Bay Delta Conservation Plan/CA Water Fix
July 2015 – Public Draft RDEIR/SDEIS
CDFW Staff Comments
October 29, 2015

CDFW is appreciative of the continued opportunity to participate and comment in development of the NEPA/CEQA document for the BDCP/CalWaterFix. Overall we feel that the Recirculated EIR/EIS is an improvement over the Public Draft and are committed to continuing to provide our support in your development of a final document.

This review is focused on changes relevant to Alternative 4A. CDFW has not reviewed changes to the BDCP in detail and is not providing comprehensive comments regarding all the changes that have been made to the BDCP plan as described in the recirculated document.

Of most concern to CDFW is the basis of comparison for conducting the CEQA analyses. In the Draft EIR/EIS' analysis of the conservation plan-based alternatives, the analyses for certain aquatic species impacts from operations of the proposed project described the modeled project impacts as compared to Existing Conditions, but ultimately reached determinations on significance based on a comparison to the NEPA baseline, which uses the NAA_LLT (i.e. 2060) conditions. The rationale for this approach was that it enabled partitioning of the effects of implementation of the alternative from the effects of sea level rise, climate change and future water demands. The recirculated EIR/EIS evaluates three new alternatives that are not proposed as conservation plans, and again for project operations' impacts to aquatic species, the analyses often reach significance conclusions based on a comparison to future conditions (NAA_ELT) rather than a comparison to Existing Conditions. However, Alternative 4A is not a large-scale and long-term conservation focused only on construction of water conveyance facilities and associated mitigation which will be implemented on a much shorter time-frame of 10-15 years (the NAA_ELT compares conditions out to 2025). We believe that the analyses should more clearly describe the project's impacts in comparison to Existing Conditions. We also recommend that further information needs to be described as to why the comparison to the "future conditions" baseline is justified based on unusual aspects of the project or conditions.

Additionally, our review found the following general concerns that are further explained in the attached comment tables:

- There are outstanding CDFW comments that have not fully been resolved from our June 2015 comments to the administrative draft revised EIR/EIS. We have included a separate document detailing these comments.

- Several of the effects analyses, results, and conclusions do not reflect current efforts being undertaken through the Section 7 process and discussions of the Fish and Game Code section 2081(b) permit application. CDFW generally understands that as these methods, analyses and results are finalized they will be included in the final EIR/EIS to ensure clarity and consistency.

- We had some difficulty in clearly distinguishing which of the HCP/NCCP elements carry over to Alternative 4A. This is particularly a concern regarding Avoidance and Minimization Measures, project operations criteria and other details of the BDCP that were not included or clearly referenced in the project description.

- Several of the mitigation measures and CEQA conclusions need additional clarification to demonstrate that they will be effective in reducing or eliminating impacts and can be feasibly implemented.

- The CEQA analyses for the proposed environmental commitments do not clearly demonstrate how each species' habitat requirements will be met when an environmental commitment targets species that utilize the same natural communities. The attached tables include several examples of cases where species with disparate habitat requirements are assumed to benefit from the same mitigation acreages. This is an important clarification necessary for ensuring that impacts to individual species are reduced to a less-than-significant level.

- The document does not clearly explain how modeled physical changes are translated into biological effects and subsequently how those biological effects are, or are not, then concluded to be significant/adverse, based on the significance thresholds articulated. If these determinations are based on professional experience, rather than a quantitative process that translates modeled physical effects into biological effects, then those determinations and the basis for the qualitative assumptions, should be made clear. As should the information about what species population estimates or species abundance indices these modeled effects are applied to in the assessments.

Should you have questions or want to discuss any of these comments please feel free to contact Chad Dibble, (916) 445-1202, chad.dibble@wildlife.ca.gov

Attachments: RDEIR_EIS CDFW comments_T errestrial
RDEIR _EIS CDFW comments_unresolved
RDEIR _EIS CDFW comments_Aquatic
RDEIR _EIS CDFW comments_Summary of CEQA Conclusions
RDEIR _EIS CDFW comments_Section 1
RDEIR _EIS CDFW comments_Section 5
RDEIR _EIS CDFW comments_Appendix3B
RDEIR _EIS CDFW comments_AppendixA Section8
RDEIR _EIS CDFW comments_AppendixD

Bay Delta Conservation Plan/CA Water Fix
July 2015 – Public Draft RDEIR/SDEIS
CDFW Staff Comments
October 30, 2015

Supplemental Document

The following provides a summary of CEQA conclusions (excerpts from Section 4 of the RDEIR/SEIS) in support of the general comment submitted as part of CDFW's comments on Section 4 fish and aquatic resources.

Under Alternative 4A, egg mortality (according to the Reclamation egg mortality model) in drier water years, during which winter-run Chinook salmon would already be stressed due to reduced flows and increased temperatures, would be up to 18% greater (absolute difference) than egg mortality under the CEQA baseline. The extent of spawning habitat and egg incubation conditions according to the SacEFT model are predicted to be 21% and 9% lower, respectively, on an absolute scale. Years with water temperatures at the red level of concern and exceedances above NMFS temperature thresholds would be substantially greater under Alternative 4A relative to the CEQA baseline. Therefore, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce suitable spawning habitat and substantially reduce the number of winter-run as a result of egg mortality, although, due to the highly suppressed population size of winter-run Chinook salmon relative to historical population sizes, it is unlikely that spawning habitat is currently limiting. (Section 4, p. 4.3.7-60)

Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce juvenile migration conditions for winter-run Chinook salmon upstream of the Delta. Under Alternative 4A, there would be reductions in flow and increased temperatures in the Sacramento River that could lead to biologically meaningful reductions in juvenile migration conditions, thereby reducing survival relative to Existing Conditions. Reduced migration conditions would delay or eliminate successful migration necessary to complete the winter-run Chinook salmon life cycle. Winter-run Chinook salmon juvenile survival through the Delta for Alternative 4A would be similar or slightly lower than for Existing Conditions. (Section 4, p. 4.3.7-72)

Under Alternative 4A (including climate change effects), there are flow and storage reductions, as well as temperature increases in the Sacramento River that would lead to biologically meaningful increases in egg mortality and overall reduced habitat conditions for spawning spring-run and egg incubation, as compared to Existing Conditions. Flows in the Feather River low-flow channel do not differ between Alternative 4A and Existing Conditions. However, water temperature analyses in the Feather River low-flow channel using thresholds developed in coordination with NMFS indicate that there would be moderate to large negative effects on temperature conditions during spring-run Chinook salmon spawning and egg incubation. (Section 4, p. 4.3.7-98)

Under Alternative 4A, there would be small to moderate flow reductions and temperature increases in the Feather River. SacEFT predicts improvements to spawning habitat availability for spring-run Chinook salmon in the Sacramento River under Alternative 4A and SALMOD predict slightly reduced habitat conditions. Exceedances above NMFS temperature thresholds would be higher under Alternative 4A relative to Existing Conditions. Results would be similar among model scenarios. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce rearing habitat and substantially reduce the number of spring-run Chinook salmon as a result of fry and juvenile mortality. (Section 4, p. 4.3.7-109)

Under Alternative 4A, there would be moderate to substantial flow reductions and substantial increases in temperatures and temperature exceedances above thresholds in the Sacramento, Feather, and American Rivers, which would interfere with fall-/late fall--run Chinook salmon spawning and egg incubation. Biological models, including the Reclamation egg mortality model and SacEFT, predict substantially degraded spawning and egg incubation habitat conditions in the Sacramento, Feather, and American Rivers. These modeling results are generally consistent for H3_ELT and H4_ELT. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce suitable spawning habitat and substantially reduce the number of fall-/late fall-run Chinook salmon as a result of egg mortality. (Section 4, p. 4.3.7-155)

Under Alternative 4A, including climate change effects, there would be persistent moderate flow reductions in the Feather, American, Stanislaus, Mokelumne, and San Joaquin Rivers, which would interfere with fall-/late fall--run Chinook salmon juvenile rearing habitat conditions. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce suitable rearing habitat and substantially reduce the number of fall-/late fall-run Chinook salmon as a result of degraded juvenile rearing conditions. (Section 4, p. 4.3.7-167)

These modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce migration conditions for fall-/late fall-run Chinook salmon upstream of the Delta. Under Alternative 4A, instream flows would be lower in multiple upstream rivers during the fall-run Chinook salmon migration period relative to Existing Conditions, depending on scenario (H3_ELT or H4_ELT). Degraded migration habitat conditions would delay or eliminate successful migration necessary to complete the fall-run Chinook salmon life cycle. However, the impact of Alternative 4A across the operational range (Scenarios 23 H3_ELT and H4_ELT) on through-Delta migration conditions would be small due to generally similar juvenile survival and a minor effect on olfactory cues for adults. (Section 4, p. 4.3.7-192)

Under Alternative 4A, there are flow and cold water pool availability reductions in the Feather, American, and Stanislaus Rivers, as well as temperature increases in the Feather and American rivers that would lead to biologically meaningful increases in egg mortality and overall reduced habitat conditions for spawning steelhead and egg incubation, as compared to Existing Conditions. Alternative

4A would not have significant effects on steelhead spawning conditions in the Sacramento River, Clear Creek, San Joaquin River, or the Mokelumne River. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce suitable spawning habitat and substantially reduce the number of steelhead as a result of egg mortality. (Section 4, p. 4.3.7-214)

Under Alternative 4A, there are flow reductions in the Feather, American, Stanislaus, San Joaquin, and Mokelumne Rivers and temperature increases in the Sacramento, Feather, American, and Stanislaus Rivers that would lead to reductions in quantity and quality of fry and juvenile steelhead rearing habitat relative to Existing Conditions. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce rearing habitat and substantially reduce the number of steelhead as a result of fry and juvenile mortality. (Section 4, p. 4.3.7-229)

Under Alternative 4A, there would be reductions in flow in the Sacramento, Feather, American, Stanislaus, and Mokelumne Rivers that would lead to biologically meaningful reductions in juvenile and adult migration conditions, thereby reducing survival relative to Existing Conditions. Reduced migration conditions would delay or eliminate successful migration necessary to complete the steelhead life cycle. Alternative 4A would not affect migration conditions for steelhead in Clear Creek or the San Joaquin River. Water temperatures under Alternative 4A would generally be similar to those under Existing Conditions in all rivers examined. There would be minimal effects on through-Delta migration conditions because changes in juvenile survival and adult olfactory cues would be small. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce migration conditions for steelhead. (Section 4, p. 4.3.7-253)

Under Alternative 4A, flows would generally not differ in the Sacramento River. However, flows would be lower under Alternative 4A in the Feather and San Joaquin rivers and water temperature conditions would be degraded in all rivers examined relative to Existing Conditions. Results would generally be consistent between H3 and H4. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce suitable spawning habitat and substantially reduce the number of green sturgeon as a result of elevated exceedances above temperature thresholds. (Section 4, p. 4.3.7-294)

Under Alternative 4A, water temperatures would be similar in the Sacramento River, although the exceedance above NMFS temperature thresholds in the Feather River would be higher under Alternative 4A than those under the CEQA baseline, which could increase stress, mortality, and susceptibility to disease for larval and juvenile green sturgeon. These modeling results are consistent among scenarios. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce rearing habitat and substantially reduce the number of green sturgeon as a result of fry and juvenile mortality. (Section 4, p. 4.3.7-298)

Under Alternative 4A, there would be frequent small to large reductions in flows in the Sacramento and Feather Rivers upstream of the Delta that would reduce the ability of all three life stages of green sturgeon to migrate successfully. Exceedance of Delta outflow thresholds would be lower under Alternative 4A's H3_ELT scenario than under Existing Conditions, but would be similar or greater than under Existing Conditions for the H4_ELT scenario. Note that there is high uncertainty that year class strength is due to Delta outflow or if both year class strength and Delta outflows co-vary with another unknown factor. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce upstream migration conditions for green sturgeon. (Section 4, p. 4.3.7-303)

Under Alternative 4A, there would be small to moderate, persistent reductions in flows in the Sacramento, Feather, and San Joaquin Rivers that would cause biologically meaningful effects to white sturgeon spawning and egg incubation habitat. Further, there would be increases in exceedances of NMFS temperature thresholds in the Sacramento River that would cause a biologically meaningful effect to white sturgeon spawning and egg incubation. Results would generally be consistent between H3_ELT and H4_ELT. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce the quantity and quality of suitable spawning and egg incubation habitat. (Section 4, p. 4.3.7-325)

Under Alternative 4A, the exceedance of flow thresholds in the Sacramento River would be lower than under Existing Conditions. Exceedance of Delta outflow thresholds would be lower under Alternative 4A's H3_ELT scenario than under Existing Conditions, but would be similar or greater than under Existing Conditions for the H4_ELT scenario, although there is high uncertainty that year class strength is due to Delta outflow or if both year class strength and Delta outflows are co-varying with another unknown factor. Juvenile migration flows in the Sacramento River at Verona would be up to 31% lower in six (for H3_ELT) or seven (for H4_ELT) of 12 months relative to Existing Conditions. These reduced flows would have a substantial effect on the ability to migrate downstream, delaying or slowing rates of successful migration downstream and increasing the risk of mortality. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce migration conditions for white sturgeon. (Section 4, p. 4.3.7-326)

Collectively, these modeling results indicate that the impacts to Pacific lamprey spawning and egg incubation conditions would be less than significant. There would be no increases in exposure to redd dewatering that would affect more than 5 percent of the population in all rivers. Temperature exposure in the American River at the Sacramento River confluence would affect 15 percent more cohorts under H3_ELT, but there would be no other differences that would have a biologically meaningful effect to Pacific lamprey in any of the other 9 locations evaluated. Therefore, the impact is less than significant and no mitigation is required. (Section 4, p. 4.3.7-336)

Under Alternative 4A, the risk of redd dewatering would increase to some degree under some flow reductions in the Sacramento and Trinity rivers, and substantially in the American River at Nimbus Dam (increases from 34% to 238%). Flow reductions would increase the risk of ammocoete stranding and desiccation in these rivers. There would be a beneficial effect from decreased occurrence of flow reduction events (=reduced ammocoete stranding risk) in the Feather River (-8 19% to -64% for the 85% and 90% flow reduction categories) but this effect would not offset the more substantial reductions in the other locations. There would be an increase in exposure to critical water temperatures in most locations examined. Increased exposure to higher water temperatures would increase stress and mortality of ammocoetes. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce rearing habitat and substantially reduce the number of Pacific lamprey as a result of fry and juvenile mortality. (Section 4, p. 4.3.7-343)

Collectively, these modeling results indicate that the effect is less than significant because it would not substantially reduce or degrade migration habitat or substantially reduce the number of fish as a result of mortality. There would be small to moderate negative effects of Alternative 4A on lamprey migration flows in the Sacramento River at Rio Vista, no effect (under H3_ELT) or moderately large benefits (under H4_ELT) in the Feather River, and no effect in the Sacramento River at Red Bluff and in the American River. Combined, these effects would not have a population level effect on Pacific lamprey. Therefore, the impact is less than significant and no mitigation is required. (Section 4, p. 4.3.7-348)

Under Alternative 4A, there would be moderate to substantial persistent increases in occurrence of flow reduction events for Alternative 4A with respect to Existing Conditions for the Trinity River (up 17 to 49%) and the American River at Nimbus Dam (up to 292%) and at the confluence with the Sacramento River (up to 270%) that would increase river lamprey ammocoete stranding risk and therefore rearing success for these locations. There would be a beneficial effect from reduced occurrence of flow reductions in the Feather River (up to 61% reduction) but this effect would not be sufficient to offset the negative effects from increased occurrence of flow reductions at the other locations. Further, stranding risk under H4_ELT in the Feather River would be higher than those under H3_ELT, such that the benefits under H3_ELT would not occur under these H4_ELT. There would also be increases under Alternative 4A in ammocoete cohort exposure to critical water temperatures in the Feather and American rivers that would have effects on rearing success through ammocoete mortality. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce rearing habitat and substantially reduce the number of river lamprey as a result of fry and juvenile mortality. (Section 4, p. 4.3.7-364)

Under Alternative 4A, there would be moderate and persistent flow reductions for substantial portions of the river lamprey macropthalmia migration period in the American River, and less persistent and smaller magnitude flow reductions in the Sacramento River and Feather River. These flow reductions would affect juvenile migration success, increase straying, and delay access to the ocean. If in fact, lamprey use these cues to find natal spawning grounds, these flow reductions may also affect adult migration success, including a reduction in the ability for adults to sense olfactory cues. There would be

beneficial effects from increases in flow for some months and water year types in each location. However, this effect would not be sufficient to offset the negative effects of flow reductions for the remainder of the migration period and/or in other water year types, particularly drier water year types when effects of flow reductions would be more critical. Flows under H4_ELT would be less favorable than those under H3_ELT. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce migration conditions for river lamprey. (Section 4, p. 4.3.7-367)

Collectively, flows would be lower under Alternative 4A during the adult largemouth bass residency period relative to Existing Conditions. Flows would be persistently and moderately to substantially lower in several rivers during substantial portions of the period. Therefore, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce the quantity and quality of habitat for adults as a result of flow reductions. (Section 4, p. 4.3.7-416)

Collectively, flows would be lower under Alternative 4A during the juvenile and adult Sacramento tule perch occurrence period relative to Existing Conditions. Flows would be persistently and moderately to substantially lower in several rivers during substantial portions of the period. Therefore, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce suitable rearing habitat as a result of flow reductions. (Section 4, p. 4.3.7-423)

Collectively, flows would be lower under Alternative 4A during the year-round juvenile and adult Sacramento-San Joaquin roach occurrence period relative to Existing Conditions. Flows would be persistently and moderately to substantially lower in several rivers during substantial portions of the rearing period. Therefore, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce suitable rearing habitat as a result of flow reductions. (Section 4, p. 4.3.7-430)

Collectively, flows would be lower under Alternative 4A during the juvenile and adult hardhead occurrence period relative to Existing Conditions. Flows would be persistently and moderately to substantially lower in several rivers during substantial portions of the rearing period. Therefore, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce habitat for juvenile and adult hardhead as a result of flow reductions. (Section 4, p. 4.3.7-436)

BDCP/California Water Fix RDEIR/SDEIS
Comment Form

Document: *July 15, 2015 Public Draft—RDEIR/SDEIS Section 4, Terrestrial*

Comment Source: *California Department of Fish and Wildlife*
Submittal Date: *October 30, 2015*

No.	Page	Line #	Comment	ICF Response
			Section 4.1	
1	4.1-5	12	The Project Description includes new construction and operations of the new conveyance and modified operations of existing facilities. Consistent with discussions in the Section 7 process and 2081(b) permit applications, there are also existing facilities, such as Suisun Marsh facilities, fish salvage operations, and the existing North Bay Aqueduct facility, with ongoing operations that are a part of the overall operations. Please add a description of existing facilities operations here for consistency with the Section 7 process and 2081(b) permit application.	
2	4.1-16	10	Please revise to make it clear that this description is in "Section 3.4.4, CM4 Tidal Wetland Restoration" of Appendix D".	
3	4.1-18	16	This section title Collaborative Science and Adaptive Management Program (or CSAMP) is confusing to the reader in that the text here and in the Collaborative Science section below is suggesting a new program that builds off of an existing program with the same name (CSAMP). We suggest renaming this section "Collaborative Science, Monitoring, and Adaptive Management" and further clarifying in the text how the new program will either continue the CSAMP/CAMT efforts or absorb them.	
4	4.1-18	21	AMMP does not seem like the appropriate acronym. Please revise to be consistent with the title. Also see comment on page 4.1-18, line 16 above regarding the title of this section.	
5	4.1-20	27	The funding and MOA section could use additional clarification regarding the assurances of funding, especially as it relates to compliance and effectiveness monitoring vs. adaptive management monitoring. Specifically, the "when feasible" statement is problematic, since it provides no commitment to this process or	

No.	Page	Line #	Comment	ICF Response
			clarification of how the agencies will be supported to participate in this process. E.g., the language above implies that monitoring and studies are needed so that the Collaborative Science program can inform intake design and construction of the screens. However, these actions should be taken as part of implementation, compliance, and effectiveness monitoring requirements and will most likely need to begin prior to an adaptive management program being developed. Additionally, Section 4.1.2.4 states that "the proposed compliance and effectiveness monitoring program for the CESA 2081b permit is described in Chapter 6 of that permit application". However, that information is not available for review as part of this EIR/EIS.	
6	4.1-20	39-41	The use of the phrase "the parties above" implies that CDFW will ensure availability of funding for monitoring associated with 2081(b) requirements. Please note that a condition of approval for an incidental take permit is that applicant has ensured adequate funding to meet their commitments under a 2081 permit.	
7	4.1-37	32-34	This states that the environmental commitments (ECs) and resource restoration and protection principles (RRPPs) are considered part of Alternative 4A, and not defined as mitigation measures (MMs). However, the analyses for many species reference RRPP requirements in order to meet proposed CEQA/NEPA mitigation in the absence of a proposed MM. Though RRPPs aren't defined as MMs for CEQA/NEPA compliance, they are treated as such in the species' impacts analyses. For example, the valley elderberry longhorn beetle (VELB) analysis states, "The acres of riparian protection and restoration proposed would satisfy the typical mitigation requirements described in the previous paragraph." Another consequence of the approach is that it makes it unclear and difficult to assess whether all impacts are ensured to be less than significant. Several comments below point out a conflict	

