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Page Count	Page Printed #	Line #	Section #	Beginning of Paragraph	Referenced Text	Comment	Commenter Name	Response to Comment
3	3	14	1	Table 11-1b: Summary of Operations and Maintenance	Table 11-1b: Summary of Operations and Maintenance Impacts and Mitigation Measures for Aquatic Biological Resources	Highly questionable that a project of this magnitude results in less than significant impacts to all fish species with no mitigation. It will require significant effort to evaluate this material line by line, review references cited for accuracy, review appendices, and examine modeling inputs and verify results. This level of effort is beyond the scope of the timelines and due dates for this review.	CDFW	The analysis can be found in FISH-1 through FISH-20. For longfin smelt (FISH-9) there is an identified significance that is determined to be less than significant with mitigation.
3	3	14	1	Table 11-1b: Summary of Operations and Maintenance	Table 11-1b: Summary of Operations and Maintenance Impacts and Mitigation Measures for Aquatic Biological Resources	In regard to modeling results, we will note again that biological responses and impacts to proposed project occur on a daily time step. The use of layered modeling inputs resulting in monthly averaged results is not capable of detecting impacts that occur on a daily or short term time steps. While we acknowledge the need to evaluate impacts through this modeling approach due to the complexity of this proposed project, we consider these results as a lines of evidence but not definitive stand alone confirmation that significant impacts do or do not occur. Additionally, we consider magnitudes of impacts as determined by these modeling approaches to be evidence of general trends but also to be highly uncertain.	CDFW	Agreed, and we strive to use daily model outputs when they are available and when the modelers indicate that using them is appropriate. However, CALSIM is a monthly model designed for forecasting.
9	9	28	1	Researchers have studied the impacts of water expo	Researchers have studied the impacts of water export on Delta flow and velocity using hydrodynamic models. The Salmonid Scoping Team (SST) recently provided a summary of these effects (Salmonid Scoping Team 2017). The SST concluded that the effect of the SWP water exports on Delta flow and velocity varied as a function of distance from the facility as well as a function of export volume, total Delta inflow, and tidal action. While export rates had little effect on distributaries such as Georgiana Slough, a much greater effect exists in the south Delta, particularly in Old River near the CVP and SWP south Delta export facilities	This conclusion is based on one journal article in which the authors assert that water velocity affects fish therefore only velocity should be examined. Cavallo and Zeug 2015. The paper is more a hypothesis that is poorly supported at it's foundation. Interesting but hardly definitive.	CDFW	This type of information cannot be added at this time and would not materially change the impact analysis or the determination in this chapter; this information could be added prior to the final and would not affect an impact determination.
9	9	4	1	Water temperatures in the Delta follow a seasonal	Water temperatures in summer now approach or exceed the upper thermal tolerances (e.g., 20 degrees Celsius [°C] to 25°C for coldwater fish species such as salmonids and Delta-dependent species such as delta smelt [Hypomesus transpacificus]). This is especially true in parts of the south Delta and San Joaquin River, potentially restricting the distribution of these species and precluding previously important rearing areas (National Research Council 2012).	This is also true for Longfin Smelt which experience thermal stress at 20C. I suggest adding a reference to Jeffries et al. 2016. Effects of high temperatures on threatened estuarine fishes during periods of extreme drought. J Exp Biol 1 June 2016; 219 (11): 1705–1716.	CDFW	Reference added
11	11	10	1	More recent research (e.g., Hutton et al. 2015, Ma	Nevertheless, X2 remains a regulatory standard for maintenance of fall habitat for delta smelt (CWQCB D-1641).	X2 is used as a regulatory standard for water quality throughout the year and is also correlated with the abundance of other aquatic species including prey items for listed fish. Provide a more thorough discussion of regulations and ecological processes related to X2.	CDFW	Please refer to Chapter 6 for thorough discussion on X2.
12	12	11	1	Turbidity	Turbidity	Turbidity has been identified as an important habitat component for Delta Smelt. Provide some discussion on turbidity as a component of Delta Smelt habitat.	CDFW	Added discussion.

15	15	5	1	North Delta Fish Passage and Entrainment	North Delta Fish Passage and Entrainment	Adult salmonids also stray into the Colusa Basin Drain via the Cache Slough Complex. One of the terminus points of the Colusa Basin Drain connects to the Knights Landing Ridge Cut Slough which then connects to the eastern toe drain of the Yolo Bypass which eventually drains out to the Cache Slough Complex in the northern delta, near Liberty Island. Tidal influence from the delta enhances flows from the Yolo Bypass in the Cache Slough Complex, creating attraction flows that draw salmonids into the bypass and subsequently the Colusa Basin Drain. This occurs both during flooding and non-flooding of the Yolo Bypass. Gahan, G. , M. Healey, C. McKibbbin, H. Kubo and C. Purdy. Colusa Basin Drain and Wallace Weir Fish Trapping and Relocation Efforts. California Department of Fish and Wildlife; 1/23/2017.	CDFW	Added discussion of this in 'Fish Passage' section of Section 11.2.3.3.
15	15	23	1	Water quality can also affect fish passage in the	Water quality in the mainstem Sacramento River and its distributary sloughs can be poor at times during summer, creating conditions that may stress migrating fish or even impede migration	Lack of flow and poor water quality conditions also contribute to mixed attraction signals, decreased adult homing to natal spawning grounds, and increased stray rate.	CDFW	Spawning and rearing has been analyzed as part of the WUA analysis. Redd dewatering has also been analyzed. Text has been added to further discuss water quality and to make consistent with the surface water quality chapter (Chapter 6)
15	15	23	1	Water quality can also affect fish passage in the	Water quality in the mainstem Sacramento River and its distributary sloughs can be poor at times during summer, creating conditions that may stress migrating fish or even impede migration	Please expand this section to incorporate these issues	CDFW	Text has been added to further discuss water quality and to make consistent with the surface water quality chapter (Chapter 6)
16	16	25	1	The south Delta intake facilities include the SWP	can	Delta exports result in net negative flow in Old and Middle River under most conditions. It would be more accurate to say that Delta diversions create net reverse flows under most circumstances. I suggest providing a visualization or summary of Old and Middle River flow.	CDFW	Edit has been made
17	17	8	1	The life stage of the fish at which entrainment oc	The life stage of the fish at which entrainment occurs may be important for population dynamics	This section would benefit from discussion of indirect mortality of larval and juvenile osmerids in the south and central Delta.	CDFW	This type of information cannot be added at this time and would not materially change the impact analysis or the determination in this chapter; this information could be added prior to the final and would not affect an impact determination.
17	17	13	1	The life stage of the fish at which entrainment oc	larvae	Larval loss is not quantified and larvae may be more susceptible to entrainment due to the their inability to swim. Provide references or analysis that supports the assertion that loss of prespawning adults has greater consequence than the loss of the same number of larvae.	CDFW	Common knowledge, no citation needed; the sentence notes this as a possibility and not definitive ('may'); also added clarifier for why in sentence.
27	27	32	1	Studies continued in 2019 on the issue of food web	Studies continued in 2019 on the issue of food web enhancement in the Yolo Bypass.	It should be noted that water for these studies may be limited in years of drought, or limited to better than average water type years.	CDFW	Text added on page 11-30.
27	27	32	1	Studies continued in 2019 on the issue of food web	Studies continued in 2019 on the issue of food web enhancement in the Yolo Bypass.	CDFW recommends that more discussion on this is provided.	CDFW	Added cross-reference to Impact FISH-8 for delta smelt, where there is more discussion.

