

Responses to Panel's Phase 1 Comments

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Responses to Phase 1 Comments

Background

- Phase 1 charge to review:
 - Selected sections of draft BA
 - Draft Analytical Approach to developing the joint NMFS/USFWS Biological Opinion
 - Proposed methods for assessing project effects on Longfin Smelt

Responses to Phase 1 Comments

Background

- Panel produced draft report

**Independent Review Panel Report for the 2016 California WaterFix Aquatic
Science Peer Review**

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May 12, 2016

Responses to Phase 1 Comments

Background

- 17 specific recommendations

Number	Recommendation	Section	Page
1	That the evaluation of the influence of climate change on the PA operations should be longer than 2030.	2.1.4	21
2	Evaluate the compounding effect of the PA and dry years, and the potential for depensatory mortality, using a series of continuous dry years.	2.2.3	25
3	That all fish screen criteria described by NMFS (2011) should be explicitly addressed in the BO.	2.2.4.1	27
4	Additional effort to evaluate PA effects on critical salmonid habitats, including natural and restoring tidal wetlands predictably under the large-scale influence of the NDD operations.	2.2.5	29
5	Evaluate water removal effects (up to ~40% of Sacramento River flow depending on month and water year) during tail end migration periods when juvenile salmonid abundance is low, in addition to when most juveniles are present in the Delta.	2.2.6	30
6	Evaluate the extent to which the PA may alter the abundance of Striped Bass and other predators that consume ESA-listed species.	2.2.7	30
7	Evaluate the PA effects on wild fry, parr and smolt migrants, given that Fall-run Chinook Salmon are likely an important prey of Killer Whales.	2.2.7	31
8	That the AABO describe how it will evaluate project effects on diversity and spatial structure.	2.2.8	32
9	That approaches for using precaution and adaptive management be described in the AABO.	2.2.8	32
10	That the abiotic habitat effects of the PA be explicitly considered within the context of the new Bever et al. (2016) findings, while recognizing that this exercise cannot include turbidity due to lack of a turbidity model for the PA simulation	2.3.4	43

	(i.e., the abiotic station index of Bever et al. 2016 should be modified to include salinity and current speed, but not turbidity). We also recommend that the water-distribution system within Suisun Marsh be qualitatively assessed for its potential influence on the salinity, current speed, and turbidity within the high-abundance area for Delta Smelt, as described above and as identified in Figure 2.		
11	That boxplot and exceedance plot figure legends state that the plots exclude model uncertainty, unless that uncertainty can be incorporated.	2.5.1	49
12	That the BO authors obtain the full set of regression statistics for all regressions used in PA and NAA projections, so that true prediction intervals can be constructed for all figures like Figure 4.A-7 of the BA. Failing that, the legends on such figures should probably state that the plotted CI's are too narrow by an unknown amount, because they are not true prediction intervals.	2.5.1.1	50
13	That time series plots such as Figure 4.A-7 omit the solid lines depicting the point predictions from the fish response model, because the point predictions are unlikely to be the actual future outcomes.	2.5.1.2	52
14	That the AABO describe how weights of evidence will be determined.	2.5.2	53
15	That the AABO specify how decisions will be made when likelihood estimates, and projected changes in likelihood, are highly uncertain.	2.5.2	53
16	That the BO includes a critical analysis and evaluation of the approach to adaptive management (AM) proposed in the PA.	2.6	55
17	That the Agencies articulate an explicit plan in the AABO for evaluating the adequacy of the plans for AM, based on best available knowledge regarding effective AM design and implementation.	2.6	57

Responses to Phase 1 Comments

Background

- CWF proponents, consulting team, and permitting fish agency representatives (CDFW & NMFS) met on 6/14/2016 to discuss how to address panel recommendations
- Following slides summarize responses

Responses to Phase 1 Comments

Recommendations and Responses

Number	Recommendation
1	That the evaluation of the influence of climate change on the PA operations should be longer than 2030.

- Per 6/14/2016 meeting
 - Topic need not be addressed in final BA
 - Updated models will need to be considered into the future, so that climate change is adaptively managed and considers factors such as drought operations procedures

Responses to Phase 1 Comments

Recommendations and Responses

2

Evaluate the compounding effect of the PA and dry years, and the potential for compensatory mortality, using a series of continuous dry years.

- Per 6/14/2016 meeting
 - Topic need not be addressed in final BA
 - Will be considered in BO
 - Probably through examination of a series of years
 - Again with need to consider adaptive management and drought operations procedures

Responses to Phase 1 Comments

Recommendations and Responses

3

That all fish screen criteria described by NMFS (2011) should be explicitly addressed in the BO.

