.		
51100	19	27	The "evaluation of concentration assuming no settling of suspended sediment" starting on page 6-44 used data from the "November–May period of higher flows and concentrations to better focus on the range of flows that may occur when Sacramento River water would be diverted to Sites Reservoir." This is inconsistent with other statements in the DEIR that state that the project's primary months of diversion to storage would be January through March (page 6-32).	The primary months of diversions would occur when flow is high in the Sacramento River, but diversions could occur any time during September 1–June 14. Please see Master Response 4, Water Quality, for more detail regarding why data for November through May were selected for evaluation of metal concentrations.	Reviewed by Client	N/A

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51100	19	28	The DEIR states the settling of sediment entering the reservoir would substantially reduce the concentration of metals (page 6-45). Though settling of sediment (and organic matter) entering the reservoir would reduce total metal concentrations, the DEIR does not take into account resuspension of settled sediments by winds or inundation zone erosion when the reservoir level is reduced. In addition, dissolution of metals from the bottom sediments under the anoxic conditions expected to occur in the reservoir can substantially increase metals concentrations in the hypolimnion, which will become distributed throughout the water column following fall turnover. "Settling in the reservoir of 95% or more of the sediment that enters the reservoir" would create a significant source for metals in the reservoir from resuspension or dissolution during certain times of the year.	Please see Master Response 4, Water Quality, and response to comment 19-18 regarding metal concentration effects associated with shoreline erosion. Dissolution of metals from the sediments under anoxic conditions was considered in the analysis and is a primary reason Mitigation Measure WQ-2.1 was developed. Master Response 4 also addresses metal concentration effects associated with anoxic conditions and reaeration, explaining the low likelihood that metals released under anoxic conditions would be carried downstream from Sites Reservoir at times when metal concentrations would otherwise be low. If high metal concentrations associated with anoxic conditions cannot be avoided in the reservoir discharge, the metal concentrations would be expected to decline as the water moves downstream due to reaeration.	Reviewed by Client	N/A
51100	19	29	A "Reservoir Management Plan" is identified on page 6-47. The RMP Page 2D-37) states that "past studies	The monitoring of Sacramento River metal concentrations described in Appendix 2D will provide	Reviewed by Client	N/A

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			of metal concentrations in the Sacramento River have not focused on high flows that will be the source water for Sites Reservoir. Metal concentrations at the diversion(s) will be measured within 24 hours of the start of diversions at RBPP and every 2 weeks during continuous diversions." "After 2 years of measuring metal concentrations in the diversions, the frequency of measurements will decrease to monthly." Rather than focusing on a strict protocol or set schedule of monitoring at 2-week intervals, monitoring should target a range of flow conditions to better understand the relationship between flow and metals concentrations. Event based monitoring may require data collection biweekly, weekly, or even on a daily basis as flow conditions vary. Additional consideration for monitoring would include analyzing differences in water quality based on whether flows are primarily composed of water from Shasta Lake or tributary inflows dominate the flow in the Sacramento River at the diversion points, and dry, normal, and wet year	measurements that focus on water quality at the most relevant time for water quality in Sites Reservoir, namely when water would be diverted to storage. This monitoring schedule will naturally result in data collection over a range of conditions that would occur at the time of diversions to storage. As described in Appendix 2D, after 2 years of measuring metal concentrations in the diversions, the frequency of measurements will decrease to monthly but not be terminated. The final RMP will be prepared after meetings and consultation with regulatory agencies and other stakeholders and the RMP may continue to be revised throughout the operation of the reservoir, potentially resulting in modification of the protocol for monitoring metal concentrations.		

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			effects on water quality. Two years of data collection likely will not be sufficient to provide the required information.			
51100	19	30	The description of the SWRCB's Antidegradation Policy on page 6-47 is misleading in stating that the policy allows for some degradation in consideration for increased beneficial uses, the supposed beneficial use being increased water supply from the proposed reservoir. The Antidegradation Policy prohibits discharges that would degrade water quality even though the degradation would not exceed water quality objectives because no capacity would exist for degradation that will be caused by the next downstream or downgradient uses – the ability to beneficially use the water would have been impaired, even though water quality objectives would not yet have been exceeded (SWRCB 2011). The contribution of additional metal loads from releases from the proposed Sites Reservoir during the summer would cause concentrations of metals in the	According to the Antidegradation Implementation Policy in the Central Valley Basin Plan (Central Valley Regional Water Quality Control Board 2018:4-23), "The Regional Water Board will apply 68-16 [the Antidegradation Policy] in considering whether to allow a certain degree of degradation to occur or remain. In conducting this type of analysis, the Regional Water Board will evaluate the nature of any proposed discharge, existing discharge, or material change therein, that could affect the quality of waters within the region. Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State."	Reviewed by Client	Central Valley Regional Water Quality Control Board. 2018. The Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley Region: The Sacramento River Basin and the San Joaquin River Basin. Fifth Edition. Revised May 2018. Available: https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201805.pdf.

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			Sacramento River (through direct releases or releases through the CBD or GCID) to exceed criteria and standards or at least be subject to the Antidegradation Policy due to an incremental increase in metals in the Sacramento River from the proposed project. Thus, the proposed project may face prohibition of releases if stored water does not meet water quality criteria or standards or if releases can cause criteria or standards to be exceeded by downstream inputs (i.e., Antidegradation Policy).	Please see response to comment 19-6 regarding the operation of the Project and the application of the antidegradation policy. In addition, please see the Chapter 6, Surface Water Quality, discussion for Impact WQ-2 and Master Response 4, Water Quality, for a discussion of the effects of the Project on water quality in the Sacramento River. The analysis concludes that, with the exception of methylmercury, the Project would not cause substantial increases in metal concentrations in the Sacramento River. As a result, with the possible exception of methylmercury, the Project would not restrict downstream beneficial uses, including those downstream beneficial uses that may degrade water quality. The Authority will work with the State Water Board and Regional Water Board (as applicable) as part of the certification process under Section 401 with regard to application of the Antidegradation Policy.		Accessed: January 24, 2021.

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51100	19	34	Because Harmful Algal Blooms (HABs) are expected to be relatively high in surface water of the reservoir (page 6-55), "releases could be made from lower in the water column (e.g., through the low-level intake) to reduce the potential for higher concentrations of cyanobacteria and cyanotoxins to be released downstream." This is proposed as a strategy on page 6-57 to avoid effects from initial filling of Sites Reservoir on downstream conditions. However, a statement on page 6-16 indicates that water would be released from the surface rather than lower in the water column to avoid releasing water with high concentrations of mercury: "Due to this stratification, reservoir releases from the warmer, upper layer of water (i.e., the epilimnion) during the summer are less likely to have elevated methylmercury concentrations compared to releases from the deeper hypolimnion." Water quality is affected whether water is released from the surface (HABs) or bottom (mercury). Neither release scenario, then, is effective at	Please refer to Master Response 4, Water Quality, for a discussion regarding the use of the I/O tower, which would control releases of water quality constituents, including cyanotoxins and methylmercury, by selective use of the multiple tiers in the tower. Because presence of harmful algal blooms (HABs)/cyanotoxins would be the only reason for releasing water from deeper in the reservoir, potential conflicts with regard to I/O tower tier selection to avoid releasing multiple water quality constituents of concern would not occur unless HABs/cyanotoxins were present at the I/O tower. If HABs/cyanotoxins were present at the I/O tower at the same time relatively high metal concentrations (including methylmercury) or water too cold for agriculture was deep in the reservoir, then there might be no I/O tower tier available for discharging relatively high-quality water. However, as described in Master Response 4, this scenario would be uncommon and additional measures (e.g., Mitigation	Reviewed by Client	N/A

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			mitigating impacts; releases from the bottom to avoid HABs results in high levels of mercury being released, while releases from the surface to avoid mercury results in high levels of HABs being released. One mitigation strategy conflicts with the other. Withdrawing water between the epilimnion and hypolimnion (i.e., the metalimnion) may avoid releasing water with high HABs (epilimnion) or mercury (hypolimnion), but this narrow band of water would quickly be depleted, leaving no option but to release water with either high concentrations of HABs or mercury.	Measures WQ-1.1 and WQ-2.1) would help protect against the consequences of such a scenario. Mitigation for potential methylmercury impacts is described under Mitigation Measure WQ-1.1 and is focused on reducing the methylation of mercury in Sites Reservoir, which would reduce potential water quality impacts due to mercury.		
51100	19	38	The DEIR on page 6-81 states that "concentrations of metals released from Sites Reservoir could be higher than their concentrations in the Sacramento River at the point of discharge, potentially degrading river water quality." "The release of Sites Reservoir water to the CBD under Alternatives 1, 2, and 3 would likely reduce metals concentrations in the CBD because metal concentrations in the CBD are generally higher than	As described in the Chapter 6, Surface Water Quality, Methods of Analysis section, the Project would not change the amount of metals entering CBD from existing land use. The effect of the metals load in discharges from Sites Reservoir on the Sacramento River water quality was evaluated independently from existing CBD loads (i.e., existing CBD loads were not part of the analysis). In other words, the existing load in CBD would	Reviewed by Client	N/A

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			metals concentrations in the Sacramento River regardless of time of year." As discussed earlier, release of water to the CBD from Sites reservoir results in elevated concentrations of most metals in the CBD. However, even if release of water from Sites Reservoir to the CBD did not cause metal concentrations in the CBD to be increased, the total volume of poor quality metal laden water being released to the Sacramento River at the CBD outfall is increased with the introduction of water from Sites Reservoir, thereby causing greater adverse impacts on water quality in the Sacramento River than if just CBD water was released. The additional metals load in CBD due to the addition of water from Sites Reservoir may, when combined with other downstream discharges, result in the need for additional water treatment by downstream users, particularly municipal or industrial users.	be the same under both No Project and Project conditions and therefore would not contribute to a Project effect. Please see Master Response 4, Water Quality, which explains that, due to the timing of releases from Sites Reservoir, most suspended sediment that enters Sites Reservoir would settle on the way to Sites Reservoir or in the reservoir prior to discharge. Once some settling of suspended sediment has occurred in Sites Reservoir, metal concentrations in Sites Reservoir are likely to be similar to or less than concentrations in the CBD. In addition, please see response to comment 19-3 regarding effects on beneficial uses and please see response to comment 19-26 regarding the assumptions used in the comment. Although CBD generally has lower water quality than the Sacramento River, the volume of water emanating from CBD during the dry-season is relatively low (generally less than		

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				1,000 cfs during May – November as shown in Chapter 5) and the resulting CBD effect on Sacramento River water quality does not preclude beneficial uses of water. The water from Sites Reservoir could represent a slight increase in load but reduction in concentration from CBD. Much of the increase in load would represent load that was diverted from and then returned to the Sacramento River. It is unlikely the incremental effect of Sites releases on concentrations in the Sacramento River would be enough to cause CBD effects to exceed regulatory standards, especially considering the dilutive effect of the Sacramento, Feather, and American Rivers. In addition, as described in Chapter 5, Sites Reservoir releases to the Sacramento River would be capped at 1,000 cfs, and when CBD flows are high, such as occurs during rice field drainage, Sites Releases would need to be less than 1,000 cfs due to limited capacity in CBD.		

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51100	19	39	The DEIR states on page 6-81 that "high concentrations of total metals in the Sacramento River water diverted to storage may be reduced substantially by settling of suspended sediment. This would cause concentrations to drop and approach the dissolved, filtered measurements." The DEIR does not take in account the dissolution of metals from the settled sediments under the anoxic conditions expected in the reservoir. Dissolution of metals from the settled sediments will add to those already present in the dissolved form. In addition, the DEIR states that evapoconcentration could increase metals concentrations in the reservoir by up to 48 percent.	Please see Master Response 4, Water Quality, and response to comment 19-28 regarding dissolution of metals under anoxic conditions and a description of how evapoconcentration was included in the analysis.	Reviewed by Client	N/A
51100	19	40	The DEIR on page 6-82 states that "to demonstrate a range of results for the Sacramento River, these graphs show two types of results for concentrations in the Sacramento River downstream of the Sites discharge: Concentrations assuming median river concentrations mixed with Sites Reservoir concentrations that assume no	Please see Master Response 4, Water Quality, and response to comment 19-25 regarding the conservative nature of the metals analysis. The comment is correct regarding when Sites Reservoir would divert water and, as described in Chapter 2, Project Description and Alternatives,	Reviewed by Client	N/A

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			settling of suspended sediment. This represents typical river concentrations mixed with Sites concentrations that are probably unrealistically high." Sites Reservoir will not be diverting "median" river concentrations, but rather the higher concentrations occurring with higher flows in the January through March period. Throughout this DEIR, comments are made that analyses are "conservative," meaning that the DEIR considers worst case scenarios in the analyses. The analyses are not "conservative" at all, but are an underestimation of the concentration of metals that will occur in the reservoir since the available data does not identify the higher concentration of metals that will occur with higher flows.	Sites Reservoir would typically divert during high flow events when metal concentrations are likely to be elevated. The comment misinterprets the sentence in question. The median values mentioned in the sentence are median values for the Sacramento River receiving water, not the water that would be diverted to Sites Reservoir storage.		
51100	19	41	The DEIR on page 6-82 states that "the total aluminum, total copper, and total iron concentrations in Sites Reservoir are likely to frequently exceed aquatic life protection standards if settling did not reduce these concentrations." As noted previously, settling of sediments is not	Please refer to Master Response 4, Water Quality, and response to comment 19-28 discussions regarding anoxic conditions. Please also refer to Master Response 4 for a discussion of the use of the I/O tower, which would control releases of water quality	Reviewed by Client	N/A

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			a permanent sink for metals in the reservoir. Dissolution of metals under anoxic conditions will allow metals from the sediments to re-enter the water column, which may then lead to even more exceedances of water quality standards for aquatic life protection.	constituents by selective use of the multiple tiers in the tower.		
51100	19	42	In discussing effects on aquatic communities in the reservoir due to metals, the DEIR on page 6- 82 states “these effects would occur on an aquatic community in a reservoir that is not present under existing conditions so there would be no substantial degradation of water quality relative to existing conditions.” Strange statement. There is no degradation under existing conditions without the reservoir, but there are certainly impacts on the aquatic community when the reservoir is constructed. The SWRCB sets water quality standards and objectives that includes reservoirs.	In the analysis in Chapter 6, Surface Water Quality, the No Project Alternative represents the continuation of the existing conditions for the study area, in general, including the proposed reservoir site specifically. Because no reservoir exists under the No Project Alternative, a comparison between existing water quality conditions at the proposed reservoir site and water quality conditions once Sites Reservoir is filled and operational cannot be made. Please see the response to comment 19-31 regarding the determination of significant impacts and adverse effects of a project relative to an environmental baseline/No Project Alternative and No Action Alternative	Reviewed by Client	N/A

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				pursuant to CEQA and NEPA, respectively. As acknowledged in Chapter 4, Regulatory and Environmental Compliance: Project Permits, Approvals, and Consultation Requirements, and Chapter 6, the operation of the reservoir will comply with applicable permit requirements issued by the State Water Resources Control Board and other regulating agencies. Effects due to construction and operation of Sites Reservoir on special-status fish species and aquatic biological resources at locations outside of the reservoir are discussed in Chapter 11, Aquatic Biological Resources.		
51100	19	44	The DEIR on page 6-83 states "acute synergistic metal effects in the river would be greater than what might occur in Sites Reservoir because metal concentrations in the Sacramento River during high flow events are much higher than concentrations expected in Sites Reservoir." Diversions to Sites Reservoir would	The sentence that begins "acute synergistic metal effects" has been modified to clarify that effects in Sites Reservoir may at times be similar to what occurs in the Sacramento River. Aluminum and copper are the most likely metals to exceed standards. Information in Chapter 6, Surface	Reviewed by Client	N/A

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			occur during high flow events, so metals concentrations in Sites Reservoir would be similar to those in the Sacramento River during these events. The DEIR goes on to state "as described above, once suspended sediment settles in Sites Reservoir most metals are expected to occur at levels below water quality standards for aquatic life protection, which would limit the likelihood of synergistic effects." The DEIR considered only four metals, but nonetheless found that "with these assumptions for partial settling, concentrations for total aluminum may be close to the 620 µg/L water quality standard for aquatic life protection, hovering between about 500 µg/L and 750 µg/L" and "total copper concentrations may occasionally exceed water quality standards for aquatic life protection" (page 6-82). This conclusion conflicts with the earlier and does not support the conclusion that most metals are expected to occur at levels below	Water Quality, and Appendix 6E, Water Quality Data (e.g., the Water Quality Standards for Metals, Metals Data by Month, and Metals Data Tables sections), show that most metals (i.e., metals other than aluminum and copper) occur at levels below water quality standards. Even for aluminum and copper, the Project would not be expected to cause exceedances of standards in Colusa Basin Drain or the Sacramento River, as described in Impact WQ-1 and Impact WQ-2. Please see Master Response 4, Water Quality, regarding selection of metals for detailed evaluation and discussion of additive effects.		

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			water quality standards for aquatic life protection.			
51100	19	44	Graphs are presented on pages 6-84 and 6-85 that depict estimated concentrations of various metals going back as far as the year 1920 to the year 2000. There are no metals data for nearly all the years depicted in the graphs, so how were the estimates determined?	CALSIM results for water years 1922–2003 were used in the estimation procedure described in the Chapter 6, Surface Water Quality, Pesticides and Metals other than Mercury section. The methodology is also summarized and clarified in Master Response 4, Water Quality.	Reviewed by Client	N/A
51100	19	45	The DEIR on page 6-86 states that "arsenic levels measured in the Sacramento River are below regulatory standards." Arsenic levels in the Sacramento River near Red Bluff as well as at Hamilton City exceed several goals and objectives, including the California Public Health Goal for Drinking Water, USEPA National Recommended WQ Criteria for water and fish consumption, and USEPA National Recommended WQ Criteria for fish consumption. Though not regulatory, these goals are criteria to which arsenic concentrations	Please see Master Response 4, Water Quality, and response to comment 19-23 regarding regulatory standards for evaluation.	Reviewed by Client	N/A

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			should be compared to evaluate impacts.			
51100	19	47	In determining CEQA significance on page 6-92, the DEIR reiterates that “releasing water from lower in the reservoir if cyanobacteria and cyanotoxins are confirmed near the I/O tower at a level at or exceeding the “Caution” action trigger level, would further reduce any potential for adverse water quality effects,” which ignores the conflicting issue of high methylmercury concentrations in the lower water. The DEIR on page 6-93 also states that “in the Sacramento River, discharges to the river from Sites Reservoir would occur after reductions in total metal concentrations due to settling of suspended sediment. These discharges would not cause substantial increases in concentration or exceedances or exacerbation of exceedances of water quality standards for metals in the Sacramento River.” This ignores the importance of redistribution of metals from the reservoir sediments due to	Please see response to comment 19-34 and Master Response 4, Water Quality, regarding the selective use of multiple tiers on the I/O tower to control releases of water quality constituents, including cyanotoxins and methylmercury. Please see Master Response 4 for a discussion of dissolution under anoxic conditions. Please see responses to comments 19-6 and 19-30 regarding the Antidegradation Policy. As evaluated and presented in Chapter 6, the one unmitigable exceedance of water quality standards in the Sacramento River is for methylmercury. Chapter 6, Appendix 6E, Appendix 6F, and Master Response 4 indicate the small magnitude of effect on metal concentrations in the Sacramento River. The Authority will work with the State Water Board and Regional Water Board (as applicable) as part of the certification process under Section	Reviewed by Client	N/A

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			dissolution. Any increases in concentrations or exceedances of water quality standards for metals is a concern for downstream water users, even if not "substantial."	401 with regard to application of the Antidegradation Policy.		
51100	19	49	Another mitigation for Stone Corral Creek (page 6-95) is to "pump water from the top of Sites Reservoir for release into Stone Corral Creek. Based on the demonstration of the effect of partial settling of suspended sediment on total metal concentrations in Sites Reservoir and the conservative nature of this assessment, metal concentrations in Sites Reservoir are expected to meet water quality standards for the protection of aquatic life during the drier parts of the year in water located above the deepest portions of the reservoir." This conflicts with earlier statements in this DEIR (page 6-82) that states "based on the calculations that demonstrate the effect of partial settling of suspended sediments, settling of suspended sediment may have a substantial effect on total metal concentrations. With these	Dissolution of metals from the sediments under anoxic conditions was considered in the analysis and is a primary reason Mitigation Measure WQ-2.1 was developed. Dissolution of metals from sediments is further considered in Master Response 4, Water Quality. Text in Chapter 6, Surface Water Quality, regarding Mitigation Measure WQ-2.1 was revised to acknowledge that concentrations of a few metals may occasionally be above water quality standards for aquatic life and to describe the additional protections in place for Stone Corral Creek; this revision does not change impact determinations or conclusions contained in Chapter 6. Please see Master Response 4 and response to comment 19-21 for a	Reviewed by Client	N/A

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			assumptions for partial settling, concentrations for total aluminum may be close to the 620 µg/L water quality standard for aquatic life protection, hovering between about 500 µg/L and 750 µg/L (Figure 6-9). Total copper concentrations may occasionally exceed water quality standards for aquatic life protection." Even higher concentrations could be expected had the effects of dissolution of metals from the sediments been considered in the analysis.	discussion regarding the conservative aspects of the analysis. Please also see Master Response 4 for beneficial uses of Stone Corral and Funks Creeks, and protections for Stone Corral and Funks Creeks. Water quality in Stone Corral and Funks Creeks will be monitored as part of the RMP and the Stone Corral Creek and Funks Creek Aquatic Study Plan and managed through adaptive management. Eventually, water from the creeks would mix with other water sources, reducing the water quality signature from Sites Reservoir.		
51100	19	50	The DEIR on page 6-100 states that "the net effect of the Project would be to enhance beneficial uses of water, and water quality could improve in parts of the study area. For example, during some months the increases in Delta outflow could reduce seawater intrusion and under certain circumstances Alternatives 1, 2, and 3 could allow for seasonal storage changes in Shasta Lake that could help to preserve cold-water supply for fish through exchanges with Sites	As described in Chapter 5, Surface Water Resources; Master Response 2, Alternatives Description and Baseline; and Master Response 3, Hydrology and Hydrologic Modeling, exchanges are included in the CALSIM simulations. As such, they are included in the water quality evaluations and the Sacramento River dilution estimates, and the metal concentrations reported in the analysis of Chapter 6, Surface Water Quality, account for the effect of	Reviewed by Client	N/A

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			Project water." Increased releases from Sites Reservoir to preserve water in Lake Shasta will result in a greater percentage of water in the Sacramento River being composed of Sites Reservoir water, which results in less dilution from Shasta releases, and greater metals concentrations in the Sacramento River.	exchanges on dilution. The exchanges affect the timing of Sites Reservoir releases but not the total volume of releases. When water would be released from Sites Reservoir to retain water in Lake Shasta, there would be a slight increase in the fraction of Sacramento River water emanating from Sites Reservoir, but the reverse would occur when the exchange water stored in Lake Shasta is eventually released.		
51100	19	52	This section also states that "operations would increase water supply reliability for refuges, municipalities, and agriculture, particularly in Dry and Critically Dry Water Years." Though reliability may increase, the quality of water provided by Sites Reservoir may not be suitable for wildlife habitat in refuges and may require additional treatment by municipalities, particularly in dry and critically dry years when less dilution water would be available from existing water projects.	Please see Master Response 4, Water Quality, regarding beneficial uses and the metals analysis approach, which includes consideration of dilution during Dry and Critically Dry Water Years. CALSIM results are used to calculate dilution for the entire 1922-2003 simulation period. As discussed in Chapter 6, dilution would be lower when flow in the Sacramento River is lower, but dilution would always be substantial; when Sites Reservoir would release water to the Sacramento River, it would constitute 14%–15% when discharges are relatively high compared to river flow	Reviewed by Client	N/A

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				(i.e., 90th percentile values), depending on whether Alternative 1, 2, or 3 was implemented.		
51100	19	53	The Sacramento River from Red Bluff to Knights Landing is on the Clean Water Act Section 303(d) Impaired Water Bodies list for PCBs, but there is no discussion in this DEIR about PCBs.	As described in the Chapter 6, Surface Water Quality, Methods of Analysis section, water quality constituents were chosen for evaluation based on whether elevated levels of the constituents are present in the study area as evidenced by presence on the 303(d) list or other documentation and whether there is a mechanism by which operation of Sites Reservoir could affect those levels. Polychlorinated biphenyls (PCBs) were dismissed from further evaluation, along with other contaminants closely associated with sediment, in the Chapter 6, Selection of Water Quality Constituents to Evaluate section because these compounds would not be expected to be any more concentrated in Sites Reservoir than in the Sacramento River or Colusa Basin Drain and would be expected to mostly remain adsorbed to sediment.	Reviewed by Client	N/A

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51100	19	54	Chapter 5. Surface Water Resources The DEIR on page 5-28 states that "in-lieu exchanges between Sites Reservoir releases and flow in the Sacramento River would occur when Sites Reservoir releases were used to meet local Storage Partner demands (Sacramento River Settlement Contractors, Reclamation, or, most likely, GCID) that normally would be met through diversions from the Sacramento River." There would be no dilution of water from Sites Reservoir with water from the Sacramento River under such exchanges, and therefore water with higher levels of metals would be supplied to local Storage Partners, particularly GCID, with associated adverse effects. There is no discussion about the adverse effects of such exchanges from metals or other water quality parameters (HABs, cyanotoxins, etc.) to the local water users, including use on wildlife refuges.	The commenter's assumption that there would be no dilution of Sites Reservoir water for local agriculture is likely not correct. Sites Reservoir is intended to provide a Dry Water Year supplemental water supply for agricultural, municipal, and industrial uses. The local participants upstream of the Delta are mostly agricultural users who are under contract to Reclamation for delivery of Sacramento River water. During extremely dry conditions, the shortage provisions of those contracts are enacted, but there are rarely no diversions from the Sacramento River. For example, in Critically Dry Water Years, agricultural contractors may receive only 5% of their allocation, and settlement contractors' deliveries may be reduced to 75% of their allocation. Only under extremely dry conditions, such as occurred during the 2012 to 2016 drought sequence, have those amounts not been available for diversion. Thus, there is likely to be Sacramento River water in the conveyance systems that would dilute the water released from Sites	Reviewed by Client	N/A

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				Reservoir. In addition, many of the local users have alternate sources of water that could be used to mix with Sites Reservoir water. Even if water from Sites Reservoir were used directly for agricultural purposes, it is unlikely to affect agriculture. As shown in the Methods of Analysis section in Chapter 6, Surface Water Quality, of the FEIR/FEIS, in general, water quality standards for agriculture are substantially higher (easier to meet) than other water quality standards. While evaluation of reservoir water quality (Impact WQ-2 in Chapter 6) indicates that Sites Reservoir may sometimes have higher concentrations of some metals than the Sacramento River, aqueous concentrations of metals are expected to be substantially below water quality standards for agriculture. A more detailed analysis of arsenic was done because of its toxicity. All estimated values for arsenic were substantially less than regulatory		

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				standards for drinking water, aquatic life protection, and agriculture (table titled Arsenic Concentrations in the Sacramento River, Sites Reservoir, and Regulatory Standards). This information is reviewed in Chapter 15, Agriculture and Forestry Resources (Impact AG-4). Alternatives 1, 2, and 3 would not result in increased arsenic levels that would be toxic for agricultural purposes, including rice, and soil concentrations of mercury/methylmercury in Yolo Bypass are not expected to increase. The only local (i.e., north of the Delta) refuge in a location to receive water directly from the reservoir is the Colusa National Wildlife Refuge (NWR). Like other local users, the Colusa NWR has multiple sources of water that would mix with deliveries from Sites Reservoir. Monitoring and mitigation measures incorporated in the Reservoir Management Plan will ensure standards are maintained. Please also see Master Response 4, Water Quality, regarding beneficial		

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				uses and the Chapter 6 metals discussion for Impact WQ-2.		
51100	19	115	p. 6-19: "Mean mercury concentrations in Shasta Lake and in the Sacramento River at Red Bluff and Hamilton City are substantially lower than the CTR criterion for mercury in freshwater (50 nanograms per liter [ng/L])." The Sites Reservoir project will not be diverting "mean" concentrations of mercury (or any other constituent), but rather the higher concentrations of constituents generally associated with the higher flows from which the project will be diverting. In the Sacramento River at Hamilton City, Table 6-5 shows that total mercury concentrations have been measured as high as 54 ng/L, which are higher than the CTR criterion of 50 ng/L, and raise concern for significant and substantial adverse effects when waters with these types of concentrations are diverted into the reservoir.	Total mercury concentrations in Sacramento River diversions to Sites Reservoir may, at times, be higher than the mean concentrations cited for the Sacramento River at Red Bluff and Hamilton City, as identified in Chapter 6, Surface Water Quality. However, in large part, mercury associated with these high flows would be associated with suspended sediment, which would mostly settle out in the reservoir. In addition, the maximum mercury concentration from the combined total mercury measurements in the Sacramento River at Red Bluff and Hamilton City was the only value that exceeded the California Toxics Rule (CTR) criterion, and the 90th percentile value is only 3.86 nanograms per liter (ng/L) (n=150). Mercury concentrations in inputs to the reservoir are therefore expected to be well below the CTR criterion even if higher flows with concentrations greater than the mean are diverted into the reservoir.	Reviewed by Client	N/A

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				Furthermore, reservoir concentrations considered in the analysis would, on average, more closely resemble the mean concentrations of inflows than the highs or lows in source water, as inputs will be mixed into the large volume of reservoir water. Comparisons with other nearby reservoirs and lakes can also provide insight into the expected mercury concentrations that would occur at Sites Reservoir. As discussed in Appendix 6F, Mercury and Methylmercury, with the exception of Clear Lake, on which the Sulphur Bank Mercury Mine Superfund site is located, mean concentrations of total mercury were not greater than 4.42 ng/L. None of the almost 500 other samples from nearby reservoirs exceeded the 50 ng/L total mercury CTR criterion. Fish tissue methylmercury concentrations within Sites Reservoir will depend on many factors; however, tissue concentrations are expected to be comparable to those in existing nearby reservoirs in the long term. Reservoir water quality management		

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				actions described in Chapter 6 and Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, would minimize mercury methylation and methylmercury accumulation in fish tissues.		
51100	63	18	Migration Flow – Survival Relationships At page 11-119, we find the following correct summary of what is now the best available science with regard to the relationship between higher flows of water through the Delta and outmigrating salmon survival rates: "Diversions from the Sacramento River to Sites Reservoir under Alternatives 1, 2, and 3 have the potential to affect survival of juveniles salmonids, including winter-run Chinook salmon, based on flow-survival relationships. Several recent analyses provided evidence for positive correlations between Sacramento River flows and survival	Water temperature in Sites Reservoir would be stratified except during the coldest times of year and therefore would not become a bathtub of warm water. Please see Master Response 4, Water Quality, for some examples of reservoir temperature profiles simulated by CE QUAL W2, including during low storage conditions. The temperature blending analysis considers the temperature of the water released from Sites Reservoir (as simulated by CE QUAL W2), mixing with water in downstream waterways (i.e., Funks Reservoir for all alternatives and CBD for all alternatives except Alternative 2), and warming along the lengths of the	Reviewed by Client	N/A

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			of Chinook salmon [citations omitted].” Later on that same page, the RDEIR/SDEIS also states: “The discussion in Section 11P.2 of Appendix 11P, Riverine Flow-Survival, illustrates that the Sites Reservoir diversion criteria generally minimizes diversions during the historical periods of fish movement … and application of the flow-threshold criteria … suggests that flow-survival effects on juvenile Chinook salmon (including winter-run Chinook salmon) would be greatly limited by the diversion criteria.” Project proponents also claim: “As discussed in Chapter 6, the effects of Alternatives 1A, 1B, 2, and 3 on water temperatures at the Sites Reservoir release site in the Sacramento River would be relatively small with the releases generally tending to cause a slight reduction in water temperature (Tables 6-12a through 6-12d). Therefore,	waterways before discharge to the Sacramento River. The reservoir would not be shaded. Based on CALSIM results for the entire analysis period, overall average depth in the reservoir would be 86 to 94 feet depending on alternative (calculated as overall average volume in acre-feet divided by overall average surface area in acres). As described in Chapter 6, Surface Water Quality, flexibility in reservoir release temperatures would be provided by selective use of the multiple tiers in the I/O tower (centerlines at 340, 370, 390, 410, 430, and 450 feet elevation, with an additional outlet at 470 feet for Alternatives 1 and 3) and at the low-level intake with centerline at 311 feet. The selection of release ports for water temperature modeling followed the protocols described in the Reservoir Management Plan (RMP) (section titled Reservoir Management Plan in Appendix 2D, Best Management Practices, Management		

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			temperature-related effects of Alternatives 1A, 1B, 2, and 3 on winter-run Chinook salmon at the Sacramento River release site would be minimal … For Alternatives 1A, 1B, 2, and 3, water temperatures at this location would either stay the same or be reduced due to Sites Reservoir releases." [11-120] Hypothetical reductions in Sacramento water temperatures due to Sites Reservoir timed inputs, of course, depends on two things: (a) whether those inputs are applied directly to the Sacramento River or not – which according to the description of the Project alternatives in the Executive Summary [Table ES-1 on pg. ES-8] could only be achieved under Alternative 2, and; (b) the initial temperature of the water originating at the Sites Reservoir at the upper end of the pipeline to the river. Left to itself the Sites Reservoir is simply going to absorb sunlight, especially during summer months,	Plans, and Technical Studies), with tier selection based on meeting a reservoir release temperature objective of 65°F during the rice growing season. Please also see Master Response 4, Water Quality, for a discussion regarding use of the I/O Tower to control water quality of releases. Release of cold water from Sites Reservoir would not be an objective for several reasons: the presence of warm-water fish in Funks Creek; the long distance between Sites Reservoir and the Sacramento River; the limited effect of Sites Reservoir releases on Sacramento River water due to dilution effects; and the downstream location of the discharge site on the Sacramento River, where river temperatures are warmer and fish are less dependent on cool temperatures.		

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			and heat up, collecting and spreading that solar energy broadly through its increased surface area like any other lake. Unless the reservoir becomes temperature stratified, it will become just like a bathtub of warm water – water that might well be warmer (not cooler) than the Sacramento River at the time of inflow. The RDEIR/SDEIS should explain in more detail any water temperature reduction measures, if any, that are planned for keeping the water temperatures of water delivered from Sites Reservoir to the Sacramento River as low-temperature as possible. For instance, is the reservoir expected to stratify in temperature, and if so, will there be temperature control devices sufficient to take water only from the lower-temperature level of that stratification? What will the average depth of the reservoir be? Will it be covered in some way – such as naturally with the introduction of floating water plants, or with floating solar collectors as some have			

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			proposed – in order to reduce initial water temperatures?			
51100	64	3	Chapter 6: Surface Water Quality Section 6.2.2.3. Nutrients, Organic Carbon, and Dissolved Oxygen The text states, "The initial filling of a new reservoir results in the release of nutrients from newly flooded soil and decomposing flooded vegetation. This release declines somewhat as the reservoir ages (Gunnison et al., 1984; Maavara et al., 2020:108)." This influx of nutrients into water that is being held in a reservoir, where increased light availability, reduced flow, and increased temperatures are likely, may overall enhance opportunities for HABs to occur.	It is acknowledged in the Chapter 6, Surface Water Quality, Impact Analysis and Mitigation Measures section that nutrients in the reservoir would be available in non-limiting concentrations sufficient for the formation and sustainment of harmful algal blooms (HABs) both during the initial filling of the reservoir (see Impact WQ-1) and in the long term (see Impact WQ-2). It is also identified in the Environmental Setting section (Harmful Algal Blooms subsection) that nutrient availability is an important environmental factor that contributes to the formation of HABs.	Reviewed by Client	N/A
51100	64	4	Section 6.2.2.6. Harmful Algal Blooms The description of environmental factors that influence HABs does not account for the wide variety of planktonic and benthic cyanobacteria that can occur in California waters.	Text has been added to the Chapter 6, Surface Water Quality, Constituents, Harmful Algal Blooms section of the Final EIR/EIS to note that there are species differences with regard to tolerance of cooler water temperatures, lower light levels, and	Reviewed by Client	N/A

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			While many planktonic species do favor the temperature, light, and flow conditions noted, there are planktonic (such as Planktothrix) and benthic taxa (such as Microcoleus, Phormidium, and Anabaena) that occur in lower water temperatures, lower light, or higher flow than noted (see Section 3.3; ITRC 2021) [ATTMT 1 has reference entry].	water flow. In addition, text was added to this section to generally describe that cyanobacterial blooms may be planktonic or benthic and to note common genera of each bloom type. This modification is in the environmental setting and clarifies information already contained in the document regarding harmful algal blooms. This modification does not change conclusions or impact determinations identified in the analysis.		
51100	64	5	Section 6.2.2.6. Harmful Algal Blooms The description of cyanobacteria focuses on characteristics related to planktonic cyanobacteria, particularly Microcystis. As noted above, numerous planktonic and benthic cyanobacteria may occur, including some that grow attached to benthic substrates, aquatic plants, and natural or artificial structures within the water column as well as some that are present in sub-surface layers with lake stratification. This variety should be addressed when considering potential	The analysis in Chapter 6, Surface Water Quality, is focused on planktonic cyanobacteria as they have been well-researched and may be more likely to occur near and be drawn into the I/O tower given that benthic cyanobacteria generally require a substrate for attachment. Further, the proliferation of benthic cyanobacteria requires greater water transparency for light to penetrate to benthic areas and thus is more common in oligotrophic surface waters. The Authority and Reclamation understand that blooms	Reviewed by Client	N/A

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			HAB occurrence and necessary monitoring, management, and public heath actions.	of both planktonic and benthic cyanobacteria (and associated toxins) could proliferate in Sites Reservoir. As discussed in Chapter 6, conditions in Sites Reservoir favorable to the proliferation of harmful algal blooms (HABs) would likely occur. If cyanobacteria/cyanotoxins were present in reservoir releases, potential downstream effects on water quality would not be expected because concentrations of cyanobacteria and cyanotoxins would be greatly diluted when eventually discharged into the Sacramento River, and cyanotoxins would undergo biodegradation and, to some degree, photodegradation. Furthermore, the Reservoir Management Plan (RMP), described in Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, includes monitoring for planktonic as well as benthic HABs and coordination with the State Water Resources Control Board and the Central Valley Regional Water Quality Control Board for posting benthic HABs signage. In addition, text has been added to Appendix 2D of the		

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				Final EIR/EIS to clarify that the RMP will be modified over time through adaptive management. The RMP is and will continue to be revised throughout the operation of the reservoir. Text has also been added to the HABs section of the RMP in Appendix 2D noting that if there are HABs near the I/O tower, water samples will be taken at multiple depths and locations in the vicinity and downstream to assess cyanobacteria and cyanotoxin concentrations. These revisions do not change conclusions or the less-than-significant impact determination identified in the analysis for HABs. Please see response to comment 64-4 regarding text added to Chapter 6 related to planktonic and benthic cyanobacteria.		
51100	64	6	Section 6.2.2.6. Harmful Algal Blooms We [Office of Environmental Health Hazard Assessment] recommend noting that [we have] developed Notification Level Recommendations	A reference to California Office of Environmental Health Hazard Assessment's Notification Level Recommendations for Four Cyanotoxins in Drinking Water has been added to the Chapter 6, Surface	Reviewed by Client	N/A

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			for Four Cyanotoxins in Drinking Water as well (https://oehha.ca.gov/water/crnr/notice-availability-notification-levelrecommendations- four-cyanotoxins-drinking-water).	Water Quality, Constituents, Harmful Algal Blooms section of the Final EIR/EIS, and the recommendations have been added to Appendix 4A, Regulatory Requirements. This modification is in the environmental setting and clarifies information already contained in the document regarding harmful algal blooms. This modification does not change conclusions or impact determinations identified in the analysis.		
51100	64	7	Section 6.3.2.2. Temporal Shift The temporal shift between time of diversion and time of release could also contribute to release of water with a higher likelihood of HABs.	The temporal shift discussed in the Temporal Shift section of Chapter 6, Surface Water Quality, is addressing the issue of the potential for higher concentrations of specific water quality constituents (i.e., electrical conductivity, pesticides, nutrients, and metals) in the Sacramento River at the time of diversion to Sites Reservoir relative to concentrations in the Sacramento River at the time of release from Sites Reservoir. Accordingly, this discussion is not applicable to cyanobacteria, cyanotoxins, or harmful algal blooms because concentrations of	Reviewed by Client	N/A

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				cyanobacteria and cyanotoxins in the Sacramento River diversions at the time of diversion are not expected to be higher than the potential concentrations in Sites Reservoir releases.		
51100	64	8	Section 6.3.2.8. Harmful Algal Blooms It is unclear how the likelihood of HABs occurring within Sites Reservoir during operations is assessed based on the information presented in this section. Please provide more rationale for what the comparison of intake and water surface elevations is expected to show. Cyanobacteria and cyanotoxins can be found in deeper sub-surface waters depending on type, genus, water conditions, etc. See Section 9.1 Optimizing The Location And Depth For The Offtake (Chorus and Welker, 2021 [ATTMT 1 has reference entry]; Chapter 9) for context of vertical distribution and consideration of discharge depth. This variability is also shown with real-time profiling to a maximum of 75-90	As described in the Chapter 6, Surface Water Quality, Operation, Harmful Algal Blooms section, the assessment for the potential for (or likelihood of) harmful algal blooms (HABs) to occur in Sites Reservoir during operations considered environmental drivers of bloom formation, including water temperature (modeled monthly average water temperatures), nutrients, and water column stability. The comparison of approximate intake elevation and reservoir water surface elevations was used to generally assess the potential for high concentrations of cyanobacteria and cyanotoxins to be released from Sites Reservoir if HABs were to occur in the vicinity of the I/O tower and low-level intake in Dry and Critically Dry Water Years and when releases are made from operational dead pool. Text	Reviewed by Client	N/A

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			meters in Detroit Lake, a drinking water source for Salem, Oregon (https://or.water.usgs.gov/projs_dir/habs/lakeprofiler.html?site=444306122144600). Department of Water Resources' Pacheco Pumping Plant monitoring data also provides a useful example of monitoring for HABs at depth for water intake management (http://cdec4gov.water.ca.gov/dynamicapp/QueryF?s=PPP).	indicating this has been added to the Chapter 6, Operation, Harmful Algal Blooms section of the Final EIR/EIS to provide clarification. Text has also been added to the Chapter 6, Environmental Setting, Harmful Algal Blooms section providing examples of species of cyanobacteria that compete well at low light and thus can grow relatively well deeper in the water column. The impact analysis does not maintain that no cyanobacteria or cyanotoxins would be released from the reservoir. Please refer to response to comment 64-5 regarding revisions to the reservoir management plan and HABs monitoring.		
51100	66	27	The environmental baseline used in the RDEIR/SDEIS violates CEQA and NEPA because it does not include existing water quality standards adopted by the SWRCB in 2018. While the RDEIR/SDEIS's environmental baseline selectively updated some regulatory requirements to include the 2019 biological opinions, the document excludes the regulatory	The Project would not affect operations on the Stanislaus, Tuolumne, Merced, and lower San Joaquin Rivers or salinity at Vernalis because it would not affect inflow to or diversions from the San Joaquin River watershed. Therefore, there is no need to include the water quality standards for freshwater inflow from these rivers. Inclusion of the	Reviewed by Client	N/A

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			requirements adopted by the SWRCB in 2018 regarding water quality standards for Delta salinity and freshwater inflow from the Stanislaus, Tuolumne, Merced, and lower San Joaquin Rivers. See RDEIR/SDEIS at 5A2-20 to 5A2-22. The RDEIR/SDEIS fails to provide any reasoned explanation for excluding these regulatory requirements from the environmental baseline.	modifications to the southern Delta salinity standards associated with the 2018 Bay-Delta Plan amendments would not affect the Delta water quality evaluation because the amendments increased the salinity objectives and because the evaluation in Chapter 6, Surface Water Quality (Impact WQ-2), includes consideration of change in salinity regardless of salinity objective. Please refer to Master Response 2, Alternatives Description and Baseline, regarding the baseline used.		
51100	72	72	D. Impacts to Water Quality. The RDEIR/SDEIS downplays the evidence and the risk to surface water quality that is likely to occur upon execution of the Project. This iteration is an improvement from the 2017 version which claimed, "[b]ecause no potentially significant direct water quality impacts were identified, no mitigation is required or recommended." In the RDEIR/SDEIS, Project proponents now acknowledge some water quality issues but offer	The water quality impact analysis in Chapter 6, Surface Water Quality, concludes less than significant effects on surface water quality with respect to salinity, water temperature, HABs, invasive aquatic vegetation, nutrients, organic carbon, and dissolved oxygen. The analysis acknowledges the potential for significant water quality impacts related to methylmercury, metals in Stone Corral Creek, and metals and pesticides in Yolo Bypass, and introduces mitigation measures WQ-1.1, WQ-2.1, and WQ-2.2,	Reviewed by Client	N/A

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			contradictory mitigation measures while downplaying or ignoring other water quality issues.	respectively, to address these potentially significant impacts. Please see Master Response 4, Water Quality, for more information regarding the water quality analysis contained in Chapter 6.		
51100	72	73	The RDEIR/SDEIS Does Not Disclose Reasonably Foreseeable and Currently Occurring Clean Water Act Processes and Impairments that Impact the Project. The State of California Water Resources Control Board and Central Valley Water Board have the responsibility of implementing the Clean Water Act ("CWA") and Porter Cologne Water Quality Control Act for California Waters. California is also responsible for protecting the public trust and preventing unreasonable use of water. This means that California is also responsible for listings under the CWA 303(d) process and creating associated Total Maximum Daily	At the time of public release of the RDEIR/SDEIS in November 2021 and when the information in in Appendix 6A, Water Quality Constituents and Beneficial Uses, was compiled prior to November 2021, and the 2014–2016 303(d) list was the most recent list approved by the State Water Resources Control Board (State Water Board) and U.S. Environmental Protection Agency (USEPA). Since that time, the 2020–2022 Integrated Report for Clean Water Act 303(d) and 305(b) (Central Valley Regional Water Quality Control Board 2022) has been approved by both of these agencies (May 2022). Accordingly, the Clean Water Action Section 303(d) Impaired Water Bodies in the Study Area table in the RDEIR/SDEIS has been updated and the table title revised to	Reviewed by Client	Central Valley Regional Water Quality Control Board. 2022. 2020-2022 303(d) list. Excel file (includes potential sources) Final Revised Appendix A of the Final Staff Report for the 2020-2022 Integrated Report for Clean Water Act 303(d) List and 305(b) Report. Available: https://www.waterboards.ca.gov/water_issues/programs/water_quality_as

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			Loads (TMDL) and updating and implementing Basin Plans. Under these processes California has not only been working to update the Bay Delta Water Quality Control Plan, which will require flow enhancement actions, they have also been working to catch up on the 2018, 2022, 2024 303(d) listings. The state decided to not include new temperature listings for the Sacramento River and Bay Delta in the 2018 303(d) list updates despite significant evidence that listings were warranted and a huge body of scientific studies and evidence showing that there is a temperature impairment. Furthermore, the Central Valley Water Resources Control Board released its draft report which called for the listing of two segments of the Sacramento River and one segment of the Bay Delta as temperature impaired on June 4, 2021 and took public comment on July 6, 2021. This information was then publicly available to Project proponents before the release of the RDEIR/SDEIS. The	"Impaired Water Bodies in the Study Area Included in the 2020–2022 California Integrated Report for Clean Water Act Sections 303(d) and 305(b)" in Appendix 6A of the Final EIR/EIS. In addition, applicable text in Chapter 6, Surface Water Quality, in the Final EIR/EIS has been updated based on the 2020–2022 303(d) list. The updates to the 303(d) list for the geographies discussed in the impact analysis were relatively minor and include water temperature and dissolved oxygen for specific reaches of the Sacramento River. The updates to the most recently approved list(s) do not change conclusions or impact determinations identified in the analysis.		sessment/2020_2022_integrated_report.html. Accessed: May 12, 2022.

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			State Water Resources Control Board then took comments on the 303(d) listings in December 2021 and approved the listings in January 2022. Therefore, the RDEIR/SDEIS statement that "[n]one of the waterbodies in the study area are listed on the 303(d) list as having water temperature impairments," [Footnote 74: RDEIR/SDEIS, 6-5.] is intentionally misleading.			
51100	72	75	[Exhibit 3] New 303 (d) listings in the Project Area [Footnote 75: Compiled from the State Water Resources Control Board 2022 Water Quality Assessment Integrated Report. Available online: <https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2020_2022_integrated_report.html>]	Please see response to comment 72-73 regarding the 303(d) listings. The commenter provided this exhibit for reference purposes in support of their comments. Those comments are addressed in these responses to the commenter's letter.	Reviewed by Client	N/A
51100	72	77	On page 6E-30 the Project proponents state, "Quantitative assessment was performed for total concentrations of four metals:	Please see Master Response 4, Water Quality, for a discussion of metals selected for evaluation and additive effects of metals. Master Response 4	Reviewed by Client	N/A

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			aluminum, copper, iron, and lead. These four metals are of greatest concern based on what the measured data show for seasonal changes in concentration and concentrations above standards." The Coalition applauds the consultants for recognizing these 4 metals pose a challenge to meeting standards and correctly inferring that "seasonal changes" (e.g. high flow events) will raise metal concentrations. However, ignoring the other existing metals and failing to analyze synergistic effects will not protect the environment. Each of these metals may adversely affect reservoir water quality by themselves and must be analyzed to determine combined synergistic effects. The SWRCB 2016 "A Compilation of Water Quality Goals" states that "When multiple constituents have been found together in groundwater or surface waters, their combined toxicity should be evaluated," and that "theoretical risks from chemicals found together in a water body shall be considered additive for all chemicals having similar toxicologic	discusses why the selected metals were those most likely to experience an increase in exceedance of water quality standards and therefore provide a reasonable representation of the potential water quality impacts associated with operational effects on metal concentrations. Please also see Master Response 4 for a discussion of additive effects. The applicability of the policies identified in the comment is limited because Sites Reservoir would not be a cleanup site, hazardous waste site, or Superfund site (see Chapter 27, Public Health and Environmental Hazards, for more information regarding hazardous material sites). Master Response 4 explains why determination of the combined effects of metals on aquatic resources would be inaccurate due to the lack of accurate tools to account for the variable and unknown nature of the interaction of all effects.		

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			effects or having carcinogenic effects“" [Footnote 76: See State Water Resources Control Board 2016“"A Compilation of Water Quality Goal”", pg. 44.] This RDEIR/SDEIS did not consider the combined effects of metals and is therefore deficient.			
51100	72	78	Additionally, the streams within the footprint of the reservoir and the presumed source waters emanating from the Cottonwood Creek drainage are known to contain concentrations of these water quality impediments, [aluminum, copper, iron and lead] especially during high flow events. [Footnote 77: RDEIR/SDEIS, pg. 2-30.“"Sites Reservoir would be filled through the diversion of Sacramento River water that generally originates from unregulated tributaries to the Sacramento River downstream from Keswick Dam”"]	Please see Master Response 4, Water Quality, for a description of how the available data were used to estimate metal concentrations in the diversions for Sites Reservoir storage based on flow and the percentage of tributary inputs. This approach maximized the data pool for measurements taken at high flows in the Sacramento River source water. Water emanating from Cottonwood Creek is part of the tributary inputs to the Sacramento River and its effect on both the measured and estimated metal concentrations is included in the values for the Sacramento River near the diversion locations for Sites Reservoir.	Reviewed by Client	N/A

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51100	72	79	According to the Project proponent's website, "Sites Reservoir does not rely on snowmelt but captures winter runoff from uncontrolled streams below the existing reservoirs in the Sacramento Valley. …Much of the rainfall from extreme even– --especially those that occur back-to-back when the ground is saturated".”" [Footnote 78: See https://sitesproject.org/about-sites/, last accessed 24 January 2022.] When there is significant precipitation, releases from the upstream reservoirs during the winter will be curtailed during high runoff periods to prevent downstream flooding. These time periods would increase the contribution of elevated tributary metal constituents, especially those coming from Cottonwood Creek. The negative impacts on water quality in the Sacramento River will be greater at these times then those predicted by the metric on page 6E-30 which dilutes the metal-laden tributary water with Shasta Reservoir water. The proposed metric would more accurately characterize the metal	Diversions to Sites Reservoir would occur when flow in the Sacramento River is greater than what is required for instream and water supply requirements. The amount of water originating from local tributaries would be variable and would never constitute 100% of the flow. For example, if Shasta Lake makes flood control releases, most of the water would originate from Shasta Lake. Although water quality measurements did not target high flows, multiple measurements were taken during higher flows. Master Response 4, Water Quality, discusses available data and how the available data were used to develop exponential equations to estimate metal concentrations as functions of tributary input and flow, allowing estimation of concentrations under more extreme conditions than what was present during measurements. The difference between flow at Bend Bridge and flow at Keswick indicates the amount of flow coming from local tributaries. CALSIM results for flow in	Reviewed by Client	N/A

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			concentration by measuring metal concentrations pouring out of Cottonwood Creek during high flow rather simply tabulating cfs for Keswick + Bend Bridge. The failure to monitor metal concentrations on a set time schedule rather than during highest flow events is a significant oversight and leaves the RDEIR/SDEIS deficient.	the Sacramento River at Keswick and Bend Bridge were used to estimate the percent of local tributary runoff in the water that would be diverted to Sites Reservoir storage. Under conditions of high flow and tributary input, the estimated values can be higher than measured values.		
51100	72	80	Selenium The Sites Reservoir planners are aware of the potential for diminished water quality from naturally occurring selenium in the region they plan to inundate. A survey done by the Regional Water Quality Control Board “"RWQC”") in 1988 demonstrated that Sacramento River water generally met water quality standards for selenium except for streams that flowed into the valley draining the coast range. While the RWQCB survey did not directly measure selenium concentrations in the streams that drain the Antelope Valley, it did measure streams on both sides of the	Selenium enters the westside creeks by watershed runoff passing over and through seleniferous substrate. Water in Sites Reservoir would not be passing through the reservoir substrate prior to entering the reservoir. Instead, most of the movement of water through the reservoir substrate would be downward, away from the water stored in the reservoir, contributing to local groundwater supplies in the same manner as precipitation. As described in Chapter 6, Surface Water Quality, selenium concentrations in Stone Corral Creek are somewhat higher than in the	Reviewed by Client	

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			project. The survey indicated that precipitation events mobilize selenium in the watersheds of the Sites region to unsafe levels for fish, humans and agriculture. [Footnote 79: Regional Water Quality Control Board, Central Valley Region 1988. Water Quality Survey for Selenium in the Sacramento River and its Major Tributaries.“"Historical data on selenium concentrations in surface water of the Sacramento River Basin indicated periods of elevated selenium levels, especially from areas originating in the western portion of the basin. Selenium concentrations as high as 390 ug/L were recorded in surface water in the Sacramento River Basin. This concentration is similar to the levels found in agricultural drainage water entering Kesterson Reservoir via the San Luis Drain (USGS, 1985). Because of the concern over the effects that these selenium levels may have on aquatic life in both the River Basin and the Delta, a program of water quality monitoring was initiated to help define the sources of selenium and whether	Sacramento River (average measured total selenium of 6.74 micrograms per liter [µg/L] in Stone Corral Creek and less than 0.95 µg/L in the Sacramento River; Appendix 6E, Water Quality Data), but the Project would not affect the selenium load from Stone Corral and Funks Creeks because the Project would not alter the selenium running off from the Stone Corral Creek watershed. These creeks are expected to contribute only a small percent of the water in Sites Reservoir. The volume of inflow from Stone Corral and Funks Creeks is small, estimated to be a combined average of 14 TAF per year (TAF/yr). The Sacramento River input to Sites Reservoir storage will greatly dilute selenium originating from the Antelope Valley via Funks and Stone Corral Creeks watersheds.		