27	27	40	1	Studies continued in 2019 on the issue of food web	Analysis of the results is ongoing (Davis et al. 2019).	It should be noted that there are impacts to migrating adult fall-run Chinook as a result of this study and the increased flows through the Yolo Bypass during the late summer/early fall, and as a result, CDFW was tasked with capturing and relocating adults below Wallace Weir. Immediately after the pulse flow in 2018, 76 adult Chinook salmon were recovered downstream of Wallace Weir and in 2019, 340 salmon during and immediately after the pulse flow (CDFW unpublished data, 2018-2019). Similar actions due to increased flows from the CBD into the Yolo Bypass may have similar impacts to adult salmonids. Although there is a collection facility to capture these fish at Wallace Weir, this is still a migratory delay for salmonids as they perish in these waters due to poor water quality (high water temperatures, low D.O., etc.) without contributing to the spawning population unless relocated back to the Sacramento River.	CDFW	This potential effect is analyzed for fall-run Chinook salmon in Impact FISH-4.
27	27	40	1	Studies continued in 2019 on the issue of food web	Analysis of the results is ongoing (Davis et al. 2019).	CDFW recommends adding this information.	CDFW	Edit has been made
29	29	2	1	The Yolo Bypass Salmonid Habitat Restoration and F	the first winterflow events flows	"triggered by the first winter flows". Immigration is triggered by increases in flows, not necessarily increased flows occurring in winter; for instance a peak flow/emigration event may occur in spring.	CDFW	Clarified by adding in 'increased flow events'.
29	29	2	1	The Yolo Bypass Salmonid Habitat Restoration and F	the first winterflow events flows	CDFW recommends making this modification	CDFW	Section Edits have been made
29	29	16	1	Construction of the Yolo Bypass Salmonid Habitat R	completed in 2022	Please note that construction of the Big Notch Project also includes a supplemental fish passage structure along the western side of the Fremont Weir. It is uncertain whether the supplemental fish passage facility will be completed in 2022.	CDFW	Edit has been made.
31	31	28	1	The level of flow in the upper Sacramento River be	2019 NMFS BiOp	Not true. 90-5 stands as is. and is not and cannot be modified by the NMFS BO or the USBR PA.	CDFW	Edit has been made
32	32	17	1	Dredging, dams, levee construction, urban encroach	the	Describe the Sacramento River National Wildlife Area and associated restoration efforts.	CDFW	This type of information cannot be added at this time and would not materially change the impact analysis or the determination in this chapter; this information could be added prior to the final and would not affect an impact determination.
32	32	35	1	An abundance of deep, cold-water pools in the main	Sacramento River provide habitat for holding adult anadromous salmonids during all months of the year (Vogel 2011).	Due to decreased flows in the late summer months, temperatures in the lower Sacramento River commonly exceed thermal tolerances of chinook, and green sturgeon in June, July, August and September (CDEC data).	CDFW	New paragraphs have been added to intro. For additional Climate Change analysis see chapter 28.
35	35	21	1	Vogel (2011) suggested that the mainstem Sacrament	suggest that optimal habitats for rearing may be limited at higher flows (Vogel 2011).	The theme of less rearing habitat during higher flows needs more support.	CDFW	Revised to read "suggest that optimal habitats for rearing may be limited at high flows (Vogel 2011)." Note that this statement refers to the main channel. Please see Rearing WUA curves in Appendix 11K for more evidence.

35	35	21	1	Vogel (2011) suggested that the mainstem Sacrament	suggest that optimal habitats for rearing may be limited at higher flows (Vogel 2011).	CDFW suggests providing more than one study to support this statement	CDFW	Additional studies are currently being reviewed.
45	45	1	1	Folsom Reservoir has a capacity of approximately 9	and kokanee	Can not compete with Wakasagi. Wakasagi are a big driver of fish species composition due to their ability to out-compete juvenile fishes for food resources.	CDFW	Organization and level of detail is appropriate to current impact analysis structure
45	45	2	1	Lake Natoma is a regulating afterbay to the Folsom	Lake Natoma is regularly stocked with hatchery rainbow trout, although conditions are better suited for warm-water fish species (Bureau of Reclamation 2007).	Not anymore due to the potential for moving below Nimbus into the AR and genetic introgression with steelhead. Also this practice has been stopped so as not to allow a vector for pathogens such as IHN to move across lake natoma into the fish hatcheries and into the lower river.	CDFW	Deleted this sentence.
45	45	13	1	Reclamation currently operates the reservoir to me	006 Water Forum Lower American River Flow Management Standard (2006 FMS	This is incorrect. Suggest updating the entire paragraph to reflect current operations (2017 FMS).Minimum release requirements are the following:October: 500-1,500 cfsNovember-December: 500 - 2,000 cfsJanuary: 500 - 1,750 cfsFebruary-March: 500 - 1,750 cfsApril-June: 500 - 1,500 cfsJuly-September: 500 - 1,750 cfs	CDFW	Description of operation updated to reflect 2017 modified flow management standards
45	45	23	1	Reclamation currently operates the reservoir to me	006 Water Forum Lower American River Flow Management Standard (2006 FMS	Also confirm if the overall Calsim II modeling was conducted using out of date American River operations or current American River operations.	CDFW	Confirmed with Jacobs that the 2017 MFMS was incorporaed in CALSIM II.
45	45	32	1	Reclamation currently operates the reservoir to me	the minimum flow requirements (MFR) established in the 2006 Water Forum Lower American River Flow Management Standard (2006 FMS). The MFR establishes minimum flows, as measured by the total release at Nimbus Dam, which vary throughout the year in response to the hydrology of the Sacramento and American River Basins. The October 1 through December 31 MFR range between 800 and 2,000 cfs. The January 1 through Labor Day MFR range between 800 and 1,750 cfs. The post- Labor Day through September MFR range between 800 and 1,500 cfs. As a general rule, the MFR must equal or exceed 800 cfs year-round. Narrowly defined exceptions to this rule allow Nimbus releases to drop below 800 cfs to avoid depletion of water storage in Folsom Reservoir when dry or critical hydrologic conditions are forecasted to occur. These narrowly defined exceptions to the MFR are an important component of the 2006 Flow Management Standard.	This is all outdated. In reality Reclamation operates Folsom to meet system wide needs primarily compliance with D-1641 but also to meet exports and other purposes like USACE flood control requirements. Reclamation rarely operates Folsom at the minimum flow requirements though will use the FMS as a backstop for minimum flows.	CDFW	updated to reflect 2017 modified flow management standards and 2019 BO
46	46	11	1	“The proposed action is consistent with the approa	years	This is not correct. Exhibit C of the 2017 FMS the water temperature objectives are 65 degrees or less and Reclamation uses an iterative temperature matrix to achieve the lowest possible temperature. To be met with current measures including power bypass now and not when pending structural improvements are finished. It may be a decade or more before those are done. There is also an October 15 target of 60F and a 56F target Nov 1, along with bypass of power generation	CDFW	Languaged replaced with updated references to 2019 BA and ARWA 2017 modified flow standards