● Added reference to these criteria in BA Ch. 3

NMFS, and CDFW). The review and final design process will incorporate lessons from the Fish Facilities Technical Team (2011) work, the current NMFS (2011) guidance for fish screens, and recent relevant projects, as applicable. Two recent examples of fish refugia design and

Biological Assessment for the
California WaterFix

3-37

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ICF 00237.15

● Sweeping velocity requirements not finalized

- Analyses assess range
- Delta Smelt: 4.1.3.2.2 *Impingement and Screen Contact*
- Chinook Salmon: 4.3.4.1.2.1.1.2 *Impingement, Screen Contact, and Screen Passage Time*

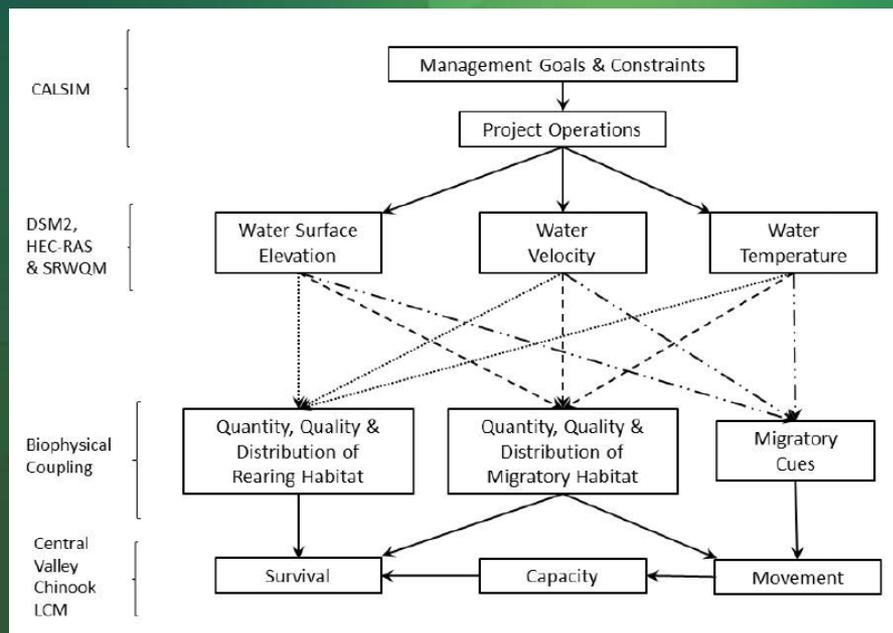
Responses to Phase 1 Comments

Recommendations and Responses

4	Additional effort to evaluate PA effects on critical salmonid habitats, including natural and restoring tidal wetlands predictably under the large-scale influence of the NDD operations.
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- Per 6/14/2016 meeting

- Topic need not be addressed in final BA; to be considered in BO



Hendrix et al. (2014, Life Cycle Modeling Framework for Sacramento River Winter-Run Chinook Salmon: Figure 2)

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Recommendations and Responses

5

Evaluate water removal effects (up to ~40% of Sacramento River flow depending on month and water year) during tail end migration periods when juvenile salmonid abundance is low, in addition to when most juveniles are present in the Delta.

- Text added to acknowledge importance of tail ends (e.g., Section 4.3.4.1.1.1 Temporal Occurrence for WR Chinook)
- Various analyses are at the month-specific level

Table 4.3-13. Median Daily Proportion of Flow Entering Important Delta Channels, from DSM-HYDRO Modeling, with Green Shading Indicating PP is $\geq 5\%$ Less than NAA and Red Shading Indicating PP is $\geq 5\%$ More than NAA(Except for Sutter/Steamboat Sloughs, where Entry is Considered Beneficial and the Color Scheme is Reversed).