No.	Page	Line #	Comment	ICF Response
			between the assumption that certain ECs will address impacts to multiple species, and species-specific habitat requirements that are not met by the related EC. This approach is left over from the BDCP, where the reserve system provided a very large buffer above minimum mitigation requirements. It would be much clearer if the EIR described the impact to a particular species and identified the appropriate level of mitigation for that impact, conditioned to meet the needs of that species, as an MM. It is possible that one mitigation area could meet the habitat requirements of multiple species and therefore satisfy multiple mitigation measures, but that may not always be true.	
8	4.1-39	n/a	Table 4.1.8 – VELB1: This objective has been carried over from the BDCP and does not quantify a number of acres out of 354 acres provided by ECs 3 and 7 that are required to mitigate for impacts to VELB. We suggest updating this RRPP to ensure mitigation needs for the species are met, because VELB may have unique requirements that do not overlap with other riparian species. For example, 100 of the 251 acres restored will be mature forest for WYBC (VFR2) that may not contain elements necessary for VELB's use. Other riparian species' commitments (such as 19 acres for RBR) may also not include elements necessary for VELB. Therefore, we suggest revising VELB1 to state that at least 78 acres restored by EC7 and 78 acres protected by EC3 have the elements described in VELB1 and VELB2. A similar comment on the VELB section of Section 4.3.8 was also submitted.	
9	4.1-41	n/a	Table 4.1.8-SHWA SH1: We suggest updating this RRPP to ensure that the mitigation needs for this species are met with specific acreage requirements based on anticipated impacts.	
			Section 4.3.4	
10	4.3.4-34	29-34	It is unclear how the evaluation can conclude that the project will not substantially increase health risks to fish, when the analysis did not evaluate the risk. Appendix 8I states that the benchmark used to evaluate mercury risks in fish tissue were from the Delta Methylmercury TMDL (0.24 ppm in 350 mm LMB). However, that fish tissue target was developed for the protection of human	

No.	Page	Line #	Comment	ICF Response
			health, and not fish health. The TMDL did not develop fish tissue targets to protect the most sensitive life stages of fish to methylmercury toxicity (e.g., reproductive and early-life stages). The most recent science has estimated that less than 0.02 ppm methylmercury in reproductive tissues and early-life stage fish is necessary to protect from adverse effects. The current evaluation should include an assessment of impacts using this benchmark or equivalent. See comment on page 4.3.4-54.	
11	4.3.4-34	35-40	The State Water Board's Statewide Mercury Control Program for Reservoirs has determined that the magnitude of reservoir level fluctuations has been found to be positively correlated to reservoir fish tissue methylmercury concentrations (SWRCB 2015). If the project operations result in increasing the fluctuations of upstream reservoirs through re-operations, etc., then the project may impact reservoir fish methylmercury concentrations. The current environmental evaluation has not assessed this impact.	
12	4.3.4-54		Both NEPA Effects and CEQA Conclusions conclude that the project will result in no adverse impacts; however, the project is estimated to increase sturgeon (Green sturgeon is ESA listed) selenium concentrations to levels that will cause injury. This would be an exceedance of the Sacramento-San Joaquin River Basin Plan toxicity narrative objective because selenium would be present in concentrations that produce detrimental physiological responses in aquatic life. Furthermore, Linares-Casenave et al. (2014) suggests that sturgeon in the Bay-Delta could currently be at risk from selenium toxicity. The project would exacerbate toxicity to organisms that feed from the benthic food web.	
Section 4.3.8				
13	General comment		In general, CEQA analyses of proposed ECs do not consider differences in the habitat requirements of species which utilize the same natural communities. For example, EC 7 commits to riparian habitat restoration and protection. EC7 is expected to offset impacts to a wide variety of special-status species including least Bell's vireo, riparian brush rabbit, and special-status bat species. Although these three species use riparian habitat, their habitat requirements are different and not complimentary. Least Bell's	

No.	Page	Line #	Comment	ICF Response
			vireo and riparian brush rabbit require early successional shrubby riparian vegetation. Special-status bat species require mature riparian habitat with large, established roost trees. As a result of these disparate habitat requirements, it is not appropriate to credit all of the proposed riparian habitat restoration and conservation as a benefit to all three species. However, refining the estimated acres of riparian habitat (in this example) to reflect the proportion of EC7 that would meet the specific requirements of each species would mean that CEQA mitigation ratios proposed in the document would not be met.	
			Vernal pool crustaceans	
14	4.3.8-63	25-35	We suggest discussing potential impacts from recreation when describing EC 11. Although AMM37 (Recreation) is included in the discussion of Alternative 4A offsets to impacts (page 65, line 8), potential impacts from recreation should be discussed because vernal pool habitat is sensitive to human intrusion.	
15	4.3.8-65	23	AMMs listed below in the text minimize or avoid direct mortality. We suggest referencing these AMMs again in this sentence, in addition to habitat protection.	
16	4.3.8-65	34-42	There is no discussion of the AMMs that will offset these effects, and there is no discussion of impacts as a result of O&M after construction. We suggest discussing AMMs and O&M here to be consistent with the CEQA conclusion.	
			Valley elderberry longhorn beetle	
17	4.3.8-66	27	"Planting shrubs in a high-density cluster" is too vague and inconsistent with the USFWS 1999 guidelines. Specify, per the guidelines: The planting area will be at least 1,800 square feet for each elderberry transplant, with as many as 5 additional plantings and up to 5 associated native species plantings within that same area.	
18	4.3.8-66	32	Assuming EC 3 is the same as CM3 (BDCP public draft), there are no acreage commitments for protecting valley elderberry longhorn beetle (VELB) habitat specifically. As a result, EC 3 does not contribute to meeting mitigation requirements and reducing impacts to VELB. The 103 acres of protected riparian habitat will be designed for other riparian species requirements that are not	

No.	Page	Line #	Comment	ICF Response
			elderberry shrub obligates.	
19	4.3.8-67	8-10	Please either correct the habitat model, or base mitigation on the estimate provided by the habitat model.	
20	4.3.8-67	10-12	Conveyance facilities are not environmental commitments. Adjust terminology to indicate project impacts that result in these losses are water conveyance, transmission, and RTM, and EC 4.	
21	4.3.8-67	2, 6-7	Impact numbers do not agree with those presented in the draft BA.	
22	4.3.8-69	1-10, 41	VELB would need 78 acres of valley foothill riparian protected and 78 acres of valley foothill riparian restored according to the requirements outlined in the U.S. Fish and Wildlife Service conservation guidelines to meet proposed CEQA mitigation ratios described on page 4.3.8-68. It is not clear how much restored and protected valley foothill riparian habitat will be available to meet the specific habitat requirements of VELB and the proposed mitigation ratios. As a result, we cannot determine how the CEQA conclusion is supported by the available analysis and information. Please add details describing how proposed mitigation would meet VELB requirements.	
23	4.3.8-69	41-44	The CEQA conclusion should not assume that protection and restoration of habitat is greater than proposed mitigation ratios unless this exceedance is quantified in RRPP VELB1.	
Sacramento and Antioch dunes anthicid beetles				
24	4.3.8-76	30-43	Riparian conservation and restoration is unlikely to benefit these species because it is primarily designed to accommodate other riparian species requirements. Because sand bars and sand dune habitat would be incompatible with most riparian special status species requirements (ex. RBR, LBV, and WYBC), it is unlikely that proposed mitigation will benefit anthicid beetles.	
25	4.3.8-78	25-33	Nothing is known about the ability of either anthicid species to successfully disperse and establish in vacant available habitat. Additionally, the upstream abundance and distribution of the Sacramento anthicid beetle is essentially unknown. Given the combination of uncertain (at best) benefits from the project on these species (see comment on page 4.3.8-76, lines 30-43), and the strong likelihood of project impacts on known	

No.	Page	Line #	Comment	ICF Response
			occurrences, we cannot determine how the CEQA conclusion of "less-than-significant" is supported by the information available. Please revise this section.	
			Delta green ground beetle	
26	4.3.8-78	43-44	There is no RRPP committing to protect grassland in CZ1. Alt 4A protects substantially fewer acres of grassland than the BDCP to mitigate for effects on other grassland-dependent species, mostly in CZs 7 and 8. For example, RRPP G10 protects 647 acres of grassland near Byron Hills, and 227 acres are committed to riparian brush rabbit (RBR5), leaving less than 200 acres that may be protected in CZ1. Vernal pool (VP) complex protection would benefit this species more than grassland. Most of the RRPPs for VP complex are intended to be conducted near Byron, and do not include the Jepson Prairie VP Core Area (see USFWS vernal pool recovery plan, Figure III-13c).	
27	4.3.8-79	12-14	If grassland or VP complex restoration occurs in CZ1 it could impact Delta green ground beetle. Because specific locations are not stated in the RRPPs or Section 4.1.2.3, we suggest including additional discussion here regarding potential impacts of grassland or VP complex restoration projects to the species.	
28	4.3.8-79	36-38	Here again the assumption is made that protection of grasslands will occur in CZ1, though that siting commitment is not specified in Alternative 4A.	
29	4.3.8-79	6-7	We suggest including EC 8 as a potential impact.	
30	4.3.8-80	11-14 32-35	Include restoration of grassland and VP complex as potential impacts unless it is specified in Alt 4A that they will not occur in CZ1. We suggest characterizing potential impacts as a result of ECs 3 and 11, unless it is specified in Alt 4A that protection of grassland will occur in CZ1.	
31	4.3.8-80	43	Lands adjacent to Calhoun Cut and the west side of Lindsey Slough are within the species range according to this impact analysis and CNDDB occurrence data.	

No.	Page	Line #	Comment	ICF Response
			Callippe silverspot butterfly	
32	4.3.8-81	20	Potrero Hills is not mapped as suitable habitat in Figure 12-12. It is also not included in the two populations recognized by USFWS (2009) or CNDDB.	
33	4.3.8-81	22-26	It is not specified in Alt 4A where grasslands will be restored. Unless specified in an RRPP or in Section 4.1.2.3 as not occurring in the Cordelia Hills/western edge of the project area, we suggest analyzing this restoration as a potential impact. This comment is related to another section below (page 83, lines 3-23).	
34	4.3.8-81	35-36	We suggest including EC 8 as a potential unknown impact, unless otherwise specified. This comment cascades to sections below (page 83, lines 3-23).	
35	4.3.8-83	3-23	Include site-specific management plans and restoration plans that would protect larval host plants and nectar sources. It should be clear that these plants will be protected and avoided during grassland restoration and management activities.	
			Silvery legless lizard, San Joaquin coachwhip and Blainville's horned lizard	
36	4.3.8-107	27-28	Include EC 9 in the bulleted list of benefits to special status reptiles.	
37	4.3.8-107	6-7	California horned lizard (*Phrynosoma coronatum frontale*), later changed to Blainsville's horned lizard (*P. blainvillii*), will also occupy clearings in riparian woodlands (Jennings and Hayes 1994). We suggest analyzing riparian restoration as a potential impact. Riparian ECs would not benefit the species, because the structure and location of protected/restored riparian habitat is targeted to other species needs and, as a result, would not be compatible with special status reptile requirements.	
38	4.3.8-107	18-29	*P. blainvillii* also uses small mammal burrows and is associated with native perennial vegetation, such as *Sueda fruticosa* and *Atriplex polycarpa* (Jennings and Hayes 1994). We suggest also including RRPPs VP/AW1, VP/AW3, VP/AW5, VP/AW6, VP/AW7, G4, G5, and G6. These would also benefit the SJ Coachwhip.	
39	4.3.8-107	11-12	Historic museum records show *P. blainvillii* occurrences could have been extirpated within the study area (Jennings and Hayes 1994). This should be mentioned here, with reference to MM BIO-55 in lines 30-32.	

No.	Page	Line #	Comment	ICF Response
40	4.3.8-108	12-13	This sentence states there would be a permanent effect on the San Joaquin coachwhip resulting from water conveyance facilities in CZ4. However, the model for these species (Figure 12-17) and the description on page 107 indicate that the Blainville horned lizard has potential habitat in CZ 4, not the San Joaquin coachwhip. Please revise this sentence.	
41	4.3.8-109 110	3 8-21	When analyzing impacts of Alt 4A, it would be appropriate to remove "noncovered" and "covered" species terminology. This is a global comment.	
42	4.3.8-109	5	Explain why O&M is expected to have little to no adverse effect; ie, because these species are not expected to occur in the area affected by O&M. Periodic effects would occur, if present.	
43	4.3.8-109	13-17	The risk of crushing *P. blainvillii* would not necessarily be lower during the active season, because the species uses crypsis to hide from predators and would be hard to spot from a moving vehicle. Seasonal risk reduction may be more appropriate for the coachwhip, but the risk of crushing the horned lizard during the active season should be discussed. BIO-55 and AMMs would minimize vehicle strike impacts more than operating during the active season. We also suggest noting that these reptiles would not be active under conditions of extreme temperatures and could be taking cover in burrows or crevices or under structures such as rocks or logs (Morey 2000). They could also burrow beneath the soil and be crushed by vehicles. If BIO-55 restricts work during extreme cold and heat (below 67 degrees F or over 100 degrees F), this would reduce the impact of being crushed by vehicles. *P. blainvillii* may only be active during the early morning and evening hours in the summer (Morey 2000).	
44	4.3.8-109	28-29	The existing habitat in Contra Costa County that ECs would connect to is potentially occupied by both the coachwhip and the horned lizard. Adding this information would strengthen the analysis.	
45	4.3.8-110	1-7	Strengthen the CEQA conclusion by also referencing the RRPPs suggested in our comment above on page 4.3.8-107, lines 18-29.	
46	4.3.8-110	15-16	MM BIO-55 is too open-ended in that it doesn't commit to protecting the individual(s) found if passive relocation is infeasible. We suggest consulting other CEQA documents, project reports, or	

No.	Page	Line #	Comment	ICF Response
			species guidelines to determine other methods that could be used to avoid harm to these species. Please explain how passive relocation would occur. If there is a guideline available, it should be referenced in the MM. Both the survey protocol and the relocation protocol should be approved by CDFW prior to construction.	
47	4.3.8-110	22	We suggest also discussing impacts from noise, night lighting, accidental release of petroleum or other contaminants, and the inadvertent discharge of sediment or excessive dust. These species are known to burrow under loose sand and could be affected by contaminated dirt or excessive sediment, as well as construction activities compacting the dirt and sand. Artificial night lighting could affect the behavior of reptiles, but little is known about the effects of light and noise. A CDFW-approved relocation plan could ensure relocated individuals are out of the footprint of noise and light (see comment on page 4.3.8-100, lines 15-16).	
			Greater sandhill crane	
48	4.3.8-136		Please explain why EC 10 is described as removing foraging habitat and is listed as a benefit to greater sandhilll crane and a driver for the "less-than-significant" CEQA conclusion on page 4.3.8-139 line 10.	
			Tricolored blackbird	
49	4.1-41	n/a	RRPP TB1: We suggest revising the wording of RRPP TB1 to include the possibility of protecting non-marsh occupied TRBL nesting habitat. "TB1 - Protect and manage occupied or recently occupied (within the last 15 years) tricolored blackbird nesting habitat located within 3 miles of high-value foraging habitat in Conservation Zones 1, 2, 8, or 11. Freshwater marsh nesting habitat will be managed to provide young, lush stands of bulrush/cattail emergent vegetation and prevent vegetation senescence."	
50	4.3.8-178	20-23	Suggest changing this requirement to protect high- to very high-value foraging habitat within three miles of occupied or recently occupied nesting habitat to be consistent with the proximity requirement in the first bullet.	

No.	Page	Line #	Comment	ICF Response
51	4.3.8-181	22-29	As currently worded this language is too vague and doesn't technically require any avoidance of nesting colonies if the project proponent deems avoidance "infeasible". Also see comments on AMM 21 in Appendix D.	
			Song sparrow "Modesto" population	
52	4.3.8-271	16-17	We suggest removing this sentence because it lacks an explanation of why project activities are expected to have little impact on the population. We suggest including the subsequent discussion of ECs and impacts in the CEQA conclusion instead.	
53	4.3.8-271	20-29	The song sparrow requires early successional riparian habitat with willow and a moderately dense understory with blackberry (California Partners in Flight and the Riparian Habitat Joint Venture 2004). VFR1 would have to guide all of the riparian mitigation for this species. Other RRPPs that would benefit this species and should be included are: GSC2, GSC3, TB1, TB4, and RBR1.	
54	4.3.8-272	18	WYBC could use a young forest about 4 years old (Detting and Seavy 2012), which could also be suitable for the song sparrow, as long as the brushy understory is present. "A period of time" could be specified as "at least 4 years".	
55	4.3.8-272	25-28	Other impacts that overlap with occurrences include the Intermediate Forebay (1 occurrence), access roads throughout the footprint (4 occurrences), and the CCF pumping area and conveyer (3 occurrences).	
56	4.3.8-273	30	MM BIO-75 should also be applied to O&M activities and added to this paragraph.	
57	4.3.8-274	39-40	We suggest adding RRPPs listed in comment on page 4.3.8-271, lines 20-29 to this section.	
58	4.3.8-275	8-11	There is not enough discussion in this section to explain why transmission lines are not expected to adversely affect the population. There are several occurrences of this subspecies overlapping potential transmission lines. The Modesto population's distribution is primarily in the Delta and concentrated near the proposed tunnel alignment. We suggest including information about the species' behavior and maneuverability and focus on the effectiveness of diverters in reducing strike hazard for passerines. For example, song sparrows have a low wingload ratio (Poole 1938)	

No.	Page	Line #	Comment	ICF Response
			but broad, high-aspect wings. They are moderately vulnerable to strikes and were found under power lines in studies where diverters were not installed (Brown and Drewien 1995, Yee 2007).	
59	4.3.8-275	24-25	There are numerous studies on the effects of anthropogenic noise on song sparrows. Song sparrows rely heavily on song to defend territories and attract mates and research indicates that construction noise greater than 50 dB could cause the sparrows to change their singing behavior, which may threaten breeding in the vicinity of the proposed project (Wood and Yezerinac 2006). We suggest discussing this impact in more detail as a potentially significant effect without implementation of MM BIO-75.	
60	4.3.8-276	1-5	Please add more discussion that is specific to the song sparrow, which feeds on invertebrates. There are studies that indicate song sparrows are at high risk for methylmercury exposure, and the song sparrow was considered a biosentinal species for MeHg contamination affecting reproductive success in the San Francisco Bay estuary (Jackson, Condon et al. 2011). Jackson, Evers et al. (2011) found a 34% reduction in Carolina wren (a similar songbird) nesting success in mercury contaminated sites. We suggest describing mercury as a potentially significant impact without implementation of EC 12.	
61	4.3.8-277	2-3	There is research available which indicates the effects of mercury on breeding success. Jackson, Evers et al. (2011) state mercury concentrations above 0.4ppm (wet weight) translate to reproductive failure, and that concentrations in their study exceeded 2.5ppm, a level associated with a 50% decline in breeding success.	
62	4.3.8-277	1-13	Include discussion of selenium and AMM27 here.	
			Special-status bat species	
63	4.3.8-306	20-22	This sentence states foraging habitat effects from water conveyance facilities and CM4 were not considered adverse because they convert one foraging habitat type to another. We suggest leaving effects from the water conveyance facilities out of this sentence so that effects can be stated separately from benefits. Effects from the water conveyance facilities would be adverse	

No.	Page	Line #	Comment	ICF Response
			without environmental commitments, AMMs and MM BIO-166.	
64	4.3.8-305	11	Western small-footed myotis and Yuma myotis are also designated as Sensitive by BLM.	
65	4.3.8-305	19-21	Surveys for presence/absence of special-status bats were not sufficient to identify the species present at bridges within the project area. As a result, impacts should be assumed in places where bridges overlap with the alignment, or bat surveys should be conducted prior to project activities at bridges within 300 feet of project disturbance. For example, Figure 12-51 shows a bridge across the Banks pumping plant canal at the southwestern tip of CCF, adjacent to construction impacts. The South Mokelumne River bridge is about 300 feet from potential pressurized ventilation shaft construction on northeast Staten Island. If special status bats are using either of these bridges, they could be impacted by light, noise, vibration, and other disturbances, which would be offset with MMs. See comment on page 4.3.8-312, lines 41-42.	
66	4.3.8-306-307	31, 1-2	We suggest stating clearly that MM BIO-166 will be implemented at these bridge sites as well as other roost sites in the project area.	
67	4.3.8-308	5-8	It is unlikely that all, or even a majority, of the riparian habitat proposed for restoration and protection will provide adequate roosting habitat for special-status bat species. The same habitat is committed as mitigation for other riparian species (including least Bell's vireo and riparian brush rabbit) which require low lying shrub riparian habitat is unsuitable as bat roosting habitat. Additionally, the mitigation commitment for riparian habitat is not sufficient to meet the proposed CEQA/NEPA project level mitigation ratios for impacts to roosting habitat (lines 31-34). As a result of these discrepancies we cannot determine how the CEQA conclusion of "less-than-significant" is supported by the analysis and information available. Please revise to address these discrepancies.	
68	4.3.8-310	5	We suggest implementing surveys for special status bat species and MMs when direct impacts to roosting habitat (for example trees and bridges) or impacts within 300 ft of roosting habitat are anticipated.	
69	4.3.8-311	4	We suggest applying these protective measures to occupied structures and trees that are found to be used by the western red	

No.	Page	Line #	Comment	ICF Response
			bat.	
70	4.3.8-310	35	We suggest requiring that survey protocols or guidelines for western red bat be implemented by a qualified biologist. For example, western red bats have a unique call that can be easily detected through acoustic surveys but are visible only from the vantage point of looking underneath them. This is probably the only SSC bat that would be found in the project footprint, so it should be addressed specifically.	
71	4.3.8-311	5-6	We suggest revising the avoidance timing to March 1 through October 31. The Townsend's big-eared bat conservation strategy states maternity colonies begin to gather in March and nursery colonies break up in September and October (Pierson, Wackenhut et al. 1999).	
72	4.3.8-311	11-12	It is not clear why the exclusion device season is split up between spring and fall, when Townsend's big-eared bat maternal sites could be active between March 1 and October 31. It would make more sense to have exclusion devices installed prior to project activities and prior to March 1, then not removed until after project activities at that location are completed.	
73	4.3.8-311	27	"Every effort should be made to avoid the roost," As currently stated this section holds no promise of avoidance and minimization. We suggest revising to state that every effort will be made to avoid the roost.	
74	4.3.8-312	17-23	This contradicts the proposed CEQA/NEPA mitigation ratios described on page 4.3.8-308. The mitigation acreages are not sufficient to meet proposed ratios for impacts to roosting habitat.	
75	4.3.8-312	24	Artificial roosts should only be designed in consultation with CDFW.	
76	4.3.8-312 - 313	41 - 42	We suggest adding a new MM with specific avoidance BMPs pertaining to indirect effects of lighting, noise, and vibration near sites where special status bat species are found. For example, we suggest requiring that noise barriers and lights be pointed inward or not extending 300 feet beyond the construction site for maintenance, operations or other activities in the measure. Or, effects could be avoided through buffers established under MM 166.	