46	46	35	1	Beginning in 2008, in coordination with USFWS and	thereby preventingminimizing the dewatering of salmonid redds in a historically important spawning and rearing area if flows dropped.	This gravel has been rearranged since 2010 during high flow events and it no longer functions in this capacity.	CDFW	This type of information cannot be added at this time and would not materially change the impact analysis or the determination in this chapter; this information could be added prior to the final and would not affect an impact determination.
47	47	25	1	Hatcheries	Hatcheries	The Mokelumne River Hatchery is not listed; it should be noted that any project actions that affect flows in the lower Sacramento River, or the Prospect Slough via the Colusa Basin Drain can influence stray rates of adult Chinook salmon. Proportionally high numbers of Mokelumne River Hatchery origin fall-run Chinook have been observed in the Ridge Cut and Colusa Basin Drain and are worth consideration.	CDFW	This type of information cannot be added at this time and would not materially change the impact analysis or the determination in this chapter; this information could be added prior to the final and would not affect an impact determination.
49	49	9	1	Several predatory fish are present in the lower Am	including black basses (largemouth bass, smallmouth bass, and spotted bass) and striped bass,	Black bass are minimally present and in the lower warmer reaches of the river and striped bass density is variable from minimally present to seasonally present.	CDFW	Revised to: "Several predatory fish are variably present in the lower American River…."
49	49	15	1	Several predatory fish are present in the lower Am	Additionally, isolation of redds in side channels resulting from fluctuations in Folsom Reservoir releases may increase predation of emergent fry	There are not really striped bass and black bass in these side channels	CDFW	This type of information cannot be added at this time and would not materially change the impact analysis or the determination in this chapter; this information could be added prior to the final and would not affect an impact determination.
51	51	27	1	Funks Creek, a tributary to Stone Corral Creek, ha	There are no requirements to maintain flows in Funks Creek below Funks Reservoir, but seepage through the dam gates allow a few cfs, which maintains flow in Funks Creek	Seepage is fine if it maintains the fishery, however the fishery is actually protected; Fish and Game code (article 5937) states: The owner of any dam shall allow sufficient water at all times to pass though a fish way, or in the absence of a fishway, allow sufficient water to pass over around or through the dam, to keep in good condition any fish that may exist below the dam....."	CDFW	Changed to "Fish and Game code 5937 requirements maintain sufficient flows in Funks Creek below Funks Reservoir to keep in good condition fish that reside below the dam."
53	53	5	1	The U.S. Geological Survey (USGS) collected 25 yea	zero flow	*No measurable flow, which does not necessarily mean there is no flow at all	CDFW	Text updated
53	53	21	1	Avg	Avg	Would be good to present both the mean and median to better characterize flows.	CDFW	CALSIM II outputs are not true monthly means (i.e., not computed from individual data points, such as days), but are expressions of simulated operating and hydrologic, etc. conditions averaged over a month.
54	54	6	1	The impact assessment relies primarily on modeled	Changes in flow exceeding 10 percent were considered to represent a potentially meaningful difference	Consider looking at changes in flow on a daily timestep- 10% change on a monthly timestep should be justified with more context to explain its application.	CDFW	Edits have been made to clarity use of timestep
58	58	13	3	During the period when these reservoirs are therma	increase reservoir storage	Is this really an increase, or a change in how water is stored and released?	CDFW	Changed language to reflect the comment
58	58	15	3	During the period when these reservoirs are therma	Implementation of the cooperative operations agreements with Reclamation and DWR could increase reservoir storage during this period; implementation could also increase the reservoir's cold-water pool volume, thereby increasing the quantity of habitat available to cold-water fish species during these months.	Expand to describe what changes in operations/agreements could result in the meaningful increases analyzed, references supporting suggested fish use would also be helpful.	CDFW	Description of what a meaningful change is is provided in App 11B

72	72	9	3	Tisdale Weir rotary screw traps (Figure WR_TWRST,	Tisdale Weir rotary screw traps	Please confirm with CDFW on accurate characterization of passage timing at Tisdale RSTs. Although data on SacPAS may indicate the narrative, sampling dates have changed since 2016. It is also not possible for passage at Tisdale to occur later than Knights Landing downstream. It is important to understand the limitations of an RST monitoring program when using such to characterize passage. Another solution would be to change the narrative to reflect the majority of the passage period. This currently reads as though it is encompassing the entirety of the passage period.	CDFW	This type of information cannot be added at this time and would not materially change the impact analysis or the determination in this chapter; this information could be added prior to the final and would not affect an impact determination.
72	72	9	3	Tisdale Weir rotary screw traps (Figure WR_TWRST,	Tisdale Weir rotary screw traps	CDFW recommends that the authors include sampling dates for each location. Sampling protocols state that when water temperatures exceed thresholds for safe handling of juveniles, sampling will cease. Sampling is not ended because fish are not present. CDFW recommends restructuring this section to accurately reflect the data and the protocols associated with collecting these data.	CDFW	This information does not appear to be available at the summary site used to generate the plots, so a footnote was added to Chapter 11.
72	72	14	3	Tisdale Weir rotary screw traps (Figure WR_TWRST,	Tisdale Weir rotary screw traps (Figure WR_TWRST, Appendix 11A): Passage begins in early September and lasts until the first of May. The passage of winter-run chinook at this weir is very dynamic: the first half (50%) of the run passes anywhere from the first of November to the first of March, whereas the main portion (90%) begins to pass the weir from early October to late November and ends anywhere from the end of December to early March.	It should be noted that data from Tisdale is brief in scale when compared to the other data sets. Trap capture efficiency or confidence intervals should be included for the individual sampling sites for better perspective.	CDFW	This type of information cannot be added at this time and would not materially change the impact analysis or the determination in this chapter; this information could be added prior to the final and would not affect an impact determination.
72	72	16	3	Knights Landing rotary screw traps (Figure WR_KLRS	rarely	Analysis for this report was earlier stated as using KL trap data from 2008-2018, many of those years are drought years. It should be noted that the KL study has been in operation since 1996 and other seasons data may suggest emigration at Knight Landing can occur in August.	CDFW	This type of information cannot be added at this time and would not materially change the impact analysis or the determination in this chapter; this information could be added prior to the final and would not affect an impact determination.
80	80	8	3	The Hamilton City intake is on an oxbow of the Sac	(Cavallo et al. 2015)	Not in the bibliography. If this is the paper I think it is then it is out of context in this paragraph. Please provide the appropriate reference.	CDFW	Missing reference will be added to next draft.
82	82	25	3	Entrainment Through Screens	Entrainment Through Screens	In addition to the studies described in the following section, NMFS and CDFW have fish screen criteria that may be referenced here.	CDFW	Added citation of the criteria used for the Freeport Intake monitoring plan.
105	105	8	5	At very high flows, river flow may overtop the fis	so that overtopping would be rare	Add reference or data to support claim.	CDFW	Common knowledge, no citation needed
105	105	11	5	At very high flows, river flow may overtop the fis	suggesting that only a limited portion of juvenile winter-run Chinook salmon in the upper water column may be susceptible	Please expand explanation/justification- seems speculative at the moment.	CDFW	Added cross-reference to earlier section discussing vertical distribution.
110	110	30	5	The Martin and Anderson models estimate water temp	Anderson models	Not peer reviewed and we consider this an untested hypothesis with high risk if it were to be implemented as a management strategy.	CDFW	No management strategy is proposed. The model is only being used as an analytical tool