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			further assessment of waste discharge regulation was needed”" pdf p. 12;”"Of the samples taken prior to 1984, the highest reported selenium concentration occurred principally along the western half of the basin. Samples taken in the Stony Creek Watershed and the Clear Lake area showed consistently high values. Between 1980 and 1981, DWR conducted a trace element survey in the Stony Creek area in conjunction with the Thomes-Newville water storage project study (DWR Files). Total selenium concentrations regularly exceeded the 10 ug/L standard with the highest reported selenium at 240 ug/L. Samples taken in the Clear Lake area have shown concentrations reaching 80 ug/L for total selenium. The Colusa Basin Drain which receives runoff from the westside streams, as well as a significant amount of irrigation return flow, showed the highest concentration at 390 ug/L total selenium in 1981”" pdf p. 18”"A special survey in Black Butte Reservoir which included composite sediment			

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			sampling was conducted in October 1986 to verify historical data that showed high [selenium] values in the reservoir discharge.”"In October 1986, sediment and water samples were taken from the Black Butte Reservoir area, to verify historical data reporting selenium levels up to 240 ug/L (DWR files) and in response to selenium levels ranging from 0.7 mg/Kg to 1.9 mg/Kg detected in fish livers by the California Department of Fish and Game during 1984 and 1985”" pdf p. 20. Available online: http://www.waterboards.ca.gov/rwqcb5/water_issues/swamp/historic_reports_and_faq_sheets/bckgrnd_selenium/wq_sur vey_sacrvr_tribs_88.pdf] According to USGS research,“"Evaporative enrichment can cause elevated selenium concentrations in terminal water bodie”" (p. 24) and“"...selenium can be transported from source areas in mountains to irrigated areas in adjacent valley”" (p. 27). [Footnote 80: Ralph L. Seiler, et.al. 1999. Areas Susceptible to Irrigation-Induced Selenium Contamination of Water and			

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			Biota in the Western United States U.S. GEOLOGICAL SURVEY CIRCULAR 1180. Available online: https://www.fws.gov/mountainprairie/contaminants/papers/circ1180.pdf.] Therefore, the DEIS/EIR must survey the Antelope Valley watershed to determine the amount of selenium that is likely to dissolve into the stored water. Furthermore, the analysis must determine if evaporative enrichment would exacerbate any environmental or agricultural problems associated with excessive selenium concentrations.			
51100	72	84	The inundation of native landscapes transforms woodlands, grasslands and riparian zones into drowned dead zones that, when drained, are highly erodible. The RDEIR/SDEIS states on page 6-31 that“"[w]ind, rain, and wave action commonly erode bare soil adjacent to reservoirs and could cause erosion along the edge of Sites Reservoir when it is not full. These phenomena may temporarily increase turbidity along the reservoir’s edge	Please see Master Response 4, Water Quality, for a discussion of the effects of shoreline erosion.	Reviewed by Client	N/A

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			prior to settling of the sediment, but this increase would not markedly affect beneficial uses of the reservoir (i.e., recreation, water supply, fisheries and wildlife)"" Erosion of soils in the exposed inundation zone will deposit sediment on the reservoir bottom and re-suspend soils laden with metals and other contaminants, which will exacerbate water quality impacts in the reservoir and downstream releases.			
51100	72	85	3. Evaporative Enrichment of Contaminants The RDEIR/SDEIS on page 6-32 states that evapoconcentration could increase constituent concentrations in Sites Reservoir by up to 48 percent. When the source water is more highly contaminated with metals and the soils in the reservoir contribute more salt/metal into the reservoir and the impounded water is exposed to heat/wind causing evaporation, water quality declines over time despite the introduction of dilution. It is therefore inevitable that water released from	As described in the Chapter 6, Surface Water Quality, Methods of Analysis section and implemented in the analysis for Impact WQ-2, evapoconcentration is incorporated into the quantitative assessments for metals and salinity and is considered in the evaluation of the beneficial uses. The Final EIR/EIS includes updated estimates of evapoconcentration (based on project and model refinements in the CALSIM simulations) and describes why the most concentrated water is unlikely to be released for water supply purposes. The signature of	Reviewed by Client	N/A

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			Sites Reservoir to the Sacramento River will contribute higher concentrations of constituents such as salt and metals. The RDEIR/SDEIS does not adequately evaluate the effects from these higher concentrations on water quality and beneficial uses of the Sacramento River.	evapoconcentration in the metals estimates is sometimes apparent, but often obscured by the variability in estimated reservoir inflow concentrations. This revision does not change conclusions or impact determinations identified in the analysis.		
51100	72	86	The RDEIR/SDEIS recognizes existing data is insufficient and considers collecting additional source- water quality samples for metals at predetermined intervals to identify problematic metal loads that may occur after the reservoir is built and in operation. There has been ample time during the 20+ years this Project has been promoted to collect appropriate highflow metal data. Data provided by retired DWR water quality Chief Boles during the 2017 DEIR/DEIS era illustrated existing quality constituents are elevated during high flow and highlighted data gaps that must be filled prior to building and operating a reservoir in this dubious location. The failure of the proponents to fill this	The information used to conduct the evaluation in Chapter 6 is sufficient to provide decision makers with an understanding of the relative change in metal concentrations between the No Project Alternative and the Project. Although water quality measurements did not target high flows, multiple measurements were taken during higher flows. Master Response 4, Water Quality, discusses available data and how the available data were used to develop exponential equations to estimate metal concentrations as functions of tributary input and flow, allowing estimation of concentrations if conditions become more extreme	Reviewed by Client	N/A

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			data gap while selling the benefits to naïve investors is reprehensible. Collecting this data after the project is completed to determine the severity of the problems might be helpful but would result in a bad outcome for local irrigators who might be stuck with water too contaminated to put back in the river. CEQA requires impact analysis prior to approval and construction of a project.	than what was present during measurements. Master Response 4, Water Quality, reviews the number of data points and the methodology described and used in Chapter 6, Surface Water Quality, for pooling data to maximize the number of data points at higher flows. Master Response 4 also includes a review of the equations to estimate metal concentrations at flows or percentages of tributary inflows higher than what occurred at the time of the measurements. Also, please see Appendix 6E, Water Quality Data, for a tabulation of the number of data points from each measurement site and graphical representation of the relationship between measured metal concentrations and flow in the Sacramento River at Keswick. As described in Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, the Authority will be conducting water		

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				quality measurements for a variety of constituents.		
51100	72	88	The data gaps must be filled and then measured against the appropriate standards. There are water quality thresholds applicable to this project, including California and Federal Drinking Water Standards (MCLs), California Public Health Goals (PHGs), California State Notification and Response Levels for Drinking Water, Suggested No-Adverse-Response Levels (SNARLs), Cancer Risk Estimates, Health-based criteria from USEPA Integrated Risk Information System (IRIS), Proposition 65 Safe Harbor Levels, California Toxics Rule Criteria to Protect Human Health and Aquatic Life, USEPA Recommended Criteria to Protect Human Health and Aquatic Life, Agricultural Use Protective Limits, and Taste and Odor Based Criteria. These are the thresholds to which the proposed project should be analyzed, but the RDEIR/SDEIS fails this test.	Please refer to Master Response 4, Water Quality, for a discussion regarding regulatory standards appropriate for use in the impact evaluation of metals and metalloids other than mercury.	Reviewed by Client	N/A

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51100	72	89	4. Harmful Algae Blooms Water quality conditions would be conducive to the growth of HABs forming cyanobacteria as well as algae, particularly in the summer when water temperatures in the reservoir would be warmer and nutrients would be more concentrated due to reduced storage volume. Concentrations would likely be higher toward the water's surface where cyanobacteria and algae would be concentrated. Water would be released from lower in the reservoir if water quality monitoring indicated that organic carbon concentrations were high (Section 2D.3).	The commenter is citing to text that can be found in Chapter 6, Surface Water Quality, but has combined two separate discussions. The last two sentences in the comment are from Impact WQ-2 from the organic carbon discussion for Colusa Basin Drain and Sacramento River, whereas the preceding sentences are from the nutrient discussion under this same impact (Sites Reservoir section). The last sentence, as it appears in Chapter 6, has been deleted in the Final EIR/EIS; Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, does not include an action to change the depth at which water is released from Sites Reservoir based on organic carbon concentrations, although DOC concentrations will be monitored as part of the metals evaluation for Sites Reservoir (see the Appendix 2D, Metals section). In addition, clarifying text has been added to the organic carbon discussion for Colusa Basin Drain under Impact WQ-2 in Chapter 6 of the Final EIR/EIS. These revisions do not change conclusions or impact	Reviewed by Client	N/A

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				determinations identified in the analysis. The comment does not raise significant environmental issues related to the analysis of impacts discussed in the RDEIR/SDEIS. Please refer to Master Response 1, Responses to General Comments, for responses to general comments on the RDEIR/SDEIS.		
51100	72	90	5. Salt Saline water has been observed to seep from underground salt springs in the vicinity of the Salt Lake fault along the slopes above the valley and along the valley floor within the proposed inundation area of Sites Reservoir. “"These areas are generally located in the Funks Creek watershed. The water from the underground springs accumulates along the trough of the valley and forms Salt Lake (USGS, 1915”". The proponents failed to accurately survey the depth or hydrodynamics of Salt Lake and fail to model how much more active the	Due to its small size, surveys of the depth and hydrodynamics of Salt Pond surface water are not necessary. As described in the Chapter 6, Surface Water Quality, Environmental Setting section, the size of Salt Pond and adjacent seasonal brackish wetlands varies with time. The wetted area appears to vary from 0 to 30 acres. As described in the Chapter 6, Sites Reservoir and Salt Pond section, the analysis for Impact WQ-2 considers both full mixing of the Salt Pond water with the rest of Sites Reservoir and accumulation of the Salt Pond water at the bottom of the reservoir.	Reviewed by Client	N/A

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			saline springs would be if the reservoir was inundated. The assumption that the salty water would""[g]enerally accumulate at the bottom of the reservoi"" does not assure a more general mixing into the whole reservoir during filling and emptying. The recognition that""Saline water will increase the salinity of the water in storage. Salinity in Sites Reservoir may also increase due evapoconcentration, which may increase EC by 13%-16% on average, with maximum increases of 41%-48%"" is an important consideration. The optimistic but short-sighted analysis of how much salinity would be introduced into the Sacramento River Basin if Sites Reservoir is filled is insufficient and must be reconsidered.	The analysis also considers a range of possible reservoir concentrations associated with Salt Pond. The effect on salinity in the reservoir assuming full blending would be small even when the highest measured electrical conductivity (EC) value is used. Prior to reservoir operation, measurements of spring flow and water quality (as specified in the draft Reservoir Management Plan in Appendix 2D, Best Management Practices, Management Plans, and Technical Studies) will help narrow the range of effects that might be associated with the salt springs. As described in the Salinity section of Impact WQ-2 in Chapter 6, the weight of Sites Reservoir water over the salt springs would likely reduce the flow of saline mineral water from these springs. As described in the Chapter 6, Methods of Analysis section and implemented in the analysis for Impact WQ-2, evapoconcentration is		

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				incorporated into the quantitative assessments for salinity.		
51100	72	92	When high concentrations of metals approaching, or exceeding water quality criteria exist in proposed project source waters they can't be regulated by governmental agencies as being natural occurrences. But once impounded, enriched by evaporation, added to by erosion of uninundated bare-soil reservoir edges, and seasoned by salt springs, they are subject to water quality regulation. All releases of water from the proposed reservoir will be subject to review by water quality regulatory agencies to ensure that such releases do not adversely affect downstream benefits due to the heavy metals loads in the releases. Proponents claim on page 6-47""The Antidegradation Policy may allow for some degradation of water quality (i.e., increases in constituent concentration) if beneficial use increases. Evapoconcentration in reservoirs, for example, is generally accepted due the benefits of water	The Authority and Reclamation acknowledge and agree the operation of Sites Reservoir, including consistency with the Antidegradation Policy, will be reviewed by regulatory agencies (see Chapter 4, Regulatory and Environmental Compliance: Project Permits, Approvals, and Consultation Requirements, regarding permits, approvals, and consultation processes that are potentially applicable to the Project and agencies that are anticipated to rely on the EIR/EIS for decision-making and implementation). Please see Chapter 6, Surface Water Quality, Impacts WQ-1 and WQ-2 and Master Response 4, Water Quality, regarding effects on water quality relative to water quality standards. In addition, please see the Chapter 6, Antidegradation Policy section, which discusses how the Antidegradation Policy is considered and applied by regulatory agencies. The water quality analysis concludes that, with the exception of	Reviewed by Client	N/A

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			storage”" But if the already compromised source water quality is reduced beyond quality criteria or standards by the added impediments recognized by proponents, it is likely to reduce or eliminate the balance of benefits to supply and to the environment. The Antidegradation policy must be considered as a distinct possibility. The impounded metal-laden water could presumably still be used in lieu of Shasta releases on agricultural soils, but the long-term impacts to farms and refuges must be considered.	methylmercury, operation of the Project would not cause significant and unavoidable increases in downstream metal concentrations. As a result, with the exception of methylmercury, the Project would not conflict with downstream beneficial uses.		
51100	72	93	The presentation of data and analysis minimizes the severity of the heavy metals, salt, organic carbon and HAB problems in the source water and the impoundment footprint. The contradicting operational strategies meant to mitigate environmental damage will fail to protect the environment and may leave the impounded water vulnerable to the state antidegradation policy.	The water quality analysis contained in Chapter 6, Surface Water Quality, and associated appendices presents data and modeling results in multiple ways depending on the impact mechanisms being evaluated without attempting to minimize the severity of effect. The Methods of Analysis section in Chapter 6 and discussion for Impacts WQ-1 and WQ-2 explain the many pieces of information used in the analysis and the analysis approach and locations evaluated. In	Reviewed by Client	N/A

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				addition, please see Master Response 4, Water Quality, for more discussion regarding the methodologies used to assess metals; for example, the use of measured data and estimation of metal concentrations, as well as the time-series estimates of inflow concentration, evapoconcentration, and dilution using CALSIM results. Please refer to Master Response 4 for a discussion regarding the metals analysis and use of the I/O tower to control releases of water quality constituents. In addition, please see the response to comment 72-92 regarding the Antidegradation Policy.		
51100	76	3	Antidegradation Considerations All wastewater discharges must comply with the Antidegradation Policy (State Water Board Resolution 68-16) and the Antidegradation Implementation Policy contained in the Basin Plan. The Antidegradation Implementation Policy is available on page 74 at: https:llwww.waterboards.ca.gov/centr	The Authority and Reclamation acknowledge and agree the operation of Sites Reservoir, including consistency with the antidegradation policy, will be reviewed by regulatory agencies as part of the applicable permit processes (see Chapter 4, Regulatory and Environmental Compliance: Project Permits, Approvals, and Consultation Requirements, regarding permits, approvals, and consultation processes	Reviewed by Client	N/A

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			alvalley/water issues/basin plans/sacsjr 201805.pdf In part it states: Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State. This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives. The antidegradation analysis is a mandatory element in the National Pollutant Discharge Elimination System and land discharge Waste Discharge Requirements (WDRs) permitting processes. The environmental review document	that are potentially applicable to the Project and agencies that are anticipated to rely on the EIR/EIS for decision-making and implementation). The EIR/EIS evaluates surface water and groundwater quality in Chapters 6, Surface Water Quality, and 8, Groundwater Resources, and includes discussion of background concentrations and applicable water quality standards. Additional information is provided in Master Response 4, Water Quality.		

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			should evaluate potential impacts to both surface and groundwater quality.			
51100	77	38	ATTMT 1. Chapter or Appendix–-Section: Chapter 6–- Section 6.2.2.6, Harmful Algal Blooms (HABs). Page(s): p. 6-23. Comment and Recommendations: Harmful algal blooms (HABs) include a wide range phytoplankton such as diatoms and dinoflagellates, in addition to cyanobacteria. Cyanotoxins may be present in water, sediment, and biological organisms even if a bloom isn't observed. Microcystis is the dominant cyanobacteria in California, but Aphanizomenon and Dolichopermum are becoming more abundant (Lehman et al. 2021). CDFW recommends that the FEIR/FEIS consider other potential sources of HABs in its analysis.	The Environmental Setting section of Chapter 6, Surface Water Quality, of the Final EIR/EIS has been revised to include a brief discussion of planktonic and benthic cyanobacteria, including examples of common genera of each that may occur in freshwater surface waterbodies in California. This revision clarifies information already contained in the document regarding harmful algal blooms. This revision does not change conclusions or impact determinations identified in the analysis.	Reviewed by Client	N/A
51100	78	15	Total Maximum Daily Loads (TMDLs) and Impaired Water Bodies Shasta Lake, Sacramento River, Lake Oroville, Feather River, Folsom Lake, American River, Yolo Bypass, and the	The table titled "Clean Water Action Section 303(d) Impaired Water Bodies in the Study Area" in the Appendix 6A, Water Quality Constituents and Beneficial Uses, of the RDEIR/SDEIS has been updated based on the most	Reviewed by Client	N/A

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			Sacramento-San Joaquin Delta are currently on the Clean Water Act Section 303(d) List of Impaired Waters due to a wide variety of constituents of concern, including chlordane, chlorpyrifos, DDT (Dichlorodiphenyltrichloroethane), diazinon, dieldrin, group A pesticides, invasive species, mercury, PCBs (Polychlorinated biphenyls), and toxicity. Central Valley Water Board staff recommends referencing the most current 303(d) list and requirements contained in existing TMDLs for the potential discharge area of the reservoir within the draft REIR/SEIS.	current approved 303(d) list (i.e., 2020–2022 303(d) list, and the table title revised to "Impaired Water Bodies in the Study Area Included in the 2020–2022 California Integrated Report for Clean Water Act Sections 303(d) and 305(b)" in the Final EIR/EIS. Relevant total maximum daily loads (TMDLs) for water quality impairments in the study area are identified in the Environmental Setting section of Chapter 6, Surface Water Quality. The updates to the 303(d) list for the geographies discussed in the impact analysis were relatively minor and include water temperature and dissolved oxygen for specific reaches of the Sacramento River. The updates to the most recently approved list(s) do not change conclusions or impact determinations identified in the analysis.		
51100	78	58	Chapter 6–- The environmental document should include an analysis of potential sub-monthly water quality impacts, including temperature and other impacts that	For some of the constituents evaluated (e.g., harmful algal blooms [HABs], pesticides, and nutrients), the analysis is based on physical processes and measured concentrations. For these	Reviewed by Client	N/A

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			could have sub-monthly significant impacts. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	constituents, modeling is not necessary, nor would it be reliable or feasible, especially at a sub-monthly time step. For other constituents such as salinity and metals, CALSIM results are used as explained in the Methods of Analysis section of Chapter 6, Surface Water Quality. Two types of CALSIM results that inform the evaluation of impacts are evapoconcentration and dilution in the Sacramento River. The monthly CALSIM results are adequate for evaluating these phenomena because they are minimally affected by day-to-day fluctuations. Evapoconcentration occurs gradually over time, so a sub-monthly analysis is not warranted. Dilution in the Sacramento River, which is a function of Sites Reservoir release and Sacramento River flow, would also likely not vary much within a month. Sites Reservoir releases would not fluctuate greatly from day to day and, at the time when Sites Reservoir water would be discharged to the Sacramento River (generally May to November), flow in the river would no longer be influenced by		

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				storm events and would not be fluctuating greatly from day to day. The Chapter 6 temperature evaluation focuses on whether discharge from Sites Reservoir would cause an increase in receiving water temperature of more than 5°F. Fisheries resources are the primary designated beneficial use potentially affected by water temperature. As such, most of the potential effects associated with changes in water temperature are discussed in Chapter 11, Aquatic Biological Resources, which evaluates how changes in water temperature under each alternative could affect fish at a daily (Sacramento and American Rivers) or monthly (Feather River) time step. Water temperature is also discussed in Chapter 15, Agriculture and Forestry Resources, as it relates to rice. The temperature blending tool (described in Chapter 6 and Appendix 6D, Sites Reservoir Discharge Temperature Modeling) was used to		

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				assess the effect of Sites Reservoir discharge on Sacramento River water temperature. This tool cannot simulate sub-monthly effects of Sites Reservoir discharge on receiving-water temperature. There would be limited day-to-day variation in the effect of the discharge on receiving-water temperature because reservoir release temperatures tend to be constant and because, as mentioned above, release flows and Sacramento River flows are not expected to vary greatly during the discharge period. Therefore, the temperature blending tool provides a reasonable representation of potential temperature effects associated with Sites Reservoir releases. Water temperature in the Sacramento and American Rivers was modeled on a sub-daily time step (see Appendix 6C, River Temperature Modeling Results). The fish assessment of water temperature effects presented in Chapter 11, Aquatic Biological Resources, utilized sub-monthly water temperature modeling results for		

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				special-status cold-water fish that use these rivers. In addition, the Chapter 11 fish assessment considers the difference between daily average and daily maximum temperatures. Methylmercury formation rates in reservoirs are uncertain due to the many factors that can affect the rate. For this reason, methylmercury in Sites Reservoir was not modeled and instead was estimated based on information from other reservoirs. Possible downstream effects of these estimated concentrations were assessed qualitatively, with the exception of potential changes in concentrations of aqueous methylmercury that could contribute to fish tissue concentrations. As described in Chapter 6 and in Appendix 6F, Mercury and Methylmercury, the Central Valley Regional Water Quality Control Board Total Maximum Daily Load model was used to calculate expected tissue methylmercury concentrations in 350 millimeter (mm) largemouth bass		

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				based on estimated short- and long-term water column methylmercury concentrations from the Project alternatives in the Sacramento River at Freeport. Additional calculations were made, as a sensitivity analysis, to identify the concentrations of water column methylmercury that would need to be discharged from the Project to cause a given change in fish tissue concentrations. Calculations were based on the proportional flows from the Project in the Sacramento River at Freeport as determined by CALSIM II. Because bioaccumulation of methylmercury occurs over an extended period of time, assessment of sub-monthly changes in methylmercury would not be meaningful and would not provide additional relevant information. Please also see Master Response 3, Hydrology and Hydrologic Modeling, for a discussion of modeling time step and the use of CALSIM. In some cases, monthly results from CALSIM are the		

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				best available information for evaluation of some resources.		
51100	78	59	Chapter 6–- The draft REIR/SEIS states "The analysis in this chapter focuses on the Central Valley Basin Plan objective for waterbodies designated with the WARM or COLD beneficial use that at no time or place shall the temperature of intrastate waters be increased more than 5°F above natural receiving water temperature." In addition to this objective, the Basin Plan also includes a narrative WQO, and provides as follows: "The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses." Temperature objectives for COLD interstate waters, WARM interstate waters, and Enclosed Bays and Estuaries are as specified in the Water Quality Control Plan for Control of Temperature in the Coastal and	A 5°F increase is not the sole basis for evaluating water temperature effects. Water temperature effects are primarily evaluated in Chapter 11, Aquatic Biological Resources. As described in Chapter 6, Surface Water Quality, Methods of Analysis, fisheries resources are the primary designated beneficial use potentially affected by water temperature. As such, most of the potential effects associated with changes in water temperature are discussed in Chapter 11, Aquatic Biological Resources. Chapter 11 and Appendix 11B, Upstream Fisheries Impact Assessment Quantitative Methods, describe the multiple methodologies and temperature indices used to assess temperature effects on fish species. Water temperature is also discussed in Chapter 15, Agriculture and Forestry Resources, related to rice. Please also see Master Response 5, Aquatic Biological Resources, regarding methodologies and use of modeled	Reviewed by Client	N/A

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			Interstate Waters and Enclosed Bays of California including any revisions. There are also temperature objectives for the Delta in the State Water Boar''s 2006 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. At no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5°F above natural receiving water temperature. Temperature changes due to controllable factors shall be limited for the water bodies specified as described in Table 3-7. To the extent of any conflict with the above, the more stringent objective applies. In determining compliance with the water quality objectives for temperature, appropriate averaging periods may be applied provided that beneficial uses will be fully protected." The 5 degree requirement is the maximum allowable change in temperature. Per the narrative WQO, no change in temperature can be	results related to temperature and fish.		

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			made without first demonstrating to the Regional Board that the alteration would not adversely affect beneficial uses. The analysis lacks any evaluation of potential impacts to beneficial uses, e.g., aquatic life, in terms of the WQO. The significance of a potential impact should be evaluated in terms of impacts to beneficial uses, not the 5 degree threshold. [Commenting Water Board or Section within the State Water Board: Bay-Delta]			
51100	78	60	Chapter 6–- The analysis evaluates temperature impacts to the Sacramento River from the discharge of water from Sites Reservoir; however, it appears that the analysis lacks an evaluation of temperature impacts in the Sacramento River that may be caused by the additional diversions from the river and coordinated operations with Shasta Reservoir.	Please see response to comment 78-59 regarding temperature. Sacramento River temperature effects on fisheries are evaluated in Chapter 11, Aquatic Biological Resources. Changes in temperature associated with changes in Sacramento River flow (including changes due to diversions and coordinated operations with Shasta Reservoir) were simulated with the HEC-5Q model. Changes in Sacramento River temperature are small (e.g., see Appendix 6C, River Temperature	Reviewed by Client	N/A

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			[Commenting Water Board or Section within the State Water Board: Bay-Delta]	Modeling Results). Potential effects of changes in Sacramento River temperature are evaluated in Chapter 11 for multiple species of fish.		
51100	78	61	Chapter 6, page 6-29–- State Water Board staff note that the issuance of a Clean Water Act section 401 water quality certification could serve as Waste Discharge Requirements pursuant to the Porter-Cologne Water Quality Control Act (Water Code sections 13000 et seq.) as authorized by State Water Board Water Quality Order No. 2003-0017-DWQ, Statewide General Waste Discharge Requirements for Dredged or Fill Discharges that have Received State Water Quality Certification. [Commenting Water Board or Section within the State Water Board: Water Quality & Public Trust section]	The comment notes that a water quality certification per the Clean Water Act Section 401 can also serve as a Waste Discharge Requirement per the Porter-Cologne Water Quality Control Act. The comment is noted.	Reviewed by Client	N/A
51100	78	62	Chapter 6, page 6-31–- The environmental document states that while the Delta is impaired by elevated selenium, "selenium is not included in the evaluation because	As described in Chapter 6, Surface Water Quality, the Project would not affect the selenium load from Stone Corral and Funks Creeks, and these creeks are expected to contribute only	Reviewed by Client	N/A

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			the Project would not affect the major sources of Delta selenium: natural sources, San Joaquin River flow, and industries in the San Francisco Bay Area. Selenium concentrations in the Sacramento River are low, with most measurements below detection limits and measured values for total selenium all being less than 1 µg/L (WDL values for Sacramento River below Red Bluff, Sacramento River at Hamilton City, and Sacramento River above CBD measured from 2000 through 2020). Selenium concentrations in Stone Corral Creek are somewhat higher (average measured total selenium of 6.74 µg/L; Appendix 6E), but the Project would not affect the selenium load from Stone Corral Creek, and Stone Corral Creek is expected to contribute only a small percent of the water in Sites Reservoir." USEPA 2016 criterion for Se is 1.5 ug/L in lentic systems and 3.1 ug/L in lotic systems. Stone Corral Creek concentrations appear to be elevated. The document includes USEPA 2016 in the references but does not mention the criterion and	a small percent of the water in Sites Reservoir. The volume of inflow from Stone Corral and Funks Creeks is small, estimated to be a combined average of 14 thousand acre-feet per year (TAF/yr). The U.S. Environmental Protection Agency (USEPA) selenium standards are included in the Chapter 6 table titled Metals Water Quality Standards. These standards are for dissolved selenium concentrations, which are somewhat lower than the total concentrations, average of 6.15 micrograms per liter (µg/L) in Stone Corral Creek and average of 0.13 µg/L in the Sacramento River below Red Bluff (Appendix 6E, Water Quality Data). Selenium contributions from the creeks to Sites Reservoir would be substantially diluted even when reservoir storage is low. For example, the average flow and dissolved selenium concentration expected from Funks Creek and Stone Corral Creek (14 TAF at 6.15 µg/L) could be		

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			does not include a Se cycling discussion in the text, which may be warranted considering the concentrations in the creek. Stone Corral Creek concentrations are 4 times the criterion for lentic systems. An evaluation of loading to the reservoir may be warranted, as continued loading may result in localized elevated bioaccumulation rates due to the change from a lotic system to a lentic environment. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	mixed with Sites Reservoir with an assumed storage at operational dead pool (60 TAF) and selenium concentrations two times the concentration in the Sacramento River below Red Bluff (0.26 µg/L), which assumes some evapoconcentration and/or prior contributions from the creeks. The resulting concentration would be 1.37 µg/L [(6.15*14+0.26*60)/74], which is below the lentic criterion of 1.5 µg/L. In reality, if Sites Reservoir storage were at operational dead pool, it likely would mean hydrologic conditions were dry, and flows in Funks and Stone Corral Creeks would be less than average and thus not discharging selenium into the reservoir. Releases from Sites Reservoir would limit buildup of selenium concentrations in the reservoir, and the releases would represent lotic conditions, which would be subject to the higher USEPA criterion of 3.1 µg/L. In many instances, Sites Reservoir would cause selenium		

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				concentrations in the lower creeks (below Sites Reservoir) to convert from exceeding the lotic criterion to meeting it. In addition, as acknowledged in Chapter 4, Regulatory and Environmental Compliance: Project Permits, Approvals, and Consultation Requirements, and Chapter 6, the operation of the reservoir will comply with applicable permit requirements issued by the State Water Resources Control Board and other regulating agencies.		
51100	78	63	Chapter 6, page 6-31–- The environmental document states that "Contaminants associated with sediments were also dismissed from detailed evaluation. Contaminated sediments could move into Sites Reservoir as suspended sediments during high flows, but the main supplies of contaminated sediments and their potential effects would remain in the Sacramento River channel because the amount of sediment contained in the diversions	The purpose of the text cited by the comment was to make it clear that contaminants closely associated with sediment are not expected to be any more concentrated in Sites Reservoir than in the Sacramento River. Text in Chapter 6, Surface Water Quality, has been clarified in the Final EIR/EIS, and the text revisions do not result in a change in impact determination or conclusion. Please see Master Response 4, Water Quality, regarding anoxic conditions and use of the I/O	Reviewed by Client	N/A

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			to Sites Reservoir would be small compared to what is contained in the Sacramento River channel." Reservoirs can create conditions, e.g., anoxia and hypolimnetic enrichment, that convert insoluble oxidized precipitates into reduced soluble forms, and as a result these soluble chemicals can be released from the sediment. Contaminant levels that may not pose a threat in the riverine setting may react differently and cause toxicological impacts in the reservoir or in discharges from the reservoir. Such potential impacts from metals, phosphates, HS, and other contaminants that may be caused by the reservoir conditions require analyses. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	tower to control releases of constituents.		
51100	78	64	Chapter 6, page 6-31–- According to the draft REIR/SEIS, "Contaminants associated with sediments were also dismissed from detailed evaluation.	Please see response to comment 78-63 regarding contaminant adherence to sediment.	Reviewed by Client	N/A

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			Contaminated sediments could move into Sites Reservoir as suspended sediments during high flows, but the main supplies of contaminated sediments and their potential effects would remain in the Sacramento River channel because the amount of sediment contained in the diversions to Sites Reservoir would be small compared to what is contained in the Sacramento River channel." The draft REIR/SEIS should include a quantitative estimate of the amount of sediment contained in the diversions to the Terminal Regulating Reservoir, Funks Reservoir, and Sites Reservoir. Additionally, the draft REIR/SEIS should include a discussion regarding the need and frequency of dredging activities at the Terminal Regulating Reservoir, Funks Reservoir, and Sites Reservoir and the likelihood that the sediment would contain contaminants and the associated impacts related to dredging contaminated sediment.	A quantitative estimate of suspended sediment entrained at the Red Bluff and Hamilton City intakes under the Project is provided in Appendix 11F, Smelt Analysis, (Section 11F.3), and is also discussed in Chapter 7, Fluvial Geomorphology, and Chapter 11, Aquatic Biological Resources. Modeling results indicate that up to approximately 2.7% and 2.1% of suspended sediment would be entrained at the Red Bluff and Hamilton City intakes, respectively. Sediment removal is not likely to substantially affect water quality because no regular sediment removal under operating conditions would be required for Sites Reservoir, Funks Reservoir, TRR East, or TRR West due to large reservoir volumes and distance from Sacramento River intakes. GCID and TCCA perform regular maintenance on their canals, which could include sediment removal. The Authority will coordinate with GCID and TCCA on canal		

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			[Commenting Water Board or Section within the State Water Board: Water Quality and Public Trust section]	operations, which would include agreements on canal use.		
51100	78	66	Chapter 6, pages 6-39, 6-54, 6-58–-Elevated MeHg discharged to the Colusa Basin Drain (CBD), which already has one of the highest average concentrations of aqueous MeHg in the Central Valley (CVRWQCB 2010) will exacerbate bioaccumulation conditions in the canal. The fish Hg levels are near 0.2 ppm and increasing aqueous MeHg concentrations will likely increase their concentrations to levels that pose risk to consumers. The environmental document states, "Because Funks Creek, Stone Corral Creek, and the CBD do not support sport fish, it is unlikely that anglers would be fishing these waterbodies; accordingly, any potential exceedances of the sport fish objective at these locations would not be expected to affect the public." The CVRWQCB staff have observed many people fishing in CBD on many	It is acknowledged in Chapter 6, Surface Water Quality, that releases from Sites Reservoir could result in increased methylmercury bioaccumulation in fish in Funks and Stone Corral Creeks, as well as the Colusa Basin Drain (CBD). The potential for an impact on public health due to consumption of fish in these waterbodies under the Project alternatives is discussed in Chapter 27, Public Health and Environmental Hazards. The text referenced in this comment has been revised in Chapters 6 and 27 of the Final EIR/EIS to indicate that, although sport fish may be found in Funks and Stone Corral Creeks, it is unlikely that anglers would be fishing these streams because they are small, intermittent streams and their stream banks are located primarily on private land. Text indicating that the CBD does not support fish and that it is	Reviewed by Client	N/A

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			occasions. This statement should be revised accordingly. [Commenting Water Board or Section within the State Water Board: Water Quality and Public Trust section]	unlikely that anglers would be fishing in the CBD has been deleted. These text revisions do not change conclusions or impact determinations identified in the Chapter 6 or Chapter 27 analyses.		
51100	78	67	Chapter 6, page 6-50–- Please note that CVRWQCB Order R5-2016-0076-01 expires in January 2022, according to the following: https://www.waterboards.ca.gov/rwqcb5/board_decisions/adopted_orders/general_orders/r5-2016-0076-01.pdf. State Water Board staff recommend the final draft REIR/SEIS reference any update to the Order. [Commenting Water Board or Section within the State Water Board: Water Quality and Public Trust section]	It is the Authority's understanding that Central Valley Regional Water Quality Control Board Order R5-2016-0076-01 (NPDES CAG995002) has been reissued as Order R5-2022-0006 (NPDES CAG995002). Accordingly, text has been revised in the Final EIR/EIS to reference the reissued order, which expires on March 31, 2027. This text revision does not change conclusions or impact determinations identified in the analysis.	Reviewed by Client	N/A
51100	78	68	Chapter 6, Page 6-50–- Since Stone Corral Creek is listed on the Clean Water Act Section 303(d) list for dissolved oxygen, the construction, dewatering, and diversion activities will need to comply with Basin Plan	The Environmental Setting section in Chapter 6, Surface Water Quality, acknowledges the 303(d) listing for dissolved oxygen in Stone Corral Creek. The Authority will comply with all regulatory requirements identified in applicable basin plan(s), total	Reviewed by Client	N/A

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			objectives and the anticipated TMDL in development for dissolved oxygen. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	maximum daily loads (TMDLs), and/or permits during construction and operation.		
51100	78	69	Chapter 6, pages 6-54, 6-88–- While the draft REIR/SEIS states studies of Funks and Stone Corral Creek have not yet been conducted, a general discussion should be included of how Funks and Stone Corral Creeks will be protected from any harmful algae blooms or low-quality water from the reservoir over the long-term operation of the reservoir. The draft REIR/SEIS appears to lack an evaluation that includes the complexities of cyanobacteria and may understate the true impacts of cyanobacteria or other harmful algal blooms (e.g., pelagic and benthic states, bioaccumulation of cyanotoxins by benthic invertebrates, sediment accumulation of cyanotoxins, multiple species, reservoir discharges of cyanobacteria and toxins, and impacts to	The Authority and Reclamation acknowledge the complexities of the environmental fate of cyanotoxins and of cyanobacteria in general. Text highlighting some of these complexities has been added to the Harmful Algal Blooms subsection of the Environmental Setting section of Chapter 6, Surface Water Quality. The analysis in Chapter 6 acknowledges that cyanobacteria and cyanotoxins could be released from Sites Reservoir. The fact that recreational use of the reservoir could be affected seasonally and that visitors could be exposed to cyanotoxins while recreating in or near the water in the presence of harmful algal blooms (HABs) is discussed in Chapter 27, Public Health and Environmental Hazards. Further, text in the Environmental Setting section of	Reviewed by Client	N/A

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			recreational users and wildlife) in water years where the reservoir levels are primarily stagnant. The draft REIR/SEIS should be revised to include additional information and analysis to address these issues. [Commenting Water Board or Section within the State Water Board: Permitting]	Chapter 6 acknowledges that cyanotoxins can accumulate in food crops, fish, and shellfish. Additional text has been added to this section to acknowledge that cyanotoxins, specifically microcystin, can adsorb to suspended and settled sediment and that zooplankton and zoobenthos have been shown to accumulate microcystins. Text revisions to the Environmental Setting section of Chapter 6 do not change the conclusion or impact determination identified in the analysis. As explained in Chapter 6, Impact WQ-2, potential impacts from HABs would not be significant. In addition, releases from Sites Reservoir to Funks and Stone Corral Creeks will be adaptively managed as part of a comprehensive study plan and adaptive management plan as described in Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, to ensure that impacts remain less than significant and that fish are maintained in good condition in		

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				compliance with California Fish and Game Code 5937. Besides standard water quality parameters, the Authority and Reclamation have added cyanobacteria and cyanotoxin monitoring to the stream bioassessment component of the Stone Corral Creek and Funks Creek Aquatic Study Plan to specifically address uncertainty regarding cyanobacteria and cyanotoxins in Stone Corral and Funks Creeks due to the Project. Please refer to Master Response 4, Water Quality, for a discussion regarding the use of the I/O tower to control releases of water quality constituents.		
51100	78	71	Chapter 6, Page 6-56 – Analysis should be included on impacts from algal blooms in general due to odor, aesthetic impairment, and recreational impacts at the project site, within the Sacramento River, and in the Delta, including an analysis of cumulative impacts.	Sites Reservoir would be a relatively large reservoir and it is unlikely that if harmful algal blooms (HABs) do occur in the reservoir that the blooms would occur throughout the entire reservoir. Accordingly, any perceived aesthetic impairment or perceptible odor related to blooms would depend on the spatial and temporal distribution	Reviewed by Client	N/A

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			[Commenting Water Board or Section within the State Water Board: Bay-Delta]	of the viewer and HABs. It is likely that HABs could be avoided by the viewer(s) and/or recreators given the size of the reservoir and multiple opportunities for viewers/recreators in different locations around and on the reservoir. Chapter 27, Public Health and Environmental Hazards, describes the potential for recreational use of the reservoir to be affected seasonally and the potential for visitors to be exposed to cyanotoxins while recreating in or near the water in the presence of HABs. A cumulative impact analysis for water quality (including HABs) is presented in Chapter 31, Cumulative Impacts. As discussed in Chapter 6, Surface Water Quality, any potential release of cyanobacteria/cyanotoxins from Sites Reservoir would be greatly diluted when eventually discharged into the Sacramento River. Accordingly, there would be no related aesthetic impairment or odor in the Sacramento River or in the Delta due		

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				cyanobacteria/cyanotoxins potentially contained in Sites Reservoir releases. Similarly, there would be no impact on recreation in the Sacramento River downstream of Sites Reservoir or in the Delta due cyanobacteria/cyanotoxins potentially contained in Sites Reservoir releases.		
51100	78	72	Chapter 6, page 6-60–- According to the draft REIR/SEIS, “Ongoing monitoring of aqueous and fish tissue methylmercury in Sites Reservoir will be implemented per permit conditions, to assess the effectiveness of fisheries management actions over the long term.” The final REIR/SEIS should identify the specific permit(s) referenced. [Commenting Water Board or Section within the State Water Board: Water Quality and Public Trust section]	The text referenced by the commenter has been revised in Chapter 6, Surface Water Quality, of the Final EIR/EIS. Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, has been revised in the Final EIR/EIS to provide clarification that the ongoing monitoring of aqueous and fish tissue methylmercury in Sites Reservoir will be implemented per requirements or conditions in a water right order, Section 401 water quality certification, or other appropriate order issued by the State Water Resources Control Board and/or Central Valley Regional Water Quality Control Board. Federal, state, and local permits, approvals, and consultation processes	Reviewed by Client	N/A

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				that are potentially applicable to the Project are discussed in Chapter 4, Regulatory and Environmental Compliance: Project Permits, Approvals, and Consultation Requirements. Appendix 4A, Regulatory Requirements, describes the regulatory setting for water quality and other environmental resources.		
51100	78	73	Chapter 6, Page 6-72–- The environmental document indicates that providing water to the Yolo Bypass is not expected to impact dissolved oxygen conditions. Additional analyses should be provided to support this conclusion, particularly given recent results from the North Delta Food Subsidy Study. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	Chapter 6, Surface Water Quality, acknowledges that dissolved oxygen (DO) levels in the Yolo Bypass may be temporarily affected by habitat releases during the release period (Impact WQ-2) similar to what occurred during the 2018 and 2019 North Delta Flow Action (NDFA) (aka North Delta Food Subsidy) studies (Twardochleb et al. 2021; Davis et al. 2022). Additional clarifying text has been added to the analysis in Chapter 6 (Impact WQ-2) of the Final EIR/EIS related both to the NDFA studies and DO in the Yolo Bypass (including non-managed flow pulses). To a point, there is an apparent correlation between flow magnitude (up to	Reviewed by Client	Twardochleb, L., A. Maquire, L. Dixit, M. Bedwell, J. Orlando, M. MacWilliams, A. Bever, and B. Davis. 2021. North Delta Food Subsidies Study: Monitoring Food Web Responses to the North Delta Flow Action. March 5. Davis, B., J. Adams, M. Bedwell, A. Bever, D.

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				approximately 300 cfs) through the Yolo Bypass and DO levels (as measured in the Yolo Bypass Toe Drain near Lisbon Weir), which is apparent in years when the NDFA studies have been implemented (e.g., 2018 and 2019) as well as during non-managed flow pulses (e.g., 2020). A figure was added to the analysis illustrating this. In addition, a figure was added to show that DO levels are somewhat reduced and do intermittently fall below the 5 milligrams per liter (mg/L) Delta DO water quality objective in both managed (e.g., 2018 and 2019) and non-managed flow pulse years (e.g., 2020 and 2021). If the observed temporary reduction in DO levels during the 2018 and 2019 NDFA studies is representative of what may occur as a result of Sites Reservoir water being released and pushing low DO water from the CBD downstream, temporary reductions in DO levels would potentially occur but would not be substantially different than what occurs currently. The additional analysis included in Chapter 6		Bosworth, T. Flynn, J. Frantzich, R. Hartman, J. Jenkins, N. Kwan, M. MacWilliams, A. Maquire, S. Perry, C. Pien, T. Treleaven, H. Wright, and L. Twardochleb. 2022. North Delta Food Subsidy Synthesis: Evaluating Flow Pulses from 2011-2019. Draft. March. Department of Water Resources, Division of Integrated Science and Engineering.

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				supports the conclusions previously described for DO in the RDEIR/SDEIS and does not change conclusions or impact determinations.		
51100	78	74	Chapter 6, page 6-88–- The environmental document should discuss the effects of the project on HABs in pelagic, benthic, and organic systems. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	Please see response to comment 78-69 regarding harmful algal blooms and text revisions to the Environmental Setting section in Chapter 6, Surface Water Quality. The commenter does not specifically identify what is meant by "organic systems." The Harmful Algal Blooms subsection of the Environmental Setting section in Chapter 6 notes the potential for bioaccumulation of cyanotoxins in certain food crops, as well as in fish and shellfish. Chapter 11, Aquatic Biological Resources (Contaminants subsection of the Delta and Suisun Bay/Marsh section), generally describes the potential toxic effects of Microcystis aeruginosa on the environment, and Impact FISH-8 provides a discussion of potential Microcystis bloom effects on delta smelt as a result of implementing Alternative 1, 2, or 3.	Reviewed by Client	N/A

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51100	78	75	Chapter 6, pages 6-81, 6-100–- The environmental document states that "Alternatives 1, 2, and 3 would increase the aqueous methylmercury concentration at Freeport during summer and fall months of Dry and Critically Dry Water Years. These increases would range from approximately 3% above existing conditions when Sites Reservoir releases are at the long-term expected methylmercury concentration of 0.1 ng/L, to 28% above existing conditions when releases are at the short-term reasonable worst-case methylmercury concentration of 0.3 ng/L. Fish tissue methylmercury concentrations would increase by at least 5% above existing conditions when the aqueous methylmercury concentration in Sites Reservoir releases is 0.1 ng/L (estimated long-term expected concentration), and up to 50% above existing conditions when Sites Reservoir releases have the short-term reasonable worst-case methylmercury concentration of 0.3 ng/L." This would conflict with the	The primary purpose of CEQA is for lead agencies to identify and disclose potentially significant impacts on the physical environment and mitigate those identified impacts to the extent technically and socially feasible, such that decision makers understand the environmental impacts of their decisions. This is similarly the case for NEPA, although NEPA does not mandate mitigation. That the Project has the potential to exceed the Delta methylmercury total maximum daily load (TMDL) is disclosed in the EIR/EIS. As acknowledged in the CEQA significance determination for mercury/methylmercury under Impact WQ-2 in Chapter 6, Surface Water Quality, Sites Reservoir releases may cause measurable long-term degradation of water quality downstream in the north Delta by causing increases in aqueous and fish tissue methylmercury concentrations in Dry and Critically Dry Water Years and causing exceedances of the methylmercury TMDL fish tissue objectives to occur more frequently and/or by greater magnitudes during	Reviewed by Client	N/A

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			Delta MeHg TMDL and BPA. New projects should not result in an increase in aqueous MeHg concentrations or elevated fish Hg concentrations. Even the long-term MeHg concentration is 1.7 to 2.5-fold higher than the adopted aqueous MeHg goal in the TMDL and BPA. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	these years and release period. While Mitigation Measure WQ-1.1 may reduce mercury methylation in Sites Reservoir, the effectiveness of this mitigation is not known at this time, and, thus, the impact is significant and unavoidable. As discussed in Master Response 1, CEQA and NEPA Process, Regulatory Requirements, and General Comments, CEQA and NEPA lead agencies can approve a project even if significant and unavoidable impacts are identified.		
51100	78	76	Chapter 6, page 6-91–- The draft REIR/SEIS states, “There are several reasons why the effect of moving Sites Reservoir releases through the Yolo Bypass could have a limited effect on pesticides in the Delta. • The pesticide load from the CBD to the Delta would not change; only the discharge location would change. • Pesticides are already present in the Yolo Bypass and are already being	The Project would not alter use of agricultural or urban pesticides and, therefore, would not be expected to change pesticide load in CBD or the Delta. Pesticide concentrations measured in CBD are presented in Appendix 6E, Water Quality Data, and a description of various pesticides used is contained in the Environmental Setting, Pesticides section of Chapter	Reviewed by Client	Davis, B., J. Adams, M. Bedwell, A. Bever, D. Bosworth, T. Flynn, J. Frantzich, R. Hartman, J. Jenkins, N. Kwan, M. MacWilliams, A. Maquire, S. Perry, C. Pien, T. Treleaven, H. Wright, and L. Twardochleb.

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			discharged to the Cache Slough Complex." This greatly oversimplifies pesticide use and interactions. Pesticides are registered for specific uses, and pesticides are applied according to crop types and time of year. The environmental document lacks any analysis of the different types of pesticides used, concentrations of pesticides present in the Yolo Bypass, Cache Slough, or the Colusa Basin Drain, the interactions of currently observed pesticides in the Yolo Bypass and Cache Slough and the addition of CBD pesticides (e.g., additive or synergistic interactions). For example, the CBD will contain, at a minimum, pesticides associated with rice farming, whereas monitoring in the Cache Slough has observed high levels of pesticides associated with urban land uses from Ulatis Creek. The environmental document should address these issues.	6, Surface Water Quality, as well as Impact WQ-2. This comment explains some of the complexities of evaluating potential effects associated with rerouting CBD water through the Yolo Bypass. There is evidence that flow pulses through the Yolo Bypass could increase phytoplankton abundance downstream of the Yolo Bypass and food supply for fish in the North Delta, including delta smelt. This conclusion is based on evaluation of flow pulses that occurred through the Yolo Bypass during 2011 through 2019 as described in Chapter 6 and Chapter 11, Aquatic Biological Resources. The magnitude of effect has been variable and the methodology for maximizing primary production has not been determined. There is some concern that flow pulses could relocate contaminants and reduce the expected benefits of the pulses (e.g., Davis et al. 2022:2,3). Mitigation Measure WQ-2.2 would reduce or minimize effects associated		2022. North Delta Food Subsidy Synthesis: Evaluating Flow Pulses from 2011-2019. Draft. March. Department of Water Resources, Division of Integrated Science and Engineering

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			[Commenting Water Board or Section within the State Water Board: Bay-Delta]	with releasing water to the Yolo Bypass related to pesticides. Additive or synergistic effects are not well understood, and a description of the current state of knowledge regarding synergistic effects would not substantively affect the water quality evaluation presented in Chapter 6. Possible synergistic and additive effects of pesticides and other stressors (e.g., temperature) are difficult to quantify based solely on concentrations. There is much uncertainty around these topics. While it is expected that flow pulses through the Yolo Bypass provide a net benefit to fisheries, investigation to verify net benefit continues. The requirement for net benefit to fish described in Mitigation Measure WQ-2.2 would allow flow to be released to the Yolo Bypass even if pesticides increase temporarily at some locations provided that there is a net benefit. Assessment of net benefit would, by definition, need to consider synergistic effects of pesticides as		

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				described in Mitigation Measure WQ-2.2. Ultimately, net benefit might need to be determined with experiments, such as the enclosure experiments that were attempted with delta smelt during the 2019 flow pulse (Davis et al. 2022:264).		
51100	78	77	Chapter 6, page 6-92–- The environmental document states that "operation would not increase water temperature more than 5°F at discharge locations, in compliance with the Central Valley Basin Plan." This is not a correct metric for evaluating impacts to beneficial uses. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	Please see response to comment 78-59 regarding water temperature and increases of water temperature more than 5°F.	Reviewed by Client	N/A
51100	78	78	Chapter 6, page 6-92–- The environmental document states that "operation would not reduce drinking water quality downstream due to nutrients and organic carbon or cause low DO because nutrients and organic carbon in Sites Reservoir releases would be diluted and water Bay-Delta	As noted in the Chapter 6, Surface Water Quality, table titled Nutrients, Organic Carbon and Dissolved Oxygen, in addition to drinking water standards for nitrate, nitrite, and nitrate plus nitrite, the Central Valley Basin Plan contains a narrative objective for biostimulatory	Reviewed by Client	Davis, B., J. Adams, M. Bedwell, A. Bever, D. Bosworth, T. Flynn, J. Frantzich, R. Hartman, J. Jenkins, N. Kwan, M. MacWilliams,

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			would be aerated upon release. Any increases in reservoir nutrient concentrations may benefit fish." An evaluation against drinking water standards does not address the environmental impacts of the discharge of biostimulatory constituents. The evaluation should include an evaluation of the cumulative impacts of the discharge of biostimulatory constituents and resulting changes in productivity downstream combined with the discharge of reservoir produced HABs and cyanotoxins. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	substances, which is applicable to nutrients. As discussed in the analysis in Impact WQ-1, short-term concentrations of nutrients in Sites Reservoir would be expected to be higher than in water diverted from Sacramento River. In the long term, although nutrient levels within the reservoir could be higher than in Sacramento River, as discussed under Impact WQ-2, Sites Reservoir releases would likely have minimal effects on or would reduce nutrient levels in the Colusa Basin Drain (CBD) and would be further diluted once discharged into the Sacramento River. Similarly, any cyanobacteria would also be diluted. In general, nutrient levels in the Delta are not limiting, as discussed in the Chapter 6, Environmental Setting section, and any contribution from Sites Reservoir would not be expected to be substantial enough to promote aquatic growths that cause nuisance or adversely affect beneficial uses. Similar to the North Delta Food Subsidy studies, the goal of flow		A. Maquire, S. Perry, C. Pien, T. Treleaven, H. Wright, and L. Twardochleb. 2022. North Delta Food Subsidy Synthesis: Evaluating Flow Pulses from 2011-2019. Draft. March. Department of Water Resources, Division of Integrated Science and Engineering.

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				releases from Sites Reservoir through the CBD to Yolo Bypass is biostimulatory in nature; that is, the purpose is to increase phytoplankton production to benefit north Delta fish species. If these releases are successful in achieving an increase in phytoplankton, it would most likely be due to moving CBD water, which is dominated by agricultural drain water, through Yolo Bypass. In addition, internal biological processes within Tule Canal and the Toe Drain may also release nutrients. Assuming that observed changes in phytoplankton biovolume during and after the habitat releases from Sites Reservoir are similar to those from the North Delta Food Subsidy studies, where there were generally lower median phytoplankton biovolumes in most years (2014–2019) at both upstream and downstream sites in Yolo Bypass following the flow pulse (Davis et al. 2022:158), there would be no detrimental changes in productivity in Yolo Bypass and downstream. No pulse flow-induced harmful algal		

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				blooms were noted during these studies. Chapter 31, Cumulative Impacts, presents the cumulative analysis for water quality, including for nutrients, cyanobacteria, and cyanotoxins. Additional text is included in Chapter 31 of the Final EIR/EIS to provide clarification regarding whether there would be an anticipated incremental contribution related to nutrients from the Project when added to the impacts from other past, present, and reasonably foreseeable future actions. This text revision does not change conclusions or impact determinations identified in the analysis.		
51100	78	80	Chapter 6, page 6-100–- The environmental document states that "Construction, operation, and maintenance of Alternative 1, 2, or 3 would increase overall beneficial use of water in the Sacramento River watershed. The Project would not conflict or obstruct a water quality	An exceedance of a water quality control plan (basin plan) water quality objective would not necessarily indicate a conflict with or obstruction of implementation of the applicable basin plans for the study area. The potential for the Project to exceed single constituent water quality objectives, as well as beneficial uses, was considered in the impact analyses	Reviewed by Client	Central Valley Regional Water Quality Control Board. 2019. The Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control

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			control plan and this impact would be less than significant." This statement is overly broad. The project could have significant impacts on water quality constituents or beneficial uses, and it is not clear that the proposed mitigation measures will be adequate to address these impacts given their level of detail and feasibility questions. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	presented for Impacts WQ-1, WQ-2, and WQ-3 in Chapter 6, Surface Water Quality. As described in Chapter 6 for Impact WQ-5, water quality control plans include consideration of all beneficial uses (e.g., Central Valley Regional Water Quality Control Board 2019:2-1, State Water Resources Control Board 2018:9). While consideration of single constituent water quality objectives is part of the analysis, the approach related to the evaluation of Impact WQ-5 is broader, given the fact that exceedances of single water quality constituents do not necessarily suggest a conflict with or obstruction of implementation of a basin plan. If water quality effects were expected to be severe or if there were no increases in beneficial uses expected to result from the project, this impact would be considered significant. Impact WQ-5 considers the overarching goal of basin plans to maximize multiple beneficial uses of water, considering changes in all beneficial uses along with changes in water quality, not simply whether a		Board, Central Valley Region: The Sacramento River Basin and the San Joaquin River Basin. Fifth Edition. Revised February 2019. Available: https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201902.pdf. Accessed: August 3, 2022. State Water Resources Control Board. 2018. Water Quality Control Plan for the San Francisco/Sacramento-San Joaquin Delta Estuary. December 12. Available: https://www.water

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				single water quality constituent objective would be exceeded. Please refer to Master Response 4, Water Quality, for a discussion on the adequacy of the water quality mitigation measures identified in Chapter 6. Also refer to response to comment 78-17 regarding adaptive management of the Reservoir Management Plan and the associated text addition to Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, of the Final EIR/EIS. This revision does not change conclusions or impact determinations identified in the analysis.		boards.ca.gov/plans_policies/docs/2018wqcp.pdf. Accessed: August 3, 2022.
51100	78	106	Appendix 6a, pages 6A-11 to 6A-14 For table 6A-4, the table should reference the most recent California Integrated Report (Clean Water Act Section 303(d) List and 305(b) Report). State Water Board staff anticipate the 2020-2022 California Integrated Report will be submitted to the USEPA in March	At the time of public release of the RDEIR/SDEIS (November 2021) and when the information in the table then titled "Clean Water Action Section 303(d) Impaired Water Bodies in the Study Area" (Appendix 6A, Water Quality Constituents and Beneficial Uses) was compiled prior to November 2021, the 2014–2016 303(d) list was the most recent list	Reviewed by Client	Central Valley Regional Water Quality Control Board. 2022. 2020-2022 303(d) list. Excel file (includes potential sources) Final Revised Appendix A of the Final Staff

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			2022. Additional information can be found here: https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2020_2022_integrated_report.html. [Commenting Water Board or Section within the State Water Board: WQ & Public Trust section]	approved by the State Water Resources Control Board and U.S. Environmental Protection Agency. Since that time, the 2020–2022 Integrated Report for Clean Water Act 303(d) and 305(b) (Central Valley Regional Water Quality Control Board 2022) has been approved by both of these agencies (May 2022). Accordingly, the table content has been updated and the title has been revised to "Impaired Water Bodies in the Study Area Included in the 2020–2022 California Integrated Report for Clean Water Act Sections 303(d) and 305(b)" in the Final EIR/EIS. In addition, applicable text in Chapter 6, Surface Water Quality, has been updated based on the 2020–2022 303(d) list. The updates to the 303(d) list for the geographies discussed in the impact analysis were relatively minor and include water temperature and dissolved oxygen for specific reaches of the Sacramento River. The updates to the most recently approved list(s) do not change		Report for the 2020-2022 Integrated Report for Clean Water Act 303(d) List and 305(b) Report. Available: https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2020_2022_integrated_report.html. Accessed: May 12, 2022.

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				conclusions or impact determinations identified in the analysis.		
51100	79	9	The EPA has concerns about the effects of Site Reservoir on water quality. The SDEIS finds that evapoconcentration of aluminum, copper, and iron would likely contribute to exceedance of water quality objectives to protect aquatic life.	Water quality and multiple water quality constituents are fully evaluated in Chapter 6, Surface Water Quality. As described in Chapter 6 and Master Response 4, Water Quality, evapoconcentration is incorporated into the metals analysis contained in Chapter 6. Chapter 6 (Impact WQ-2) describes that evapoconcentration may occasionally result in exceedance of water quality objectives to protect aquatic life in Sites Reservoir. However, because no reservoir exists under the No Project Alternative, a comparison between existing water quality conditions at the proposed reservoir site and reservoir water quality conditions once Sites Reservoir is filled and operational cannot be made. CEQA requires that effects for a proposed project be analyzed relative to an environmental baseline that represents the physical environmental conditions that exist at the time the CEQA process began. The CEQA baseline for assessing	Reviewed by Client	N/A

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				significance of impacts of any proposed project is normally the environmental setting or existing conditions at the time a Notice of Preparation is issued (CEQA Guidelines, § 15125, subd. (a)). The No Project Alternative under CEQA is used to compare conditions without the Project to conditions with the Project. In the analysis in Chapter 6, the No Project Alternative represents the continuation of the existing conditions in 2020 for the study area in general, including the proposed reservoir site specifically. Please refer to Master Response 2, Alternatives Description and Baseline, regarding the CEQA and NEPA baseline used and the comparison of potential effects of the Project to that baseline. Downstream waterways already experience some exceedances of water quality objectives for aquatic life. Effects in downstream waterways would be diminished because reservoir release concentrations would decrease due to settling of metals, due to implementation of		

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				Mitigation Measure WQ-2.1, and due to dilution associated with the agricultural water supply management system and the Sacramento River. Please see Master Response 4 regarding downstream beneficial uses and Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, regarding the study plan and adaptive management for Funks and Stone Corral Creeks.		
51100	79	10	The SDEIS acknowledges that conditions in the proposed reservoir would be conducive to the formation of harmful algal blooms, but the EPA has concerns that the analysis presented may mischaracterize the likelihood and severity of blooms.	The qualitative harmful algal blooms (HABs) analysis in Chapter 6, Surface Water Quality, relies on multiple environmental variables to characterize the likelihood of the formation of HABs in Sites Reservoir, including water temperature, reservoir drawdown, reduced storage volume, and nutrient availability. The analysis does not attempt to characterize the severity (e.g., size, cyanobacterial biomass) of potential blooms because that would be too speculative given the multiple environmental variables affecting HABs. Additional text has been added to the Harmful Algal	Reviewed by Client	N/A

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				Blooms subsection of the Environmental Setting section in Chapter 6 to provide more information and/or clarification regarding planktonic vs. benthic HABs, temperature dependency of growth rate, and differences in light tolerance (and, thus, water column position) among cyanobacterial genera. The text revision does not change conclusions or impact determinations identified in the analysis.		
51100	79	33	Surface Water Quality The water quality analysis presented in Chapter 6 indicates that once constructed, Sites would likely experience impaired water quality conditions with high levels of metals, as well as warm and still water conditions conducive to the formation of harmful algal blooms (HABs). Mercury and Other Metals Methylmercury production and bioaccumulation is likely in the reservoir, Funks Creek, and Stone	The comment provides a summary of information contained in Chapter 6, Surface Water Quality. The comment is noted.	Reviewed by Client	N/A

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			Corral Creek; all three waterbodies are expected to exceed the California Office of Environmental Health Hazard Assessment's 0.2 mg/kg wet weight sport fish objective (p. 6-73, 6-74). Modeling results presented in Appendix 6E suggest that Sites Reservoir concentrations of aluminum, copper, and iron would routinely approach or exceed water quality objectives for aquatic life protection, limiting the ability of Sites to provide environmental flows and benefits to receiving waterbodies as proposed. Mitigation measure WQ-1.1 outlines the proposed management of impacts of methylmercury on Sites Reservoir and receiving waters and relies on recommendations from a draft staff report [Footnote 7: Draft Staff Report for Scientific Peer Review for the Amendment to the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California, Mercury Reservoir Provisions – Mercury TMDL and Implementation Program for Reservoirs (State Water Resources			

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			Control Board 2017b)] that has not yet been approved.			
51100	79	35	The SDEIS proposes to delay fish stocking to mitigate methylmercury bioaccumulation in reservoir fish; however, we note that delays of planned fish stocking will likely not reduce bioaccumulation unless other measures are taken to significantly inhibit methylmercury production. We further note that unauthorized fish stocking is common in United States and may not be easily preventable once recreational facilities become operational.	The Authority and Reclamation acknowledge that unauthorized fish stocking could occur, but Sites Reservoir is located relatively remotely, which could constitute a deterrent to this unauthorized practice. An additional action was added to Mitigation Measure WQ-1.1 as well as to the Reservoir Management Plan (RMP) in Appendix 2D (Best Management Practices, Management Plans, and Technical Studies) to minimize potential public exposure to methylmercury through consumption of Sites Reservoir fish prior to regulated stocking of the reservoir. A fish sampling program will be implemented upon completion of the initial filling of the reservoir. Initially, a sampling program will be implemented to determine whether game fish are present (either because of unauthorized stocking or fish entrainment at the Sacramento River diversions). If it has been determined that a population of game fish has	Reviewed by Client	N/A

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				established in the reservoir, annual monitoring of Sites Reservoir fish tissue methylmercury concentrations will commence. If the 0.2 mg/kg sport fish objective is exceeded, fish consumption warning signs will be posted. The addition of this action to the Final EIR/EIS does not change conclusions or impact determinations identified in the analysis in Chapter 6, Surface Water Quality. Further, as indicated in Mitigation Measure WQ-1.1 in Chapter 6 and in Appendix 2D, as part of the RMP, multiple measures will be implemented to reduce mercury methylation in Sites Reservoir and, thus, bioaccumulation of methylmercury in reservoir fish.		
51100	79	36	Recommendation: In the FEIS, consider the effects of higher methylmercury concentrations in Sites Reservoir and receiving waters on tribal and subsistence fisherpersons who may not be	The Tribal Subsistence Fishing water quality objective for methylmercury (0.04 mg/kg, wet weight of skinless fish fillet [State Water Resources Control Board 2017a]) is more stringent than the California sport fish water quality objective (0.2 mg/kg wet weight). The Subsistence Fishing	Reviewed by Client	State Water Resources Control Board. 2017a. Final Staff Report: Part 2 of the Water Quality Control Plan for Inland Surface

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			protected by the 0.2 mg/kg wet weight sport fish objective.	water quality objective is, at present, a narrative objective and at such a time that a water quality control plan designates a water body or segment with the Subsistence Fishing (SUB) beneficial use, a region-wide or site-specific numeric fish tissue objective would be recommended; accordingly, this water quality objective is not readily comparable to either of the aforementioned numeric objectives. In the Central Valley, the Tribal Subsistence Fishing and Subsistence Fishing water quality objectives are applicable only to waters with the Tribal Subsistence Fishing (T-SUB) or Subsistence Fishing (SUB) beneficial use designations, respectively, of which there are none in the study area (as defined in Chapter 6). Accordingly, the Tribal Subsistence Fishing and Subsistence Fishing water quality objectives were not considered in the analysis in Chapter 6, Surface Water Quality. Text was added to Chapter 6, Thresholds of Significance subsection (Table 6-10) indicating this.		Waters, Enclosed Bays, and Estuaries of California – Tribal and Subsistence Fishing Beneficial Uses and Mercury Provisions. Available at: https://www.waterboards.ca.gov/water_issues/programs/mercury/docs/hg_SR_final.pdf

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				Further, the Central Valley Regional Water Quality Control Board would need to designate specific waterbodies (such as Sites Reservoir and receiving waters) with the T-SUB and/or SUB beneficial uses for those objectives to be applicable. Because the public health analysis related to methylmercury and study area fish consumption (Chapter 27, Public Health and Environmental Hazards) was based on the water quality analysis in Chapter 6, by extension, the California sport fish water quality objective for methylmercury (i.e., 0.2 mg/kg wet weight) was used as the threshold for evaluating significance of Sites Reservoir operations effects on water quality and public health. As indicated in Chapter 27 for Impact HAZ-6, there would be a less-than-significant impact on public health due to study area fish consumption because the California Office of Environmental Health Hazards Assessment (OEHHA) methylmercury fish consumption advisories would continue to be implemented in the study area, and these advisories		

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				would serve to protect people against the overconsumption of fish with increased body burdens of mercury for those following these recommendations. Text was added to Chapter 27, in the Public Health Hazards Related to the Methylmercury and HABs subsection of the Environmental Setting section that discusses beneficial uses of water in the state in the context of the California sportfish water quality objective and the Tribal Subsistence Fishing water quality objective. In addition, text was added to the same section adding further clarification on the OEHHA's fish consumption advisories. Text was also added to Chapter 27 for Impact HAZ-6 to add clarification that the OEHHA standards and fish consumption advisories would also serve to protect tribal and subsistence fisherpersons against the overconsumption of fish with increased body burdens of mercury. The numeric sport fish objective for Tribal Subsistence Fishing has been		

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				added to Table 6-4, Water Quality Criteria and Objectives for Mercury and Methylmercury Applicable to the Study Area, and a table footnote was added indicating that the objective was not applicable to the study area because there are currently no waters in the study area with the T-SUB beneficial use designation. These text additions do not change conclusions or impact determinations identified in the analysis. Please see Master Response 7, Tribal Coordination, Consultation, and Engagement, for additional discussion of tribal beneficial uses.		
51100	79	39	Harmful Algal Blooms While the EPA concurs with Chapter 6's finding that construction and operation of Sites Reservoir is likely to create conditions conducive to the formation of HABs, the conclusion that there would be no adverse effect does not appear to be supported by the analysis of HAB risks. The SDEIS characterizes HABs as dependent on	The focus of the discussion of harmful algal blooms (HABs) in Chapter 6, Surface Water Quality, was on planktonic HABs because cyanobacteria that produce toxin concentrations of concern for human health are typically planktonic (Chorus and Welker 2021:226). Text has been added in the Chapter 6, Constituents, Harmful Algal Blooms section of the	Reviewed by Client	Chorus, I. and M. Welker. 2021. Toxic Cyanobacteria in Water. Second edition. CRC Press, Boca Raton, FL.

