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Subject:	Sites Project PCFFA/IFR Supplemental Comments
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Ms. Alicia Forsythe 27 January, 2022

Sites Project Authority

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Submitted electronically to: aforsythe@sitesproject.org, vking@usbr.gov, EIR-EIS-Comments@SitesProject.org

Re: Supplemental Comments on the RDEIR/SDEIS for the Sites Reservoir Project

Dear Ms. Forsythe and Ms. King:

These are PCFFA/IFR Supplemental Comments, to add to comments from NRDC, *et al.* that we have also joined in submitting and will be submitted tomorrow. Please add these to the Administrative Record in this proceeding. If there is any problem downloading this document, please contact me immediately. Thanks for the opportunity to comment.

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##########

Where are the Environmental Benefits of this Project?

"Environmental benefits" and "environmental purposes" of the Project used in part to justify the Project are vague and largely undefined – and in several instances (an noted in our other comments), illusory. Insofar as any of those benefits accrue to improve highly stressed in-river conditions (particularly high temperatures) and to benefit aquatic species (such as Chinook salmon and steelhead) in the Sacramento River, only **Alternative 2** makes provisions for returning waters captured from the Sacramento in the winter directly back into the Sacramento (presumably in the summer and fall) to provide cold water benefits for ESA-listed winter run Chinook, spring-run Chinook and steelhead, and also non-listed but declining as well as economically valuable harvested fall-run Chinook in the river.

Nowhere in the Project NEPA documents are these "environmental benefits" – particularly the use of stored Project water ***specifically*** for reduction of high-water temperatures in the summer that threaten anadromous fishes – spelled out or modeled in any detail.

It appears its history that this Project was conceived and created almost entirely to augment irrigation water supplies, not to actually help solve any of the many serious environmental problems that the CVP and other related water projects have created by way of water over-appropriation, groundwater depletion, and cascading Bay Delta ecosystem collapses that are the underlying causes of the multiple and synergistic ESA- and CESA-listed species crises that are mere symptoms. In short, the Project is designed almost entirely to benefit irrigation, not to store water to meet watershed ecosystem or species conservation needs.

We believe that there may be great merit in the basic concept of setting aside winter water for storage when not needed for fish, so that those waters can then be used to augment summer flows with additional cold water that salmonids need for summer survival. Especially as a way to adapt river conditions to climate change, the basic concept of substitution flows does, in our view, have some merit. There will of course be some benefits to irrigation as well by making it easier for fish to survive in the system, not only directly (through higher and colder summer flows) but also important benefits in *increasing the overall flexibility of management* for the whole system, once ecosystem balance is re-achieved. But so far, this Project is not serving that purpose.

Instead of designing this Project almost exclusively around meeting irrigation needs, leaving environmental benefits as a mere public relations afterthought, the Project should be specifically redesigned to provide identifiable "environmental benefits" as a first priority, then modeling can determine ways of better meeting irrigation needs without compromising those basic environmental benefits, rather than *vice versa* as is now the case.

In any event, those "environmental purposes" and safeguards should be spelled out and designed into the system as "including providing cold water within the Sacramento River to help meet the needs of the Sacramento-Shasta Temperature Management Plans, D-1641 and WRO 90-5 and other relevant water quality plans and standards, and to prevent temperature-dependent

mortalities for anadromous salmonids and other aquatic species as specified in those plans and in any later Biological Opinions for ESA and/or CESA-listed aquatic species." Targeting ways for meeting these ecosystem needs, and especially for meeting mandatory water quality and temperature standards designed to meet those ecosystem needs, should be written into the Project's purpose, design and management criteria. This new approach would generate a great deal more -- and much broader -- public support.

Protecting ESA- and CESA-listed species is *not optional*, but rather is legally a higher priority for beneficial use of water throughout the hydrological system than any conceivable irrigation use, whether by contract or regular water right. Legally, the BOR and State must protect these species and abide by relevant Biological Opinions to their best ability of what is physically possible.

Whether there are any actual "environmental benefits" for salmon in the Sacramento at all in the Project as currently designed is questionable in terms of providing more cold water for anadromous species during summer months. Additional water returned to the Sacramento from Sites Reservoir will likely be warmer water than the ambient temperatures of the river, not cold water, as it will have been sitting in a relatively shallow reservoir with considerable surface area through which to absorb solar energy through the summer. Exactly what will happen to that water, particularly in the middle of the summer when most needed, has not been specifically nor adequately modeled in the RDEIR/SDEIS.