Junction	Water Year Type	December			January			February			March			April			May			June		
		NAA	PP	PP vs. NAA	NAA	PP	PP vs. NAA	NAA	PP	PP vs. NAA	NAA	PP	PP vs. NAA	NAA	PP	PP vs. NAA	NAA	PP	PP vs. NAA	NAA	PP	PP vs. NAA
Sutter Slough (Entry is beneficial)	W	0.262	0.262	0.000 (0%)	0.264	0.263	-0.001 (0%)	0.267	0.265	-0.002 (-1%)	0.265	0.265	0.000 (0%)	0.263	0.263	0.000 (0%)	0.263	0.263	0.000 (0%)	0.219	0.193	-0.026 (-12%)
	AN	0.259	0.257	-0.002 (-1%)	0.261	0.261	0.000 (0%)	0.263	0.263	0.000 (0%)	0.262	0.263	0.001 (0%)	0.262	0.261	-0.001 (0%)	0.262	0.258	-0.004 (-2%)	0.181	0.174	-0.007 (-4%)
	BN	0.257	0.252	-0.005 (-2%)	0.259	0.258	-0.001 (0%)	0.261	0.261	0.000 (0%)	0.260	0.259	-0.001 (0%)	0.261	0.259	-0.002 (-1%)	0.240	0.238	-0.002 (-1%)	0.175	0.181	0.006 (3%)
	D	0.227	0.219	-0.008 (-4%)	0.256	0.254	-0.002 (-1%)	0.260	0.259	-0.001 (0%)	0.260	0.259	-0.001 (0%)	0.259	0.259	0.000 (0%)	0.242	0.239	-0.003 (-1%)	0.173	0.174	0.001 (1%)
	C	0.195	0.185	-0.010 (-5%)	0.254	0.247	-0.007 (-3%)	0.259	0.256	-0.003 (-1%)	0.249	0.239	-0.010 (-4%)	0.230	0.225	-0.005 (-2%)	0.199	0.195	-0.004 (-2%)	0.151	0.152	0.001 (1%)

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Recommendations and Responses

6

Evaluate the extent to which the PA may alter the abundance of Striped Bass and other predators that consume ESA-listed species.

- Per 6/14/2016 meeting
 - Topic need not be addressed in final BA
 - BDCP/CWF EIR/S analyses available for BO consideration
 - Impact AQUA-201: Effects of Water Operations on Entrainment of Non-Covered Aquatic Species of Primary Management Concern
 - Impact AQUA-203: Effects of Water Operations on Rearing Habitat of Non-Covered Aquatic Species of Primary Management Concern

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7	Evaluate the PA effects on wild fry, parr and smolt migrants, given that Fall-run Chinook Salmon are likely an important prey of Killer Whales.
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- Added text to BA App. 5.E (5.E.4.3.2.1 *Status and Distribution*) to acknowledge points raised by panel
- Various analyses relevant to smaller individuals:
 - 5.E.5.3.1.2.1.1.1 *North Delta Exports: Impingement, Screen Contact, and Screen Passage Time*
 - 5.E.5.3.1.2.1.2.1 *Indirect Mortality within the Delta: Channel Velocity, Flow Routing into Channel Junctions*
 - 5.E.5.3.1.2.1.2.2 *Habitat Suitability: Bench Inundation, San Pablo Bay Fall-Run Chinook Salmon Fry Rearing Habitat*

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8	That the AABO describe how it will evaluate project effects on diversity and spatial structure.
9	That approaches for using precaution and adaptive management be described in the AABO.

- Per 6/14/2016 meeting
 - Topics to be addressed in BO

Responses to Phase 1 Comments

Recommendations and Responses

10

That the abiotic habitat effects of the PA be explicitly considered within the context of the new Bever et al. (2016) findings, while recognizing that this exercise cannot include turbidity due to lack of a turbidity model for the PA simulation (i.e., the abiotic station index of Bever et al. 2016 should be modified to include salinity and current speed, but not turbidity). We also recommend that the water-distribution system within Suisun Marsh be qualitatively assessed for its potential influence on the salinity, current speed, and turbidity within the high-abundance area for Delta Smelt, as described above and as identified in Figure 2.

- To be covered in afternoon presentation on *Delta Smelt Analyses*

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Recommendations and Responses

11	That boxplot and exceedance plot figure legends state that the plots exclude model uncertainty, unless that uncertainty can be incorporated.
12	That the BO authors obtain the full set of regression statistics for all regressions used in PA and NAA projections, so that true prediction intervals can be constructed for all figures like Figure 4.A-7 of the BA. Failing that, the legends on such figures should probably state that the plotted CI's are too narrow by an unknown amount, because they are not true prediction intervals.
13	That time series plots such as Figure 4.A-7 omit the solid lines depicting the point predictions from the fish response model, because the point predictions are unlikely to be the actual future outcomes.

- Largely done where possible
- Examples provided in afternoon presentations

Responses to Phase 1 Comments

Recommendations and Responses

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15	That the AABO specify how decisions will be made when likelihood estimates, and projected changes in likelihood, are highly uncertain.
16	That the BO includes a critical analysis and evaluation of the approach to adaptive management (AM) proposed in the PA.
17	That the Agencies articulate an explicit plan in the AABO for evaluating the adequacy of the plans for AM, based on best available knowledge regarding effective AM design and implementation.

- Per 6/14/2016 meeting
 - Topics to be addressed in BO