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			specific conditions (p. 6-24); we note that these conditions only represent the optimal conditions for planktonic HABs, which can occur outside of optimal conditions, in flowing waters, and can alter buoyancy to obtain nutrients from deep waters.[Footnote 9: Graham, J.L., Dubrovsky, N.M., and Eberts, S.M., 2017, Cyanobacterial harmful algal blooms and U.S. Geological Survey science capabilities (ver 1.1, December 2017): U.S. Geological Survey Open-File Report 2016–1174, 12 p., https://doi.org/10.3133/ofr20161174.] The SDEIS does not consider the potential for benthic HABs which could occur in a reservoir such as Sites.[Footnote 10: 10 FAQ on toxic algal mats. My Water Quality: California Harmful Algal Blooms Portal. https://mywaterquality.ca.gov/habs/resources/benthic_education.html] In addition to human health risks, HABs may contribute to degradation of ecosystem structure and function by causing anoxia, bioaccumulation of cyanotoxins in organisms, or directly	Final EIR/EIS to note that there are species differences regarding tolerance of cooler water temperatures, lower light levels, and flow conditions. In addition, text was added to this section to generally describe that cyanobacterial blooms may be planktonic or benthic and noted common genera of each bloom type. These text additions are in the environmental setting and provide clarification to information contained in the document regarding HABs. These text additions do not change conclusions or impact determinations identified in the analysis. In the analysis in Chapter 6, the No Project Alternative represents the continuation of the existing conditions for the study area, in general, including the proposed reservoir site specifically. Because no reservoir exists under the No Project Alternative, a comparison between water quality conditions at the proposed reservoir site without the Project and water quality conditions once Sites Reservoir is filled and		

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			causing fish mortality. [Footnote 9: Graham, J.L., Dubrovsky, N.M., and Eberts, S.M., 2017, Cyanobacterial harmful algal blooms and U.S. Geological Survey science capabilities (ver 1.1, December 2017): U.S. Geological Survey Open-File Report 2016–1174, 12 p., https://doi.org/10.3133/ofr20161174.]	operational cannot be made. Accordingly, no significance determination regarding HABs in Sites Reservoir was made. However, a discussion of the potential for public health to be affected by HABs at the reservoir is presented in Chapter 27, Public Health and Environmental Hazards. The analysis for HABs in Impact WQ-2 (Chapter 6) discusses three other geographies in addition to Sites Reservoir (i.e., (1) Shasta Lake, Lake Oroville, Folsom Lake and San Luis Reservoir; (2) Stone Corral and Funks Creeks; and (3) Yolo Bypass and the Delta) and the potential for HABs to substantially degrade water quality adversely affect water quality in those surface waters relative to the No Project Alternative. Sites Reservoir operations are not expected to substantially degrade water quality in those surface waters and thus a less-than-significant impact determination was made. The Reservoir Management Plan (RMP) (see Appendix 2D, Best Management Practices, Management		

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				Plans, and Technical Studies) includes monitoring for benthic HABs and coordination with the State Water Resources Control Board and the Central Valley Regional Water Quality Control Board for posting benthic HABs signage. With regard to HABs potentially causing a reduction in dissolved oxygen (DO) in the reservoir, text in the environmental setting as well as in the analysis for Impact WQ-2 in Chapter 6, indicates that DO levels can be adversely affected by high biological oxygen demand (see section titled Nutrients, Organic Carbon, and Dissolved Oxygen in Chapter 6) and that there may be a temporary reduction in DO levels in Sites Reservoir with die-off of cyanobacteria and algae (Impact WQ-2). The magnitude of the reduction in the reservoir would depend on the magnitude of the die-off. Any temporary reduction in DO within the reservoir would be an effect on the Project itself, rather than an effect from the Project on the surrounding		

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				environment. Please refer to Master Response 2, Alternatives Description and Baseline, regarding the baseline used and the comparison of potential effects of the Project to that baseline (i.e., the No Project Alternative). Low DO concentrations in the hypolimnion in Sites Reservoir due to summer thermal stratification would not have any downstream effects on beneficial uses or water quality. Any releases made from this depth would be expected to become amply aerated once released and conveyed through Funks Reservoir and the TC Canal or through the TRR and the GCID and further downstream. Accordingly, potential DO effects on water quality would be less than significant, as described in Chapter 6. Further, the Harmful Algal Blooms section of the Environmental Setting section in Chapter 6 notes the potential for bioaccumulation of cyanotoxins in certain food crops, as well as in fish and shellfish. Chapter 11, Aquatic Biological Resources (Contaminants subsection of the Delta and Suisun Bay/Marsh section), generally		

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				describes the potential toxic effects of Microcystis aeruginosa on the environment, and Impact FISH-8 provides a discussion of potential Microcystis bloom effects on delta smelt as a result of implementing Alternatives 1, 2, or 3. The potential impacts of HABs on the Delta and effects on aquatic organisms are acknowledged and described in Chapter 11.As described in Chapter 11, there would be little difference in HABs potential between the No Project Alternative and Alternatives 1, 2, and 3 in the Delta, and thus Delta fish species (Impacts FISH-8 and FISH-15) are unlikely to be affected. The same is expected for the Sacramento River downstream of Sites Reservoir where releases would be greatly diluted and cyanotoxins potentially originating from the reservoir would also be subject to biodegradation, and for the Colusa Basin Drain, which receives water from multiple sources downstream of the reservoir (including substantial agricultural flow returns) in addition		

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				to what is anticipated to be limited and intermittent flows from Sites Reservoir through Stone Corral and Funks Creeks. As explained in Chapter 6, Impact WQ-2, potential impacts from HABs are less than significant. Nevertheless, the Authority and Reclamation recognize that uncertainty exists regarding Stone Corral and Funks Creeks downstream of the Project and have developed a comprehensive aquatic study plan and adaptive management plan (see the Stone Corral Creek and Funks Creek Aquatic Study Plan and Adaptive Management section of Appendix 2D) that will ensure fish are maintained in good condition in compliance with California Fish and Game Code 5937. Besides standard water quality parameters, the Authority and Reclamation have added cyanobacteria and cyanotoxins analyses to the Surface Water Ambient Monitoring Program component of the Stone Corral Creek and Funks Creek Aquatic Study Plan		

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				(Aquatic Study Plan). Moreover, potential HAB-related impacts on Stone Corral and Funks Creeks would depend on the timing and volume of releases, which will be determined and adaptively managed based on results from the technical studies of the Aquatic Study Plan and performance standards developed in conjunction with the relevant agencies, including CDFW and USFWS, to ensure HABs impacts remain less than significant. In addition, the RMP HAB monitoring program and action plan will also contribute to inform management of releases from Sites Reservoir to Stone Corral and Funks Creeks. As for potential HAB impacts on aquatic communities in the reservoir itself, please refer to the response to comment 79-42.		
51100	79	40	Table 6-20 presents unadjusted average monthly temperatures derived from CalSIM outputs to assess when warm reservoir temperature conditions would support HABs; we	The modeled water temperatures presented in Chapter 6, Surface Water Quality (Table 6-20 [Modeled Monthly Average Sites Reservoir Water Temperatures (°F)] of the RDEIR/SDEIS	Reviewed by Client	N/A

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			note that this data is inappropriately applied since stratification would support warmer surface temperatures from early summer well into the fall. The SDEIS also incorrectly asserts that microcystin and other cyanotoxins would undergo rapid photodegradation and would be unlikely to affect downstream waters (p. 6-92); cyanotoxins produced in reservoir HABs commonly persist for weeks or months, and cyanobacteria released into downstream waters can travel downstream to inoculate receiving waterbodies. [Footnote 11: Otten, T.G., Crosswell, J.R., Mackey, S. and Dreher, T.W., 2015. Application of molecular tools for microbial source tracking and public health risk assessment of a Microcystis bloom traversing 300 km of the Klamath River. Harmful Algae, 46, pp.71-81.]	as cited by the commenter), are monthly average near-surface temperatures; they are not the monthly average temperatures for the reservoir water column. The table title has been revised to add clarification. Text related to photodegradation was revised for clarity as it is generally biodegradation that can occur relatively rapidly once the biodegradation process has started and not photodegradation, which was already made clear in the Harmful Algal Blooms subsection of the Environmental Setting section of Chapter 6. These text revisions do not change conclusions or impact determinations identified in the analysis. It is acknowledged in the Chapter 6 impact analysis that cyanobacteria and cyanotoxins could potentially be released from the reservoir. Even given this potential, and the potential for cyanobacteria to be transported downstream, it would be speculative to indicate that these cells would result in substantial effects		

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				downstream relative to the No Project Alternative (e.g., result in increases in harmful algal blooms or affect drinking water quality) given the multiple environmental variables that are required to stimulate bloom formation and maintenance in surface waters. Cyanobacteria are essentially ubiquitous in freshwater and marine environments but do not always result in adverse environmental or public health effects simply due to their presence. In addition, please refer to Master Response 4, Water Quality, for a discussion regarding the use of the I/O tower to control releases of water quality constituents.		
51100	79	41	No separate mitigation measures are proposed to manage HAB impacts, although the Reservoir Management Plan (p. 2D-30) describes a general HAB monitoring plan and actions to be taken to protect public health if trigger criteria are exceeded, including releasing water from deeper in the reservoir. Throughout the bloom season, monitoring for cyanobacteria species and	The commenter generally refers to the Reservoir Management Plan (RMP; Appendix 2D, Best Management Practices, Management Plans, and Technical Studies) as it pertains to harmful algal blooms (HABs) in the RDEIR/SDEIS. As described in the RMP, monitoring for benthic and planktonic HABs will occur seasonally, at a minimum, beginning April 15 and continuing through October. This time	Reviewed by Client	Central Valley Regional Water Quality Control Board. 2019. Nonpoint Source 319(H) Program Cyanobacteria and Harmful Algal Blooms Evaluation Project Harmful Algal Bloom

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			cyanotoxins is critical to ensure appropriate protective measures are in place to address the cyanobacteria species and cyanotoxin concentrations present.	period is generally consistent with the "bloom season" for HABs in the Central Valley, which is late spring through early fall (Central Valley Regional Water Quality Control Board 2019). As also noted in the RMP, monitoring will begin earlier than April 15 if blooms are suspected. Please refer to the response to comment 79-37 regarding adaptive management of the Reservoir Management Plan and the associated text addition to Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, of the Final EIR/EIS noting this. This revision does not change conclusions or impact determinations identified in the analysis.		Primer. November. Available: https://www.waterboards.ca.gov/centralvalley/water_issues/nonpoint_source/harmful_algal_blooms/final_hab_primer.pdf. Accessed: March 24. 2022.
51100	79	44	Recommendation: In the FEIS, identify criteria to determine the appropriate depth to avoid HAB releases and describe how these multiple factors will be balanced and prioritized if no single depth interval meets release criteria for temperature, HABs, and metals.	Please refer to Master Response 4, Water Quality, for a discussion regarding the use of the I/O tower to control releases of water quality constituents. Please see response to comment 79-41 regarding the Reservoir Management Plan (RMP) and harmful algal bloom (HAB) monitoring. In addition, text has been	Reviewed by Client	N/A

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			Describe how appropriate depth levels for water releases from the Sites I/O works will be determined in a way that allows for providing warm epilimnetic water for rice production while avoiding releasing cyanobacteria and cyanotoxins (likely to occur in the epilimnion during rice growing season) and avoiding releases of methylmercury and other metals (likely to occur in higher concentrations in the hypolimnion).	added to the HABs Action Plan component of the RMP to include water sampling at multiple depths near the I/O tower if visual monitoring indicates that there is a bloom near the tower. These revisions to Appendix 2D do not change conclusions or impact determinations identified in the analysis.		
51100	81	11	Page 6-102 NMFS suggests that stormwater mitigation measures include bioretention treatment that would help sequester microplastics like tire wear particles and other roadway/vehicular toxicants.	As identified in Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, BMP-15, Performance of Site-Specific Drainage Evaluations, Design, and Implementation, includes strategies and practices to protect water quality and associated aquatic habitat from pollutants in stormwater runoff. These strategies and practices may include green infrastructure such as bioswales and infiltration basins to capture, filter, or reduce stormwater runoff. Green infrastructure can be effective at retaining microplastics. Gilbreath et al. (2019) observed that 90% of the	Reviewed by Client	Gilbreath, A., L. Mckee, I. Shimabuku, D. Lin, L.M. Werbowski, X. Zhu, J. Grbic, and C. Rochman. 2019. Multiyear Water Quality Performance and Mass Accumulation of PCBs, Mercury, Methylmercury, Copper, and Microplastics in a Bioretention Rain

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				concentration of anthropogenic microparticles, including microplastics, was retained by a bioretention rain garden.		Garden. J. Sustainable Built Environment 5(4):04019004-1 – 04019004-9. Available: https://www.researchgate.net/publication/335753462_Multiyear_Water_Quality_Performance_and_Mass_Accumulation_of_PCBs_Mercury_Methylmercury_Copper_and_Microplastics_in_a_Bioretention_Rain_Garden#fullTextFileContent. Accessed: July 7, 2022.
51100	81	12	Page 6-11 In Table 6-3, applicable regulatory water quality criteria/objectives should reference the EPA-recommended criteria for ammonia. Also, in addition to organic carbon,	Chapter 6, Surface Water Quality, Table 6-3 (titled Nutrients, Organic Carbon and Dissolved Oxygen) as cited in the comment provides summary information for potential natural and anthropogenic sources of, and beneficial uses affected by,	Reviewed by Client	N/A

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			metrics related to eutrophication like chlorophyll-a and microcystins should be included in the table.	nutrients, organic carbon, and dissolved oxygen. Because the table cited in the comment is specific to potentially applicable regulatory water quality criteria/objectives for nutrients (specifically, phosphorus and nitrogen [nitrate, nitrite, and ammonia]), organic carbon, and dissolved oxygen, metrics related to eutrophication like chlorophyll-a and microcystins are not included. Chlorophyll-a can be used as a measure of phytoplankton biomass but there are no chlorophyll-a water quality standards and thus this water quality constituent is not included with the applicable regulatory criteria/objectives in Table 6-3. Similarly, and as indicated in Chapter 6, there are currently no federal or state regulatory standards for cyanotoxins (including microcystin) in recreational waters or drinking water. Please refer to Appendix 4A, Regulatory Requirements, of the Final EIR/EIS for USEPA's human health recommended recreational criteria and drinking water health advisories for microcystins and		

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				cylindrospermopsin, as well as the Office of Environmental Health Hazard Assessment's notification level recommendations for anatoxin-a, saxitoxins, microcystins, and cylindrospermopsin. In addition, participating state agencies have developed voluntary guidance for responding to HABs in recreational waters, and the Office of Environmental Health Hazard Assessment has developed notification-level recommendations for four cyanotoxins in drinking water: anatoxin-a, saxitoxins, microcystins, and cylindrospermopsin, which are also identified in Appendix 4A. Table 6-3 in the Final EIR/EIS has been revised to include U.S. Environmental Protection Agency's (USEPA's) aquatic life ambient water quality criteria for ammonia (acute and chronic). This revision does not change the conclusions or impact determinations identified in the analysis.		

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51100	81	14	Page 6-28 The use of CALSIM monthly data (e.g. for metals, pesticides, salinity, and HABs) lacks the temporal resolution to analyze acute water quality exceedances. Additionally, it's suggested that the CE-QUAL-W2 model being used for temperature analysis in Sites Reservoir be further developed to analyze the other potential water quality impacts in the reservoir: namely metals, including mercury, salinity, and especially eutrophication and HABs.	For some of the constituents evaluated (e.g., harmful algal blooms [HABs], pesticides, and nutrients), the analysis is based on physical processes and concentrations under No Project Alternative conditions. For these constituents, modeling is not necessary, nor would it be reliable or feasible, especially at a sub-monthly time step. For other constituents such as salinity and metals, CALSIM results are used, as explained in the Methods of Analysis section of Chapter 6, Surface Water Quality. Two types of CALSIM results that inform the evaluation of impacts are evapoconcentration and dilution in the Sacramento River. The monthly CALSIM results are adequate for evaluating these phenomena because they are minimally affected by day-to-day fluctuations. Evapoconcentration occurs gradually over time, so a sub-monthly analysis is not warranted. Dilution in the Sacramento River, which is a function of Sites Reservoir release and Sacramento River flow, would also likely not vary much within a month. Sites Reservoir releases	Reviewed by Client	N/A

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				would not fluctuate greatly from day to day and, at the time when Sites Reservoir water would be discharged to the Sacramento River, flow in the river would no longer be influenced by storm events and would not be fluctuating greatly from day to day. The Chapter 6 temperature evaluation focuses on whether discharge from Sites Reservoir would cause an increase in receiving-water temperature of more than 5°F. Fisheries resources are the primary designated beneficial use potentially affected by water temperature. As such, most of the potential effects associated with changes in water temperature are discussed in Chapter 11, Aquatic Biological Resources, which evaluates how changes in water temperature under each alternative could affect fish at a daily (Sacramento and American Rivers) or monthly (Feather River) time step. Water temperature is also discussed in Chapter 15, Agriculture and		

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				Forestry Resources, as it relates to rice. The temperature blending tool (described in Chapter 6 and Appendix 6D, Sites Reservoir Discharge Temperature Modeling) was used to assess the effect of Sites Reservoir discharge on Sacramento River water temperature. This tool cannot simulate sub-monthly effects of Sites Reservoir discharge on receiving-water temperature. There would be limited day-to-day variation in the effect of the discharge on receiving-water temperature because reservoir release temperatures tend to be constant and because, as mentioned above, release flows and Sacramento River flows are not expected to vary greatly during the discharge period. Therefore, the temperature blending tool provides a reasonable representation of potential temperature effects associated with Sites Reservoir releases. Water temperature in the Sacramento and American Rivers was modeled on		

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				a sub-daily time step (see Appendix 6C, River Temperature Modeling Results). The fish assessment of water temperature effects presented in Chapter 11 utilized sub-monthly water temperature modeling results for special-status cold-water fish that use these rivers. In addition, the Chapter 11 fish assessment considers the difference between daily average and daily maximum temperatures, including for the monthly temperatures simulated for the Feather River. Methylmercury formation rates in reservoirs are uncertain due to the many factors that can affect the rate. For this reason, methylmercury in Sites Reservoir was not modeled and instead was estimated based on existing information for reservoirs. Possible downstream effects were assessed qualitatively, with the exception of potential changes in concentrations of aqueous methylmercury that could contribute to fish tissue concentrations. As described in Chapter 6 and in		

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				Appendix 6F, Mercury and Methylmercury, the Central Valley Regional Water Quality Control Board Total Maximum Daily Load model was used to calculate expected tissue methylmercury concentrations in 350 millimeter (mm) largemouth bass based on estimated short- and long-term water column methylmercury concentrations from the Project alternatives in the Sacramento River at Freeport. Additional calculations were made, as a sensitivity analysis, to identify the concentrations of water column methylmercury that would need to be discharged from the Project to cause a given change in fish tissue concentrations. Calculations were based on the proportional flows from the Project in the Sacramento River at Freeport as determined by CALSIM II. Because bioaccumulation of methylmercury occurs over an extended period of time, assessment of sub-monthly changes in methylmercury would not be meaningful.		

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				Please also see Master Response 3, Hydrology and Hydrologic Modeling, for a discussion of modeling time step and the use of CALSIM. In some cases, monthly results from CALSIM are the best available information for evaluation of some resources. Regarding use of CE QUAL W2: simulation of metals (including mercury), salinity, eutrophication, and HABs was not performed with the CE QUAL W2 model because these simulations would be unreliable; input parameters needed for such simulations have a much higher degree of uncertainty than those needed for water temperature simulations. These constituents are best simulated in an existing reservoir that allows for measurements of input parameters and measurements of constituent values that can be used for model calibration. An expanded CE QUAL W2 model would require inputs for parameters such as sediment oxygen demand, nutrients, and sediment metal concentrations that may change relatively rapidly		

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				after filling of the reservoir. Furthermore, simulation of HABs is particularly difficult because it requires the model to be able to reliably distinguish between HABs and other types of algal growth.		
51100	81	20	Pages 6-55 to 56 The surface Water Quality Analysis notes that, "During initial filling of Sites Reservoir, nutrient (nitrogen and phosphorus) levels would be expected to be relatively high due to flooding of soils in the inundation footprint. This, along with warm water temperatures starting in late spring, could contribute to creating conditions conducive to promoting and maintaining HABs, and supporting the growth of nuisance algae and aquatic vegetation." However, it concludes that, "Downstream effects on water quality would not be expected if cyanobacteria and cyanotoxins were present in the releases because concentrations of cyanobacteria and cyanotoxins would be greatly diluted	Please see the Chapter 6, Surface Water Quality, Dilution of Sites Discharges in the Sacramento River section for a discussion of the dilution effect of the Sacramento River on Sites Reservoir discharges in the Sacramento River. The full set of monthly CALSIM results for Sites Reservoir discharges to the Sacramento River via the Dunnigan Pipeline (Alternative 2) or via CBD (Alternatives 1 and 3) was compared to CALSIM results for flow in the Sacramento River at Wilkins Slough (upstream of the discharge locations). This comparison allows the evaluation of dilution of Sites Reservoir discharges in the Sacramento River. For Sites releases that are conveyed via the CBD, water in the CBD would also act to dilute cyanobacteria and cyanotoxins from Sites Releases, if	Reviewed by Client	N/A

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			when eventually discharged into the Sacramento River. Furthermore, cyanotoxins undergo biodegradation and photodegradation." The assumptions behind this dilution should be fully explained. Specifically, will reservoir releases be limited during HAB events to prevent downstream release of cyanotoxins? Will any releases that could impact human health or aquatic life be timed such that the discharge can be adequately diluted?	present. There are currently no plans to limit reservoir releases or alter the timing of releases during HAB events. The simple presence of cyanobacteria or cyanotoxins in water does not ensure that there would be adverse effects on human health or aquatic life. These toxins must be present at concentrations in air and/or water that are dangerous to people or aquatic life. Refer to Master Response 4, Water Quality, which explains how the I/O tower will be used to control releases of water quality constituents, including how deeper ports will be used for reservoir releases when HABs/cyanotoxins are present.		
51110	19	13	The DEIR on page 6-17 states that “in newly constructed reservoirs, the initial inundation of soils and vegetation can cause higher net methylmercury production in early years after filling, when organic carbon is relatively abundant, relative to long-term average production. This initial spike in mercury methylation	As quoted by the commenter, the methylmercury analysis in Chapter 6, Surface Water Quality, states that “the literature suggests that fish tissue concentrations of methylmercury may peak 3–8 years after filling, with concentrations slowly declining to a lower steady-state after 10–35 years.” This text makes no statement about	Reviewed by Client	N/A

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			can increase the concentrations of water column methylmercury to double or triple the long-term average concentrations for up to 10 years.” It also states that “the literature suggests that fish tissue concentrations of methylmercury may peak 3–8 years after filling, with concentrations slowly declining to a lower steady-state after 10–35 years.” The data from Lake Oroville (which is over 50 years old) shows that even if the expected initially high mercury concentrations in the reservoir decline over time, the concentrations of mercury present in water that would be diverted to the reservoir from the Sacramento River at Red Bluff and especially at Hamilton City are sufficiently high to cause fish tissue methylmercury concentrations to exceed criterion for the protection of human health and wildlife, not just for 10 to 35 years, but for the life of the reservoir project.	or allusion to the potential concentrations of methylmercury in Sites Reservoir fish relative to the criterion for the protection of human health and wildlife, either in the short term or long term. As stated in Chapter 6 in the Impact WQ-2 discussion, assuming similar fish species and comparable food web structures at Sites Reservoir relative to other nearby reservoirs, a reasonable expected average fish tissue concentration (normalized to 350 millimeters largemouth bass, weight weight [ww]) is approximately 0.47 milligrams per kilogram (mg/kg), and a reasonable worst-case fish tissue concentration is the 99th percentile value among these reservoirs (0.85 mg/kg, ww)—values that exceed the 0.2 mg/kg California sport fish objective. As indicated in Mitigation Measure WQ-1.1 and in Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, as part of the reservoir management plan, multiple measures will be		

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				implemented to reduce mercury methylation in Sites Reservoir and, thus, bioaccumulation of methylmercury in reservoir fish. As identified in Chapter 27, Public Health and Environmental Hazards, under Impact HAZ-6, the California Office of Environmental Health Hazards Assessment methylmercury fish consumption advisories would continue to be implemented in the study area, and these advisories would serve to protect people against the overconsumption of fish with increased body burdens of mercury for those following these recommendations.		
51110	19	31	On page 6-54, page 6-57, and elsewhere, statements concerning expected mercury levels in fish, nutrients, and dissolved organic carbon in the reservoir explain that "this would be an effect on the Project itself occurring within the Sites Reservoir, rather than an effect from the Project on the surrounding environment." This seems to imply that the project would not be	CEQA requires that effects for a proposed project be analyzed relative to an environmental baseline that represents the physical environmental conditions that exist at the time the CEQA process began. The CEQA baseline for assessing significance of impacts of any proposed project is normally the environmental setting or existing conditions at the time a Notice of Preparation is issued (CEQA	Reviewed by Client	N/A

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			responsible for these issues in the reservoir since it is the location where the reservoir is placed that is responsible. It is the construction of the reservoir that creates the problem. The creation of the reservoir creates a problem for the surrounding environment (i.e., birds that will prey on fish contaminated with high levels of mercury in the reservoir).	Guidelines, § 15125, subd. (a)). NEPA does not have a comparable baseline requirement, but, similar to CEQA, which requires analysis of the No Project Alternative, NEPA requires analysis of the No Action Alternative. The No Project Alternative under CEQA and the No Action Alternative under NEPA are used to compare conditions without the Project to conditions with the Project. In the EIR/EIS analysis, the CEQA No Project Alternative and NEPA No Action Alternative are the same. In the analysis in Chapter 6, Surface Water Quality, the No Project Alternative represents the continuation of the existing conditions in 2020 for the study area in general, including the proposed reservoir site specifically. Because no reservoir exists under the No Project Alternative, a comparison between existing water quality conditions at the proposed reservoir site and reservoir water quality conditions once Sites Reservoir is filled and operational cannot be made.		

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				Text indicating that consumption of fish that have bioaccumulated methylmercury could cause illness or mortality of bald eagle was added to Chapter 10, Wildlife Resources, of the Final EIR/EIS. The text addition does not change the impact determinations or conclusions in that chapter. In addition, potential effects on public health and aquatic resources due to potential reservoir water quality are addressed in Chapter 27, Public Health and Environmental Hazards, and Chapter 11, Aquatic Biological Resources.		
51110	19	32	The discussion on page 6-57 also explains that "any increases in reservoir nutrient concentrations may benefit fish." However, management of the mercury problem in the reservoir includes not introducing fish into the reservoir for at least 10 years (Mitigation Measure WQ-1.1). So, there are not any fish that would benefit from the increased nutrient concentrations in the reservoir. Even if there were fish in the reservoir, increased nutrient concentrations	The Chapter 6, Surface Water Quality, text quoted by the commenter has been deleted from where it appears in the CEQA determination for Impact WQ-1 in the Final EIR/EIS because the nutrient discussion under this impact is within the context of the initial filling of Sites Reservoir. This text, however, still appears in Impact WQ-2, which covers the operation of the reservoir. It is correct that the reservoir would not be stocked with fish for at least 10 years following its	Reviewed by Client	N/A

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			would lead to increased HABs (an impact) and anoxia in the hypolimnion as the organic materials (HABs) produced in the epilimnion sink and decompose in the hypolimnion, eliminating the hypolimnion as habitat for fish (another impact). As well, the anoxic hypolimnion will result in the dissolution of metals from the sediments back into the water column, yet another adverse impact from the increases in reservoir nutrient concentrations.	initial filling (per Mitigation Measure WQ-1.1). Once stocked, fish will benefit from reservoir nutrients. The referenced potential effect of nutrients on the development of harmful algal blooms (HABs) and of the decomposition of HABs on dissolved oxygen in Sites Reservoir is discussed in Chapter 6. Please refer to Master Response 4, Water Quality, and response to comment 19-28 for a discussion regarding dissolution of metals under anoxic conditions and for a discussion of the use of the I/O tower, which would control releases of water quality constituents by selective use of the multiple tiers in the tower.		
51110	19	33	This section on page 6-54 of the report also acknowledges that long-term methylmercury concentrations in fish in the proposed reservoir can reasonably be expected to be about 0.85 mg/kg ww, which greatly exceeds the 0.2 mg/kg ww of the California sport fish objective.	The comment is identifying information contained in the impact analysis regarding potential long-term methylmercury concentrations in Sites Reservoir fish and that this concentration would exceed the California sport fish objective.	Reviewed by Client	N/A

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51110	19	46	The DEIR states on page 6-88 that "in drought years, releases from the reservoir's normal operating dead pool would be made through the low-level intake" and on page 6-89 that "if cyanobacteria and cyanotoxins are confirmed near the I/O tower at a level at or exceeding the "Caution" action trigger level, releases could be made from lower in the water column (e.g., through the low-level intake) to reduce the potential for higher concentrations of cyanobacteria and cyanotoxins to be released downstream. This hypolimnial release would result in water with high concentrations of methylmercury being released downstream.	Please refer to Master Response 4, Water Quality, for a discussion regarding the use of the I/O tower to control releases of water quality constituents. If HABs/cyanotoxins were present at the I/O tower at the same time relatively high metal concentrations (including methylmercury) or water too cold for agriculture was deep in the reservoir, then there might be no I/O tower tier available for discharging relatively high-quality water. Master Response 4 explains why this scenario would be uncommon and additional measures would protect against the consequences of such a scenario.	Reviewed by Client	N/A
51110	19	51	This section goes on to say "the development of Sites Reservoir for Alternative 1, 2, or 3 would create in-reservoir habitat and thus net benefits for Reservoir cold-water and warm-water fish species." Cold water fish species would be impacted by the anoxic conditions expected to occur in the hypolimnetic environment required by such fish. In addition, high	Please see response to comment 19-31 regarding the determination of significant impacts and adverse effects of a project relative to an environmental baseline/No Project Alternative and No Action Alternative pursuant to CEQA and NEPA, respectively. Because no reservoir exists under the No Project Alternative, all alternatives would	Reviewed by Client	N/A

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			methylmercury concentrations in the reservoir will impact all fish species. Mitigation for mercury includes not stocking fish for at least 10 years, so there would be no net benefits to cold-water and warmwater fish species for at least 10 years.	benefit cold-water and/or warm-water fish species in the reservoir once it is operational and stocked through the creation of new habitat (see Chapter 11, Aquatic Biological Resources, Impact FISH-18 and Appendix 11E, Reservoir Fish Species Analysis). As described in Chapter 6, Surface Water Quality, Mitigation Measure WQ-1 and in Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, methylmercury management measures would be implemented at Sites Reservoir to reduce the methylation of mercury in the reservoir and thus fish exposure to and bioaccumulation of methylmercury.		
51110	72	76	The RDEIR/SDEIS Does Not Accurately Assess or Mitigate Water Quality Impacts. Chapter 6 mentions mercury 574 times indicating the focus on this particular constituent but places less scrutiny over the other water quality	The level of detail provided for each water quality constituent depends on level of concern, the amount of information available, and the level of detail needed for an impact determination. Mercury is mentioned frequently in Chapter 6, Surface Water Quality, because it is highly toxic,	Reviewed by Client	N/A

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			constituents contained in water diverted to, impounded in, and released from Sites Reservoir: water temperature, salinity, aluminum, arsenic, cadmium, chromium, copper, iron, lead, manganese, nickel, selenium, silver, zinc, pesticides, nutrients, and HABs (Harmful Algae Blooms).These water quality constituents exceed established water quality criteria in some existing waterbodies in the study area and will be present in the source waters, increased by evaporative enrichment and exacerbated by operations of a surface water reservoir. Since water quality in the proposed reservoir will reflect that of the source waters, the reservoir will hold numerous metals, including aluminum, arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, selenium, silver, and zinc.	extensively studied, and is a focus of environmental regulations such as total maximum daily loads (TMDLs). Please see Master Response 4, Water Quality, for a summary and additional detail regarding the metals analysis, including source-water concentrations, a discussion of water quality standards, and the selection of metals for evaluation. Based on the evaluation of pesticide data described in the environmental setting and Impact WQ-2 of Chapter 6, pesticide concentrations are not expected to be elevated in Sites Reservoir. Water temperature is evaluated extensively in Chapter 11, Aquatic Biological Resources, as it relates to effects on fish species.		
51110	72	81	2. Mercury Impact WQ-2 (Violate any water quality standards or waste discharge requirements or otherwise	An exceedance of a water quality control plan (basin plan) water quality objective would not necessarily indicate a conflict with, or obstruction of, implementation of the applicable	Reviewed by Client	Central Valley Regional Water Quality Control Board. 2019. The Water Quality

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			substantially degrade surface water quality during operation) is identified as CEQA significant and unavoidable (SU) and NEPA substantial adverse effect (SA) for all alternatives. This obviously conflicts with and obstructs implementation of a water quality control plan (Impact WQ-5). The identification of Impact WQ-2 admits that the project will violate water quality standards of the Central Valley Water Quality Control Plan (Basin Plan) and will result in a significant impact and substantial adverse effect which conflicts with the Basin Plan. In the Sacramento River at Hamilton City, Table 6-5 shows that total mercury concentrations have been measured as high as 54 ng/L, which are higher than the CTR criterion of 50 ng/L and raise concern for significant and substantial adverse effects when waters with these types of concentrations are diverted into the reservoir.	basin plans for the study area. The potential for the Project to exceed single constituent water quality objectives, as well as beneficial uses, was considered in the impact analyses presented for Impacts WQ-1, WQ-2, and WQ-3 in Chapter 6, Surface Water Quality. As described in Chapter 6 for Impact WQ-5, water quality control plans include consideration of all beneficial uses (e.g., Central Valley Regional Water Quality Control Board 2019:2-1, State Water Resources Control Board 2018:9). While consideration of single constituent water quality objectives is part of the consideration, the approach related to the evaluation of Impact WQ-5 is broader, given the fact that exceedances of single water quality constituents does not necessarily suggest a conflict with or obstruction of implementation of a basin plan. If water quality effects were expected to be severe or if there were no increases in beneficial uses expected to result from the project, this impact would be considered significant. Impact WQ-5 considers the		Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley Region: The Sacramento River Basin and the San Joaquin River Basin. Fifth Edition. Revised February 2019. Available: https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201902.pdf. Accessed: August 3, 2022. State Water Resources Control Board. 2018. Water Quality Control Plan for the San Francisco/Sacrame

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				overarching goal of basin plans to maximize multiple beneficial uses of water, considering changes in all beneficial uses along with changes in water quality, not simply whether a single water quality constituent objective would be exceeded. Total mercury concentrations in Sacramento River diversions to Sites Reservoir may be higher than the mean concentrations cited for the Sacramento River at Red Bluff and Hamilton City in Chapter 6. However, in large part, mercury would be associated with suspended sediment, which would mostly settle out in the reservoir. In addition, comparisons with other nearby reservoirs and lakes can provide insight into the expected mercury concentrations that would occur at Sites Reservoir. As discussed in Appendix 6F, Mercury and Methylmercury, apart from Clear Lake, on which the Sulphur Bank Mercury Mine Superfund site is located, mean concentrations of total mercury were not greater than 4.42 ng/L. None of almost 500 other samples from		nto-San Joaquin Delta Estuary. December 12. Available: https://www.waterboards.ca.gov/plans_policies/docs/2018wqcp.pdf. Accessed: August 3, 2022.

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				nearby reservoirs exceeded the 50 ng/L total mercury CTR criterion. Fish tissue methylmercury concentrations within Sites Reservoir will depend on many factors; however, tissue concentrations are expected to be comparable to those in existing nearby reservoirs in the long term. Reservoir water quality management actions (i.e., Mitigation Measure WQ-1.1) described in Chapter 6 and Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, would minimize mercury methylation and methylmercury accumulation in fish tissues. As stated in Chapter 6, although the potential to reduce methylmercury concentrations exists based on current research, the effectiveness of the methylmercury minimization actions to reduce reservoir methylmercury concentrations such that there would be no substantial measurable increase in aqueous and fish tissue methylmercury concentrations at downstream locations is not known at		

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				this time. Thus, the impact is significant and unavoidable.		
51110	72	82	Table 6-5 shows that total mercury concentrations have been measured as high as 14.4 ng/L in the Sacramento River at Red Bluff but only 0.52 ng/L in Oroville Reservoir. The comparatively low concentrations of total mercury from the water in Oroville Reservoir have been sufficient to cause fish from this reservoir to exceed the numeric criterion and objectives for fish, including both sport and prey fish, for the protection of human health and wildlife as contained in the Sacramento--San Joaquin River Delta Estuary TMDL for Methylmercury and Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California--Tribal and Subsistence Fishing Beneficial Uses and Mercury Provisions. Fish tissue concentrations as high as 0.7 mg/kg have been found in fish from Oroville Reservoir (DWR 2007). Since mercury concentrations of up to only 0.52 ng/L in Oroville Reservoir have been enough to cause	Expected mercury concentrations were determined for the Project based on the qualitative assessment in Chapter 6, Surface Water Quality, described in Section 6.3 (Methods of Analysis) and in Appendix 6F, Mercury and Methylmercury, which cataloged mercury data and other information from reservoirs in California to compare with the Sites Reservoir in terms of location, size, expected reservoir surface elevation fluctuations, mercury sources, and fish species present. Expected mercury/methylmercury concentrations for Sites Reservoir cannot be compared to the No Project Alternative because Sites Reservoir would not exist under the No Project Alternative. Regardless, the analysis acknowledges that both in the short term and long term that there would be more methylmercury generated within the reservoir than would be degraded, particularly in the short term. The analysis acknowledges	Reviewed by Client	N/A

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			levels to be exceeded in Oroville, concentrations of mercury as high as 14.4 ng/L in water diverted to the proposed reservoir from the Sacramento River at Red Bluff is likely to cause severe impacts and adverse effects in the proposed reservoir and in downstream releases.	that the expected average and reasonable worst-case fish tissue concentrations of methylmercury would exceed the 0.2 mg/kg (wet weight) California sport fish objective. Similarly, the impact analysis discusses the potential for releases from Sites Reservoir to result in bioaccumulation of methylmercury in fish at other locations (i.e., Funks and Stone Corral Creeks, Colusa Basin Drain, Yolo Bypass, and the Delta). The implementation of Mitigation Measure WQ-1.1 would minimize bioaccumulation of methylmercury by requiring steps be taken to reduce, monitor, and manage mercury in the reservoir. The California Office of Environmental Health Hazards Assessment methylmercury fish consumption advisories would continue to be implemented in the study area during operation of the reservoir, and these advisories would serve to protect people against the overconsumption of fish with increased body burdens of mercury		

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				for those following these recommendations.		
51110	72	83	The RDEIR/SDEIS states on page 6-17 explains how newly inundated reservoirs in this region often have, "higher net methylmercury production in early years after filling, when organic carbon is relatively abundant, relative to long-term average production. This initial spike in mercury methylation can increase the concentrations of water column methylmercury to double or triple the long-term average concentrations for up to 10 years." The RDEIR/SDEIS strategy for dealing with this dangerous water quality problem is 1) to not stock the reservoir with fish for 10 years, and 2) release water from high in the reservoir since the methylmercury concentrations are greater deep in the reservoir. While the Coalition admits recognition of the issue, the suggested mitigation measures are insufficient. There is no assurance that methylmercury levels will drop sufficiently to allow fish stocking or that private citizens will	As indicated in Mitigation Measure WQ-1.1 and in Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, as part of the Reservoir Management Plan, multiple measures will be implemented to reduce mercury methylation in Sites Reservoir and, thus, bioaccumulation of methylmercury in reservoir fish. The Authority and Reclamation acknowledge that unauthorized fish stocking could occur, but Sites Reservoir is located relatively remotely, which could constitute a deterrent to this unauthorized practice. An additional action was added to Mitigation Measure WQ-1.1 and to the Reservoir Management Plan (Appendix 2D) to minimize potential public exposure to methylmercury through consumption of Sites Reservoir fish prior to regulated stocking of the reservoir. A fish sampling program will be	Reviewed by Client	N/A

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			refrain from stocking the water. In fact, reservoir fluctuations would also contribute to conditions favorable to mercury methylation. It is expected that the Project fluctuations would be greater than median fluctuations of other reservoirs in the state, which indicates that Sites Reservoir fluctuations would likely contribute to conditions favorable to mercury methylation.	implemented upon completion of the initial filling of the reservoir. Initially, a sampling program will be implemented to determine whether game fish are present (either because of unauthorized stocking or fish entrainment at the Sacramento River diversions). Once it has been determined that a population of game fish has established in the reservoir, annual monitoring of Sites Reservoir fish tissue methylmercury concentrations will commence. If the 0.2 mg/kg sport fish objective is exceeded, fish consumption warning signs will be posted in several visible locations around the reservoir, in coordination with the State Water Resources Control Board, the Central Valley Regional Water Quality Control Board, and the Office of Environmental Health Hazards Assessment. Fish consumption advisories would serve to protect people against the overconsumption of fish with increased body burdens of mercury for those following these recommendations. The addition of this action to the Final EIR/EIS does		

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				not change conclusions or impact determinations identified in the analysis in Chapter 6, Surface Water Quality. As indicated for Mitigation Measure WQ-1.1, once authorized fish stocking begins fish tissue monitoring will also be implemented for a minimum of 10 years. Annual reservoir water level fluctuation in Sites Reservoir is considered in the assessment of factors driving fish methylmercury concentrations, as described in Appendix 6F, Mercury and Methylmercury. The Sites Reservoir Project Footprint section of Appendix 6F text has been revised with regard to modeled mean annual long-term reservoir water level fluctuations and the narrative text has been revised and clarification added, accordingly. While expected Sites Reservoir water surface level fluctuations would be greater than median fluctuations in other existing California reservoirs, expected fluctuations would be within		

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				the ranges reported by other reservoirs. Please refer to Master Response 4, Water Quality, for a discussion regarding the use of the I/O tower to control releases of water quality constituents.		
51110	77	42	ATTMT 1. Chapter or Appendix - Section: Chapter 6 - Section 6.3.2.9, Mercury and Methylmercury. Page(s): p. 6-38. Comment and Recommendations: CDFW suggests that the FEIR/FEIS provide additional analysis on the potential impacts of increased flooding on methylmercury formation in the Yolo Bypass due to August-October flows and releases for Storage Partners. Table 11-13 (p.11-115) indicates that Yolo Bypass flooding could increase by hundreds of acres between August-October due to these flows, which would potentially increase methylmercury formation. Releases for Storage Partners along the CBD, Yolo Bypass, and North Bay Aqueduct may also impact methylmercury formation if	The intent of the releases from Sites Reservoir to the Yolo Bypass is to temporally and spatially distribute food sources for fish species. If the water inundates floodplain areas (i.e., areas outside existing channels), the food resources would be deposited and would fail to move into the Delta. As such, Sites Reservoir would be operated to maintain flows within the existing Toe Drain, Tule Canal, and other channels, and adjustments in operations would be coordinated between the Authority and parcel owners using the existing Yolo Bypass monitoring network. Clarification has been added to Chapter 6, Surface Water Quality, for the mercury/methylmercury analysis. This clarifying text does not change the	Reviewed by Client	N/A

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			releases are not contained within the Tule Canal/Toe Drain.	conclusions or impact determinations identified in the analysis. There is currently one Storage Partner who would potentially receive a relatively small delivery from the North Bay Aqueduct via the Sacramento River. Water from Sites Reservoir for this delivery would not be routed through Yolo Bypass. There are no Storage Partners expected to take deliveries along the Colusa Basin Drain or Yolo Bypass.		
51110	78	16	The Yolo Bypass Sacramento River is identified on the Clean Water Act Section 303(d) List as impaired by mercury because of elevated methylmercury concentrations in fish that pose a risk to wildlife and humans who consume fish. Due to historical mercury and/or gold mining in the watershed, the project boundary likely has deposits of mercury-containing sediments. As project construction is occurring, Central Valley Water Board staff recommends project proponents implement practices to control	As identified in Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, erosion and sediment control measures will be implemented as part of BMP-12, Development and Implementation of Stormwater Pollution Prevention Plan(s) (SWPPP) and Obtainment of Coverage under Stormwater Construction General Permit (Stormwater and Non-stormwater) (Water Quality Order No. 2022-0057-DWQ/NPDES No. CAS000002 and any amendments thereto).	Reviewed by Client	N/A

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			erosion and minimize discharges of mercury and methylmercury. For instance, Central Valley Water Board staff recommends the implementation of turbidity curtains and/or cofferdams for in-water work to limit the discharge of suspended solids downstream, which will reduce the risk of methylation downstream of mercury that is attached to those suspended solids. The goal is to minimize erosion of the mercury-containing soils in order to protect beneficial uses in this portion of the Sacramento River and to reduce mercury and methylmercury loads moving downstream.			
51110	78	17	The Central Valley Water Board requests that the Project proponent coordinate with Central Valley Water Board TMDL staff to develop a monitoring plan that would reduce the potential for methylation and mercury contamination, or contamination of any other constituents of concern, in the surrounding areas that may be influenced by discharge from the	As noted in Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, methylmercury reduction actions will be implemented in coordination with the State Water Resources Control Board and the Central Valley Regional Water Quality Control Board, as required. Monitoring is necessarily part of any methylmercury reduction action(s) that may be implemented in	Reviewed by Client	N/A

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			reservoir from regular operation, as identified within mitigation measures discussed in Chapter 6 of the draft REIR/SEIS.	Sites Reservoir because pre-action and post-action monitoring would be the only means of determining whether methylmercury reduction actions were successful. Text was added to Appendix 2D in the Final EIR/EIS to note that, in addition to methylmercury reduction actions, fish tissue monitoring will also be implemented in coordination with the State Water Resources Control Board and Central Valley Regional Water Quality Control Board, as required. Text was also added to Appendix 2D providing for water quality monitoring for cyanobacteria and cyanotoxins in the vicinity of the I/O tower and downstream if, based on visual monitoring, harmful algal blooms occur near the I/O tower. These text additions do not change the conclusions or impact determinations identified in the analysis. In addition, text has been added to Appendix 2D of the Final EIR/EIS to clarify how the Reservoir Management Plan (RMP) will be modified over time. The RMP is and		

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				will continue to be revised throughout the operation of the reservoir. This text addition does not change conclusions or impact determinations identified in the analysis in Chapter 6. Revisions to the RMP will be prepared in consultation with regulatory agencies and other stakeholders.		
51110	78	18	Due to concerns with likely spikes in methylmercury with the operation of the reservoir, the Central Valley Water Board recommends that reservoir managers monitor and report mercury in fish tissue periodically (minimum every 10 years) in a range of species, following Surface Water Ambient Monitoring Program (SWAMP) Safe To Eat Workgroup protocols.	As noted in Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, to assess the effectiveness of methylmercury reduction actions after initial implementation, fish tissue methylmercury concentrations and the timing and frequency of tissue sampling following implementation of reduction actions will be informed by Phase 1 pilot tests. In addition, text was added to Appendix 2D in the Final EIR/EIS to note that, in addition to methylmercury reduction actions, fish tissue monitoring will also be implemented in coordination with the State Water Resources Control Board and the Central Valley Regional Water Quality Control Board, as required. Text was revised in Appendix 2D to	Reviewed by Client	N/A

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				include the Safe to Eat Workgroup protocol and to clarify that multiple fish species will be sampled, as identified by the comment. The text revisions do not result in a change to an impact determination or conclusion.		
51110	78	65	Chapter 6, pages 6-39, 6-54, 6-58 - The environmental document includes a qualitative assessment of the primary factors that could increase or decrease mercury and methylmercury concentrations at the four geographies that could be affected by Project. Aqueous methylmercury concentration is the single most important factor influencing fish tissue Hg concentrations. The predicted aqueous MeHg concentration in the reservoir is 22 to 33-fold (short-term) and 11-17-fold (long-term) higher than the proposed aqueous MeHg allocation (<0.009 ng/L) in the Statewide Reservoir Methylmercury TMDL (SWRCB 2017b, as referenced in the draft REIS/SEIS). This suggests that Sites Reservoir will create conditions that result in	The impact analysis for mercury/methylmercury in Chapter 6, Surface Water Quality, compares estimated total mercury concentrations in Sites Reservoir to the U.S. Environmental Protection Agency's California Toxics Rule (CTR) mercury criterion (50 nanograms/liter total recoverable mercury) and compares estimated methylmercury concentrations to the California sport fish objective (0.2 milligrams/kilogram [mg/kg] wet weight [ww] of fish tissue). The California sport fish objective is applicable to waterbodies outside of the Delta and Yolo Bypass. As discussed in Appendix 6F, Mercury and Methylmercury, the lowest applicable water column criterion for mercury is the CTR mercury criterion, which was developed to protect	Reviewed by Client	Central Valley Regional Water Quality Control Board. 2010. Sacramento–San Joaquin Delta Estuary TMDL for Methylmercury. Final Staff Report. April. Prepared by Wood, M., C. Foe, J. Cooke, and L. Stephen. Available online at: https://www.waterboards.ca.gov/rwqcb5/water_issues/tmdl/central_valley_projects/delta_hg/archived_delta_hg_info/april_2010_

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			elevated fish tissue mercury levels that will persist indefinitely. Reservoirs create new conditions that enhance the production of MeHg and bioaccumulation and biomagnification of Hg. The creation of the reservoir has a high risk of resulting in elevated fish Hg levels that pose a risk to human recreators and consumers of fish from the reservoir as well as wildlife that consume fish. The analysis lacks an evaluation of the significance of creating a waterbody with elevated fish tissue Hg concentrations. Instead the analysis compares inorganic Hg concentrations against the California Toxics Rule, which is inadequate for this kind of environmental assessment, as stated in the early sections of the chapter. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	humans from exposure to mercury in drinking water and in contaminated fish (Central Valley Regional Water Quality Control Board 2010:164). This criterion is intended for the protection of aquatic life. For potential Project-related changes in fish tissue mercury concentrations in the Delta and Yolo Bypass, the Central Valley Regional Water Quality Control Board methylmercury total maximum daily load (TMDL) tissue concentration objective of 0.24 mg/kg, ww, for trophic level 4 fish (0.08 mg/kg, ww, for trophic level 3 fish) was used as a point of comparison. Potential effects of the Project on fish, wildlife, and humans related to exposure to methylmercury are discussed in Chapter 10, Wildlife Resources, Chapter 11, Aquatic Biological Resources, and Chapter 27, Public Health and Environmental Hazards. Chapter 11 discusses the effects on special-status fish species of the potential increase in mercury in the Delta due to Project operations. Text regarding the potential effects of		hg_tmdl_hearing/apr2010_tmdl_staffrpt_final.pdf.

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				methylmercury bioaccumulation in fish on bald eagle due to the Project was added to Chapter 10 of the Final EIR/EIS. The text addition does not change the impact determinations or conclusions in that chapter. A discussion of the potential for public health to be affected by methylmercury due to consumption of fish from Sites Reservoir and other assessed geographies within the study area is presented in Chapter 27.		
51110	78	79	Chapter 6, page 6-93 - The environmental document states that operation would not cause mercury concentrations to exceed the CTR criterion in Sites Reservoir. Sites Reservoir releases with estimated expected long-term aqueous methylmercury concentrations would be lower than that in the CBD under existing conditions and therefore would not be expected to increase bioaccumulation of methylmercury in CBD fish. Sites Reservoir releases could increase aqueous and fish tissue methylmercury concentrations in the CBD, particularly during Dry and	It is acknowledged in the impact analysis in Chapter 6, Surface Water Quality, that in both the short term and long term, estimated Sites Reservoir fish tissue methylmercury concentrations may exceed the 0.2 milligram/kilogram, wet weight, California sport fish objective and that this is considered a significant and unavoidable impact. Implementation of Mitigation Measure WQ-1.1 is intended to minimize reservoir methylmercury production and bioaccumulation of methylmercury in reservoir fish. In addition, as described in Chapter 27, Public Health and	Reviewed by Client	N/A

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			Critically Dry water years at estimated long-term worst case methylmercury concentrations in releases. However, fish tissue methylmercury levels in the CBD would likely return to baseline levels within months following the May–November release period.” The production of elevated fish Hg levels in the reservoir where human and wildlife fish consumers will be exposed to toxic levels would be a significant impact. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	Environmental Hazards, the Office of Environmental Health Hazard Assessment’s methylmercury fish consumption advisories would continue to be implemented for the consumption of study area fish, which would serve to protect people against the overconsumption of fish with increased body burdens of mercury. Text regarding effects of methylmercury bioaccumulation in fish on bald eagle was added to Chapter 10, Wildlife Resources, of the Final EIR/EIS. This text addition does not change the impact determinations or conclusions in that chapter.		
51110	78	107	Appendix 6F, page 6F-18 The environmental document states that “Since no reservoir exists under the No Project Alternative, these fluctuations cannot be compared to a baseline. However, comparison to other reservoirs indicates that expected fluctuations are greater than median fluctuations of other reservoirs in California, indicating that reservoir fluctuations will likely	CEQA requires that effects for a proposed project be analyzed relative to an environmental baseline that represents the physical environmental conditions that exist at the time the CEQA process began. The CEQA baseline for assessing significance of impacts of any proposed project is normally the environmental setting or existing conditions at the time a Notice of Preparation is issued (CEQA Guidelines, § 15125, subd. (a)). NEPA	Reviewed by Client	N/A

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			contribute to conditions favorable to mercury methylation." The baseline is no reservoir producing MeHg, so the analysis should encompass all of the new MeHg being produced by the new reservoir and subsequent exposure to fish, humans, and wildlife. [Commenting Water Board or Section within the State Water Board: Bay Delta]	does not have a comparable baseline requirement, but, like CEQA, which requires analysis of the No Project Alternative, NEPA requires analysis of the No Action Alternative. The No Project Alternative under CEQA and the No Action Alternative under NEPA are used to compare conditions without the Project to conditions with the Project. In the EIR/EIS analysis, the CEQA No Project Alternative and NEPA No Action Alternative are the same. In the analysis in Chapter 6, Surface Water Quality, the No Project Alternative represents the continuation of the existing conditions in 2020 for the study area in general, including the proposed reservoir site specifically. Because no reservoir exists under the No Project Alternative, a comparison between existing water quality conditions at the proposed reservoir site and reservoir water quality conditions once Sites Reservoir is filled and operational cannot be made. Potential effects of the Project on fish, wildlife, and humans related to		

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				exposure to methylmercury are discussed in Chapter 10, Wildlife Resources, Chapter 11, Aquatic Biological Resources, and Chapter 27, Public Health and Environmental Hazards. Chapter 11 discusses the effects on special-status fish species of the potential increase in mercury in the Delta due to Project operations. Text regarding potential effects of methylmercury bioaccumulation in fish on bald eagle due to the Project was added to Chapter 10 of the Final EIR/EIS. The text addition does not change the impact determinations or conclusions in that chapter. A discussion of the potential for public health to be affected by methylmercury due to consumption of fish from Sites Reservoir and other assessed geographies within the study area is presented in Chapter 27.		
51110	79	8	The EPA has concerns about the effects of Sites Reservoir on water quality. The SDEIS identifies substantial adverse effects that can be expected from mercury methylation in the proposed reservoir; the EPA is	Chapter 27, Public Health and Environmental Hazards, assesses the potential impact on public health from mercury/methylmercury due to consumption of fish in the study area, which may be affected by increased	Reviewed by Client	N/A

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			concerned that this impact could disproportionately affect tribal and subsistence fishing communities.	bioaccumulation of methylmercury as a result of construction and operation of Sites Reservoir. While not currently specifically tailored to Tribal and subsistence fisherpersons, the California Office of Environmental Health Hazards Assessment (OEHHA) methylmercury fish consumption advisories would continue to be implemented in the study area, and these advisories would serve to protect people against the overconsumption of fish with increased body burdens of mercury for those following these recommendations. Text was added to the Final EIR/EIS, Chapter 27, in the Public Health Hazards Related to Methylmercury and HABs subsection of the Environmental Setting section that discusses beneficial uses of water in the state in the context of the California sportfish water quality objective and the Tribal Subsistence Fishing water quality objective. In addition, text was added to the same section adding further clarification on the OEHHA's fish consumption advisories. Text was also added to		

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				Chapter 27 for Impact HAZ-6 to add clarification that the OEHHA standards and fish consumption advisories would also serve to protect tribal and subsistence fisherpersons against the overconsumption of fish with increased body burdens of mercury. These text revisions do not change conclusions or impact determinations identified in the analysis.		
51110	81	18	Page 6-39 Mercury impacts on aquatic life (in addition to human health and wildlife) should be further analyzed, especially for sturgeon. Mercury can affect the immune, respiratory and cardiovascular systems, reproductive organs, nervous systems, and digestive systems of fish. Mercury impacts on fish are discussed in the aquatic biological resources section (page 11-16), and an increase in mercury levels in the Delta is discussed, but dismissed for salmonids based on a short temporal overlap of the species with the	Potential mercury impacts on aquatic life are discussed in Chapters 6, Surface Water Quality, and 11, Aquatic Biological Resources. It is acknowledged that Sites Reservoir releases may cause measurable increases in fish tissue methylmercury concentrations in the Delta, particularly in Dry and Critically Dry water years. Mitigation Measure WQ-1.1, would be implemented to reduce the methylation of mercury in Sites Reservoir and thus reducing the magnitude of impact in the Delta. Sturgeons are known to exhibit high mercury tissue concentrations as a result of both bioaccumulation (high	Reviewed by Client	Lee J.W., N. De Riu, S. Lee, S.C. Bai, G. Moniello, and S.S. Hung. Effects of dietary methylmercury on growth performance and tissue burden in juvenile green (Acipenser medirostris) and white sturgeon (A. transmontanus). Aquat Toxicol. 2011 Oct;105(3-4):227-34. doi:

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			contaminant and the historic data showing low tissue levels in salmon (page 11-121). However, this analysis is not discussed for sturgeon, which have been reported to have higher levels of mercury in tissues. Mercury was a cause of ESA listing for the Green Sturgeon sDPS in California's Central Valley and the impact of the Sites Reservoir increases in mercury loading should be analyzed for this species.	longevity and large size species) and bioamplification within aquatic foodwebs. While green and white sturgeon life history is not fully understood, most adult sturgeons migrate to river reaches upstream of the areas of concern to spawn in winter and spring every 2 to 6 years and remain the rest of the time in downstream estuarine areas (white sturgeon) or coastal waters (green sturgeon) not affected by Sites Reservoir releases. Dietary exposure in areas that may receive Sites Reservoir releases, including the Delta, would be most likely to affect juveniles. While lethal and sublethal effects of mercury dietary exposure have been experimentally documented in juvenile sturgeons (Lee et al. 2011), the lowest observed effect concentration in both white and green sturgeon was on a 50 milligrams methylmercury per kilogram diet—exceeding the average concentrations measured in the main sturgeon preys in the Delta by 3 to 4 orders of magnitude (see Central Valley Regional Water Quality Control		10.1016/j.aquatox. 2011.06.013. Epub 2011 Jun 23. PMID: 21763234. Central Valley Regional Water Quality Control Board. 2010. Sacramento – San Joaquin Delta Estuary TMDL for Methylmercury. Staff Report. April.

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				Board 2010, Table C.4, for average mercury concentrations in Crangon shrimp, Asiatic clam and gobies). Potential increase in mercury/methylmercury in the Delta as a result of Sites Reservoir operations would be far from causing sturgeon preys to reach such elevated tissue methylmercury concentrations.		
51110	81	21	Pages 6-55, 58 The water quality analysis acknowledges short term exceedances of water column and fish tissue criteria for methylmercury. What best management practices will be implemented to control or prevent this? The SDEIS/REIR proposed to not stock fish for 10 years after initial filling, but striped bass larvae and other Centrarchids larvae may be entrained in the water withdrawal and establish in the reservoir. Have the measures proposed in methylmercury management/mitigation measures WQ-1.1 been proven to be effective in their purpose? On Pages 6-54 and 6-73, how were the "reasonable worst-	Measures that would be implemented to reduce the methylation of mercury in Sites Reservoir and thus the bioaccumulation of mercury in fish are described in Mitigation Measure WQ-1.1. Most of these actions are recommended actions for new reservoirs as part of the Statewide Mercury Control Program for Reservoirs, as identified in the Draft Staff Report for Scientific Peer Review for the Amendment to the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California, Mercury Reservoir Provisions – Mercury TMDL and Implementation Program for Reservoirs (State Water Resources Control Board 2017b). The potential	Reviewed by Client	State Water Resources Control Board. 2017b. Draft Staff Report for Scientific Peer Review for the Amendment to the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California, Mercury Reservoir Provisions – Mercury TMDL and Implementation

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			case" Estimated Long-Term Average Concentrations of Total Mercury and Methylmercury in Sites Reservoir determined? The argument presented that Sites mercury loading isn't impactful because Yolo Bypass concentrations are higher (page 6-75), fails to account for mercury cycling where Hg could accumulate in Yolo Bypass sediments and fish tissues from Sites loadings, if the concentrations from Sites are lower. This mechanism is explicitly listed for metals other than mercury under Temporal Shift and Evapoconcentration (page 6-81).	effectiveness of these recommended methylmercury reduction actions is supported by current research (State Water Resources Control Board 2017b). Methylmercury reduction actions will be implemented in coordination with the State Water Resources Control Board and Central Valley Regional Water Quality Control Board, as required. While largemouth bass and other centrarchids could be entrained at the Red Bluff and Hamilton City intakes, they are unlikely to survive the multiple pumping facilities between the diversions and Sites Reservoir. Therefore, the probability of entrained fish establishing a population in Sites Reservoir is low. As noted for Impact FISH-13 in Chapter 11, Aquatic Biological Resources, striped bass spawning occurs in the Sacramento River downstream of these intakes, and thus entrainment of striped bass fish larvae would likely not occur. A discussion of potential entrainment of black bass (largemouth bass, smallmouth bass, and spotted bass) is		Program for Reservoirs. April. Available: https://www.waterboards.ca.gov/water_issues/programs/mercury/reservoirs/docs/peer_review/02_staff_report_scientific_peer_review.pdf. Accessed: August 3, 2022.