111	111	33	5	The percentage of redds in the Sacramento River lo	A single relationship for flows was developed for the entire river section, but the flows used to estimate redd dewatering in the current analysis were those that best matched the longitudinal distribution of the redds of the different salmon runs in the river as estimated from aerial redd surveys conducted by CDFW from 2003 through 2019	Please, expand- what were the flows used to estimate dewatering- where can we find them? How do these flows differ from those developed as a single relationship to the entire river section (i.e., quantified differences)?	CDFW	The flows used to develop the single relationship were measured over the entire reach of the river section, but those that matched the spawning distribution of the salmon race considered are most appropriate for assessing dewatering conditions conditions for that race. If CDFW would like to see the flow data used for the three locations (Keswick, ds of Clear Creek, and Battle Creek), a request needs to be made with the Sites Authority. Note that USRDOM outputs were used for thjis analysis, which results in large data sets.
112	112	20	5	Results are presented using the grand mean percent	Expressing changes of small values as percent changes may result in very large values that may be misleading.	Please, clarify, as this statement does not make sense.	CDFW	See example provided in Appendix 11N, Section 3.1 *Redd Dewatering*
112	112	25	5	The results for winter-run show few large changes	The largest reductions in redd dewatering occur under Alternative 3 during the spawning and incubation period for eggs spawned in June of Above Normal and Below Normal Water Years and in July of Above Normal Water Years. Changes for most months and water year types under all the alternatives are less than 2%.	Why highlight reductions in redd dewatering and not increases in redd dewatering?	CDFW	Both reductions and increases are highlighted.
113	113	3	5	The USFWS determined sSpawning WUA for winter-run	To estimate changes in winter-run spawning WUA that would result from Alternatives 1–3, the winter-run flow versus spawning habitat WUA relationship developed for each of the three segments was usedused with mean monthly CALSIM II flows	Generally, median monthly flows (the 50% exceedance flow) are used to better represent the true average flow expected to be present each month. As mean is the average, it can be influenced by outliers and may not reflect expected conditions.	CDFW	Outliers are rare for these data so mean and median are likely similar.
116	116	15	5	All the means for juvenile rearing WUA differ by <	All the means for fry rearing WUA differ by less than 5% between Alternatives 1, 2, and –3 and the NAA in Segments 5 and 4 (Table 11K-24 and Table 11K-25). In Segment 6, three of the means under Alternative 1-3 are >5% lower than the NAA mean (Table 11K-23). The largest reduction is 7% for October of Below Normal Water Years under Alternative 3. These results indicate that Alternative 3 would have a moderate effect on rearing habitat for winter-run fry in the Sacramento River during October of Below Normal Water Years and the other alternatives would have little effect. All the means for juvenile rearing WUA differ by <5% between Alternatives 1, 2, and –3 and the NAA, except for a 5% increase in Segment 6 for October of Critically Dry Water Years under Alternative 3 and a 5% reduction in Segment 4 for September of Above Normal Water Years under Alternative 3 (Table 11K-26 and Table 11K-28). These results indicate that Alternatives 1, 2, and –3 would have minor effects on rearing habitat for winter-run juveniles in the Sacramento River.	If the trend is lower rearing WUA then the actual number is probably higher since this uses monthly average flows differences.	CDFW	Some of the individual values from which the monthly average are computed are higher and some are lower.
117	117	2	5	All three river locations show the largest differe	All three river locations show the largest differences between Alternatives 1, 2, and –3 and the NAA for the cohorts of fry that emerged during the months of April, May, June, and July	This section seems pretty important- perhaps expand to include the differences (numerically) and/or add in details to better describe the potential impacts/improvements such as percentages, locations, etc.	CDFW	Numerical differences are provided in Table 11N-28 through Table 11N-30 of Appendix 11N.

117	117	31	5	Results by life stage and mortality source are rep	99% lower to 90% higher	These are huge ranges, can more detail be described as to the reasoning/uncertainty? Can the model be improved to better forecast mortality· I'm not sure how much can be determined based on these results.	CDFW	App 11H includes additional model background. This model can't practicably be improved related to this effort
118	118	10	5	Overall, SALMOD results show a minimal beneficial	Overall, SALMOD results show a minimal beneficial effect of each alternative on winter-run Chinook salmon mortality and potential production in the Sacramento River.	So no environmental benefit either?	CDFW	Correct
118	118	11	5	Floodplain Inundation and Access	Floodplain Inundation and Access	This section (and similar sections for other relevant species) lacks a discussion/analysis on the potential effects of reduced flows over Fremont Weir on adult fish passage. It is important to remember that the objectives of the Fremont Weir Big Notch Project are two-fold: 1. To increase the availability of juvenile rearing habitat, and 2. To improve migratory delays and loss of fish at Fremont Weir. Therefore, if you are claiming that the Fremont Weir notch protections were developed to avoid impacts to the Big Notch Project, then the potential impacts to adult fish passage must also be addressed.	CDFW	Added a new discussion "Adult Upstream Passage at Fremont Weir" in section on Floodplain Inundation and Access.
118	118	19	5	As described in Chapter 2, Fremont Weir notch prot	As described in Chapter 2, Fremont Weir notch protections are included in the diversion criteria to reduce changes to spill frequency and duration under Alternatives 1, 2, and –3 relative to existing conditions. In particular, these criteria avoid impacts on Reclamation's ability to implement its obligations in the 2019 NMFS ROC on LTO Biological Opinion to implement the Yolo Bypass Restoration Salmonid Habitat Restoration and Fish Passage Implementation Plan and provide 17,000+ acres of inundation in the Yolo Bypass from December to April (NMFS 2019). As such, Alternatives 1, 2, and –3 would have limited potential for negative effects to Yolo Bypass floodplain inundation and access for winter-run Chinook salmon.	This paragraph makes it seem as if protecting operations of the Big Notch Project are the same as protecting the larger process of floodplain inundation in the Yolo Bypass and access for juvenile salmonids. It is important to note that the proposed Fremont Weir notch protections do not provide protections when flows through the Big Notch are >6,000 cfs (the maximum operational flow of the Big Notch). This is potentially an issue as the greatest floodplain benefits and best fish access to the Yolo Bypass occurs when Fremont Weir overtops. Recent research by Pope et al. (2021) found that 80% of acoustically tagged fish from a release group released during peak flooding ended up in the Yolo Bypass, compared to less than 5% released either before or after the peak flood. The authors suggest that there is a threshold in flow or stage height beyond which a pronounced change in entrainment probability occurs. This may be explained in part by a complementary study that showed that as discharge over Fremont Weir increased, mean cross-sectional fish position moved closer to the weir (Blake et al. 2017). Therefore, Pope et al. (2021) suggests that at certain overtopping flow levels, despite there being a large fraction of river flow entering the Yolo Bypass, Chinook salmon are not close enough to Fremont Weir to become entrained over the weir. Given the difference in fish access to the Yolo Bypass during peak and non-peak flow it is prudent to ensure that proposed project operations do not impact peak Fremont Weir overtopping events and thus juvenile entrainment into the Yolo Bypass.	CDFW	Although the paragraph describes the Fremont Weir notch protections in the context of Reclamation's ability to implement its BiOp obligations, the subsequent analysis describes changes relevant to juvenile salmonids. In addition to Fremont Weir notch protections, pulse protection operations of the alternatives would also help to minimize impacts to peak Fremont Weir overtopping events and thus juvenile entrainment into the Yolo Bypass mentioned by the commenter.
118	118	21	5	As described further in Appendix 11M, this analysi	Appendix 11M	Please provide Appendix 11M for review.	CDFW	Appendix 11M was provided on a later date
118	118	26	5	As described further in Appendix 11M, this analysi	As described further in Appendix 11M, this analysis examined the frequency and duration of spills over the Fremont Weir as well as the total flows in the Yolo Bypass that would provide rearing habitat for salmonids. The number of years in the 82-year simulation period where there was at least one Fremont Weir spill of varying amounts (0; 2,000; 4,000; 6,000; 8,000; and 10,000 cfs) with a duration of 0-10 days, 11-20 days, 21-30 days, 31 to 45 days, and greater than 45 days were calculated from daily results.	Crosswalk with DWR Yolo Bypass project information	CDFW	Appendix 11M has been refined, as well as associated text in chapter 11.