No.	Page	Line #	Comment	ICF Response
77	4.3.8-308	10-11	Reference ECs that specify what natural communities are included in the 15,194 acres. Although developed land may partially support foraging bats it should not be used for mitigation or included in the analysis for reduced significant impacts.	
78	4.3.8-308	33-34	Restoring up to 251 acres and protecting up to 103 acres of valley/foothill riparian does not meet the proposed mitigation ratio identified in the text.	
79	4.3.8-309	14	See comment on page 4.3.8-312, lines 41-42. If a new MM is included, add as part of the CEQA conclusion.	
80	4.3.8-309	17-18	RRPP G2 creates ponds for herps and has nothing to do with bats. We suggest removing this reference. G6 would benefit bats by increasing insect prey. G1, G3, and G4 could also be beneficial. CL1 and CL2 might also be worth mentioning.	
Redhead and tule greater white-fronted goose				
81	4.3.8-246	12	This sentence should reference Section 4.3.1.2, not 4.3.4.8.	
82	4.3.8-342 - 345	n/a	Tule greater white-fronted goose (TGWG) would not be affected by water conveyance construction or related activities and impacts because it is only found in Suisun Marsh west of Sherman Island. Unless tidal restoration is considered an impact in Suisun Marsh (not mentioned in the waterfowl section), there would be no impacts to this species based on current and known historic range and distribution. However, a habitat model could be created for the TGWG to determine if there are impacts on potential tidal or upland habitat outside of Suisun Marsh.	
83	4.3.8-342 - 345	n/a	ECs to restore or create tidal wetlands in the north and south Delta would not benefit TGWG, based on its current and historic range. The species would benefit from tidal marsh restoration and creation or protection of grassy uplands or high marsh in the vicinity of Suisun Marsh.	
84	4.3.8-342 - 345	n/a	Creation or protection of managed wetland for redhead would require a RRPP for the species that summer water is maintained greater than 1 meter deep. Otherwise, this would be a limiting factor for redhead breeding in the restored or protected wetland.	
		n/a	Redhead nests in the Yolo Bypass, but there appear to be no recent records in Suisun Marsh or the Delta. Due to the vast contraction of	

No.	Page	Line #	Comment	ICF Response
			this species' range in this area, we suggest developing a MM to survey for the species on modeled habitat overlapping the project footprint, with a strong breeding season restriction measure if it is found or a revised version of MM BIO-75 (see comment on page 4.3.8-352, lines 37-39).	
85	4.3.8-349	1-3	Without a specific bird-strike analysis for diving ducks, such as redhead, it should not be assumed that diverters installed will reduce this impact to less than significant. APLIC (2012) reported different mortality rates between ducks and cranes. Additionally, ducks are slightly "poorer" fliers and myopic in the air. Though ducks do react positively to diverters, a risk assessment for this species would be appropriate, given how rare it is in the area.	
86	4.3.8-352	37 - 39	MM 75 is focused on land birds such as passerines nesting on terrestrial vegetation rather than flooded wetlands with emergent vegetation (Custer 1993). We suggest adding a MM similar to 75 which is customized to ducks, including redhead.	
			Bank swallow	
87	4.3.8-280	37-38	Instead of stating "predicted flows under 4A would not be substantially greater," the conclusion could state that the model outputs indicate no substantial difference between 4A and Existing Conditions, if that is the case. It is important to elucidate the uncertainty of the model predictions as well as the complex variables of bank swallow habitat suitability, which compounds the need for mitigation.	
88	4.3.8-281	1-13	We suggest revising BIO-147 to reflect the fact that bank swallow breeding colonies move along the river from year-to-year and are not necessarily found in fixed locations over time. Suggested revisions shown below. "To address the uncertainty of the impact of upstream spring flows on existing bank swallow habitat, DWR will monitor colonies upstream of the study area along the Sacramento and Feather Rivers, and collect habitat suitability data including soil type, number of active burrows per colony, and height of average burrows. Using survey data DWR will quantify the magnitude of spring flows that would result in potential mortality of active	

No.	Page	Line #	Comment	ICF Response
			colonies each year. In addition, to determine the degree to which reduced winter flows are contributing to habitat loss, DWR will quantify the winter flows required for river meander to create suitable habitat through lateral channel migration and bank resurfacing. If impacts of upstream flows on bank swallow habitat or individuals are identified, replacement habitat will be established at a minimum of 2:1 for the length of bank habitat affected. Replacement habitat will consist of removing bank revetment to create habitat for bank swallow at a location subject to CDFW approval (Bank Swallow Technical Advisory Committee 2013)."	
			Short-eared owl and northern harrier	
89	4.3.8-237	39	Please provide a list of the selected cultivated lands that were included in the model. We suggest including low-height crop types used for hunting small mammals (similar to Swainson's hawk, white-tailed kite, ferruginous hawk, and golden eagle) in this list. For example, the harrier uses alfalfa, grain, beets, tomatoes, and melons (Davis and Niemela 2008).	
90	4.3.8-238	3	We suggest adding ECs 3, 8 and 9 to this list as benefits to northern harrier (NOHA). The BSSC account states this species uses VP complex as well as annual, perennial, and ruderal grasslands. Grassland is the most important habitat type for both species, especially the shot-eared owl (SEOW).	
91	4.3.8-238	22	SEOW and NOHA have different nesting habitat types than those specified in the parentheses in MM BIO-175 (marshes, grasslands, etc.). We suggest removing the parenthetical in MM BIO-175 so that the mitigation measure refers to all suitable habitat types for all species relying on it.	
92	4.3.8-240	2-3	Both the NOHA and SEOW are ground nesters. This language needs to be revised. Ground disturbance impacts could be more than a minor disturbance to suitable SEOW and NOHA ground nesting habitat. We suggest also adding a reference to MM BIO -175, as in the bullet below this paragraph.	
93	4.3.8-240	5	There is a word missing in this sentence. The sentence should state that these activities could impact SEOW and NOHA nests.	
94	4.3.8-240	40	NOHA also nests in grasslands, including those within a vernal pool matrix.	

No.	Page	Line #	Comment	ICF Response
95	4.3.8-240	43	Clarify that these species use the same foraging habitat as SWHA.	
96	4.3.8-241	6-7	Including ECs 8 and 9 as well as vernal pool complex protection would contribute to the analysis that environmental commitments far exceed proposed CEQA mitigation ratios. For example, though the CEQA analysis does not include restoration of grassland, EC 8 would benefit the species beyond the proposed mitigation ratio. This is important to point out since the environmental commitments are not necessarily tied to meeting compensation requirements under CEQA. We suggest presenting the ECs as voluntary conservation actions that benefit the species as much as, or more than, proposed CEQA mitigation ratios.	
97	4.3.8-241	36-37	Carry over ECs 8 and 9 to the CEQA analysis, per comment on page 4.3.8-241, lines 6-7.	
98	4.3.8-242	9-11	Please explain "ground-based foraging behavior" (ie, flying at low heights near the ground or hunting from the ground). SEOW occasionally hunts from a perch as well, but the perches are usually short (bushes, fence posts, etc.). A USFWS habitat model indicates trees are sometimes but rarely used (USFWS 2001). If the perch is high enough, this could increase the collision risk. The two species should be analyzed separately. NOHA has long, narrow high-aspect wings with low wing loading and good maneuverability. Owls have lower aspect wings which decrease their maneuverability. Therefore, the owls may have a low to moderate risk of collision, which would be reduced by the diverters.	
99	4.3.8-245	20-42	Selenium and AMM 27 are not discussed.	
			Special-status plant species	
100	General comment		In general, the discussion of adverse impacts to plant species centers on impacts to occurrences, not suitable habitat. Proposed mitigation for impacts to occurrences is described in MM BIO-170. This approach does not acknowledge that impacts to suitable habitat also constitute an adverse effect, even if no individuals of a species are killed. Removing suitable habitat could extirpate existing seed banks and will ultimately restrict the range of a species. Eliminating suitable habitat could also diminish the ability of a	

No.	Page	Line #	Comment	ICF Response
			species to shift its distribution in response to future environmental changes (ex. climate change and development) According to Section 12.3.1.2 of the Public Draft BDCP EIR/EIS an adverse impact under CEQA would result if: "- A permanent reduction in the acreage and value of known occupied habitat for noncovered plant species - permanent reduction in the acreage and value of modeled habitats for special-status species" Although they weren't analyzed as such, reductions in the amount of suitable habitat (occupied and unoccupied) constitute an adverse effect on sensitive plant species under the definition provided in the EIR/EIS. Additionally, the future viability of a species is likely to be diminished as a result of impacts to suitable habitat. Given these discrepancies we cannot determine how "less-than-significant" CEQA conclusions for special status plants are supported by the information available. Please address these discrepancies.	
101	4.3.8-319	12-13	"This could be an adverse effect, depending on whether or not the affected modeled habitat is actually occupied by the species." See special status plant species general comment above. Please revise to address the discrepancies identified therein.	
102	4.3.8-320	31-43	We suggest referencing the 250 ft buffer here and in AMM11 to ensure that avoidance of special status plant species is achieved as intended.	
103	4.3.8-321	20-22	This statement is too vague to be evaluated in the context of a CEQA conclusion. Please quantify expected impacts to suitable habitat and all proposed mitigation of alkali seasonal wetlands and special status plant species which occur in this natural community. Also see special status plant general comment above regarding impacts to suitable but unoccupied habitat.	
104	4.3.8-323	1	Please add references to mitigation measure BIO-170 when discussing mitigation for impacts to grassland special-status plant	

No.	Page	Line #	Comment	ICF Response
			species to ensure consistency in the approach to all special-status plant species in the project area. Also see the special status plant species general comment above regarding impacts to suitable but unoccupied habitat.	
105	4.3.8-330	1-12	Please add references to mitigation measure BIO-170 when referencing mitigation for impacts to tidal wetland special-status plant species to ensure consistency in the approach to all special-status plant species in the project area. Also see the special status plant species general comment above regarding impacts to suitable but unoccupied habitat.	
106	4.3.8-330	29-36	Please revise to include a reference to the mitigation requirement established in BIO-170 to provide a clear statement of mitigation commitments associated with impacts to occurrences of special-status plant species. Also see the special status plant species general comment above regarding impacts to suitable but unoccupied habitat.	
107	4.3.8-330	39-41	Please add a reference to the mitigation requirement established in BIO-170 if an occurrence of side-flowering skull cap is impacted. Without this mitigation guarantee the impact on side flowering skullcap is more likely to be adverse as a result of impacts to suitable habitat combined with potential impacts to occurrences.	
San Joaquin pocket mouse				
108	4.3.8-303	34-37	San Joaquin pocket mouse typically uses sparse, dry grasslands without dense invasive grass thatch. It is likely that a large part of the 1,060 acres of grassland committed in EC11 will not be suitable for San Joaquin pocket mouse because it will be immediately adjacent to aquatic habitat and intended as giant garter snake upland habitat. Additionally, the committed grassland acres do not achieve the 2:1 ratio proposed to mitigate impacts to San Joaquin pocket mouse under CEQA. As a result of these discrepancies, we cannot determine how the CEQA conclusion of "less-than-significant effect" is supported by the existing effects analysis and proposed mitigation. Please revise to address these discrepancies.	
White-tailed kite				
109	4.3.8-	14	Please revise this sentence. It is misleading to state that all "effects	

No.	Page	Line #	Comment	ICF Response
	202		to the species would be avoided" as a result of implementation of AMM39. The primary intention of AMM39 is to avoid the possibility of take of white-tailed kite as a result of project activities.	
110	4.3.8-205	40	EC 7 is listed as both an impact to white-tailed kite (removal of foraging habitat) and a benefit (creation of nesting habitat). Please include an additional sentence justifying a "less-than-significant" conclusion based on the fact that nesting habitat is a more limiting resource for white-tailed kite in the Delta than foraging habitat to explain this apparent discrepancy.	
			Cooper's hawk and osprey	
111	General		These species are different enough in their requirements (per comments below) to warrant separate impact analyses for each.	
112	4.3.8-217	36-37	As currently written AMM18 pertains only to SWHA nests, not Cooper's hawk and osprey. We suggest adding a similar MM for Cooper's hawk and osprey in Section 4. If planting mature trees will mitigate impacts on these species to less than significant, it should be specified in a RRPP (eg. appended to VFR1).	
113	4.3.8-218	3-5	RRPP VFR1 may not benefit osprey. Osprey need tall trees with open space for easy access over or near water. The species could benefit from Swainson's hawk needs, but not necessarily from the needs of LBVI and other riparian passerines and small mammals that the objective is intended to benefit. VFR1 could benefit Cooper's hawk, however, so rather than remove this measure, also reference CL1 (isolated trees) and VFR2 (mature trees) as benefits for osprey.	
114	4.3.8-218	6	First sentence: "Maintain a single contiguous patch of 100 acres of mature riparian forest..." was likely meant to be a bullet point to add to the paragraph above and would benefit osprey as suggested in comment on page 4.3.8-219, lines 3-5. Please clarify that this commitment is stated in an RRPP.	
115	4.3.8-218	19	Add a reference to Figure 12-33. The two species' habitat requirements are not exactly the same. Ensure the model includes elements needed by both species (e.g., elements of SWHA breeding habitat) and include rationale as to why the model and impacts analysis do not include foraging habitat for these species.	

No.	Page	Line #	Comment	ICF Response
116	4.3.8-219	7	Ventilation shafts and geotechnical exploration are also impacts to riparian habitat not mentioned here.	
117	4.3.8-219	13-15	Occurrence data in CNDDB were likely submitted only up to the point each species was no longer SSC. If the data set used for the model doesn't include BDCP survey data, this would be an incomplete and outdated data set and should not be used for analysis of impacts.	
118	4.3.8-219	28-30	Nest trees should never be removed as part of EC 11 activities. These species' foraging habitats are not modeled or considered in the impact analysis.	
119	4.3.8-220	33	Replace reference to white-tailed kite with the species being discussed in this section.	
120	4.3.8-221	2-5	Foraging habitat for these species was not discussed in this analysis. Carrying over EC 7 from SWHA is not appropriate for these species. Osprey forage for fish in open water; and Cooper's hawk forage for primarily small birds and mammals, generally in forests with open or edge habitat, shrublands, and grasslands. One study indicated agricultural fields were avoided by Cooper's hawk (Stephens and Anderson 2002).	
121	4.3.8-221	30-31	See the general comment on osprey and Cooper's hawk. The CEQA conclusion should rely on MM BIO-75 and any additional MM or RRPP for the planting of mature trees that compensate for impacts on these species developed in response to the general comment above instead of referencing AMM18.	
122	4.3.8-222	1	Some hawks have low aspect (wider wings) than the best flyers on the scale, increasing susceptibility to collision (APLIC 2012). Osprey have long and slender high-aspect wings compared to other hawks, and this could attribute to good maneuverability and avoidance; whereas, Cooper's hawks have short, rounded wings with lower aspect, increasing susceptibility (Bildstein 2006, Cornell Lab of Ornithology 2015).	
123	4.3.8-222	4-5	Brown and Drewien (1995) did not show dramatic decreases in collision across all species, but they did imply that markers contributed to a lower observed rate of bird mortality. Buteo species (also low wing aspect hawks) were found dead under powerlines in both studies.	

No.	Page	Line #	Comment	ICF Response
124	4.3.8-222	19	"General" maneuverability does not clearly justify this CEQA conclusion. Instead, we suggest that the conclusion state that osprey's high maneuverability and keen eyesight contribute to a minimal effect of collision. For Cooper's hawk, low-aspect wings could increase susceptibility, but low wing loading and good eyesight help to decrease susceptibility. Also, hawks do not tend to fly in flocks. If described in this way above (see comment on page 4.3.8-222, line 1), the CEQA conclusion could state that Cooper's hawk has a moderate level of susceptibility, but AMM20 would reduce this to a less than significant impact.	
125	4.3.8-222	44	Ospreys would be more susceptible to methylmercury exposure than Cooper's hawk, because they prey on fish.	
126	4.3.8-224	8-10	BIO-75 refers to surveys and buffers prior to construction. It does not specifically address operations and maintenance activities after construction. To rely on MM BIO-75 for this indirect effect, BIO-75 would need to be updated to include provisions addressing O&M activities.	
			Ferruginous hawk	
127	general		We suggest separating ferruginous hawk analyses (FEHA) from golden eagle (GOEA) analyses. GOEA is a fully protected species and there appear to be differences in habitat requirements per the comments below.	
128	4.3.8-224	36-37	FEHA distribution appears to be correlated with lagomorph populations, so croplands may not provide long-term viability unless mixed into a grassland matrix (Hunting 2000). In contrast, GOEA is known to hunt for rabbits or other small mammals in most open areas. The habitat model for FEHA should focus more on the grassland complexes and only include agricultural land mixed with grassland or wetlands. Note that Figure 12-34 does not include the habitat model layer.	
129	4.3.8-225	4	Protecting cultivated lands may not benefit FEHA, per comment on page 4.3.8-224, lines 36-37 above. Changes in the distribution of FEHA could have resulted from conversion of grassland to agriculture, where such conversion did not negatively affect SWHA (Hunting 2000, Wiggins, Schnell et al. 2014). ECs 8 and 9, which would restore grassland complexes that have higher concentrations	

No.	Page	Line #	Comment	ICF Response
			of rabbits, and protection of VP/ASW complexes in EC 3 would benefit FEHA as well as GOEA.	
130	4.3.8-225	23	Include EC 9.	
131	4.3.8-225	29	These impacts could eliminate both GOEA and FEHA habitat; the sentence just refers to GOEA habitat.	
132	4.3.8-226	12-13	As with other watch list species, CNDDB may have fewer entries for FEHA after the species was taken off the BSSC list. FEHA was observed in Stone Lakes NWR (Appendix C, Stone Lakes NWR Conservation Plan); therefore, it could be within the vicinity of the intake structures.	
133	4.3.8-226	22	See comment on page 4.3.8-225, line 29. The same omission occurs here.	
134	4.3.8-226	28	Remove reference to SWHA habitat and replace with GOEA/FEHA.	
135	4.3.8-226	40	We suggest discussing O&M in its own paragraph/bullet point.	
136	4.3.8-227	16	Protecting 11,870 acres of cultivated lands may not meet the proposed mitigation ratio for FEHA, depending on how they use that agricultural landscape. Many of these acres would include crop types that benefit species other than FEHA. Foraging crops for SWHA could provide foraging for FEHA; but as noted above, FEHA uses ag land less than SWHA and is more negatively affected than SWHA by grassland conversion to agricultural fields. Intensive agriculture, as in most of the Delta, does not benefit FEHA. This may be a reason FEHA is rarely found in the Delta. We suggest conducting additional literature review and consulting experts to determine whether FEHA should have its own habitat model and impact analysis, as suggested in comment on page 4.3.8-224, lines 36-37 above.	
Double-crested cormorant, herons, and egrets				
137	4.3.8-229	17-18	Please explain why wetland and aquatic habitats were not modeled and included in this analysis. All taxa in this section nest in tidal and nontidal marshes (fresh water or saltwater). Cormorants nest on the ground and on the edges of aquatic habitats (Cornell Lab of Ornithology 2015).	