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				discussed under Impact FISH-16 in Chapter 11. An additional action has been added to Mitigation Measure WQ-1.1 as well as to the Reservoir Management Plan in Appendix 2D to minimize potential public exposure to methylmercury through consumption of Sites Reservoir fish prior to regulated stocking of the reservoir. A fish sampling program will be implemented upon completion of the initial filling of the reservoir. Initially, a sampling program will be implemented to determine whether game fish are present (either because of unauthorized stocking or fish entrainment at the Sacramento River diversions). Once it has been determined that a population of game fish has established in the reservoir, annual monitoring of Sites Reservoir fish tissue methylmercury concentrations will commence. If the 0.2 mg/kg sport fish objective is exceeded, fish consumption warning signs will be posted. The addition of this action to the Final EIR/EIS does not change conclusions or impact determinations identified in the		

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				analysis in Chapter 6, Surface Water Quality. A detailed discussion of how the estimates for expected and reasonable worst-case short- and long-term total mercury and methylmercury concentrations in Sites Reservoir were made is provided in Appendix 6F, Mercury and Methylmercury. Regarding the issue of potential mercury loading from Sites Reservoir to Yolo Bypass, while there is expected to be mercury and methylmercury in releases from Sites Reservoir, Yolo Bypass habitat flows would be confined to the Tule Canal, Toe Drain, and other channels and thus would result in minimal land inundation where mercury/methylmercury could be deposited. Thus, these flows would be expected to move through the bypass with minimal mercury deposition.		
51120	19	10	Chapter 6. Surface Water Quality p. 6-2 and 6-3: Table 6-1b summarizes	An exceedance of a water quality control plan (basin plan) water quality	Reviewed by Client	Central Valley Regional Water

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			operation impacts for surface water quality resources. Impact WQ-2 (Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality during operation) is identified as CEQA significant and unavoidable (SU) and NEPA substantial adverse effect (SA) for all alternatives. Yet, somehow this is deemed as not conflicting with or obstructing implementation of a water quality control plan (Impact WQ-5). Since, as identified as Impact WQ-2, the project will violate water quality standards of the Central Valley Water Quality Control Plan (Basin Plan), this is obviously a significant impact and substantial adverse effect which conflicts with the Basin Plan	objective would not necessarily indicate a conflict with, or obstruction of, implementation of the applicable basin plans for the study area. The potential for the Project to exceed single-constituent water quality objectives, as well as beneficial uses, were considered in the impact analyses presented for Impacts WQ-1, WQ-2, and WQ-3 in Chapter 6, Surface Water Quality. As described in Chapter 6 for Impact WQ-5, water quality control plans include consideration of all beneficial uses (e.g., Central Valley Regional Water Quality Control Board 2019:2-1, State Water Resources Control Board 2018:9). While consideration of single-constituent water quality objectives is part of the consideration, the approach related to the evaluation of Impact WQ-5 is broader, given the fact that exceedances of single water quality constituents do not necessarily suggest a conflict with or obstruction of implementation of a basin plan. Impact WQ-5 considers the overarching goal of basin plans to maximize multiple beneficial uses of		Quality Control Board. 2019. The Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley Region: The Sacramento River Basin and the San Joaquin River Basin. Fifth Edition. Revised February 2019. Available: https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201902.pdf. Accessed: August 3, 2022. State Water Resources Control Board. 2018. Water Quality

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				water, considering changes in all beneficial uses along with changes in water quality, not simply whether a single water quality constituent objective would be exceeded.		Control Plan for the San Francisco/Sacramento-San Joaquin Delta Estuary. December 12. Available: https://www.waterboards.ca.gov/plans_policies/docs/2018wqcp.pdf. Accessed: August 3, 2022.
51120	19	35	One of the methylmercury management strategies is to not stock Sites Reservoir with fish for the first 10 years following its initial filling (page 6-59). How will the project prevent someone from taking it upon themselves to stock fish of their choosing, as has happened at many other reservoirs (e.g., Northern pike in the Upper Feather River reservoirs). What will the project do to prevent someone from stocking fish and to mitigate this stocking when it does occur?	As indicated in Mitigation Measure WQ-1.1 and in Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, as part of the Reservoir Management Plan, multiple measures will be implemented to reduce mercury methylation in Sites Reservoir and, thus, bioaccumulation of methylmercury in reservoir fish. Fish tissue monitoring will begin the first year of authorized reservoir stocking, and, through coordination with the State Water Resources Control Board, the Central Valley Regional Water	Reviewed by Client	N/A

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				Quality Control Board, and the California Office of Environmental Health Hazards Assessment, fish consumption warning signs will be posted, as appropriate, based on methylmercury levels in fish tissue. Fish consumption advisories would serve to protect people against the overconsumption of fish with increased body burdens of mercury for those following these recommendations. The Authority and Reclamation acknowledge that unauthorized fish stocking could occur, but Sites Reservoir is located relatively remotely, which could constitute a deterrent to this unauthorized practice. An additional action has been added to Mitigation Measure WQ-1.1 as well as to the Reservoir Management Plan in Appendix 2D to minimize potential public exposure to methylmercury through consumption of Sites Reservoir fish prior to regulated stocking of the reservoir. A fish sampling program will be implemented upon completion of the		

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				initial filling of the reservoir. Initially, a sampling program will be implemented to determine whether game fish are present (either because of unauthorized stocking or fish entrainment at the Sacramento River diversions). Once it has been determined that a population of game fish has established in the reservoir, annual monitoring of Sites Reservoir fish tissue methylmercury concentrations will commence. If the 0.2 mg/kg sport fish objective is exceeded, fish consumption warning signs will be posted. The addition of this action to the Final EIR/EIS does not change conclusions or impact determinations identified in the analysis in Chapter 6, Surface Water Quality.		
51120	19	36	Another methylmercury management strategy is to introduce an oxidant, such as nitrate, to the reservoir bottom waters (near the sediment-water interface) to reduce anoxia (page 6-59). "If this method is employed, reservoir releases will be made from a higher tier (i.e., higher	As described in Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, reservoir water chemistry would be managed according to methods proven feasible and effective at reducing mercury methylation by pilot tests undertaken in other mercury-impaired reservoirs,	Reviewed by Client	N/A

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			elevation) in the I/O tower to avoid discharging bottom waters." Introduction of nitrates will serve as a nutrient source to stimulate increased algal ((HABs) growth following reservoir turnover. Releases from above the hypolimnion will be affected by HABs.	as determined by the State Water Resources Control Board's program review at the conclusion of the Phase 1 pilot tests for the Statewide Mercury Control Program for Reservoirs. The addition of an oxidant, such as nitrate, may be considered. However, in considering any water chemistry management action, the benefits of such action of potentially reducing mercury methylation would be weighed against multiple factors, including other potential effects on water quality and reservoir operations. Please refer to Master Response 4, Water Quality, for a discussion regarding the use of the I/O tower to control releases of water quality constituents.		
51120	19	48	Mitigation for impacts to Stone Corral Creek include "release occasional pulses of high flow. Flow pulses could flush away low-quality sediment and water from the bottom of the reservoir adjacent to Sites Dam." This would flush contaminant laden sediments downstream, resulting in downstream impacts including	Mitigation Measure WQ-2.1 allows a range of possible actions, with several possible approaches provided. The sediment at the bottom of Sites Reservoir is unlikely to be toxics-laden, although it might have bound metals similar to what may already be present in Stone Corral Creek. If a particular level of flow pulse is	Reviewed by Client	N/A

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			smothering of aquatic habitat with toxics laden sediments. Adding "a vertical extension in the reservoir at the withdrawal point. This extension would pull water from higher in the reservoir, where metal concentrations are expected to be lower" and "pump water from the top of Sites Reservoir for release into Stone Corral Creek." But HABs are higher in this water that would be supplied from the upper water column of the reservoir – trading one impact for another.	ineffective or releases too much sediment, the approach would be modified (e.g., the flow would be changed or a different type of approach, such as one of the other listed options, would be used). Harmful algal blooms (HABs) would not continually be present in Sites Reservoir because of their seasonal variation and likely would not be present in the entire water column from an anoxic zone to the water surface. For this reason, pulling water from higher in the reservoir is a viable option. Please see the Master Response 4, Water Quality, discussion regarding use of the I/O tower. While this discussion focuses on use of the I/O tower, the discussion is also relevant to withdrawing water from various elevations in the reservoir. In addition, Master Response 4 contains text describing other protections for Stone Corral Creek and describes how the creek is often dry under during the		

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				months when HABs would be more likely to be present in Sites Reservoir.		
51120	64	9	Section 6.4, sub-section on HABs and Invasive Aquatic Vegetation The discussion about cyanotoxin degradation is primarily applicable for extracellular cyanotoxins, while most cyanotoxins (with the exception of cylindrospermopsin) are primarily intracellular while the cell is intact. As shown with the Klamath River, long-distance transport of cyanobacterial cells and intracellular cyanotoxin can occur following planktonic HABs in reservoirs (Otten et al., 2015 [ATTMT 1 has reference entry]). As far as the statement about dilution of discharges, these are living organisms that grow, reproduce, can act as source population, and for some taxa, change their buoyancy, not chemicals that can equally distribute within the water column.	Chapter 6, Surface Water Quality, in the Environmental Setting, Harmful Algal Blooms (HABs) section explains that cyanotoxins typically remain within cyanobacteria until the cells die or rupture. The comment seems to object to the HABs impact analysis indicating that if cyanobacteria and cyanotoxins were released from the reservoir they would be diluted when eventually discharged to the Sacramento River. This is a valid description of the fate of cyanobacteria and cyanotoxins if they are ever released, regardless of the fact that cyanobacteria grow, reproduce, alter their buoyancy, or may be transported long distances. It is valid because once releases are made, the releases would enter different receiving waters (e.g., TC Canal, CBD, Sacramento River) and experience dilution. Text has been added to the Environmental Setting, Harmful Algal Blooms section of Chapter 6 regarding overwintering of	Reviewed by Client	N/A

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				cyanobacteria and potential "seed" populations. This text addition does not change conclusions or impact determinations identified in the analysis.		
51120	64	10	Section 6.4, sub-section on HABs and Invasive Aquatic Vegetation Occurrence of HABs with elevated cyanotoxins (including Danger advisory levels) have occurred in California water bodies during winter (see, https://mywaterquality.ca.gov/habs/where/freshwater_events.html) and cells/toxins may occur in deeper waters.	The Environmental Setting, Harmful Algal Blooms section of Chapter 6, Surface Water Quality, notes that, in the Central Valley, most harmful algal blooms (HABs) occur in late spring through early fall but that HABs can also begin earlier in the year or continue year-round in some locations. Text in the impact analysis is consistent with this text.	Reviewed by Client	N/A
51120	64	11	Section 6.4, sub-section on HABs and Invasive Aquatic Vegetation Native and invasive aquatic plants can compete with cyanobacteria for light and nutrients. Actions to address aquatic plants should consider potential to alter conditions for cyanobacterial blooms as well.	Aquatic plant control as part of the Reservoir Management Plan will be focused on nonnative invasive species, as discussed in Appendix 2D, Best Management Practices, Management Plans, and Technical Studies. Control of these species is important because they can outcompete native species, have adverse effects on aquatic habitats,	Reviewed by Client	N/A

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				obstruct waterways and navigational channels, and block agricultural and municipal water intakes. Native aquatic plant species will not be targeted.		
51120	64	12	Section 6.4, sub-section on HABs and Invasive Aquatic Vegetation In addition to HAB advisory signage (when warranted), ongoing outreach efforts about potential HABs through general awareness signage and other communication media (e.g., social media, newsletters) would be helpful in increasing public awareness and potentially reducing HAB exposure.	In addition to water quality monitoring and implementation of the HABs action plan, a measure for general informational signage on HABs has been added to the Reservoir Management Plan in Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, of the Final EIR/EIS. Under this measure, general informational signage on HABs will be placed in visible locations around the reservoir, as well as at Peninsula Hills Recreation Area, Stone Corral Creek Recreation Area, boating kiosks, the day-use boat ramp, and/or parking areas. The signage will include basic information regarding what HABs are; how to recognize a bloom; the potential health effects of cyanotoxins; the common signs and symptoms of exposure to cyanotoxins; how to avoid recreational exposure to	Reviewed by Client	N/A

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				cyanotoxins; and information about the potential health risks to pets. All reservoir personnel will be made aware of the potential health risks of cyanotoxins and will be provided with the appropriate personal protective equipment, as needed, to reduce the potential for exposure to cyanotoxins. This text revision does not change any impact determinations or conclusions. Please refer to the response to comment 64-5 regarding adaptive management of the Reservoir Management Plan and the associated text addition to Appendix 2D of the Final EIR/EIS.		
51120	64	13	Section 6.4, sub-section on HABs and Invasive Aquatic Vegetation Some cyanobacteria taxa bloom in sub-surface layers during water body stratification and can then move to the surface with water body turnover.	This comment makes a statement regarding vertical bloom location and movement of some cyanobacteria taxa within a waterbody. The Authority and Reclamation acknowledge that cyanobacteria can form surface scums or accumulate below the water's surface. Text was added to the Harmful Algal Bloom subsection of the Reservoir Management Plan in Appendix 2D, Best Management Practices,	Reviewed by Client	N/A

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				Management Plans, and Technical Studies, for the incorporation of water sampling at multiple depths and locations in the vicinity of the I/O tower to assess cyanobacteria and cyanotoxin concentrations. This text addition does not change the conclusion or impact determination identified in the analysis..		
51120	64	14	Section 6.4, sub-section on HABs and Invasive Aquatic Vegetation Cyanobacterial cells can senesce and die-off with associated drop in dissolved oxygen at times other than late fall. There can be a seasonal succession as different taxa become dominant (Nwosu et al., 2021 [ATTMT 1 has reference entry]).	This comment makes a general statement regarding the timing of cyanobacterial senesce and die-off and seasonal succession and dominance. Clarifying text has been added to the discussion in Chapter 6, Surface Water Quality, for Impact WQ-2 indicating that a reduction of dissolved oxygen levels in the reservoir may be expected in late fall generally due to die-off of cyanobacteria and/or algae. This text addition does not change the conclusion or impact determination identified in the analysis..	Reviewed by Client	N/A
51120	64	15	Section 6.4, sub-section on HABs and Invasive Aquatic Vegetation	The Environmental Setting, Harmful Algal Blooms section in Chapter 6, Surface Water Quality, has been	Reviewed by Client	N/A

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			Some cyanobacteria taxa grow in water at cooler temperatures (including under ice) so, the 66°F minimum noted is not applicable across all water bodies and all cyanobacteria taxa.	revised in the Final EIR/EIS to note that some cyanobacterial species can tolerate cooler water temperatures. This text addition does not change the conclusion or impact determination identified in the analysis.		
51120	64	16	Section 6.4, sub-section on HABs and Invasive Aquatic Vegetation Potential transport of cyanobacterial cells or cyanotoxins in aerosols and human nasal exposure as shown in Florida (Schaefer et al., 2020 [ATTMT 1 has reference to entry]) could extend potential HAB impacts beyond the reservoir.	The commenter indicates that cyanobacteria/cyanotoxins could have impacts beyond the reservoir via aerosolization. Human exposure to cyanotoxins via aerosol, as well as other potential exposure pathways, is discussed in Chapter 27, Public Health and Environmental Hazards.	Reviewed by Client	N/A
51120	64	17	Section 6.4, sub-section on HABs and Invasive Aquatic Vegetation Response of cyanobacteria to water flow increases are specific to type (planktonic or benthic) and taxa of cyanobacteria. In addition, increased flow could flush cyanobacteria cells into downstream areas where potential impacts could occur.	The comment is not clear what text is being referenced in the harmful algal blooms (HABs) impact analysis regarding flow. It is assumed the reference is to the discussion for the Yolo Bypass and the Delta, where text indicates that habitat releases from Sites Reservoir to Yolo Bypass would not be expected to result in increases in HABs in the Delta, in part because	Reviewed by Client	Lehman, P., K. Marr, G.L. Boyer, S. Acuna, and S.J. Teh. 2013. Long-term trends and causal factors associated with Microcystis abundance and toxicity in San

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				existing flows in the northern Delta would be high enough to prevent the formation of HABs. The response of cyanobacteria to water flow increases is specific to the type of cyanobacteria (planktonic or benthic) and taxa. Microcystis are the most common cyanobacteria found in blooms in the Delta, and generally low flows (low turbulence) and long hydraulic residence times are two of the primary environmental variables favoring Microcystis blooms in the Delta (Lehman et al. 2013, Berg and Sutula 2015). Generally, benthic mats occur under lower flow conditions (California North Coast Regional Water Quality Control Board 2022). While increased flow could flush cyanobacterial cells into downstream areas, it would be speculative to say that this would result in increased blooms in those downstream areas, given the multiple variables that influence HABs (e.g., higher water temperatures, greatly reduced flows) to create conditions conducive to blooms can be site-specific.		Francisco Estuary and implications for climate change impacts. Hydrobiologica 718: 141-158. Berg, M., and M. Sutula. 2015. Factors Affecting Growth of Cyanobacteria with Special Emphasis on the Sacramento-San Joaquin Delta. August. Prepared for: The Central Valley Regional Water Quality Control Board and The California Environmental Protection Agency State Water Resources Control Board. Technical Report 869. August 2015.

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						Available: https://amarine.com/wp-content/uploads/2018/01/Cyano_Review_Final.pdf. California North Coast Regional Water Quality Control Board. 2022. Benthic Cyanobacteria and Cyanotoxin Monitoring in Northern California Rivers, 2016-2019. January. Freshwater Harmful Algal Bloom (FHAB) Monitoring and Response Program. Available: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://

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						www.waterboards.ca.gov/northcoast/water_issues/programs/swamp/pdf/20220208_Final_North_Coast_Benthic_Cyano_Report_2016-2019_ADA.pdf. Accessed: July 15, 2022.
51120	64	18	Section 6.4, sub-section on HABs and Invasive Aquatic Vegetation The HAB portal incident map only provides voluntarily reported HABs. Absence of reported HABs from Yolo Bypass to that map should not be interpreted as a lack of HAB occurrence. Direct contact with CDFW Wildlife Area or Yolo Basin Foundation staff about observations or monitoring for HABs would be potentially helpful in clarifying this.	Text was added to Chapter 6, Surface Water Quality, of the Final EIR/EIS noting that, as part of the Yolo Bypass Fish Monitoring Program, Microcystis has been observed in the Yolo Bypass, but no bloom sightings were reported (Interagency Ecological Program et al. 2021). This text does not change the conclusion or impact determination identified in the analysis. The text in Chapter 6 acknowledges that that per the voluntary reports database of harmful algal blooms there are no reports of HABs in Yolo Bypass.	Reviewed by Client	Interagency Ecological Program, C. Pien, J. Adams, and N. Kwan. 2021. Interagency Ecological Program: Zooplankton catch and water quality data from the Sacramento River floodplain and tidal slough, collected by the Yolo Bypass Fish Monitoring

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						Program, 1998-2018 ver 2. Environmental Data Initiative. Available: https://doi.org/10.6073/pasta/baad532af96cba1d58d43b89c08ca081. Accessed: July 26, 2022.
51120	72	91	Contradictory mitigation example: Fish contaminated with bioaccumulated mercury would have disastrous impacts on humans, raptors and the fish themselves. Releasing water from high in the reservoir as a mitigation to avoid high mercury concentrations deep in the water is contradicted by the mitigation suggested for avoiding contaminating reservoir releases with HABs that are likely to form in that upper water levels.	Mitigation for potential methylmercury impacts is described under Mitigation Measure WQ-1.1 and is focused on reducing the methylation of mercury in Sites Reservoir. Implementation of this mitigation measure would minimize potential methylmercury impacts on fish, raptors, and humans. Please refer to Master Response 4, Water Quality, for a discussion regarding the use of the I/O tower to control releases of water quality constituents, which would control releases of water quality constituents, including cyanotoxins and methylmercury, by selective use of the multiple tiers in	Reviewed by Client	N/A

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				the tower. Because presence of harmful algal blooms (HABs)/cyanotoxins would be the only reason for releasing water from deeper in the reservoir, potential conflicts with regard to I/O tower tier selection to avoid releasing multiple water quality constituents of concern would not occur unless HABs/cyanotoxins were present at the I/O tower. If HABs/cyanotoxins were present at the I/O tower at the same time relatively high metal concentrations (including methylmercury) or water too cold for agriculture was deep in the reservoir, then there might be no I/O tower tier available for discharging relatively high-quality water. However, as described in Master Response 4, this scenario would be uncommon and additional measures would protect against the consequences of such a scenario. Please refer to Chapter 27, Public Health and Environmental Hazards, regarding the analysis for potential impacts on public health related to		

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				methylmercury bioaccumulation in fish. In addition, Chapter 11, Aquatic Biological Resources, discusses the effects on special-status fish species of the potential increase in mercury in the Delta due to Project operation. Text regarding effects of methylmercury bioaccumulation in fish on bald eagle was added to Chapter 10, Wildlife Resources, of the Final EIR/EIS. The text additions do not change the impact determinations or conclusions in that chapter.		
51120	77	39	ATTMT 1. Chapter or Appendix - Section: Chapter 6 - Section 6.3.2.5, Water Temperature. Page(s): p. 6-34. Comment and Recommendations: Model limitations may obscure the magnitude of the Proposed Project's temperature impacts to the Sacramento River. The Sites reservoir temperature model does not include inflows or outflows for Funks Creek or Stone Corral Creek. It is assumed that the reservoir will stratify as a typical Northern California Reservoir, but the pump outlet location and flat topography (higher winds) may lead	Extensive modeling showing reservoir stratification has already been performed. The volume of inflow from Stone Corral and Funks Creeks is small, estimated to be a combined average of 14 TAF per year (TAF/yr), and is unlikely to substantially affect water temperature in Sites Reservoir. The CE QUAL W2 model was used to simulate water temperatures in Sites Reservoir, as described in Chapter 6, Surface Water Quality, and Appendix 6D, Sites Reservoir Discharge Temperature Modeling. These simulations incorporate wind	Reviewed by Client	N/A

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			to a well-mixed reservoir. An example from another "off-channel" storage project, the San Luis Reservoir Draft Resource Management Plan (2012, p. 2-19) states "Because of constant pumping and mixing of its water, San Luis Reservoir does not typically develop a thermocline." CDFW recommends further analysis on the Proposed Project's stratification potential.	measurements and consider the shape of the reservoir. The wind values were based on measurements collected at the California Irrigation Management Information System (CIMIS) station near the City of Durham, approximately 35 miles east of the reservoir site. These model results indicate that the reservoir would be stratified during all but the coldest months. Simulated temperature profiles shown in Master Response 4, Water Quality, illustrate the expected temperature stratification. Pumping at Sites Reservoir would not be constant. Pumping would be used to fill the reservoir only during periods of excess flow in the Sacramento River, and releases for water supply would occur later.		
51120	77	40	ATTMT 1. Chapter or Appendix - Section: Chapter 6 - Section 6.3.2.5, Water Temperature. Page(s): p. 6-34. Comment and Recommendations: The RDEIR/SDEIS's temperature modeling does not consider agricultural runoff, which may increase the solar radiation	As described in Chapter 32, Other Required Analyses, the Project would increase water supply reliability during Dry and Critically Dry Water Years. Increased reliability may allow agricultural users to make different decisions than they otherwise would	Reviewed by Client	N/A

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			potential of the discharged water. Warm releases from the Proposed Project are targeted for rice farming, and this water will warm further on the rice fields, which presumably will be returned to the Yolo Bypass and/or Sacramento River. This has the potential to impact water quality in the Yolo Bypass and Sacramento River through reductions in dissolved oxygen and increases in water temperature. CDFW recommends that the FEIR/FEIS include an analysis of the effects of agricultural runoff, resulting from Project operations, on dissolved oxygen levels and water temperature.	(e.g., grow crops more consistently on the same agricultural acreage and reduce the need to fallow land in drought years, change the cropping pattern). Surface water deliveries from Sites Reservoir storage may also be used to avoid irrigation with groundwater. As shown in the table titled Sites Reservoir Agricultural Deliveries Compared to Total Agricultural Deliveries in Chapter 32, the estimated percent increase in total agricultural deliveries would be small. Consequently, it is unlikely there would be a substantial increase in total agricultural acreage, and agricultural runoff is not expected to increase under Project conditions. Furthermore, agricultural runoff is currently regulated by the existing Irrigated Lands Regulatory Program, which protects water quality.		
51120	77	43	ATTMT 1. Chapter or Appendix - Section: Chapter 6 - Impact WQ-2, Violate any Water Quality Standards or Waste Discharge Requirements or Otherwise Substantially Degrade Surface Water Quality During	The North Delta Flow Action studies were reviewed and considered in the analysis in the RDEIR/SDEIS. It is acknowledged in Chapter 6, Surface Water Quality, that dissolved oxygen (DO) levels in the Yolo Bypass may be	Reviewed by Client	N/A

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			Operation. Page(s): p. 6-72. Comment and Recommendations: The RDEIR/SDEIS states that "Sites Reservoir releases to the Yolo Bypass would not be expected to violate water quality standards or waste discharge requirements or otherwise substantially degrade water quality in Yolo Bypass . . . With regard to . . . [Dissolved Oxygen] DO" (p. 6-72). CDFW disagrees with this conclusion as DWR's recent synthesis report for the North Delta Food Subsidy study from 2013-2019 showed DO levels in the Yolo Bypass Toe Drain at Lisbon Weir were reduced during the flow pulse in all years (Davis et al. 2021). As indicated in Appendix 6A, the CBD and Knights Landing Ridge Cut (KLRC) are both on the 303(d) List of Impaired Water Bodies for DO. Conveying water through the CBD and KLRC has the potential to transport low-DO water downstream into the Yolo Bypass. The proposed Yolo Bypass habitat flows will occur within a three-month period between August-October, potentially impacting DO levels in the Yolo	temporarily affected by habitat releases during the release period (Impact WQ-2) like what occurred during the 2018 and 2019 North Delta Flow Action (aka North Delta Food Subsidy) studies. Additional analysis has been added to Chapter 6 (Impact WQ-2) of the Final EIR/EIS explaining that there appears to be a general correlation between flows in Yolo Bypass and DO levels (as measured in the Yolo Bypass Toe Drain near Lisbon Weir), which is apparent in years when the North Delta Food Subsidy studies have been run (e.g., 2018 and 2019) and in non-managed flow years (e.g., 2020). In addition, text has been added to Chapter 6 noting that DO levels in non-managed pulse flow years also temporarily drop below the 5.0 milligrams per liter (mg/L) Delta DO objective. DO levels would not be expected to be substantially different from current conditions during the habitat releases from Sites Reservoir. The additional analysis included in Chapter 6 supports the conclusions previously described for DO in the		

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			Bypass during the entire release period. Releases for Storage Partners along the CBD, Yolo Bypass, and North Bay Aqueduct may also impact DO levels. CDFW recommends providing additional analysis on the potential impacts of transporting water through the Yolo Bypass on DO levels. CDFW suggests including relevant findings from the 2013-2019 North Delta Food Subsidy study related to DO.	RDEIR/SDEIS and does not change conclusions or impact determinations. The potential effects on special-status fish species (specifically delta smelt) that may result from a Project-related reduction in DO in the Yolo Bypass is discussed in Chapter 11, Aquatic Biological Resources. There is currently one Storage Partner who would potentially receive a relatively small delivery from the North Bay Aqueduct via the Sacramento River. Sites Reservoir may have low DO levels, particularly if releases were made from the hypolimnion. However, as discussed in Chapter 6, water would become aerated upon release, and releases would generally contribute to only a small fraction of the flow in the Sacramento River. Water from Sites Reservoir for this delivery would not be routed through Yolo Bypass. There are no Storage Partners expected to take deliveries along the Colusa Basin Drain or Yolo Bypass.		

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51120	77	44	ATTMT 1. Chapter or Appendix - Section: Chapter 6 - Impact WQ-2, Sites Reservoir. Page(s): pp. 6-88, 89. Comment and Recommendations: The RDEIR/SDEIS considers that the concentration of cyanotoxins would depend on the magnitude of the bloom, but the assumptions listed in the RDEIR/SDEIS for considering causes of concern are overly simplistic. Microcystis has a pelagic and benthic state. Microcystins can be found in water, sediment, and biological organisms. Latour et al. 2007 found benthic Microcystis colonies at 70 centimeters deep in sediment, with an approximate age of 14, suggesting Microcystis and it's toxin can persist in lake sediments. Biodegradation does occur but it depends on other conditions such as adsorption rate, temperature, and pH. A strain of microcystin, Microcystin-LR, has high affinity to organic matter (Wu et al. 2011; Pawlick and Kornijo et al. 2010). Dissolved microcystins can adsorb to suspended particulate matter as a pathway of transport to downstream regions, including marine	The Authority and Reclamation acknowledge the complexities of the environmental fate of cyanotoxins and of cyanobacteria in general in Chapter 6, Surface Water Quality. Text highlighting some of these complexities has been added to the Environmental Setting, Harmful Algal Blooms section of Chapter 6 including clarification on biodegradation and photodegradation rates, sediment adsorption of cyanotoxins in the context of fate and transport, "overwintering" of some species of cyanobacteria in or on sediment, and additional general information on benthic cyanobacteria. This text does not change the conclusion or impact determination identified in the analysis. Cyanobacteria are essentially ubiquitous in freshwater and marine environments but do not always result in adverse environmental or public health effects simply due to their presence. Similarly, the presence of cyanotoxins in water, suspended sediment, and/or bottom sediment does not necessarily indicate that there would be an overall adverse	Reviewed by Client	N/A

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			environments. (Liu et al.2008). Bivalves, or clams, can have long depuration phase of removing toxins as found in Miller et al. 2010 and Gibble et al. 2016. CDFW recommends that the Proposed FEIR/FEIS acknowledge the complexities of cyanobacteria as being both pelagic and benthic. Cyanotoxins are extremely complex and while they may biodegrade and photodegrade, they can be present in water, suspended sediment, bottom sediment, and biological organisms.	effect on water quality, public health, aquatic resources, or wildlife.		
51120	77	45	ATTMT 1. Chapter or Appendix - Section: Chapter 6 - Impact WQ-2, Yolo Bypass and The Delta. Page(s): p. 6-90. Comment and Recommendations: Aulacoseira is a diatom, which is considered a good food source in general. However, results from Jungbluth et al. 2020, suggests Aulacoseira may not serve as an accessible food source. The North Delta Food Subsidy Synthesis (Davis et al. 2021) found the flow action in 2016 significantly lowered biovolume (Figure 4-1 and Table 4-2). While	The comment is referring to text in the Impact WQ-2 discussion for Yolo Bypass and the Delta, which notes that in the 2016 North Delta Flow Action study, a phytoplankton bloom (*Aulacoseira granulata*) was observed following the pulse flow. The text has been revised in the Final EIR/EIS to highlight that during the 2018 and 2019 North Delta Food Subsidy studies, there was no apparent increase in average biovolume of cyanobacteria between the pre- and post-agricultural water pulse in the	Reviewed by Client	Davis, B., J. Adams, M. Bedwell, A. Bever, D. Bosworth, T. Flynn, J. Frantzich, R. Hartman, J. Jenkins, N. Kwan, M. MacWilliams, A. Maquire, S. Perry, C. Pien, T. Treleaven, H. Wright, and L. Twardochleb. 2022. North Delta

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			Aulacoseira was detected in downstream stations, it is unlikely that it was transported from the north due to the flow action since Aulacoseira was observed at very low levels at the upstream stations. Frantzich et al. 2021 conclude phytoplankton taxa were not significantly different before, during, and after the flow pulse.	Yolo Bypass or in the lower Sacramento River except in the Toe Drain at Road 22 in the 2019 study (Davis et al. 2022). This text revision does not change conclusions or impact determinations identified in the analysis.		Food Subsidy Synthesis: Evaluating Flow Pulses from 2011-2019. Draft. March. Department of Water Resources, Division of Integrated Science and Engineering.
51120	77	46	ATTMT 1. Chapter or Appendix - Section: Chapter 6 - Impact WQ-2, Violate any Water Quality Standards or Waste Discharge Requirements or Otherwise Substantially Degrade Surface Water Quality During Operation. Page(s): p. 6-90. Comment and Recommendations: The RDEIR/SDEIS states that "according to the [Harmful Algal Blooms] HABs voluntary reports database (California HABs Portal maintained by the California Water Quality Monitoring Council; State Water Resources Control Board 2021a) HABs have not been reported in Yolo Bypass in previous years." (p. 6-90) Microcystis	Upon review of data sets referenced by the comment, the Authority and Reclamation acknowledge that Microcystis has been observed at some monitoring stations in the north Delta and at the screw trap in the Toe Drain in Yolo Bypass. However, the presence of toxic cyanobacteria, in this case Microcystis, is not the same as the presence of harmful algal blooms (HABs). There was no notation of any Microcystis bloom sightings in the Yolo Bypass in the California Department of Water Resources' Yolo Bypass Fish Monitoring Program during the period 1999–2018 (Interagency Ecological Program et al.	Reviewed by Client	California Department of Fish and Wildlife. 2022. Fall Midwater Trawl Survey End of Season Report: 2021. February 8. Available: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentId=199043. Accessed: August 1, 2022. California Department of

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			has been observed in the north delta and Yolo Bypass areas in the datasets from the following sources: DWR's Yolo Bypass Fish Monitoring Program; DWR's North Central Region Office dataset; CDFW's Fall Midwater Trawl Survey; and CDFW's Summer Townet Survey. The California HABs portal currently is missing all or most of Interagency Ecological Program data. CDFW suggests that the Proposed Project incorporates this information into their impact analysis in the FEIR/FEIS.	2021). However, at the screw trap in the Toe Drain, the Microcystis "visual rating" was "low" (i.e., "widely scattered colonies") multiple days in the months of July, August, and September 2014 and on one day at the end of July 2015. In the 2021 Fall Midwater Trawl (FMWT) September through mid-December sampling period, based on visual assessment rankings of Microcystis spp., Microcystis density was ranked "absent" in the north Delta along the Sacramento River as far downstream as approximately Rio Vista except in September around Rio Vista, where density was ranked "low" (i.e., "visible but widely scattered Microcystis colonies") (California Department of Fish and Wildlife 2022). In the 2020 FMWT, Microcystis was absent in the same north Delta locations along the Sacramento River down to approximately Rio Vista for approximately the same sampling period (California Department of Fish and Wildlife 2021). While the text in Chapter 6, Surface Water Quality, refers to voluntary reports of HABs,		Fish and Wildlife. 2021. Fall Midwater Trawl Survey End of Season Report: 2020. July 28. Available: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentId=193627&inline. Accessed: August 1, 2022. Interagency Ecological Program, C. Pien, J. Adams, and N. Kwan. 2021. Interagency Ecological Program: Zooplankton catch and water quality data from the Sacramento River floodplain and tidal slough, collected by the

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				this reference is valid and informative to the analysis. Text has been added to Chapter 6 to note that, via the Yolo Bypass Fish Monitoring Program, Microcystis has been observed in the Yolo Bypass, but no bloom sightings were reported as part of this monitoring effort. This text does not change conclusions or impact determinations identified in the analysis.		Yolo Bypass Fish Monitoring Program, 1998-2018 ver 2. Environmental Data Initiative. Available: https://doi.org/10.6073/pasta/baad532af96cba1d58d43b89c08ca081. Accessed: July 26, 2022.
51120	77	47	ATTMT 1. Chapter or Appendix - Section: Chapter 6 - Pesticides. Page(s): p. 6-91, 92. Comment and Recommendations: The RDEIR/SDEIS states that "there is still some uncertainty about whether augmented flows through the Yolo Bypass could cause increases in pesticide levels in the bypass that might be detrimental to fish or could cause increases in pesticide levels in plankton within the bypass that may provide food for fish in the Cache Slough Complex" (p. 6-91,92). CDFW agrees that there is uncertainty	There is evidence that flow pulses through the Yolo Bypass could increase phytoplankton abundance downstream of the Yolo Bypass and food supply for fish in the North Delta, including delta smelt. This conclusion is based on evaluation of flow pulses that occurred through the Yolo Bypass during 2011 through 2019 as described in Chapters 6 and 11. The magnitude of effect has been variable and the methodology for maximizing primary production has not been determined. There is some concern that flow pulses could	Reviewed by Client	Davis, B., J. Adams, M. Bedwell, A. Bever, D. Bosworth, T. Flynn, J. Frantzich, R. Hartman, J. Jenkins, N. Kwan, M. MacWilliams, A. Maquire, S. Perry, C. Pien, T. Treleaven, H. Wright, and L. Twardochleb. 2022. North Delta Food Subsidy

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			surrounding this issue but is concerned that the RDEIR/SDEIS's pesticide impact analysis is based on a qualitative rationale that only considers why "Sites Reservoir releases through the Yolo Bypass could have a limited effect on pesticides in the Delta" (p. 6-91). There is evidence to suggest that increased flows through the Yolo Bypass could increase pesticide concentrations and that exposure to these pesticides could adversely impact aquatic biological resources. Davis et al. 2021, found significantly higher pesticide concentrations in water and zooplankton during flow pulses (Figure 3-60 and Figure 3-62). In some cases, pesticides detected exceeded EPA aquatic life benchmarks for chronic and acute toxicity. Additionally, synergistic or additive effects of pesticides, along with other stressors, may have a significant adverse impact on biological aquatic resources. 11A.1.8.4 of the RDEIR/SDEIS states that "sturgeon are at risk of harmful accumulations of toxic pollutants in their tissues,	relocate contaminants and reduce the expected benefits of the pulses (e.g., Davis et al. 2022:2,3). The Chapter 6, Surface Water Quality, analysis of pesticide effects associated with flow augmentation through the Yolo Bypass was based in part on Orlando et al. (2020). This report describes that pesticides could increase at some locations in response to flow pulses. Information from a draft Davis et al. (2022) report has been added to Chapter 6. The Davis et al. (2022) report documents temporarily increased concentrations of pesticides during flow pulses, but it also describes reasons why the flow pulses from Sites Reservoir might not cause substantial detrimental pesticide effects when compared to current conditions. Ultimately, the EIR/EIS determines that pesticide effects associated with flow augmentation through the Yolo Bypass could be significant without implementation of Mitigation Measure WQ-2.2, that implementation of the mitigation		Synthesis: Evaluating Flow Pulses from 2011-2019. Draft. March. Department of Water Resources, Division of Integrated Science and Engineering. Orlando, J.L., De Parsia, M., Sanders, C., Hladik, M., and Frantzich, J. 2020. Pesticide concentrations associated with augmented flow pulses in the Yolo Bypass and Cache Slough Complex, California: U.S. Geological Survey Open-File Report 2020–1076, 101 p., https://doi.org/

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			especially pesticides such as pyrethroids and heavy metals such as selenium and mercury (Israel and Klimley 2008; Stewart et al. 2004)" (p. 11A-56). Additionally, Fong et al. 2016, noted that Delta Smelt populations and other pelagic organisms are in decline likely due to the effects of multiple stressors. CDFW recommends that the FEIR/FEIS's impact analysis consider the potential impacts that may occur should the Proposed Project operations increase pesticide levels through the Yolo Bypass. CDFW also recommends that the FEIR/FEIS consider adding a section to the Water Quality chapter discussing impacts that could occur as a result of synergistic effects from multiple stressors related to water quality.	measure would reduce or minimize effects associated with releasing water to the Yolo Bypass related to pesticides, and that impacts would be less than significant. Synergistic effects are not well understood, and a description of the current state of knowledge regarding synergistic effects would not add to the body of information presented in Chapter 6 regarding flow augmentation in the Yolo Bypass and potential net benefit to fish. Possible synergistic and additive effects of pesticides and other stressors (e.g., temperature) are difficult to quantify based solely on concentrations. There is much uncertainty around these topics. The requirement for net benefit to fish described in Mitigation Measure WQ-2.2 would allow flow to be released in the Yolo Bypass even if pesticides increase temporarily at some locations, provided that there is a net benefit. Assessment of net benefit would, by definition, need to consider synergistic effects of pesticides as described in Mitigation		10.3133/ ofr20201076.

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				Measure WQ-2.2. Ultimately, net benefit might need to be determined with experiments such as the enclosure experiments that were attempted with delta smelt during the 2019 flow pulse (Davis et al. 2022:264).		
51120	78	70	Chapter 6, Page 6-56 - It is not clear that the proposed mitigation measures to address water quality impacts that rely on plans that have not yet been developed will be adequate to mitigate potential water quality impacts, including impacts associated with harmful algal blooms. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	Please see Master Response 4, Water Quality, for more information regarding the water quality analysis contained in Chapter 6, Surface Water Quality. The mitigation measures described in Chapter 6 are adequate to reduce impacts and explain in Chapter 6 how the magnitude of the impacts would be reduced. Please refer to Master Response 4 for a discussion on the adequacy of the water quality mitigation measures identified in Chapter 6. With respect to HABs, the analysis in Chapter 6 explains why impacts from the Project are determined to be less than significant. A detailed monitoring and action plan is also included in Appendix 2D to further minimize impacts from HABs. With respect to	Reviewed by Client	State Water Resources Control Board. 2017b. Draft Staff Report for Scientific Peer Review for the Amendment to the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California, Mercury Reservoir Provisions – Mercury TMDL and Implementation Program for Reservoirs. April.

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				methylmercury, the analysis in Chapter 6 explains why impacts from the Project are determined to be significant; it then explains the specific mitigation actions that will be taken, which are mostly derived from research sited by the State Water Resources Control Board in the Draft Staff Report for Scientific Peer Review for the Amendment to the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California, Mercury Reservoir Provisions — Mercury TMDL and Implementation Program for Reservoirs (State Water Resources Control Board 2017b). The analysis in Chapter 6 explains why the effectiveness of the mitigation is uncertain, such that the impact is significant and unavoidable. With respect to metals impacts, the analysis in Chapter 6 explains why the impacts from the Project are determined to be significant, and it further provides a defined set of mitigation options to meet a specified performance standard - namely, reducing constituent levels to meet water		Available: https://www.waterboards.ca.gov/water_issues/programs/mercury/reservoirs/docs/peer_review/02_staff_report_scientific_peer_review.pdf. Accessed: May 4, 2022.

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				quality standards for the protection of aquatic life for metals for Stone Corral Creek, and prevention of net detrimental effects from metals and pesticides associated with moving CBD water through the Yolo Bypass (including a cessation of such flows if necessary) - to ensure that impacts are less than significant. The analysis and mitigation are adequate and comply with CEQA's requirements.		
51120	79	11	The EPA believes that the proposed mitigation measures to manage these water quality concerns [effects of mercury methylation in the proposed reservoir; evapoconcentration of aluminum, copper and iron; effects of algal blooms] would not be effective and, in many cases, would conflict with each other.	Please refer to Master Response 4, Water Quality, for a discussion regarding the use of the I/O tower to control releases of water quality constituents and the resolution of potential conflicts and regarding the adequacy of the water quality mitigation measures identified in Chapter 6, Surface Water Quality. Because presence of harmful algal blooms (HABs)/cyanotoxins would be the only reason for releasing water from deeper in the reservoir, potential conflicts with regard to I/O tower tier selection to avoid releasing multiple water quality constituents of concern would not occur unless	Reviewed by Client	N/A

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				HABs/cyanotoxins were present at the I/O tower. If HABs/cyanotoxins were present at the I/O tower at the same time relatively high metal concentrations (including methylmercury) or water too cold for agriculture was deep in the reservoir, then there might be no I/O tower tier available for discharging relatively high-quality water. However, as described in Master Response 4, this scenario would be uncommon and additional measures would protect against the consequences of such a scenario.		
51120	79	34	Many of the proposed mitigation measures would conflict with other measures meant to adaptively manage HABs, such as adding nitrate to stimulate algal growth or releasing water from the epilimnion (upper reservoir).	As discussed in Chapter 6, Surface Water Quality, Sites Reservoir operation would result in reservoir drawdown, reduced storage volume, and higher water temperatures from late spring through fall, particularly in Dry and Critically Dry Water Years. This would create favorable conditions for the initiation of HABs in the reservoir. If cyanobacteria and cyanotoxins were present in reservoir releases, potential downstream effects on water quality would not be	Reviewed by Client	N/A

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				expected because concentrations of cyanobacteria and cyanotoxins would be greatly diluted when eventually discharged into the Sacramento River, and cyanotoxins would undergo biodegradation and, to some degree, photodegradation. As described in Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, reservoir water chemistry would be managed according to methods proven feasible and effective at reducing mercury methylation by pilot tests undertaken in other mercury-impaired reservoirs, as determined by the State Water Resources Control Board’s program review at the conclusion of the Phase 1 pilot tests for the Statewide Mercury Control Program for Reservoirs. The addition of an oxidant, such as nitrate, may be considered. However, in considering any water chemistry management action, the benefits of such action at potentially reducing mercury methylation would be weighed against multiple factors, including other potential effects on water quality and reservoir operations.		

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				Please refer to response to comment 79-11 and Master Response 4, Water Quality, for a discussion regarding the use of the I/O tower to control releases of water quality constituents.		
51120	79	37	Recommendation: Consider actions under mitigation measure WQ-1.1 that would prevent or inhibit mercury methylation, such as minimizing the frequency of water surface fluctuations which are known to contribute to mercury methylation, or installation of oxygenation systems in the reservoir at construction to better enable hypolimnetic oxygenation. [Footnote 8: Statewide methylmercury control program for reservoirs factsheet. California Water Boards 2013. https://www.waterboards.ca.gov/water_issues/programs/mercury/reservoirs/docs/factsheet.pdf]	As described for Mitigation Measure WQ-1.1, multiple actions would be taken to reduce mercury methylation in Sites Reservoir. While it has been shown that water level fluctuations in reservoirs have been associated with increased methylmercury in fish, the State Water Resources Control Board and the Regional Water Quality Control Boards (Water Boards) do not recommend “muting water level fluctuations as an implementation option for reducing reservoir fish methylmercury levels because most California reservoirs are designed to empty and re-fill annually” (State Water Resources Control Board 2017b). Instead of requiring changes in reservoir water level fluctuations as a means to reduce mercury methylation, the Water Boards	Reviewed by Client	State Water Resources Control Board. 2017b. Draft Staff Report for Scientific Peer Review for the Amendment to the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California, Mercury Reservoir Provisions – Mercury TMDL and Implementation Program for Reservoirs. April. Available: https://www.water

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				recommend "respond[ing] to the effects of water level fluctuations." In addition, text has been added to Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, of the Final EIR/EIS to note that the Reservoir Management Plan (RMP) will continue to be revised throughout the operation of the reservoir. Revisions to the RMP will account for changes to operations, site-specific conditions, adaptive management actions and decisions, and future changes to regulations or methodologies for evaluating water quality constituents. Thus, additional actions to reduce methylmercury in the reservoir in the future may considered/implemented in consultation with regulatory agencies and other stakeholders. This text revision does not change conclusions or impact determinations identified in the analysis.		boards.ca.gov/water_issues/programs/mercury/reservoirs/docs/peer_review/02_staff_report_scientific_peer_review.pdf. Accessed: May 4, 2022.
51120	79	38	Recommendation:	Please see Master Response 4, Water Quality, which shows modeled reservoir temperature profiles under	Reviewed by Client	N/A

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			Provide information regarding the likelihood that Sites Reservoir would not thermally stratify due to low storage in a given year, limiting the ability to mitigate releases of methylmercury and other metals under mitigations measures WQ-1.1 and WQ-2.1	low storage conditions and describes how stratification relates to water quality. Stratification is expected for all but the coldest portions of the year. If stratification did not occur, the reservoir would be fully mixed and aerated, and metal/methylmercury concentrations would likely not be elevated at the bottom of the reservoir and, therefore, there would be no need to implement metal/methylmercury mitigation measures that depend on stratification. Master Response 4 also contains a discussion regarding the use of the I/O tower to control releases of water quality constituents.		
51120	81	13	Page 6-23 Selenium values from Stone Corral Creek near Sites are greater than that allowable in the San Joaquin Basin, for example, and could be more concentrated in first flush storm events. Values from Sites should be mitigated to ensure that they do not	As described in Chapter 6, Surface Water Quality, the Project would not affect the selenium load from Stone Corral and Funks Creeks, and these creeks are expected to contribute only a small percent of the water in Sites Reservoir (average of 14 TAF per year). In many instances, Sites Reservoir would cause selenium concentrations in the creeks downstream of the reservoir to be	Reviewed by Client	N/A

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			produce significant pollutant loadings downstream.	reduced, allowing the lotic (flowing water) criterion of 3.1 micrograms per liter (µg/L) (see table titled Metals Water Quality Standards in Chapter 6) to be met due to the dilution of the creek water with water from the Sacramento River present in Sites Reservoir.		
51120	81	22	Page 6-9 The discharge of salinity and nutrients to the Sacramento River due to Sites Reservoir construction and operations (on account of increases agricultural use, routing of the water through the Colusa Basin Drain, and brine springs, seeps and salt ponds in the reservoir footprint) should be included, along with metal and pesticide effects, in Mitigation Measure WQ-2.2.	The Project is not expected to have a significant effect on salinity and nutrients in the Sacramento River as a result of construction and operations, as described in Chapter 6, Surface Water Quality (Impacts WQ-1 and WQ-2). As described in Chapter 32, Other Required Analyses, the Project would increase water supply reliability during Dry and Critically Dry Water Years. Increased reliability may allow agricultural users to make different decisions than they otherwise would (e.g., grow crops more consistently on the same agricultural acreage and reduce the need to fallow land in drought years, change the cropping pattern). Surface water deliveries from	Reviewed by Client	N/A

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				Sites Reservoir storage may also be used to avoid use of groundwater for irrigation. As shown in the table titled Sites Reservoir Agricultural Deliveries Compared to Total Agricultural Deliveries in Chapter 32, the estimated percent increase in total agricultural deliveries would be small. Consequently, it is unlikely there would be a substantial increase in total agricultural acreage, and agricultural runoff is not expected to increase under Project conditions. Furthermore, agricultural runoff is currently regulated by the existing Irrigated Lands Regulatory Program, which protects water quality. Because the Project would not change the salt and nutrient load entering CBD from existing land use, the discharge of CBD loads to the Sacramento River would not increase as a result of the Project. The potential effects of the salt seeps that feed Salt Pond were evaluated in Chapter 6 for Impact WQ-2, and the effects were determined to be less		

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				than significant, due primarily to the relatively small volume of water emanating from the seeps.		
51120	81	23	Page 6-90 The statement "Releases from Sites Reservoir would generally have low to no concentration of pesticides and would therefore not degrade Sacramento River water quality" is not substantiated with monitoring or modeling data. The diversion of Sacramento River water through agricultural land use could cause an increase in pesticide and herbicide concentrations. For example, it's noted on page 6-91 that "There was some indication that the 2016 pulse of Sacramento River water reduced pesticide concentration at the upstream end of the Yolo Bypass, but it may have conveyed some pesticide downstream to the lower part of the bypass near Lisbon Weir." Unfortunately, the mitigation measure proposed won't reduce pesticide concentrations, but rather remove the environmental benefit of the flows	The statement that "Releases from Sites Reservoir would generally have low to no concentration of pesticides and would therefore not degrade Sacramento River water quality" is based on pesticide data. As described in Chapter 6, Surface Water Quality, measurements of pesticide concentrations available in the California Department of Pesticide Regulation's Surface Water Database (SURF) were considered in the analysis. The effect of the flow pulses on Yolo Bypass water quality is related more to water quality in CBD than water quality from Sites Reservoir. The evaluation of flow pulses through the Yolo Bypass relied on studies that evaluated movement of pesticide associated with North Delta flow action pulses through the Yolo Bypass. There is evidence that flow pulses through the Yolo Bypass could	Reviewed by Client	N/A

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			entirely: depending on the state of the science and fish needs (including water quality impacts), flows would cease if there were no net benefit.	increase phytoplankton abundance downstream of the Yolo Bypass and food supply for fish in the North Delta, including delta smelt. This conclusion is based on evaluation of flow pulses that occurred through the Yolo Bypass during 2011 through 2019 as described in Chapters 6 and 11. The magnitude of effect has been variable and the methodology for maximizing primary production has not been determined. There is some concern that flow pulses could relocate contaminants and reduce the expected benefits of the pulses (e.g., Davis et al. 2022:2,3). Please see response to comment 81-22 regarding agricultural runoff and the lack of the ability of operation of the Project to affect existing agricultural runoff. The Project is not responsible for mitigating preexisting pesticide loads, and Mitigation Measure WQ-2.1 would minimize, avoid, or reduce the potential pesticide loads associated with operation of the Project.		

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51600	68	1	The Revised Draft Environmental Report/Supplemental Draft Environmental Impact Statements (RDEIR/SDEIS) fail to disclose important and highly adverse environmental impacts to fishery resources. The RDEIR/SDEIS fail to display the magnitude, frequency and duration of hydrological differences between the without-the-project and the with-the-project (alternatives) environmental conditions to allow comprehending fishery impacts. The plotted summaries of the project-occasioned hydrological differences presented obfuscate short-term differences during fish-habitat-critical periods.	Hydrologic model outputs are presented several ways to allow full viewability by the reader. Monthly flow exceedance plots are provided for several locations, which display every modeled data point for all alternatives for the location. Tables showing the probability of exceedance of modeled flows at 10% intervals (10% to 90%) are also provided for each month, alternative, and location. Mean values for each water year type and for the full 82-year CALSIM period of record are also provided by month for each alternative and location. Finally, differences between each alternative and the No Project Alternative in exceedance at a 10% interval, mean value by water year type, and mean of the full simulation period are provided for each month and location. Instead of relying solely on differences in flows between the No Project Alternative and the Project, the EIR/EIS includes a number of biological models and biology-based	Addressed by ICF	N/A

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				analyses to assess flow-related effects on fishery resources (e.g., IOS, OBAN, SALMOD, redd dewatering analysis, juvenile stranding analysis, spawning and juvenile rearing habitat availability analyses, emigrating juvenile flow-survival analysis). These models and analyses provide a better assessment of how the various aspects of flow can affect the biology of fish. Please refer to Chapter 11, Aquatic Biological Resources, of the Final EIR/EIS for the full scope of these multiple analyses, results, and impact determinations.		
51600	68	4	Current fishery habitat conditions in the Sacramento River from Keswick Dam downstream, in the Sutter and Yolo bypasses, and in the Sacramento-San Joaquin estuary are bleak and worsening. Native, beneficial non-native, estuarine and anadromous fish populations are in drastic decline with extinction probable for some species. While technically there is unappropriated water in the upper Sacramento River,	The EIR/EIS describes the current (2020 for the Final EIR/EIS) baseline conditions and status of aquatic resources. Appendix 11P, Riverine Flow-Survival, provides analyses of divertible flows. Master Response 2, Alternatives Description and Baseline, describes the operation of the Project and when diversions would occur, including refinements made to the Wilkins Slough flow criterion in the Final EIR/EIS. Master Response 5, Aquatic Biological Resources, further	Addressed by ICF	N/A

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			much of the time there is none surplus to environmental needs.	discusses the analyses of the Project's effects on Aquatic Resources described in Chapter 11 of the Final EIR/EIS, as compared to the No Project Alternative. Please refer to the Baseline and Special-Status Species section of Master Response 5 for an explanation of why analyses conducted pursuant to CEQA and NEPA may reasonably conclude that impacts are less than significant or not substantially adverse even though fishery habitat conditions or populations may be declining under baseline conditions, as long as the Project does not worsen those.		
51600	68	8	If Sites is constructed and operated as proposed the Sacramento River and the Sacramento-San Joaquin Rivers estuary inflow and outflow will be further diminished and aquatic resources further significantly diminished. Meeting a horribly un-protective standard is not a basis for claiming a no-impact assessment.	Please see Master Response 2, Alternatives Description and Baseline, which addresses the refinements made to Project operations, including changes to the Wilkins Slough flow criterion in the Final EIR/EIS that further restricts diversions. Chapter 11, Aquatic Biological Resources, of the Final EIR/EIS and Master Response 5, Aquatic Biological Resources, describe the adequacy of the thresholds and criteria used in the	Addressed by ICF	N/A

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				analyses that support the findings of no significant impact. Please refer to Master Response 5 for a discussion of flow impacts and mitigation measures.		
51600	72	46	The Alleged "Environmental Benefits" From This Project Are Vague and Not Substantiated. "Environmental benefits" and "environmental purposes" of the Project used in part to justify the Project are vague and largely undefined. Insofar as any of those benefits accrue to in-river conditions and aquatic species (such as Chinook salmon and steelhead) in the Sacramento River, only Alternative 2 makes provisions for returning waters captured from the Sacramento in the winter directly back into the Sacramento (presumably in the summer and fall) to provide cold water benefits for ESA-listed winter run Chinook, spring-run Chinook and steelhead, and also non-listed but declining as well as economically valuable harvested fall-run Chinook in	Please refer to Master Response 5, Aquatic Biological Resources, for discussions regarding the benefits of the Project, including clarifications about the potential to provide cold-water benefits under all alternatives (not just Alternative 2) through exchanges with Storage Partners. Note that the Project is required to and will comply with existing standards for the Sacramento River. Water temperatures in the Sacramento River are and will continue to be managed through water releases from Shasta and Keswick Dams in accordance with the State Water Resources Control Board water rights and water quality criteria related to the CVP and SWP operations under the Project, as well as relevant biological opinions. For instance, any decision by Reclamation to provide additional temperature	Addressed by ICF	N/A

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			the river. In any event, those "environmental purposes" should be spelled out as "including providing cold water within the Sacramento River to help meet the needs of the Sacramento-Shasta Temperature Management Plans, D-1641 and WRO 90-5 and other relevant water quality standards, and to prevent temperature-dependent mortalities for anadromous salmonids and other aquatic species as specified in those plans and in any later Biological Opinions for ESA and/or CESA-listed aquatic species." Protecting ESA-listed species is not optional, and rather is legally a higher priority for water use than any conceivable irrigation use, whether by contract or regular water right. The USBR and State must protect these species and abide by relevant Biological Opinions to the best of what is physically possible.	control through the use of Shasta Lake under Project conditions would be required to be made in consultation with Reclamation's existing temperature task group and be subject to approval by the Central Valley Regional Water Quality Control Board, pursuant to Water Rights Order 90-5, as is currently the case. Please also refer to Master Response 5, Aquatic Biological Resources, for discussions of CEQA/NEPA requirements as they pertain to special-status fish species and how these planning processes and standards differ from the permitting ones (e.g., Biological Opinions).		
51600	78	86	Chapter 11, page 11-2	The figure titled Aquatic Biological Resources Study Area in Chapter 11, Aquatic Biological Resources, has	Addressed by ICF	N/A

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			Lake Berryessa appears to be incorrectly labeled Stone Corral Creek in Figure 11-1. [Commenting Water Board or Section within the State Water Board: WQ & Public Trust section]	been revised in the Final EIR/EIS per the comment.		
51600	78	89	Chapter 11, page 11-107 "Table 11D-19" in Chapter 11, page 107, should be changed to "11D-18." [Commenting Water Board or Section within the State Water Board: Bay-Delta]	The table reference in Chapter 11, Aquatic Biological Resources, has been revised in the Final EIR/EIS per the comment.	Addressed by ICF	N/A
51600	81	10	Page 32-17 In Table 32-8 the Water Quality and Fish Impacts (for Winter, Spring, and Fall Chinook Salmon and Steelhead) are determined under NEPA to have substantial adverse effects without mitigation. With mitigation, the water quality impacts are partially improved to an adverse effect determination, but the Fish Impacts are fully mitigated to no effect or no adverse effect determinations. The single	In the Final EIR/EIS, both the Wilkins Slough flow criteria and Bend Bridge pulse flow protection criteria have been revised to be more restrictive and reflect the most recent and best available science, as described in Master Response 2, Alternatives Description and Baseline. The analyses, results, and impact determinations as they pertain to aquatic biological resources have been updated accordingly in Chapter 11, Aquatic Biological Resources, of	Addressed by ICF	N/A

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			mitigation measure proposed, FISH-2.1, is a useful operational criteria, but limited since it only maintains historic mean flow at Wilkins Slough for a quarter of the year for out migrating juvenile Chinook salmon. This limited measure is not significant enough to reduce the impacts of the project's increases in water withdrawals from the Sacramento River that result in a reduction in winter-run spawning area in Critically Dry Water Years, 8-10 days of increased water temperatures at Hamilton City above Salmon Juvenile Rearing and Emigration targets, and an over 100 acres estimated reduction in Mean Daily January through April Inundated Habitat (Acres <1 Meter Deep) for Juvenile Salmonids in the Yolo Bypass. Mitigation measures to address additional habitat, time periods, and life stages are needed.	the Final EIR/EIS, further confirming the findings of no effect or no adverse effect (e.g., the updated winter-run spawning weighted usable area [WUA] analyses do not show significant reductions in spawning areas). Please also refer to Master Response 5, Aquatic Biological Resources, for a discussion of the revised analysis in the Final EIR/EIS to include the full migration period of juvenile migrating salmonids. As mentioned in Master Response 5, the Wilkins Slough bypass flow criterion of 10,700 cfs is now part of the Project operational criteria (instead of a mitigation measure) and covers the period from October 1 to June 14, which includes key salmonid outmigration periods during the Project's diversion season.		
51610	63	6	Another question to ask is what will be the reduction of high winter-time "flushing flows"	Potential changes in flow regime and geomorphic processes are analyzed in Chapter 7, Fluvial Geomorphology, under Impacts FLV-2 and FLV-3.	Addressed by ICF	NA

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			because of Project diversions, and how those reductions might affect natural high flow scouring mechanisms that reduce the incidence and spread of such fish pathogens as *Ceratanova shasta*, and that suppress the incidence of harmful algal blooms (HABs), both of which have become more prevalent throughout the hydrological system.	There is some empirical and modeling evidence from other systems (e.g., Klamath/Trinity Rivers, where ceratomyxosis is more prevalent and which will be unaffected by Sites Reservoir, as described in the Water Operations section of Chapter 2, Project Description and Alternatives, and Master Response 8, Trinity River) that high flows and high velocity can reduce the density of the intermediate polychaete host for the fish pathogen *Ceratonova shasta* and reduce infectious spores' concentrations. As identified in Chapter 7, Sites Reservoir operations would not lead to significant reduction in scouring due to high flows (table titled Flow and Percent Change between the No Project Alternative and Alternatives 1, 2, and 3). Diversions would primarily occur in high flow conditions during which scouring and other geomorphic processes are anticipated to remain relatively unchanged compared to the No Project Alternative/No Action Alternative. Diversion would be limited in low flow periods when flows at Wilkins Slough are above 10,700 cfs		

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				during October 1 to June 14; as such, there would be no exacerbation of conditions favorable to the development of harmful algal blooms (HABs) or increases in pathogen concentrations in the Sacramento River, while nonetheless keeping intact the “flushing flows” during high flow periods under the flow protection criteria (Chapter 11, Aquatic Biological Resources, Impacts FISH-2 through FISH-5). In addition, as described in Chapter 2 and Master Response 2, Alternatives Description and Baseline, the operations have been refined such that the Wilkins Slough flow criterion is 10,700 cubic feet per second (cfs) from October 1 to June 14, with no diversion from June 15 to August 31, and 5,000 cfs in September. The Bend Bridge pulse flow protection criteria have also been refined. These two project refinements, which do not change the conclusions of the analyses, further preserve high winter “flushing flows.”		