119	119	6	5	Takata et al. (2017) examined various juvenile Chi	coded-wire-tagged juvenile Chinook salmon	Hatchery	CDFW	"hatchery" added
119	119	8	5	Takata et al. (2017) examined various juvenile Chi	Daily-downscaled CalSim	Please, elaborate on what constitutes daily-downscaled CalSim modeling. Were monthly flows in CalSim simply divided by days of the month?	CDFW	Appendix M includes the following: "Daily Fremont Weir spill output from CalSim II was used in this analysis. Daily spill outputs from CalSim II were based on a monthly-to-daily flow mapping technique applied in the model for a better estimate of the spills at the Fremont Weir and the Sacramento Weir. The technique applies historical daily patterns, based on the hydrology of the year, to transform the monthly volumes into daily flows. Daily patterns are “borrowed” from the observed DAYFLOW period of 1956-2008. In all cases, the monthly volumes are preserved between the daily and monthly flows. It is important to note that this daily mapping approach does not in any way represent the flows resulting from operational responses on a daily time step." - Marin had asked me to contact Jacobs for explanation, which I will do] [Sophie: I contacted Chad at Jacobs and he provided explanation of new mthods. I have revised CH. 11 and cited Appendix 5A for the explanation] Marin: Added footnote to Table 11-11 cross-referencing where downscaling is described in Appendix 11M.
119	119	10	5	Takata et al. (2017) examined various juvenile Chi	Daily-downscaled CalSim modeling suggests that operations under Alternatives 1–3 may reduce Yolo Bypass inundation in January–June by approximately one day across most water year types	Please provide this data for review.	CDFW	The request will be forwarded to the Sites Authority.
119	119	16	5	Takata et al. (2017) examined various juvenile Chi	the small differences in Yolo Bypass inundation indicated by the CalSim modeling suggest that the alternatives are limited in their potential for negative effects to juvenile Chinook salmon, including winter-run.	CalSim is not the best model to use when analyzing impacts to daily changes in flow. This coupled with the fact that the assessment seems to have averaged all of the data by water year types, in presenting its conclusions, reduces confidence in the analysis. At a minimum, displaying the maximum number of days that the project would reduce Yolo Bypass inundation, under each water year type, would be useful.	CDFW	CALSIM monthly time-step data was not used in the analysis. Rather the CALSIM montly output was modified using daily variations in hydrologic and other conditions to simulate daily time-step flows. Providing the mean days of inundation data by water year type certainly does not provide the ful range of values, but the mean includes both years with fewer and years with more frequent days of inundation. We believe the average conditions adequately represent the likely effect on the rearing fish.
119	119	16	5	Takata et al. (2017) examined various juvenile Chi	the small differences in Yolo Bypass inundation indicated by the CalSim modeling suggest that the alternatives are limited in their potential for negative effects to juvenile Chinook salmon, including winter-run.	Suggest is the operative word in this conclusion. We will need to operationalize these modeling results in the subsequent ITP conditions to ensure there is no to minimal effect on Yolo inundation.	CDFW	Under real operations, Reclamation would operate according this adjustment to minimize effects on yolo inundation.
119	119	18	5	Table yoloind1. Mean Annual Number of Days in Janu	Table yoloind1. Mean Annual Number of Days in January–June With Yolo Bypass Floodplain Inundation by Alternative and Water Year Type.	Without being able to see the raw data that was used to develop this table, it is difficult to understand how variable these trends might be within water year types. Please include standard deviation so we can get a better idea of the variability.	CDFW	Please see Appendix 11M for more information.

120	120	13	5	Diversions from the Sacramento River to Sites Rese	Although the modeling focused on the spring period, it is hypothesized that similar relationships may occur during other months of juvenile salmon migration (Michel, pers. comm.).	There is new data every year that is available, but not yet published that should be considered	CDFW	This type of information cannot be added at this time and would not materially change the impact analysis or the determination in this chapter; this information could be added prior to the final and would not affect an impact determination.
120	120	33	5	Sites Reservoir releases could temporally overlap	suggest juveniles only occur downstream of the discharge location at approximately River Mile 100 from November onwards (Figure WR_DJFMP).	Conflicts with RST data at KL which shows presence in September.	CDFW	This type of information cannot be added at this time and would not materially change the impact analysis or the determination in this chapter; this information could be added prior to the final and would not affect an impact determination.
120	120	37	5	Sites Reservoir releases into the Yolo Bypass via	Adults would not be present in the Yolo Bypass during August through October (Appendix 11A, Table 11A-2)	However, there is an overlap with fall run chinook and steelhead.	CDFW	Agreed. However, this was found in the winter-run analysis section.
121	121	4	5	As discussed in Chapter 6, Surface Water Quality,	As discussed in Chapter 6, Surface Water Quality, the effect of Alternatives 1A, 1B, 2, and 3 on water temperatures at the Sites Reservoir release site in the Sacramento River would be relatively small with the releases generally tending to cause a slight reduction in water temperature (Tables 6-12a through 6-12d).	Please, see CDFW's comments in chapter 6.	CDFW	See responses in Ch 6
121	121	19	5	Table CBD_temp. Mean and Median of Estimated Chang		Please, list the actual temperature as well.	CDFW	The outputs from the analysis are only in terms of change from "without project" conditions
123	123	21	5	Visual observation of exceedance plots and differe	Visual observation of exceedance plots and differences in modeled mean monthly temperatures by water year type between alternatives and the NAA in the American River at Watt Ave indicates that water temperatures would be predominantly similar among alternatives during the the period of winter-run Chinook salmon non-natal rearing	Earlier in the document it lists outdated flow requirements. We need to know what was used in the modeling. Obsolete or current operations?	CDFW	Please refer to appendices
128	128	27	5	IOS	IOS	IOS is showing an impact to the bottom line which is returning adult females.	CDFW	The IOS analysis shows the differences are limited.
130	130	24	5	OBAN modeling results are discussed in detail in A	OBAN modeling results are discussed in detail in Appendix 11I.	Appendix 11I was not provided. However, because OBAN doesn't include flow survival relationships and the effects of Sites Diversions, OBAN really doesn't have any value here because flow and diversions pretty much are the main impacts of this project.	CDFW	The appendix is now available.
130	130	34	5	In-Delta and upstream operational impacts of Alter	Alternatives 1–3 would be less than significant.	As stated above, IOS indicates a decrease in Mean Female Adult Winter-Run Chinook Salmon Escapement by Water Year Type by up to 5% in certain water year types under certain alternatives. Please describe how a decrease of 5% is considered less than significant. Further minimization measures may be needed to address this impact.	CDFW	This was just noting that the side channel analysis was outstanding; the analyses describe changes in the various rearing habitats.
130	130	36	5	[Note to Reviewers: This conclusion is preliminary	[Note to Reviewers: This conclusion is preliminary and is dependent on an upcoming side-channel analysis]	Winter-run rear in more than side channels.	CDFW	Section has been updated

