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 NMFS comments on Proposed Action

### NMFS Comments on the Proposed Action (BA Table 4-6)

Table 4-6. Components of the Proposed Action (Modified with some additional columns)

	Title	Site Specific or Programmatic?	Core Operation or Adaptive Management?	NMFS Comment	Proposed Resolution or Path Forward	Resolution
	CVP/SWP Wide					
1	Divert and store water consistent with obligations under water rights and decisions by the State Water Resources Control Board	Site-specific	Core	No specific comment		
2	Shasta Critical Determinations and Allocations to Water Service and Water Repayment Contractors (p.4-14)	Site-specific	Core	The proposed action does not mention how fish factor into allocation decisions.  Details are needed on how the Shasta storage and temperature management for winter-run is considered in the "shortage policy" (p. 4-10).	Reclamation articulates how allocations are managed to ensure temperatures are met for winter-run.	
3	2018 Revised Coordinated Operations Agreement (p. 4-8)	NCO	NCO	(1) COA needs to be consulted on because they are embedded in and drive the operations.  (2) Need more detail about balancing		

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				Shasta, Folsom and Oroville to meet D-1641 requirements based on conditions and COA.		
	Upper Sacramento					
4	Seasonal Operations (p. 4-26)	Site-specific	Core	<p>We need more information on what actions (rather than goals, targets, and examples) are being taken to manage storage in the context of water temperature management. Cold water pool considerations are mentioned without sufficient detail in the following PA components: “spring pulse flows”, “cold water pool management”, and “Fall and Winter refill and redd maintenance”.</p> <p>Reclamation should provide details regarding its analysis and decisions regarding seasonal operations leading up to temperature management in the summer. For example, provide, by July 1 of each year, an analysis (using, e.g, the Deas model and SWFSC coupled reservoir model) showing how differing assumptions on runoff, temperatures and operations affect storage, Keswick releases, runoff, lake stratification, and resulting cold water pool.</p>	Need a presentation from Reclamation next week to walk us through the details and modeling on Shasta.	
5	Spring Pulse Flows (p. 4-27)	Site-specific	AM	What’s the frequency of (1) <u>projected</u> Shasta >4 MAF, (2) a spring pulse flow resulting in lowering a Tier, and (3) a spring pulse flow interfering with the ability to meet other anticipated demands on the reservoir?		

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6	Shasta Cold Water Pool Management (p. 4-27)	Site-specific	Core	<p>(1) There is insufficient detail to consult on temperature management as a site-specific action. The action is described programmatically but it still does not provide enough information to estimate/understand the range of operations (and their potential effects).</p> <p>(2) The tiered approach based on the Anderson model appears to be experimental and based on unproven methodologies. How much evidence is there behind the Anderson model of varying temperatures? Perhaps this should be an adaptive management element to try this operation in a year when then 53.5 is not attainable. But not ready to have in PA as a hard-wired action.</p> <p>Under tier 3 and 4, NMFS predicts lots of lethality. Why is there no provision for demand shifting until tier 4?</p> <p>(3) There is no description of ops. within a "tier." There is insufficient information on the proposed relationship between available cold water and duration of temperature management.</p> <p>(4) The strategy to build Shasta storage not clear in the proposed action. Similarly, how is the shortage policy or contract allocations managed to build or maintain storage to meet WR temperature criteria and maximize the frequency of meeting tier 1 and 2 years?</p>	<p>(1) Provide more details.</p> <p>(2) We believe that the Anderson model may be lab-tested and applied through adaptive management but should not be relied upon for site-specific, core operations.</p> <p>(3) Provide more details.</p> <p>(4) (for understanding) How is "build storage" modeled in CalSim II? What is the priority relative to other demands? re: (5 &amp; 6)</p> <p>(5) Provide more details.</p>	
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				<p>(5) Similarly, how are Keswick release schedules, reductions in deliveries and preferential releases from Oroville and Folsom, etc. managed to build Storage and manage for summer water temperatures?</p> <p>(6) Reclamation needs to document how current tiers in operations were input into Calsim (e.g., preferential use of Oroville and Folsom for meeting D-1641, and restricted Keswick release schedule).</p> <p>(7) How is demand shifting defined? Why is demand shifting not considered as a strategy to increase the likelihood of reaching tier 1 and 2 conditions?</p>	<p>(6) Provide more details.</p> <p>(7) Provide more details.</p>	
7	Fall and Winter Refill and Redd Maintenance (p. 4-32)	Site-specific	Core	<p>We are unclear about how the 10% risk assessment works. 10% or <b>less</b> risk of <b>what</b>, in order to rebuild storage for the following year? Does Reclamation mean 10% or more?</p> <p>If the 10% threshold is exceeded, what happens?</p>	Provide more details.	
8	Operation of a Shasta Dam Raise (p. 4-33)	Site-specific	Core	<p>Description of this action is too vague to consult on either as a site-specific action or a programmatic action</p>	<p>Significant details on the proposed action and its effects are needed to consult on this action:</p>	