No.	Page	Line #	Comment	ICF Response
			Cormorant nests were found on Wheeler Island in Suisun Bay and in Venice Cut (Schwarzbach and Adelsbach 2003). Great blue heron nests were found on Wheeler and Van Sickle Islands, Suisun Bay. Great egret nests have been found in Grizzly Island and Montezuma Slough (Schwarzbach and Adelsbach 2003). Tidal and nontidal marshes and open water (margins of lakes, rivers, ponds, and shallow water/mudflats) are also foraging habitat and should be included in the model.	
138	4.3.8-229	24-25	See comment on page 4.3.8-221, lines 30-31 (Cooper's hawk and osprey). We suggest removing references to AMM18 throughout the impact analysis.	
139	4.3.8-229	25-28	See comment on page 4.3.8-229, lines 17-18 above. We suggest including EC 3 (protection of 119 acres of nontidal marsh), EC 4, and EC 10 in the bulleted list as offsets for impacts to marsh nesting habitat. Channel margin enhancement would also benefit these species.	
140	4.3.8-230 - 233	all	Impacts shown in Table 12-4A-44 and described in the text below will change if impacts to marsh habitat are added per comment on page 4.3.8-229, lines 17-18. Will need to revise accordingly.	
141	4.3.8-233	40	Please add detail describing how all direct and indirect impacts on rookeries will be avoided to MM BIO-117. The MM should require surveys, buffers, and monitoring rookeries for disturbance in consultation with expert biologists, similar to MM BIO-75. MM BIO-117 should not be restricted to avoiding rookeries in riparian habitat, but include other habitat types where rookeries may occur (e.g., tidal or nontidal marshes, along the margins of aquatic features, etc.). Colonial nesters can be very sensitive to human disturbance. If one nesting bird is startled, the whole colony could abandon nests, resulting in many failed nests.	
142	4.3.8-231	4-6	We suggest adding a description or citation of the occurrence data sources referenced here. It is likely that few cormorant occurrences were submitted to CNDDB after the species was removed from the BSSC list. Because egrets and herons are not special status species it is unlikely that many records have been submitted to CNDDB.	
143	4.3.8-231	6	MM BIO-117 should also be mentioned here.	

No.	Page	Line #	Comment	ICF Response
144	4.3.8-231	22-27	Localized ground disturbing activities could have more than a minor effect if they disturb cormorants nesting on the ground. Cormorants tend to nest on the ground after their nest trees fall over and die from stress and guano produced by a rookery (Cornell Lab of Ornithology). This impact to ground nesting cormorants should be discussed, along with MMs BIO-75 and BIO-117 which would offset any potential impacts.	
145	4.3.8-232	6	MM BIO-117 should also be mentioned here.	
146	4.3.8-232-233	35-43	We suggest adding a discussion of benefits to cormorants, herons and egrets from commitments to protect riparian habitat. Impacts to marsh habitat, and benefits associated with restoration and protection of marsh habitat, should also be discussed here. Taken together, it is likely that benefits of riparian and marsh ECs to cormorants, herons and egrets will exceed proposed CEQA mitigation ratios.	
147	4.3.8-232	29	Remove reference to white-tailed kite and replace with cormorants, herons, and egrets.	
148	4.3.8-233	21-34	CEQA conclusion should also be revised in response to comments on page 4.3.8-229, lines 24-25 and page 4.3.8-232, lines 35-43 above.	
149	4.3.8-233	32 and 34	Remove reference to Cooper's hawk and osprey and replace with cormorants, herons, and egrets.	
150	4.3.8-234	4-6	Remove sentence referring to least bittern and white-faced ibis.	
151	4.3.8-234	8	Global change: Brown and Drewien (1995) did not show dramatic decreases in collision across all species, but they did imply that markers contributed to a lower observed rate of bird mortality.	
152	4.3.8-234	34	MM BIO-117 should also be mentioned here.	
153	4.3.8-235	2	Please note that these species are especially susceptible to methylmercury because they consume fish. However, Schwarzbach and Adelsbach (2003) could be cited to state that cormorants, egrets, and herons in Suisun Marsh and the Delta had low enough levels to avoid embryotoxicity. This would supplement the discussion of lowered impact based on BDCP fish studies and EC 12.	

No.	Page	Line #	Comment	ICF Response
154	4.3.8-235	16	Global change: replace "tropic" with "trophic"	
155	4.3.8-235	37-44	In addition to studies discussed in the general copy-paste language, we suggest discussing results presented in Schwarzbach and Adelsbach (2003) in this section. They found the highest selenium concentrations in great egrets, snowy egrets, and black-crowned night herons in SF Bay. The cormorants had slightly lower levels. However, selenium levels were below known embryotoxic thresholds and were weakly correlated with mercury concentrations. See also comment on page 4.3.8-235, line 2.	
			Shorebirds and waterfowl	
156	4.3.8-342	34-41	We suggest adding a discussion of the potential for direct mortality of shorebirds and waterfowl as a result of construction activities in Clifton Court Forebay. Waterfowl and shorebird experts indicate that several species nest on the southern edge of the forebay, where dredging and forebay expansion are proposed. We suggest revising BIO-178 to include this potential impact and associated mitigation.	
157	4.3.8-342	17	We suggest including nontidal freshwater emergent wetland (marsh) natural community, which is separated from managed wetlands, grassland, and VP/ASW. These natural communities are also used by waterfowl and/or shorebirds (Shuford, Humphrey et al. 2004, Petrik, Petrie et al. 2012).	
158	4.3.8-342	24-31	RRPPs that could also benefit waterfowl and shorebirds include GGS3, GGS5, WPT1 and sandhill crane RRPPs. Some waterfowl and shorebirds benefit from rice, managed wetlands, and natural wetlands. Other waterfowl (greater white-fronted geese and tundra swan) use chopped corn fields(CFR and TNC In prep). EC 8, EC 9 and RRPPs G2 and G3 could also be included, per comment on page 4.3.8-342, line 17 above.	
159	4.3.8-342	34-39	We suggest adding a discussion of impacts to 506 acres of grassland habitat (Table 12-4A-10 on page 4.3.8-54) and impacts to VP/ASW which could adversely affect shorebirds and waterfowl. Also see comment on page 4.3.8-342, line 17 above.	
160	4.3.8-343	4-5	In some cases restored and protected acres would only provide suitable foraging habitat. For example, ducks forage in winter wheat	

No.	Page	Line #	Comment	ICF Response
			and most of the shorebird species would be migrating, not nesting in the project area. We suggest adding restored grassland and protected/restored VP/ASW complex to this discussion per comment on page 4.3.8-342, line 17 above.	
161	4.3.8-344	24-26	RRPP CBR1 does not guide the protection of cultivated lands. RRPPs suggested in our comment on page 4.3.8-342, lines 24-31 would be beneficial to offset these impacts.	
162	4.3.8-344	31-38	Waterfowl also breed in grasslands (Shuford, Humphrey et al. 2004). We suggest including a discussion of impacts to grasslands and protection and restoration of grasslands (ECs 3 and 8) in Impact BIO-180.	
163	4.3.8-343	34-35	EC 9 could also remove cultivated lands. We suggest discussing these potential impacts, or explaining why they are not included.	
164	4.3.8-343	34-35	It is not clear why loss of managed wetlands, grasslands, and tidal/nontidal wetlands is not included in this discussion. If ECs would not remove these habitat types, it should be stated here.	
165	4.3.8-344	37-38	Please describe the proportion of grassland, nontidal and tidal wetland habitat (commensurate with the proposed mitigation ratio) will be managed for breeding waterfowl while also meeting the needs of other species.	
166	4.3.8-345	1-3	See comments on page 4.3.8-343, lines 34-35 and page 4.3.8-344, lines 37-38 and update the CEQA conclusion accordingly.	
167	4.3.8-345	6-16	Vernal pool complex and alkali seasonal wetland also provide nesting habitat for American avocet (Shuford, Humphrey et al. 2004).	
168	4.3.8-345	10	Killdeer also nests in rice in the Sacramento Valley (Shuford, Humphrey et al. 2004).	
169	4.3.8-345	25-27	Same as comment on page 4.3.8-343, lines 34-35.	
170	4.3.8-345	26-27	See comment on page 4.3.8-344, lines 37-38. Not all 832 acres of restored nontidal marsh will be managed wetland. Natural nontidal wetland will also be restored as part of this commitment, as described on page 4.3.8-346, to benefit other species such as tricolored blackbird. All managed wetland may not meet the specifications for shorebirds. This analysis states the majority of	

No.	Page	Line #	Comment	ICF Response
			shorebird species require water depths of approximately 10-20 cm for foraging. However, diving ducks require deeper water for foraging and yellow-headed blackbirds require relatively deep water (up to 1.5 m) for nesting (Jaramillo 2008). On the other hand, Ivey, Herziger et al (2014) recommend 10 cm – 15 cm for crane roosting habitat, of which about 500 acres of managed wetlands will be created. It is also possible that some giant garter snake aquatic habitat would be suitable. We suggest revising this analysis to more accurately quantify the number of mitigation acres that will be managed in a manner suitable for shorebirds.	
171	4.3.8-345	31	Please remove references to sandhill crane in this analysis.	
172	4.3.8-345	37-42	Not all of the cultivated lands impacted will be crops used by the shorebirds, as specified in the paragraph above. American avocets, black-necked stilts, and killdeer mostly use rice, which is rare in the Delta except in the northern Yolo Bypass.	
173	4.3.8-346	10-12	Same as comment on page 4.3.8-343, lines 34-35.	
174	4.3.8-346-347	23-41 1-5	See comment on page 4.3.8-345, lines 26-27. The managed wetland analysis on page 4.3.8-345 assumes that 832 acres of created nontidal wetlands would benefit shorebirds that use managed wetlands. Only 500 acres of this habitat is required to be managed at depths suitable for sandhill crane and shorebirds. The remaining 332 acres of nontidal wetlands may not be managed at the appropriate depth for shorebirds. However, even if the 119 acres of protected nontidal wetlands from EC 3 are included in the analysis, it is unlikely that 832 acres of wetlands will be managed to benefit shorebirds. Please acknowledge and discuss potential conflicts between management for shorebirds and other nontidal marsh species in more detail. For example, managing water depths for shorebirds conflicts with yellow-headed blackbird nesting and diving duck foraging requirements. Please also revise the effects analysis and CEQA conclusion to address these discrepancies.	
175	4.3.8-	6-37	We suggest adding a discussion of potential conflicts between	

No.	Page	Line #	Comment	ICF Response
	347		management for shorebirds and other species which rely on cultivated lands. For example, removing stubble after harvest conflicts with waterfowl foraging needs; minimal vegetation adjacent to shallow water or on islands could conflict with GGS and CBRA needs for vegetated banks; flooding harvested potatoes conflicts with sandhill crane foraging but is compatible with geese (CFR and TNC In prep); different flooding regimes may be needed for the crane, geese, and/or SWHA foraging than recommended for shorebirds. If species-specific mitigation could be separated geographically, that would help resolve conflicts, but could be difficult to manage.	
176	4.3.8-348	14	Also include killdeer.	
177	4.3.8-348	29	We suggest adding a discussion of nontidal wetland to this CEQA conclusion. There are no impacts to this natural community anticipated, and some wetlands will be protected, restored, and managed for the benefit of the shorebirds. This could offset some of the loss of cultivated lands for those shorebird species that use both (such as killdeer).	
178	4.3.8-348	32-38	We suggest adding a more detailed discussion of transmission line impact risk. Shorebirds and waterfowl are particularly vulnerable to power line strikes due to wing loading and flocking behavior (Brown and Drewien 1995, Yee 2007, APLIC 2012). Brown and Drewien (1995) found that waterfowl constituted approximately 50% of transmission line strike mortality of all birds studied. We suggest discussing results of studies that show avian markers decreased mortality of waterfowl and shorebirds, and studies that found that American coots were still vulnerable to power line strike mortality after marker installation (Yee 2007, VWS 2015). To reduce risks to nocturnal flyers, such as coots, diverters should be illuminated (VWS 2015).	
179	4.3.8-349	41-44	Please explain why largemouth bass was used as a surrogate species. Why it is considered more conservative than shorebirds and waterfowl, or other fish-eating species such as diving ducks and terns? Ackerman, Eagles-Smith et al (2014) indicate that fish Hg concentrations did not adequately predict avian risk to exposure,	

No.	Page	Line #	Comment	ICF Response
			and that egg monitoring more accurately reflects the impacts of Hg on birds. They found MeHg concentrations in many adults and eggs in the SF Bay estuary exceeded levels of toxicity. We suggest discussing the results of this study and adding an adaptive management strategy that includes monitoring mercury levels in shorebird and waterfowl eggs.	
180	4.3.8-350	4	The risk of mercury exposure varies among shorebird species and locations. Shorebirds that forage on fish and in managed wetlands in Yolo Bypass or Suisun Marsh are at a higher risk than other shorebirds. Ackerman, Eagles-Smith et al. (2014) provide an example of elevated concentrations of methylmercury in black-necked stilts due to foraging in managed wetlands and on fish.	
181	4.3.8-351	16-17	There is no EC 5 described in Section 4.1.2.3. Please revise to clarify this sentence and add a reference to nontidal restoration, EC 10.	
182	4.3.8-352	17	We suggest adding tidal habitat, nontidal habitat, and floodplain restoration to this sentence as agents of increased selenium exposure. Waterfowl that consume sessile bivalve clams and other benthic filter feeders would be exposed to additional, and potentially toxic, levels of selenium. Without AMM27 this would constitute a significant impact.	
			Section 4.3.25	
183	4.3.25-8	38	Because Section 4.3.25 does not generally rise to the level of analysis, the use of the phrase "analyze and disclose" is not appropriate. Consider substituting the phrase "discuss conceptually".	
184	4.3.25-9	19	The sentence beginning here seems to turn the operating concept for the CWF on its head. In reality, diversions at the proposed NDDs will only be allowed if Sacramento River inflows are adequate to protect downstream species habitat and water quality conditions. This is an important concept to ensure that the water operations "flexibility" afforded by the proposed NDDs is not used to the detriment of Delta aquatic species.	
185	4.3.25-9	28	Here the document makes confusing use of the term "entrapment zone". Biologists generally use this term to describe the estuary's saltwater/freshwater interface. For the purposes of this comment it is assumed that the author is referring to something like the	

No.	Page	Line #	Comment	ICF Response
			"zone of entrainment". It is important to note here that the purpose positioning X2 further downstream goes beyond reducing entrainment. For species such as Delta smelt, longfin smelt, and *Crangon franciscorum* downstream positioning of X2 increases the quantity and quality of habitat, and improves transport to that habitat. The relative ease of using inflows to move saltwater downstream from the proposed NDDs would probably result in a constriction of habitat for some species, in particular Delta smelt rearing in the important lower Sacramento River reach (below Rio Vista).	
186	4.3.25-9	37	The ECs remaining in the CWF are generally designed to mitigate for project related impacts. As such, and unlike the BDCP, they don't result in a net gain in habitat quantity or quality.	
187	4.3.25-9	42-45	Because Alternative 4A seeks authorization for take of state and federally listed species through a 2081(b) permit and Section 7 Biological Opinion, the project proponents are required under section 2081(b) to ensure impacts of the authorized taking are minimized and fully mitigated. A mitigation standard differs substantially from the standard underlying Alternative 4, and established by the Natural Community Conservation Planning Act, to conserve and manage covered species within the Plan area. Although the NCCPA's standard may be sufficient to facilitate species resiliency to climate change, habitat restoration and preservation proposed in Alternative 4A is not sufficient.	
188	4.3.25-10	3-11	We suggest removing this paragraph because it is based on general conclusions that are unsupported by current ecological and evolutionary theory. Many environmental factors (abiotic *and* biotic) limit the distribution and abundance of native species. The assumption that ameliorating one specific stressor on a listed species in the Delta will result in increased population sizes is speculative and unfounded. Additionally, although population size can be an important factor in determining species resiliency in response to environmental change, the capacity of a species to express adaptive phenotypic plasticity and the level of genetic variation within and among populations are more important determinants of species persistence over the short- and long- term.	

No.	Page	Line #	Comment	ICF Response
			Increasing genetic variation within and among populations of threatened and endangered species would require, at a minimum, sustained long term increases in population sizes across many generations.	
189	4.3.25-10	8	Predator control at the NDDs is intended as mitigation, not enhancement, to offset the predation problems otherwise created by the presence of the NDDs. Also, the benefit of predator control at CCF is easily overstated, because the south Delta export facilities will often not be operating winter-spring entrainment season, and the period of preferential southern diversion is generally after the entrainment season.	
190	4.3.25-10	9	The use of the term "will" here is too optimistic. At this point the net benefits of the NPB are still uncertain.	
191	4.3.25-10	17	Are the "interties" referenced part of the project? If not, their suggested use is speculative.	

References Cited

Ackerman, J., C. A. Eagles-Smith, G. Heinz, S. De La Cruz, J. Y. Takekawa, A. Miles, T. Adelsbach, M. Herzog, S. Bluso-Demers, G. Herring, D. Hoffman, C. Hartman, J. Willacker, T. Suchanek, S. Schwarzbach and T. Maurer (2014). Mercury in birds of San Francisco Bay-Delta, California - Trophic pathways, bioaccumulation, and ecotoxicological risk to avian reproduction. US Geological Survey and US Fish and Wildlife Service, Environmental Contaminants Division. USGS Survey Open-File Report 2014-1251. Available: http://dx.doi.org/10.3133/ofr20141251.

APLIC (2012). Reducing avian collisions with power lines: the state of the art in 2012, Edison Electric Institute and Avian Power Line Interaction Committee (APLIC), Washington, DC.

Bildstein, K. (2006). Migrating raptors of the world - their ecology and conservation, Cornell University Press, Ithaca, NY.

Brown, W. M. and R. C. Drewien (1995). Evaluation of two power line markers to reduce crane and waterfowl collision mortality. Wildlife Society Bulletin. **23:** 217-227.

California Partners in Flight and the Riparian Habitat Joint Venture (2004). Version 2.0 The riparian bird conservation plan: A strategy for reversing the decline of riparian associated birds in California.

CFR and TNC (In prep). Population trends, habitat selection and food availability for sandhill cranes and large waterfowl on Staten Island and associated management recommendations. Convervation Farms and Ranches (CFR) and The Nature Conservancy (TNC). 2014-15 Annual Report.

Cornell Lab of Ornithology (2015). All about birds - Cooper's hawk [Internet]. Cornell University, Ithaca, NY. Available: www.allaboutbirds.org/guide/Coopers_Hawk/id. Accessed: October 16, 2015.

Cornell Lab of Ornithology (2015). All about birds - Double-crested cormorant [Internet]. Cornell University, Ithaca, NY. Available: https://www.allaboutbirds.org/guide/Double-crested_Cormorant/id. Accessed: October 19,2015.

Custer, C. (1993). Life history traits and habitat needs of the redhead. US Fish and Wildlife Service, Northern Prarie Wildlife Research Center, La Crosse, WI. Fish and Wildlife Leaflet 13.1.11. Available: http://www.nwrc.usgs.gov/wdb/pub/wmh/13_1_11.pdf.

Davis, J. and C. Niemela (2008). Northern harrier (*Circus cyaneus*). In California bird species of special concern. W. Shuford and T. Gardali (editors). Western Field Ornithologists and California Department of Fish and Game, Sacramento, CA. pp. 444-450.

Detting, M. and N. Seavy (2012). Yellow-billed cuckoo survey effort along the Sacramento and Feather Rivers: 2012. Prepared for California Department of Fish and Game. PRBO Conservation Science, Petaluma, CA.

Hunting, K. (2000). Ferruginous hawk (*Buteo regalis*). In Version 1.0. The draft grassland bird conservation plan: A strategy for protecting and managing grassland habitats and assocaited birds in California [Internet]. Point Reyes Bird Observatory, Stinson Beach, CA. Available: http://www.prbo.org/calpif/htmldocs/species/grassland/fehaacct.html. Accessed: October 15, 2015.

Ivey, G., C. Herziger and D. Hardt (2014). Conservation priorities and best management practices for wintering sandhill cranes in the Central Valley of California. Prepared for The Nature Conservancy. International Crane Foundation, Baraboo, WI.

Jackson, A., A. Condon, M. Etterson, D. Evers, S. Folsom, J. Detweiler, J. Schmerfeld and D. Cristol (2011). The song sparrow as a biosentinel for methylmercury in riparian food webs of the San Francisco Bay area. Poster prepared by the San Francisco Estuary Institute, Oakland, CA. Available: http://www.sfei.org/sites/default/files/biblio_files/ARobinsonSOE2011_draft3.pdf.

Jackson, A., D. Evers, M. Etterson, A. Condon, S. Folsom, J. Detweiler, J. Schmerfeld and D. Cristol (2011). Mercury exposure affects the reproductive success of a free-living terrestrial shorebird, the Carolina wren (*Thryothorus ludovicianus*). The Auk. **128:** 759-769.

Jaramillo, A. (2008). Yellow-headed blackbird (*Xanthocephalus xanthocephalus*). In California bird species of special concern. W. Shuford and T. Gardali (editors), Western Field Ornithologists and California Department of Fish and Game, Sacramento, CA.

Jennings, M. and M. Hayes (1994). Amphibian and reptile species of special concern in California. Prepared for the California Department of Fish and Game, Inland Fisheries Division. California Academy of Sciences, Department of Herpetology, San Francisco, CA; Portland State University, Department of Biology, Portland, OR; and Metro Washington Zoo, Animal Management Division, Portland, OR. Final Report.

Linares-Casanave, J., R. Linville, J. Van Eeenennaam, J. Muguet and S. Doroshov (2014). Selnium tissue burden compartmentalization in resident white sturgeon (*Acipenser transmontanus*) of the San Francisco Bay Delta Estuary. Environmental Toxicology and Chemistry. **9999:** 1-9.