131	131	4	5	In-Delta and upstream operational impacts of Alter	In-Delta and upstream operational impacts of Alternatives 1-3 on winter-run Chinook salmon would be negligible. Impacts associated with operations of Alternatives 1–3 would be less than significant. [Note to Reviewers: This conclusion is preliminary and is dependent on an upcoming side-channel analysis] NEPA Conclusion for Alternatives 1, 2, and 3 In-Delta and upstream operational impacts of Alternatives 1-3 on winter-run Chinook salmon would be negligible. Impacts associated with operations of Alternatives 1–3 would be less than significant.	These analyses don't really evaluate impacts on juvenile rearing and migration survival which would be the primary impacts on winter-run for when this project is diverting. Side channel analysis is useful, but won't be definitive because winter-run use other habitats for rearing besides side channel habitat. We will also need to examine the bottleneck effect which is the overall impact of the lowest flow experienced by the river, not 82 year averages of monthly flows.	CDFW	Juvenile rearing habitat is examined in various sections, such as Rearing Habitat Weighted Usable Area and Floodplain Inundation and Access. Migration survival is examined in the Migration Flow-Survival and Juvenile Through-Delta Survival sections, for example. The lowest flow experienced by the river would not be expected to coincide with diversions because of the proposed diversion criteria described in Chapter 2.
143	143	36	7	Loss of redds to scouring or entombment occurs whe	A flow of 40,000 cfs was selected as the scour flow threshold for the Sacramento River based on estimates in the relevant literature	Please, add references (i.e., what literature).	CDFW	References are provided in Table 11N-10, as indicated.
145	145	15	7	Spawning habitat for spring-run Chinook salmon was	As noted by USFWS (2003a), the however, there is some uncertainty to using the validity of using the fall-run WUA curves to characterize spring-run spawning habitat is uncertain	Please, add in justification for their use.	CDFW	Justification is the same as that provided in USFWS 2003a, spawning periods are similar and there are no other good options.
146	146	30	7	Because some rearing by spring-run juveniles occur	Because some rearing by spring-run juveniles occurs throughout the year, all months are included in the spring-run juvenile rearing WUA analysis (Table 11K-32 through Table 11K-34). In Segment 6, a few of the means for Alternatives 1, 2, and –3 differ from the NAA means by more than 5%, and all these differences result from increased rearing WUA under Alternatives 1–3 (Table 11K-32). Four of the five increases occur under Alternative 3. The pattern for >5% difference in Segment 5 is similar to that in Segment 6, but in Segment 5 all of the differences occur under Alternative 3 and one of them (September of above normal years) results from reduced rearing WUA under Alternative 3 (Table 11K-33). Segment 4 has many more large differences in juvenile rearing WUA than either of the other segments (Table 11K-34). Almost all these differences occur under Alternatives 1B and 3 and include some relatively large differences (including a 17% increase for Alternative 3 in August of above normal years and 17% reduction for Alternative 3 in September of above normal years). Increases >5% in rearing WUA outnumber reductions >5%, with all increases occurring in the spring and summer months and all reductions occurring in the fall (Table 11K-34).	All sections seem to have a reduction in rearing habitat yet there is no significant impact of any fish species.	CDFW	See Tables 11K-29 through 11K-35 in Appendix 11K. There are more instances of large increases in rearing WUA than large decreases.

148	148	4	7	The SALMOD model outputs for spring-run Chinook sa	The SALMOD model outputs for spring-run Chinook salmon are presented in Appendix 11H, SALMOD, Table 1b-1 through Table 1b-4, Table 2b-1 through Table 2b-4, and Figure B-b-1 through Figure B-b-19. For all water years combined for all life stages and source of mortality, mean annual spring-run Chinook salmon potential production would be similar under Alt 1A (0% difference) and Alt 1B (0% greater) relative to the NAA (Appendix 11H, SALMOD, Table 2b-1 and Table 2b-2, Figure B-a-1). Further, differences within each water year type in mean annual potential production between Alt 1A and the NAA and between Alt 1B and the NAA would be small (<1%). Alt 2 and Alt 3 results would be similar to those of Alt 1A and 1B (Appendix 11H, SALMOD, Table 2b-3, Table 2b-4, Figure B-b-1) in that differences in production relative to the NAA would be very small (generally <1%).	No environmental benefit for spring run?	CDFW	No, differences are very small
148	148	12	7	However,The wide variation in these modeling resul	1,210,000 spring-run eggs each year.	Not a true life cycle model.	CDFW	correct
176	176	11	9	Alt 3 - 1 beneficial (August, critical years)	beneficial	This is a long way downstream to see a beneficial temperature effect in a critical year, in August same as RBDD.	CDFW	The model provides these results
176	176	11	9	Alt 3 - 1 beneficial (August, critical years)	beneficial	Is this theoretical or would this be incorporated into the actual TMP for shasta operations?	CDFW	These are results of a model showing how temperatures would change with implementation of each action alternative. The operations of each alternative would be implemented according to the criteria provided in the project description.
178	178	26	9	Results are presented using the grand mean percent	Expressing changes of small values as percent changes may result in very large values that may be misleading.	Please, clarify what this statement is trying to convey.	CDFW	See example provided in Appendix 11N, Section 3.1 *Redd Dewatering*
178	178	28	9	The results of the redd dewatering analysis for fa	eggs spawned in September of Above Normal Water Years	How? Would these be below Sites intakes? How would Sites be diverting in September when there are generally no flow events?	CDFW	Such effects are likely related to Shasta exchanges or other types of coordination with CVP and SWP. See Chapter 2 for details.
179	179	28	9	Mean spawning WUA for fall-run under Alternatives	greater than 10%. Eight of the 12 reductions in means that are >5% occur under Alternative 3.	This looks like a significant reduction in fall run spawning habitat	CDFW	As can be seen in Tables 11K-8 through 11K-11 of Appendix 11K, the differences for Alternatives 1 and 2 are generally small, with many or most less than 1%. For Alternative 3, there are more relatively large reductions. Nonetheless, the average difference is about -1.1%. A 1.1% reduction in availability spawning habitat seems unlikely to have a significant impact on the Sacramento River fall-run population.