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51610	66	52	(B) The RDEIR/SDEIS Fails to Accurately Analyze Environmental Impacts to Winter-Run Chinook salmon and Fails to Disclose Significant Impacts of the Proposed Project The RDEIR/SDEIS erroneously claims that the proposed project and alternatives will not cause significant environmental impacts to winter-run Chinook salmon; however, this conclusion is based on flawed and internally inconsistent analyses that fail to accurately assess the likely impacts of the proposed project and alternatives. The proposed mitigation measure FISH-2 fails to mitigate impacts to winter-run Chinook salmon, and the proposed project and alternatives will cause reduced survival and abundance of winter-run Chinook salmon, which is a significant impact in light of the fact that the species is declining and is not self-sustaining under baseline conditions. Cal. Code Regs., tit. 14, § 15065(a)(1). The RDEIR/SDEIS must be revised to accurately characterize impacts to	The Wilkins Slough diversion criteria have been refined in the Final EIR/EIS to higher minimum flow standard of 10,700 cfs October 1 to June 14, as described in Master Response 2, Alternatives Description and Baseline. See Master Response 5, Aquatic Biological Resources, regarding the adequacy of the tools, thresholds, and criteria used in the analysis of Project effects on salmonid habitat that supports the determination of no significant impact. Please also refer to Master Response 5 for a discussion of the proper application of California Code of Regulations, title 14, section 15065(a)(a) as it relates to baseline conditions and special-status species and of differences between the planning requirements (CEQA/NEPA) and permitting processes (including under the federal and state Endangered Species Act).	Addressed by ICF	N/A

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			winter-run Chinook salmon and to identify adequate mitigation measures that eliminate significant impacts to winter-run Chinook salmon.			
51610	70	25	Discussion regarding Funks and Stone Corral Creek Page 11-299. The area of the confluence of Funks and Stone Corral Creeks on the east side of I-5, this area includes a portion of the Willow-Creek- Lurline Wetlands Management Area. What is missing from discussion and from this Chapter generally is any discussion regarding the aquatic species that live in the Colusa Basin Drain. Salmon have been found in the Colusa Basin Drain. Local fisherman have fished for catfish on the Drain for years and Red Swamp Crayfish is abundant. Also missing from this discussion is the contribution to the Foodweb from seasonal flooding on the Colusa Basin Drain. The Colusa Basin Drain is ALIVE and is an important source of food for aquatic life in its channel but also downstream of Knights Landing	In Chapter 11, Aquatic Biological Resources, the analysis focuses on the “stream reaches of interest.” These are the reaches below the dam sites on Stone Corral Creek and Funks Creek and the point at which the creeks are integrated into the water delivery systems of GCID and TCCA. For Stone Corral Creek, this is the point at which it crosses the GCID Main Canal. Below this point, the creek is supplied with water for use on agricultural fields and receives drain water from those fields. For Funks Creek, it is the point at which it enters Funks Reservoir. Below the reservoir, the creek is sustained by seepage from the Funks Reservoir dam, and, below GCID Main Canal, it also receives water for delivery and drain water from agricultural fields.	Addressed by ICF	Existing reference from Chapter 11: National Marine Fisheries Service. 2014. Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-Run Chinook Salmon and Central Valley Spring-Run Chinook Salmon and the Distinct Population Segments of California Central Valley Steelhead. July. National Marine Fisheries

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			where the confluence of the Colusa Basin Drain and the Sacramento River. Historically the confluence was via Sycamore Slough before Reclamation so wild life species have depended on the Colusa Basin Drain habitat since the end of the Great Valley Sequence. Since Reclamation the confluence is at Knights Landing but the importance of its habitat has existed for millions of years since the Great Valley Sequence made it the low lying waterway and wetlands for the west side of the Sacramento Valley.	In addition, the Stone Corral Creek and Funks Creek Aquatic Study Plan and Adaptive Management section of Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, describes technical studies plan and adaptive management plan for Stone Corral and Funks Creeks. These studies will evaluate fisheries resources in the creeks and update information on flow and geomorphology of the creeks. The goal of these studies is to update information of fish presences, habitat uses, and habitat quality to ensure decision regarding maintenance of these streams is consistent with regulatory requirements including , California Fish and Game Code Section 5937. Please see Master Response 5, Aquatic Biological Resources, regarding maintaining flows in Funks and Stone Corral Creeks. The Colusa Basin Drain is maintained by agricultural return flows and flow from several other westside streams (e.g., Hunters Creek, Freshwater Creek,		Service West Coast Region.

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				Salt Creek, and Cortina Creek). The flow in Stone Corral and Funks Creeks is not expected to affect resources in the Colusa Basin Drain. Although salmon have been found in the Colusa Basin Drain, the Colusa Basin Drain is not suitable habitat for salmon. There is no suitable spawning or rearing habitat in the Colusa Basin Drain, and there is no return to the Sacramento River from the Colusa Basin Drain upstream of the Knights Landing Outfall. The fisheries agencies are actively pursuing actions to exclude salmon from the Colusa Basin Drain (e.g., Wallace Weir fish facility) (NMFS 2014).		
51610	71	25	Discussion regarding Funks and Stone Corral Creek Page 11-299. The area of the confluence of Funks and Stone Corral Creeks on the east side of I-5, this area includes a portion of the Willow-Creek- Lurline Wetlands Management Area. What is missing from discussion and from this Chapter generally is any discussion regarding the aquatic species that live in the	In Chapter 11, Aquatic Biological Resources, the analysis focused on the "stream reaches of interest." These are the reaches below the dam sites on Stone Corral Creek and Funks Creek and the point at which the creeks are integrated into the water delivery systems of GCID and TCCA. For Stone Corral Creek, this is the point at which it crosses the GCID Main Canal. Below	Addressed by ICF, changes/rejection to client tracked revisions suggested	Existing reference from Chapter 11: National Marine Fisheries Service. 2014. Recovery Plan for the Evolutionarily Significant Units of Sacramento

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			Colusa Basin Drain. Salmon have been found in the Colusa Basin Drain. Local fisherman have fished for catfish on the Drain for years and Red Swamp Crayfish is abundant. Also missing from this discussion is the contribution to the Foodweb from seasonal flooding on the Colusa Basin Drain. The Colusa Basin Drain is ALIVE and is an important source of food for aquatic life in its channel but also downstream of Knights Landing where the confluence of the Colusa Basin Drain and the Sacramento River. Historically the confluence was via Sycamore Slough before Reclamation so wild life species have depended on the Colusa Basin Drain habitat since the end of the Great Valley Sequence. Since Reclamation the confluence is at Knights Landing but the importance of its habitat has existed for millions of years since the Great Valley Sequence made it the low lying waterway and wetlands for the west side of the Sacramento Valley.	this point, the creek is supplied with water for use on agricultural fields and receives drain water from those fields. For Funks Creek, it is the point at which it enters Funks Reservoir. Below the reservoir, the creek is sustained by seepage from the Funks Reservoir dam, and, below GCID Main Canal, it also receives water for delivery and drain water from agricultural fields. In addition, the Stone Corral Creek and Funks Creek Aquatic Study Plan and Adaptive Management section of Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, describes a technical studies plan and adaptive management plan for Stone Corral and Funks Creeks. These studies will evaluate fisheries resources in the creeks and update information on flow and geomorphology of the creeks. This information will be used to evaluate and, if necessary, refine the proposed release provisions	in bubble comments	River Winter-Run Chinook Salmon and Central Valley Spring-Run Chinook Salmon and the Distinct Population Segments of California Central Valley Steelhead. July. National Marine Fisheries Service West Coast Region.

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				designed to maintain these intermittent streams. The Colusa Basin Drain is maintained by agricultural return flows and flow from several other westside streams (e.g., Hunters Creek, Freshwater Creek, Salt Creek, and Cortina Creek). The change in the flow pattern in Stone Corral and Funks Creeks is not expected to affect the aquatic life in the Colusa Basin Drain. Although salmon have been found in the Colusa Basin Drain, the Colusa Basin Drain is not suitable habitat for salmon. There is no suitable spawning or rearing habitat in the Colusa Basin Drain, and there is no return to the Sacramento River from the Colusa Basin Drain upstream of the Knights Landing Outfall. The fisheries agencies are actively pursuing actions to exclude salmon from the drain (e.g., Wallace Wier fish facility) (NMFS 2014).		
51610	72	17	The use of arbitrary thresholds for identifying significant impacts is	Please refer to Master Response 5, Aquatic Biological Resources,	Addressed by ICF	N/A

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			inconsistent with the CEQA guidelines, which require a mandatory finding of significance if a project would "cause a fish or wildlife population to drop below self-sustaining levels" or "substantially reduce the number or restrict the range of an endangered, rare or threatened species." Cal. Code Regs., tit. 14, § 15065(a)(1). Where, as here, populations of winter-run Chinook salmon, Longfin Smelt, Delta Smelt, and other species are below self-sustaining levels, any further impacts that causes those populations to further drop below self-sustaining levels is a per se significant impact under CEQA requiring mitigation. [Footnote 14: In addition, we note that CESA requires that the impacts of the project on listed species be fully mitigated and not jeopardize the continued existence of the species, see Cal. Fish and Game Code § 2081, regardless of whether those impacts are designated as significant under CEQA.] As one example, the RDEIR/SDEIS finds, using the IOS life cycle model, that Alternative 1A would reduce the long-term	regarding the thresholds and criteria used in the analysis. Impact determinations are not based on a single result or analysis but on the judgement of fisheries experts reviewing multiple lines of evidence and analyses reflecting the most current and best available science. In addition, Master Response 5 discusses CEQA and NEPA requirements, how they differ from the permitting processes (including under the California Endangered Species Act), and the application of California Code of Regulations, title 14, section 15065(a)(a) as it relates to baseline conditions and special-status species.		

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			abundance of winter-run Chinook salmon by 3 percent on average, as a result of reducing survival through the Sacramento River by 1 percent and through the Delta by 1-2 percent. RDEIR/SDEIS at 11-128 to 11-129. The population of winter-run Chinook salmon is not self-sustaining under baseline conditions, and the impact of Alternative 1A is therefore per se a significant impact requiring mitigation. Cal. Code Regs., tit. 14, § 15065(a)(1).			
51610	77	93	ATTMT 1. Chapter or Appendix - Section: Impact Fish-10 through Impact Fish-17. Page(s): General Comment. Comment and Recommendations: The projections of Proposed Project effects on native and introduced fish species (Impact Fish-10 through Impact Fish-17) do generally use the best available species life history accounts and current information. The uncertainty associated with projections of less than significant Proposed Project impacts on these fish is especially high because there is no precedent	Please refer to Master Response 5, Aquatic Biological Resources, for a discussion of uncertainty in impact analyses as it pertains to CEQA/NEPA. Any uncertainty surrounding the analyses and models used in impact determinations (as noted, the best available tools and current information) is fully acknowledged and described throughout Chapter 11, Aquatic Biological Resources, of the EIR/EIS and taken into account as fisheries experts review multiple lines of evidence to assess potential Project impacts. The impact determinations	Addressed by ICF	N/A

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			for these effects because quantitative models and analysis of fish response for a project of this type and scale are nonexistent. In other words, the best available science to evaluate Proposed Project effects on these fish species results inevitably in conclusions that are speculative. Because of this uncertainty, CDFW recommends that the FEIR/FEIS fully describe this level of uncertainty and include these fish species in the adaptive management program.	are not speculative and are supported by substantial evidence outlined in the more than 300 pages of analysis contained in Chapter 11 and the 30 different methods used to conduct analyses regarding Project operations as summarized in the Methods for Analysis of Potential Effects on Fish and Aquatic Resources table and the 15 technical appendices supporting Chapter 11. As described in Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, the adaptive management program will be focused on addressing uncertainties in the analyses of effects of the Project on ecosystems, with an emphasis on special-status species. Consideration of these species may be included as appropriate.		
51610	77	94	ATTMT 1. Chapter or Appendix - Section: Appendix 11A - Section 11A.1.3.2, Life History and General Ecology. Page(s): p. 11A-25. Comment and Recommendations:	The language in Appendix 11A, Aquatic Species Life Histories, regarding the weir at Coleman National Fish Hatchery has been revised in the Final EIR/EIS per this comment. This text revision does not	Addressed by ICF	N/A

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			RDEIR/SDEIS states: "Until recent years, salmon passage was not possible above the Coleman Hatchery barrier weir located on Battle Creek." This is not correct. Fish passage is always possible at the Coleman National Fish Hatchery barrier weir. The Coleman National Fish Hatchery controls fish passage at the weir for hatchery operations.	change an impact determination or conclusion.		
51610	77	95	ATTMT 1. Chapter or Appendix - Section: Appendix 11A - Section 11A.1.3.2, Table 11A-2. Page(s): p. 11A-27. Comment and Recommendations: The RDEIR/SDEIS uses National Marine Fisheries Service 2019 for their table of general life stage timing for winterrun Chinook salmon. However, this table should be updated to include Glenn Colusa Irrigation District's long-term winter-run monitoring data and Tisdale's Rotary Screw Trap data from CDFW's Tisdale Monitoring Program to reflect best available science and provide winter-run emigration information between RBDD and Knights Landing.	The table provided by National Marine Fisheries Service (2019) is a general representation and not intended to include every possible data source. Tisdale rotary screw trap data are summarized in Attachment 1, Juvenile Salmonid Monitoring, Sampling, and Salvage Timing Summary from SacPAS, to Appendix 11A, Aquatic Species Life Histories. Available Glenn-Colusa Irrigation District monitoring data have less temporal resolution than other data sources (monthly sums of fish captured) and show generally consistent patterns to other data sources.	Addressed by ICF	N/A

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51610	77	96	ATTMT 1. Chapter or Appendix - Section: Appendix 11A - Section 11A.1.4.3, Distribution and Abundance. Page(s): p. 11A-32. Comment and Recommendations: The RDEIR/SDEIS states "Today, only the mainstem Sacramento River and Butte, Mill, and Deer Creeks maintain wild spring-run Chinook salmon populations" (p. 11A-32). Battle Creek should be added to the list of creeks containing wild spring-run (NMFS 2016).	The suggested changes regarding Battle Creek in the Appendix 11A, Aquatic Species Life Histories, Spring-Run Chinook Salmon—Central Valley ESU, Distribution and Abundance section have been made. This text revision does not change an impact determination or conclusion.	Addressed by ICF	NA
51610	77	97	ATTMT 1. Chapter or Appendix - Section: Appendix 11A- Section 11A.1.4.4, Stressors. Page(s): p. 11A-36. Comment and Recommendations: The reference National Marine Fisheries Service 2014 appear to have been taken out of context with regards to discussing stressors on spring-run Chinook salmon. The text should be revised to reflect the literature cited or removed. Specifically, stressors in Deer, Mill, and Antelope creeks include agricultural water diversions primarily, with loss of	National Marine Fisheries Service (2014) presents a detailed threat assessment. The language in Appendix 11A, Aquatic Species Life Histories, was meant to be a brief summary of that assessment. The language in Chapter 11, Aquatic Biological Resources, has been revised to better reflect the summary language in the recovery plan, which highlights agricultural diversions. This text revision does not change an impact determination or conclusion.	Addressed by ICF	Existing reference from Chapter 11: National Marine Fisheries Service. 2014. *Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-Run Chinook Salmon and Central Valley Spring-Run Chinook Salmon*

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			habitat due to urban development secondary.			*and the Distinct Population Segments of California Central Valley Steelhead*. July. National Marine Fisheries Service West Coast Region.
51610	77	98	ATTMT 1. Chapter or Appendix - Section: Appendix 11F - Section 11F.5. Page(s): p. 11F-34. Comment and Recommendations: The RDEIR/SDEIS calculated tidal habitat restoration mitigation for longfin smelt. "The overall area of effect for each scenario was calculated as 10% of the area of the above calculations, consistent with calculations for the mitigation requirements used by California Department of Fish and Game (2009) and California Department of Water Resources (2019)" (p. 11F-34). However, the description is confusing, and it is unclear how the overall area for each scenario was calculated. CDFW suggests the FEIR/FEIS provide	Information regarding the description of the calculation that the comment is seeking can be found in the Kratville (2010) document cited in Appendix 11F, Smelt Analysis. As such, no text modification has been made to Appendix 11F.	Reviewed by Client	Existing reference: Kratville, D. 2010. *California Department of Fish and Game Rationale for Effects of Exports*. California Department of Fish and Game, Sacramento, CA.

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			a clear step-by-step description of the calculation.			
51610	78	93	Chapter11 page 11-166 In table 11-29, numbers presented for “All Fish Abundance Upstream of Red Bluff” and “All Fish Abundance Upstream of Hamilton City” are the same. Please clarify. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	In Chapter 11, Aquatic Biological Resources, of the Final EIR/EIS, tables titled Abundance and Percentage of Spring-Run Chinook Salmon Adult Escapement Upstream and Downstream of the Red Bluff and Hamilton City Intakes, 2009–2020 and Abundance and Percentage of Fall-Run and Late Fall–Run Chinook Salmon Adult Escapement Upstream and Downstream of the Red Bluff and Hamilton City Intakes, 2009–2020 have been revised per the comment. The revision does not change an impact determination or conclusion.	Reviewed by Client	N/A

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51650	63	11	Flow-Related Physical Impacts on ESA-listed Salmonids 1. Redd Dewatering The RDEIR/SDEIS on page 11-109 notes that: "The results for winter-run Chinook salmon show few large changes in redd dewatering between the NAA and Alternatives 1, 2, and 3 (Table 11N-13)….. Changes for most months and water year types under all Alternatives 1, 2, and 3 are less than 2%. Overall, the effects of Alternatives 1, 2, and 3 on winter-run redd dewatering are minor." While this may be true on average, that average value is merely a mathematical construct, not a real event. In Table 11N-13 there is an outlier high number (highlighted in red) for the July- October period in a Below Normal water year, in which the percentage of redds dewatered under those conditions is projected to be 2%. In an extremely weak population baseline, such as that of the	No significant impact related to redd dewatering were identified so no mitigation is required. For a discussion of modeling used for redd dewatering and the treatment of outliers in the results, please refer to Master Response 5, Aquatic Biological Resources, which addresses the use of daily or monthly modeling results in the analyses, the adequacy of thresholds and criteria used in the analyses, the uncertainty in interpreting modeling results, and the use of means in reporting modeling results See also in Master Response 5, the discussion of special-status fish species and CEQA and NEPA requirements, baseline and special-status species. In addition, Master Response 5 provides clarification regarding the process (determination of significant impacts) for decision-making in the EIR/EIS under CEQA/NEPA, including "baselines" used for evaluating effect. Note that the highlighted results in the tables for the alternatives should not be considered statistical outliers;	ICF Reviewed	NA

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			endangered winter-run Chinook salmon stocks, that 2% loss could well be deemed significant. Repeated such loss events could be even more so, especially on top of cumulative losses from other sources. Similar claims of insignificant impacts from redd dewatering for spring-run Chinook and fall-run Chinook could be made. However, in a related table (11N-14) showing percentage of ESA-listed spring-run Chinook redds likely to be dewatered, there are also data outliers in the Sept-Dec. time frame in Above Normal water years for Alt 1B (2.3% reduction), for Alt 3 (4.5% reduction), and during the Oct.-Jan. time period for Above Normal years under Alt 3 (2.2% reduction), and for Critically Dry water years for Alt 1A (4.5% reduction), Alt 1B (3.2% reduction, Alt 2 (3.2% reduction) and finally Alt 3 (3% reduction). There are also similar redd dewatering problems listed for fall-run Chinook in Table N-15 of between 2% and 4.1%	they are simply “flags” to help readers quickly locate the results with the largest differences from the No Project Alternative.		

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			in some time frames and water years for some Alternatives. These redd dewatering projects outliers are of some concern – please explain what, if any, mitigation measures you will take (e.g., reducing Project intakes in Critically Dry years during peak egg-laying season for salmonids) to mitigate these potential impacts on redds.			
51650	63	13	Spawning Habitat Loss At page 11-111, after earlier describing the WUA (“weighted usable area”) method used in your analysis, you state: “Almost all spawning by winter-run occurs in the upper two segments (Segment 6 and 5) of the Sacramento River, between Keswick Dam and Cow Creek, with spawning density (redds per RM) especially high in Segment 6 (Table 11K-1)….. Mean winter-run spawning WUA differs by less than 5% for most months and water year types, but mean WUA in Segment 6 under Alternatives 1, 2, and 3 is 5% to	The changes in winter-run spawning conditions in Segment 6 of Critically Dry Water Years are acknowledged in the RDEIR/SDEIS: “These results indicate that in May of critically dry years, Alternatives 1–3 would result in reductions of spawning habitat in Segment 6 and increases of spawning habitat in Segment 4. Note that spawning habitat conditions for winter-run are much more important in Segment 6 than in Segment 4”. However, the >5% reductions in Segment 6, which occur only in Critically Dry Water Years, range from 5% to 6%, depending on the alternative. Because this level of	Reviewed by ICF	NA

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			6% lower than WUA under the NAA in May of Critically Dry Water Years (Table 11K-2)." But then the draft goes on to say: "In general, Alternatives 1, 2, and 3 are not expected to substantially affect winter-run spawning WUA." This latter assurance is, on its face, contradicted by the fact that at least during May, in Critically Dry water years, RDEIR/SDEIS tables show that up to 6.1 % percent of all the very small amount of still remaining winter-run Chinook spawning habitat is expected to be lost. This impact, even by the Project's own questionable ≥5% significance level definition, is thus a significant impact. There are similar spawning area Segment 5 habitat losses projected for river Segment 5 for spring-run Chinook (see Table 11K-6) for Above Normal water years for Alternative 3 of 9.4% spawning area losses.	reduction is restricted to one water year type in one month it is considered not to have a substantial effect on the overall availability of winter-run spawning habitat. For further explanation regarding determination of substantial effects, please refer to Master Response 5, Aquatic Biological Resources, for discussions of: (1) thresholds and criteria used in the analyses, and (2) use of means in reporting modeling results.		

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			These relatively higher spawning area losses are of concern – please explain what, if any, mitigation measures Sites Authority will take (e.g., reducing Project intakes in Critically Dry years during peak egg-laying season for salmonids) to mitigate these significant impacts of spawning area losses.			
51650	63	15	3. Rearing Habitat Loss At page 11-111, the RDEIR/SDEIS states: "These results indicate that Alternative 3 would have a moderate effect on rearing habitat for winter-run fry in the Sacramento River during October of Below Normal Water Years and the other alternatives would have no adverse effects." This is an over-simplification, at best. As noted in Table 11K-23 for Segment 6 of the upper Sacramento River (one of the two main areas in which the winter-run still spawn), in September there would be a 5.1% winter-run fry rearing area reduction under	There are inevitably some differences in rearing habitat weighted usable area between the No Project Alternative and Alternatives 1, 2, and 3, but for all four Chinook salmon races and life stages except winter-run fry, more of the largest (highlighted) differences show increases in habitat rather than decreases. As noted by the commenter, the reduction for winter-run fry is acknowledged in the EIR/EIS. As discussed in Master Response 5, Aquatic Biological Resources (see section identified below), impact conclusions regarding effects of the Project on the populations of all fish species evaluated are arrived at by	Reviewed by ICF	NA

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			Alternative 3, and in October under Below Normal conditions there would be a 7.1% loss under Alternative 3 and a 5.1% loss in Critically Dry years. And remember, these losses are cumulative on top of other major winterrun Chinook spawning and rearing habitat losses over many decades, losses which are in large part the trigger for their current ESA-listing as "endangered." There are similar problems for loss of spring-run Chinook fry rearing habitat (see Table 11K-30 through 34) in Sacramento River Segments 4 and 5, and for fall-run Chinook as well under certain conditions (see Table 11K-46, looking at Sacramento River Segment 4). These rearing habitat area losses projected are of some concern – please explain what, if any, mitigation measures you will take (e.g., reducing Project intakes in Critically Dry years during peak fry rearing season for salmonids) to mitigate these potential	weighing effects of the alternatives on *all* important factors. Please refer to Master Response 5, Aquatic Biological Resources: 1) thresholds and criteria used in the analyses, and (2) uncertainty in interpreting modeling results. These sections discuss the need to base conclusions regarding the effects of the alternatives on a fish species or race on the results of *all* potential factors analyzed, rather than limiting considerations to a single factor. In addition, Master Response 5 provides clarification regarding the process (determination of significant impacts) for decision-making in the EIR/EIS under CEQA/NEPA		

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			additional impacts that will lead to yet more fry rearing-area habitat losses.			
51650	63	17	Increases in Juvenile Salmonid Strandings There is an unfortunate dearth of analysis of salmonid juvenile stranding risk, as noted in Appendix 11-N (Other Flow-Related Upstream Analysis): "11N.3.3 Juvenile Stranding. A juvenile stranding analysis for salmonids was conducted in the Sacramento River only. No information is available from the Feather and American Rivers for relating changes in flow to numbers of juvenile salmonids stranded. Furthermore, daily flow data are needed to reliably estimate juvenile stranding, and only monthly data are available for these rivers." [Footnote 1: RDEIR/SDEIS, pg. 11N-42.] One would then have to assume, as a precautionary measure, that juvenile stranding problems in these other rivers would be comparable to typical stranding problems in the	The lack of information for assessing juvenile stranding in the Feather and American Rivers is unfortunate. However, it would be problematic to assume that the effects of the Project on stranding in these rivers would be the same as those determined for the Sacramento River. Not only are conditions that affect juvenile rearing habitat in these rivers different from those in the Sacramento River, but the effects of the alternatives on flow conditions in these rivers are very different. Uncertainty in the analysis of some environmental effects can be expected. Please see the discussion in Master Response 5, Aquatic Biological Resources, on use of best available tools and uncertainty. Regarding the balancing of increases and decreases in the juvenile stranding results, the commenter makes the following argument: "Stranding events and non-stranding events cannot be traded off against	Reviewed by ICF	NA

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			Sacramento. You cannot just assume them away from lack of data, as apparently was done. “Absence of evidence is not evidence of absence.” And it turns out there are also likely to be serious juvenile stranding problems within the Sacramento River: “The largest increases in juvenile stranding occur for the April cohort at all three locations [upper Sacramento River: Keswick Dam, Clear Creek, and Battle Creek], ranging as high as 30% in Dry Water Years under Alternative 1A, 1B, and 2 at the Keswick Dam location.” [11-112] But then, remarkably, this very troubling and clearly significant impact is dismissed out of hand with the following justifications: “The principal period of stranding vulnerability for the winter-run is for cohorts emerging in July through October, when some large reductions and increases in juvenile stranding occur, but large reductions in juvenile	each other ‘on average’ because they are not biologically symmetrical. Once an individual juvenile fish is stranded, even once, it is dead – it does not matter one bit if in other places at other earlier or later times, it would not been stranded at all or would have benefited in some way. It only takes a single event (not an “averaged sum”) for a stranding to result in death. Once a fish is dead, it stays dead. It cannot benefit from later more benign events.” The tables in Appendix 11N titled “Estimated Number (thousands) of Juvenile Chinook Salmon or Steelhead Stranded by Flow Reductions at Keswick and the Percent Differences (in parentheses) for the No Action Alternative (NAA) and Alternatives 1–3”, “Estimated Number (thousands) of Juvenile Chinook Salmon or Steelhead Stranded by Flow Reductions at the Clear Creek Confluence and the Percent Differences (in parentheses) for the No Action Alternative (NAA) and Alternatives 1–3”, and “Estimated Number (thousands) of Juvenile		

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			stranding are more frequent than large increases. Therefore, Alternatives 1, 2, and 3 are not expected to affect winter-run juvenile stranding (Table 11N-28 through Table 11N-30).” [Page 11-112] “The results generally show little evidence of major overall effects of Alternatives 1-3. The redd dewatering and juvenile stranding analyses found many increases in potential negative effects balanced by many reductions in such effects.” [Appendix 11N-53] This is false, and at best, contradictory reasoning. Stranding events and non-stranding events cannot be traded off against each other “on average” because they are not biologically symmetrical. Once an individual juvenile fish is stranded, even once, it is dead – it does not matter one bit if in other places at other earlier or later times, it would not been stranded at all or would have benefited in some way. It only takes a single event (not an “averaged sum”) for a stranding to result in death. Once a fish is dead, it	Chinook Salmon or Steelhead Stranded by Flow Reductions at the Battle Creek Confluence and the Percent Differences (in parentheses) for the No Action Alternative (NAA) and Alternatives 1–3” provide the mean results for a large range of stranding conditions over many years. The results of the stranding model (and most of the other analyses and models used in the Final EIR/EIS) do not follow mortality events for a single cohort of fish, as suggested in the comment. Therefore, according to the results, while increased stranding in April during some years would reduce the abundance of juveniles in May of the same years, reduced stranding in May of some years would lead to increased abundance of juveniles in June of the same year. Or, to build on the commenter’s argument, a fish stranded in April would be eliminated from the population, but those not stranded and surviving into May would have a greater mean chance of surviving into June. Because the reductions in mean stranding during May are much		

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			stays dead. It cannot benefit from later more benign events.[Footnote 2: This is comparable to in-river fish mortality events in response to summer daily hot water temperature spikes. Once a spike occurs at fatal spike temperatures, even once, the fish affected by that spike are dead. It does not matter thereafter what the “average daily temperature” was for that day. The “average daily temperature” is a mathematical construct while the high temperature spike is a real mortality event.] In short, its death cannot be averaged away. Removing large numbers of juvenile fish from the river, including by periodic mortality events like strandings, just means fewer fish to benefit from later improving conditions. Dead fish, from whatever the cause, are in fact removed from the population. Juvenile stranding events with mortalities of as high as 30% of the fish present (see Table 11N-28 through Table 11N-30) thus represent significant mortality events	greater than the increases during April, we conclude that the potential positive effects in May outweigh any negative effects in April. Please also refer to Master Response 5 for a detailed discussion of thresholds and criteria used in analyses as well as the use of means in reporting results. When available (e.g., temperature effects on salmonids), results are evaluated in terms of thresholds (“index values”, see Appendix 11B, Upstream Fisheries Impact Assessment Quantitative Methods).		

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			that have serious implications – particularly for already extremely weak and now geographically very limited populations like the endangered winter-run Chinook. Mitigation measures to prevent these mortality events should be incorporated into the Project Plan and into its permits.			
51650	66	44	VI. The RDEIR/SDEIS Fails to Accurately Analyze Environmental Impacts and Fails to Disclose Significant Adverse Environmental Impacts of the Proposed Project and Alternatives (A) The RDEIR/SDEIS Fails to Accurately Assess Environmental Impacts Because it Ignores Changes in Flow or Storage Less Than 5 or 10 Percent The RDEIR/SDEIS' analysis of significant environmental impacts violates NEPA and CEQA because it assumes that changes in flow or storage less than 5 percent and/or 10 percent are insignificant. However,	The 5% or 10% values are not used as thresholds in making impact determinations in the EIR/EIS. Please refer to Master Response 5, Aquatic Biological Resources, for discussions of: (1) thresholds and criteria used in the analyses, and (2) treatment of special-status fish species with respect to CEQA and NEPA requirements, including baseline conditions.	Reviewed by ICF	N/A

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			changes in flow and/or storage less than 5 percent or 10 percent frequently results in these levels dropping below key thresholds relating to the survival of native fish species, including species listed under the California Endangered Species Act ("CESA") and the federal Endangered Species Act ("ESA"). As a result, even changes in flow or storage levels that are a less than 5 percent change from the baseline clearly can and do cause significant adverse impacts to native fish species. Moreover, for salmon and other species, reductions in flow less than 5 percent have synergistic impacts that can be devastating for these species, as reduced flows reduce survival in multiple reaches of the Sacramento River and through the Delta, resulting in cumulatively significant reductions in survival. As a result, the RDEIR/SDEIS fails to disclose significant impacts of the proposed project and alternatives to species listed under CESA and the ESA, for which mandatory findings of significance are warranted. The RDEIR/SDEIS must be revised to			

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			eliminate the assumption that changes in flow or storage less than 5 percent and less than 10 percent are insignificant.			
51650	66	45	The RDEIR/SDEIS claims that the CALSIM model is not accurate enough to assess changes in flow or storage less than 5 percent, stating that, Incremental flow and storage changes of 5% or less in modeled results are generally considered within the standard range of uncertainty associated with model processing. Therefore, for the purposes of the impact analysis, flow changes of 5% or less were considered to be similar to the NAA for comparative purposes. Changes in flow exceeding 10% were considered to represent a potentially meaningful difference. RDEIR/SDEIS at 11-57. These 5 percent and 10 percent thresholds of significance are arbitrary, inconsistent with other NEPA/CEQA documents prepared by Reclamation, and not supported by substantial evidence.	The 5% or 10% values are not used as thresholds in making impact determinations in the EIR/EIS. Please see Master Response 5, Aquatic Biological Resources, for discussions of thresholds and criteria used in analyses, as well as uncertainty. In addition, please refer to Master Response 3, Hydrology and Hydrologic Modeling, for more information on the use of CALSIM II.	Reviewed by ICF	NA

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			Moreover, to the extent that CALSIM 2 fails to accurately assess impacts, the RDEIR/SDEIS fails to explain why it does not use the CALSIM 3 model, which has been publicly released by DWR and incorporates more recent hydrological data.			
51650	66	46	The RDEIR/SDEIS provides no justification for why changes in flow less than the 10 percent threshold would not be considered a potentially meaningful difference. The lack of any explanation for this assumption regarding the 10 percent threshold makes it plainly arbitrary and capricious.	The 10% value is not used in making impact determinations in the EIR/EIS. Please refer to Master Response 5, Aquatic Biological Resources, which addresses the adequacy of thresholds and criteria used in the analyses.	Reviewed by ICF	NA
51650	66	47	The justification for the 5 percent threshold is also irrational and not supported by substantial evidence. Because CALSIM modeling is used in a comparative manner (meaning that it is used to model conditions under both the environmental baseline and action alternatives), there is no need for the 5 percent or 10 percent thresholds. Importantly, there is no basis to conclude that Sacramento	The 5% or 10% values are not used as thresholds in making impact determinations in the EIR/EIS. Please see Master Response 5, Aquatic Biological Resources, for a discussion of thresholds and criteria used in analyses.	Reviewed by ICF	NA

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			River flow reductions due to diversions to storage under the proposed project are an illusory modeling artifact; instead, reduced flow in the Sacramento River is an inevitable and necessary consequence of diverting water from the Sacramento River to fill Sites Reservoir. While the CALSIM model does have significant flaws, failing to disclose changes in flow that are 5 percent (or 10 percent) or less as a significant impact misleads the public and decisionmakers. In fact, other CEQA/NEPA documents that use CALSIM modeling do not use a 5 percent or 10 percent thresholds for determining whether changes in flow or storage constitute a significant impact. For instance, the final CEQA/NEPA documents for the California WaterFix project did not use these thresholds, and the RDEIR/SDEIS provides no reasoned explanation why these assumptions are necessary since they have been omitted from other CEQA/NEPA analyses where CALSIM is used.			

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51650	66	48	The RDEIR/SDEIS does not consistently employ these [5 and 10 percent] thresholds. If a 5 percent change is significant, then to avoid impacts the project could simply limit diversions to levels that produce a less than 5 percent change in flow, yet it fails to do this. In addition, changes in Delta outflow from the proposed project are generally less than 5 percent, see RDEIR/SDEIS at Table 5B3-5- 1a, yet as the RDEIR/SDEIS admits, the reduction in abundance of Longfin Smelt that results from reduced Delta outflow would be a significant impact requiring mitigation, see id. at 11-271.	The 5% or 10% values are not used as thresholds in making impact determinations. Please refer to Master Response 5, Aquatic Biological Resources, which addresses the adequacy of thresholds and criteria used in the analyses. Master Response 5 also addresses the Longfin smelt impact analyses and associated mitigation measures.	Reviewed by ICF	NA
51650	66	49	Using these 5 percent and 10 percent thresholds results in the RDEIR/SDEIS failing to disclose significant environmental impacts for which mitigation is required. For instance, the RDEIR/SDEIS claims that the project and alternatives would cause a significant impact to winter-run Chinook salmon if diversions by the proposed project or alternatives caused flows in the Sacramento River	The 5% or 10% values are not used as thresholds in making impact determinations in the EIR/EIS. Please refer to Master Response 5, Aquatic Biological Resources, which addresses the adequacy of thresholds and criteria used in the analyses.	Reviewed by ICF	NA

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			to drop below 10,700 cfs. RDEIR/SDEIS at 11-130 to 11-131. However, because the RDEIR/SDEIS assumes that a 5 percent reduction in flows in the Sacramento River is simply a modeling artifact and not a real change, the RDEIR/SDEIS would not identify operations that reduce flows by 4 percent, but drop below 10,700 cfs, as a significant effect. Similarly, although the IOS life cycle model used in the RDEIR/SDEIS finds that on average, winter-run Chinook salmon escapement is 3 percent lower under Alternative 1A and 4 percent lower under Alternative 1B, with greater reductions in escapement in wetter water year types, see RDEIR/SDEIS at 11-128, the RDEIR/SDEIS wrongly concludes this is a less than significant effect.			
51650	66	50	The use of arbitrary thresholds for identifying significant impacts is inconsistent with the CEQA guidelines, which require a mandatory finding of significance if a project would "cause a fish or wildlife population to drop below self-sustaining levels" or	The 5% or 10% values are not used as thresholds in making impact determinations in the EIR/EIS. Please refer to Master Response 5, Aquatic Biological Resources, which addresses the adequacy of thresholds and criteria used in the analyses. Please	Reviewed by ICF	NA

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			"substantially reduce the number or restrict the range of an endangered, rare or threatened species." Cal. Code Regs., tit. 14, § 15065(a)(1). Where, as here, populations of winter-run Chinook salmon, Longfin Smelt, Delta Smelt, and other species are below self-sustaining levels, any further impacts that causes those populations to further drop below self-sustaining levels is a per se significant impact under CEQA requiring mitigation. [Footnote 12: In addition, we note that CESA requires that the impacts of the project on listed species be fully mitigated and not jeopardize the continued existence of the species, see Cal. Fish and Game Code § 2081, regardless of whether those impacts are designated as significant under CEQA.] As one example, the RDEIR/SDEIS finds, using the IOS life cycle model, that Alternative 1A would reduce the long-term abundance of winter-run Chinook salmon by 3 percent on average, as a result of reducing survival through the Sacramento River by 1 percent and through the Delta by 1-2 percent.	also see Master Response 5 for a discussion of CEQA and NEPA requirements as they pertain to special-status fish species, and how these planning processes differ from the permitting ones (including under the federal and state Endangered Species Act)		

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			RDEIR/SDEIS at 11-128 to 11-129. The population of winter-run Chinook salmon is not self-sustaining under baseline conditions, and the impact of Alternative 1A is therefore per se a significant impact requiring mitigation. Cal. Code Regs., tit. 14, § 15065(a)(1). The RDEIR/SDEIS fails to accurately analyze environmental effects and disclose significant environmental impacts because of the use of these arbitrary 5 percent and 10 percent thresholds. The RDEIR/SDEIS must be revised to exclude these improper assumptions regarding the effects of the proposed project and alternatives.			
51650	66	51	As the RDEIR/SDEIS admits, the OBAN model does not account for the flow:survival relationship in the Sacramento River, RDEIR/SDEIS at 11-129 to 11-130, and therefore the OBAN model does not provide an accurate assessment of the effects of the proposed project and alternatives on salmon. Similarly, the SALMOD model does not accurately assess the	For the Final EIR/EIS, the OBAN model has been updated to adjust for flow-survival relationships. This update does not change any impact determinations or conclusions. The OBAN model provides only one of several pieces of evidence representing the best available science and forming the weight of evidence to support impact	Reviewed by ICF	N/A

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			effects of the proposed project and alternatives, including because it does not account for the flow:survival relationships in the Sacramento River and through the Delta; SALMOD is an outdated and discredited model should not be relied upon.	conclusions. SALMOD assesses potential effects of water temperature and flows on annual juvenile Chinook salmon production, which is calculated as the number of juveniles at the location of the RBDD. As such, and as characterized in the EIR/EIS, SALMOD ends at the location of the RBDD and makes no claim to assess effects in the Sacramento River downstream of this location or in the Delta. SALMOD has been used in several analyses of changing water infrastructure and operations projects. It has not been discredited or characterized as outdated in these documents. As with OBAN, it is one of several analyses representing the best available science used to form the weight of evidence approach to the impact analysis.		
51650	66	53	(i) The RDEIR/SDEIS Fails to Disclose Significant Environmental Impacts to Winter-Run Chinook Salmon Caused by Reduced Flows in the Sacramento River Due to Incorrect Assumptions Regarding Migration Timing	Please see Master Response 5, Aquatic Biological Resources, for a discussion of flow-related impacts on juvenile migrating salmonids and associated mitigation measures. As described in Master Response 2, Alternatives Description and Baseline	Reviewed by ICF	NA

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			Although the RDEIR/SDEIS acknowledges the scientific evidence demonstrating that reduced flows in the Sacramento River as a result of diversions to fill Sites Reservoir will reduce the survival of migrating juvenile salmon, the RDEIR/SDEIS concludes that mitigation measure FISH-2 will reduce these impacts to a less than significant level. See RDEIR/SDEIS at 11-130 to 11-131. This conclusion is arbitrary and capricious because mitigation measure FISH-2 applies only in the months of March to May, whereas winter-run Chinook salmon juveniles migrate past the diversion points for Sites Reservoir from October to May.	and Master Response 5, Aquatic Biological Resources, the Wilkins Slough flow criteria have been refined in the Final EIR/EIS to increase flow standards and extended to October 1 to June 14 to cover the migration period for all the runs of salmon and steelhead in the Sacramento River; the criteria are also now part of the project description and no longer a mitigation measure. The Sacramento River is fully appropriated June 15 to August 31, so the Project would not have a right to divert water in that time period.		
51650	66	56	Second, the bypass flow requirement is based around the success of relatively large migrating juvenile Chinook salmon. Diverting flows above the proposed threshold may cause significant negative effects for the much larger portion of the juvenile Chinook salmon population that measures less than 75mm in fork length. Michel et al. (2021) used sonic	Please see Master Response 5, Aquatic Biological Resources, for a discussion of flow-related impacts on juvenile migrating salmonids and associated mitigation measures, including a discussion about the adequacy of the Michel et al. (2021) approach in terms of factors such as comparing continuous versus	Reviewed by ICF	NA

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			tags to track survival and movements of the fish they studied; their flow results apply only to fish large enough to carry a sonic tag. Migration behavior and habitat use of juvenile salmon varies with size (Quinn 2005; Williams 2006), so it is highly likely that increasing flow rates benefit smaller fish in ways and at levels that differ from those detected among the large fish studied by Michel et al. (2021). In fact, several other recent studies have documented continuous increases in survival and abundance as Sacramento River flows increase (Michel 2019; Notch et al. 2020); similar continuous positive relationships have been found among Chinook salmon in the San Joaquin River and its tributaries (SEP 2019). Furthermore, Munsch et al. (2019) identified a Sacramento River flow threshold associated with high likelihood of detection of small juvenile Chinook salmon ("fry"; greater than 55mm) in the Delta; they also found that abundance of fry increased continuously with increasing flows. Therefore, it is likely	thresholds relationships and issues related to smaller salmonids.		

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			that reducing Sacramento River flows in a range above ~10,712 cfs will reduce survival rates among a significant portion of migrating juvenile Chinook salmon.			
51650	66	57	Third, the proposed flow bypass mitigation allows no margin for error and is thus likely to result in frequent loss of real survival benefits ascribed to the greater than or equal to 10,712cfs flow threshold. The bypass requirement allows flows to be reduced to exactly the threshold identified by Michel et al. (2021), despite known levels of uncertainty around this parameter estimate. Whereas the benefit of flows above 10,712 cfs is believed to be all-or-nothing (i.e., it is a threshold), errors in estimating that threshold, measuring actual flows in the river, or changes in the threshold from year-to-year or among salmonid populations (e.g., spring-run v. fall-run) could lead to the elimination of all positive effects of this proposed mitigation. In fact, Michel et al. (2021) estimate uncertainty around their flow	Please see Master Response 5, Aquatic Biological Resources, for a discussion of flow-related impacts on juvenile migrating salmonids and associated mitigation measures, as well as uncertainty. Master Response 5 also includes a discussion about the adequacy of the Michel et al. (2021) approach. The Authority is developing an adaptive management plan to address inevitable uncertainties through ongoing and future research efforts that could inform future refinements of the Project's operational criteria. Please see Appendix 2D, Best Management Practices, Management Plans, and Technical Studies, for more information about Fish Monitoring and Technical Studies Plan and Adaptive Management for Diversions.	Reviewed by ICF	NA

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			threshold (at p. 9, Figure 4), and, as with any ecological study, the results are drawn only from a limited number of real-world situations that may not fully characterize natural variability in the flow-survival relationship. As the RDEIR/SDEIS acknowledges (at 11-130): "There is some uncertainty in the modeled flowsurvival effects and in the ability to limit potential effects with real-time operational adjustments." These uncertainties must be factored into bypass flow mitigation by raising the threshold by a safety factor that accounts for environmental variability and measurement error.			
51650	66	58	In addition, the RDEIR/SDEIS' analysis of riverine survival of salmon is flawed and fails to accurately assess environmental impacts because it does not model or analyze the effects of the proposed project and alternatives. First, the RDEIR/SDEIS' analysis of the effects of reduced flows on salmon survival only considers the effects of water diversions on salmon survival in the	Please see Master Response 5, Aquatic Biological Resources, for a discussion of flows and mitigation measures, including the expanded date ranges of analysis in Appendix 11P. The analysis shows 0% difference in survival for all years analyzed.	Reviewed by ICF	NA

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			Sacramento River between January 1 to May 31. See RDEIR/SDEIS at 11P-3. However, the vast majority of winter-run Chinook salmon have migrated past Red Bluff Diversion Dam (the upstream diversion point for Sites Reservoir) before January 1 in many years. See id. at 11-79 to 11-80. Thus, the analysis in the RDEIR/SDEIS ignores the effects of reduced flows caused by diversions for the proposed project and alternatives that affects the vast majority of winter-run Chinook salmon, even though the proposed project and alternatives can divert water during these months.			
51650	66	59	The RDEIR/SDEIS' analysis of the effects of reduced flows on salmon survival includes operational restrictions (such as a prohibition on diversions when Delta outflow is less than 44,500 cfs during the months of March to May) that are more protective than, and not included in, the proposed project and alternatives. Compare RDEIR/SDEIS at 11P-2 to	All models and assumptions reflect the contents in Chapter 2, Project Description and Alternatives, and the description of Project operations. The quantitative analysis in Appendix 11P, Riverine Flow-Survival, relies on results from the Daily Divertible Flow Tool (DDFT), not CALSIM II. The DDFT estimated the volume of water available for diversion under recent hydrologic conditions, whereas CALSIM II is an operations model that	Reviewed by Client	NA

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			11P-3 with id. at 2-31, 5A1-29 to 5A1-30, 5A2-28 to 5A2-33.	assesses and operates to conditions in the CVP/SWP system. As the DDFT does not actively simulate operations of the CVP/SWP system, it relies on certain indicators (or results of operational actions) to understand system conditions. The DDFT consideration of 44,500 cubic feet per second of Delta outflow in April and May reflects an operation to which CALSIM II operates. As such, despite variances in methodology and modeled assumptions, both tools appropriately analyze the operation of the Project.		
51650	66	60	The RDEIR/SDEIS' analysis in Appendix 11P assumes that the proportion of salmon migrating down the Sacramento River on a daily basis is the same proportion that passed the Red Bluff sampling station, but acoustic tag data shows a wide variation in the speed of juvenile salmon migration between Red Bluff and Knights Landing (Klimley et al. 2017); without this assumption, the analysis shows significantly greater reductions in survival of juvenile	Please see Master Response 5, Aquatic Biological Resources, for a discussion of flows and mitigation measures, including a discussion about the modeling of migration speeds.	Reviewed by ICF	NA

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			salmon. See RDEIR/SDEIS at 11P-5. As a result of these flawed assumptions, the RDEIR/SDEIS fails to accurately analyze the effects of the proposed project and alternatives.			
51650	66	61	(iii) The RDEIR/SDEIS Fails to Disclose Significant Environmental Impacts to Winter-Run Chinook Salmon Caused by Reduced Flows in the Lower Sacramento River and Delta The RDEIR/SDEIS' analysis of the effects of the proposed project and alternatives on the survival of juvenile winter-run Chinook salmon through the lower Sacramento River and Delta also fails to accurately assess impacts and fails to disclose significant impacts from the proposed project and alternatives. As the RDEIR/SDEIS acknowledges, there is a strong flow:survival relationship in several reaches in the Delta, and reductions in instream flow results in reduced survival of juvenile salmon. Perry et al. 2018; see RDEIR/SDEIS at 11-123 to 11-124. The RDEIR/SDEIS claims that diversions to Sites Reservoir under the	The analysis cited by the commenter illustrates what are qualitatively small differences in survival based on the analysis using the through-Delta survival function of Perry et al. (2018). This is consistent in the Final EIR/EIS. The analysis is transparent and described in detail in Appendix 11J, Through-Delta Survival and Delta Rearing Habitat of Juvenile Chinook Salmon.	Reviewed by ICF	Perry, R. W., A. C. Pope, J. G. Romine, P. L. Brandes, J. R. Burau, A. R. Blake, A. J. Ammann, C. J. Michel. 2018. Flow-Mediated Effects on Travel Time, Routing, and Survival of Juvenile Chinook Salmon in a Spatially Complex, Tidally Forced River Delta. Canadian Journal of Fisheries and Aquatic Sciences 75(11): 1886–1901.

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			proposed project would result in small changes in survival of salmon migrating through the Delta. RDEIR/SDEIS at 11-124 to 11-125. However, this analysis is misleading to the public and decisionmakers, and it fails to disclose significant environmental impacts to winter-run Chinook salmon that would result.			
51650	66	62	Because the RDEIR/SDEIS' modeled effects of the proposed project and alternatives on flows in the Sacramento River at Freeport is inaccurate (estimating smaller reductions in flow than would actually occur under the proposed project and alternatives), see supra Section V [see comments 38-42], the assessment of effects on survival of salmon through the Delta is likewise inaccurate, underestimating the adverse impacts to winter-run Chinook salmon that are likely to occur.	Please see responses to comments 66-38, 66-39, 66-40, 66-41, and 66-42 and Master Response 3, Hydrology and Hydrologic Modeling, for a discussion of the appropriateness of the modeling. As described therein, the modeling is not inaccurate, and as such the assessment of effects on survival of salmon through the Delta is also not inaccurate.	Reviewed by ICF	NA
51650	66	96	(G)The RDEIR/SDEIS Fails to Accurately Analyze Environmental Impacts to Fish Below Golden Gate Dam and Sites Dam and Fails to	The U.S. Geological Survey operated a stream gage in Stone Corral Creek near the town of Sites, which is just upstream of the proposed Sites Dam	Reviewed by ICF	Richter, B. D., M. M. Davis, C. Apse, and C. Konrad. 2011. Short

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			Disclose Potentially Significant Impacts of the Proposed Project Flows required for maintaining fish in good condition below Golden Gate Dam and Sites Dam have not yet been identified or incorporated into the project design or mitigation measures. The lack of information on Funks Creek and Stone Corral Creek flow needs (fish assemblage, geomorphic flows, etc.) makes it impossible to understand and comment on the proposed project's environmental impacts. Studies have yet to be conducted on basic hydrology and fish needs. RDEIR/SDEIS at 2-38. The RDEIR/SDEIS must be revised to include sufficient information so decision-makers can evaluate if stream ecosystem needs downstream of the reservoir can be met or will be degraded by the project design. Concerns that should be analyzed in a revised environmental document include:	location, from April 1958 to September 1985. No data are available for Funks Creek . This information was analyzed and presented in Chapter 11, Aquatic Biological Resources, and it was used to inform the proposed design of the release structures that would be needed to release flows into the creeks in compliance with water rights terms and conditions awarded to the Authority and to comply with California Fish and Game Code (CFGC) Section 5937. The analysis conducted in Chapter 11 was done consistent with methods proposed by Richter et. al. (2011) and is expected to maintain the streams and fish resources in a condition comparable to existing conditions. Subsequent to publication of the RDEIR/SDEIS the Authority contracted with MBK Engineers to produce a longer-term estimate of streamflow on Stone Corral Creek and Funks Creeks based on extrapolation of data from Elder Creek. The Elder Creek gage was chosen because it was the nearest gage on the valley floor with a long record of data		Communication: A Presumptive Standard for Environmental Flow Protection. River Research and Applications. Published online in Wiley Online Library (wileyonlinelibrary.com) DOI: 10.1002/rra.1511. California Department of Fish and Game. 2003. *Fisheries Studies at Stony Creek, Thomes Creek, Sites Newville Projects, and Colusa Basin Drain Report*. California Department of Fish and Game,

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			-valve capacities of only 100 cfs (RDEIR/SDEIS at 2D-40), when Stone Corral Creek flows exceeding 500 cfs are common in wet years; -effects of emergency releases of up to 2,500 cfs on Stone Corral Creek; and -sediment and fish passage needs, which should be evaluated earlier than "prior to construction of dams" (hydrogeomorphic technical study described on RDEIR/SDEIS at 2D-42) so they can be incorporated into the project design. We recommend using the tools and following the approach described in the California Environmental Flows Framework (CEFF; https://ceff.ucdavis.edu/) to conduct this analysis. Steps 1-10 of the Framework should inform the RDEIR/SDEIS, including "propose mitigation measures to offset impacts" as described in CEFF Step 10.	available. For the analysis, MBK assumed that Elder Creek has relatively similar precipitation and runoff patterns to Stone Corral Creek and Funks Creeks. The streamflow of Elder Creek, located in Tehama County, has been measured since 1948 (USGS Gage No. 11379500). The gage site is approximately 49 miles northwest of the proposed Sites Reservoir and has a drainage area upstream of the gage of 92.4 square miles. The overlapping period of gage records for Stone Corral Creek and Elder Creek (1958–1985) was used to determine a logarithmic correlation between the two gages for each month of the year and that was adjusted to account for the differences in size of the watersheds (MBK Engineers 2022). That analysis demonstrates a comparable pattern to that reported based on the limited stream gage data form Stone Corral Creek, which is little to no flow from June to November, higher flows associated with winter storms from December through March, and smaller flows in April and May. These		Central Valley Bay-Delta Branch.

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				updated flow data are included in Chapter 11. Since the two creeks are located within private property and access has not been granted, the only information available for the RDEIR/SDEIS regarding fish in Stone Corral and Funks Creeks is from the CALFED North of Delta Offstream Storage investigations. From July 1998 to January 1999, then California Department of Fish and Game sampled 11 stations in Stone Corral Creek and 15 stations in Funks Creek (California Department of Fish and Game 2003). They reported species composition and relative abundance. They also reported stream type and substrate characteristics. All of the sample stations were located within the reservoir inundation zone, and most were within 1 mile of the dam sites (California Department of Fish and Game 2003). No sampling of the stream reaches below the proposed dam locations was done as part of that investigation. In addition, data on stream hydrology is limited and		

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				dated. Nevertheless, the Authority recognized the limitations of the available information and proposed to conduct a series of studies to obtain information to update baseline hydrogeomorphic conditions, fish assemblage, habitat utilization, and ecology of the streams, as described in Appendix 2D, Best Management Practices, Management Plans, and Technical Studies. The Authority expects to work cooperatively with the California Department of Fish and Wildlife on the design and implementation of these studies to ensure they provide the information to design a functional flow release strategy. While the analysis conducted in Chapter 11 was done consistent with methods proposed by Richter et. al. (2011) and is expected to maintain the streams and fish resources in a condition comparable to existing conditions, the California Environmental Flows Framework (CEFF) may be considered if it is the desired approach and can be completed in time to inform final design prior to construction. The		

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				Authority is also committed to longer-term monitoring and management of the release strategy to ensure it achieves its purpose of maintaining the stream channels and fish that use them in good condition. Please see the Funks and Stone Corral Creeks section of Master Response 5, Aquatic Biological Resources, for a discussion of the data that will be updated for Funks and Stone Corral Creeks and CFGC Section 5937.		
51650	66	112	[Attachment 1: Powerpoint from Sites Authority – "Sites Reservoir Project, 2021 Water Estimate, May 28, 2021."]	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to the commenter's letter.	Reviewed by ICF	NA
51650	72	11	Second, the RDEIR/SDEIS' analysis of significant environmental impacts violates NEPA and CEQA because it assumes that changes in flow or storage less than 5 percent and/or 10 percent are insignificant. However, changes in flow and/or storage less than 5 percent or 10 percent frequently results in these levels dropping below key thresholds	The 5% or 10% values are not used as thresholds in making impact determinations in the EIR/EIS. Please see Master Response 5, Aquatic Biological Resources, for discussions of (1) thresholds and criteria used in analyses, (2) baseline and special-status fish species, and (3) how the	Reviewed by ICF	NA

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			relating to the survival of native fish species, including species listed under the California Endangered Species Act ("CESA") and the federal Endangered Species Act ("ESA"). As a result, even changes in flow or storage levels that are a less than 5 percent change from the baseline clearly can and do cause significant adverse impacts to native fish species. Moreover, for salmon and other species, reductions in flow less than 5 percent have synergistic impacts that can be devastating for these species, as reduced flows reduce survival in multiple reaches of the Sacramento River and through the Delta, resulting in cumulatively significant reductions in survival. As a result, the RDEIR/SDEIS fails to disclose significant impacts of the proposed Project and alternatives to species listed under CESA and the ESA, for which mandatory findings of significance are warranted. The RDEIR/SDEIS must be revised to eliminate the assumption that changes in flow or storage less than 5	permitting and planning processes differ.		

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			percent and less than 10 percent are insignificant.			
51650	72	12	The RDEIR/SDEIS claims that the CALSIM 2 model is not accurate enough to assess changes in flow or storage less than 5 percent, stating that, "Incremental flow and storage changes of 5% or less in modeled results are generally considered within the standard range of uncertainty associated with model processing. Therefore, for the purposes of the impact analysis, flow changes of 5% or less were considered to be similar to the NAA for comparative purposes. Changes in flow exceeding 10% were considered to represent a potentially meaningful difference." [Footnote 9: RDEIR/SDEIS at 11-57.] These 5 percent and 10 percent thresholds of significance are arbitrary, inconsistent with other NEPA/CEQA documents prepared by the USBR, and not supported by substantial evidence. Moreover, to the	The 5% or 10% values are not used as thresholds in making impact determinations in the EIR/EIS. Please see Master Response 5, Aquatic Biological Resources, for discussions of thresholds and criteria used in analyses, as well as uncertainty. Please see Master Response 3, Hydrology and Hydrologic Modeling, for a discussion on the use of CALSIM II.	Reviewed by ICF	NA

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			extent that CALSIM 2 fails to accurately assess impacts, the RDEIR/SDEIS fails to explain why it does not use the CALSIM 3 model, which has been publicly released by DWR and incorporates more recent hydrological data.			
51650	72	13	The RDEIR/SDEIS Is Fundamentally Flawed. First, the RDEIR/SDEIS provides no justification for why changes in flow less than the 10 percent threshold would not be considered a potentially meaningful difference. The lack of any explanation for this assumption regarding the 10 percent threshold makes it plainly arbitrary and capricious.	The 10% values are not used as thresholds in making impact determinations in the EIR/EIS. Please see Master Response 5, Aquatic Biological Resources, which addresses the adequacy of thresholds and criteria used in analyses.	Reviewed by ICF	NA
51650	72	14	The justification for the 5 percent threshold is also irrational and not supported by substantial evidence. Because CALSIM modeling is used in a comparative manner (meaning that it is used to model conditions under both the environmental baseline and action alternatives), there is no need	The 5% or 10% values are not used as thresholds in making impact determinations in the EIR/EIS. Please see Master Response 5, Aquatic Biological Resources, for a discussion of thresholds and criteria used in analyses, as well as uncertainty. Please see Master Response 3, Hydrology	Reviewed by ICF	NA

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			for the 5 percent or 10 percent thresholds. Importantly, there is no basis to conclude that Sacramento River flow reductions due to diversions to storage under the proposed project are an illusory modeling artifact; instead, reduced flow in the Sacramento River is an inevitable and necessary consequence of diverting water from the Sacramento River to fill Sites Reservoir. While the CALSIM model does have significant flaws, failing to disclose changes in flow that are 5 percent (or 10 percent) or less as a significant impact misleads the public and decisionmakers. In fact, other CEQA/NEPA documents that use CALSIM modeling do not use a 5 percent or 10 percent thresholds for determining whether changes in flow or storage constitute a significant impact. For instance, the final CEQA/NEPA documents for the California WaterFix project did not use these thresholds, and the RDEIR/SDEIS provides no reasoned explanation why these assumptions are necessary since they have been	and Hydrologic Modeling, for a discussion on the use of CALSIM II.		