Morey, S. (2000). California wildlife habitat relationships system: Blainville's horned lizard. California Department of Fish and Wildlife, California Interagency Wildlife Task Group, Sacramento, CA. R029.

Petrik, K., M. Petrie, A. Will and J. McCreary (2012). Waterfowl impacts of the proposed conservation measure 2 for the Yolo Bypass - an effects analysis tool. Prepared for Yolo Bypass Fisheries Enhancement Planning Team. Ducks Unlimited, Western Regional Office, Rancho Cordova, CA.

Pierson, E., M. Wackenhut, J. Altenbach, P. Bradley, P. Call, D. Genter, C. Harris, B. Keller, B. Lengus, L. Lewis, B. Luce, K. Navo, J. Perkins, S. Smith and L. Welch (1999). Species conservation assessment and conservation strategy for the Townsend's big-eared bat. Idaho Department of Fish and Game, Idaho Conservation Effort, Boise, ID.

Poole, G. (1938). Weights and wing areas in North American birds. The Auk. **55:** 511-517.

Schwarzbach, S. and T. Adelsbach (2003). Assessment of ecological and human health impacts of mercury in the Bay-Delta watershed. Prepared for California Department of Fish and Game, CALFED Bay-Delta Mercury Project. Draft Final Report.

Shuford, W., J. Humphrey, R. Hansen, C. Hickey, G. Page and L. Stenzel (2004). Patterns of distribution, abundance, and habitat use of breeding black-necked stilts and American avocets in California's Central Valley in 2003. Prepared for the Central Valley Shorebird Working Group. Point Reyes Bird Observatory, Stinson Beach, CA. Draft Final Report.

Stephens, R. and S. Anderson (2002). Conservation assessment for the Cooper's hawk and sharp-shinned hawk in the Black Hills National Forest, South Dakota and Wyoming. University of Wyoming, Wyoming Cooperative Fish and Wildlife Research Unit, Laramie, WY.

SWRCB (2015). Statewide mercury program: Addressing mercury in California's waters [Internet]. State Water Resources Control Board (SWRCB), Sacramento, CA. Available: http://www.waterboards.ca.gov/water_issues/programs/mercury/. Accessed: October 19, 2015.

USFWS (2001). Short-eared owl habitat model [Internet]. US Fish and WIldlife Service, Guld of Maine Watershed Habitat Analysis. Available: http://www.fws.gov/r5gomp/gom/habitatstudy/metadata/short-eared_owl_model.htm. Accessed: August 2015.

USFWS (2009). Callippe silverspot butterfly (*Speyeria callippe callippe*) 5 year-review: Summary and evaluation. US Fish and Wildlife Service, Sacramento Fish and WIldlife Office (USFWS), Sacramento, CA.

VWS (2015). Avian risks assocaited with power lines and wind energy. Ventana Wildlife Society (VWS), Salinas, CA. Available: http://www.ventanaws.org/conservation/powerlines.htm. Accessed: October 19, 2015.

Wiggins, D., G. Schnell and D. Augustine (2014). Distribution and nesting success of ferruginous hawks and Swainson's hawks on an agricultural landscape in the great plains. The Southwestern Naturalist. **59:** 356-363.

Wood, W. and S. Yezerinac (2006). Song sparrow (*Melospiza melodia*) song varies with urban noise. The Auk. **123:** 650-659.

Yee, M. L. (2007). Testing the effectiveness of an avian flight diverter for reducing avian collisions with distribution power lines in the Sacramento Valley, California. Prepared for the California Energy Commission, PIER Energy-Related Environmental Research Program, Sacramento, CA. CEC-500-2007-122.

BDCP/California Water Fix RDEIR/SDEIS
Comment Form

Document: ***July 15, 2015 Public Draft—RDEIR/SDEIS Section 4 – previous unresolved June 2015 comments on Administrative Draft***

Comment Source: *California Department of Fish and Wildlife*
Submittal Date: *October 30, 2015*

Note: All page and line numbers correspond to the second Administrative Draft RDEIR/SDEIS submitted to CDFW for review in June 2015.

No.	Page	Line #	Comment	ICF Response
			Lesser sandhill crane	
1	4.3.8-150	17-19	Comment on administrative draft: Refer to the habitat model developed in Chapter 12, Alternative 4, for lesser sandhill crane foraging habitat and use area.	Not addressed ICF stated the model is the same for both subspecies. The BDCP model for GSCR (Appendix 3A) is not the same as the LSCR model (Figure 12-22). The LSCR model shows foraging habitat as far south as CCF, while the GSCR model cuts foraging habitat to north of Discovery Bay. Neither model depicts "roosting and foraging" separate from "foraging".
2	4.3.8-151	27	Comment on administrative draft: Be sure foraging habitat impacts are analyzed against the lesser crane model and not the greater crane model. There should be a different number here based on the additional foraging habitat south of the GSCR foraging habitat and winter use area, as far south as Clifton Court Forebay.	Partially addressed ICF stated that the impacts analysis uses the LSCR model, limited to the crane use area, and that the impact analysis focuses on the area where cranes are present. Gary Ivey's "crane use area" is depicted as the GSCR winter use area in BDCP Appendix 3A. It is not clear where the LSCR crane use area is, as delineated by G. Ivey, and if it matches the foraging habitat model in Figure 12-22. Please explain if this analysis is based on the LSCR winter use area. Impacts to foraging habitat for both subspecies are not the same, due to LSCR foraging a greater distance from roosting sites than GSCR. The numbers reflect higher impacts for LSCR foraging habitat, but this is not well explained.
3	4.3.8-152-153	35-46 1-13	Comment on administrative draft: Impacts described appear to be confined to the greater sandhill crane use area and do not include impacts south of the area in the modeled foraging habitat for lesser sandhill crane. We suggest updating this analysis to include impacts	Partially addressed ICF response: "impacts are for lesser sandhill crane use area which is very similar to GSHC boundary but there is more foraging habitat impacted by the conveyance facility

No.	Page	Line #	Comment	ICF Response
			south of Venice Island.	because of the increased foraging distance from roost sites." Follow up comment: We suggest adding a reference to the LSCR use area and clarifying how "roosting and foraging" habitat differs from "foraging" in the LSCR model (e.g, if "roosting and foraging" is restricted to the GSCR use area or if it contains only mapped roost sites). This section does not describe impacts from roads, access shafts, transmission lines, or geotech on Mandeville and Bacon Islands, which overlap modeled foraging habitat in both subspecies models, but not roosting habitat. This analysis is still incomplete without a clear description of what is being analyzed.
4	4.3.8-153-154	18-25 1-10	Comment on administrative draft: Table 12-4A-31. Update these numbers based on comments above (lesser sandhill crane foraging habitat model, not greater sandhill crane model). The same with EC impacts that follow.	Same as status as comments on page 4.3.8-151, line 27 and page 4.3.8-152, lines 35-46.
5	4.3.8-154-155	40-43 1-2	Comment on administrative draft: Same as comment on pages 4.3.8-153-4.	Same as status as comments on page 4.3.8-151, line 27 and page 4.3.8-152, lines 35-46.
6	4.3.8-155	7	Comment on administrative draft: This number would change if impacted foraging acres are adjusted. Need to ensure restoration/protection still meets or exceeds the 1:1 mitigation requirement for foraging habitat.	See status of comments on page 4.3.8-151, line 27 and page 4.3.8-155, line 39 (below). If 4811 acres of foraging habitat will be protected for both subspecies based on impacts to LSCR foraging habitat, this would meet the proposed 1:1 mitigation for LSCR.
7	4.3.8-155	39	Comment on administrative draft: This number needs to be consistent with the number In the greater sandhill crane section; the greater section probably needs to be updated.	Partially addressed Page 146, line 38 was not updated to 4811 for LSCR or for GSCR on page 132, line 34. Restoration and Performance Principle GSC1 does not specify acreage. If 4811 acres of foraging habitat will be protected, the change needs to be cascaded to these sections.
8	4.3.8-157	3	Comment on administrative draft: Include "and AMM30 Transmission Line Design and Alignment Guidelines."	Not addressed ICF response: "Included AMM30." Reference to AMM30 does not appear in this section.
9	4.3.8-157	19	Comment on administrative draft: Remove the word "dramatically".	Not addressed, global comment.

No.	Page	Line #	Comment	ICF Response
10	4.3.8-158	39-40	Comment on administrative draft: Also discuss benefits of implementing AMM 30 here.	Not addressed ICF response: "added AMM30". AMM30 is not referenced in the CEQA conclusion.
11	4.3.8-163		Comment on administrative draft: There should be an inundation section for this species even though there are no impacts, for consistency with other species.	Partially addressed Throughout the document inundation impact headers are not included where there are no impacts anticipated. Those sections need to be removed to provide consistency.
Least Bell's vireo and yellow warbler				
12	4.3.8-165	35	Comment on administrative draft: AMMs are not described below, they are listed below. They are described in Appendix 3.C of the draft BDCP and in Appendix D.	Not addressed It is still not clear in this section which AMMs are being referred to for O&M.
13	4.3.8-165	36-38	Comment on administrative draft: There should be a discussion here about yellow warbler nesting in the study area as well. The BSSC account (Heath 2008) states the species is largely extirpated as a breeder in the Delta; however, nests were found in the SJRNWR in 2002 and 2003. Therefore, reestablishment of a breeding population of yellow warbler is also possible.	Partially addressed ICF response: "Possible but unlikely over the new permit term. Added text to clarify." Text was changed to clarify. However, we suggest acknowledging the possibility of at least one breeding pair of either species occurring during the project term, rather than assuming such presence is unlikely. Many sources imply riparian restoration could bring in one or more breeding pair(s) of either species (USFWS 2005, Heath 2008). The LBVI detections in the Yolo Bypass were singing males, and the CalFed program considered these detections a result of successful restoration.
14	4.3.8-168	9-12	Comment on administrative draft: Even if one pair breeds, fragmentation of habitat can cause edge effects such as exposure to cowbird parasitism, a major threat to both species. This should be discussed here. It is not clear why fragmentation would have a minimal effect if there are only a small number of individuals. If there is one breeding pair and fragmentation causes that nest to fail, this is not a minimal effect on a species that is considered extirpated from the Delta and is starting to return. This conclusion could be made if AMM 20 and/or MM BIO-75 adds a measure that nests will be monitored post construction where fragmentation has occurred, and appropriate actions will be taken to minimize resulting edge effect (e.g., cowbird control).	Partially addressed The cowbird problem was addressed and language suggested in comment on page4.3.8-168, lines 24-28 below was added. We still suggest to delete the sentence that assumes a small number of occurrences would qualify the fragmentation impact as a low effect on the species for the reasons described in this comment (ie, impacting reestablished breeding in the Delta could prevent the species' range expansions and recovery). The implementation of AMMs, BIO-75 and adaptive management described thereafter would minimize the impacts.
15	4.3.8-	32-38	Comment on administrative draft: According to the valley/foothill	Partially addressed Language was updated per this

No.	Page	Line #	Comment	ICF Response
	168		riparian natural community impact analysis, Valley/foothill riparian will be restored primarily in CZ 4 and CZ 7 in the Cosumnes/Mokelumne and South Delta ROAs. The transmission lines to be installed along the tunnel alignment south of Lambert Road and from the Intermediate Forebay to RTM overlap the Cosumnes/Mokelumne ROA, and birds attracted by this restoration could be affected. The reasons discussed here do not make collision with transmission lines highly unlikely. The bird strike analysis for least Bell's vireo should be discussed instead and inferred for yellow warbler, as well as the effectiveness of diverters installed for greater sandhill crane.	comment, but states lack of occurrences as one of the reasons strikes are unlikely. The recent LBVI occurrence data imply LBVI could be present in the Delta but undetected. We suggest omitting this reasoning and instead focusing on each species' use of habitat, behavior, and diverters. It should also be noted that at least one study indicated yellow warbler and other species of vireos were found dead under powerlines (EPRI 2003), so strikes are not "highly unlikely". Strikes may be minimized by the birds' behaviors, and would be further minimized if powerline right-of-ways provide a buffer from the riparian habitat.
16	4.3.8-169	3-7	Comment on administrative draft: See comment 10	Partially addressed, see status for comment on page 4.3.8-168 lines 32-38.
San Joaquin kit fox and American badger				
17	4.3.8-295	25	Comment on administrative draft: Since the BDCP conservation strategy isn't part of Alternative 4A, this sentence should point to the corresponding EC(s).	Not addressed. ECs and RRPPs are described in this chapter. This section should not reference Chapter 3 of the draft BDCP. The ECs and RRPPs need to ensure the same goals of the conservation strategy.
18	4.3.8-296 297	35-36 1-8	Comment on administrative draft: In this paragraph, badgers need to be included in the discussion. Passive recreation could result in disturbance of San Joaquin kit foxes and American badgers at their den sites, particularly natal sites (Kirks 2015), and close contact with an aggressive badger could be a threat to human safety. Though disease from domestic dogs may not be an issue, we suggest updating AMM37 Recreation so that trails are buffered from active SJ kit fox and badger dens (BDCP Appendix 3.C, page 83, lines 1-3) to minimize disturbance and human encounters. We also suggest prohibiting rodent control when either species is present. Restrictions need to be discussed for both species to state that recreation effects will be minimal for both species.	Partially addressed Though the language here and ICF's response indicate a modification to AMM37, the modification does not show up in Appendix D to include badger dens.
19	4.3.8-297	15-18	Comment on administrative draft: AMMs 10 and 24 and MM BIO-162 are specific to construction activities and do not explicitly include measures for post-construction activities such as ongoing maintenance and operations. These need to be updated or not relied upon for minimization because the kit fox or the badger could	Partially addressed. ICF response: "The AMMS apply to all covered activities which includes construction, maintenance and operations, and restoration and recreation. No edits needed." This is described in BDCP public draft Appendix 3.C.1.

No.	Page	Line #	Comment	ICF Response
			appear after construction is completed, particularly if attracted by restoration of habitat.	Section 4.1.23 states AMMs under Alternative 4A are consistent with the approach described in Appendix 3.C. We suggest updating BIO-162 to refer to all project activities. This may be a global comment for all MMs.
20	4.3.8-297	23-26	Comment on administrative draft: Suggestions in comments above should be considered for Substantive BDCP revisions in Appendix D to update AMMs 37, 10 and 24 and for an update to MM BIO-162 before these can be relied upon as measures that minimize mortality.	See status of comments on page 4.3.8-297, lines 1-8 and page 3.4.8-297, lines 15-18 above.
21	4.3.8-298	12-21	Comment on administrative draft: American badger needs to be included in these discussions as well. The modeled SJ kit fox habitat is also likely to represent suitable habitat for the badger. Lines 16-17 should not refer to an SJKF satellite population because there is no confirmed population in this area. This should be changed to existing suitable habitat in Contra Costa County. The mitigation in lines 19-21 would also benefit the badger.	Not addressed. ICF response: "some edits made, there is a population in Contra Costa County, and it would be considered a satellite."
22	4.3.8-298 299	41-44 1-4	Comment on administrative draft: This CEQA conclusion can only be made for both species if suggested changes in comments above are made.	See status on comments on page 4.3.8-297, lines 1-8 and page 3.4.8-297, lines 15-18 above.
23	4.3.8-299	5-12	Comment on administrative draft: As noted above, a description of post-construction monitoring, relocation, and avoidance need to be included. Avoiding an active den should be achieved with a buffer, as in AMM 24.	Partially addressed. Addressed by stating surveys will be concurrent with SJKF and BUOW surveys. However, the size of the buffer was not specified. AMM24 provides a buffer for known SJKF dens of 100 feet. We suggest using the same buffer for American badger and SJ kit fox, or allowing badger buffer distance to be determined by a qualified biologist.
24	4.3.8-299	19-22	Comment on administrative draft: Ground squirrel control would degrade the value of SJKF and badger habitat by reducing prey and burrows. This should be discussed here.	Partially addressed. Should be contingent on presence of individual SJKF or badger, rather than the presence of populations. Ground squirrels would help a population become established.
25	4.3.8-299	34-41	Comment on administrative draft: Same as comment on page 4.3.8-298, lines 41-44.	See status on comments on page 4.3.8-297, lines 1-8 and page 3.4.8-297, lines 15-18above.
26	4.3.8-300	N/A	Comment on administrative draft: There are no discussions on methylmercury exposure (badgers prey on birds as well as small mammals), fragmentation, or inundation. Even if these are not impacts, they should be discussed for consistency with other	Partially addressed. ICF response: "there are no effects on badger or fox from methylmercury." Although ICF's response indicates that there is no impact,

No.	Page	Line #	Comment	ICF Response
			species' impacts analyses.	no discussion of potential impacts is included. Leaving methylmercury out of the indirect effects impact for these species is reasonable. However, several analyses of other species with no anticipated impacts from methylmercury are included. For example, the "Periodic Effects of Inundation" sections conclude that there will be no effect from methylmercury. We are suggesting consistency in this regard.
			California tiger salamander	
27	4.3.8-95 96	43 21, 34	Comment on administrative draft: AMM 13 from the BDCP Appendix 3C will need to be updated to be consistent with language agreed upon by the TTT.	ICF response: "Information not available at this time". Please update as possible for the final draft.
28	4.3.8-97	30-32	Comment on administrative draft: There will need to be an updated version of AMM 13 as well, based on what was agreed upon in TTT.	ICF response: "Information not available at this time". Please update as possible for the final draft.
29	4.3.8-98	9	Comment on administrative draft: The USFWS Bay Area programmatic requires minimization of indirect effects from light, within a 1,000 ft buffer, which could result in increased likelihood of injury of mortality due to desiccation and predation. This needs to be discussed in more detail here and the minimization buffer needs to be added to AMM13.	ICF response: No permanent night lighting, minimal if any impact. We suggest restricting the use of all night lighting, permanent or temporary, which would illuminate adjacent suitable CTS habitat.
			Loggerhead shrike	
30	4.3.8-334	10	Comment on administrative draft: Breeding shrikes have the status of species of special concern. Breeding shrikes also need shrubs and tall trees for perching and for nest placement, and are generally associated with riparian edge grasslands (Humple 2008) or grasslands/cultivated lands with trees and shrubs present. Impacts to this habitat are the most important to analyze over foraging habitat without the shrub and tree component.	Partially addressed ICF response: Can't re-run model but text was revised in accordance with this comment. It now states "Loggerhead shrike modeled habitat is overestimated as it does not differentiate between lands with or without associated nesting vegetation." We suggest adding "nesting and perching vegetation and structures" to this sentence. Other structures (fences, poles) can be used for perching. Though the model does not differentiate high quality from low quality as containing these components, adding this language shows that the impacts and compensation analysis is conservative because the model includes high-quality foraging habitat with and without perching structures. Low-value habitat doesn't

No.	Page	Line #	Comment	ICF Response
				appear in Figure 12-42, and shouldn't be considered when analyzing impacts. Row/truck crops and vineyard conversion is considered a threat to the species (Humple 2008). Therefore, compensation of these impacts with high-quality grassland and riparian is also a conservative approach.
31	4.3.8-265	1-2	Comment on administrative draft: Table 12-4A-50: Ensure impact analysis on high-value habitat includes riparian and riparian edge habitat. The analysis should be treated similarly to the Swainson's hawk and white-tailed kite.	Partially addressed ICF response: Can't model riparian edge habitat associated with grasslands, but the model is conservative as per status of comment on page 4.3.8-334, line 10. ICF also responded that the text would suggest riparian habitat sited near open areas would provide nesting opportunities, but this revision does not appear in the text. Another suggestion is to include RRPP RBR5, which would protect 227 acres of grasslands on landward sides of levees adjacent to restored floodplain as foraging habitat for RBR. This would also benefit the shrike; however, we hope the shrikes won't prey on the rabbits!
32	4.3.8-264-267	30-31 28-29 41-45	Comment on administrative draft: Temporary impacts on grasslands with trees and shrubs available for nesting and on riparian habitat should also be restored after construction. Thus AMM10 should be included for this species.	Partially addressed A reference to AMM10 still needs to be added on page 4.3.8-265, line 12, and described on page 4.3.8-268, line 1, for habitat other than cultivated lands.
33	4.3.8-267	30-31	Comment on administrative draft: Potential nesting shrubs and trees would also need to be mitigated at 2:1 if impacted, so the protected/restored habitat should contain an equivalent or higher number of shrubs or trees impacted. Riparian restoration and protection could be included here as mitigation if adjacent to high-quality foraging habitat. Tree or shrub replacement for Swainson's hawk or white-tailed kite could also apply to loggerhead shrike.	Partially addressed ICF response: "Can't model that impact for this draft. BUT have included riparian commitment and AMM18 commitment for trees to be adjacent to SWHA foraging habitat which would benefit LOSH." These benefits, as well as CL1, VFR1, and others that could be added (ECs 8 and 9, VP/ASW protection, RRPPs G8 and RBR5) do not meet the 2:1 mitigation for high-quality foraging habitat containing, or adjacent to, trees or shrubs. As a result, we recommend developing a mitigation measure for LOSH (which would also benefit other species) requiring that the 9,364 protected/restored grassland and suitable cultivated lands will be sited to have trees or shrubs