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					Specifically, modeling of of the PA which includes the dam raise (18.5 feet and ~634 TAF of increased storage) so that not only the Sac flows, storages, and associated temp outputs, but flows and temperatures throughout the Sacramento Basin and Delta are representative of the PA.	
<b>9</b>	Rice Decomposition Smoothing* (p.4-34)	Site-specific	Core	Assumes “propose to work to synchronize” will be implemented.		
<b>10</b>	Spring Management of Spawning Locations* (p.4-34)	Site-specific	AM	NMFS believes the adaptive management of this action should not be separate from the 5-agency adaptive management framework.	NMFS recommends a commitment to use the adaptive management framework agreed to by the five agencies for CWF.	
<b>11</b>	Cold Water Management Tools (e.g., Battle Creek Restoration, Intake Lowering near Wilkins Slough, Shasta TCD Improvements)*(p.4-34 to 4-35)	Programmatic	AM			

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12	Spawning and Rearing Habitat Restoration*(p. 4-35)	Programmatic	AM	What is being proposed above and beyond what NMFS has already consulted on through the B-13 program?	Move to the Environmental Baseline?  As an alternative, consider drawing from the State's Salmon Resiliency Strategy or other efforts that are ongoing with Battle Creek and Butte Creek PG&E license transfers and orphaned project pursuits.	
13	Small Screen Program* (p. 4-35)	Programmatic	AM			
14	Winter-Run Conservation Hatchery Production* (p. 4-35)	Programmatic	AM	Generally agree with increasing LSNFH production during extreme drought conditions, however, the use of New Zealand or Great Lake Chinook salmon stocks to improve heterozygosity is an experimental concept that should not be relied on as part of the proposed action.	Develop alternative language for coordinating with the NMFS SWFSC and the USFWS on emergency hatchery management practices.	
15	Adult Rescue* (p. 4-35)	Programmatic	AM	The adult rescue proposal is experimental needs further discussion through 5-agency AMF	NMFS recommends a commitment to	

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					use the adaptive management framework agreed to by the five agencies for CWF.	
16	Juvenile Trap and Haul* (p. 4-35)	Programmatic	AM	The juvenile trap and haul proposal is experimental and needs further discussion through 5-agency AMF	NMFS recommends a commitment to use the adaptive management framework agreed to by the five agencies for CWF.	
	Trinity					
17	Seasonal Operations (p. 4-36)	Site-specific	Core	Unclear how Trinity Reservoir end of September storage will be maintained (no minimums), and how water temperature objectives in the Trinity River will be complied with. No description of cold water pool management. No description of how the reservoir would be managed during successive drought years.		
18	Trinity River Record of Decision (p. 4-37)	NCO	NCO	Table 4-6 shows Trinity River ROD and Long Term Plan to protect adult salmon in the lower Klamath River as "Not Consulted On", yet proposed action section (4.9.2.2) has discussion of Trinity River ROD and the Long Term Plan for the lower Klamath River. Section 4.10 also shows TRRP flows not included in this consultation, but should be.		

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19	Long-Term Plan to Protect Adult Salmon in the Lower Klamath River (p. 4-37)	NCO	NCO			
20	Grass Valley Creek Flows from Buckhorn Dam (p. 4-38)	Site-specific	Core			
21	Whiskeytown Reservoir Operations (p. 4-38)	Site-specific	Core	Unclear how the cold water pool will be managed to comply with temperature objectives in Clear Creek, particularly in drought/critical years. Proposed temperature management at 56 F for spring-run spawning at the compliance point is described as suboptimal survival.		
22	Clear Creek Flows (p. 4-38)	Site-specific	Core			
23	Spring Creek Debris Dam (p. 4-39)	Site-specific	Core			
24	Clear Creek Restoration Program* (p. 4-39)	NCO	NCO			
	Feather River					
25	FERC Project #2100-134	NCO	NCO			
	American River					
26	Seasonal Operations (p. 4-41)	Site-specific	Core			
27	2017 Flow Management Standard Releases and "Planning Minimum" (p. 4-41)	Site-specific	Core	Need details about which elements of the 2017 Water Forum proposal are being committed to.	Reclamation to provide specific commitments.	
28	Spawning and Rearing Habitat Restoration* (p. 4-42)	Programmatic	AM			