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			omitted from other CEQA/NEPA analyses where CALSIM is used.			
51650	72	16	Using these 5 percent and 10 percent thresholds results in the RDEIR/SDEIS failing to disclose significant environmental impacts for which mitigation is required. For instance, the RDEIR/SDEIS claims that the project and alternatives would cause a significant impact to winter-run Chinook salmon if diversions by the proposed project or alternatives caused flows in the Sacramento River to drop below 10,700 cubic feet per second ("cfs"). [Footnote 12: RDEIR/SDEIS at 11-130 to 11-131.] However, because the RDEIR/SDEIS assumes that a 5 percent reduction in flows in the Sacramento River is simply a modeling artifact and not a real change, the RDEIR/SDEIS would not identify operations that reduce flows by 4 percent, but drop below 10,700 cfs, as a significant effect. Similarly, although the IOS life cycle model used in the RDEIR/SDEIS finds that on average, winter-run Chinook salmon escapement is 3 percent lower	The 5% or 10% values are not used as thresholds in making impact determinations in the EIR/EIS. Please see Master Response 5, Aquatic Biological Resources, for a discussion of thresholds and criteria used in analyses. For the Final EIR/EIS, the OBAN model has been updated to adjust for flow-survival relationships. Note that the OBAN model provides only one piece of evidence forming the weight of evidence supporting impact conclusions. SALMOD assesses potential effects of water temperature and flows on annual juvenile Chinook salmon production, which is calculated as the number of juveniles at the location of the RBDD. As such, and as characterized in the EIR/EIS, SALMOD ends at the location of the RBDD and makes no claim to assess effects in the Sacramento River downstream of this location or in the Delta. SALMOD has been used in several analyses of	Reviewed by ICF	NA

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			under Alternative 1A and 4 percent lower under Alternative 1B, with greater reductions in escapement in wetter water year types, see RDEIR/SDEIS at 11-128, the RDEIR/SDEIS wrongly concludes this is a less than significant effect. [Footnote 13: As the RDEIR/SDEIS admits, the OBAN model does not account for the flow:survival relationship in the Sacramento River, RDEIR/SDEIS at 11-129 to 11-130, and therefore the OBAN model does not provide an accurate assessment of the effects of the proposed project and alternatives on salmon. Similarly, the SALMOD model does not accurately assess the effects of the proposed project and alternatives, including because it does not account for the flow:survival relationships in the Sacramento River and through the Delta; SALMOD is an outdated and discredited model should not be relied upon.]	changing water infrastructure and operations projects. It has not been discredited or characterized as outdated in these documents. As with OBAN, it is one of several analyses used to form the weight of evidence approach to the impact analysis.		
51650	72	18	The RDEIR/SDEIS fails to accurately analyze environmental effects and disclose significant environmental	The 5% or 10% values are not used as thresholds in making impact determinations in the EIR/EIS. Please	Reviewed by ICF	NA

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			impacts because of the use of these arbitrary 5 percent and 10 percent thresholds. The RDEIR/SDEIS must be revised to exclude these improper assumptions regarding the effects of the proposed project and alternatives.	refer to Master Response 5, Aquatic Biological Resources, which addresses the adequacy of thresholds and criteria used in the analyses.		
51650	72	32	In Below Normal to Critically Dry Years, The Percentage of Total Flows That Are Subject to Project Withdrawal Will Be Most Important in Terms of Their Ecological Consequences. The NGO coalition notes that RDEIR/SDEIS Table 11-6 (Red Bluff) withdrawals are projected to be as high as 14 percent of total river flow in Below Normal-classed years, 10 percent in some Dry years, but scaled down to a maximum of 4 percent in some Critically Dry years, depending upon the alternative chosen. These rates do not appear alarming, if correct. But in Table 11-7 (Hamilton City), diversions are projected to be up to 25 percent of total flows in Below Normal years for some alternatives, and up to 24 percent in	The 25% mean diversion rate at Hamilton City cited by the commenter (i.e., in June of Critically Dry Water Years) is essentially the same as the No Project Alternative and therefore reflects the type of diversions occurring under baseline conditions. For the example that the commenter gave at Red Bluff, the up to 4% mean diversions occurred in the month of March in Critically Dry Water Years (with 0% diversions under the No Project Alternative). The corresponding mean diversion at Hamilton City in March of Critically Dry Water Years is 1% under the No Project Alternative as well as Alternatives 1, 2, and 3. As the commenter notes, the Red Bluff and Hamilton City intakes are separate diversions from the same river; there are other points of diversion as well as	Reviewed by ICF	N/A

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			some Dry years (June) and up to 25 percent in some Critically Dry years. Additionally, these two diversions would be cumulative, i.e., they are separate diversions at different points -- but from the same river. What are the total reductions in instream flow that result?	points of addition (i.e., tributaries) between the two intakes. Therefore, the diversions are best thought of as percentages of the flow approaching each intake. In the example month of March of Critically Dry Water Years cited by the commenter, the total mean diversion is 4% of flow at Red Bluff and 1% of flow at Hamilton City.		
51650	72	33	Another concerning aspect of Table 11-7, there seems to be little difference in Critically Dry Years during May through November -- under both NAA and all the Alternatives -- with even less withdrawals projected in some scenarios as between NAA and the Alternatives during these months, as follows [Footnote 38: RDEIR/SDEIS, pg. 11-91.] [See Exhibit 1]. There is no explanation why, in the without the Project scenario (NAA), up to 24% of the total volume of the Sacramento River is nevertheless withdrawn, while under the Alternatives there may in fact be less water withdrawn than under the NAA scenario. There are similar anomalies elsewhere in the	The table titled "Hamilton City Diversion as Percentage of Sacramento River Flow, Averaged by Month and Water Year Type, from CALSIM Modeling" in Chapter 11, Aquatic Biological Resources, of the RDEIR/SDEIS presents the total diversions at Hamilton City, averaged by month and water year type. The total diversions at Hamilton City may include: GCID diversions (which exist in the No Project Alternative) and Sites diversions. Any diversions presented under the No Project Alternative represent the GCID diversions from the Sacramento River. Per the in-lieu exchange operation (documented in the Project description), there are times when	Reviewed by ICF	NA

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			Table. The Coalition would appreciate clarification from the Project proponents on this discrepancy.	GCID diversions under Alternatives 1, 2, and 3 are lower than GCID diversions under the No Project Alternative. Additionally, the commenter may consider differences in percentage of river flow diverted as concerning anomalies in terms of the Alternatives 1, 2, and 3 having lower percentage of river flow diverted. Lower percentage of river flow does not necessarily equate to less water withdrawn, because the percentage diverted depends not only on the amount of water withdrawn, but also the amount of flow in the river approaching the intake. However, as shown in plots provided in the RDEIR/SDEIS such as the figure titled "Hamilton City Diversion – Glenn Colusa Canal, Critical Year Average Diversion, and Figure titled Hamilton City Diversion - Glenn Colusa Canal, October", in Appendix 5B1, Project Operations, there are lower absolute rates of diversion at Hamilton City under Alternatives 1, 2, and 3 in May through August, for example. These		

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				lower rates are attributable to overall Project operations, wherein less flow is required to be diverted during these months and water year types as a result of water being available for release by Sites Reservoir.		
51650	72	34	[Exhibit 1: Table showing values from Table 11-7]	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to the commenter's letter.	Reviewed by ICF	NA
51650	72	58	Flow-Related Physical Impacts on ESA-listed Salmonids. 1. Redd Dewatering The RDEIR/SDEIS on page 11-109 notes that: "The results for winter-run Chinook salmon show few large changes in redd dewatering between the NAA and Alternatives 1, 2, and 3 (Table 11N-13) . . . Changes for most months and water year types under all Alternatives 1, 2, and 3 are less than 2%. Overall, the effects of Alternatives	Refer to Master Response 5, Aquatic Biological Resources, for discussions of: (1) the use of monthly modeling results in the analysis of flow and related environmental factors, (2) special-status fish species and CEQA and NEPA requirements, baseline and special-status species, (3) uncertainty, and (4) thresholds and criteria used in the analyses. The highlighted results in the tables for the project alternatives should not be considered statistical outliers; they are simply "flags" to help readers quickly locate the results with the	Reviewed by ICF	NA

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			1, 2, and 3 on winter-run redd dewatering are minor." While this may be true on average, that average value is merely a mathematical construct, not a real event. In Table 11N-13 there is an outlier high number (highlighted in red) for July-October period in a Below Normal water year, in which the percentage of redds dewatered under those conditions is projected to be 2 percent. In an extremely weak population baseline, such as that of the endangered winter-run Chinook salmon stocks, that 2percent loss could well be deemed significant. Repeated such loss events could be even more so. Similar claims of insignificant impacts from redd dewatering for spring-run Chinook and fall-run Chinook could be made. However, in a related table (11N-14) showing percentage of ESA-listed spring-run Chinook redds likely to be dewatered, there are also data outliers in the September-December time frame in Above Normal water	largest differences from the No Project Alternative. For discussions of cumulative impacts on redd dewatering and other potential effects, refer to Section 31.3.6, *Aquatic Biological Resources*, of Chapter 31, *Cumulative Impacts* of the Final EIR/EIS.		

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			years for Alternative ("Alt") 1B (2.3 percent reduction), for Alt 3 (4.5 percent reduction), and during the October-January time period for Above Normal years under Alt 3 (2.2 percent) reduction, and for Critically Dry water years for Alt 1A (4.5 percent reduction), Alt 1B (3.2 percent reduction), Alt 2 (3.2 percent reduction) and finally Alt 3 (3 percent reduction). There are also similar redd dewatering problems listed for fall-run Chinook in Table N-15 of between 2 percent and 4.1 percent in some time frames and water years for some Alternatives. These redd dewatering projects outliers are of some concern. The Coalition requests the Project proponents please explain what, if any, mitigation measures they will take (e.g., reducing Project intakes in Critically Dry years during peak egg-laying season for salmonids) to mitigate these potential impacts on redds. And keep in mind also, there is no analysis about cumulative other			

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			impacts on river conditions that have already taken a high toll on the redds that are still typically present. Without that information on cumulative impacts it is not possible to say whether up to an additional 5 percent loss of redds through dewatering -- especially in light of the cumulative losses from all other impacts -- is a "significant" impact on the population as a whole or not.			
51650	72	59	2. Spawning Habitat Loss At page 11-111, after earlier describing the WUA ("weighted usable area") method used in the analysis, Project proponents state: "Almost all spawning by winter-run occurs in the upper two segments (Segment 6 and 5) of the Sacramento River, between Keswick Dam and Cow Creek, with spawning density (redds per RM) especially high in Segment 6 (Table 11K-1). . . Mean winter-run spawning WUA differs by less than 5% for most months and water year types, but mean WUA in Segment 6	The changes in winter-run spawning conditions in Segment 6 of Critically Dry Water Years is acknowledged in the RDEIR/SDEIS: "These results indicate that in May of critically dry years, Alternatives 1–3 would result in reductions of spawning habitat in Segment 6 and increases of spawning habitat in Segment 4. Note that spawning habitat conditions for winter-run are much more important in Segment 6 than in Segment 4". However, the >5% reductions in Segment 6, which occur only in Critically Dry Water Years, range between 5% and 6%, depending on the alternative, which is considered,	Reviewed by ICF	NA

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			under Alternatives 1, 2, and 3 is 5% to 6% lower than WUA under the NAA in May of Critically Dry Water Years (Table 11K-2)." However, the draft goes on to say: "In general, Alternatives 1, 2, and 3 are not expected to substantially affect winter-run spawning WUA." This latter assurance is, on its face, contradicted by the fact that at least during May, in Critically Dry water years, RDEIR/SDEIS tables show that up to 6.1 percent of all the very small amount of still remaining winter-run Chinook spawning habitat is expected to be lost. This impact, even by the Project's own questionable <5 percent significance level definition, is thus a significant impact.	based on expert opinion, not to be a substantial effect on the overall availability of winter-run spawning habitat. Also, as discussed in Master Response 5, Aquatic Biological Resources, impact conclusions regarding effects of Alternatives 1, 2, and 3 on the populations of all fish species evaluated are arrived at by weighing effects of the alternatives on all important factors. For further explanation regarding determination of substantial effects, please refer to Master Response 5 for discussions of: (1) uncertainty, (2) thresholds and criteria used in the analyses, (3) use of means in reporting modeling results, and (4) treatment of special-status fish species with respect to CEQA and NEPA requirements.		
51650	72	61	It is also important to note that there should also be an analysis about cumulative other impacts on river conditions that have already taken a high toll on spawning areas that were once typically present. Without that information on cumulative impacts it	Please see Master Response 5, Aquatic Biological Resources, for discussions of: (1) special-status fish species and CEQA and NEPA requirements, baseline and special-status species, baseline and special-status species, (2) uncertainty, and (3)	Reviewed by ICF	NA

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			is not possible to say whether up to an additional 5 percent loss of spawning habitat through dewatering is a "significant" impact on the population as a whole or not. Even a 5 percent loss of what may already be only a very small remainder of once abundant habitat could easily be "significant."	thresholds and criteria used in the analyses. For discussions of cumulative impacts on spawning and rearing weighted usable area and other potential effects, refer to Section 31.3.6, *Aquatic Biological Resources*, of Chapter 31, *Cumulative Impacts* of the Final EIR/EIS.		
51650	72	63	There should also be an analysis about cumulative other impacts on river conditions that have already taken a high toll on rearing habitat areas that were once typically occupied. Without that information on cumulative impacts it is not possible to say whether up to an additional 5 percent loss of spawning habitat through dewatering is a "significant" impact on the population as a whole or not.	This comment is substantially similar to comment 72-61. Please refer to response to comment 72-61.	Reviewed by ICF	NA
51650	72	64	4. Increases in Juvenile Salmonid Strandings	No geographically broad studies of juvenile stranding, such as would be required to evaluate effects of Project flows on juvenile stranding, have been	Reviewed by ICF	NA

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			There is an unfortunate dearth of analysis of salmonid juvenile stranding risk, as noted in Appendix 11-N (Other Flow-Related Upstream Analysis): "11N.3.3 Juvenile Stranding. A juvenile stranding analysis for salmonids was conducted in the Sacramento River only. No information is available from the Feather and American Rivers for relating changes in flow to numbers of juvenile salmonids stranded. Furthermore, daily flow data are needed to reliably estimate juvenile stranding, and only monthly data are available for these rivers." [Footnote 65: RDEIR/SDEIS, pg. 11N-42.] One would then have to assume, as a precautionary measure, that juvenile stranding problems in these other rivers would be comparable to typical stranding problems in the Sacramento. The Project proponents cannot just assume them away from lack of data.	conducted for the Feather or American rivers. This lack of information is unfortunate, but it would be problematic to assume that the effects of Alternatives 1, 2, and 3 on stranding in these rivers would be the same as those determined for the Sacramento River. Not only are conditions that affect juvenile rearing habitat in these rivers different than those in the Sacramento River, but the effects of the alternatives on flow conditions in these rivers are very different. Please see discussion in Master Response 5, Aquatic Biological Resources, on 1) use of best available tools and 2) uncertainty.		

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51650	72	65	And it turns out there are likely to be serious juvenile stranding problems within the Sacramento River: "The largest increases in juvenile stranding occur for the April cohort at all three locations [upper Sacramento River: Keswick Dam, Clear Creek, and Battle Creek], ranging as high as 30% in Dry Water Years under Alternative 1A, 1B, and 2 at the Keswick Dam location." [Footnote 66: RDEIR/SDEIS, pg. 11-112.] But then, remarkably, this very troubling and clearly significant impact is dismissed out of hand with the following justifications: "The principal period of stranding vulnerability for the winter-run is for cohorts emerging in July through October, when some large reductions and increases in juvenile stranding occur, but large reductions in juvenile stranding are more frequent than large increases. Therefore, Alternatives 1, 2, and 3 are not expected to affect winter-run juvenile stranding (Table 11N-28 through Table 11N-30)."	The commenter makes the following argument: “Stranding events and non-stranding events cannot be traded off against each other ‘on average’ because they are not biologically symmetrical. Once an individual juvenile fish is stranded, even once, it is dead – it does not matter one bit if in other places at other earlier or later times, it would not been stranded at all or would have benefited in some way. It only takes a single event (not an “averaged sum”) for a stranding to result in death. Once a fish is dead, it stays dead. It cannot benefit from later more benign events.” The tables in Appendix 11N titled “Estimated Number (thousands) of Juvenile Chinook Salmon or Steelhead Stranded by Flow Reductions at Keswick and the Percent Differences (in parentheses) for the No Action Alternative (NAA) and Alternatives 1–3”, “Estimated Number (thousands) of Juvenile Chinook Salmon or Steelhead Stranded by Flow Reductions at the Clear Creek Confluence and the Percent Differences (in parentheses)	Reviewed by ICF	NA

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			[Footnote 67: RDEIR/SDEIS, pg. 11-112.] "The results generally show little evidence of major overall effects of Alternatives 1-3. The redd dewatering and juvenile stranding analyses found many increases in potential negative effects balanced by many reductions in such effects." [Footnote 68: RDEIR/SDEIS, Appendix 11N-53.] This is false, and at best, contradictory reasoning. Stranding events and non-stranding events cannot be traded off against each other "on average" because they are not biologically symmetrical. Once an individual juvenile fish is stranded, even once, it is dead -- it does not matter one bit if in other places at other earlier or later times, it would not been stranded at all or would have benefited in some way. It only takes a single event (not an "averaged sum") for a stranding to result in death. Once a fish is dead, it stays dead. It cannot benefit from later more benign events. [Footnote 69: This is comparable to in-river fish	for the No Action Alternative (NAA) and Alternatives 1–3" and "Estimated Number (thousands) of Juvenile Chinook Salmon or Steelhead Stranded by Flow Reductions at the Battle Creek Confluence and the Percent Differences (in parentheses) for the No Action Alternative (NAA) and Alternatives 1–3" provide the mean results for a large range of stranding conditions over many years. The results of the stranding model (and most of the other analyses and models used in the Final EIR/EIS) do not follow mortality events for a single cohort of fish, as suggested in the comment. Therefore, according to the results, while increased stranding in April during some years would reduce the abundance of juveniles in May of the same years, reduced stranding in May of some years would lead to increased abundance of juveniles in June of the same year. Or, to build on the commenter's argument, a fish stranded in April would be eliminated from the population, but those not stranded and surviving into May would have a		

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			mortality events in response to summer daily hot water temperature spikes. Once a spike occurs at fatal temperatures, even once, the fish affected by that spike are dead. It does not matter thereafter what the "average daily temperature" was for that day. The "average daily temperature" is a mathematical construct while the high temperature spike is a real mortality event.] In short, its death cannot be averaged away.	greater mean chance of surviving into June. Because the reductions in mean stranding during May are much greater than the increases during April, we conclude that the potential positive effects in May outweigh any negative effects in April. Please refer to Master Response 5, Aquatic Biological Resources, for a detailed discussion of thresholds and criteria used in analyses as well as the use of means in reporting results. When available (e.g., temperature effects on salmonids), results are evaluated in terms of thresholds ("index values", see Appendix 11B, Upstream Fisheries Impact Assessment Quantitative Methods).		
51650	72	66	Removing large numbers of juvenile fish from the river, including by periodic mortality events like strandings, just means fewer fish to benefit from later changing conditions. Dead fish, from whatever the cause, are in fact removed from the population. Juvenile stranding events with mortalities of as much as	Please see response to comment 72-65. Also refer to Master Response 5, Aquatic Biological Resources, discussion about baseline and special-status species used for impacts assessments not including	Reviewed by ICF	NA

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			30 percent of the fish present [Footnote 70: RDEIR/SDEIS, Table 11N-28 through Table 11N-30.] thus represent significant mortality events that have serious implications, particularly for already extremely weak and now geographically very limited populations like the endangered winter-run Chinook. Mitigation measures to prevent these mortality events should be incorporated into the Project Plan and into its permits.	consideration of the degraded status of the population.		
51650	72	67	5. Migration Flow -- Survival Relationships At page 11-119, the NGO coalition notes the following correct summary of what is now the best available science with regard to the relationship between higher flows of water through the Delta and out-migrating salmon survival rates: "Diversions from the Sacramento River to Sites Reservoir under Alternatives 1, 2, and 3 have the potential to affect survival of juveniles	The Sites Reservoir is comparable in size and depth to Lake Berryessa and, similar to Lake Berryessa, is expected to stratify in late spring and summer months. Sites Reservoir will be between 1.3 and 1.5 million acre feet and up to 310 feet Deep. Lake Berryessa is a 1.6 million acre foot reservoir with an maximum depth of 275 feet. Lake Berryessa is a reasonable model because its comparable size, its location on the east side of the coastal mountain	Reviewed by ICF	NA

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			salmonids, including winter-run Chinook salmon, based on flow-survival relationships. Several recent analyses provided evidence for positive correlations between Sacramento River flows and survival of Chinook salmon [citations omitted]." On that same page, the RDEIR/SDEIS also states: "The discussion in Section 11P.2 of Appendix 11P, Riverine Flow-Survival, illustrates that the Sites Reservoir diversion criteria generally minimizes diversions during the historical periods of fish movement…and application of the flow-threshold criteria…suggests that flow-survival effects on juvenile Chinook salmon (including winter-run Chinook salmon) would be greatly limited by the diversion criteria." Project proponents also claim: "As discussed in Chapter 6, the effects of Alternatives 1A, 1B, 2, and 3 on water temperatures at the Sites	range, and comparable climate conditions at both locations. Withdrawals from Sites reservoir would be made via the I/O tower. The I/O tower would allow withdrawal for seven different elevations under Alternatives 1 and 3 and six different elevations under Alternative 2. This would allow Project operators to manage withdrawals for temperature and turbidity requirements. Reservoir releases would be made to the TC Canal and GCID Main Canal for north-of-Delta agriculture and municipal uses. Water for export south of the Delta would be conveyed from the reservoir to the TC Canal to its terminus, then via pipeline to the CBD (Alternatives 1 and 3) or to the Sacramento River (Alternative 2). Water releases to the CBD near Dunnigan (Alternatives 1 and 3) would be conveyed via Knights Landing Outfall to the Sacramento River. Modeling of the effect of releases on the receiving water is discussed in Master Response 4, Water Quality, in the Final EIR/EIS, and Appendix 6D,		

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			Reservoir release site in the Sacramento River would be relatively small with the releases generally tending to cause a slight reduction in water temperature (Tables 6-12a through 6-12d). Therefore, temperature-related effects of Alternatives 1A, 1B, 2, and 3 on winter-run Chinook salmon at the Sacramento River release site would be minimal...For Alternatives 1A, 1B, 2, and 3, water temperatures at this location would either stay the same or be reduced due to Sites Reservoir releases." [11-120] Hypothetical reductions in Sacramento water temperatures due to Sites Reservoir timed inputs, of course, depends on two things: (a) whether those inputs are applied directly to the Sacramento River or not, which according to the description of the Project alternatives in the Executive Summary [Footnote 71: RDEIR/SDEIS, Table ES-1 on pg. ES-8.] could only be achieved under Alternative 2, and; (b) the initial temperature of the water originating	Sites Reservoir Discharge Temperature Modeling. In addition to temperature at the reservoir release location and the Sacramento River receiving location, the model accounts for blending with water in the TC Canal and CBD and temperature exchange with the atmosphere at a monthly time step. The results indicate that the effect on Sacramento River water temperatures from either of the two conveyance methods is expected to be relatively small, with the releases generally only causing a slight reduction in water temperature within a limited area downstream of the mixing point compared to the No Project Alternative. Monitoring of releases during operations would allow confirmation of modeling results and refinement of temperature control via the I/O tower, but given the relative volumes of releases and flow in the river, and as demonstrated by modeling results, releases are not likely to result in substantial effects to species or river water quality. As such, no additional in-reservoir temperature		

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			at the Sites Reservoir at the upper end of the pipeline to the river. Left to itself the Sites Reservoir is simply going to absorb sunlight, especially during summer months, and heat up, collecting and spreading that solar energy broadly through its increased surface area like any other lake. Unless the reservoir becomes temperature stratified, it will become just like a bathtub of warm water, water that might well be warmer (not cooler) than the Sacramento River at the time of inflow. The RDEIR/SDEIS should explain in more detail any water temperature reduction measures, if any, that are planned for keeping the water temperatures of water delivered from Sites Reservoir to the Sacramento River as low-temperature as possible. For instance, is the reservoir expected to stratify in temperature, and if so, will there be temperature control devices sufficient to take water only from the lower-temperature level of that stratification? What will the	reduction measure such as the ones cited by the commenter (which could come with their own sets of potentially detrimental impacts), are necessary or advisable at this time.		

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			average depth of the reservoir be? Will it be covered in some way, such as naturally with the introduction of floating water plants, or with floating solar collectors as some have proposed, in order to reduce initial water temperatures?			
51650	77	32	ATTMT 1. Chapter or Appendix - Section: Chapter 5 - Section 5.4.1, CALSIM. Page(s): General Comment. Comment and Recommendations: The CalSim II model uses a monthly time step leading to the use of monthly averaged flow data as inputs. Proposed Project diversion operations are most likely to occur on a sub-monthly time step targeting specific flow events with many associated impacts likewise occurring on a sub-monthly flow event specific basis; therefore, the use of average monthly flow data is unlikely to capture the relative peak timings of flows and outmigration of the more vulnerable life stages. Similarly, the use of summary statistics as inputs and grouping of results can dampen the level of modeled effect fish may	Please see Master Response 5, Aquatic Biological Resources, for a discussion of monthly and daily modeling results in analyses. The commenter focuses on results in Chapter 5, Surface Water Resources; however, key analyses in Chapter 11, Aquatic Biological Resources, use daily modeling results. For example, and very much related to the commenter's concerns, the migration flow-survival analysis presented in Appendix 11P, Riverine Flow-Survival, is not dependent on CALSIM modeling results, but instead uses the Daily Divertible and Storable Flow Tool combined with the statistical code from Michel et al. (2021), specifically linking flows to daily fish movement as indicated by monitoring data. Please also see Master Response	ICF reviewed	Michel, C., J. Notch, F. Cordoleani, A. Ammann, and E. Danner. 2021. Nonlinear Survival of Imperiled Fish Informs Managed Flows in a Highly Modified River. *Ecosphere*. Available: https://doi.org/10.1002/ecs2.3498.

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			experience at a smaller time scale, which may underestimate the actual impact of modeled operations on fish survival. As such, presentation of results in this format coupled with analysis dependent on CalSim II monthly average flow inputs may be incapable of detecting, accurately quantifying, or portraying the comparative effect of significant impacts of Proposed Project operations alternatives on fish species (Simenstad et al. 2017).	5 for a discussion of flows and mitigation measures.		
51650	77	33	ATTMT 1. Chapter or Appendix - Section: Chapter 5 - Section 5.4.1.1, Summary of General Changes in Hydrology. Page(s): pp. 5-30, 5-33. Comment and Recommendations: The Proposed Project would exchange water with Shasta Lake to help preserve the cold water pool and provide benefits to anadromous fish. The hydrologic analyses presented in the RDEIR/SDEIS (Table 5-11, p. 5-30) shows on average no increases in Shasta Lake storage in wet years and minimal increases (2-4%) on average in critically dry years, while flow on	Reductions in flow do not necessarily have negative effects on anadromous salmonid populations. Spawning and rearing habitat weighted usable area (WUA), for example, typically peak at intermediate flows and are reduced at flows that are lower or higher than these flows. For examples, please refer to the WUA curves in Appendix 11K, Weighted Usable Area Analysis, in the figures entitled “Spawning WUA curves for Winter-Run Chinook Salmon in the Sacramento River, Segments 4 to 6. ACID = Anderson-Cottonwood Irrigation District”	ICF reviewed	NA

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			the Sacramento River decreases by 10-11%, on average, in May (Table 5-16, p. 5-33) of critically dry years due to the exchanges, when compared with the No Action Alternative. There are many factors that affect Shasta Lake cold water pool management and preserving relatively small volumes of water in Shasta Lake in the spring and summer will not necessarily result in meaningful temperature benefits later in the year. CDFW is concerned that any benefit derived from these exchanges may be overshadowed by the adverse impacts to anadromous fish caused by the reduction in flow on the Sacramento River, due to exchanges, in the spring of critically dry years.	through "Composite Spawning WUA for Steelhead in the American River". Effects of spring flow reductions on anadromous fish in the Sacramento River were evaluated using a suite of analyses methods (see Appendices 11K and 11N, Other Flow-Related Upstream Analyses in the RDEIR/SDEIS). For example see Tables titled "Winter-run Spawning WUA[a] in the Sacramento River, Segment 6, and Percent Differences (in parentheses) between the No Action Alternative (NAA) and Alternatives 1–3 (Alt 1A, Alt 1B, Alt 2, and Alt 3)" and "Winter-run Spawning WUA[a] in the Sacramento River, Segment 4, and Percent Differences (in parentheses) between the No Action Alternative (NAA) Alternatives 1–3 (Alt 1A, Alt 1B, Alt 2, and Alt 3)" in Appendix 11K. These analyses show 5% to 6% reductions for Alternatives 1, 2, and 3 in May of Critically Dry Water Years in winter-run spawning habitat WUA downstream of Keswick Dam (Segment 6) and increases in May of Critically Dry Water Years of 5% to 6%		

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				downstream of Cow Creek (Segment 4). The Keswick reach is more important for winter-run spawning than the Cow Creek reach, so this reduction represents a negative effect on winter-run spawning habitat. However, as shown in the RDEIR/SDEIS, all other flow effects in May of critically dry years were positive, including rearing habitat WUA for spring-run (table titled "Spring-run Juvenile Rearing WUA[a] in the Sacramento River, Segment 6, and Percent Differences (in parentheses) between the No Action Alternative (NAA) and Alternatives 1–3 (Alt 1A, Alt 1B, Alt 2, and Alt 3)" through table titled "Spring-run Juvenile Rearing WUA[a] in the Sacramento River, Segment 4, and Percent Differences (in parentheses) between the No Action Alternative (NAA) and Alternatives 1–3 (Alt 1A, Alt 1B, Alt 2, and Alt 3)" in Appendix 11K), late fall–run (table titled "Late Fall–run Fry Rearing WUA[a] in the Sacramento River, Segment 6, and Percent Differences (in parentheses) between the No Action Alternative (NAA) and		

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				Alternatives 1–3 (Alt 1A, Alt 1B, Alt 2, and Alt 3)” through table titled “Late Fall–run Juvenile Rearing WUA[a] in the Sacramento River, Segment 4, and Percent Differences (in parentheses) between the No Action Alternative (NAA) and Alternatives 1–3 (Alt 1A, Alt 1B, Alt 2, and Alt 3)” in Appendix 11K), steelhead (table ” Steelhead Fry Rearing WUA[a] in the Sacramento River, Segment 6, and Percent Differences (in parentheses) between the No Action Alternative (NAA) and Alternatives 1–3 (Alt 1A, Alt 1B, Alt 2, and Alt 3)” through “Steelhead Juvenile Rearing WUA[a] in the Sacramento River, Segment 4, and Percent Differences (in parentheses) between the No Action Alternative (NAA) and Alternatives 1–3 (Alt 1A, Alt 1B, Alt 2, and Alt 3)” in Appendix 11K) as well as late fall–run and steelhead juvenile stranding (Table titled “Estimated Number (thousands) of Juvenile Chinook Salmon or Steelhead Stranded by Flow Reductions at Keswick and the Percent Differences (in parentheses) for the No Action Alternative (NAA) and Alternatives 1–		

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				3" through table titled "Estimated Number (thousands) of Juvenile Chinook Salmon or Steelhead Stranded by Flow Reductions at the Battle Creek Confluence and the Percent Differences (in parentheses) for the No Action Alternative (NAA) and Alternatives 1–3" in Appendix 11N). Also, as shown in Appendix 11K, under the revised Project operations proposed for the Final EIR/EIS, WUA analyses indicate that any negative effects on winter-run spawning WUA were small (all reductions < 4%) in all of the river segments. Integrated potential positive and negative effects from exchanges (and the other operational effects of Alternatives 1, 2, and 3) are illustrated with the results from the winter-run Chinook salmon life cycle models, IOS and OBAN. These models generally show limited differences between Alternatives 1, 2, and 3 and the No Project Alternative.		

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51650	77	34	ATTMT 1. Chapter or Appendix - Section: Chapter 5 - Section 5.4.1.1, Summary of General Changes in Hydrology. Page(s): p. 5-33. Comment and Recommendations: The RDEIR/SDEIS shows potentially significant adverse impacts to aquatic biological resources due to Proposed Project diversions on the Sacramento River during the October-June period for Alternatives 1, 2, and 3. CDFW is concerned that reductions in flow due to Proposed Project operations are most pronounced in critically dry years, when biological aquatic resources are stressed and most vulnerable to further reductions in flow. For example, Table 5-16 (p. 5-33) shows an average 5-11% reduction in flow in critically dry years, near Wilkins Slough, for the period between December-May when flows during that time are on average already significantly below the 50% survival threshold of 10,712 cfs (Michel et. Al. 2021) for juvenile Chinook salmon. Adverse impacts, caused by the reduction	The commenter expressed concerns regarding reducing potential adverse effects of diversion to less than significant. As described further in the discussion of flows and mitigation measures in Master Response 5, Aquatic Biological Resources, in the Final EIR/EIS, Alternatives 1, 2, and 3 include refined Wilkins Slough bypass flow criteria of 10,700 cubic feet per second from October 1 to June 14 (please also see Master Response 2, Alternatives Description and Baseline). As a result, there are smaller differences in flows. Using the example provided by the commenter, the difference in mean December–May flows near Wilkins Slough in Critically Dry Water Years is reduced from 5% to 11% in the RDEIR/SDEIS to less than 1% to less than 5% in the Final EIR/EIS, and analyses of potential biological effects in the Final EIR/EIS reflect these updates.	ICF reviewed	N/A

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			of flow from Proposed Project diversions, are likely to occur to many aquatic species, not just juvenile Chinook salmon, already stressed in the Sacramento River system. As a result, CDFW recommends the Proposed Project increase minimum bypass flow requirements to reduce the adverse impacts of diversions to less than significant.			
51650	77	64	ATTMT 1. Chapter or Appendix - Section: Chapter 11 - Section 11.3.2, Operations. Page(s): p. 11-57. Comment and Recommendations: The RDEIR/SDEIS states that "where feasible, and when modelers indicate using them is appropriate, daily model outputs are utilized" (p. 11-57). However, use of USRDOM daily time step hydrologic data is limited to juvenile stranding analysis, redd scour, and redd dewatering analysis for evaluating impacts FISH-2 through FISH-5 as standalone, not cumulative projections of impacts.	In addition to the analyses listed by the commenter, there are several other daily outputs used in the analyses, including daily Freeport flows from the DSM2-HYDRO model for through-Delta survival effects (Appendix 11J, Through-Delta Survival of Juvenile Salmonids), as well as the Daily Divertible and Storable Flow for river flow-survival migration analyses (Appendix 11P, Riverine Flow-Survival), for example. The IOS model, and integrated life cycle model for winter-run Chinook salmon (Appendix 11I, Winter-Run Chinook Salmon Life Cycle Modeling), uses daily flows for through-Delta survival effects. Whether monthly or daily models, all	ICF reviewed	N/A

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				analyses ("standalone", in the commenter's words, or otherwise) form part of the weight of evidence for the overall impact conclusions in Impacts FISH-2 through FISH-5, as well as for all other fish species.		
51650	77	66	ATTMT 1. Chapter or Appendix - Section: Chapter 11 - Yolo Bypass and Fremont Weir Spill Flow and days of Yolo Bypass Inundation. Page(s): p. 11-114. Comment and Recommendations: As noted in the RDEIR/SDEIS, Proposed Project operations could reduce recruitment of juvenile salmonids onto the Yolo Bypass via Fremont Weir during overtopping events and through the proposed Fremont Weir Notch Project headworks structure. CDFW is concerned that the analyses conducted are lacking in fully evaluating the potential impact of operations on juvenile salmonid access to floodplain rearing habitat in the Yolo Bypass. The RDEIR/SDEIS analysis for flow reductions at Fremont Weir only spans January-June, thereby missing November and	An analysis of the percentage of flow and fish entering Yolo Bypass has been added to the Final EIR/EIS, based on daily downscaled CALSIM data. In addition, analyses based on the work by Acierto et al. (2014) and US Army Engineer Research and Development Center (2017) using the Daily Divertible and Storable Flow Tool input data have also been added, which includes methods developed for the Yolo Bypass Salmonid Habitat Restoration and Fish Passage EIS/EIR consistent with the commenter's suggestion. These analyses, which can be found for example in the Floodplain Inundation and Access discussion of Impact FISH-2, generally show limited potential for negative effects of Alternatives 1, 2, and 3 and would be expected to bracket results that might be obtained using the	ICF reviewed	Acierto, K. R., J. Israel, J. Ferreira, and J. Roberts. 2014. Estimating juvenile winter-run and spring-run Chinook salmon entrainment onto the Yolo Bypass over a notched Fremont Weir. California Fish and Game 100(4):630-639. US Army Engineer Research and Development Center. 2017. Scenario Analysis of Fremont Weir Notch -

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			December when overtopping may occur. Additionally, the total reduction in inundated habitat is skewed by adding modeled inundated habitat in the August-October period during conditions when juvenile salmon most likely will not have access to that habitat. To fully assess potential impacts, CDFW suggests the RDEIR/SDEIS include an analysis of how Proposed Project diversions will reduce flow entering the Yolo Bypass on a daily time-step during Fremont Weir overtopping events and through the proposed Fremont Weir Notch headworks structure for the time period of November 1 through May 31, to adequately capture Fremont Weir spill events and Fremont Weir notch operations. Changes in flow entering the Yolo Bypass on a daily time scale may be more important than monthly changes to inundated acres because it is assumed that fish access to the Bypass is the limiting factor for rearing rather than total inundated acres. CDFW suggests using the two-dimensional TUFLOW model developed for the Fremont	TUFLOW model suggested by the commenter. The comment states that showing inundated habitat results for the August through October period, during which the juvenile salmonids would not have access to the habitat, "skews" the results. However, the RDEIR/SDEIS explicitly states that the habitat created during this period is not available to juvenile salmon or to splittail. This information is presented more prominently in the Final EIR/EIS.		Integration of Engineering Designs, Telemetry, and Flow Fields. Technical memorandum for the Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project. Sacramento, California.

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			Weir Notch EIR/EIS (BOR and DWR 2019). Reductions in flow should be related to reductions in juvenile salmonid entrainment onto the Yolo Bypass using best available information such as entrainment models developed for the Fremont Weir Notch Project.			
51650	77	69	ATTMT 1. Chapter or Appendix - Section: Chapter 11 - Floodplain Inundation and Access for Sutter Bypass. Page(s): pp. 11-118, 119; 11-147; 11-179; 11-205. Comment and Recommendations: "The results of the frequency analysis of weir spills shows reductions in the number of spills, especially for the SutterBypass, indicating a reduction in bypass entry opportunity for juvenile salmonids" (p. 11-118, 119). Similar analyses are provided on p. 11-147 for spring-run Chinook salmon, p. 11-179 for fall and late-fall-run Chinook salmon, and p.11-205 for Central Valley steelhead. CDFW believes that the existing analyses and discussion of results on the potential impact of operations on juvenile salmonid access to floodplain	With respect to the commenter's uncertainty in the time period analyzed for Sutter Bypass inundation, the methods are described in Appendix 11M, stating that the analysis is for the October-April time period. Additional analysis of potential effects on juvenile salmonid entry into Sutter Bypass at Moulton Weir, Colusa Weir, and Tisdale Weir has been added to Final EIR/EIS based on the daily proportion of river flow entering Sutter Bypass at each weir. It is considered that these results provide a reasonable indication of potential impacts on juvenile salmonids in lieu of the type of model that the commenter suggested, given that flow entering the bypass is an indicator of potential fish entry into	Reviewed by ICF	N/A

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			rearing habitat in the Sutter Bypass do not fully capture potential impacts. It is not clear from the text what time period was modeled to assess reduction in weir spill events, the modeling results are not presented and the impact of the described reduction in weir spill event is not evaluated. Like for the Yolo Bypass, Sites operations could reduce beneficial recruitment of listed juvenile salmonids onto the Sutter Bypass via Moulton, Colusa, and Tisdale Weirs. Operations also have the potential to impact juvenile rearing habitat at the southern end of the Sutter Bypass due to a reduction of floodplain inundation arising from backwatering around the confluence of Sacramento River and Feather River. CDFW recommends that the same level of detail in-text as is provided for Yolo Bypass for potential changes to weir spill flows, days of inundation, and inundated area in Sutter Bypass. As for the Yolo Bypass, additional analyses should be conducted to better assess how operations will impact juvenile	the bypass. The additional information does not result in changes to conclusions. An analysis of backwater inundation into the southern Sutter Bypass from the Sacramento River has been prepared and is included in Appendix 11M of the Final EIR/EIS. The results indicate that lower Sutter Bypass suitable habitat created by Sacramento River backflow would be lower under the Alternatives 1, 2 and 3 than the NAA. However, these differences are relatively small and unlikely to affect overall salmonid or splittail production, and do not affect the impact determination for any of the species that spawn or rear in the Sutter Bypass.		

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			salmonid access to floodplain rearing habitat in the Sutter Bypass. This should include an analysis of how Sites proposed diversions will reduce flows in the Sutter Bypass on a daily time-step. CDFW suggests using the two-dimensional TUFLOW model developed for the Big Notch Project EIR/EIS (BOR and DWR 2019). Reductions in flow should be related to reductions in juvenile salmonid entrainment onto the Sutter Bypass using best available information.			
51650	77	75	ATTMT 1. Chapter or Appendix - Section: Chapter 11 - Life Cycle Models. Page(s): pp. 11-127 - 11-129. Comment and Recommendations: The OBAN winter-run Chinook salmon life cycle model was run to provide an analysis of the potential integrated effects of Alternatives 1, 2, and 3 on the species relative to the NAA. As noted in the RDEIR/SDEIS, OBAN does not have a flow survival component capable of analyzing primary impacts of the Proposed Project on winter-run Chinook salmon. Given the absence of a flow survival component, OBAN	For the Final EIR/EIS, the OBAN life cycle model accounts for flow-survival effects and shows little difference between scenarios.	ICF reviewed	N/A

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			provides limited utility for evaluation of Proposed Project impacts on winter-run Chinook salmon.			
51650	77	78	ATTMT 1. Chapter or Appendix - Section: Chapter 11 - Impact Fish-4, Sites Reservoir Release Effects. Page(s): pp. 11-180, 11-206. Comment and Recommendations: "Fall-run Chinook salmon entering the Toe Drain may eventually reach the Wallace Weir, where fish rescue and relocation to the Sacramento River by CDFW occurs, either at the recently completed Wallace Weir Fish Rescue Facility or by beach seine in the vicinity of the Wallace Weir" (p. 11-180 for fall-run, p. 11-206 for steelhead). Operations of the Wallace Weir Fish Salvage Facility should not be considered an avoidance or minimization measure for potential impacts from conveying water through the Yolo Bypass on adult salmonids. The purpose of the Wallace Weir Fish Rescue Facility is to prevent listed adult fish from entering the Colusa Basin Drain and increase the efficiency of potential fish salvage	The analysis of potential increases in adult fall-run Chinook salmon entering the Yolo Bypass does not consider that operation of the Wallace Weir Fish Salvage Facility is an avoidance or minimization measure for potential impacts from conveying water through the Yolo Bypass. Rather, the analysis acknowledges the existence of fish rescue and provides context on the rate of rescue and associated mortality during managed flow actions analogous to reservoir releases under Alternatives 1, 2, and 3. This shows the rate of rescue/mortality to be low relative to Evolutionarily Significant Unit size. Mitigation Measures FISH-8.1 and WQ-2.2 will address water quality issues associated with potential effects of reservoir releases moving water through the Yolo Bypass. The comment regarding operational capacity is ambiguous as to whether it is referring to ability to pass flows or	ICF Reviewed	N/A

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			operations. The long-term goal for the Yolo Bypass fisheries enhancement efforts is to reduce fish salvage at Wallace Weir. Increasing reliance on the facility to reduce impacts from Proposed Project deliveries conflicts with this goal. As such, it is inappropriate to use operations of the fish rescue facility as a rationale for explaining why Proposed Project reservoir releases would not impact adult fall-run Chinook salmon and steelhead. Additionally, increased flows through Colusa Basin Drain and Wallace Weir may impact the operational capacity of the Wallace Weir Fish Rescue Facility, further increasing the chance of stranding, migratory delays, and exposure to poor water quality conditions to fish being present downstream of Wallace Weir between August and November. Increased reliance of the Wallace Weir Fish Rescue Facility should be put in context of the objectives of the facility and a discussion of how handling and transporting anadromous fish potentially impacts their fitness	the capacity to handle fish. Based on a review of Project capabilities the weir and fish rescue facility would be operational at the flows associated with these releases. The capacity to handle fish will be addressed in public benefits contract required by the WSIP for the administration of water dedicated to environmental benefits.		

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			should be included. Overall, the Proposed Project should provide a more objective description of the potential impacts of reservoir releases through the Yolo Bypass on increased stranding of fall-run Chinook salmon and steelhead, as well as impacts to operations of Wallace Weir Fish Rescue Facility.			
51650	77	79	ATTMT 1. Chapter or Appendix - Section: Chapter 11 - Impact Fish-6, Flow Effects. Page(s): p. 11-223. Comment and Recommendations: Fish screen entrainment assessment is based on pallid sturgeon (Mefford and Sutphin 2008). This species is a poor proxy for green or white sturgeon. More suitable references would be products of the Cech or Fangue labs at UC Davis such as Poletto et al. 2014 and Mussen et al. 2014.	The references suggested by the commenter as being more suitable are less suitable for the purpose of assessing the potential for entrainment of larval sturgeon through fish screens, because those references pertain to juveniles for which the size means zero risk of entrainment. The reference to Mefford and Sutphin (2008) is only one part of the weight of evidence for entrainment risk and is appropriate given the morphological similarity of pallid sturgeon to green sturgeon. The analysis further goes on to cite work from the Cech/Fangue labs at UC Davis, in discussing monthly velocity criteria based on Verhille et	ICF Reviewed	Mefford, B., and Z. Sutphin. 2008. *Intake Diversion Dam Fish Screens*. Evaluation of Fish Screens for Protecting Early Life Stages of Pallid Sturgeon. Hydraulic Laboratory Report HL-2007-010. Draft. September. Denver, CO: U.S. Bureau of Reclamation, Technical Service Center, Water Resources

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				al. (2014) for protection of larval sturgeon at water diversions.		Research Laboratory. Verhille, C. E., J. B. Poletto, D. E. Cocherell, B. DeCourten, S. Baird, J. J. Cech, and N. A. Fangue. 2014. Larval green and white sturgeon swimming performance in relation to water-diversion flows. Conservation Physiology 2(1):cou031.
51650	77	80	ATTMT 1. Chapter or Appendix - Section: Chapter 11 - Impact Fish-6, Flow Effects. Page(s): p. 11-223. Comment and Recommendations: The RDEIR/SDEIS states that "The [green sturgeon] adults spawn primarily from March through July, although they	The cited text has been revised to eliminate post-July as a possible spawning period and corresponding discussion of results has been deleted from the report. This does not change the impact determinations.	ICF Reviewed	NA

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			periodically spawn in late summer and fall (as late as October) (Heublein et al. 2009, 2017, NMFS 2018b)" (p. 11-223). This statement is not consistent with the cited literature. The first two citations do not support this statement and the last citation (NMFS 2018) states that larvae have been found in late summer and fall. The latest reports of larvae have been around early October, which would correspond to spawning in July or August, not in the fall. Green sturgeon have never been reported spawning that late in the season.			
51650	77	81	ATTMT 1. Chapter or Appendix - Section: Chapter 11 - Impact Fish-6, Table 11-48. Page(s): p. 11-228. Comment and Recommendations: The RDEIS/SDEIS notes flow at Hamilton City will be reduced to 5-13% of average flow. This is of concern for green and white sturgeon. January - February corresponds with peak adult white sturgeon up-migration, and March with the start of green sturgeon up-migration for spawning. While it is unlikely that these	As recommended, the potential impact of reduced flow in the Sacramento River on migratory cues and timing of green and white sturgeon is addressed in the Final EIR/EIS. This does not change the impact determination.	ICF Reviewed	NA

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			reductions would be enough to limit passage, it is not known if they would impact migratory cues and change or alter the timing of migrations. CDFW recommends this potential impact be addressed in the FEIR/FEIS.			
51650	77	82	ATTMT 1. Chapter or Appendix - Section: Chapter 11 - Impact Fish-6, Table 11-48 and Flow Effects, Adult Migration and Holding. Page(s): p. 11-240. Comment and Recommendations: Green sturgeon spawning in the Feather River is limited to wet and above normal years due to blocked passage at Sunset Weir (as noted on p. 11-240); however, there are ongoing plans to improve passage at that barrier. If passage is improved, it is likely that spawning will occur in the Feather River in lower water years. Even if passage is improved, the reductions in flow predicted in June and July would impact rearing of larval green sturgeon. Note that one of the reasons the species was listed was that there was only one small spawning area in the Sacramento	Material addressing this topic has been added to the green sturgeon section in the Final EIR/EIS. This does not change the impact determination.	ICF Reviewed	NA

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			River, making the species susceptible to catastrophic events. Enhancing and supporting spawning in the Feather River (and other rivers) is an important component of the NMFS Recovery Plan (NMFS 2018). CDFW recommends the FEIR/FEIS address potential impacts to larval green sturgeon rearing habitat.			
51650	77	99	ATTMT 1. Chapter or Appendix - Section: Appendix 11I - Winter- Run Chinook Salmon Life Cycle Modeling. Page(s): General Comment. Comment and Recommendations: Clarification is needed on the flow scenarios used for IOS CalSim II inputs specific to the Proposed Project and to determine if Yolo (including Big Notch restoration project) and Sutter Bypass Project associated flow changes are accounted for in IOS. Temperature inputs for the Sacramento River are derived from the USBR SRWQM temperature model but it is not clear if the modeling is specific to the Proposed Project based on the documentation. Temperature inputs are only applied to the spawning	The IOS modeling primarily uses CALSIM modeling, for which assumptions (including the presence of a Fremont Weir notch) are documented in Appendix 5A-1, Model Assumptions. The Sutter Bypass Project, which is in early planning stages, is not included in the modeling. All modeling is specific to each operational scenario (i.e., No Project Alternative or Alternatives 1, 2, and 3). As the commenter notes, the IOS model does not include redd dewatering. There are standalone analyses related to redd dewatering for winter-run Chinook salmon elsewhere in the EIR/EIS, which found minor effects.	ICF Reviewed	N/A

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			reach from Keswick to Balls Ferry, but Proposed Project related flow changes are not accounted for in this section of the Sacramento River. Therefore, redd dewatering is another component of IOS that was not modeled. Chinook salmon redd dewatering could occur or be exacerbated by Proposed Project operations depending on water year type and water transfers.			
51650	77	100	ATTMT 1. Chapter or Appendix - Section: Appendix 11I - Winter- Run Chinook Salmon Life Cycle Modeling. Page(s): General Comment. Comment and Recommendations: IOS has been updated to include a flow survival component for migrating winter-run smolts. The simple linear regression presented was based on seven years of winter-run Chinook salmon acoustic tag data; however, the specific years utilized are not provided and the linear regression does not include the data points that were used to develop the linear regression (Figure 4, Appendix 11I). The survival values range from	The method description for the IOS model has been revised to include more details related to data and fit of the flow-survival function in the Final EIR/EIS (see Attachment 11I-1, IOS Winter-Run Chinook Salmon Life Cycle Model, to Appendix 11I, Winter-Run Chinook Salmon Life Cycle Modeling). This text revision does not change an impact determination or conclusion. This model has a different flow-survival relationship than the Michel et al. model (2021) because it focused only on winter-run Chinook salmon smolts, whereas Michel et al. (2021) included some winter-run as well as other runs of salmon and	ICF Reviewed	Michel, C., J. Notch, F. Cordoleani, A. Ammann, and E. Danner. 2021. Nonlinear Survival of Imperiled Fish Informs Managed Flows in a Highly Modified River. *Ecosphere*. Available: https://doi.org/10.1002/ecs2.3498.

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			approximately 25% at 3,250 cfs to 37% at 60,000 cfs from Bend Bridge to Verona. It is unclear how the regression was interpolated, extrapolated, and fit to the data points utilized. It has been shown in other flow survival analyses that there may be inflection points and thresholds of flow related survival that are vastly different than what was presented in the RDEIR/SDEIS analysis (Michel et al. 2021). Therefore, the actual impact of Proposed Project operations on salmonid survival in the Sacramento River may be under-represented.	focused more on the spring period, which is after most winter-run migration is complete. It is unclear why, as the commenter suggests, Project operations would be underrepresented by the IOS model; other than noting that there are different survival relationships, there is no specific reason given why there should be a bias for underrepresentation. Please see Master Response 5, Aquatic Biological Resources, for a discussion of flow and mitigation measures, in particular related to the inclusion of Wilkins Slough bypass flow criterion in Alternatives 1, 2, and 3 for the Final EIR/EIS (also see Master Response 2, Alternatives Description and Baseline).		
51650	77	101	ATTMT 1. Chapter or Appendix - Section: Appendix 11I - Winter- Run Chinook Salmon Life Cycle Modeling. Page(s): General Comment. Comment and Recommendations: The Delta Passage Model (DPM) component of IOS relies on monthly average CalSim II flows as an input and variable entry	Documentation for the Delta Passage Model (DPM) that describes the data sources and analysis used in the most recent revision was added as attachment to the IOS model description in the Final EIR/EIS (Attachment 11I-1, IOS Winter-Run Chinook Salmon Life Cycle Model, to	ICF Reviewed	N/A

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			timing for each year in the model simulation. It is unclear if river migration has a pulse flow component or is simply a function of smolt maturation, and how year-specific entry to the Delta curves are generated. As such, CDFW cannot determine if these entry curves coincide with actual Proposed Project diversions. When coupled with the use of monthly averaged flow inputs, there is significant potential for the IOS model to under-represent Proposed Project impacts on through Delta survival. It is also unclear if the DPM component of IOS relies on Perry 2010 or if it has been updated to the more recent Perry 2018 model. CDFW recommends that the DPM component of IOS including the smolt entry component of the IOS life cycle model be more thoroughly documented in Appendix 11I-2.	Appendix 11I, Winter-Run Chinook Salmon Life Cycle Modeling). Within the IOS documentation, the section on Delta Passage describes how fish enter the Delta and contrasts how it happens in IOS vs. the DPM, specifically: "The timing of winter-run entry into the Delta is a function of upstream fry/egg rearing and river migration so timing changes annually, in contrast to the fixed nature of Delta entry for the standalone DPM." The figure titled Winter-Run Chinook Salmon Smolt Delta Entry Distributions Assumed under the Delta Passage Model Compared with Entry Distributions for IOS in 1937, 1994, and 2001 in Attachment 11I-1 compares entry distributions in several different years within IOS relative to the DPM, based on application in modeling for a prior project.		
51650	77	106	ATTMT 1. Chapter or Appendix - Section: Appendix 11P - Riverine Flow-Survival. Page(s): Figure 11P-1. Comment and Recommendations: The RDEIR/SDEIS's analysis showed that	Please see Master Response 5, Aquatic Biological Resources, for a discussion of these topics in the scope of flow and mitigation measures, which notes, for example limitations	ICF Reviewed	N/A

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			estimated survival for the status quo and Proposed Project scenarios was similar (Figure 11P-1), with the exception of two wet years (2011 and 2017). This illustrates that the Proposed Project diversion criteria generally minimize diversions during the historical periods of fish movement, as reflected in Red Bluff rotary screw trap data. However, fish presence/passage at the RBDD rotary screw traps is an incomplete reference point to assess impacts of Proposed Project diversions on juvenile salmonid flow-survival relationships. Listed fish (Central Valley spring-run Chinook and steelhead) enter the Sacramento River downstream of Red Bluff Diversion Dam (RBDD) (e.g., Antelope, Deer, Mill Creek populations) October through June. Additionally, peak passage events of fish at the RBDD rotary screw traps should be evaluated by juvenile life-stage (e.g., fry, parr, smolt). For example, fry life-stage individuals are caught at much higher rates than larger-sized individuals, and flow-survival impacts should be weighted	in the availability of data for other life stages and how the analysis accounts for fish from Feather River and Butte Creek.		