No.	Page	Line #	Comment	ICF Response
				present. SWHA habitat and RBR5 would cover about 7032 acres of this requirement.
34	4.3.8-268	16	Comment on administrative draft: See comments above for a stronger CEQA conclusion for nesting shrikes.	Partially addressed There is no mention of the importance of trees and shrubs in the CEQA conclusion. If the mitigation measure suggested for comment 48 is adopted, the CEQA conclusion would also reference that measure.
			Mountain plover	
35	4.3.8-247	1-8	Comment on administrative draft: All protected cultivated lands or even protected/restored grasslands wouldn't necessarily benefit the mountain plover (change to "could" benefit mountain plover). Grasslands need to be managed to maintain a short vegetation height, and agricultural lands provide less suitable habitat than natural lands. Both would need good insect production with small amounts of vegetation so that plovers can seek invertebrates in cracks and crevices in the soil. Some cultivated land--including alfalfa, hay, and grain--would not be used if the plovers cannot access the soil (Hunting and Edson 2008). For the restoration and protection to be relied upon for a less than significant CEQA conclusion, the restored/protected lands would need to be managed to be suitable.	Partially addressed Addressed on page 247 and on page 249. EC 11 does not specifically manage habitat for ground foraging insectivores (heavily grazed or mowed, high invertebrate productivity), as stated in the analysis.
36	4.3.8-249	10-11	Comment on administrative draft: See comment 64. This is where the suitability of habitat impacted needs to be mitigated with equally suitable habitat (managed pasture or grassland, managed fallow ag land, or suitable agriculture) to meet the 2:1 requirement. Environmental Commitment 11 could accomplish part of this; however, it should be stated that the acres of grassland and cultivated lands protected or restored for mitigation will be selected and/or managed to meet suitability requirements for wintering mountain plover.	Partially addressed by EC 11. Restoration of grassland and protection of ASW/VP complex could also contribute to ECs meeting proposed mitigation ratios, in case there isn't enough suitable agriculture for this species. Relying on agricultural land assumes the protected habitat for SWHA and other species that are small mammal foragers are also suitable for insect foragers. However, SWHA foraging habitat could have higher vegetation cover than requirements of insect foragers. Mountain plover relies more on managed grassland, pastures, and harvested/fallowed fields than the majority of agricultural lands proposed for protection (Hunting and Edson 2008). This could be short of the proposed mitigation requirement for this species.
			Black tern	

No.	Page	Line #	Comment	ICF Response
37	4.3.8-251	4-5	Comment on administrative draft: Black terns also nest in marshes or marsh complexes on emergent, floating, or aquatic vegetation (Shuford 2008). Central Valley black terns mostly breed in rice fields, but a few breed in emergent wetlands. Impacts to emergent wetlands should also be analyzed.	Partially addressed ICF response: "Can't change model for Recirculated Draft. Could add for the final EIR/EIS." This comment was addressed except for updating the model and analyzing potential impact to emergent wetland (marsh).
38	4.3.8-251	10-18	Comment on administrative draft: Same as comment on page 4.3.8-251, lines 4-5 above. Ensure emergent wetlands are included in the impact analysis.	Partially addressed See status of comment on page 4.3.8-251, lines 4-5 above.
39	4.3.8-251	13-18 20-25	Comment on administrative draft: The BSSC account infers that breeding black terns are extirpated from the Delta. This may be a strong analysis for a lack of direct and indirect effects on individual birds, but not necessarily on habitat. Furthermore, discussions on potential impacts should be warranted if the restoration of tidal or nontidal marsh attracts black terns to recolonize the Delta, since they regularly occur in the Sacramento Valley just north of the Yolo Bypass. The black tern may also occur occasionally in the Delta during migration or after breeding.	Noted but not addressed This comment should be addressed after the model is revised to assess impacts on emergent wetland. We suggest discussing potential impacts to migrating birds. Impacts to other migratory bird species assume individuals would evade disturbance impacts that could cause mortality. We suggest requiring surveys of any rice, flooded agricultural fields, or nontidal marsh wetlands within 200 feet of the footprint in case black terns start recolonizing the Delta during the project term. This requirement could be added along with a reference to MM BIO-75 to Impact BIO 129.
California horned lark and grasshopper sparrow				
40	4.3.8-252	8	Comment on administrative draft: Cultivated lands modeled should also include alfalfa.	Not addressed. ICF response: "Comment noted. Can't change model for Recirculated Draft. Could add for the final EIR/EIS."
41	4.3.8-252	14-15	Comment on administrative draft: Protection of grasslands could benefit these species if the grasslands are moderately open and managed to maintain low to medium vegetation height (Unitt 2008). Horned larks require short, sparse vegetation and may favor bare, dry ground. Both species are mostly ground foragers. Only a portion of protected cultivated lands will benefit these species.	Partially addressed. See comment status for mountain plover.
42	4.3.8-254	38-43	Comment on administrative draft: Suitability of habitat impacted needs to be mitigated with equally suitable habitat (managed pasture or grassland, managed fallow ag land, or suitable agriculture) to meet the 2:1 requirement. Environmental	Partially addressed per status of comments on page 4.3.8-247, lines 1-8 and page 4.3.8-252, lines 14-15 above. ICF stated that a mitigation measure cannot be developed to ensure the management of lands restored/protected

No.	Page	Line #	Comment	ICF Response
			Commitment 11 could accomplish part of this; however, it should be stated that the acres of grassland and cultivated lands protected or restored for mitigation will be selected and/or managed to meet suitability requirements for the species.	through ECs will meet proposed CEQA mitigation ratios for these grassland species. Horned larks have similar foraging requirements as mountain plovers. Grasshopper sparrows are also ground foragers that prefer dry, sparsely vegetated sites with open or bare ground for feeding, but also use medium height grasses and alfalfa. All of these birds are declining grassland species that may not have adapted as well to agriculture as Swainson's hawk. Therefore, relying mostly on protected agricultural land for their mitigation would not benefit the species as much as mitigating with heavily managed grassland.
Least bittern and white-faced ibis				
43	4.3.8- 259 260	28 8	Comment on administrative draft: Include AMM 37 here and in the CEQA conclusion.	Partially addressed. Not addressed on page 259, lines 19-23.

References Cited

EPRI (2003). Bird strike indicator/bird activity monitor and field assessment of avian fatalities. Prepared for the California Energy Commission, Public Interest Energy Research Program. Electric Power Research Institute (EPRI), Palo Alto, CA. Interim Report 1005385.

Heath, S. (2008). Yellow warbler (*Dendroica petechia*). In California bird species of special concern: studies of western birds no. 1. W. Shuford and T. Gardali (editors), Western Field Ornithologists and California Department of Fish and Game, Sacramento, CA.

Humple, D. (2008). Loggerhead shrike (*Lanius ludovicianus*) (mainland populations). In Bird species of special concern. W. Shuford and T. Gardali (editors). Western Field Ornithologists and California Department of Fish and Game, Sacramento, CA.

Hunting, K. and L. Edson (2008). Mountain plover (*Charadrius montanus*). In California bird species of special concern. W. Shuford and T. Gardali (editors), Western Field Ornithologists and California Department of Fish and Game, Sacramento, CA. pp. 180-186.

Kirks, S. (2015). American badger in Sonoma County - State of the badger 2014. Paula Lane Action Network, Petaluma, CA. Available: http://www.paulalaneactionnetwork.org/StateOf.html. Accessed: October 15, 2015.

Shuford, W. (2008). Black tern (*Chlidonias niger*). In Bird species of special concern. W. Shuford and T. Gardali (editors). Western Field Ornithologists and California Department of Fish and Game, Sacramento, CA.

Unitt, P. (2008). Grasshopper sparrow (*Ammodramus savannarum*). W. Shuford and T. Gardali (editors). Western Field Ornithologists and California Department of Fish and Game, Sacramento, CA.

USFWS (2005). News release: Songbird missing from Central Valley for 60 years reappears at San Joaquin River National Wildlife Refuge. US Fish and Wildlife Service (USFWS). Available: http://www.fws.gov/news/ShowNews.cfm?ID=81C2E018-65BF-03E7-2C1A149D5B85E5ED. Accessed: October 19, 2015.

California Water Fix RDEIR/SDEIS Review
Comment Form

Document: ***July 15, 2015 Public Draft—RDEIR/SDEIS Section 5***

Comment Source: *California Department of Fish and Wildlife*
Submittal Date: *October 30, 2015*

No.	Page	Line #	Comment	ICF Response
1	5-6	Table 5.2.1-1	The Lindsey Slough project has been completed. The table name and accompanying note state that these projects may apply toward meeting the conveyance project's Environmental Commitments, but many of these are described in preceding text as being a part of Cal EcoRestore, suggesting they would not be means to meet Alt. 4A's Environmental Commitments. Please clarify.	
2	5-6	1-6	The text states that concurrent project effects will not occur under the non-HCP alternatives because these new alternatives do not contain the CMs. However, the preceding text and following table identify projects that may occur under Cal EcoRestore during the construction period for the conveyance. Modeling assumes that in the near term 25,000 acres of tidal restoration will occur, as well as Yolo improvements. Please clarify or confirm how these projects are considered as potential cumulative projects for the non-HCP alternatives.	
3	5-129	8-16	CDFW staff made substantial comments on Section 4.3.8 (Alt 4A, Terrestrial Biological Resources) regarding the adequacy of proposed mitigation measures in offsetting impacts to special-status species as a result of water conveyance facility construction. In some cases the proposed mitigation acreages do not meet the stated CEQA mitigation ratios commonly used to offset impacts to individual species. In other cases, the same mitigation action (for example riparian habitat restoration) is proposed as a mitigation measure for multiple species with a wide range of specific habitat requirements. These species requirements are, in some cases, so disparate that one project or mitigation commitment cannot be tailored to both species (for example least Bell's vireo and special-status bats). CDFW staff reiterates these comments again in the context of Section 5, Cumulative Impacts.	

			When taken together, across all cumulative impacts to special status species in the Delta, even a slight difference between standard mitigation acreage requirements under CEQA and those proposed for this project, or partial inadequacy in the ability of proposed mitigation to meet species-specific requirements, are likely to result in adverse impacts under the preferred alternative 4A.	

BDCP/California Water Fix RDEIR/SDEIS
Comment Form

Document: ***July 15, 2015 Public Draft—RDEIR/SDEIS Appendix A Section 8***

Comment Source: *California Department of Fish and Wildlife*
Submittal Date: *October 30, 2015*

No.	Page	Line #	Comment	ICF Response
1	8-33	28	2015 WDR for discharges to Mud Slough have recently been adopted (CVRWQCB 2015).	
2	8-34	13, 37	White sturgeon selenium tissue data have been collected and reported from the SF Bay and Delta recently (Linares-Casanave, Linville et al. 2014). The fish selenium concentrations are at levels that have been shown to cause reproductive toxicity.	
3	8-54		Total mercury concentrations in many Central Valley water bodies and Delta outflow have been to found to have statistically significant positive relationships with flow. If the project alternatives have the ability to adjust flow rates into or out of the Delta, then the analyses should include this type of relationship to estimate mercury concentrations (and other constituents with flow-dependent concentrations) to calculate mass-balances. The assumption that concentrations are conservative and independent of flow rates may not present the true magnitude of impacts caused by alternatives that adjust flow magnitude (Louie, Foe et al. 2008, David, McKee et al. 2009, Wood, Morris et al. 2010).	
4	8-58	33-	Research in the last 10 years has shown that fish are more sensitive to mercury toxicity than previously thought (Beckvar, Dillon et al. 2005, Dillon, Beckvar et al. 2010, Sandheinrich, Bhavsar et al. 2011). It is estimated that fish tissue methylmercury concentrations need to be 0.2 mg/kg (whole body) to be protective of fish health. In addition, the most sensitive endpoint of mercury toxicity is likely to eggs and early-life stages of fish through maternal transfer (<0.02 mg/kg). Current water quality objectives and criteria were only developed to protect humans and other wildlife consumers of fish (e.g., Delta Methylmercury TMDL, SF Bay Mercury TMDL, and CTR). The current analyses should include an evaluation of the impacts of alternatives on mercury toxicity to fish using 0.2 mg/kg (0.02 mg/kg for ELS) or equivalent as a benchmark. As well, the "Existing Surface Water Quality" section should include mercury toxicity and risks to fish.	
5	8-87	11-12	The text states: "The later estimation is recognized as the most reliable calculation of mercury	

			exported from the Delta to date (SFBRWQCB 2006)" However, the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) recognizes David, McKee et al. (2009) as the most reliable calculation. Please revise this citation.	
6	8-87	21-23	The text states: "The Central Valley Water Board has targeted the 110 kg/year total mercury load reduction in its planned implementation of the Delta Methylmercury TMDL (SFBRWQCB 2006)." Wrong reference. Instead cite CVRWQCB (2010).	
7	8-98	10	"Low Toxicity Thresholds" is not one of the 3 categories of exceedance threshold categories said to be evaluated earlier in the paragraph.	
8	8-98	18	The category described previously was "Toxicity Threshold Exceedance" not "Toxicity Level Exceedance".	
9	8-98	19-23	None of the figures display the Toxicity Threshold Exceedance Quotients. Figure 8-65 is monthly average flow.	
10	8-105	42-44	Delta methylmercury export load estimates were developed from monitoring that was conducted from approximately 2000-2006, not only one year of data (Louie, Foe et al. 2008).	
11	8-247	4-31	The State Water Board's Statewide Mercury Control Program for Reservoirs has determined that the magnitude of reservoir level fluctuations has been found to be positively correlated to reservoir fish tissue methylmercury concentrations (SWRCB 2015). If the project operations result in increasing the fluctuations of upstream reservoirs through re-operations, etc., then the project may impact reservoir fish methylmercury concentrations. The current environmental evaluation has not assessed this impact.	
12	8-248	29	Exceedance quotients comparisons should include an evaluation of fish protection benchmarks for mercury (e.g., 0.2 mg/kg adults and 0.02 mg/kg ELS). The evaluation should include assessments for sensitive fish species.	
13	8-249	22	Many major rivers in the Sacramento-San Joaquin River Delta watersheds have significant relationships between flow and total mercury concentrations. See Comment 3.	
14	8-283	29	Sturgeon are biological. The project is predicted to cause hard to green sturgeon, an ESA listed species. Additionally, since sturgeon are indicator species, this analysis indicates that there may be other organisms that feed from the benthic food web (e.g., splittail) which might be at high risk. If it is predicted that sturgeon selenium concentrations may exceed benchmarks and thresholds, then it is possible that	

			these other benthic feeders may be at risk too. Selenium tends to accumulate to a much greater extend in sensitive tissues (e.g., liver, gonads, kidneys) than in muscle, and selenium toxicity has been shown to increase non-linearly. Increasing selenium concentrations from below benchmark thresholds to above thresholds is significant. Furthermore, increasing whole-body concentrations would result in multiple-fold increases in other sensitive tissues, which may have significant effects to the organisms or offspring. It is incorrect to conclude that there are no predicted exceedances of biological effects if Alternatives 4 and 4A would cause an EQ of 1.1 for sturgeon and exceed the lower benchmark. This comment also applies to Alternative 4A water quality analyses and CEQA conclusions.	
15	8-309	41	Similar to comment 11, Delta export loads were estimated from data collected between 2000-2006 (Louie, Foe et al. 2008).	

Literature Cited

Beckvar, N., T. Dillon and L. Read (2005). Approaches for linking whole-body fish tissue residues of mercury or DDT to biological effects thresholds. Environmental Toxicology and Chemistry. **24:** 2094-2105.

CVRWQCB (2015). Grassland bypass project [Internet]. Central Valley Regional Water Quality Control Board (CVRWQCB), Rancho Cordova, CA. Available: http://www.waterboards.ca.gov/centralvalley/water_issues/grassland_bypass/. Accessed: October 19, 2015.

David, N., L. McKee, F. Black, A. Flegal, C. Conaway, D. Schoellhamer and N. Ganju (2009). Mercury concentrations and loads in a large river system tributary to San Francisco Bay, California, USA. Environmental Toxicology and Chemsitry. **20:** 2091-2100.

Dillon, T., N. Beckvar and J. Kern (2010). Residue-based mercury dose-response in fish: An analysis using lethality-equivalent test endpoints. Environmental Toxicology and Chemistry. **11:** 2559-2565.

Linares-Casanave, J., R. Linville, J. Van Eeenennaam, J. Muguet and S. Doroshov (2014). Selnium tissue burden compartmentalization in resident white sturgeon (*Acipenser transmontanus*) of the San Francisco Bay Delta Estuary. Environmental Toxicology and Chemistry. **9999:** 1-9.

Louie, S., C. Foe and D. Bosworth (2008). Mercury and suspended sediment concentrations and loads in the Central Valley and freshwater Delta. Prepared for the CALFED Bay-Delta Program. Central Valley Regional Water Quality Control Board, Rancho Cordova, CA. Available: http://mercury.mlml.calstate.edu/reports/reports/. Final Report.

Sandheinrich, M., S. Bhavsar, R. Bodaly, P. Drevnick and E. Paul (2011). Ecological risk of methylmercury to piscivorous fish of the Great Lakes region. Ecotoxicology. **20:** 1577-1587.

SWRCB (2015). Statewide mercury program: Addressing mercury in California's waters [Internet]. State Water Resources Control Board (SWRCB), Sacramento, CA. Available: http://www.waterboards.ca.gov/water_issues/programs/mercury/. Accessed: October 19, 2015.

Wood, M., P. Morris, J. Cooke and S. Louie (2010). Amendments to the water quality control plan for the Sacramento River and San Joaquin River Basins for the control of methylmercury and inorganic mercury in the Sacramento San-Joaquin Delta Estuary. Central Valley Regional Water Quality Control Board, Rancho Cordova, CA. Staff Report.

BDCP/California Water Fix RDEIR/SDEIS
Comment Form

Document: ***July 15, 2015 Public Draft- RDEIR/SDEIS Sections 3 and 4, Chapter 11, and Appendix D, Fish and Aquatic Resources***

Comment Source: *California Department of Fish & Wildlife*
Submittal Date: *October 30, 2015*

No.	Page	Line #	Comment	ICF Response
	General		The process between modeling or other analysis and NEPA Effects/CEQA Conclusions determinations needs to be described more clearly. Generally the analysis shows differences between NAA/Existing Conditions and Proposed Project for habitat/physical values such as flow or temperature based on 2010 modeling for scenarios H3 and H4. These values are also frequently presented in mean or average values over long periods of time. What is not clear is how these modeled physical changes are translated into biological effects and subsequently how these biological effects are deemed to be significant/adverse or not in the NEPA Effects/CEQA Conclusions. It should be made clear that these determinations are often based on professional experience rather than a rigorous quantitative process that translates modeled physical effects into biological effects. This was acknowledged in the BOR's recent DEIS for the Coordinated Long Term Operations of the CVP/SWP. In order to clarify how these decisions are made more effort could be placed into describing the rationale behind the decision. It is also not clear what species population estimates or species abundance indexes these modeled effects are applied to in assessing biological effects and NEPA Effects/CEQA Conclusions. Species population indices and abundance estimates are trending	

			down both long term, under current conditions, and are likely to continue to trend down into the future due to climate change, increased demand, and sea level rise (*see attached Supplemental Document containing a summary of CEQA conclusions*). Please note that there are numerous instances where the NEPA effects (no adverse impact) are utilized over CEQA conclusions (which show significant impact) because NAA separates non project impacts (climate change, sea level rise, increased demand) from project impacts. Fish populations in the wild; however, are not are subject to NEPA/CEQA distinctions. Rather they are subject to the conditions and stressors that they experience and populations will respond accordingly between Existing Conditions and NAA. The question is then whether the translation between modeled physical effects, biologically meaningful effects, and subsequently NEPA/CEQA determinations is made based on knowledge of current fish populations or are these decisions made based on the effect project operations may have on future populations at the NAA baseline in light of degrading environmental conditions. This is an important distinction because smaller magnitudes of change in physical habitat attributes may have a greater effect on aquatic species with critically low population abundances in the future.	
	3-7	29-32	*"Refer to Section 4.3.7, Fish and Aquatic Resources, Impacts AQUA-1, AQUA-19, AQUA-37, AQUA-55, AQUA-73, AQUA-91, AQUA-109, AQUA-127, AQUA-145, AQUA-163, AQUA-181, and AQUA-199 for the analysis of Alternative 4A. These construction-related impacts would be identical for Alternative 4 because the proposed physical water conveyance facilities are the same for both alternatives."* The text written here creates a circular	

			path the reader must follow. AQUA-109 for example, refers the reader back to Alternative 4 (presumably of the Public Draft EIR/EIS?) for a description of impacts. This creates confusion and does not seem to align with the text written here.	
	4.2-1	16-18	This sentence states that the NAA_ELT period assumes a time period of approximately 15 years following project approval, but the footnote on this page suggests that the ELT is modeled at 2025, which will be significantly shorter than 15 years. Please update the language for consistency and provide an explanation in the text for this discrepancy.	
	4.2-51	31-36	RPA Action I.7 will provide improved connectivity and passage for SRC, as well as other salmon runs. This information should be updated as appropriate to this discussion. However, it is unclear why specific reference to RPA 1.7 is called out here when many of the RPAs are aimed at increasing abundances of listed fishes. If the intent is to make a connection between adult passage resulting in increased success of spawning and population abundance, which could then lead to increased entrainment, the discussion could use additional clarification.	
	4.2-54	12-14	This CEQA conclusion overstates the number of species that will likely have rearing benefits from RPA Action I.6.1. The extent by which RPA Action I.6.1 will have rearing benefits for steelhead is unclear and rearing benefits to green and white sturgeon are even more uncertain. In addition, splittail may have some rearing benefits, but the benefits of RPA Action I.6.1 to splittail are predominantly in regards to spawning habitat, and should therefore be included in the Water Ops Effects on Spawning in the above section.	
	4.2-54	39-43	It is unclear whether this section is discussing impacts on migration habitat for juveniles or for adults—we assume it is referring to juvenile migration. While RPA Action I.7 will likely have benefits for outmigrating juveniles, the RPA is targeting adult passage. Therefore, if this	