180	180	9	9	Mean spawning WUA for late fall–run under Alternat	with increases occurring during late spring to early summer (May and June)	Generally late fall run are not spawning at this time.	CDFW	Thank you for noting this. Analysis, text, and appendix tables have been revised to delete these two months.
180	180	18	9	Fall-run. Rearing habitat WUA for fall-run fry an	mean monthly	We need to examine the lows which can bottleneck the overall population.	CDFW	Lows in specific years would likely result in poor recruitment for specific yearclasses, but these would likely be offset by highs in other years.
185	185	27	9	Sites Reservoir releases into the Yolo Bypass via	Releases into the Yolo Bypass would overlap with the adult late-fall-run Chinook salmon migration period during October and the juvenile rearing and emigration period during August through October (Appendix 11A, Table 11A-7; Figure LFR_DJFMP).	This is going to lead to false attraction and straying which will need to be monitored as it is likely to lead to significant impacts.	CDFW	The analysis presented in this section does not suggest that there would be significant impacts.
185	185	30	9	In contrast to the other runs of Chinook salmon, t	August–October	Has there been any thought to shifting these proposed flows back one month from Aug-Oct to Jul-Sep (as suggested in the 2016-18 NDFA Report) in an effort to avoid peak fall-run Chinook salmon upstream migration in October. Doing so would still also avoid peak spring-run Chinook upstream migration from May-Jun. The major drawback is that spring-run still have potential to be in the system in July.	CDFW	This type of information cannot be added at this time and would not materially change the impact analysis or the determination in this chapter; this information could be added prior to the final and would not affect an impact determination.
185	185	32	9	In contrast to the other runs of Chinook salmon, t	existing	Correction: exiting.	CDFW	text edited
185	185	33	9	In contrast to the other runs of Chinook salmon, t	Johnston et al. (2020) found that the median probability of acoustically tagged adult fall-run Chinook salmon existing exiting the Yolo Bypass after entering it was 0.74, indicating that nearly a quarter of fish entering the Toe Drain may not leave.	Johnston et al. (2020) notes that "Chinook Salmon may be fully capable of exiting unsuitable habitat if they receive signals along the migratory corridor that conditions are impassable or unsuitable for spawning, but that these signals were unavailable as a consequence of this system's altered hydrology." Regression analysis from the 2016 and 2018 NDFA also indicated that the further upstream salmon traveled, the more likely they were to get stranded in the Yolo Bypass. Further altering the system's hydrology by providing consistent flows through the Yolo Bypass over a three-month period will likely compound the problem of straying as the increased flows provide false cues to salmon about the suitability of the Yolo Bypass as a migration corridor, thus making it more likely for salmon to go further up the Yolo Bypass and ultimately more likely to become stranded.	CDFW	The potential negative effects of the flow action are analyzed in this section, using the available information from the previous years' flow actions, which are similar in nature to the flow action that would occur under the alternatives.
186	186	11	9	In contrast to the other runs of Chinook salmon, t	This rate of rescue and mortality is very low compared the overall ESU size, which numbers in the tens of thousands of fish or greater	Looking only at the rate of rescue and mortality does not capture the true effects of straying into the Yolo Bypass for Chinook salmon populations. For example, although only 8 out of 340 rescued Chinook salmon died in 2019, how many of the "rescued" fish were subsequently able to successfully spawn in the Sacramento River? Migratory delays coupled with potentially poor water quality conditions in the Bypass may result in a wide range of sub-lethal impacts (e.g., disease, reproductive failure, increased egg mortality, etc.) that will ultimately impact reproductive success.	CDFW	This type of information cannot be added at this time and would not materially change the impact analysis or the determination in this chapter; this information could be added prior to the final and would not affect an impact determination.

186	186	11	9	In contrast to the other runs of Chinook salmon, t	greater	It is important to look to the future when considering the impacts of the Sites project. Conditions for fall-run Chinook continue to worsen, which likely will be further exacerbated by the effects of climate change. Over time this will put increased pressure on the population, particularly the wild spawning population. Thus, it is important to take seriously and not down play this potential project impact, as it may be more detrimental in the years to come. Additionally, Sites' proposed deliveries provide far more water on average than previous managed flow events. The potential impacts of releasing these larger volumes of water could increase the number of fall-run that stray into the Yolo Bypass, beyond what has historically been observed. The narrative provided in this section reads as if its intent is to down play the project's potential impact. However, the intent of this document is supposed to be to objectively identify potential impacts of the project, so that they can be avoided or mitigated. As there is uncertainty surrounding this particular impact, the project should consider a scenario/possibility that this impact is worse than they anticipate and identify ways in which project operations may be altered to avoid and/or mitigate for the impact.	CDFW	New text has been added to the chapter to address climate change and operations.
186	186	16	9	In contrast to the other runs of Chinook salmon, t	Alternatives 1, 2, and –3 would result in only very low ESU-level effects on fall-run Chinook salmon.	These effects to fall-run Chinook still need to be weighed against the proposed Yolo Bypass Habitat benefit, which remains uncertain. Currently, evidence exists to indicate that increased flows through the Yolo Bypass may be detrimentally affecting fall-run Chinook, while there is no evidence to indicate that managed flow events are improving habitat conditions for Delta Smelt.	CDFW	This type of information cannot be added at this time and would not materially change the impact analysis or the determination in this chapter; this information could be added prior to the final and would not affect an impact determination.
187	187	8	9	As discussed in Chapter 6, Surface Water Quality,	As discussed in Chapter 6, Surface Water Quality, the effect of Alternatives 1A, 1B, 2, and 3 on water temperatures at the Sites Reservoir release site in the Sacramento River would be relatively small with the releases generally tending to cause a slight reduction in water temperature (Tables 6-12a through 6-12d).	Please, see CDFW's chapter 6 comments, regarding temperature effects in the Yolo Bypass.	CDFW	Beneficial text removed.
187	187	12	9	All changes in water temperature in the Yolo Bypas	negligible, and possibly marginally beneficial	Assuming that Sites' deliveries lower water temperatures, if these temperatures occur in the limited upper area of the bypass, they are unlikely to provide any benefit. The flows provided by the project have the potential to attract fish into the Yolo Bypass, where they are not supposed to be, and where they may experience elevated temperatures and other conditions that reduce their chances of survival. This is especially the case in critically dry years, when conditions in the Yolo Bypass are particularly bad, but when the project would still potentially be delivering sufficient volumes of water to attract fish.	CDFW	Beneficial text removed.
205	205	2	9	All changes in water temperature in the Yolo Bypas	These lower water temperatures are expected to have a negligible effect on adult steelhead in the Yolo Bypass and may have a marginally beneficial effect.	It seems inappropriate to claim that lowering water temperatures in the Bypass may have a marginally beneficial effect for adult steelhead or any other adult salmonid. If salmonids are entrained in the Bypass and depending on how far into the Bypass they are (e.g. upstream of Ag crossing 4), without access to the Sacramento River they will likely perish without being able to contribute to the spawning population.	CDFW	Removed "benefit" text
205	205	2	9	All changes in water temperature in the Yolo Bypas	These lower water temperatures are expected to have a negligible effect on adult steelhead in the Yolo Bypass and may have a marginally beneficial effect.	It is inappropriate because the Colusa Basin Drain is not steelhead habitat and they shouldn't be in the CBD. The impact should not be measured in temperature affects but the fact that a federally listed species has been drawn into the CBD by the Sites Reservoir Release in the first place.	CDFW	Removed "benefit" text
231	231	37	9	To evaluate the frequency of low flows at Wilkins	To evaluate the frequency of low flows at Wilkins Slough that would potentially affect upstream passage of sturgeon, the frequency of monthly flows less than 3,250 cfs during the February through June immigration period was determined from CALSIM II outputs	What is the minimum flow requirement is it 5,000 cfs?	CDFW	There are conflicting minimum flow requirements for the Sacramento River(NCWA 2014). NMFS has a minimum flow requirementof 3,250 cfs, so this flow was used as a conservative limit in the low flow analysis.