And as noted above, only **Alternative 2** would even be capable, as a matter of basic engineering, of returning any of those stored flows directly back to the Sacramento River, as opposed to the nearest irrigation ditch. If these Sites-origin flows are intended to free up other, colder waters (e.g., from Shasta reservoir) to use to maintain cold water fish-flows, this goal has not been specified nor quantified in the RDEIR/SDEIS analysis, and there is thus no guarantee that such mitigation measures would ever occur. In what is clearly an over-appropriated hydrological system, there is always pressure to use whatever water is available for irrigation, rather than for the protection of ESA- and CESA-listed species. Without some guarantees built into Project operations parameters for such fish-flow mitigation measures, they remain uncertain and speculative.

Potential for Impacts on Aquatic Biological resources Due to Changes in Flow Patterns in the Sacramento River

What is the net annual reduction of total water available, expected through: (a) ground seepage from the reservoir; (b) evaporation; (c) various conveyance losses? These types of water losses would all likely be increased by the process of diverting, storing and then channeling back waters stored in Sites Reservoir. Such water losses should be quantified at the very least so as to determine whether the Project as proposed would even be an effective or efficient way to manage water.

Another question to ask is what will be the reduction of high winter-time "flushing flows" because of Project diversions, and how those reductions might affect natural high flow scouring mechanisms that reduce the incidence and spread of such fish pathogens as *Ceratanova shasta*, and that suppress the incidence of harmful algal blooms (HABs), both of which have become more prevalent throughout the hydrological system.

There also are unacceptable high likely impacts on ESA-listed winter-run Chinook at Hamilton City and Red Bluff intakes:

> "All winter-run Chinook salmon spawning occurs upstream of Red Bluff (Azat 2019), so all juvenile winter-run migrating downstream would need to pass the two intake locations at Red Bluff and Hamilton City….. It is possible that a relatively large proportion of downstream-migrating juvenile salmonids could pass relatively close to the Red Bluff and Hamilton City intakes, particularly during nighttime periods when most migration occurs [citations omitted]…..
>
> "[I]t would be expected that approximately 10-30% of downstream-migrating juvenile salmonids approaching the river-oxbow split would enter the oxbow and have the potential to be exposed to the Hamilton City intake screen." [Pages 11-84 & 85]

This is an unacceptable amount of "take" for an ESA-listed species (winter-run Chinook) already on the verge of extinction. At a minimum, these two intakes must be redesigned to absolutely minimize "take" of these fish, including repositioning them so that there are adequate natural sweeping flows sufficient to guide juvenile fish away from these intakes, and with screens positioned far enough from the intake current to keep juvenile fish from entrainment. These design elements need to be in place in the Plan. It is NOT sufficient to merely plan future studies on these issues, as currently stated:

> "Potential exposure of juvenile salmonids to the Red Bluff and Hamilton City fish screens would be addressed by technical studies focused on diversions at these locations during high winter flow conditions when Project diversions would occur (Appendix 2D)." [Page 11-86]

Again, without an adequate and stable description of all aspects of the Project plan, its likely impacts simply cannot be analyzed, and this violates the very purposes of both CEQA and NEPA. It is simply not enough to state, as is done above, that all these issues would somehow be addressed later in time, i.e., long after the CEQA and NEPA comment stage has passed.

This effort to indefinitely defer actual analysis of entrainment impacts simply begs the question: "What happens if entrainment at these intakes is found to be unacceptably high?" The current Project plan does not seem to answer this question, but rather it goes through a convoluted reasoning process (apges 11-91 to -97) to justify the largely still unsupported assertion that:

> "The Red Bluff and Hamilton City fish screens are designed to protective standards for Chinook salmon fry and so near-field effects would be expected to be limited.

> Impingement could be monitored at the Red Bluff and Hamilton City intakes during high winter flow conditions when Project diversions would occur (Appendix 2D)."

This is more like simply taking these pre-existing intakes as they now are, rather than bringing them up to higher standards based on best available design criteria – and hoping for the best. At the least, if there is to be meaningful monitoring in accordance with Appendix 2D, there should be certain entrainment "triggers" and caps above which, if these levels are reached, the intakes will be redesigned or operated to minimize such problems.

Temperature Effects from Irrigation Diversions on Winter-run Chinook Must Be Considered Cumulatively, Not in Isolation

Project analysis categorically dismisses most (but not quite all) increased temperature impacts on winter-run Chinook as (1) being less than 5% greater under the alternatives than under the NAA, and (2) the exceedance per day was generally less than 0.5° F. greater than under the NAA. The RDEIR/SDEIS then states:

> "Because these biologically meaningful effects occurred in only one month of one water year type, they are not expected to be persistent enough to affect winter-run Chinook salmon at a population level." [11-105].

And later:

> "Overall, effects of Alternatives 1, 2, and 3 on water temperature-related effects to winter-run Chinook salmon in the Sacramento River are expected to be biologically inconsequential due to the low frequency and small magnitude of differences between Alternatives 1, 2, and 3 and the NAA." [11-107]

However, requiring "a population level" effect is not the appropriate standard here. The finding of a "take" of this ESA-listed species does not require "population level" impacts – and lack of population level effects does not excuse a "take" of an endangered species.