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29	Drought Temperature Facility Improvements* (p. 4-43)	Programmatic	AM			
Stanislaus						
30	Seasonal Operations	Site-specific	Core	Not clear what is assumed for Vernalis flows, year-round, in COS and PA scenarios.	Reclamation to provide details.	
31	Stanislaus Stepped Release Plan	Site-specific	Core			
32	Alteration of Stanislaus DO Requirement	Site-specific	Core			
33	Spawning and Rearing Habitat Restoration*	Programmatic	AM			
34	Temperature Management Study*	Programmatic	AM			
San Joaquin						
35	San Joaquin River Restoration Program	NCO	NCO			
36	Lower SJR Habitat*	Programmatic	AM			
Bay-Delta						
37	Seasonal Operations (p. 4-43)	Site-specific	Core	Jones and Banks Pumping Plants: Description of operations should be more detailed to clearly describe what is proposed, in particular: -- how the Clifton Court radial gates will be operated on the tidal cycles and Delta water elevations, -- how frequently joint points of diversion will be used (water year type, seasons, preference for which facility will be used,	NMFS needs more details by March 1 to understand operations by.  Reclamation should copy details, as appropriate,	

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				<p>impacts to salvage, etc.),          -- information on standard operating procedures for fish salvage (i.e. count durations, frequency of counts, what happens during outages or louver cleanings, etc.).</p> <p>North Bay Aqueduct and Barker Slough Pumping Plant: Minimal information is given regarding the Barker Slough Pumping Plant and its operations - Need details on permitted pumping rates versus the frequency and volumes of historical pumping rates - information over an average given year and by water year type.</p> <p>Contra Costa Water District Rock Slough Pumping Plant and Intake Canal: No information on the operations of this facility, particularly permitted export rates and volumes, historical usage patterns, etc. What is Reclamation proposing, how is the proposed action the same or different from the previous operations?. This is not very clear - operations, infrastructure construction, both, or something else.</p> <p>More detail as to what is proposed and what is different than the Current Ops.</p>	<p>from the 2008 BA and 2009 RPA.</p>	
38	Minimum Export Rate (p. 4-44)	Site-specific	Core			
39	Delta Cross Channel Operations (p. 4-44 and A-95)	Site-specific	Core	<p>Reclamation proposes to open up the gates up to two times for 5 days during the period between December 1 and May 20 if needed for water quality. This is in</p>	<p>Reclamation should confirm that the proposed action</p>	

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				<p>conflict with D-1641 which requires the gates to be closed between Feb 1 and May 20.</p> <p>Details are needed on how the risk assessment is conducted and resolution if the fish agencies do not agree with Reclamation's decision. Should also include the aspects of the lower Mokelumne River attraction flow operations.</p>	<p>is consistent with D-1641.</p> <p>Provide more details on the risk assessment and decision making/elevation process.</p>	
<b>40</b>	Agricultural Barriers (p. 4-46 and A-97)	Site-specific	Core	<p>Is the proposed action asking for coverage for operations, construction, or both? The proposed project description is too vague as to the actual project details. Separate BiOps are typically written that cover construction and operations for a multi-year period. No information regarding what is going to happen with the HORB. Is it going to be installed per the CWF BiOp as an operable barrier, or is the HORB not going in under the proposed project and Reclamation will defer until the CWF project is implemented?</p>	<p>Ag barrier construction is a separate section 7 consultation, should not be consulted on in ROC on LTO.</p> <p>Reclamation should determine the fate of the HORB in this consultation.</p>	
<b>41</b>	Contra Costa Water District Rock Slough Operations (p. 4-46 and A-110)	Site-specific	Core			
<b>42</b>	North Bay Aqueduct (p. 4-46)	Site-specific	Core			
<b>43</b>	Water Transfers (p. 4.47 and A-127)	Site-specific	Core			
<b>44</b>	Clifton Court Aquatic Weed Removal (p. 4-48 and A-101)	Site-specific	Core	<p>Need to clarify that it is water temperature that is the basis of the start dates for treatment. Need to clearly explain that listed green sturgeon are present during</p>	<p>Reclamation should copy details, as appropriate,</p>	