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			towards parr and smolt life stages, which are more actively out-migrating through Sacramento River mainstem to reach the ocean versus fry life-stages that are still rearing in the lower Sacramento River and Delta, often for extended periods of time. This is a key consideration for evaluating survival for status quo and Proposed Project scenarios and concluding whether or not survival would be similar in real-life scenarios based on the fish presence criteria used in the Sites Diversion tool. The analysis also omits Proposed Project impacts on Butte Creek and Feather River origin salmonids, including CESA listed salmonids which enter the Sacramento River below Wilkins Slough.			
51650	77	107	ATTMT 1. Chapter or Appendix - Section: Appendix 11P - Riverine Flow-Survival. Page(s): p. 11P.2. Comment and Recommendations: The RDEIR/SDEIS analyzes the effects of in-river flow generally utilizing the best flow survival science available (Michel et. Al. 2021) and has	Please see Master Response 5, Aquatic Biological Resources, for a discussion of flow and mitigation measures, including the lack of Above Normal Water Years noted by the commenter.	ICF Reviewed	NA

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			documented the methodology well in Section 11P.2. The RDEIR/SDEIS assesses the proposed diversion criteria by application of published flow-survival relationships to daily flow data, while accounting for historical fish migration patterns as represented in monitoring data. The Sites Reservoir Daily Divertible & Storable Flow Tool provided daily Sacramento River at Wilkins Slough flows for the flow-survival analysis, which include daily diversions by the Red Bluff and Hamilton City diversions. However, the period of record is limited to 2009-2018 and does not include above normal year types during which Proposed Project diversions would be expected.			
51650	78	45	Chapter 5: Surface Water Resources, Page 5-30 - Average estimated decreases to Sacramento River flows (11%, Table 5-16) in May of critically dry years and associated adverse impacts to fish survival and fish populations may not be sufficiently mitigated or offset by the minimal average estimated increases to Shasta	Water temperature modeling for the Final EIR/EIS indicates that differences in mean water temperature between each alternative and the No Project Alternative during spring months (March through May) of critically dry years would be no more than ±0.2°F at all locations in the Sacramento River between Keswick and Butte City.	ICF Reviewed	NA

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			Lake storage in May of critically dry years (2-4%, Table 5-11). Minimal storage increases in the month of May are not necessarily likely to provide temperature benefits in later, warmer, summer and fall months when temperature benefits are most needed, especially in critically dry conditions. The net effect of these changes may be a significant adverse effect to fish species present in the Sacramento River in spring of critically dry years. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	Please see Appendix 6C, River Temperature Modeling (HEC5Q and Reclamation Temperature Model), for revised model output tables for the Final EIR/EIS. Because the modeling has been refined for the Final EIR/EIS, the number provided in this response (no more than ±0.2°F) may be different from those in the RDEIR/SDEIS and in the comment, although they are consistent with the Final EIR/EIS. The conclusions did not change as a result of the new modeling.		
51650	78	46	Chapter 5: Surface Water Resources, Page 5-33 – Reductions in flow due to Proposed Project operations and diversions on the Sacramento River during the October – June period in critically dry years for Alternatives 1 – 3, result in potentially significant adverse impacts to aquatic biological resources. Increased bypass flow requirements should be evaluated that would avoid reducing baseline	Please see Master Response 5, Aquatic Biological Resources, for a discussion of flow-related impacts on juvenile migrating salmonids and associated mitigation measures. Please see Master Response 2, Alternatives Description and Baseline, which addresses the refinements made to Project operations, including changes to the Wilkins Slough criteria	ICF Reviewed	NA

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			flows and reduce potentially adverse impacts to fish species to less than significant. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	in the Final EIR/EIS that further restrict diversions.		
51650	78	47	Chapter 5: Surface Water Resources, Pages 5-36 and 37 - The draft REIR/SEIS shows that changes to baseline flows as a result of water exchanges made possible by the Proposed Project may result in adverse impacts to fish species. For example, flow increases of 5 – 25 percent in fall months may dewater fallrun Chinook and steelhead redds when flows recede. Flow reductions in June and July of critically dry years (3 – 14 percent, Table 5-23) on the Feather River may adversely impact migrating spring-run Chinook salmon and green sturgeon. Similar flow changes on the American River due to Folsom Lake exchanges are estimated to occur with the same concerns for adverse impacts to salmon and steelhead. Operational criteria should	Effects of flow changes on life history stages and habitats of fish are analyzed in Chapter 11, Aquatic Biological Resources, of the RDEIR/SDEIS, regardless of the source of the changes. This includes effects of flow increases and subsequent recessions on fall-run redds and the other cases cited. Effects of any changes in operations are presented in the Final EIR/EIS. For example, the results of analyses on redd dewatering, provided in Appendix 11N, Other Flow-Related Upstream Analyses, and Chapter 11 of the Final EIR/EIS, show no effect of the Project on redd dewatering in the Feather and American Rivers, except for occasional increases for spring-run in the Feather River and fall-run in the American River. Other effects are fully	ICF Reviewed	NA

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			be developed to avoid changes to baseline flows that may cause adverse impacts to fish species on the Feather and American Rivers. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	discussed in the cited documents. Note that Folsom Lake exchanges are no longer part of the Sites Project.		
51650	78	85	Chapter 11: Aquatic Biological Resources Reductions in flows and survival of juvenile fish with a demonstrated flow survival relationship are likely to be negatively impacted by Proposed Project operations that reduce baseline flows. Anticipated negative impacts on native fish species that have documented positive flow: abundance relationships reinforce the previously stated need for a project alternative that concentrates diversions during high flow periods when there is excess flow in the system and avoids diversions during lower flow periods when those flows provide for protection of fish and wildlife.	The Project concentrates diversions during high flow periods. Diversions during low-flow periods are relatively rare. Please see Master Response 2, Alternatives Description and Baseline, which addresses the refinements made to Project operations, including changes to the Wilkins Slough Bypass Flow criteria in the Final EIR/EIS that further restrict diversions. The Wilkins Slough diversion Bypass Flow criteria have been refined in the Final EIR/EIS to higher minimum flow standard of 10,700 cfs from October 1 to June 14 and are also part of the project description (rather than a mitigation measure), as described in Master Response 2. Also see Master Response 5, Aquatic Biological Resources, for a discussion of flow-	ICF Reviewed	N/A

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			[Commenting Water Board or Section within the State Water Board: Bay-Delta]	related impacts on juvenile migrating salmonids and associated mitigation measures.		
51650	78	91	Chapter 11, page 11-112 These tables (11N-28, 29, 30) show potential for large-scale increases (over 30%) and decreases (over 55%) of juvenile salmonid stranding under different project alternatives compared to the NAA. The draft REIR/SEIS, however, does not address any potential mitigation measures for such changes in juvenile stranding. Instead, the draft REIR/SEIS concludes that the project alternatives would not be expected to affect winter-run juvenile stranding based on the varying levels of juvenile stranding stating "some large reductions and increases in juvenile stranding occur, but large reductions in juvenile stranding are more frequent than large increases." Mitigation for increases to juvenile stranding should be identified instead of relying on potential decreases at other times to	We believe that weighing increases and reductions in expected stranding of juvenile fish is legitimate and, in fact, recommended. It is unrealistic to expect no changes in conditions such as juvenile fish stranding from a large project such as Sites, but if the changes result in more decreases than increases in potential stranding, it is reasonable to conclude that, at worst, there would be no overall increase in stranding. Please also note that juvenile stranding analyses are just one of several lines of evidence used in making impact determinations. Analyses of new Project operations using revised CALSIM II flow data for the Final EIR/EIS has yielded minor changes in the juvenile stranding results.	ICF Reviewed	NA

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			offset increases in stranding and losses to juvenile survival. [Commenting Water Board or Section within the State Water Board: Bay-Delta]			
51650	78	92	Chapter 11, pages 62 11-152; 11-185 Spring-run (Table 11K-18) and fall-run Chinook salmon (Table 11K-19) spawning habitat WUA downstream of the Thermalito Afterbay Outlet will be reduced under Alternatives 1A (6.8%), 1B (5.6%), and 2 (6.7%) in October of Below Normal water years. Despite these reductions of spawning habitat in the Feather River, the draft REIR/SEIS concludes the Alternatives would have "mostly minor effects." Further analyses of the impacts of the reduced spawning habitat and justification for the conclusion of "minor effects" should be provided. Given the status of these fish populations, a finding of "minor effects" does not appear to be supported by the estimated losses to	The cited reductions in mean spawning WUA are the only >5% reductions and occur only in 1 month of one water year type. Based on expert opinion such reductions are considered to have minor effects on the overall availability of spring-run and fall-run spawning habitat. Note also that, as discussed in Master Response 5, Aquatic Biological Resources, impact conclusions regarding effects of the Project on the populations of all fish species evaluated are arrived at by weighing effects of the alternatives on *all* important factors. Also see discussions in Master Response 5 on: (1) CEQA/NEPA "baseline" used for impacts assessments doesn't include consideration of the degraded status	ICF Reviewed	NA

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			spawning habitat that result from the proposed project. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	of the population, (2) uncertainty, and (3) thresholds and criteria used in the analyses.		
51650	78	94	Chapter 11, page 11-174 The project would result in reduced spawning habitat WUA for fall-run, especially in river segments 4 and 6 in the Sacramento River under Alternatives 1A, 1B, and 3 (Tables 11K-8, 9, 10, and 11). The draft REIR/SEIS also concludes that "Alternatives 1, 2, and 3 would result in frequent minor reductions in spawning habitat WUA for fall-run, and occasional somewhat greater reductions, primarily for Alternative 3." The mitigation measure FISH-2.1 is designed to enhance migration survival of juvenile salmonids, and its impacts on spawning habitat WUA is uncertain. This should be clarified.	The effects of Alternatives 1, 2, and 3 on fish populations were evaluated by qualitatively weighing all relevant analysis results, including results from different processes and results from different times and locations. For example, effects of Alternatives 1, 2, and 3 on spring-run Chinook salmon eggs and alevins were evaluated by considering results of analysis of spring-run spawning weighted usable area (WUA), redd dewatering, and water temperatures in up to three different locations on the Sacramento River downstream of Keswick Reservoir and during three primary spring-run spawning months and five different water year types. Thus, for fall-run Chinook salmon, juvenile rearing habitat WUA is typically higher under Alternatives 1, 2, and 3 than the No Project Alternative,	ICF Reviewed	NA

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			[Commenting Water Board or Section within the State Water Board: Bay-Delta]	especially for Alternative 3 (see tables in Appendix 11K, Weighted Usable Area Analysis, titled "Fall-run Juvenile Rearing WUA in the Sacramento River, Segment 6, and Percent Differences (in parentheses) between the No Action Alternative (NAA) and Alternatives 1–3 (Alt 1A, Alt 1B, Alt 2, and Alt 3)"; "Fall-run Juvenile Rearing WUA in the Sacramento River, Segment 5, and Percent Differences (in parentheses) between the No Action Alternative (NAA) and Alternatives 1–3 (Alt 1A, Alt 1B, Alt 2, and Alt 3)"; and "Fall-run Juvenile Rearing WUA in the Sacramento River, Segment 4, and Percent Differences (in parentheses) between the No Action Alternative (NAA) and Alternatives 1–3 (Alt 1A, Alt 1B, Alt 2, and Alt 3)"). The improvement in rearing habitat WUA is expected to offset the reduction in spawning WUA. Also see discussion in Master Response 5, Aquatic Biological		

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				Resources, on thresholds and criteria used in the analyses.		
51650	81	4	Page 2-30 What is the basis for the cessation of the Bend Bridge Pulse Protection after 7 days (followed by the requirement for 3-day trailing average of low flows)? If flows remain elevated (for example if there are consecutive or prolonged events that increase river flow, and/or if fish remain present in high numbers) Sites Reservoir withdrawals could lead to adverse fisheries impacts. There is also a problematic lag time in the proposal resulting from the choice to use a 3-day trailing average combined with the delay inherent in monitoring (to detect fish or flow events) before initiating protection. NMFS suggests that methods be developed to implement a Bend Bridge Pulse Protection proactively, to protect fish presence and movement earlier, especially on the ascending limb of the hydrograph. For example, predictive models could use historic	The cessation of pulse protection after 7 days is based on the premise that most juvenile fish move in association with the rising limb of a hydrograph (e.g., see del Rosario et al. 2013 and Poytress et al. 2014). The measure is designed to let fish moving on the rising limb pass the diversion locations without exposure to diversions. Fish that move later during prolonged flow events would be protected by the state-of-the-art fish screens at the diversions. The pulse protection measures has been modified so that it is now based on a forecasted pulse form the National Oceanic and Atmospheric Administration's California Nevada River Forecast Center. Please see Master Response 2, Alternatives Description and Baseline, for a description of the refinements made to Project operations, including refinements to Bend Bridge Pulse flows.	ICF Reviewed	del Rosario, R.G., Y. J. F., K. Newman, P.L. Brandes, T. Sommer, K. Reece, and RI Vincik (2013). "Migration Patterns of Juvenile Winter-run-sized Chinook Salmon (Oncorhynchus tshawytscha) Through the Sacramento-San Joaquin Delta." San Francisco Estuary and Watershed Science 11(1): 24. Poytress WR, Gruber JJ, Carrillo FD, Voss SD. 2014.Compendiu m report of Red

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			hydrology and fish presence data to determine what flows will likely mobilize fish. Hydrologic, meteorologic and operations tools (e.g. from the USBR Shasta & Trinity River Division and the California Nevada River Forecast Center) can be used to forecast operations, rainfall and flow at Bend Bridge. A proactive Bend Bridge Pulse Protection could be especially important for earlier migrants in the first pulse after a drier period, as well as for later migrants facing small windows of suitable outmigration conditions. More generally, protecting the life history diversity in outmigration timing is key to salmonid population viability.	The Authority has identified the pulse protection measure as an element of its adaptive management plan and intends to work closely with the fishery agencies to investigate methods of improving the criteria to ensure the benefits of pulses are achieved without unnecessarily diminishing diversions.		Bluff diversion dam rotary screw trap juvenile anadromous fish production indices for years 2002-2012. Report of U.S. Fish and Wildlife Service to California Department of Fish and Wildlife and US Bureau of Reclamation
51650	81	7	Page 2-36 The project description states that in late summer and fall (i.e., August through November) Reclamation would release water from Shasta Lake and/or the CVP share of Sites Reservoir for Storage Partners. It should be noted, however, that releases in this time period can have	Potential effects of Alternatives 1, 2, and 3 on spawning and rearing habitat of all salmonid species in the Sacramento River downstream of Shasta Lake, including water temperature, spawning and rearing habitat availability, redd dewatering, and juvenile stranding, are analyzed	ICF Reviewed	NA

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			adverse impacts on salmon spawning, rearing, redd dewatering, and stranding. In short, the exchanges for Cold Water Pool maintenance could exacerbate the challenge of stabilizing flows to prevent stranding and redd dewatering.	and discussed in Chapter 11, Aquatic Biological Resources.		
51650	81	26	Page 11-111 Mean weighted usable area in winter-run spawning grounds from Keswick Dam to ACID dam is 5-6% less than the no action alternative in May of Critically Dry Water Years. The loss of early spawning habitat during critical years is especially detrimental since there is frequently a lack of cold water to support the survival of eggs spawned later (e.g. August, July, or even June).	The changes in winter-run spawning conditions in Segment 6 of Critically Dry Water Years are acknowledged in the RDEIR/SDEIS: "These results indicate that in May of critically dry years, Alternatives 1–3 would result in reductions of spawning habitat in Segment 6 and increases of spawning habitat in Segment 4. Note that spawning habitat conditions for winter-run are much more important in Segment 6 than in Segment 4"). However, these reductions, which range between 5% and 6% depending on the alternative, and occur only in Critically Dry Water Years, are considered, based on expert opinion, not to have a substantial effect on the overall availability of winter-run spawning habitat. Also, as discussed in Master Response 5, Aquatic	ICF Reviewed	NA

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				Biological Resources, impact conclusions regarding effects of Alternatives 1, 2, and 3 on the populations of all fish species evaluated are arrived at by weighing effects of the alternatives on *all* important factors. Analysis of new Project operations associated with the Final EIR/EIS show no effect on winter-run spawning weighted usable area in any of the river segments. Regarding the Project's potential impact on egg survival during June through August, the results of the Anderson and Martin egg mortality models from the revised modeling in the Final EIR/EIS indicate that egg mortality under each alternative is comparable to that of the No Action Alternative (NAA) (Appendix 11O, Anderson-Martin Models) and would not be deemed "detrimental" at any level. For the entire year, the Martin model predicts a change in winter-run egg mortality from 0.2% increase under Alternative 1A relative to the		

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				NAA (Appendix 11O, Anderson-Martin Models, table title: Annual Temperature-Dependent Winter- Run Chinook Salmon Mortalities, Alternative 1A 051722 minus No Action Alternative 051422) to 0.5% reduction under Alternative 3 relative to the NAA (Appendix 11O, table title: Annual Temperature-Dependent Winter- Run Chinook Salmon Mortalities, Alternative 3 051722 minus No Action Alternative 051422). The Anderson models predict a reduction in winter-run egg mortality of 0.2% under Alternatives 1A and 2 relative to the NAA (Appendix 11O, table title: Annual Temperature-Dependent Winter- Run Chinook Salmon Mortalities, Alternative 1A 051722 minus No Action Alternative 051422; table title: Annual Temperature-Dependent Winter- Run Chinook Salmon Mortalities, Alternative 2 051722 minus No Action Alternative 051422) to 0.4% under Alternative 3 relative to the NAA (Appendix 11O, table title: Annual Temperature-Dependent Winter- Run Chinook Salmon Mortalities,		

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				Alternative 3 051722 minus No Action Alternative 051422) Please also refer to Master Response 5, Aquatic Biological Resources for discussions of: (1) uncertainty, and (2) thresholds and criteria used in the analyses.		
51650	81	28	Page 11-88 The hydrologic model results report diversions as a percentage of Sacramento River Flow, averaged by month and water year type, from CalSim Modeling. Results should reflect critical conditions (e.g. drought in summer) not just average conditions (which can be highly variable in California, even when stratified by water year). In particular, the average for Critically Dry Water Years presented in Table 5-11 doesn't represent potential critical conditions since it averages across what can be a wide range of storage conditions. While the conditions of a single year may be important, prolonged dry periods (e.g. in back to back water	Please refer to Master Response 5, Aquatic Biological Resources, for a discussion of the use of means in reporting modeling results. For purposes of NEPA and CEQA, the analyses of means efficiently illustrate the general effects of the Project under a range of flows or flow-related conditions and are in keeping with appropriate use of CALSIM-based modeling. Selecting an arbitrary sequence of critically dry years for analysis would be speculative and inconsistent with the requirements of NEPA and CEQA. With respect to drought conditions, water year type calculations in CALSIM runs consider the hydrology from the previous water year. As such,	ICF Reviewed	

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			years) in the Sacramento River can exhaust CVP/SWP surface storage capacity, leading to high river temperatures (e.g. 2014-15, 2020-21) and elevated extinction risk. NMFS suggests pursuing an analysis to understand the effects of the project on the Sacramento River during prolonged dry periods, like the severe droughts that have been experienced in recent years.	a Critically Dry Water Year is likely to follow an already Dry or Critically Dry Water Year. Furthermore, lower storage conditions occur only under successive Dry Water Years, as identified by Critically Dry Water Years. Also worth noting is the location of the Project diversions at Red Bluff and the Hamilton City intake, below the critical temperature reaches for winter-run Chinook salmon. The Project would not affect runoff into Shasta Lake. It only provides a tool for Reclamation to use in its efforts to manage the cold-water pool in Shasta Lake through the use of exchanges that may affect rate of releases from Shasta Lake for purposes of temperature control and flow stability. The use of monthly means is a sufficient analysis to disclose the effect of the alternatives in that regard. Regarding river temperature conditions, please see Appendix 6C, River Temperature Modeling Results. Exceedance plots of temperature are provided for each month, which		

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				should help illustrate the changes to Sacramento River water temperature during the warmest summer months (i.e., drought conditions). Finally, Chapter 28, Climate Change, discusses the likely change in patterns of precipitation and storage in Shasta Lake and indicates an expected reduction in storage at Shasta Lake, which suggests temperature management will be a challenge in the future. The Project adds a tool Reclamation may use in the development of its annual temperature management strategies pursuant to Water Rights Order 90-5.		
51650	81	34	Page 11P-1 Please provide a copy of the Sites Reservoir Daily Divertible & Storable Flow Tool (version 20210309 and latest version) Excel workbook.	Please see response to comment 81-31 regarding information requests.	ICF Reviewed	John confirmed on 5/19 that NMFS wants information from the BA. Email is saved in information needs folder as “proof” for the time being (Email_NMFSInformationRequest_Resolution.pdf)

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51650	81	35	Page 11P-8 NMFS suggests that Figures 11P-3 & 4 show results for Sites without MM FISH-2.1 so the impact of the mitigation measure can be demonstrated.	As described in Master Response 2, Alternatives Description and Baseline, the Wilkins Slough bypass flow criterion is now part of Project operations and has been expanded to cover the October 1 to June 14 period, so there is no longer relevance in showing the effects of Mitigation Measure FISH-2.1. Please also see Master Response 5, Aquatic Biological Resources, for a discussion of flow and mitigation measures.	ICF Reviewed	N/A
51650	91	3	The environmental impacts of additional diversions from the Sacramento River are not adequately described in the proposed project. Currently California is experiencing multi-year droughts that have decimated aquatic resources such as salmon. The main stem of the Sacramento River is currently devoid of the microfauna the support fish species including salmon as documented by University of California aquatic resource studies. The proposed project fails to	The article cited by the commenter is not related to University of California aquatic resource studies that show that the mainstem of the Sacramento River is devoid of the microfauna-supporting fish species including salmon. Rather, the cited article is a summary of studies done to assess the effects on juvenile salmon from rearing in flooded farm rice fields. The Project would not affect such practices. Potential effects of the Project on other flooded habitats such as the Yolo Bypass are analyzed in the EIR/EIS; see for example the Floodplain Inundation and Access	ICF Reviewed	N/A

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			document how additional diversions will effect this water quality problem.	section of Impact FISH-2 in Chapter 11.		

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51670	70	23	The discussion in 11.2.2.2 regarding Nutrients and Foodweb Support should include a discussion regarding the Nigiri Project. https://www.nigiriproject.com/. The seasonal flooding on the Colusa Basin Drain is an important part of the Foodweb as illustrated by the findings of the Nigiri Project. To the extent that flood flows from Funks Creek and Stone Corral Creek are diverted the Foodweb highlighted in the Nigiri Project will be diminished especially regarding the seasonal wetlands and inundated riparian corridor along the Colusa Basin Drain.	A discussion of the Nigiri Project (at Knaggs Ranch) has been added to the Final EIR/EIS, as suggested by the commenter (see the reference to Katz et al. 2017 in Chapter 11, *Aquatic Biological Resources*, under *Aquatic Habitat* in the *Yolo Bypass*). Flows into the Nigiri Project come from the Knights Landing Ridge Cut and generally would be quite similar under the No Project Alternative and Alternatives 1, 2, and 3. For Final EIR/EIS CalSim modeling, the differences in mean monthly Knights Landing Ridge Cut flows during December–April are generally less than 1%, except in December of Below Normal Water Years, when flows are up to 11% less under Alternatives 1, 2, and 3. Alternatives 1, 2, and 3 would not be expected to have any effect on the ability to operate the Nigiri Project.	Reviewed by ICF	Reference in Vol 1 and RDEIR/SDEIS, Chapter 11 Katz, J. V., C. Jeffres, J. L. Conrad, T. R. Sommer, J. Martinez, S. Brumbaugh, N. Corline, and P. B. Moyle. 2017. Floodplain Farm Fields Provide Novel Rearing Habitat for Chinook Salmon. *PLOS ONE*. Available: http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0177409. Accessed: June 7, 2021.
51670	70	24	Fish Passage and Entrapment – Page 11-16 Salmon are present in the Colusa Basin Drain and have become	The link provided by the commenter no longer works. The page number (11-16) cited by the commenter	Reviewed by ICF	N/A

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			entrapped https://www.fws.gov/fieldnotes/regmap.cfm?arskey=33853	pertains to fish passage in the Delta; presence of adult salmon in the Colusa Basin Drain is discussed on page 11-30 in the RDEIR/SDEIS.		
51670	71	23	The discussion in 11.2.2.2 regarding Nutrients and Foodweb Support should include a discussion regarding the Nigiri Project. https://www.nigiriproject.com/. The seasonal flooding on the Colusa Basin Drain is an important part of the Foodweb as illustrated by the findings of the Nigiri Project. To the extent that flood flows from Funks Creek and Stone Corral Creek are diverted the Foodweb highlighted in the Nigiri Project will be diminished especially regarding the seasonal wetlands and inundated riparian corridor along the Colusa Basin Drain.	A discussion of the Nigiri Project (at Knaggs Ranch) has been added to the Final EIR/EIS, as suggested by the commenter (see the reference to Katz et al. 2017 in Chapter 11, *Aquatic Biological Resources*, under *Aquatic Habitat* in the *Yolo Bypass*). Flows into the Nigiri Project come from the Knights Landing Ridge Cut and generally would be quite similar under the No Project Alternative and Alternatives 1, 2, and 3. For Final EIR/EIS CalSim modeling, the differences in mean monthly Knights Landing Ridge Cut flows during December–April are generally less than 1%, except in December of Below Normal Water Years, when flows are up to 11% less under Alternatives 1, 2, and 3. Alternatives 1, 2, and 3 would not be expected to have any effect on the ability to operate the Nigiri Project.	Reviewed by ICF	Reference in Vol 1 and RDEIR/SDEIS, Chapter 11 Katz, J. V., C. Jeffres, J. L. Conrad, T. R. Sommer, J. Martinez, S. Brumbaugh, N. Corline, and P. B. Moyle. 2017. Floodplain Farm Fields Provide Novel Rearing Habitat for Chinook Salmon. *PLOS ONE*. Available: http://journals.plos.org/plosone/article?id=10.1371/journal.pone.017740

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						9. Accessed: June 7, 2021.
51670	71	24	Fish Passage and Entrapment – Page 11-16 Salmon are present in the Colusa Basin Drain and have become entrapped https://www.fws.gov/fieldnotes/regmap.cfm?arskey=33853	The link provided by the commenter no longer works. The page number (11-16) cited by the commenter pertains to fish passage in the Delta; presence of adult salmon in the Colusa Basin Drain is discussed on page 11-30 in the RDEIR/SDEIS.	Reviewed by ICF	N/A
51670	72	39	3. Impacts of Sites Reservoir of Yolo and Sutter Bypass Fishery Habitat Review of Appendix 11M indicates that all three alternatives will impact fishery rearing potential in both the Sutter and Yolo Bypasses. These impacts occur in two ways. First, modeling results indicate that there will be a reduced opportunity for juvenile fish to enter the Sutter and Yolo Bypasses for rearing under all Alternatives. This results in less fish available to take advantage of rearing habitat in the Bypasses. The second impact is reduced duration of inundated rearing habitat. Modeling results indicate a reduced	Analyses of juvenile fish passage for Chinook salmon into the Yolo Bypass via Fremont Weir and at the three Sutter Bypass weirs have been added to the Final EIR/EIS using several different methods. These additions can be found in Chapter 11, Impact FISH-2: Operations Effects on Winter-Run Chinook Salmon, in the sections: 1) Juvenile Entry into Yolo Bypass at Fremont Weir and 2) Juvenile Entry into Sutter Bypass at Mouton, Colusa, and Tisdale Weirs. The results of all methods, as discussed in Chapter 11, Aquatic Biological Resources (under Impact FISH-2: Operations Effects on Winter-Run Chinook Salmon, subheadings Juvenile Entry into Yolo	Reviewed by ICF	Reference in Vol 1 and RDEIR/SDEIS, Chapter 11 Sommer, T., B. Harrell, M. Nobriga, R. Brown, P. Moyle, W. Kimmerer, and L. Schemel. 2001. California's Yolo Bypass: Evidence that flood control can be compatible with fisheries, wetlands, wildlife, and agriculture.

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			duration of inundated habitat from January through June in the Yolo Bypass, with the largest reduction (-7%) if inundation occurring during dry year-types under all Alternatives (Table 11M-1). Table 11M-2 also indicates large reductions (average - 7.0 to - 8.4%) in average daily inundated habitat during the month of July for all alternatives. Modeling results do not indicate reductions in daily inundated habitat for juvenile salmonids in the Sutter Bypass (Table 11M-4). Habitat modeling results for Yolo Bypass indicate increases in daily inundation habitat during the months of August through November for Alternative 1A and 1B. However, the RDEIR/SDEIS does not address how this change may affect juvenile salmon rearing in the bypass so late in the year.	Bypass at Fremont Weir and Juvenile Entry into Sutter Bypass at Moulton, Colusa, and Tisdale Weirs), show similar or somewhat less entry of juveniles into the bypasses under Alternatives 1, 2, and 3 relative to No Project Alternative, which does not result in a change in impact determination. The July reductions in inundated habitat acreage under Alternatives 1, 2, and 3 are small in absolute terms (< 10 acres), and California native fish species that rely on Yolo Bypass inundated habitat largely have already emigrated from it by July (Sommer et al. 2001). For the same reasons, the increases in Yolo Bypass inundation during August through November would not affect native fish species, except perhaps winter-run Chinook salmon juveniles, which may enter the bypass with spills that periodically occur as early as November. The potential effects on the most affected fish species caused by the changes in inundated floodplain acreages resulting from Alternatives 1, 2, and 3		Fisheries 26(8): 6–-16.

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				are discussed in Appendix 11M under Yolo Bypass Weir Spill Events and Inundated Floodplain Habitat Area.		
51670	72	40	1. Are there juvenile salmon present in Yolo Bypass at this time of year (August through November) to take advantage of these increases in inundation?	Except in Novembers with flows high enough to cause the Fremont Weir to spill, there are no juvenile salmon in the Yolo Bypass from August through November. When the Fremont Weir spills in November, juvenile salmon are expected to take advantage of inundated habitat in the Yolo Bypass, which would be facilitated by the notching of Fremont Weir (see, for example, Table 2 of Acierto et al. 2014).	Reviewed by ICF	Acierto, K. R., J. Israel, J. Ferreira, and J. Roberts. 2014. Estimating juvenile winter-run and spring-run Chinook salmon entrainment onto the Yolo Bypass over a notched Fremont Weir. California Fish and Game 100(4):630-639.
51670	72	41	2. Is there any benefit to the juvenile salmon due to the late season increases in inundation?	See response to comment 72-40 regarding seasonal inundation of the Yolo Bypass.	Reviewed by ICF	N/A
51670	72	44	The RDEIR/EIS does not disclose impacts to fish production from lack of inundation of Yolo Bypass. The Coalition is very concerned with the impacts to floodplain habitat for Tribal Trust and endangered species	The impact analyses in Chapter 11, Aquatic Biological Resources, and Appendix 11M of the RDEIR/SDEIS identify reductions in the acreage of Yolo Bypass inundated habitat during the winter-spring period, when	Reviewed by ICF	N/A

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			habitat and fish production from the changes in flows from the Sites Project. These impacts will undermine millions of dollars of commitment to fisheries restoration. As hydroogist Greg Kamman alludes to above, the most severe impacts seem like they will occur in the Yolo Bypass and nearby floodplain areas due to low bypass flows and the changing of timing and duration of inundation. By not protecting a bypass flow of 14,000 cfs for the months of December through May, this Project will substantially impact spring run, winter run, and fall run Chinook salmon production and survival rates.	juvenile salmonids are most likely to access the bypass via Fremont Weir, as an adverse effect of the Project (see Appendix 11M under Yolo Bypass Weir Spill Events and Inundated Floodplain Habitat Area, and Chapter 11 under Impact FISH-2: Operations Effects on Winter-Run Chinook Salmon, subheading Yolo Bypass Inundated Area). However, *as shown in Table 11-14*, Estimated Mean Daily November through May Inundated Habitat (Acres <1 Meter Deep) for Juvenile Salmonids in the Yolo Bypass and the Differences (in parentheses) for the No Action Alternative (NAA) and Alternatives 1–3 (Alt 1A, Alt 1B, Alt 2, and Alt 3), the largest overall reduction for this period is about 100 acres *(< 2%)*. Any reduction in habitat acreage has a potential to affect fish production, but given the small acreages generally affected, the effect would likely not be substantial, as indicated in Impact FISH-2: CEQA Significance Determination for Alternatives 1, 2, and 3.		

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51670	72	45	The draft Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project EIS/EIR states: "Based on analysis of rotary screw trap (RST) data at Knights Landing and Delta fish survey data, a large pulse of juvenile winter-run Chinook salmon have been observed to emigrate past Knights Landing and into the Delta during and shortly after the first large fall storm event where flows reach approximately 14,000 cfs at Wilkins Slough (del Rosario et al. 2013). Although juvenile Chinook salmon are in the Sacramento River throughout the year, they can only access the Yolo Bypass floodplain following a Fremont Weir overtopping event. Juveniles have been observed in the Yolo Bypass between December and July, with presence peaking between February and April (DWR 2016, as cited in DWR and Reclamation 2017)." [Footnote 41: See USBR draft Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project EIS/EIR, pgs. 8-10, 8-11.]	Regarding the Sutter Bypass, there are almost no differences between Alternatives 1, 2, and 3 and the No Project Alternative/No Action Alternative in either the duration or acreages of floodplain inundations (table in Appendix 11M, titled Estimated Mean Daily Inundated Habitat [Acres <1 Meter Deep] for Juvenile Salmonids in the Sutter Bypass and the Absolute Differences [Acres, in parentheses] for the No Action Alternative [NAA] and Alternatives 1–3 [Alt 1A, Alt 1B, Alt 2, and Alt 3] and figure in Appendix 11M titled Average Annual Number of Sutter Bypass Inundation Events with Three Different Ranges of Duration and Four Ranges of Suitable Habitat Acreages for the No Action Alternative [NAA] and Alternatives 1–3 [Alt 1A, Alt 1B, Alt 2, and Alt 3]). There are reductions in the frequency of spills into the Sutter Bypass, but these occur primarily for spills >3,000 cubic feet per second (cfs). Steady state flow >3,000 cfs produces reductions in acreage of suitable juvenile salmonid rearing habitat in the Sutter	Reviewed by ICF	N/A

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			Review of Appendix 11M indicates that all three Project alternatives will impact fisher rearing potential in both the Sutter and Yolo Bypasses. These impacts will occur in two ways. First, modeling results indicate that there will be a reduced opportunity for juvenile fish to enter the Sutter and Yolo Bypasses for rearing under all Alternatives. This results in less fish available to take advantage of rearing habitat in the Bypasses. On the same page, the draft Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project EIS/EIR also states: "Adult Chinook salmon enter the Yolo Bypass from the south, often straying from the adjoining Sacramento River in response to tidal exchange or substantial flow pulses coming from the Yolo Bypass. While adults have been documented in the Yolo Bypass each month that sampling has occurred, the majority have been caught between October and December. Although juvenile Chinook	Bypass (figure in Appendix 11M titled Sutter Bypass Suitable (< 1 Meter Deep) Habitat Acreage versus Total Bypass Flow). Regarding the Yolo Bypass, there are increases and reductions in spill frequencies and in both the duration and acreage of inundations (table in Appendix 11M titled Estimated Mean Daily Inundated Habitat [Thousands of Acres <1 Meter Deep] for Juvenile Salmonids in the Yolo Bypass and Absolute Differences [Acres, in parentheses] for the No Action Alternative [NAA] and Alternatives 1–3 [Alt 1A, Alt 1B, Alt 2, and Alt 3] and figure in Appendix 11M titled Average Annual Number of Yolo Bypass Inundation Events with Three Different Ranges of Duration and Four Ranges of Suitable Habitat Acreages for the No Action Alternative [NAA] and Alternatives 1–3 [Alt 1A, Alt 1B, Alt 2, and Alt 3]), but as discussed in Appendix 11M, Section 11M.3.1, *Yolo Bypass Weir Spill Events and Inundated Floodplain Habitat Area,* none of these differences were considered large enough to substantially affect availability of		

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			salmon are in the Sacramento River throughout the year, they can only access the Yolo Bypass floodplain following a Fremont Weir overtopping event. Juveniles have been observed between December and July, with peak presence occurring between February and April (DWR 2016, as cited in DWR and Reclamation 2017." [Footnote 42: Id.] The second impact is reduced duration of inundated rearing habitat. Modeling results indicate a reduced duration of inundated habitat from January through June in the Yolo Bypass, with the largest reduction (-7 percent) if inundation occurring during dry year-types under all Alternatives (Table 11M-1). Having inundated habitat in the Yolo Bypass has substantial impacts on fisheries growth and survival. A 2001 study showed that "During 1998 and 1999, salmon increased in size substantially faster in the seasonally inundated agricultural floodplain than in the river,	suitable juvenile rearing habitat of the salmonid species. Master Response 5, Aquatic Biological Resources, provides a detailed discussion under the topics of uncertainty and thresholds and criteria used in the analyses concerning how differences were evaluated in the analyses with regard to significance determinations. See response to comment 72-39 for a discussion of results of new analyses added to Final EIR/EIS on fish passage for juvenile Chinook salmon into the Yolo Bypass via Fremont Weir and at the three Sutter Bypass weirs.		

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			suggesting better growth rates. Similarly, coded-wire-tagged juveniles released in the floodplain were significantly larger at recapture and had higher apparent growth rates than those concurrently released in the river. Improved growth rates in the floodplain were in part a result of significantly higher prey consumption, reflecting greater availability of drift invertebrates." [Footnote 43: See T.R. Sommer, M.L. Nobriga, "Floodplain rearing of juvenile chinook salmon: evidence of enhanced growth and survival", 2001.] Without proper mitigation, the Coalition is concerned that the lack of inundation at the Yolo Bypass will have serious ecological impacts on fisheries. [Footnote 44: Pacific lamprey and important Tribal trust species and a California species of special concern may also be impacted by changing inundation in the Yolo Bypass. See 8-12 Draft Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project EIS/EIR 8-10.]			

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51670	72	60	There are similar spawning area Segment 5 habitat losses projected for river Segment 5 for spring-run Chinook [Footnote 62: See RDEIR/SDEIS, Table 11K-6.] for Above Normal water years for Alternative 3 of 9.4 percent spawning area losses. These relatively higher spawning area losses are of some concern – please explain what, if any, mitigation measures Sites Authority will take (e.g., reducing Project intakes in Critically Dry years during peak egg-laying season for salmonids) to mitigate these potential impacts of spawning area losses.	The comment cites a 9.4% reduction in spring-run spawning habitat weighted usable area (WUA) in Segment 5 under Alternative 3 as shown in Table 11K-6 of Appendix 11K of the RDEIR/SDEIS and suggests mitigation measures should be proposed in response. Note, however, that although this reduction is predicted for September of Above Normal Water Years, a large increase in spring-run spawning WUA (16.8%) is predicted for August of Above Normal Water Years in the same river segment and under the same alternative (Alternative 3). It is expected that any negative effect of reduced spawning WUA in September would be offset by a benefit from the increased spawning WUA in August. As discussed in Master Response 5, Aquatic Biological Resources, impact conclusions regarding effects of Alternatives 1, 2, and 3 on the populations of all fish species evaluated are arrived at by weighing effects of the alternatives on *all* important factors.	Reviewed by ICF	NA

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				Also, see discussion in Master Response 5, Aquatic Biological Resources, of (1) uncertainty and (2) thresholds and criteria used in the analyses.		
51670	72	62	3. Rearing Habitat Loss At page 11-111, the RDEIR/SDEIS states: "These results indicate that Alternative 3 would have a moderate effect on rearing habitat for winter-run fry in the Sacramento River during October of Below Normal Water Years and the other alternatives would have no adverse effects." This is an over-simplification, at best. As noted in Table 11K-23 for Segment 6 of the upper Sacramento River (one of the two main areas in which the winter-run still spawn), in September there would be a 5.1 percent winter-run fry rearing area reduction under Alternative 3, and in October under Below Normal conditions there would be a 7.1 percent loss under Alternative 3 and a 5.1 percent loss in	As discussed in Master Response 5, Aquatic Biological Resources, under topic, *Uncertainty*, impact conclusions regarding effects of Alternatives 1, 2, and 3 on the populations of all fish species evaluated are arrived at by weighing effects of the alternatives on *all* important factors. Also, see discussion in Master Response 5, Aquatic Biological Resources, of thresholds and criteria used in the analyses.	Reviewed by ICF	NA

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			Critically Dry years. The Coalition also reminds Project proponents that these losses are cumulative in addition to major winter-run Chinook spawning and rearing habitat losses over many decades, losses which are in large part the trigger for their current ESA-listing as "endangered." There are similar problems for loss of spring-run Chinook fry rearing habitat [Footnote 63: RDEIR/SDEIS, Table 11K-30 through 34.] in Sacramento River Segments 4 and 5, and for fall-run Chinook as well under certain conditions. [Footnote 64: RDEIR/SDEIS, Table 11K-46, looking at Sacramento River Segment 4.] These rearing habitat area losses projected are of some concern – please explain what, if any, mitigation measures Project proponents will take (e.g., reducing Project intakes in Critically Dry years during peak fry rearing season for salmonids) to mitigate these potential additional impacts that will lead to yet more fry rearing area habitat losses.			

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51670	77	67	ATTMT 1. Chapter or Appendix – Section: Chapter 11 – Floodplain Inundation and Access. Page(s): General Comment. Comment and Recommendations: A key objective of the Fremont Weir Notch Project is to improve connectivity between the Sacramento River to provide safe and timely passage for adult winter- and spring-run Chinook salmon, Central Valley steelhead, and green sturgeon. CDFW recommends the FEIR/FEIS include an impact analysis of Proposed Project operations to the Fremont Weir Notch Project, considering impacts to the number of adult fish passage days. This analysis should be based upon the fish passage criteria developed for the Fremont Weir Notch Project. Since the Fremont Weir Notch Project is also a mitigation project for CVP & SWP operations, any changes to floodplain inundation frequency and duration should be considered when developing mitigation strategies to address those potential impacts.	An analysis of the number of days meeting adult passage criteria has been added to Chapter 11, *Aquatic Biological Resources*, of the Final EIR/EIS (see *Impact FISH-2: Operations Effects on Winter-Run Chinook Salmon* and *Impact FISH-6: Operations Effects on Green Sturgeon*, subsections *Adult Upstream Passage at Fremont Weir*, for examples).Results from this analysis do not change the impact determination.	Reviewed by ICF	N/A

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51670	77	68	ATTMT 1. Chapter or Appendix – Section: Chapter 11 – Impact Fish-2, Yolo Bypass Inundated Area. Page(s): pp. 11-115, 11-301. Comment and Recommendations: In the analysis of changes in access to suitable juvenile salmonid (and splittail) rearing habitat, the RDEIR/SDEIS describes the August – October flows through Yolo Bypass as creating “habitat”. The RDEIR/SDEIS also notes very few to no juvenile salmonids (or splittail) will be present or able to access this flooded land and, therefore, additional flows through the Yolo Bypass in August – October will not provide “suitable habitat” or ”habitat acreage”. CDFW recommends the FEIR/FEIS reflect this clarification and that analysis of changes in access to suitable rearing habitat not include the additional flows proposed to be released through the Yolo Bypass in August – October.	The cited text in Chapter 11, *Aquatic Biological Resources,* and Appendix 11M has been revised in the Final EIR/EIS to clarify that Yolo Bypass acreage inundated during the August–October period is not considered habitat for anadromous salmonids or Sacramento splittail (in Appendix 11M in the Final EIR/EIS, see first paragraph following table titled Mean Annual Number of Days in January–June With Yolo Bypass Floodplain Inundation by Alternative and Water Year Type). This revision does not change the impact determination.	Reviewed by ICF.	NA
51670	77	70	ATTMT 1. Chapter or Appendix - Section: Chapter 11 - Floodplain Inundation and Access for Sutter Bypass. Page(s): General Comment.	Analysis of adult fish passage for salmonids and sturgeons at the three Sutter Bypass weirs has been added to the Final EIR/EIS using the criteria	Reviewed by ICF.	N/A

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			Comment and Recommendations: The potential impacts of operations on adult fish passage through and out of the Sutter Bypass were not analyzed. Proposed Project operations may reduce the number of days that adult salmonids and acipenserids can pass from the Sutter Bypass back to the Sacramento River during weir overtopping events (e.g., at Moulton, Colusa, and Tisdale Weirs) and at the planned fish passage notch in Tisdale Weir. Additional analyses should be conducted to better understand how the Proposed Project will impact adult fish migration within Sutter Bypass and out of Sutter Bypass. This should include an analysis of how diversions will reduce flow entering the Sutter Bypass on a daily timestep over associated flood weirs and at the planned fish passage notch at Tisdale Weir. Flow reductions should be related to the adult fish passage criteria for depth and velocity that were developed for the BNP (DWR 2017).	suggested by the commenter. This provides more quantitative results and does not change the impact determination.		

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51670	77	71	ATTMT 1. Chapter or Appendix - Section: Chapter 11 - Impact Fish-2, Yolo Bypass Inundated Area. Page(s): p. 11-118. Comment and Recommendations: Katz et al. 2017 and Bellido-Leiva et al. 2021 do not provide evidence that the Yolo Bypass provides good rearing habitat for juvenile salmonids. Please remove and provide additional reference by Sommer et al. (2001).	Although Katz et al. (2017) and Bellido-Leiva et al. (2021) do not provide primary evidence that the Yolo Bypass provides good rearing habitat for juvenile salmonids, they do provide important supporting evidence and are therefore retained. Text has been added to Appendix 11M to clarify that increased juvenile salmonid growth rates are the principal evidence demonstrating that the Yolo Bypass provides good rearing habitat. Reference to Sommer et al. 2001 is included in the RDEIR/SDEIS.	Reviewed by ICF.	References are in Vol 1 and RDEIR/SDEIS, Chapter 11 Katz, J. V., C. Jeffres, J. L. Conrad, T. R. Sommer, J. Martinez, S. Brumbaugh, N. Corline, and P. B. Moyle. 2017. Floodplain Farm Fields Provide Novel Rearing Habitat for Chinook Salmon. *PLOS ONE*. Available: http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0177409. Accessed: June 7, 2021. Bellido-Leiva, F., R. A. Lusardi, and J.

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						R. Lund. 2021. Modeling the Effect of Habitat Availability and Quality on Endangered Winter-Run Chinook Salmon (*Oncorhynchus tshawytscha*) Production in the Sacramento Valley. *Ecological Modelling* 447. Sommer, T., B. Harrell, M. Nobriga, R. Brown, P. Moyle, W. Kimmerer, and L. Schemel. 2001. California's Yolo Bypass: Evidence that flood control can be compatible with fisheries, wetlands, wildlife, and agriculture.

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						Fisheries 26(8): 6–-16.
51670	77	102	ATTMT 1. Chapter or Appendix - Section: Appendix 11K - Weighted Usable Area Analysis. Page(s): General Comment. Comment and Recommendations: The RDEIR/SDEIS relies on Weighted Usable Area (WUA) curves developed by USFWS to determine potential impacts to salmonid rearing habitat in the Sacramento River and states "The results of the analyses suggest that Alternatives 1-3 would cause few large changes in spawning WUA in any of the rivers and would generally result in more increases than reductions in rearing WUA in the Sacramento River, especially for juveniles (53% increases in total)" (p. 11K-77). Salmonids tend to rear in off-channel and side-channel habitat, characteristic of slower velocities and shallower depths. As a result, decreased flow in the Sacramento River subsequently leads to slower and shallower conditions, potentially indicating higher WUA. However, the	The comment states that the RDEIR/SDEIS fails to address potential effects of Alternatives 1, 2, and 3 on important aspects of juvenile rearing habitat availability other than main channel rearing weighted usable area (WUA), including off-channel and side-channel habitat inundation frequency and duration and habitat fragmentation and complexity. Habitat fragmentation and complexity were not analyzed because data and models for quantifying effects of Alternatives 1, 2, and 3 on these features are not available. However, effects of Alternatives 1, 2, and 3 on off-channel and side-channel habitat inundation are quantitatively analyzed in the Final EIR/EIS in Chapter 11, *Aquatic Biological Resources;* Appendix 11K, and Appendix 11M. The rearing WUA habitat analysis used to compute the results presented in Appendix 11K (under *Rearing Habitat Weighted Usable Area*) includes side-channel habitat	Reviewed by ICF.	U.S. Fish and Wildlife Service. 2005a. Flow-Habitat Relationships for Chinook Salmon Rearing in the Sacramento River between Keswick Dam and Battle Creek. Prepared by Staff of Energy Planning and Instream Flow Branch. Sacramento, CA.

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			assessment presented in the RDEIR/SDEIS is inadequate in analyzing impacts to rearing habitat in the Sacramento River as it fails to assess other important habitat components including the potential for habitat fragmentation, inundation frequency and duration, as well as complexity. Therefore, the potential impacts to salmonid rearing habitat may be underestimated. CDFW recommends the FEIR/FEIS include additional assessment of the Proposed Project's impacts to rearing habitat availability within the Sacramento River system, as well as the other systems (i.e., the American and Feather Rivers) impacted by the Proposed Project.	along the mainstem Sacramento River in its development of rearing habitat WUA curves (U.S. Fish and Wildlife Service 2005a). In addition, floodplain hydrologic modeling was conducted for Sacramento River side-channels, the Yolo Bypass, and the Sutter Bypass, and related rearing habitat effects were analyzed. The results of these analyses are presented throughout Appendix 11M and in Chapter 11, under *Impact FISH-2: Operations Effects on Winter-Run Chinook Salmon,* subheading *Yolo Bypass Inundated Area*. They indicate minor reductions in side-channel habitat acreages under Alternatives 1, 2, and 3 in the Colusa to Knights Landing reach of the river (table in Appendix 11M titled Estimated Mean Daily Side-Channel Habitat [Acres <1 Meter Deep] for Juvenile Salmonids in the Sacramento River Reach 3 [Colusa to Knights Landing] and the Absolute Differences [in parentheses] for the No Action Alternative [NAA] and Alternatives 1–3 [Alt 1A, Alt 1B, Alt 2, and Alt 3]) and little change in the more upstream reaches (table in		

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				Appendix 11M titled Estimated Mean Daily Side-Channel Habitat [Acres <1 Meter Deep] for Juvenile Salmonids in the Sacramento River Reach 1 [Bend Bridge to Hamilton City] and the Absolute Differences [in parentheses] for the No Action Alternative [NAA] and Alternatives 1–3 [Alt 1A, Alt 1B, Alt 2, and Alt 3] and table in Appendix 11M titled Estimated Mean Daily Side-Channel Habitat [Acres <1 Meter Deep] for Juvenile Salmonids in the Sacramento River Reach 2 [Hamilton City to Colusa] and the Absolute Differences [in parentheses] for the No Action Alternative [NAA] and Alternatives 1–3 [Alt 1A, Alt 1B, Alt 2, and Alt 3]). The results also show a minor reduction under Alternatives 1, 2, and 3 in the number of inundation events of shorter duration (8 to 17 days) and minor increases in the number of events of longer duration (18 to 24 days) (figure in Appendix 11M titled Average Annual Number of Sacramento River Side-Channel Inundation Events [Three River Reaches Combined] with Three Different Ranges of Duration and Four		

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				Ranges of Suitable Habitat Acreages for the No Action Alternative [NAA] and Alternatives 1–3 [Alt 1A, Alt 1B, Alt 2, and Alt 3]). The potential effects of Alternatives 1, 2, and 3 on off-channel rearing habitat in the Yolo and Sutter Bypasses are also analyzed in Appendix 11M and Chapter 11. These results show some reduction in rearing habitat in the Yolo Bypass and little change in the Sutter Bypass (Appendix 11M under *Yolo Bypass Weir Spill Events and Inundated Floodplain Habitat Area* and under *Sutter Bypass Weir Spill Events and Inundated Floodplain Habitat Area*). No rearing habitat analyses were done for the Feather and American Rivers because no suitable tools or information for conducting such analyses on these rivers were available.		
51670	77	103	ATTMT 1. Chapter or Appendix - Section: Appendix 11K - Weighted Usable Area Analysis. Page(s): General Comment. Comment and Recommendations: The RDEIR/SDEIS states that "Rearing habitat WUA was	The links provided in the comment point to the Central Valley Project Improvement Act flow-habitat modeling program, conducted by Gill and Tompkins (2020), which uses data from weighted usable area (WUA)	Reviewed by ICF.	Gill and Hopkins 2002: http://cvpia-habitat-docs-markdown.s3-website-us-west-2.amazonaws.com

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			estimated only for the Sacramento River because no adequate flow versus rearing WUA curves located for the Feather or American River were available. The available flow versus rearing WUA information for these rivers is old, limited, and potentially unreliable (Appendix 11K)" (p. 11-58). Instream juvenile rearing habitat data for fall-run Chinook salmon from instream flow studies conducted by Mark Gard (CDFW) for the American River are available online at http://cvpia-habitat-docs-markdown.s3-website-us-west-2.amazonaws.com/watershed/american_river.html (Gill and Tompkins 2020a). Instream spawning and rearing habitat data for fall-run Chinook salmon and steelhead in the Feather River are available online at http://cvpia-habitat-docs-markdown.s3-website-us-west-2.amazonaws.com/watershed/feather_river.html (Gill and Tompkins 2020b). Additionally, instream spawning and rearing habitat data for fall-run Chinook salmon and	studies found in the literature that the authors cite in their documentation. The studies used to provide rearing habitat WUA data for the American and Feather Rivers in Gill and Tompkins (2020) are studies that are discussed in the Methods section of Appendix 11K. This section in Appendix K explains why the studies cited in Gill and Tompkins (2020) were not used for the EIR/EIS, and the primary reason was that they are not reliable sources. The studies cited in Gill and Tompkins (2020) include a 1985 USFWS report on American River rearing WUA, which is considered unreliable because of its age and previous lack of application by other researchers. For example, the Water Forum 2017 (Bratovich et al. 2017) report on studies to provide a biological rationale for the Modified Flow Management Standard does not mention or cite the 1985 USFWS report despite developing exhaustive studies related to flow effects on American River salmonids (unfortunately they do not include rearing habitat WUA). For Feather		/watershed/feather_river.html. Accessed 6/10/2022 National Marine Fisheries Service (NMFS). 2016. *Oroville Facilities Biological Opinion*. West Coast Region, Central Valley Office. Sacramento, CA Payne, T. R. 2005. *Addendum to Phase II Report Evaluation of Project Efforts on Instream Flows and Fish Habitat.* SP-F16 Sacramento, CA. Prepared for Oroville Facilities Relicensing Environmental Work Group,

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			steelhead in the Feather River from the California Department of Water Resources (DWR) and from Thomas R. Payne & Associates were used in instream flow evaluations for the relicensing of the Oroville facilities. These evaluations determined relationships between flow and both suitable spawning and rearing habitat for 23.25 miles of the Feather River. In addition, the CVPIA Structured Decision Making process utilizes the DWR Federal Energy Regulatory Commission (FERC) instream spawning and rearing habitat data for the Feather River. CDFW recommends the Proposed Project utilize these WUA curves to assess potential impacts to rearing Weighted Usable Area for juvenile salmonids in the Feather and American River systems.	River rearing WUA, Gill and Tompkins (2020) cite a 2002 study conducted by Payne and Allen that was later updated by a 2005 study by Payne. The results of both studies are considered unreliable and unusable for the purposes of the rearing habitat assessments. The report of the 2005 study (Payne 2005) opens with the following disclaimer: "This addendum to the original SP-F16 report [the 2002 report] serves to describe PHABSIM results for fry and juvenile steelhead trout and Chinook salmon. The results for this component of the analysis were more ambiguous and difficult to interpret than those for adult salmon and steelhead. In an effort to reach agreement on the meaning and applicability of the juvenile salmonid PHABSIM findings, an interagency meeting was held on June 3, 2004. At this meeting it was agreed that, given current channel conditions, the results did not support a clear alternative or ideal discharge level. Rearing habitat indexes for fry and juvenile Chinook salmon and steelhead did not respond clearly or		DWR. Sacramento, CA Bratovich, P., J. Weaver, C. Addley, and C. Hammersmark. 2017. *Lower American River. Biological Rationale, Development and Performance of the Modified Flow Management Standard*. Exhibit ARWA-702. Prepared for Water Forum. Sacramento, CA.

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				significantly to changes in discharge. Furthermore, results differed markedly depending on how areas having no cover were treated in the model. Although the results appear to be valid (i.e. they correctly represent a simplified version of juvenile fish habitat), the amount of suitable habitat seems relatively insensitive to modeled discharge levels. Based on this interpretation, the group agreed that efforts to improve physical habitat for juvenile salmonids (e.g., increasing habitat complexity with side channels, mid-channel bars, riparian vegetation and/or instream objects) should be given primary consideration, and that any flow changes should be complimentary to these physical habitat enhancements. However, the group did recommend that juvenile salmonid PHABSIM results be used wherever possible to aide [sic] in the design and placement of future habitat enhancements." The Authority and Reclamation recognize others have used the results of the Payne (2005) study, including for the NMFS 2016 Oroville Biological		

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				Assessment, but the Payne (2002 or 2005) study results are not appropriate for evaluating effects of flow on rearing habitat quality. The above statement from Payne (2005) has been added to the Appendix 11K Methods section to provide a fuller explanation for why this study's results are not used in the EIR/EIS analyses.		
51670	77	104	ATTMT 1. Chapter or Appendix - Section: Appendix 11M - Section 11M.2.1, Bypass and Side Channel Inundated Habitat Area. Page(s): p. 11M-1. Comment and Recommendations: The one-meter threshold for optimal floodplain depth is somewhat arbitrary, from both a fish ecology perspective and in context of the modeling accuracy. CDFW recommends an analysis of changes to inundated surface area with removal of discussion related to optimal/suboptimal depths.	The comment recommends quantifying juvenile salmonid rearing habitat in the bypasses and side-channel areas as total inundated habitat without reference to a 1-meter-depth threshold for habitat suitability. We believe this practice would provide a misleading picture of juvenile habitat availability. A number of sources are cited as justification for adopting the 1-meter-depth threshold (in Appendix 11M, see first paragraph under *Methods*).	Reviewed by ICF.	NA
51670	77	105	ATTMT 1. Chapter or Appendix - Section: Appendix 11M - Section 11M.2.2, Bypass Flow and Weir Spill.	We have revised the sentence in the Final EIR/EIS as follows to eliminate ambiguity: "Note, however, that the	Reviewed by ICF.	N/A

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			Page(s): p. 11M-5. Comment and Recommendations: The RDEIR/SDEIS Appendix 11M states, "Note, however, that the total flow in the bypass is not always a good indicator of suitable habitat availability, as shown in Figures 11M-1 and 11M-2" (p. 11M-5). CDFW disagrees with this statement. Flow is a good metric of available suitable habitat in both Sutter Bypass and Yolo Bypass, as increased flows equal increased entrainment of fish.	total flow in the bypass is not always a good indicator of suitable rearing habitat availability, as shown in Figures 11M-1 and 11M-2."		
51670	78	90	Chapter 11, page 11-111 The draft REIR/SEIS concludes that the project alternatives would have "no" adverse effect on the rearing habitat for winter-run fry in the Sacramento River (page 11-111, last paragraph), however, several month-water combinations would have considerable negative impacts according to the analyses. Table 11k-23 evaluating winter-run fry rearing WUA in the Sacramento River, Segment 6, identifies that rearing habitat will be mostly reduced under	Based on updated modeling results, Chapter 11, *Aquatic Biological Resources,* and Appendix 11K of the Final EIR/EIS discuss findings of expected reductions to fry rearing habitat for winter-run Chinook salmon under Alternative 3 compared to the No Project Alternative (in Appendix 11K, see *Winter-run Chinook Salmon* under *Results*). When considered in combination with results from all other analyses, this was however not found to amount to a significant impact for the species. Note that the impact determinations regarding the	Reviewed by ICF.	NA

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			the project alternatives compared to NAA; the greatest reduction will occur in October, by 3.3% in AN, 2.6% in BN, and 4.8% in CD years under Alternative 1A compared to NAA. In addition, many factors influence survival through the rearing life stages in addition to WUA. Factors such as temperature and the relationship between WUA and water temperature on the probability of survival should be discussed as part of supporting findings. [Commenting Water Board or Section within the State Water Board: Bay-Delta]	effects of Alternatives 1, 2, and 3 on winter-run Chinook salmon, as well as the other target species, do not rely on a results from a single analysis, life-stage, location, water year type or season, but instead are based on evaluations of multiple important environmental factors and lines of evidence, including for instance rearing and spawning habitat availability and water temperature, which is in line with the commenter' suggestion. This is further discussed in Master Response 5, Aquatic Biological Resources, under the topics of (1) uncertainty and (2) thresholds and criteria used in the analyses.		

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51680	66	63	The RDEIR/SDEIS analyzes the reductions in survival through the Delta using the Perry et al. 2018 model, averaged by month and water year type. RDEIR/SDEIS at 11-124. This analysis is misleading because it does not present the annual results -- the effects of reduced survival over the course of the year for juvenile salmon that are migrating downstream. The RDEIR/SDEIS also shows that juvenile winter-run Chinook salmon survival through the Delta would be reduced by 1-2 percent under Alternative 1A, based on the IOS model. RDEIR/SDEIS at 11-129. In light of the status of the species, this constitutes a significant impact under CEQA that is not disclosed in the RDEIR/SDEIS.	Presentation of the results by month is similar to the style of presentation of the Perry et al. (2018) model by the authors of that model themselves (Perry et al. 2019), when done recently in the context of the Long-Term Operation of the State Water Project (see, for example, Figure 11 of Perry et al. 2019, showing summary of results by day, without annual summary). The small differences in through-Delta survival by month (0%–2%) during the main winter-run Chinook salmon migration period (December–April) would amount to the same level of difference over the whole, several-month migration period. This is consistent with the level of difference suggested by the Delta Passage Model component of the IOS model that the commenter cross-references. Regarding the impact finding under CEQA, the RDEIR/SDEIS did conclude that there would be significant impact on winter-run Chinook salmon and thus proposed Mitigation Measure FISH-2.1 to reduce that impact to a	Reviewed by ICF	Perry, R. W., A. C. Hansen, S. D. Evans, and T. J. Kock. 2019. Using the STARS Model to Evaluate the Effects of Two Proposed Projects for the Long-Term Operation of the State Water Project Incidental Take Permit Application and CEQA Compliance. Open-File Report 2019-1127. Version 2.0. February. U. S. Geological Survey, Reston, VA. Perry, R. W., A. C. Pope, J. G. Romine, P. L. Brandes, J. R. Burau, A. R. Blake, A. J. Ammann, C. J. Michel. 2018.

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				final determination of less than significant. As described in Master Response 2, Alternatives Description and Baseline, the Wilkins Slough bypass flow criteria have been refined in the Final EIR/EIS to higher flow standards for an extended period and incorporated into the Project description as operational criteria. The updated modeling shows essentially no difference between the Project operations and the status quo.		Flow-Mediated Effects on Travel Time, Routing, and Survival of Juvenile Chinook Salmon in a Spatially Complex, Tidally Forced River Delta. Canadian Journal of Fisheries and Aquatic Sciences 75(11): 1886–1901.
51680	66	64	Equally important, the effects of the proposed project in reducing survival of juvenile winter-run Chinook salmon migrating through the Delta can be far greater when Sites diverts more water from the Sacramento River than in an average water year, which is what is disclosed in Table 11- 16. Unlike the analysis of riverine survival in the RDEIR/SDEIS, the analysis of through-Delta survival of salmon only evaluates effects using average water diversions from the Sacramento River by water year type. RDEIR/SDEIS at Table 11-16; id. At Table 11J-1. Annual	The Chapter 11, Aquatic Biological Resources, table titled Probability of Juvenile Chinook Salmon Through-Delta Survival, Averaged by Month and Water Year Type, based on Perry et al. (2018) does not assess only juvenile Chinook salmon in an average water year. All years are analyzed, and the survival results are averaged by water year type, in keeping with what is appropriate for analyses that are based on CALSIM modeling (see Master Response 5, Aquatic Biological Resources, for discussion of use of means in	Reviewed by ICF	N/A

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			water diversions by the proposed project and alternatives used in the RDEIR/SDEIS are approximately 344,000 acre feet in a Wet year and 354,000 acre feet in an Above Normal water year type. See RDEIR/SDEIS at Table 5B1-3-1c. Yet in wetter water years like 2017, Sites can divert more than 1 million acre feet of water under the proposed operating criteria. See Sites Reservoir Project, 2021 Water Estimate, May 28, 2021, at 8 (attached hereto as Exhibit 1 [Attachment 1]). The RDEIR/SDEIS fails to analyze the effects of diversions greater than the average for that water year type, where the reductions in survival through the Delta are likely to be substantially higher as a result of greater reductions in flow at Freeport. See Perry et al. 2018; RDEIR/SDEIS at Fig. 11J-1. Reduced survival is the clear consequence of the flow: survival relationship and inadequate operational criteria that are proposed.	reporting modeling results). Higher diversions in wetter years such as the 2017 example reflect more water available in the system for diversion, subject to the restrictions proposed with operating criteria, which limit the potential for negative effects (see Chapter 2, Project Description and Alternatives, of the Final EIR/EIS under the section titled Operations and Maintenance Common to Alternatives 1, 2, and 3). The results presented in the EIR/EIS reflect analysis for all years. Please also see response to comment 66-63 with respect to updates to Mitigation Measure FISH-2.1.		
51680	66	65	The RDEIR/SDEIS' analysis of the effects of the proposed project and alternatives on the survival of winter-	Please see responses to comments 66-63 and 66-64, which address the	Reviewed by ICF	N/A

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			run Chinook salmon through the Delta must be revised to incorporate accurate modeling of project operations and to disclose the higher reductions in survival that result in years with greater than average levels of water diversions.	commenter's concerns regarding presentation of modeling results.		
51680	66	66	(iv) The RDEIR/SDEIS Fails to Disclose Significant Environmental Impacts to Winter-Run Chinook Salmon Taken together, the RDEIR/SDEIS shows that the proposed project and alternatives will reduce the abundance of winter-run Chinook salmon, which are listed as endangered under CESA, and will cause winter-run Chinook salmon to drop further below self-sustaining levels. This constitutes a significant impact under CEQA. Cal. Code Regs., tit. 14, § 15065(a)(1). The RDEIR/SDEIS finds, using the IOS life cycle model, that Alternative 1A causes an average 3 percent reduction in adult abundance (escapement) of winter-run Chinook salmon, as a result of Alternative 1A	The RDEIR/SDEIS found that there would be a significant impact on winter-run Chinook salmon as a result of proposed diversions and included Mitigation Measure FISH-2.1 to reduce the impact to less than significant. Please also see the responses to comments 66-63 and 66-64 and the discussions regarding flow and mitigation measures as well as baseline and special-status species in Master Response 5, Aquatic Biological Resources.	Reviewed by ICF	N/A

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			reducing juvenile survival through the Delta by 1-2 percent and reducing juvenile survival through the Sacramento River by 0-1 percent. RDEIR/SDEIS at 11-128 to 11- 129. As described above, these are likely substantial underestimates of the project's impacts; however, even assuming for the sake of argument that they are accurate, in light of the fact that winter-run Chinook salmon are listed as endangered and their population is below self-sustaining levels, these additional reductions in survival and abundance are per se significant impacts requiring mitigation. Cal. Code Regs., tit. 14, § 15065(a)(1). The RDEIR/SDEIS must be revised to disclose this significant impact and to identify adequate mitigation measures that eliminate significant impacts.			
51680	66	67	(C) The RDEIR/SDEIS Fails to Accurately Analyze Environmental Impacts to Spring-Run Chinook Salmon and Fails to Disclose	The commenter expresses concerns that Mitigation Measure FISH-2.1 does not cover the full migration period of juvenile spring-run Chinook salmon. In the Final EIR/EIS, Wilkins Slough bypass flow criteria are part of	Reviewed by ICF	N/A

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			Significant Impacts of the Proposed Project As with winter-run Chinook salmon, the RDEIR/SDEIS fails to adequately analyze impacts of the proposed project and alternatives on spring-run Chinook salmon and fails to disclose significant impacts that are likely to occur under the proposed project and alternatives. First, proposed mitigation measure FISH-2 fails to adequately protect spring-run Chinook salmon from the significant impacts of diversions by Sites Reservoir because substantial numbers of spring-run Chinook salmon would have already migrated down the Sacramento River and into the Delta each year before this mitigation measure would be implemented, resulting in substantial reductions in survival of these migrating juvenile salmon. Significant proportions of spring-run Chinook salmon generally migrate downstream of Hamilton City as early as December, and spring-run Chinook salmon are frequently found in the Delta (in both surveys and salvage) by	the Project alternative operational criteria (as opposed to a mitigation measure) and cover the October 1 to June 14 period. These additional criteria address the December to March period described by the commenter (see Master Response 2, Alternatives Description and Baseline). Please also see the responses to comments 66-63 and 66-64 and the discussion regarding flow and mitigation measures in Master Response 5, Aquatic Biological Resources.		