The winter-run Chinook is a federally ESA-listed species that has been pushed extremely close to extinction already, and lays eggs which are also very temperature sensitive at ambient water temperature thresholds above 53.5° F. **Temperature-dependent egg mortalities (TDM) do not change in a linear fashion with increased temperature; they are threshold-related.** Water temperature increases above that particular biological threshold (now all too common in the Sacramento River system) can result in very large temperature-dependent egg mortalities even with very small increases in ambient water temperature above that key biological threshold. In that context even a 0.5° F. water temperature increase above that threshold can result in much larger egg mortalities on a non-linear basis! (See Figure 1).

Generally speaking, the extent of TDM in a cohort of Chinook salmon eggs is a function of by how much river temperatures exceed 53.5°F at the location of the redds, and for how long

these conditions persist. Egg mortality rates increase very rapidly at daily average temperatures above 53.5°F (11.94°C) (*Martin et al.* 2016), and TDM is above 70% when eggs are incubated at constant temperatures of 55°F (~12.8°C) and above (see Figure 1); this is likely an underestimate because river temperatures are not constant over the course of a day -- a 55°F average temperature means the eggs will be exposed to even higher temperature "spikes" during the hottest parts of each sunny day.

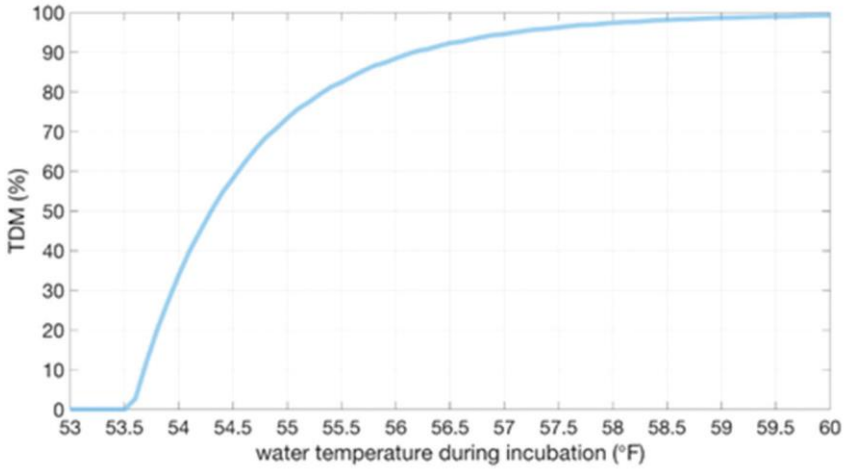

Figure 1: *Temperature-dependent mortality (% TDM) of winter-run Chinook Salmon eggs as a function of water temperatures, as modeled by NMFS based on research published by Martin et al. 2016. Note that eggs begin to die when exposed to constant temperatures above 53.5°F and mortality increases rapidly as temperatures increase. In particular, exposure to constant temperatures of 55°F corresponds to temperature-dependent mortality of greater than 70%. In the wild, temperatures are not constant; it is likely that TDM is higher at any given average temperature than it is at the corresponding constant temperature depicted here. (Source: Graph provided to parties by federal defendants October 21, 2021; reprinted from PCFFA, et al. vs. Raimondo, U.S. Dist. Court of Northern California, Case No. 1:20-cv-00431, Declaration of Dr. Jonathan A. Rosenfield, Dkt. 325 (12/16/21))*

Figure 1 also illustrates neatly why the Project RDEIR/SDEIS's broad assumption that impacts that are less than 5% of NAA *status quo* can be categorically assumed to be "insignificant" is false, as well as in conflict with NEPA and CEQA standards. In this TMD instance, and in many other instances of "threshold" triggers, once that threshold has been reached, even very small additional impact increases above that threshold "tipping point" can result in major (even irrevocable) changes to a finely balanced ecosystem. In this case, changing ambient water temperatures for cold-adapted salmonid eggs from 53.5°F a mere 0.5 degree upwards to 54.0°F would result in TMD levels rocketing from zero to 30% or more.

The RDEIR/SDEIS Must Take into Account the Cumulative Impacts from all other Sacramento River Diversions

Never in the Project's RDEIR/SDEIS documents does it discuss in any detail the cumulative effects on anadromous salmonids or other aquatic species of all the hundreds of individually small irrigation withdrawals throughout the hydrological system that already diminish Sacramento River flows within the Project area. Cumulative effects analysis is still a requirement of NEPA, and this requirement is being further bolstered by the Biden Administration (see 86 *Fed. Regs.* 55757 *et seq.* (Oct. 7, 2021)). CEQA also independently requires a cumulative effects analysis. Without such a cumulative impacts analysis it is impossible to assess the true potential water diversions resulting from the Project in terms of incremental or additional impacts the Project might create on ESA- or CESA-listed species already (by definition) near extinction.