			section is about juvenile migration habitat (which makes the most sense), then it may not be appropriate to discuss the potential indirect benefits from RPA Action I.7 with any certainty. It would be more appropriate to call out RPA Action I.6.1 benefits here, since that RPA targets juveniles, and discuss the benefits of the Yolo Bypass as a migratory pathway as compared to the Sacramento River. In addition, the extent in which there are migration habitat benefits to splittail from this RPA are uncertain; the benefits from floodplain for this species are largely spawning and some level of rearing.	
	4.2-57	15	The term "Important Farmland" should be defined and reference or footnoted.	
	4.2-57	23	Are "existing plans and programs" also referring to implementation of the BiOp RPAs? It would be useful to include a little more detail on some examples of which RPAs will be converting agricultural lands, including e.g. RPA I.6.1, upon which this CEQA conclusion is being drawn, especially given that it is a "significant" conclusion.	
	4.3.4-24	27-30	The language here seems to suggest that modeled electrical conductivity for Alt 4A is based on results using assumptions from Alt 4. This is particularly concerning as Alt 4 has a substantial amount of tidal restoration and a compliance point at Threemile slough which is further upstream than the compliance point for Alt 4A (Emmaton). If this is the case, then the conclusions for EC under Alt 4A are likely muted and reflect conditions which are substantially different than what is likely to occur within the Plan Area. A discussion of the difference, or reasons to why there is no difference, should be included.	
	4.3.4-30	16-19	*"The implementation of mitigation actions shall be focused on avoiding or minimizing those incremental effects attributable to implementation of Alternative 4A operations only. Mitigation actions to avoid or minimize the incremental EC effects attributable to climate change/sea level rise are not*	

			required because these changed conditions would occur with or without implementation of Alternative 4A." Operations of the SWP and CVP (including north Delta Diversions) will continue to need to meet D-1641 compliance standards even in the face of sea level rise. We have understood that operations will continue to manage for D-1641 compliance standards by adjusting diversions and reservoir releases as part of routine operations. Thus it is unclear how this mitigation measure would be implemented to the impacts would be less-than-significant.	
	4.3.4-30	24-36	CALSIM II, as described in 8.3.1.1, places EC compliance at Emmaton at the highest priority, and either achieves the objective, or decides that there is no feasible way to meet it. Please provide additional information on a mitigation measure such as WQ-11a will be able to have a meaningful affect at avoiding and minimizing impacts beyond what CALSIM II predicts, as the model should already incorporate management of diversions into its Artificial Neural Network.	
5	4.3.7-33	18	"AQUa-1b" should be "AQUA-1b".	
6	4.3.7-33	33	Here and on Line 37, the text appears to mistakenly refer to Delta Smelt, rather than Longfin Smelt.	
7	4.3.7-34	4	Here and at Line 8 there appear to be mistaken references to Delta Smelt, rather than Longfin Smelt.	
8	4.3.7-35	19	The meaning of sentence here would be clearer if the word "losses" was deleted after the word "entrainment".	
9	4.3.7-36	29	For added clarity consider finishing the sentence here with the phrase "...Incidental Take Permit issued by DFW."	
10	4.3.7-36	29	The sentence beginning here with "However", in combination with subsequent sentences, reads awkwardly and contains some redundancy. Consider revising this section of text to read something like: "However, at this	

			time, the best predictor of Longfin Smelt abundance is the statistical relationship between January through June X2 and Fall recruitment developed by Kimmerer et al. (2009), indicating that lower (farther downstream) X2 is associated with greater abundance. For the purposes of this impact assessment, the Kimmerer et al. (2009) relationship was used to determine how project-related changes in winter-spring X2 position might influence Longfin Smelt Fall recruitment. Consistent with the adaptive management and monitoring program described in Section 4.1, Alternative 4A would implement investigations to improve understanding of factors affecting Longfin Smelt abundance and better inform future project operations."	
11	4.3.7-38	12	It appears "has" should instead be "have".	
12	4.3.7-39	Table 11-4A-8	Footnote "1" in the table hints at something important relative to project impacts on Longfin Smelt. This species has declined severely and it is likely that CVP/SWP attenuation of winter-spring flows has contributed to this trend, and that the species can't sustain itself under existing operations. The effect of existing operations can be assessed using the X2/abundance relationship developed by Kimmerer et al. (2009), and such an assessment should be incorporated into cumulative effects discussions. The sustainability risk posed by existing operations argue strongly for avoidance of even small negative effects associated with the proposed project, like those associated with Alternative 4A(H3).	
	4.3.7-44	16	General Comment – Winter Run Chinook Salmon CDFW will continue to participate in CWF development of water operations criteria and analysis for Winter-run effects. This is currently happening under the development of the Section 7 BA, with an expectation that the Final EIR/EIS will be consistent with the results and determinations of those efforts. Should	

			the results of those efforts indicate that mitigation measures are necessary under CEQA, CDFW's expectation is that mitigation measures identified will be incorporated into the Final EIR/EIS.	
	4.3.7-50	24 and 36	Suggest deleting "as is currently being done" here and in the next paragraph.	
	4.3.7-60	44	It is unclear how the author can come to this conclusion without a discussion of existing operations and RPA actions intended to address significant impacts associated with the existing project operations (NAA_ELT). The BiOps found significant impacts under the NAA_ELT and require RPAs to avoid jeopardy. This project summarizes that it would then have additional impacts when compared to the NAA_ELT, yet concludes that no mitigation is required.	
	4.3.7-77	20	General Comment – Spring Run Chinook salmon CDFW will continue to participate in CWF development of water operations criteria and BA/BO and 2081 analysis for Spring Run Chinook salmon effects with the expectation that the Final EIR/EIS will be consistent with the results and determinations of those efforts. Should the results of that effort indicate that mitigation measures are necessary under CEQA, CDFW's expectation is that mitigation measures identified will be incorporated into the Final EIR/EIS.	
	4.3.7-124	28	General Comment – Fall/Late Fall Run Chinook salmon CDFW will continue to participate in CWF development of water operations criteria and BA/BO and 2081 analysis for Fall/Late Fall Run Chinook salmon effects with the expectation that the Final EIR/EIS will be consistent with the results and determinations of those efforts. Should the results of those efforts indicate that mitigation measures are necessary under CEQA, CDFW's expectation is that mitigation measures identified will be incorporated into the Final EIR/EIS. Fall/Late Fall Run Chinook salmon will not be included in the 2081 permit and	

			potential impacts must be mitigated through CEQA.	
	4.3.7-124		CDFW will continue to participate in CWF development of water operations criteria and BA/BO and 2081 analysis for Winter-run effects with the expectation that the Final EIR/EIS will be consistent with the results and determinations of those efforts. Should the results of those efforts indicate that mitigation measures are necessary under CEQA, CDFW's expectation is that mitigation measures identified will be incorporated into the Final EIR/EIS. Steelhead will not be included in the 2081 permit and potential impacts must be mitigated through CEQA.	
	4.3.7-124	37	In section 4.3.7, the potential effects on fall run/late fall run are stated to be the same as those described for Alternative 4, Impact AQUA-73. In section 3.3.8, it refers to section 4.3.7 for analysis of alternative 4A. Please include summary analysis of the effects of construction of water conveyance facilities on chinook salmon (fall/late fall run ESU) instead of referring to section 3.3.8 which then refers the reader back to section 4.3.7.	
	4.3.7-125	1	Chapter 11 of the Public Draft EIR/EIS states that the dual criteria for impact pile driving are 206 dB for the peak sound pressure level and 187 dB cumulative for fish larger than 2 grams. In the example of cofferdam construction, based on an attenuation rate of 4.5 dB per doubling of distance, cumulative exposures to pile driving sounds could result in injury of fish up to 858 meters from the source piles. This conclusion and potential for behavioral effects on fish should be included in the NEPA and CEQA effects as well.	
	4.3.7-135	5	A 17% or 19% increase in egg mortality for any given year is significant; this is especially true if that year type occurs over a string of years. That said, both the relative and the absolute value show an increase in egg mortality, which is not consistent with the conclusion that "*...this increase would not cause an overall effect to fall-run Chinook salmon*".	

			Additional explanation of how the author came to this conclusion should be included.	
	4.3.7-159	25	Confirm timing of species life stages analyzed for effects.	
	4.3.7-168	12	"Flows in the Sacramento River upstream of Red Bluff were examined for juvenile fall-run migrants during February through May." Confirm timing of species life stages analyzed for effects. Juvenile emigration at Red Bluff occurs between December through April (Martin et al. 2001)	
	4.3.7-168	16	Confirm timing of species life stages of temperature analysis effects determination.	
	4.3.7-183	1	*"Mitigation Measure AQUA-78d: Slightly adjust the timing and magnitude of Shasta, Folsom, and/or Oroville Reservoir releases, within all existing regulations and requirements, to ameliorate changes in instream flows that would cause an adverse effect to fall-run Chinook salmon."* The discussion needs to summarize which months and factors are driving these impacts, such as elevated temperatures or reduced flows in which months and identify in which ways reservoir releases will alleviate these impacts. The term 'slightly' should be more clearly defined as it is vague and subject to interpretation; alternatively the term could be deleted.	
	4.3.7-198, 199	26-28, 1-21	We assume spring-run is suitable for use as a proxy for juvenile steelhead. However, the number utilized for spring run is based on a bioenergetics model. Therefore, the percentage of population impacted given for spring run would not be valid for steelhead unless the population sizes are the same. Additionally, the CEQA conclusions in this section (and potentially others) should clearly discuss the interaction of the NDD and SDD impacts as they relate to predation. This would include	

			clarification of uncertainties associated with NDD impacts and the commitment to and implementation of performance standards.	
	4.3.7-211	14	Water year types must be treated independently in order to fully evaluate project effects and therefore cannot be combined to summarize the relative difference between mean flows. We recognize the challenges of presenting large quantities of data but we also recognize the need for extremes to be presented in addition to the means in order to fully evaluate the impacts.	
	4.3.7-211	34	"The effect of H3_ELT on mean flow and water temperature in the American River would be negligible although increased exceedances of the 56°F temperature threshold indicate a negative effect to steelhead spawning and egg incubation conditions." This sentence seems contradictory in that the effect is stated as negligible, yet exceedances indicate a negative effect to steelhead spawning and egg incubation conditions. 56 degrees is not an optimal egg incubation temperature. It is sub-optimal therefore any excursions past 56 are detrimental to year classes on a population level. Richter and Kolmes (2005) concluded that egg mortality increased as incubation temperatures exceeded 10°C (50°F) and substantial mortality may occur when temperatures exceed 13.5°C to 14.5°C (56.3°F to 58.1°F). Based on experience at hatcheries in the Central Valley, optimal incubation temperatures appear to be in the 7°C to 10°C (44.6°F to 50°F) range (Myrick and Cech 2004). California's steelhead management plan (McEwan and Jackson 1996) suggests a slightly higher temperature range (from 9°C to 11°C [48.2°F to 51.8°F]).	
	4.3.7-212	11	"Flows in the Mokelumne River at the Delta were examined during the January through April steelhead spawning and egg incubation period (Appendix 11C, *CALSIM II Model Results utilized in the Fish Analysis*). Mean flows under H3_ELT	

			throughout this period would be similar to flows under Existing Conditions, with minor exceptions." "Mean flows in the Sacramento River at Keswick and upstream of Red Bluff during January through April under H4_ELT would generally be similar to flows under Existing Conditions, with minor exceptions." Please explain these "minor exceptions."	
	4.3.7-212	31	Mean flows below Thermalito Afterbay under H4_ELT would be 36% lower than existing conditions during January and February and up to 509% greater during April, yet it is stated that there would be no differences in mean water temperature for any months or water year types at that location. This conclusion needs more clarification on why the lesser or greater flows with the accompaniment of lower storage in Oroville will have no effect on temperature.	
	4.3.7-253	34	"As noted for other salmonids such as winter-run Chinook salmon, similar or slightly lower survival than for Existing Conditions based on the water conveyance facilities operations would be offset by the inclusion of bypass flow criteria, real-time operational adjustments, *Environmental Commitment 6 Channel Margin Enhancement*, *Environmental Commitment 15 Localized Reduction of Predatory Fishes*, and *Environmental Commitment 16 Nonphysical Barriers*. Overall, it is concluded that the impact to steelhead would be less than significant and no mitigation would be required." An impact of an operation cannot be offset with the same operation. Please replace "offset" with "minimized". In regard to EC 15 please refer to Appendix D. Appendix D states that these projects would be implemented as experimental/pilot efforts because these efforts may not result in any measurable benefit.	

			The less significant conclusion is not supported, given the above discussion and the previous paragraph (lines 27-29) that states "Near-field effects of Alternative 4A NDD on Sacramento River steelhead related to impingement and predation associated with the intake structures could result in negative effects on juvenile migrating steelhead, although there is high uncertainty regarding overall effects." Please provide further detail (e.g. performance standard and criteria) on how the project actions will ensure impacts are less than significant.	
	4.3.7-258	32-34	It is problematic to refer to Delta smelt rationales when describing impacts of construction related activities for other species. The rationale for Delta smelt explains that because they are not likely to be in the area, or may have a few individuals present during the construction window, that impacts are essentially not significant. This will not be the case with juvenile splittail, as they will be present during the construction window.	
	4.3.7-331	28	There is no assessment of entrainment at the North Delta Facilities in this section for Pacific Lamprey.	
	4.3.7-331	38	The statement regarding entrainment under Alternative 4A not being adverse on lamprey is unsubstantiated. It is widely known that the effects of entrainment are still unknown on lamprey (Goodman and Reid 2012). While analysis conducted for 4A shows a reduction of entrainment, the remaining level of entrainment is not presented and may have a significant effect on lamprey populations.	
	4.3.7-332	20-23	As mentioned previously, due to the uncertainty surrounding entrainment effects on Pacific Lamprey, it is inappropriate to assume that impacts related to water operations are less than significant simply because operations under 4A are expected to reduce entrainment. Until the effects of entrainment are better understood at the population level for Pacific Lamprey, there cannot be any certainty to impacts related to entrainment.	

	4.3.7-352	17	There is no assessment of entrainment at the North Delta Facilities in this section for River Lamprey.	
	4.3.7-352	34-36	The same comments mentioned previously related to Pacific Lamprey also apply here for River Lamprey.	
	4.3.7 372-373		There are potentially significant but unpredictable landscape level trophic and fish population dynamic effects that could result from large scale larval entrainment of striped bass and potentially American shad. The increase in larval striped bass entrainment is estimated to be 220%.	
	4.3.7-306	22	The assessment of NPB effects provided here is highly speculative. If the NPB did impede adult sturgeon migration this could have a substantial impact on Green and White sturgeon populations. Given the risks, assessing NPB effects on adult sturgeon migration, particularly at the reduced CWF river flows, should be a high priority element of the CWF targeted research and monitoring program.	
	4.3.7-309	33-38	The paragraph beginning here discusses temperature effects in terms of percentages, and equates changes of less than 5% as being no difference. Given that 5% of 60 degrees F is 3 degrees, and this level of change could be consequential for some species and lifestages, the "5%" reference is a poor descriptor of change and benchmark for concern. Also, if the "big picture" change could be characterized generally warmer or colder, it would be helpful information.	
	4.3.7-311	311, Table 11-4A-108	This table shows substantial effects, particularly in May and June. It would be useful if an explanation was provided for the underlying causes (and the relative contribution of the causes) for the effects. It would be particularly useful to know this for the NAA_ELT vs. H3_ELT comparison, which has climate change factored out.	
	4.3.7-315	Table 11-4A-111	The substantial effects shown in the table for the Existing Conditions vs. H4_ELT comparison illustrate an important point. The point is that ELT conditions are predicted to be	

			substantially degraded from today's conditions, and sturgeon and other species populations substantially diminished as a result. The degraded ELT conditions are in addition to the greatly degraded conditions of today, much of which is attributable to ongoing effects of the CVP and SWP. This circumstance is important context for assessing the importance of predicted NAA_ELT vs. H3&4_ELT effects.	
	4.3.7-323	4	The discussion beginning here regarding flow exceedances references AFRP recommendations. It is important to note that the AFRP was developed outside the context of the CWF. To the extent flows below the NDDs contribute to sturgeon production, the CWF de-couples outflow from earlier outflow/production relationships.	
	4.3.7-325	16	Changes in through-Delta flows due to the CWF are briefly mentioned here. Reductions in flows between the NDDs and the Sacramento-San Joaquin river confluence is the most substantial CWF environmental effect sturgeon will be exposed to. Chapter 4 and/or Chapter 11 should present modelling results for, and discuss, this specific physical effect. At present the specific influence of flow in this river reach on sturgeon production is not known, but given the magnitude of the physical effect, the effect on sturgeon production should be a major focus of the "targeted research and monitoring" mentioned at Line 24. The effect of flow in this reach on spawning migration initiation and passage, the effect of flow on juvenile survival through the reach should be high priority research and monitoring program elements.	
	4.3.7-375	2-3	This is inconsistent with 4.3.4-26 lines 39-41 and 4.3.4-29 lines 29-30 which indicate potential adverse indirect effects on striped bass spawning in the Delta as opposed to river conditions. Please include similar discussion here.	
	4.3.7-375	6	It is unclear why flow and temperature on the Trinity River were evaluated for effects on striped bass. Generally, proofread for consistency for the Trinity	

			River to check to see if analysis is being presented for species that are not present in the Trinity River such as the Sacramento San Joaquin roach. This is confusing to the reader.	
	4.3.7-403	33	The CEQA conclusion for hardhead incorrectly refers to roach. Please proofread and ensure the analysis is correct as to roach.	
	4.3.7-426	38	Beginning here, the document presents a summary of the NEPA and CEQA effects of Impact AQUA-203 ("rearing") on the California Bay Shrimp (Crangon franciscorum). The conclusions are based on modelling results presented in Appendix A, Chapter 11, Table 11-mult-13 from application of Kimmerer (2009) findings regarding the relationship between X2/flow on CBS abundance. Although the model application approach is reasonable, conclusions in the NEPA Effects "not adverse", and the CEQA Effects "less than significant", appear arbitrary and poorly supported.	
	4.3.7-437	4	The document asserts that the differences in abundance between NAA_ELT and the Alternative 4A scenarios are "small", and thus are insubstantial. These assertions raise important questions about the biological effects of the allegedly small changes, and detailed differences in results between water year types and between scenarios 4A(H3) and 4A(H4). The available scientific information suggests that the abundance of CBS in the estuary has already been substantially reduced by the CVP and SWP through reductions in winter-spring flows, particularly in drier years. Thus the predicted incremental losses in abundance (ranging from 2% to 7% attributable 4A(H3) operations should be viewed as adverse and an unacceptable effect on a highly impaired population. The same "Kimmerer 2009" approach could and should be used to describe the environmental baseline for CVP/SWP operations on CBS abundance. The differences in abundances predicted for H3 and H4 are quite substantial (averaging 8%, and ranging from 3 to	

			18%), emphasizing the potential benefit of protecting winter-spring flows, which H3 fails to do. A close examination of Table 11-mult-13 also reveals important Year Type-related scenario effect differences. It is clear that the largest negative consequences (-7%) of 4A(H3) operations relative to NAA_ELT operations occur in years designated as Below Normal or Dry. This is an important observation, because years of this type are years when the population is already heavily impacted by low flows due to low precipitation and CVP/SWP operations. Given the importance of the CBS as a food source for other severely impaired key species (e.g. White Sturgeon), reductions in CBS biomass of the magnitude suggested by the modelling results in Table 11-mult-13 for proposed 4A(H3) operations should be viewed as a significant and adverse potential impact of the proposed project.	
	11-53; 11-61		Table 11-8 and 11-11 do not match for timing of fall run within the project area. Table 11-11 only shows fall run juveniles in May, but should also include the month of June as in Table 8.	
	11-141	22	The word "variable" should be plural.	
	11-141	29	"Murphy et al. 2011" is cited here and perhaps elsewhere, but not listed in the Chapter references.	
	Appendix D	General	It is not clear in this section which elements apply to HCP/NCCP Alternatives and which elements apply (or do not apply) to Alternative 4A. This section should clearly delineate for the reader which elements are included in 4A and which elements are not. Examples are: 1) Biological objectives in general 2) Inclusion of Fremont Weir operations in RTO as CM2 is a separate project under 4A. Integration of Yolo Bypass in general as a separate program under 4A 3) Adaptive Management and Adaptive Management Fund 4) Implementation Office 5) Environmental Flow Program	