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			March. RDEIR/SDEIS at 11-132 to 11-134; id., Appendix 11A at 1-13 to 1-21; 2019 NMFS BiOp at 82-83. More than half (50 percent) of the spring-run Chinook salmon population in the Sacramento Basin migrated past the Knights Landing before March 1 in many years (including Brood Years 2015, 2014, 2012, 2010, 2007, 2005, and 2003). RDEIR/SDEIS, Appendix 11A at 1-15. None of the spring-run Chinook salmon that migrate to the Delta before March would be protected by mitigation measure FISH-2, meaning that in many years less than half of the population would be protected by the proposed mitigation measure. As a result, the proposed project and alternatives would cause significant impacts by reducing survival of these migrating salmon.			
51680	66	71	(E) The RDEIR/SDEIS Fails to Accurately Analyze Environmental Impacts to Longfin Smelt and Fails to Disclose Significant Impacts of the Proposed Project	Please see Master Response 5, Aquatic Biological Resources, which addresses the outflow-abundance effects on Longfin Smelt. Master Response 5 also addresses how entrainment-related morality	Reviewed by ICF	N/A

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			The RDEIR/SDEIS ignores or underestimates potentially significant impacts to the San Francisco Estuary's Longfin Smelt population. Longfin Smelt are listed under CESA as a threatened species because they have experienced dramatic declines in abundance over several decades. Abundance of this population is strongly correlated with Delta outflow (Jassby et al. 1995; Kimmerer 2002; Rosenfield and Baxter 2007; Kimmerer et al. 2009; Thomson et al. 2010; Mac Nally et al. 2010) as is juvenile recruitment/productivity (Nobriga and Rosenfield 2016) and distribution (Dege and Brown 2004; CDFG 2009; Lewis et al. 2019b). Entrainment-related mortality is positively correlated with exports, and negatively correlated with Delta outflows and prior abundance indices (CDFG 2009; Grimaldo et al. 2009; Rosenfield 2010).	correlates outflow-abundance effects on Longfin Smelt.		
51680	66	72	(i) The RDEIR/SDEIS Fails to Accurately Analyze Impacts from Entrainment	Please see Master Response 5, Aquatic Biological Resources, which addresses the adequacy of impact analyses related to Longfin Smelt	Reviewed by ICF	N/A

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			The RDEIR/SDEIS ignores the likely significant impact of additional Longfin Smelt entrainment arising from the proposed project. Given its precarious conservation status, any increase in entrainment-related mortality is likely to threaten the viability of Longfin Smelt in the San Francisco Estuary. This is particularly true given that entrainment of Longfin Smelt has historically been highest when population numbers are low and environmental conditions lead to low Longfin Smelt production (Rosenfield 2010). Despite these known patterns, the RDEIR/SDEIS inappropriately ignores increases in entrainment-related mortality that are likely to occur as a result of increased water exports and decreased Delta outflow. To the extent that Delta Smelt and Longfin Smelt are similar (both smelt have experienced significant declines, are pelagic swimmers, and spawn, at times, in the zone of influence of CVP and SWP export facilities), recent findings on the effects of entrainment-related mortality on Delta Smelt apply, in	entrainment.. Master Response 5 also addresses why conclusions made regarding Delta Smelt would not apply to Longfin Smelt.		

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			general, to Longfin Smelt. Smith et al. (2021) state: In a population in which recruitment success rates cannot sustain the population, no additional mortality is sustainable . . . No additional mortality can be sustained by the population, but that does not mean that entrainment mortality of 0 will result in its recovery Smith et al. 2021 at p. 14.			
51680	66	73	The existing CDFW conceptual model for Longfin Smelt life history finds that combined CVP/SWP exports is a significant predictor of combined CVP/SWP salvage of adult Longfin Smelt (Rosenfield 2010). Also, Delta outflow in January-March is significantly and negatively correlated with total annual Longfin Smelt entrainment (Rosenfield 2010 at Figure 9); salvage consists mostly of juvenile Longfin Smelt and occurs mainly during April-June (Grimaldo et al. 2009). This led CDFW to suggest that Delta outflow in the winter affects the distribution of Longfin	Please see Master Response 5, Aquatic Biological Resources, which addresses the effects of potential increase in larval Longfin Smelt entrainment. Master Response 5 also addresses how changes in entrainment mortality correlates with outflow-abundance effects on Longfin Smelt.	Reviewed by ICF	N/A

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			Smelt and the subsequent juvenile cohort (CDFG 2009; Rosenfield 2010). Entrainment of larval Longfin Smelt (which is not measured at CVP/SWP fish salvage facilities) is believed to be positively correlated with X2 and increasingly negative values of Old and Middle River (OMR) flow. The RDEIR/SDEIS fails to estimate changes in entrainment to larval Longfin Smelt or to connect such changes in mortality to overall Longfin Smelt population dynamics.			
51680	66	74	The RDEIR/SDEIS fails to describe any safe level of Longfin Smelt entrainment, much less acceptable increases in that entrainment caused by the project -- it simply categorizes negative directional changes in conditions that promote entrainment as "small." Average X2 increases under all project alternatives -- increasing the risk of entrainment for all life stages of Longfin Smelt (CDFG 2009; Rosenfield 2010) in every month from December-May of Critically Dry years when Longfin Smelt are at significant risk of entrainment	Please see Master Response 5, Aquatic Biological Resources, which addresses the adequacy of impact analyses related to Longfin Smelt entrainment. In addition, Master Response 5 addresses the adequacy of categorizing the modeled changes in X2 as “small”.	Reviewed by ICF	N/A

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			mortality (Appendix 6B3: Tables 6b3-1-1c, 2c, 3c, and 4c). Because the X2 values reported are averages, it is extremely likely that some years will experience a greater shift of X2 towards the export pumps, resulting in greater entrainment risk to all Longfin Smelt life stages. The assertion that the modeled changes in X2 are "small" is arbitrary and capricious -- relatively small changes in Delta outflow or X2 are all that is required to produce large changes in entrainment risk for Longfin Smelt (Rosenfield 2010).			
51680	66	75	Combined with increasing X2 (which places more Longfin Smelt at risk of entrainment), more negative OMR flows expected under the proposed project and alternatives increase the likelihood of Longfin Smelt entrainment at levels that would pose significant risk to the overall population. Average OMR is projected to be more negative in December, March and April during Critically Dry years under all project alternatives (OMR is also more negative in January	Please see Master Response 5, Aquatic Biological Resources, which addresses the significance of different levels of impact analyses related to Longfin Smelt entrainment. In addition, Master Response 5 addresses the adequacy of categorizing the differences in entrainment risk indicators (such as X2) as “small”.	Reviewed by ICF	N/A

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			of Alternative 1A; Appendix 5B3, Tables 5B3-6-1c, 2c, 3c, and 4c) -- more negative OMR is correlated to the logarithm of Longfin Smelt salvage meaning entrainment-related mortality increases very rapidly as OMR becomes more negative (Grimaldo et al. 2009). Dismissing persistent and directional negative effects on an imperiled species by asserting, without evidence, that they are "small" is arbitrary and capricious. For example, with respect to endangered salmonids, NMFS has repeatedly warned that "[s]mall reductions across multiple life stages can be sufficient to cause the extirpation of a population" and that a "1% to 2% mean reduction in survival is a notable reduction for an endangered species, especially if it occurs on a consistent (e.g., annual) basis" (NMFS 2017 at 736). Similarly, while commenting on Delta Smelt entrainment-related mortality, Kimmerer cautioned against dismissing small but persistent losses to fish productivity and stated that mortality related to export pumping ".			

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			. . can be simultaneously nearly undetectable in regression analysis, and devastating to the population. This also illustrates how inappropriate statistical significance is in deciding whether an effect is biologically relevant." (Kimmerer 2011 at p. 7). Thus, conditions under the proposed project that facilitate increased entrainment-related mortality (increasing flow towards the export facilities, increased X2) may have a significant negative effect on Longfin Smelt population viability and the likelihood that this species will recover in the wild.			
51680	66	76	Entrainment of larval Longfin Smelt has never been effectively monitored, but we know that larval Longfin Smelt (a) are more abundant and weaker swimmers than juvenile or adult Longfin Smelt, (b) associate with the low salinity zone (Dege and Brown 2004; CDFG 2009; Hobbs et al. 2010) and are thus located closer to export facilities in drier years than in years with high Delta outflow, and (c) remain abundant into the late spring	Please see Master Response 5, Aquatic Biological Resources, which addresses the effects of potential increase in larval Longfin Smelt entrainment. Master Response 5 also addresses how changes in entrainment mortality correlates with outflow-abundance effects on Longfin Smelt.	Reviewed by ICF	N/A

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			and early-summer, at least (as evidence by continued recruitment to the Bay Study's nets well into the summer and fall; Rosenfield and Baxter 2007). Thus, it is likely that entrainment mortality of larval Longfin Smelt follows the same general pattern as entrainment of older life stages -- increasing with increasing X2 and export rates -- and that larval entrainment-related mortality much larger than for juvenile and adults, in absolute and relative terms. Also, entrainment of Longfin Smelt larvae likely continues from January through spring and into early summer, as larval fish are abundant throughout this period. The RDEIR/SDEIS must be revised to analyze the effect of the proposed project on entrainment of larval Longfin Smelt and to link the effect of any changes in entrainment-related mortality to overall Longfin Smelt population dynamics.			

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51680	66	77	(ii) The RDEIR/SDEIS Fails to Adequately Analyze Impacts on Longfin Smelt Abundance The best available science indicates that reductions in Delta inflow and Delta outflow during the winter and spring months under the proposed project will result in decreased Longfin Smelt productivity and overall declines in abundance, which constitute a significant impact under CEQA. Longfin Smelt abundance indices are strongly correlated with Delta outflow (Jassby et al. 1995; Kimmerer 2002; Rosenfield and Baxter 2007; CDFG 2009; Kimmerer et al. 2009; Thomson et al. 2010, MacNally et al. 2010; Nobriga and Rosenfield 2016). The RDEIR/SDEIS analysis of Aquatic Biological Resources states: "Winter-spring diversions for Alternatives 1, 2, and 3 would reduce Delta inflow and Delta outflow." RDEIR/SDEIS at 11-269. The best available science demonstrates that the proposed project and alternatives will have a negative effect on Longfin Smelt recruitment and overall	Consistent with this comment, the EIR/EIS concludes that there is a significant impact on longfin smelt from flow-related effects. Please also see Master Response 5, Aquatic Biological Resources, for a discussion related to longfin smelt and flow-related effects, including impacts on abundance.	Reviewed by ICF	N/A

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			abundance, constituting a significant impact under CEQA.			
51680	66	78	Longfin Smelt viability is already severely impaired by reduced abundance. Even maintenance of the population at current levels exposes the population to high risk; further persistent declines in abundance of this CESA-listed fish's population that are projected under the proposed project would contribute significantly to the risk of Longfin Smelt extirpation from the San Francisco Estuary. Furthermore, the status quo for Longfin Smelt represents continued decline towards extinction. Maintenance of Delta outflows at levels permitted under the state's CESA incidental take permit for operation of the State Water Project are expected to result in declines in abundance of the Longfin Smelt population (DWR 2020 Final EIR at p. 5-135, Tables 5.3-8 and 5.3-9) and even that level of decline assumes that Delta outflow will be augmented in April and May of certain years; however, April-May Delta outflow	Please see Master Response 5, Aquatic Biological Resources, for discussions related to longfin smelt and flow-related effects, including impacts on abundance, as well as baseline and special-status species.	Reviewed by ICF	N/A

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			augmentation is not reasonably likely to occur and the biologically important outflow period is December to May (Nobriga and Rosenfield 2016), not March to May. For example, flows were not augmented in April 2021 as low Delta outflows violated D-1641 standards; the state also petitioned to waive Delta outflow requirements in February-April of 2022 despite acknowledging that reductions in Delta outflows below levels set in D-1641 will likely to harm the Longfin Smelt population (Reclamation and DWR 2021). Even prior to being weakened under the state CESA permit and waivers of Bay-Delta water quality control plan standards, status quo protections were demonstrably inadequate to protect Longfin Smelt; this is why the SWRCB (SWRCB 2010, 2017) previously concluded that Delta outflows need to increase in order to protect Longfin Smelt adequately. Thus, the proposed project anticipates degrading environmental conditions from a status quo that is already			

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			expected to cause Longfin Smelt population declines.			
51680	66	79	The RDEIR/SDEIS's characterization of the proposed project's effects on Longfin Smelt understate the true impact of reductions in Delta outflow on this population because it relies on erroneous interpretation and misrepresentation of different models of Longfin Smelt population biology. Furthermore, neither of the analyses of flow effects on Longfin Smelt abundance incorporates potential persistent increases in entrainment-related mortality of Longfin Smelt adults, larvae, or juveniles, described above. Rather, the RDEIR/SDEIS relies on historical relationships between flow and adult abundance, ignoring the likelihood that abundance for any given outflow may decline if entrainment mortality is higher than it has historically been.	Please see Master Response 5, Aquatic Biological Resources, for a discussion related to longfin smelt and flow-related effects which addresses the adequacy of relying on historical relationships between flow and abundance for assessing outflow-abundance effects on Longfin Smelt.	Reviewed by ICF	N/A
51680	66	80	Using a computer code that is intended to replicate a population model developed by Nobriga and Rosenfield (2016), the RDEIR/SDEIS	Please see Master Response 5, Aquatic Biological Resources, for a discussion related to longfin smelt and flow-related effects, including a	Reviewed by ICF	N/A

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			concludes that there will be "small" negative effects on Longfin Smelt (RDEIR/SDEIS at 11-270) -- these negative effects are visible in all year types (RDEIR/SDEIS Tables 11-69, 11-70; see also Table 11-70). However, the RDEIR/SDEIS's implementation of Nobriga and Rosenfield's (2016) population model and its interpretation of model results are unjustified and invalid (the RDEIR/SDEIS references DWR's 2020 implementation and interpretation of the same model, which were similarly flawed and invalid; see Appendix A: Critique of CDWR's modeling of Longfin Smelt abundance and productivity under different operational alternatives for the SWP March 12, 2020 (attached hereto as Exhibit 2 [Attachment 2]). As a result, the RDEIR/SDEIS's assertion that the differences between project alternatives and no action alternatives are "uncertain" is without merit. Specifically, the RDEIR/SDEIS applies Nobriga and Rosenfield's (2016) model inappropriately -- the original model was designed to evaluate	discussion about the adequacy of the Nobriga and Rosenfield model.		

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			different conceptual alternatives of Longfin Smelt population dynamics, not to predict or compare changes in population abundance under different water management regimes. Nobriga and Rosenfield (2016) found that Longfin Smelt juvenile recruitment was powerfully affected by changes in Delta outflow -- and Delta outflow was the only abiotic variable that produced a significant effect. As a result, their model will show lower recruitment of Longfin Smelt for management alternatives that reduce Delta outflow -- contrary to the RDEIR/SDEIS's implication, there is no uncertainty associated with this modeling result. The analysis in the body of the RDEIR/SDEIS obscures this certainty by inappropriately comparing all possible outcomes under different management alternatives rather than analyzing year-byyear pairwise differences between NAA and alternatives.			
51680	66	81	The RDEIR/SDEIS confounds all the variability associated with the estuary's Longfin Smelt populations	Please see Master Response 5, Aquatic Biological Resources, which addresses the outflow-abundance	Ready for review	N/A

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			through time (including a 2-3 order of magnitude decline and that related to natural variation in Delta Outflow from year-to-year) with variation among operational alternatives that differ only in their annual winter-spring Delta outflow. For example, by categorizing years into year types (each of which includes great variation in Delta outflow, see Exhibit 2), the RDEIR/SDEIS mistakes natural variability that has nothing to do with project alternatives for "uncertainty" in the outcomes of these alternatives. As a result, RDEIR/SDEIS Figures 11-36 and 11-37 are not valid and are extremely misleading regarding the certainty of persistent negative effects on Longfin Smelt that should be expected from implementation of any of the project alternatives. By presenting the high variation in model estimates of Longfin Smelt abundance across years and across decades as if it represented uncertainty about outcomes under different alternatives, the RDEIR/SDEIS's presentation undermines the entire purpose of comparing alternatives, which is to	effects on Longfin Smelt as well as uncertainty.		

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			contrast differences that arise from different water management operations rather than background variation that is not related to the alternatives.			
51680	66	82	In a prior analysis of a version of the underlying code used in the RDEIR/SDEIS, we found that the Longfin Smelt population response to changing Delta outflow is disproportionately high; for example, a 5 percent reduction in Delta outflow produces a greater than 5 percent reduction in projected Longfin Smelt abundance (see Exhibit 2). Given that population size in one generation affects abundance in the next generation (Nobriga and Rosenfield 2016), these differences among alternatives would be expected to compound over time (until the system's carrying capacity is reached). To emphasize: Nobriga and Rosenfield (2016) demonstrated that Delta outflow was extremely well correlated, over 5 decades, with Longfin Smelt juvenile productivity -- their model predicts that lower Delta	Please see Master Response 5, Aquatic Biological Resources, for a discussion related to longfin smelt and flow-related effects, including a discussion about the adequacy of the Nobriga and Rosenfield model.	Reviewed by ICF	N/A

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			Outflow as proposed under the proposed project and alternatives will result in lower Longfin Smelt productivity; the RDEIR/SDEIS's representation of that model and interpretation of its outputs are egregiously flawed and highly misleading.			
51680	66	83	The RDEIR/SDEIS also estimates changes in population abundance based on regressions between X2 and Longfin Smelt abundance. This estimate is very coarse and should be used to evaluate only the likely relative effects of project alternatives. This analysis reveals significant negative effects on Longfin Smelt abundance as a result of project alternatives in every year type; in fact, this analysis reveals that Longfin Smelt abundance under project alternative 1A will be lower relative to the NAA in over 70 percent of years analyzed in the RDEIR/SDEIS (Compare Appendix 11F Table 11F-7 to Table 11F-8). Here again, the RDEIR/SDEIS inappropriately treats mean abundance differences as	Please see Master Response 5, Aquatic Biological Resources, which addresses the adequacy of the X2-abundance regression in assessing the relative effects of the Project alternatives compared to the No Project Alternative	Reviewed by ICF	N/A

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			though they are static, ignoring deviations from the reported mean difference in each year type (i.e., declines relative to the NAA will be greater in some years) which further increase the risk of irreparable harm to the population, and the compounding effect of abundance declines across multiple generations (Thomson et al. 2010; Nobriga and Rosenfield 2016). Furthermore, this regression approach assumes that Longfin Smelt abundance is a function of outflow alone -- in this model, prior abundance plays no role in subsequent abundance. Thus, if this regression approach showed that the population was extirpated, it could magically resurrect the population in subsequent years with higher flows. This obviously underestimates and ignores the permanent harm that can arise from persistent degradation of environmental conditions on Longfin Smelt populations under the proposed project.			

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51680	66	84	(iii) The RDEIR/SDEIS's Proposed Mitigation Measures Fail to Reduce Impacts to Longfin Smelt to a Less than Significant Level The RDEIR/SDEIS claims to mitigate anticipated negative impacts to Longfin Smelt arising from reduced Delta outflow by requiring 11-13 acres of tidal habitat restoration (negative effects of increased entrainment on Longfin Smelt abundance are ignored). There is no credible evidence to support the RDEIR/SDEIS's claim that tidal habitat restoration (especially such a tiny acreage) will benefit this population or mitigate for the expected (and understated) negative effects of the proposed project. Because there is no known effect of tidal habitat restoration on Longfin Smelt abundance and even the presumed mechanisms are highly uncertain and poorly defined, there is no scientifically supported methodology for calculating the amount of such	Please see Master Response 5, Aquatic Biological Resources, which addresses adequacy of Mitigation Measure FISH-9.1 in reducing impacts related to outflow effects on Longfin Smelt to a less than significant level.	Reviewed by ICF	N/A

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			habitat required to mitigate for the proposed project's effects. Despite significant tidal marsh habitat restoration in the Delta, the Napa estuary, and the South Bay, there is no evidence yet to demonstrate that these areas provide net benefits for the San Francisco Estuary's Longfin Smelt population (i.e., that they act as a "source" as opposed to a "sink"). Despite the restoration of several thousand acres of shallow tidal habitat that has occurred over the last several decades, Longfin Smelt abundance and productivity have not increased -- the flow-juvenile abundance relationship remains unchanged and survivorship from juveniles to adults has declined (Rosenfield and Baxter 2007; Nobriga and Rosenfield 2016). In fact, Longfin Smelt abundance has declined despite massive investment in shallow tidal habitat restoration. Although recent research has documented Longfin Smelt occurrence in marshes outside of the Delta-Suisun Bay region (Lewis et al. 2019a), there is no			

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			direct evidence that Longfin Smelt detected in these areas contribute to the adult population. Results of a preliminary otolith chemistry "fingerprinting" study concluded, ". . . Of the adult fish that were classified with moderate confidence (e.g., 75%), nearly all appeared to have reared in the northern [San Francisco Estuary] . . . " (Lewis et al. 2019b at p. 9 and Figures 17 and 18 at p. 75 of the PDF). Indeed, it is not clear that Longfin Smelt found in shallow tidal habitats downstream of Suisun Bay originated in those habitats or reproduce successfully as a result of those habitats. For example, although researchers have detected substantial numbers of Longfin Smelt west of Suisun Bay, this occurred primarily during the exceedingly wet years 2017 and 2019 (Lewis et al. 2019b) and even then it was not clear that the fish detected were produced in local marshes; Lewis et al. stated (2019b at p. 6) : ". . . It is valuable to consider whether, with high Delta outflows, it is feasible and probable that larval and juvenile Longfin Smelt			

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			found in high numbers in San Pablo Bay, and even Lower South San Francisco Bay, could have been transported from Delta and Suisun Bay spawning sites by currents, tides, and winds." Although these same researchers caught pre-reproductive adult and larval Longfin Smelt in shallow tidal habitats downstream of Suisun Bay and the Delta, they were circumspect regarding the importance of spawning and rearing in these habitats, stating that their value "remains unknown." (Lewis et al. 2019b at p. 2; see also at p. 6).			
51680	66	85	The notion that shallow tidal habitat restoration can mitigate declines in Longfin Smelt caused by reduced outflow is entirely speculative. Among other things, this concept presumes that larval production is limited by spawning and incubation habitat area; juvenile and adult Longfin Smelt are generally not found in shallow habitats (Rosenfield and Baxter 2007; Rosenfield 2010). The underlying hypothesis that the Longfin Smelt population is limited by production of	Please see Master Response 5, Aquatic Biological Resources, for a discussion related to longfin smelt and Mitigation Measure FISH-9.1, including a discussion about the effectiveness of restoration.	Reviewed by ICF	N/A

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			larvae requires that the RDEIR/SDEIS demonstrate that (a) measurable numbers of additional larvae and juveniles will be produced by the required acres of shallow tidal habitat mitigation, and (b) this number of larvae and juveniles exceeds the significant decreases in Longfin Smelt production that can be expected as a result of reductions in Delta outflow. The RDEIR/SDEIS fails to make that comparison, at least in part because the benefit to Longfin Smelt of restoring a certain acreage of shallow tidal habitat is unknown, highly uncertain, and not currently estimable.			
51680	66	86	The RDEIR/SDEIS problematically calculates the proposed acreage of mitigation based on differential entrainment of Longfin Smelt expected under the project alternatives versus under the NAA. This is inappropriate and arbitrary because (a) the RDEIR/SDEIS has concluded (without evidence) that entrainment of Longfin Smelt under the proposed project and alternatives	Please see Master Response 5, Aquatic Biological Resources, for a discussion related to longfin smelt and Mitigation Measure FISH-9.1, including a discussion regarding calculations of acres of mitigation.	Reviewed by ICF	N/A

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			"would be similar to the NAA" (at p. 11-268), (b) because the methods used to identify significant reductions in Longfin Smelt abundance under the project do not account for impacts arising from increased entrainment that are additional to the flow impact being mitigated, and (c) because the mitigation calculation assumes (without evidence) some equivalence between acreage of tidal marsh restoration and acreage in which Longfin Smelt are affected by entrainment. Thus, the proposed mitigation calculation is without scientific support and is not relevant to the significant negative effect (reduced Longfin Smelt productivity resulting from reduced Delta outflow) that it is supposed to mitigate.			
51680	66	87	Far from being a substitute for the well-described negative effects of reduced Delta outflow on Longfin Smelt abundance and productivity, the benefits of restoring putative Longfin Smelt spawning and rearing habitats in shallow tidal environments are highly uncertain, if they have any	Please see Master Response 5, Aquatic Biological Resources, for a discussion related to longfin smelt and Mitigation Measure FISH-9.1, including a discussion about the effectiveness of tidal habitat restoration.	Reviewed by ICF	N/A

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			beneficial effect at all (Lewis et al. 2019b at pp. 44-45 of PDF). Clearly, more research is needed to demonstrate what, if any, value restored shallow tidal habitats have for the Longfin Smelt population in this estuary. Until such research is completed, it will not be possible to determine (a) that constructing these habitats actually benefits the Longfin Smelt population, and if it is beneficial, (b) how much of this habitat is necessary to mitigate impacts of the proposed project. Furthermore, there is no evidence that we know how to "restore" tidal habitats such that they benefit rather than harm Longfin Smelt. Although some shallow habitats where Longfin Smelt are now detected have been the subject of marsh restoration efforts (e.g., the South Bay Salt Ponds), historical records suggest that these fish occurred in these areas prior to restoration (Rosenfield 2010). There is no evidence to assess whether fish in these "restored" habitats do better or worse following habitat restoration. Certainly, there is			

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			no evidence to support the RDEIR/SDEIS's calculation of a precise acreage to mitigate for the persistent negative effects the proposed project is expected to have on Longfin Smelt abundance.			
51680	66	88	Even if Longfin Smelt do reproduce and rear successfully in tidal habitats that have been restored, evidence suggests that any benefits will be limited to years when local stream flows and Delta outflows are high. Indeed, Lewis et al. (2019b at p. 6) write: (a) "It is unlikely that in dry, normal, or possibly even above normal years that such conditions would exists in each of these bay tributaries [west and south of the Carquinez Straights] sufficient enough to support substantial spawning and rearing. Thus in most years, the majority of suitable spawning and rearing habitats would likely occur in Suisun Bay/Marsh and the Delta," and (at p. 11) (b) ". . . Given the prevalence of drought conditions and limited outflows from the Napa River and Coyote Creek watersheds due to	Please see Master Response 5, Aquatic Biological Resources, for a discussion related to longfin smelt and Mitigation Measure FISH-9.1 including a discussion about the lack of a specific location for tidal habitat restoration.	Reviewed by ICF	N/A

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			upstream catchment and diversion, suitable conditions for spawning appear to only occur in years of anomalously high precipitation." This pattern suggests that even if it is effective, restoring shallow tidal habitats in these areas will only counter the proposed project's negative effects during wetter years, whereas declines in Longfin Smelt abundance (and increases in Longfin Smelt entrainment) are expected in drier year types, when the population is at greatest risk. Furthermore, regardless of any mitigation that might occur as a result of the proposed habitat restoration, the benefits of this activity cannot possibly occur until the habitat is actually constructed and functioning. Tidal habitat restoration generally takes many years or decades to complete; therefore, under the very best scenario, negative effects of the proposed project will not be mitigated for several Longfin Smelt generations.			

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51680	66	89	(F) The RDEIR/SDEIS Fails to Accurately Analyze Environmental Impacts to Delta Smelt and Fails to Disclose Significant Impacts of the Proposed Project The RDEIR/SDEIS incorrectly concludes that the proposed project and alternatives would not cause significant adverse impacts on Delta Smelt, because it fails to analyze important aspects of the problem and because it unlawfully assumes that changes less than 5 percent cannot constitute a significant impact.	Please refer to Master Response 5, Aquatic Biological Resources, which addresses the adequacy of thresholds and criteria used in the analyses of Delta Smelt. As mentioned in Master Response 5, the 5% threshold value is not used in making impact determinations in the EIR/EIS.	Reviewed by ICF	N/A
51680	66	90	The RDEIR/SDEIS ignores the effects of reductions in spring outflow on Delta Smelt recruitment. See Polansky et al. 2021; IEP MAST 2015. As Reclamation and DWR explained in the recent Temporary Urgency Change Petition submitted to the SWRCB, Subsequent analysis in a peer review journal using a nonlinear state space model by Polansky et al. (2021) found statistical support for both a negative	Please see Master Response 5, Aquatic Biological Resources, which addresses the revisions made to the Final EIR/EIS related to spring outflow effects on Delta Smelt.	Reviewed by ICF	N/A

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			effect of March through May X2 and Export:Inflow (E:I) ratio on recruitment of delta smelt. Thus the most recent analysis from Polansky et al. (2021) suggests the TUCP could result in negative effects to delta smelt, based on higher March through May X2 under the TUCP and TUCP with DCC options (~88.3 km) and TUCP with Collinsville X2 option (~82.3 km) relative to the base case (~81.1 km). Reclamation and DWR 2021. While the RDEIR/SDEIS discusses potential impacts of reduced Delta outflow on zooplankton, see RDEIR/SDEIS at 11-260 to 11-262, the document completely ignores Polansky et al. 2021 and the adverse impacts from reduced outflow on the recruitment and subsequent abundance of Delta Smelt.			
51680	66	91	While the RDEIR/SDEIS acknowledges that diversions by the proposed project and alternatives could reduce abundance of zooplankton prey for Delta Smelt in the low salinity zone, it improperly concludes this would not	Please see Master Response 5, Aquatic Biological Resources, which addresses the adequacy of the Delta Smelt analyses related to effects on	Reviewed by ICF	N/A

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			be a significant impact because the changes in abundance of P. forbesi would be less than 5 percent. RDEIR/SDEIS at 11-260 to 11-261, 11-266. However, given the dire status of Delta Smelt, even a very small reduction in prey abundance could constitute a significant impact. See Cal. Code Regs., tit. 14, § 15065(a)(1). Moreover, in years when Sites Reservoir would divert more water and cause greater reductions in Delta outflow, there is likely to be greater reductions in Delta Smelt prey abundance as a result of the proposed project and alternatives.	zooplankton prey (*Pseudodiaptomus forbesi)*.		
51680	66	92	The RDEIR/SDEIS finds that diversions by the proposed project and alternatives could reduce sediment loading to the Delta by up to 5 percent. RDEIR/SDEIS at 11-265. Reduced turbidity would significantly harm Delta Smelt, but the RDEIR/SDEIS finds that this impact is less than significant, based on the magnitude of the change and potential mitigation measures. Id.; see id. at 11-266. However, even a small	Please see Master Response 5, Aquatic Biological Resources, which addresses the adequacy of Delta Smelt impact analyses related to upstream sediment entrainment and supports the finding of less than significant impact. As mentioned in Master Response 5, the EIR/EIS did not propose mitigation measures for the finding of less than significant. The EIR/EIS includes technical studies and adaptive management, which is	Reviewed by ICF	N/A

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			reduction in sediment supply that reduces turbidity in the Delta may be a significant impact given that could further reduce Delta Smelt below selfsustaining levels, Cal. Code Regs., tit. 14, § 15064(a)(1). Moreover, other agencies have previously concluded that any reduction in sediment supply to the Delta and San Francisco Bay should be considered a significant impact. See Bay Conservation and Development Commission, comments on the Bay-Delta Conservation Plan, July 29, 2014 (attached hereto as Exhibit 3 [Attachment 3]). In addition, the potential mitigation measure unlawfully defers mitigation, because it does not describe specific performance metrics that would be used. See id., Appendix 2D, at 2D- 46 (stating that performance criteria will be established in the future--analysis of sediment entrainment impacts is deferred until after "at least 5 years" of project operation, and implementation of sediment reintroduction is deferred another 5 years, for at least a decade of unmitigated operation). For	not mitigation, to address uncertainty in the potential for upstream sediment entrainment effects. Please also refer to Master Response 5 for a discussion of the Bay Conservation and Development Commissions' comments on the Bay-Delta Conservation Plan.		

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			comparison, Delta Smelt live only 1 year; so this mitigation will not be implemented for at least 10 generations of Delta Smelt. The failure to identify specific performance standards that the mitigation measure must achieve is unlawful. Cal. Code Regs., tit. 14, § 15126.4(a)(1)(B).			
51680	66	93	The RDEIR/SDEIS fails to evaluate, let alone demonstrate, that such potential mitigation measures are feasible, particularly since prior analyses (by ICF for the California WaterFix project) found that the vast majority of entrained sediment could not be reused.	Please see Master Response 5, Aquatic Biological Resources, for a discussion related to delta smelt and upstream sediment entrainment, including the feasibility of proposed mitigation measures.	Reviewed by ICF	N/A
51680	66	94	The RDEIR/SDEIS must be revised and recirculated with: (1) an accurate analysis of impacts from sediment entrainment; (2) analysis of the feasibility of sediment mitigation measures; (3) specific mitigation measures and performance standards identified to ensure that impacts are reduced to a less than significant level; and (4) proposed monitoring to evaluate the implementation of	Please see Master Response 5, Aquatic Biological Resources, which addresses the adequacy of Delta Smelt impact analyses related to upstream sediment entrainment and supports the finding of less than significant impact.	Reviewed by ICF	N/A

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			mitigation measures and adaptively modify the measures as needed. Developing mitigation measures a decade after the impact is already occurring is unlawful and imposes unacceptable impacts on the multiple endangered species that depend on turbidity in the Estuary.			
51680	66	113	CDWR's modeling of the San Francisco Estuary Longfin Smelt population to evaluate new operational plans for the State Water Project and Central Valley Project: Critique By Jonathan Rosenfield, Ph.D., San Francisco Baykeeper, Senior Scientist with modeling assistance from UC Davis Otolith Geochemistry and Fish Ecology Laboratory	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to the commenter's letter.	Reviewed by ICF	N/A
51680	66	114	Attachment 3: Letter to NMFS from BCDC, dated July 29, 2014.	The commenter provided this attachment for reference purposes in support of their comments. Those	Reviewed by ICF	N/A

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				comments are addressed in these responses to the commenter's letter.		
51680	77	65	ATTMT 1. Chapter or Appendix - Section: Chapter 11 - Impact Fish-2, Delta. Page(s): General Comment. Comment and Recommendations: CDFW is concerned that important changes in location and timing of available Delta rearing and migratory habitat under the Proposed Project are not being captured by model projections in the RDEIR/SDEIS. Delta abiotic factors that influence habitat suitability and the subsequent rearing and survival components of salmonid life history is a significant knowledge gap that is not currently resolvable. This should be acknowledged throughout the text of Chapter 11. However, it is well established that the quality and quantity of habitats available for Chinook salmon and steelhead in the Delta depend on inflows from the Sacramento River (del Rosario et al. 2013). CDFW recommends that the Proposed Project utilize the California Water Fix analysis done for potential impacts to	As suggested by the commenter, an analysis of potential impacts on rearing habitat represented by adjacent bench habitat was added to the Final EIR/EIS (see discussion of results in Chapter 11, Aquatic Biological Resources, Impact FISH-2; methods are provided in Appendix 11J, Through-Delta Survival and Delta Rearing Habitat of Juvenile Chinook Salmon). The additional analysis does not change the significance conclusions. However, note that the impact determination was updated from Less Than Significant with Mitigation in the RDEIR/SDEIS to Less Than Significant in the Final EIR/EIS because of the inclusion of former mitigation measure FISH-2.1, Wilkins Slough Bypass Flow criteria, now refined, in the Project Description as described in Master Response 2,Alternatives Description and Baseline.	Reviewed by ICF	N/A

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			reduced inundation of river adjacent floodplain bench habitat to assess changes in the location and timing of available Delta rearing and migratory habitat due to Proposed Project operations.			
51680	77	72	ATTMT 1. Chapter or Appendix - Section: Chapter 11 - Impact Fish-2, Delta. Page(s): p. 11-125. Comment and Recommendations: Appendix 11J does not include specific information regarding the sensitivity analysis (e.g., What were the assumptions and parameters of the sensitivity analysis? What time of year was the Georgiana barrier assumed operational?). It is unclear if 50% reduction in mortality is an appropriate assumption under all alternatives, given the study did not take into consideration reduced outflow conditions as a result of Sites proposed alternatives. Also, it is not clear if 50% should be assumed across all flow conditions, months, and water years. The BAFF was only studied in 2011 (wet WY) and 2012 (below normal WY); therefore, there are no above normal, dry, or critical years	Edits have been made to the Through-Delta Survival of Juvenile Chinook Salmon, Methods section of Appendix 11J, Through-Delta Survival and Delta Rearing Habitat of Juvenile Chinook Salmon, of the Final EIR/EIS to clarify assumptions of the sensitivity analysis. The commenter refers to a “50% reduction in mortality,” but the analysis is assessing the effects of a 50% reduction in entry into Georgiana Slough, as opposed to a 50% reduction in mortality. As the commenter notes, the bioacoustic fish fence (BAFF) was tested in only two water year types, so there is not complete information for all water year types, but the best available information was used. As shown in the results of the sensitivity analysis in Appendix 11J, the relative difference	Reviewed by ICF	N/A

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			studied. CDFW suggests including a detailed description of the modeling assumptions included in the sensitivity analysis.	between the Project alternatives and the No Project Alternative remained similar, so assumptions regarding the relative effectiveness of the barrier did not change conclusions regarding the potential effects of the Project alternatives.		
51680	77	73	ATTMT 1. Chapter or Appendix - Section: Chapter 11 - Tables 11-17, 11-18, 11-27, and 11-28. Page(s): p. 11-126, 27, 11-154. Comment and Recommendations: The current Salvage Density Method only includes water years 2009-2019, which omits above normal water year types. Previous applications of this model (i.e., SWP EIR and Incidental Take Permit Application) included all water years analyzed with CalSim (1922-2003), which includes above normal water year types. CDFW recommends the interpretation of the results from this analysis and how they are applied to the evaluation of potential impacts consider the limited years of data used, which may underestimate potential impacts.	The commenter is concerned that the water year types used to determine the density for the salvage-density method was limited to 2009 to 2019 (note that water years 2009 to 2020 were included). This approach was adopted to ensure that recent density was used because of the changes since historical periods. Given that the method is assessing differences in south Delta exports (as described in Appendix 11Q, Other Delta Species Analyses, under the section titled Salvage-Density Method), differences in south Delta exports for Above Normal Water Years are available from summarized CALSIM modeling results to assess such differences (see Appendix 5B4, Regional Deliveries, in the Final EIR/EIS). To illustrate relative differences with salvage-density	Reviewed by ICF	N/A

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				weightings representative of species seasonal patterns, the density patterns for Wet Water Years were added for Above Normal Water Years in the Final EIR/EIS.		
51680	77	74	ATTMT 1. Chapter or Appendix - Section: Chapter 11 - Tables 11-17, 11-18, 11-27, and 11-28. Page(s): p. 11-126, 11-127, 11-206. Comment and Recommendations: The results of the Salvage Density Method are averages across water year type rather than by month and water year type. For winter-run and spring-run Chinook Salmon, salvage is not consistent across the year therefore the modeling results may underrepresent any changes to salvage during the months of peak salvage. Historically, peak salvage of winter-run Chinook Salmon occurs in March (with a smaller peak in January) and peak salvage of springrun Chinook Salmon occurs in April. CDFW suggests presenting the results of the Salvage Density Method by month and water year type.	Additional tables of the type suggested by the commenter have been added to Appendix 11Q, Other Delta Species Analyses, of the Final EIR/EIS under the section titled Salvage-Density Method. The additions do not change the significance conclusions. However, note that the impact determination was updated from Less Than Significant with Mitigation in the RDEIR/SDEIS to Less Than Significant in the Final EIR/EIS because of the inclusion of former mitigation measure FISH-2.1, Wilkins Slough Bypass Flow criteria, now refined, in the Project Description as described in Master Response 2, Alternatives Description and Baseline.	Reviewed by ICF	N/A

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51680	77	83	ATTMT 1. Chapter or Appendix - Section: Chapter 11 - Impact Fish-6, Appendix 11L Sturgeon Delta Analyses. Page(s): General Comment. Comment and Recommendations: The RDEIR/SDEIS finds the Proposed Project to have Less Than Significant (LTS) effects on both green sturgeon and white sturgeon. However, the Proposed Project has the potential to impact sturgeon survival and recruitment due to reductions in Sacramento River flow associated with input flows to the reservoir, which are not sufficiently offset by protective bypass flow criteria. Additionally, as larval sturgeon could likely be in close proximity to points of diversion at the time of diversion for the Proposed Project, an analysis of the screening efficacy on larval sturgeon may be warranted.	The commenter suggests that the Project has the potential to impact sturgeon survival and recruitment due to reductions in Sacramento River flow and suggests that bypass flow criteria do not sufficiently offset such potential effects. However, the commenter does not provide an indication of what they consider sufficient flows to be nor any source information from which this could be developed. The EIR/EIS includes an analysis of potential effects on sturgeon abundance based on available Delta outflow-abundance relationships, which form part of the considerations for the less-than-significant conclusions for the two sturgeon species. Note that bypass flow criteria have been updated in the Final EIR/EIS, which does not change the impact determination (see Master Response 2, Alternatives Description and Baseline); please refer to Master Response 5, Aquatic Biological Resources, for a discussion regarding flow and mitigation measures.	Reviewed by ICF	N/A

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				With respect to larval sturgeon and the commenter's suggestion for an analysis of screening efficacy, the potential for near-field effects, including consideration of screening efficacy, is provided in Impact FISH-6 for green sturgeon and Impact FISH-7 for white sturgeon.		
51680	77	85	ATTMT 1. Chapter or Appendix - Section: Chapter 11 - Impact Fish-6, Delta Outflow Effects. Page(s): p. 11-242. Comment and Recommendations: The RDEIR/SDEIS suggests that even if upstream passage of adults is blocked briefly, "it is likely adults would hold and continue their migration and spawning after flow subsequently increased" (p. 11-242). There is nothing in the literature to suggest this. Evidence suggests that when passage is blocked, green sturgeon will move back downstream (e.g., adults blocked by the insertion of the gates at Red Bluff Diversion Dam prior to 2011; Heublein et al. 2009). It is not known whether they attempt to spawn lower in the system or simply	The cited phrase has been deleted from the Final EIR/EIS because it is not supported, as the commenter notes. A new analysis has been prepared for adult sturgeon upstream migration flows based on observations of white sturgeon migrations in Schaffter 1997 and the results have been added to Chapter 11 and Appendix 11N. The new analysis does not change the impact determination.	Reviewed by ICF	Schaffter, R. G. 1997. White Sturgeon Spawning Migrations and Location of Spawning Habitat in the Sacramento River, California. *California Fish and Game* 83(1):1-20.

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			abort the migration and return to salt water. Suggesting that Proposed Project operations will not have an impact on sturgeon should not be based on the assumption that they will wait until later to migrate, as it is possible that the fish will not spawn at all.			
51680	77	86	ATTMT 1. Chapter or Appendix - Section: Chapter 11 - Impact-Fish-8: Operations Effects on Delta Smelt. Page(s): pp. 11-250 - 11-258. Comment and Recommendations: The RDEIR/SDEIS's analysis of effects from reservoir releases to CBD/Yolo Bypass begins by asserting that providing flow through CBD and Yolo Bypass may benefit Delta smelt. This section cites Bush (2017) to assert that 23% of the population may benefit from releases through the Yolo Bypass. This is not an accurate representation of the findings of that study. Bush (2017) found that the proportion of freshwater resident Delta smelt was variable and that summer water temperature was likely the main driver of the proportion of freshwater	Please see Master Response 5, Aquatic Biological Resources, which addresses the effects on Delta Smelt from reservoir releases to CBD/Yolo Bypass. As mentioned in Master Response 5, the EIR/EIS does not state that 23% of the delta smelt population may benefit from reservoir releases through Yolo Bypass; the analysis merely provides perspective on the proportion of the population residing in the region mostly likely to benefit from the releases. As mentioned in Master Response 5, the Final EIR/EIS was revised to include the following: 1) environmental conditions affecting proportion of freshwater residents and 2) NDFA having a phytoplankton bloom observation. Master Response 5 also	Reviewed by ICF	N/A

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			residents that are present in the Cache Slough complex. Furthermore, the North Delta food web actions (NDFA) have not demonstrated a measurable improvement in the Delta smelt population, habitat, or abundance of prey items. The only NDFA having a phytoplankton bloom observation, occurred in 2016 and was comprised of Aulacoseira, a long chain-forming diatom that copepods (a major food item for Delta smelt and longfin smelt) do not consume at high rates during blooms (Jungbluth et al. 2020). Other NDFA have resulted in no observed increase in phytoplankton. These results show the uncertainty associated with food web benefits of the NDFA. Further discussion of this action in the RDEIR/SDEIS describes the uncertainty in the extent to which Delta smelt could be affected by an increase in pesticides in the lower Yolo Bypass, as Proposed Project habitat flows would redirect CBD water that is relatively high in pesticides into the Yolo Bypass, and the potential deleterious effects that Delta smelt in the Yolo	addresses the uncertainty in potential negative effects from reservoir releases on delta smelt as a result of effects on temperature, dissolved oxygen, and pesticides.		

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			Bypass could experience due to exposure to low dissolved oxygen (p. 11-255). The RDEIR/SDEIS also acknowledges water temperature in this region is frequently at the cusp of the upper thermal maximum for Delta smelt, concluding that as a result "there is some uncertainty in the potential for effects on Delta Smelt" (p. 11-258). As stated above, Bush (2017) found that high water temperature may lead to lower frequency of freshwater resident Delta smelt in the North Delta. Therefore, any increase in water temperature in the Yolo Bypass or North Delta is likely to reduce the frequency of freshwater resident Delta smelt. CDFW suggests revising this section for clarity and clearly stating the potential benefits, uncertainties, and potential deleterious effects of reservoir releases to CBD/Yolo Bypass on Delta smelt.			
51680	77	87	ATTMT 1. Chapter or Appendix - Section: Chapter 11 - Impact-Fish-8: Operations Effects on Delta Smelt. Page(s): General Comment. Comment	Please see Master Response 5, Aquatic Biological Resources, for a discussion related to delta smelt and flow related effects, including a	Reviewed by ICF	N/A

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			and Recommendations: The RDEIR/SDEIS does not currently address the role of outflow on the transport and dispersal of Delta smelt larvae. Reduced delta outflow reduces the transport and dispersal of Delta smelt larvae downstream to areas of higher quality habitat (IEP MAST 2015, CDFW 2020). Polansky et al. 2021 also found that outflow is important for postlarval survival. CDFW suggests adding in a discussion of the Proposed Project's operational effects on survival of Delta smelt larvae in the FEIR/FEIS to better inform Proposed Project impacts to Delta smelt.	discussion on spring outflow-related variables.		
51680	77	88	ATTMT 1. Chapter or Appendix – Section: Chapter 11 – Impact-Fish-8, Flow-Related Effects. Page(s): pp. 11-260, 261. Comment and Recommendations: The RDEIR/SDEIS analyzed expected decreases in Delta outflow and the abundance of Eurytemora affinis, a copepod that is an important food for Delta smelt and found that there would be less prey available to Delta smelt in spring under all three operational scenarios	Please see Master Response 5, Aquatic Biological Resources, for a discussion related to delta smelt and flow related effects, including a discussion on delta smelt and *Eurytemora affinis*.	Reviewed by ICF	N/A

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			compared to the No Action Alternative (p. 11-260). However, these analyses used statistical relationships between outflow and Eurytemora abundance observed over several months of the spring period. The largest decrease in Delta outflow under the operational scenarios would be in March, with relatively little change in Delta outflow in April and May. Therefore, decreases in food availability in March would be expected to be greater than those represented in Table 11-58 (averaged over March through May) and Table 11-59 (averaged over March through June) (p. 11-261). The conclusion that such small decreases are unlikely to be "statistically detectable" does not mean that such decreases would not be biologically significant or deleterious to a species already suffering from food limitation. The ability to statistically detect the decrease in Eurytemora abundance is influenced by the large variability in the zooplankton data, which is inherent in zooplankton data as copepod distribution is patchy. Even			

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			at relatively low abundance, Eurytemora is highly positively selected for by Delta smelt in spring and increasing or extending its period of abundance provides feeding benefits to larval and small juvenile Delta smelt (Slater and Baxter 2014). Therefore, the negative impacts to Delta smelt from reduced prey availability may be greater than what is presented in the RDEIR/SDEIS.			
51680	77	89	ATTMT 1. Chapter or Appendix – Section: Chapter 11 – Impact-Fish-8, Flow-Related Effects. Page(s): pp. 11-263, 264. Comment and Recommendations: The RDEIR/SDEIS highlights a debate regarding the importance of low salinity zone habitat to Delta smelt, citing a small set of references (pp. 11-263, 264). Yet, throughout the Delta Smelt Flow-Related Effects section (pp. 11-260-264), the RDEIR/SDEIS states that an average of 23% of Delta smelt surviving to adulthood are freshwater residents and the remainder either migrate to the low salinity zone or are resident there (Bush 2017). This	Please see Master Response 5, Aquatic Biological Resources, which addresses low salinity zone habitat effects on Delta Smelt. As mentioned in Master Response 5, additional discussion regarding differences in fall habitat was added to the Final EIR/EIS.	Reviewed by ICF	N/A

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			contradicts the assertion that the low salinity zone is possibly not an important habitat for Delta smelt, when an average of 76% of Delta smelt surviving to adulthood reside there or migrate there for a portion of their life. CDFW suggests the Proposed Project either remove the suggestion the low salinity zone is not an important habitat for Delta smelt or expand the discussion. Specifically, the discussion should include the importance the Suisun Bay where habitat quality is maximized (Feyrer et al. 2007, Feyrer et al. 2011, Kimmerer et al. 2013) and Delta smelt foraging efficiency and success is greater (Hammock et al. 2017, Hammock et al. 2019). Recent statistical analyses conducted by USFWS also provide strong support for the importance of fall habitat to recruitment of Delta smelt (Polansky et al. 2019 and Polansky et al. 2021).			
51680	77	90	ATTMT 1. Chapter or Appendix - Section: Chapter 11 - Impact FISH-9: Operations Effects on Longfin Smelt and Appendix 11A. Page(s): General	Please see Master Response 5, Aquatic Biological Resources, for a discussion related to longfin smelt and flow-related effects, including	Reviewed by ICF	N/A

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			Comment. Comment and Recommendations: There is a well-documented positive correlation between winter and spring Delta outflow and the abundance of longfin smelt the following fall. Adults, immature sub-adults, eggs, larvae, and young juveniles are all present during some portion of this period and may be affected by various factors associated with Delta outflow. While the underlying mechanism or mechanisms driving this relationship remain unclear, the correlation between outflow and longfin smelt abundance has remained strong across multiple decades and through a substantial decrease in abundance (Maunder et al. 2015; Nobriga and Rosenfield 2016; Rosenfield and Baxter 2007; Stevens and Miller 1983; Tamburello et al. 2019; Thomson et al. 2010). Other analyses examined the magnitude of Delta outflow associated with positive longfin smelt population growth (State Water Resources Control Board (SWRCB) 2017, Rosenfield et al. 2010). The magnitude of outflow required varied	impacts on population caused by changes in flow.		

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			depending on what averaging period was considered, however, both examinations concluded that the probability of positive population growth decreases with reduced outflow (SWRCB 2017) indicating that further reduction in winter/spring outflow may exacerbate the current decline in longfin smelt population.			
51680	77	91	ATTMT 1. Chapter or Appendix - Section: Chapter 11 - Impact FISH-9: Operations Effects on Longfin Smelt and Appendix 11F. Page(s): General Comment. Comment and Recommendations: The effect that Proposed Project operations would have on longfin smelt was modeled using a reconstruction of analysis conducted by Nobriga and Rosenfield (2016). The intent of the original Nobriga and Rosenfield analysis was to test various life history conceptual models using contrasting variants of a generalized population model. The analysis using Nobriga and Rosenfield approach may not accurately convey Proposed Project impacts. Visual examination of model fit as presented	Please see Master Response 5, Aquatic Biological Resources, for a discussion related to longfin smelt and flow-related effects, including a discussion of the appropriateness of the Nobriga and Rosenfeld model.	Reviewed by ICF	N/A

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			in Figure 11F-1 showed that the model 2abc median differed from empirical data by as much as an order of magnitude in some years and that the 95% confidence intervals spanned multiple orders of magnitude indicating a high degree of uncertainty. The results are presented in such a way that mask Proposed Project effects by including all variation due to all factors including a multiple order of magnitude decline in the population and error associated with model coefficients. To facilitate clearer interpretation of impacts to longfin smelt, the results should be presented as a proportional change in the modeled FMWT index under NAA conditions prior to averaging by water year type. A second approach based on previously published regression analysis described by Kimmerer et al. (2009) and Mount et al. (2013) was also presented. The results of this second approach were similar to the Nobriga and Rosenfield method in that there was a high degree of uncertainty and that the Proposed Project operations resulted in a net			

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			negative impact on longfin smelt abundance.			
51680	77	92	ATTMT 1. Chapter or Appendix - Section: Chapter 11 - Mitigation Measure FISH-9.1: Tidal Habitat Restoration for Longfin Smelt and Appendix 11F.5 Tidal Habitat Restoration Mitigation Calculations for Longfin Smelt. Page(s): p. 11-274 and pp. 11F-32, 33. Comment and Recommendations: The proposed mitigation to offset the effect of reduced outflow used an equation described by Kratville (2010). This equation may not be appropriate due to the fact that it was developed to calculate the acreage required to mitigate the direct and indirect loss of larval Delta smelt associated with SWP/CVP exports. The equation is based on the findings of Kimmerer and Nobriga (2008) which applied a particle tracking model to estimate the proportion of simulated Delta smelt larva that would be entrained into the south Delta Export facilities from various locations in the Delta. Kratville (2010) does state that this	Please see Master Response 5, Aquatic Biological Resources, which addresses adequacy of Mitigation Measure FISH-9.1 in reducing impacts related to outflow effects on Longfin Smelt to a less than significant level.	Reviewed by ICF	N/A

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			analysis is generally representative of the effects that SWP/CVP exports have on longfin smelt larvae in dry years. However, it does not encompass the full period in which larval longfin smelt are present. Larval longfin smelt are present in the estuary beginning as early as mid-December when the E:I ratio is 65%. Therefore, this equation may be appropriate to calculate the acreage needed to offset any increase in south Delta exports associated with Proposed Project operations, if it is adjusted to account for the different E:I ratio in December and January. However, it does not account for impacts associated with reduced Delta outflow due to Proposed Project diversions.			
51680	78	96	Chapter 11, page 11-258 An analysis of the impact of changes to Delta outflow on dispersal of larval Delta smelt should be included in the environmental document to improve understanding of the potential impacts of the Proposed Project on	Please see Master Response 5, Aquatic Biological Resources, for a discussion related to delta smelt and flow related effects, including a discussion on spring outflow-related variables.	Reviewed by ICF	N/A

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			Delta smelt. Reduced outflow is expected to reduce the distribution of Delta smelt larvae downstream to areas of higher quality habitat for larval and post-larval Delta smelt. Results should be discussed by month and not averaged across season or multiple months. [Commenting Water Board or Section within the State Water Board: Bay-Delta]			
51680	78	97	Chapter 11, page 11-260 For tables 11-58 and 11-59, the results of abundance of the Delta smelt copepod food source (Eurytemora affinis) should be presented on a monthly basis to avoid underestimating the potential effects of reduced food sources as a result of reduced Delta outflow. Delta smelt are food limited and large reductions within a month may have a more significant biological impact than would appear based on average reductions over several months. The draft REIR/SEIS averages the results	Please see Master Response 5, Aquatic Biological Resources, for a discussion related to delta smelt and flow related effects, including a discussion on *Eurytemora affinis*.	Reviewed by ICF	N/A

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			over several months (March – May, Table 11-58; March – June Table 11-59) and concludes that changes are minimal. This summary approach to presenting the data and making conclusions may significantly underestimate impacts of changes to Delta outflow on food sources for Delta smelt. [Commenting Water Board or Section within the State Water Board: Bay-Delta]			
51680	82	4	Notable exclusions from the RDEIR/SDEIS included impacts to straying rates of returning Mokelumne River spawners, Delta temperature assessments based on water temperature index values for fall-run Chinook salmon, interior Delta estimates of reach specific survival, and effects to predation rates based on changes to south Delta entrainment. Additions or improvements to the analysis could benefit from:	With respect to the exclusions noted by the commenter: An analysis of straying rate of returning Mokelumne River spawners was added to Chapter 11, Aquatic Biological Resources, Impact FISH-4 of the Final EIR/EIS. This does not change the impact determination. Delta temperature assessments are not warranted because reservoir operations have little if any effect on Delta water temperatures (Wagner et al. 2011, as cited in Chapter 11 of the Final EIR/EIS), and the analyses of	Reviewed by ICF	Wagner, R. W., M. Stacey, L. R. Brown, and M. Dettinger. 2011. Statistical Models of Temperature in the Sacramento–San Joaquin Delta under Climate-Change Scenarios and Ecological Implications. Estuaries and

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			• To assess through-Delta survival, the Delta STARS Model was used. STARS stands for Survival, Travel Time, and Routing Simulation and is based on Perry et al. 2018. From the STARS model website, it is important to note that the STARS model is based on a set of relationships fitted to hatchery-origin late-fall Chinook salmon that migrated through the Delta between late November and mid-March over a five-year period (2007 - 2011). Therefore, model output should be thought of as a "historical expectation." Limited information regarding model assumptions were provided in Appendix 11H and when model data and assumptions deviate from "historical expectation," such deviations should by presented and reviewed within the RDEIR/SDEIS. • For a thorough review of through-Delta survival, we need to see the full-range of model assumptions, route entrainment estimates, and estimates of survival for each of the eight unique migration reaches (in particular the Delta Cross Channel to	temperature effects showed limited effects from the Project alternatives even in upstream areas (see, for example, the analysis of temperature effects in the Chapter 11 Temperature Effects section under Far-Field Effects of the Sacramento River analysis of Impact FISH-4 in the EIR/EIS). Interior Delta estimates of reach-specific survival would not be affected by the Project alternatives (see further discussion below). Changes in predation rates associated with south Delta entrainment would be consistent with differences in south Delta exports—for example, limited differences during the main spring migration period of juvenile salmonids (see, for example, the discussion of South Delta Entrainment for Impact FISH-4 in Chapter 11 of the EIR/EIS). With respect to the Survival, Travel Time, and Routing Simulation (STARS) model, details of model coefficients and other modeling characteristics are provided in the Perry et al. (2018)		Coasts 34: 544–556. Perry, R. W., A. C. Pope, J. G. Romine, P. L. Brandes, J. R. Burau, A. R. Blake, A. J. Ammann, C. J. Michel. 2018. Flow-Mediated Effects on Travel Time, Routing, and Survival of Juvenile Chinook Salmon in a Spatially Complex, Tidally Forced River Delta. Canadian Journal of Fisheries and Aquatic Sciences 75(11): 1886–1901.

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			Mokelumne River and Interior Delta reaches) through the Delta to assess impacts to Delta survival and Mokelumne origin salmon outmigrants. In addition, uncertainty interval values for the estimates of survival should be included for review.	paper cited in the EIR/EIS. The spreadsheet implementation of the STARS model covers a broad range of Freeport flow conditions (5,000 to 80,000 cubic feet per second), which covers nearly the full range of modeled conditions except in a very small percentage of days over the 82-year time series. With respect to the items suggested by the commenter as being necessary for a thorough review of through-Delta survival with a focus on Delta Cross Channel to Mokelumne River and interior Delta reaches, as shown by Perry et al. (2018:Figures 4 and 8), there is strong evidence of little relationship between survival and discharge for the interior Delta reach. Therefore, there would be little effect in the interior Delta of the Project alternatives relative to the No Project Alternative. With respect to the Delta Cross Channel to Mokelumne River reach, this reach does have evidence for a strong flow-survival relationship (see Perry et al. 2018:Figures 4 and 6). However, the Delta Cross Channel is		

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				closed during the main spring period of concern for Mokelumne River salmon outmigrants; therefore, the Project alternatives would not affect flow and survival in these months. A summary of survival differences in June for the Delta Cross Channel reach (i.e., Delta Cross Channel to San Joaquin River via Mokelumne River) has been added to Chapter 11 in Impact FISH-4 and to Appendix 11J, Through-Delta Survival and Delta Rearing Habitat of Juvenile Chinook Salmon, in the section titled Through-Delta Survival of Juvenile Chinook Salmon of the Final EIR/EIS. The spreadsheet implementation of the STARS model available for analysis did not include uncertainty interval values as suggested by the commenter, although the breadth of these intervals can be ascertained from the original Perry et al. (2018) paper (see, for example, Figure 6).		