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				<p>the herbicide treatment window, even though salmonids and Delta smelt may be absent in the area. Clarify whether both aerial application and boat application are to be made or is it just by boat. Clarify what the target concentration of copper herbicide is for treatments with different compounds proposed. Clarify what concentrations of copper (and what copper species is being measured in WQ testing) will be the threshold for re-opening the CCFB gates and continuing operations. Clarify what the pre-application procedure is for gate operations - is it closure at least 24 hours prior to herbicide application? Clarify whether it is a 24 hour minimum after herbicide application before gate re-opening or the 12-24 hours also stated in the project element description. No mention of other methods for weed removal - mechanical harvesting is mentioned in the effects analysis as a potential method - clarify.</p> <p>What about use of Aquathol?</p>	from the 2008 BA and 2009 RPA.	
45	Suisun Marsh Preservation Agreement (p. 4-50 and A-130)	NCO	NCO			
46	OMR Management (p. 4-51 and A-122)	Site-specific	Core	<p>Overall more detail is required for this project element. How will "real time monitoring" of salmonids and green sturgeon (e.g., fish distribution, turbidity, temperature, hydrodynamic models, and entrainment models) be used? What are the rationales for delaying changes in operations for 3 days before implementing changes to exports when triggers are</p>	Reclamation should provide more details, including use of current monitoring capabilities for action triggers.	

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			<p>exceeded? This does not make "real time" protections viable. Will distribution of wild YOY spring-run and steelhead from the SJ River basin be done separately as distinct population groups? Regarding the wild CV steelhead Protection criteria - how will 5% of population in Delta be determined? Impossible to differentiate Sac basin from SJ basin fish by visual means so the Sac basin fish will dominate this metric and will be the population that will "trip" the triggers, not SJ River fish. Also, how will differences in the timing of emigration for the two basins be addressed? SJ River fish tend to emigrate later than Sac Basin fish (based on Mossdale data) and may not be in sufficiently high numbers to ever trip the 10 fish/TAF threshold. How does this protective action for steelhead compare to the previously used I:E ratio at protecting SJ River steelhead? What evidence supports the proposed trigger threshold? Why switch to May 31 as the end of the protective action? Why not use a temperature metric for the SJ River as the end of protective triggers for steelhead after May 31 - this would reflect current hydrologic/water year conditions? Rationales should be presented for the components of the trigger.</p> <p><b>Salvage or Loss Thresholds</b> - these triggers should clearly indicate whether loss or salvage is being used. Loss is used for WRCS and surrogate spring-run triggers. Salvage is used for steelhead. Both loss and salvage was used for GS in the 2009 opinion. Since the WR JPE does</p>	
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			<p>not come out until late January or early February, what "limit" will be used during this interim period? There are currently no estimates for spring run-JPE, so the trigger for this group is not valid. What is the justification for the steelhead and green sturgeon limits?</p> <p>The implementation of the storm-related flexibility should be clearly described in the fish facilities operations, including how off ramps to exports due to fish salvage events or elevated risks to entrainment be implemented. If a cumulative trigger is met, does this preclude any more storm flexibility for the remainder of the fish migratory period for that water year?</p> <p><b>End of OMR Management</b> - No current assessment of population distribution is done for steelhead, thus no ability to determine if 95% of the population has exited the Delta. How will Reclamation and DWR determine that protective measures are not warranted? Will the Services and CDFW have any authority to disagree with this determination? If the Services and CDFW have the authority to authorize more negative OMR levels, why not the opposite too, if they deem it necessary to protect listed fish?</p>		
47	Tracy Fish Collection Facility* (p. 4-55 and A-109)	Site-specific	Core	<p>The description of the TFCF operations is inadequate. Project description should detail operating protocols used for salvage, collection, trucking, and releases. Should also explain the efficiency of the facility, the louver and secondary cleaning</p>	<p>Reclamation should copy details, as appropriate, from the 2008 BA and 2009</p>