			6) Monitoring and Research – Table 3.6-4 Table 3.6-5 Table 3.6.6 etc. include biological objectives explain how these would apply not apply to 4A. How would they be modified for 4A. 7) Annual Delta Water Operations Plan 8) Annual Progress Report 9) Annual Delta Water Operations Report 10) Five-Year Comprehensive Review/5 Year Implementation Plan 11) Twenty-five year Climate Change Comprehensive Review 12) Suspension or Revocation of the State Permit 13) Authorized Entity Group 14) Permit Oversight Group 15) Evaluating and determining whether the diversion structures are achieving performance standards for covered fishes over the course of operations To the extent that criteria on the Conveyance operations (e.g. see page D.3-19) and Environmental Commitments *are* carried forward into the 4A project description, please more clearly, comprehensively and consistently highlight in Section 4.1.2, since those are components of the Project Description and as currently formatted they are difficult to discover and parse out from the modifications to Alternative 4.	
	D.1-1		As an example of our general comment above on Appendix D, please clarify the alternatives to which Section D.1-1 applies. Projects that are referenced in this section that would serve as mitigation for other projects (for example, to meet mitigation requirements under the 2008/2009 biological opinions), or have funding-based restrictions against their use as mitigation, should not be proposed as mitigation for Alternative 4A. In addition, please note that Proposition 1 funds cannot be used to pay the costs of mitigation of Alternative 4A. Also, please note that in the development of BDCP, decisions had yet to be made about the appropriateness of specific projects for "credit" under that	

			plan.	
	D3.3-10	38-41	There is reference to a strong adaptive management and monitoring program to guide the experimental processes of CM 15 and CM 16. Please specify how this adaptive management and monitoring program is applicable to EC 15 and EC 16 under Alternative 4A.	
	D.3-11	6-8	There are striped bass that overwinter in the Cache Slough during fall. Striped bass upstream spawning migration timing overlaps with downstream juvenile migration timing for juvenile salmonids. Fremont Weir overtopping events have resulted in large numbers of adult striped bass observed during fish rescue operations in the Fremont Weir post flow reduction. It is likely that there will be striped bass that utilize this migration corridor if is made available via future Fremont Weir operations. Future evaluation of the Yolo Bypass as a migration corridor for striped bass should be evaluated under an adaptive management program to assess whether Sacramento River predation reduction is offset by increased YB predation and to what degree. Please consider adding this study to 3.4.1-5.	
	D.3.11	42-49	The updated Section 7 Hydro Analysis does not show appreciable difference in the proportion of flow into the interior Delta for the proposed action/Alternative 4A at Georgiana Slough which is linked in the analysis to the potential for entrainment. This section refers to Winter run then states the overall entrainment would be lower but it doesn't parse between rivers and runs of salmon. Please specify where/which runs contribute to the overall entrainment. Is it primarily a reduction in San Joaquin fall run due to less South Delta pumping or does it also refer to reduced entrainment of listed WR and SR which do not reside in the San Joaquin River system? IOS model shows overall decline in WR escapement due to reduced in-delta survival w/o increased	

			salvage benefit. Please update this section as new Section 7 analysis becomes available.	
	D.3.11	50-14 on next page	Cut and paste error. Two repeated paragraphs.	
	D.3-20	19-20	*"Operations will be managed at all times to avoid increasing the magnitude, frequency, or duration of flow reversals in Georgiana Slough above pre-NDD operations levels."* Please clarify this new language as it is subject to interpretation. Does this mean conditions existing today? Or does this mean conditions at the start of operations 15 years from now including climate change, increased demand, and sea level rise? Also please clarify if this means that there will be an increase in duration and frequency of periods when there is no net downstream flow i.e. conditions representing high slack tide.	
	D.3-20	33-34	*Upon approval of the BDCP a work group will be formed by the AMT to design and implement a research program to address the key uncertainties identified in Table 3.4.1-5.* How will this carry over to 4A?	
	D.3-21	4-7	*Bypass flow criteria can follow Table 3.4.1-2 alone if other measures developed through research can minimize effects on migrating covered fish past the north Delta diversions (e.g., floating surface structures diverting fish to the opposite side of the Sacramento River from the diversions).* Is this applicable to 4A? Bypass criteria are for through Delta survival and pulse protection is for survival at the screens. Diverting fish away from the screens will only serve to address impacts in the screen reach. Simply moving fish to the other side of the river by the intakes may not have an effect in downstream or through Delta survival. *"The objectives of the north Delta diversion bypass flow criteria include regulation of flows to 1) maintain fish*	

			screen sweeping velocities; 2) reduce upstream transport from downstream channels in the channels downstream of the intakes; 3) support salmonid and pelagic fish transport and migration to regions of suitable habitat; 4) reduce losses to predation downstream of the diversions; and 5) maintain or improve rearing habitat conditions in the north Delta."	
	D.3-23	Footnote 5	Please provide clarification on how RTO for Fremont Weir will be incorporated into Alt. 4A.	
	D.3.-27	Table 3.4.1-5	In general this table needs to be edited or a new table needs to be created to be consistent with 4A. First two lines refer to studies to determine if spring outflow and Fall X2 are needed in light of conservation measures to be implemented under HCP/NCCP. Because 4A has no conservation measures Spring Outflow and Fall X2 are necessary obviating the need for the studies. In addition, the Department proposes two studies for inclusion, either in the BDCP alternatives or in the new alternatives' adaptive management program. **Key Uncertainty #1**: The effect of reduced Sacramento River flow below the NDDs on adult sturgeon migration. Reduced flows have the potential to attenuate migration cues or degrade migration conditions. Proposed Research Activities: Intense monitoring of the timing and duration of adult sturgeon (Green and White) migration through the low flow reach (confluence to NDDs) at various flow rates. Monitoring to be accomplished using both acoustic tag and underwater (e.g. Didson or sonar technology) Time Frame: Beginning immediately, and extending through the first several years of NDD operation. **Key Uncertainty #2:** The effect of reduced southern Delta exports, and less	

			negative OMR and Qwest flows on Delta Smelt rearing and rearing habitat in the lower San Joaquin River. Proposed Research Activities: Part I: A thorough review of historical data to understand the factors that led to the collapse of juvenile Delta Smelt rearing in the lower San Joaquin River and southern Delta in the early 1970s, and the role through-Delta water conveyance played in that collapse. Part II: Intense monitoring of the annual movement of adult Delta Smelt into the lower San Joaquin River and central Delta, the extent of spawning in the region, the growth, survival, and distribution of subsequent juvenile smelt, and regional habitat conditions (i.e. flows, food density, temperature, turbidity, etc.). Time Frame: Immediate initiation of historical data review (Part I), with a product within 5 years that is utilized to develop hypotheses to be addressed during intense monitoring phase (Part II). Part II would begin 5 years prior to initiation of northern Delta diversions, and extend through the first five years of diversions (or until 2 Wet or Above Normal Year Types and 2 drier Year Types have been monitored. **Key Uncertainty #3:** The effect of reduced Sacramento River flow below the NDDs on juvenile salmonid outmigration. Reduced flows have the potential to reduce survival of outmigrating salmonids. Recent hydro analysis being conducted through the Section 7 process suggests that entrainment into the interior Delta may not decrease substantially under 4A. Thus, evaluation of bypass flows and subsequent adaptive management may be necessary to avoid impacts to listed runs of salmonids originating in the Sacramento River. Proposed Research Activities: Intense monitoring of the timing and duration of outmigration through the reduced flow reach to Chipps Island at various flow rates. Monitoring to be accomplished using both acoustic tag and other tagging studies. Beginning immediately, and	

			extending through the first several years of NDD operation.	
	D.3-34	35-38	Please provide references for these studies.	
	D.3-156	Table 3.6-1 5	Table 3.6-1 5. Monitoring Actions for Covered Fish Performance Focus Area It is unclear if this section needs to be edited, updated, or replaced for compatibility with 4A.	

References Cited

McEwan, D. and T.A. Jackson (1996). Steelhead Restoration and Management Plan for California. California Department of Fish and Wildlife, p. 244

Myrick, C.A., and J.J. Cech (2005). Effects of Temperature on the Growth, Food consumption, and Thermal Tolerance of Age-0 Nimbus-strain Steelhead. North American Journal of Aquaculture 67:324–330.

Richter, A., and S.A. Kolmes (2005). Maximum Temperature Limits for Chinook, Coho, and Chum Salmon, and Steelhead Trout in the Pacific Northwest. Reviews in Fisheries Science 13:23-49.

BDCP/California Water Fix RDEIR/SDEIS
Comment Form

Document: ***July 15, 2015 Public Draft—RDEIR/SDEIS Section 1***

Comment Source: *California Department of Fish and Wildlife*
Submittal Date: *October 30, 2015*

No.	Page	Line #	Comment	ICF Response
1	1-2	15	Please restate as the "Natural Community Conservation Planning Act"	
2	1-18	22	Take of species designated as a candidate species is also prohibited under Fish and Game Code, section 2085.	
3	1-19	1-11	This paraphrases the regulations and omits or modifies some provisions. Please either quote completely and accurately or note that this is the drafter's summary.	
4	1-19	16	Please restate as the "Natural Community Conservation Planning Act"	
5	1-19	20-22	Suggest using language from Fish and Game Code, section 2805(h), which defines a natural community conservation plan.	
6	1-20	1-4	CDFW does not agree that 14 C.C.R. section 1.72 defines "river, stream or lake" for purposes of Fish and Game Code section 1602. Specifically, the Fish and Game Commission did not have authority, and did not intend, to adopt 14. C.C.R. section 1.72 for that purpose. Instead, the available rulemaking records indicate the Commission adopted section 1.72 as part of its sport fishing regulations. CDFW has not relied on section 1.72 as a matter of law to define "stream" in Fish and Game Code section 1602. Please delete this sentence.	

BDCP/California Water Fix RDEIR/SDEIS
Comment Form

Document: ***July 15, 2015 Public Draft—Appendix 3B***

Comment Source: *California Department of Fish and Wildlife*
Submittal Date: *October 30, 2015*

No.	Page	Line #	Comment	ICF Response
			General	
1	multiple		Please reference the specific section where Resource Restoration and Protection Principles are defined.	
			Appendix 3B	
2	multiple		The crosswalk between Environmental Commitments (ECs) in Alt. 4A and Conservation Measures (CMs) in other alternatives is still not clear. Appendix 3B should clearly define which CM each of the numbered ECs refer to (for example, in table 3B-1, which only covers best management practices), and reference changes from the BDCP, either in Appendix D or as described in comment 4 below. Some of these definitions are buried in parentheses in sections describing CMs, but not all of them are defined this way (see comment 3 below).	
3	3B-154	4-5	The description of CM7 riparian restoration refers to EC 3 and EC 7 is not linked back to a CM. We suggest revising this section because CM3 was designed to protect natural communities, and CM7 was designed to restore riparian. It would make sense for EC 7 to be linked with CM 7 and for EC 3 to be linked with CM 3.	
4	multiple		Please include changes in acreage targets in the description of the link between each of the numbered ECs and corresponding CMs. For example, CM7 committed to 5,000 acres of restored riparian and EC 7 commits to restore/create 251 acres. Please also include these differences in acreages between the BDCP public draft and Alt 4A in the crosswalk table suggested in comment 2 above.	

BDCP/California Water Fix RDEIR/SDEIS
Comment Form

Document: ***July 15, 2015 Public Draft EIR/EIS—Appendix D***

Comment Source: *California Department of Fish and Wildlife*
Submittal Date: *October 30, 2015*

No.	Page	Line #	Comment	ICF Response
1	General comment		The effects analyses and CEQA conclusions associated with Alternative 4A (described in Section 4) include frequent references to both minimization measures unique to Alternative 4A, and AMMs developed in support of Alternative 4 and described in Appendix D of the REIR/EIR or the 2013 Public Draft. Occasionally the minimization measures described in Alt 4A are not consistent with the AMMs developed for Alternative 4, although both are referenced in an effects analysis. This overlap between Alternative 4 and 4A creates confusion regarding the specific measures that will be implemented to avoid and minimize impacts, and achieve a "less than significant impact." Please carefully review mitigation measures proposed under Alternative 4A and AMMs proposed under Alternative 4 to ensure that their requirements are consistent and complimentary. For example, if Alternative 4A is implemented, the final document should be constructed in such a way that the lead and responsible agencies can easily refer to specific sections to determine pre-project and construction minimization measures required for each special status species and associated mitigation commitments. In addition to this general comment, CDFW staff submitted several specific comments regarding potential conflicts between Alt 4A mitigation measures and Alt 4 AMMs in this table, and in comments to Section 4.3.8.	
2	D -93	13	Many of the bullet points within this section are too general to benefit all covered species. For example generally accepted relocation conditions and protocol (page D-94, lines 36-42) for California tiger salamander (CTS) are different from the standard conditions and protocol for giant garter snake. We suggest adding text to make it clear that the measures described in the 2081b permit prevail if/when they differ from these measures for species listed under CESA.	
3	D-101	19	We suggest adding text from Mitigation Measure	

			BIO-170 here to ensure consistency between AMM 11 and BIO-170. Specifically, please restate the requirements to establish a 250 ft buffer surrounding sensitive plant species occurrences when they occur in, or adjacent to, construction and can feasibly be avoided (see page 4.3.8-322 lines 24-36). Also restate the requirement to compensate for loss of individuals or occupied habitat of special-status plant species through the acquisition, protection, and subsequent management in perpetuity of other existing occurrences as a 2:1 ratio (see page 4.3.8-322 lines 37-45).	
4	D-103	9	Please check and revise AMM18 for consistency with the 2081b permit application.	
5	D.3-110	24-25	CDFW cannot authorize take of greater sandhill crane outside of the NCCPA context. As a result, CDFW review of the "Powerline Plan and Analysis" will not result in such approval and any take resulting from powerline construction in the implementation of Alternative 4A would be unlawful.	
6	D.3-115	17	We suggest deleting the word "marsh". Pre-project surveys for TRBL colonies should not be limited to marsh habitat. TRBL is known to establish nesting colonies in a wide range of habitat types including triticale fields, Himalayan blackberry stands, and mustard. Instead, add a sentence listing all possible habitat types that could be occupied by a TRBL nesting colony, as described in Section 4.3.8, to ensure that pre-project surveys have the highest possibility of identifying colonies in, or adjacent to, project activities.	
7	D.3-115	20-22	We suggest simplifying this reference to require consulting the UCD tricolored blackbird portal project which includes surveys outside Suisun Marsh that could overlap with project activities geographically.	
8	D.3-115	24-28	This AMM is too vague and doesn't require any avoidance of nesting colonies if the project proponent deems avoidance "infeasible". It is not clear what is meant by the following sentence, and how this confers protection to the species given the regulatory approach for the new preferred alternative: "AMMs will be incorporated into the project design and other portions of the application package prior to submission for coverage under the BDCP."	
9	D.3-115	33-36	Suggest changing this to a requirement for a "CDFW-approved biologist with tricolored	

			blackbird experience".	
10	D.3-115	39-41	Suggest rewording this sentence: "Exceptions to the minimum non-disturbance buffer distance will be evaluated and approved by wildlife agencies on a case by-case basis."	
11	D.3-124	13	We suggest replacing "any kind of vegetation types consistent with black rail use in the Delta". With "vegetation types consistent with black rail in the Delta, as determined by field evaluations conducted by a qualified biologist with experience surveying for black rail." The vegetation types consistent with black rail use in the Delta are not defined in the text.	
12	D.3-124	33	We suggest initiating sunset surveys 75 minutes before sunset. This time frame was suggested by CDFW experts based on field survey experience.	
13	D.3-124	35	Please revise to "4.5 National Geodetic Vertical Datum" The "4.5" was left out.	
14	D.3-126	2-3	Because of the buffer requirements below, this would be clearer if it stated that construction will be restricted to the greatest extent possible during the nesting season where nest sites occur within 0.25 miles of construction activities, unless an already existing suitable buffer between the construction activity and the nest site is identified by a CDFW-approved biologist.	
15	D.3-126	26-29	The first and second sentences appear to contradict each other. Can nest trees be removed during the breeding season, or not? We suggest prohibiting nest tree removal during the breeding season.	
16	D.3-126	32-34	The final plan may include additional measures that are specific to site conditions, but may also modify the measures following this paragraph. That intent was lost when the text was changed. Please also note that CDFW review or approval of the nesting bird monitoring and management plan, or other CDFW approvals required by this AMM, will not result in approval for take of white-tailed kite, and any take would be unlawful.	
17	D.3-127	33-34	Change references to CM7 and CM11 to Environmental Commitments. This comment applies throughout Appendix D.	
18	D.3-128	48-50	Is alfalfa high value foraging habitat for white-tailed kite? If so, please provide justification and citations. According to PRBO, kites foraged more efficiently over fallow bare ground than barley fields.	
19	D-231	7	There are other shorebirds that have similar foraging habits as black rail. This sentence should also refer to other shorebirds that feed on aquatic	

			invertebrates in tidal habitats.	
20	D-234	11	Change "mercury" to "selenium".	
21	D-239 and D-240	21-48 and 1-25	These bullets are currently listed under the subheading of prohibited uses. Please revise this section to ensure that it is clear which bullet points describe actions that are prohibited on CE properties and which bullets describe requirements of CEs (for example wildlife agency monitoring compliance with easement terms).	

From: Olson, Theresa <tolson@usbr.gov>
Sent: Wednesday, November 04, 2015 9:45 AM
To: BDCPcomments
Subject: Fwd: CDFW Comments on the BDCP/CWF July 2015 Public Draft RDEIR/SDEIS (10 attachments)
Attachments: RDEIR_EIS CDFW comments_Cover Memo.docx; RDEIR_EIS CDFW comments_Terrestrial.docx; RDEIR_EIS CDFW comments_unresolved.docx; RDEIR_EIS CDFW comments_Aquatic.docx; RDEIR_EIS CDFW comments_Summary of CEQA Conclusions.docx; RDEIR_EIS CDFW comments_Section 1.docx; RDEIR_EIS CDFW comments_Section 5.docx; RDEIR_EIS CDFW comments_Appendix3B.docx; RDEIR_EIS CDFW comments_AppendixA Section8.docx; RDEIR_EIS CDFW comments_AppendixD.docx

Here is DFW's
---------- Forwarded message ----------
From: **Dibble, Chad@Wildlife** <Chad.Dibble@wildlife.ca.gov>
Date: Fri, Oct 30, 2015 at 1:43 PM
Subject: CDFW Comments on the BDCP/CWF July 2015 Public Draft RDEIR/SDEIS (10 attachments)
To: "Enos, Cassandra@DWR" <Cassandra.Enos@water.ca.gov>, "mbanonis@usbr.gov" <mbanonis@usbr.gov>
Cc: "Jacobs, Brooke@Wildlife" <Brooke.Jacobs@wildlife.ca.gov>, "foresman.erin@epa.gov" <foresman.erin@epa.gov>, "Tucker, Michael@NOAA" <Michael.Tucker@noaa.gov>, "Ryan.Wulff@noaa.gov" <Ryan.Wulff@noaa.gov>, "Yee, Marcus@DWR" <Marcus.Yee@water.ca.gov>, Steve Centerwall <steve.centerwall@icfi.com>, "jennifer.pierre@icfi.com" <jennifer.pierre@icfi.com>, "michael.g.nepstad@usace.army.mil" <michael.g.nepstad@usace.army.mil>, "Rinek, Lori @fws.gov" <lori_rinek@fws.gov>, "cathy.marcinkevage@noaa.gov" <cathy.marcinkevage@noaa.gov>, "Olson, Theresa @usbr.gov" <tolson@usbr.gov>, "teresa.chan@icfi.com" <teresa.chan@icfi.com>, "jphillips@usbr.gov" <jphillips@usbr.gov>, "Redler, Yvette@noaa.gov" <Yvette.Redler@noaa.gov>, "Wilcox, Carl@Wildlife" <Carl.Wilcox@wildlife.ca.gov>, "mknecht@usbr.gov" <mknecht@usbr.gov>, "shelby.l.mendez@noaa.gov" <shelby.l.mendez@noaa.gov>, "Kundargi, Kenneth@Wildlife" <Kenneth.Kundargi@wildlife.ca.gov>, "barbara_beggs@fws.gov" <barbara_beggs@fws.gov>, "Bogdan, Kenneth M.@DWR" <Kenneth.Bogdan@water.ca.gov>, "Michael.s.jewell@usace.army.mil" <Michael.s.jewell@usace.army.mil>, "Rabin, Larry@fws.gov" <Larry_Rabin@fws.gov>, "Kim_S_Turner@fws.gov" <Kim_S_Turner@fws.gov>, "Little, Shannon@Wildlife" <Shannon.Little@wildlife.ca.gov>, "Starr, Jim@Wildlife" <Jim.Starr@wildlife.ca.gov>

Cassandra/Michelle,

Attached are CDFW's comments on the BDCP/CWF July 2015 Public Draft RDEIR/SDEIS. As mentioned in this morning's CEQA/NEPA meeting, the cover memo outlines the overall general concerns we have, while the comment forms (9 attachments) provide more specific detail separated by specific species and sections of the document. Should you have questions or concerns regarding these comments please feel free to contact me.

Thank you.

Chad Dibble

Environmental Program Manager

California Department of Fish and Wildlife – Water Branch

830 S. Street

Sacramento, CA 95811

(916) 445-1202 desk

(916) 206-9171 cell

--

Theresa Olson
Conservation and Conveyance Division Chief
Bay-Delta Office
Bureau of Reclamation
Office: (916) 414-2433
Cell (916) 261-4893