235	235	36	9	5713 (-0.4%)		Significant impact potential when disentangled from average flows.	CDFW	Differences in the CALSIM II mean monthly flows during Wet Water Years are relatively small (Table 11-49). Consequently, Alternatives 1, 2, and 3 are not expected to have any substantial effect with regard to flow on spawning and egg incubation of green sturgeon in the Feather River.
238	238	3	9	The flow reductions in June have the potential to	These high percentages suggest that a Sunset Pumps passage barrier may contribute to the lack of spawning by green sturgeon in the Feather River during all but the wettest years. In any caseOn the other hand, the results indicate that Alternatives 1-3 provide slightly improved flow conditions for upstream passage with regard to low flows. The increased flows under the project alternatives during late summer and fall may improve habitat and passage conditions for adults emigrating from the river after spawning.	Sites needs to look at the BO for the new FERC license which requires pulse flows to deal with passage issues. This should be your baseline for evaluating this impact.	CDFW	I believe the specific pulse flow requirements have been not yet been determined. According to a March 2020 DWR update, the new FERC license has not yet been issued, and until the license is issued, the Project operates under annual licenses, which extend the terms and conditions of the original license.
247	247	5	9	Upstream spawning migrations by white sturgeon adu	December of critically dry years, when reductions of up to 6% are expected for the project	Significant impact in critical years. The impact is likely to be more extreme than the long term average in many years.	CDFW	The flows would certainly be lower for the project alternatives and the NAA in many years, but we expect that the flows would rarely fall to levels that would produce adverse conditionts for migrating white sturgeon.
248	248	21	9	An average of 23% of delta smelt surviving to adul	likely to benefit from the summer/fall north Delta food subsidy from CBD, in particular those occurring in the Yolo Bypass Toe Drain	To date there is no evidence that Delta Smelt are benefiting from the summer/fall north Delta food subsidy.	CDFW	The available information is summarized in this analysis, noting that studies are still being undertaken.
248	248	23	9	An average of 23% of delta smelt surviving to adul	A pilot implementation of this action in 2016 found that primary production in the north Delta increased as a result of the action (Figure CBD1; as had been observed by Frantzich et al. [2018] in previous years with flow pulses).).)	Subsequent north Delta food web actions did not result in an increase in zooplankton. Provide more support for the food web benefit.	CDFW	This is a subject of ongoing investigation by DWR.
258	258	26	9	Entrainment	Entrainment	This analysis does not take into account the correlation between larval and juvenile Longfin Smelt distribution and X2. Higher X2 shifts the distribution of young Longfin Smelt upstream putting them at higher risk of entrainment into the pumps or retention in poor habitat in the south and central Delta. Spawning distribution is also shifted upstream under drier conditions. I suggest considering the cumulative effects of reduced Delta outflow through the entire season.	CDFW	Added discussion of December-March X2 per CFDG (2009) effects analysis.
260	260	23	9	Results of the Nobriga and Rosenfield (2016) model	Nevertheless, the results of the analysis suggest the potential for a small negative effect to longfin smelt.	Given this high variability, a more robust assessment of the flow related impacts to Longfin Smelt may be appropriate.	CDFW	The key point is that annual differences in hydrological conditions have a relatively larger effect on longfin smelt than differences related to operations. A better understanding of longfin smelt response to hydrology is an active topic in the research community.
262	262	2	9	328 (-2%)		This does not appear to be a realistic prediction of the FMWT Longfin Smelt index for a critically dry year. Even the poor survival scenario in the next table seems to be an overestimate. This analysis should account for the continued decline in the population rather than averaging over the entire model run.	CDFW	The analysis and method are are consistent with how it was recently applied in DWR's SWP Long-Term Operations EIR and ITP Application. See individual years' data at Figure 11-32.

314	314	17	9	The Sacramento, Feather, and American Rivers upstr	The Sacramento, Feather, and American Rivers upstream of the Delta generally provide poor habitat conditions for largemouth bass because of large seasonal flow fluctuations, relatively cold water, and lack of suitable nesting and rearing habitat. Largemouth bass populations upstream of the Delta are largely dependent on off stream habitats, including reservoirs, floodplain ponds and sloughs, and irrigation canals that provide suitable conditions for spawning and rearing during the late spring and summer months	The data sets suggest otherwise.	CDFW	Text has been revised.
314	314	19	9	The Sacramento, Feather, and American Rivers upstr	Smallmouth bass are better adapted to the more rapid flows and cooler water temperatures of the rivers upstream of the Delta, but they generally prefer smaller, higher elevations rivers and streams (Moyle 202).	The data sets do not agree. and angler reports for smallmouth bass are very good in the Feather and Sacramento Rivers.	CDFW	This type of information cannot be added at this time and would not materially change the impact analysis or the determination in this chapter; this information could be added prior to the final and would not affect an impact determination.
314	314	19	9	The Sacramento, Feather, and American Rivers upstr	Smallmouth bass are better adapted to the more rapid flows and cooler water temperatures of the rivers upstream of the Delta, but they generally prefer smaller, higher elevations rivers and streams (Moyle 202).	CDFW recommends that this section be revised to accurately reflect data and that the data are expanded to include Feather and Sacramento River datasets.	CDFW	This type of information cannot be added at this time and would not materially change the impact analysis or the determination in this chapter; this information could be added prior to the final and would not affect an impact determination.
314	314	30	9	All three black bass species spawn and rear in the	Because the largemouth bass life cycle upstream of the Delta is generally not directly affected by the mainstem rivers upstream of the Delta, changes in the Sacramento, Feather and American River flows related to the project are expected to have minimal effects of the largemouth bass population.	These non native species are prolific in rivers mentioned. Project actions will directly benefit non natives.	CDFW	Revised text to emphasize potential benefit to black basses of more stable hydrology.
329	329	3	9	Burau, J. R., S. G. Monismith, M. T. Stacey, R. N.	http://www.water.ca.gov/iep/newsletters/2000/IEPNewsletter_Spring2000.pdf.http://www.water.ca.gov/iep/newsletters/2000/IEPNewsletter_Spring2000.pdf.http://www.water.ca.gov/iep/newsletters/2000/IEPNewsletter_Spring2000.pdf. Accessed: May 19, 2021	This link doesn't work. IEP newsletters have not been online for more than a year.	CDFW	Full citation is in the References.