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				operations and additional loss associated with those events, and operations during fish facility outages at a minimum.	RPA.	
<b>48</b>	Skinner Fish Facility* (p. 4-55 and A-107)	Site-specific	Core	Same comments as Tracy fish facility.	Reclamation should copy details, as appropriate, from the 2008 BA and 2009 RPA.	
	Operations					
<b>49</b>	Suisun Marsh Salinity Control Gates Operation* (p. 4-55 and A-130)	Site-specific	Core	More details are needed to understand how upstream releases are proposed for this operation.  For any project requiring construction, some details regarding location, number of sites, the types of construction required, in-water work windows, and duration and frequency should be provided.	Reclamation should provide more details.	
<b>50</b>	Fall Delta Smelt Habitat* (p. 4-55 and A-127)	Site-specific	AM			
<b>51</b>	Clifton Court Predator Management* (didn't see separately in Chapter 4; is mentioned on p. 4-57 under "Skinner Fish Facility Improvements"; a list of studies and interim measures is provided on A-107; studies provided in Appendix G)	Site-specific	Core			
<b>52</b>	San Joaquin Basin Steelhead Telemetry Study* (p. 4-56)	Site-specific	AM			

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53	Sacramento Deepwater Ship Channel Food Study* (p. 4-56)	Programmatic	AM			
54	North Delta Food Subsidies/Colusa Basin Drain Study* (p. 4-56)	Programmatic	AM			
55	Suisun Marsh Roaring River Distribution System Food Subsidies Study* (p. 4-56)	Programmatic	AM			
Habitat Restoration						
56	Tidal Habitat Restoration (Complete 8,000 acres from 2008 BiOp)* (p. 4-57)	Programmatic	AM			
57	Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project* (p. 4-57)	NCO	NCO			
58	Predator Hot Spot Removal* (p. 4-57)	Programmatic	AM			
Facility Improvements						
59	Delta Cross Channel Gate Improvements* (p. 4-57)	Programmatic	AM			
60	Tracy Fish Facility Improvements* (p. 4-57)	Programmatic	AM			
61	Skinner Fish Facility Improvements* (p. 4-57)	Programmatic	AM	Not enough details to consult on		
62	Small Screen Program* (p. 4-57)	Programmatic	AM			
Fish Intervention						
63	Reintroduction efforts from Fish	Site-specific	AM			



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	Conservation and Culture Laboratory* (p. 4-58)					
<b>64</b>	Delta Fish Species Conservation Hatchery* (p. 4-58)	Programmatic	AM			
*Denotes a Conservation Measure						

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**Other Elements regarding the Proposed Action (either referenced in BA or not in BA but NMFS is tracking)**

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	Appendix C: Water Operations Charter		<p>The role of this "charter" is not clear. It seems to have some components of the previous AM framework that the agencies advised against including in the PA. NFMS concern that it requires a sort of "signature" of the agencies. The section claims to "describe how the 5 Agencies and stakeholders will plan, communicate, and coordinate real-time water operations decisions on the Core Water Operation for the ROC on LTO. However, it provides no process for adaptive management implementation; it does not refer at all to the previous 5-Agency AMP developed for the CWF and existing CVP/SWP BiOps; it rearranges and reassigns roles and tasks of existing groups without authority to do so.</p> <p>NMFS would also point out the misleading name of "core monitoring" that is implemented to support the "core operations". This is a potentially misleading name, since it could easily imply that this monitoring (which is really just the</p>	A commitment to use the adaptive management framework agreed to by the five agencies for CWF.	

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				<p>existing compliance monitoring), is akin to the "Core Array" championed by the SAIL. It is not at all akin to that.</p>		
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	<p>Adaptive Management (1-2)</p> <p>“Adaptively managed actions will require additional coordination prior to implementation through program-specific teams established by Reclamation and DWR with input and participation from partner agencies and stakeholders.”</p>			<p>Reclamations proposal on adaptive management is something different than the previously agreed to 5-agency AMF. This is confusing and creates the possibility of conflicting and redundant AM programs.</p>	<p>A commitment to use the adaptive management framework agreed to by the five agencies for CWF.</p>	
	<p>Fish Passage Program - Not in the proposed action</p>			<p>A successfully reintroduced population of Sacramento River winter-run Chinook salmon above Shasta Reservoir in California is anticipated to have a water supply benefit and mitigate risks to the species that currently exists below Shasta reservoir.</p>		
	<p>Discretionary Allocations</p>			<p>No real discussion of discretionary allocations, shortages and how these decisions will be made when necessary to meet key ESA or SWRCB metrics, storage management, Keswick releases and connection to allocations, shortages, and temperatures</p> <p>Preferential releases from Folsom and Oroville to meet Delta standards when necessary to preserve</p>	<p>Propose a transparent approach for exercising discretion where ESA listed fish could be affected.</p>	

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				storage at Shasta		
	I:E			Did not see a proposed spring SJ steelhead protection in PA.		