But consideration of cumulative effects is also crucial in determining whether this Project's additional impacts, on top of already existing cumulative other impacts, results in a "take" occurring or if there is "jeopardy" to ESA-listed species such as the winter-run Chinook, the spring-run Chinook and/or steelhead.

The Federal Endangered Species Act (ESA) [16 U.S.C. §1538(a)(1)] generally prohibits any person, including both private persons and federal agencies, from "taking" any endangered species, such as in this case winter-run Chinook, spring-run Chinook or steelhead. And the term "take" is broadly defined to mean "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct."

With the ESA, Congress intended endangered species to be afforded the highest of priorities. The ESA's purpose is "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, [and] to provide a program for the conservation of such endangered species and threatened species." 16 U.S.C. § 1531(b).

Under the ESA, conservation means "to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary." *Id.* § 1532(3).

Section 7(a)(2), 16 U.S.C. § 1536(a)(2), is a critical component of the statutory and regulatory scheme to conserve endangered and threatened species. It requires that every federal agency must determine whether its actions "may affect" any endangered or threatened species. If so, the action agency must formally consult with the Fisheries Service as part of its duty to "insure that [its] action is . . . not likely to jeopardize the continued existence" of that species. *Id.* § 1536(a)(1), (2); 50 C.F.R. § 402.14 (2019).

The term "jeopardize" is defined as an action that "reasonably would be expected . . . to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species." 50 C.F.R. § 402.02 (2019). At the completion of formal consultation, the Fisheries Service will issue a Biological

Opinion that determines if the agency action is likely to jeopardize the species. 16 U.S.C. §1536(b)(3)-(4); 50 C.F.R. § 402.14(h).

In formulating its Biological Opinion, the Fisheries Service must use only "the best scientific and commercial data available." 16 U.S.C. § 1536(a)(2). The Biological Opinion must also include a summary of the information upon which the opinion is based, an evaluation of the "current status of the listed species," the "effects of the action," ***and the "cumulative effects." 50 C.F.R. § 402.14(g)(2), (g)(3).*** "Effects of the action" include both direct and indirect effects of an action "that will be added to the environmental baseline." Id. § 402.02. The "environmental baseline" includes "the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process." *Id.*

"Cumulative effects" include "future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area." *Id.* Thus, in issuing a Biological Opinion, the Fisheries Service must consider ***not just the isolated share of responsibility for impacts to the species traceable to the activity that is the subject of the Biological Opinion, but also the effects of that action when added to all other activities and influences that affect the status of that species.***

Thus for both NEPA and CEQA purposes, as well as for ESA incidental take coverage purpose and a Biological Opinion, a cumulative impacts analysis looking at the combined impacts of all other water diversions in addition to or prior to the Project's proposed water diversions on ESA-listed or CEQA-listed aquatic species within the Project's area is necessary.

Flow-Related Physical Impacts on ESA-listed Salmonids

1. Redd Dewatering

The RDEIR/SDEIS on page 11-109 notes that:

> "The results for winter-run Chinook salmon show few large changes in redd dewatering between the NAA and Alternatives 1, 2, and 3 (Table 11N-13)….. Changes for most months and water year types under all Alternatives 1, 2, and 3 are less than 2%. Overall, the effects of Alternatives 1, 2, and 3 on winter-run redd dewatering are minor."

While this may be true *on average*, that average value is merely a mathematical construct, not a real event. In Table 11N-13 there is an outlier high number (highlighted in red) for the July-October period in a Below Normal water year, in which the percentage of redds dewatered under those conditions is projected to be 2%. In an extremely weak population baseline, such as that of the endangered winter-run Chinook salmon stocks, that 2% loss could well be deemed significant. Repeated such loss events could be even more so, especially on top of cumulative losses from other sources.

Similar claims of insignificant impacts from redd dewatering for spring-run Chinook and fall-run Chinook could be made. However, in a related table (11N-14) showing percentage of ESA-listed spring-run Chinook redds likely to be dewatered, there are also data outliers in the Sept-Dec. time frame in Above Normal water years for Alt 1B (2.3% reduction), for Alt 3 (4.5% reduction), and during the Oct.-Jan. time period for Above Normal years under Alt 3 (2.2% reduction), and for Critically Dry water years for Alt 1A (4.5% reduction), Alt 1B (3.2% reduction, Alt 2 (3.2% reduction) and finally Alt 3 (3% reduction).

There are also similar redd dewatering problems listed for fall-run Chinook in Table N-15 of between 2% and 4.1% in some time frames and water years for some Alternatives.

These redd dewatering projects outliers are of some concern – please explain what, if any, mitigation measures you will take (e.g., reducing Project intakes in Critically Dry years during peak egg-laying season for salmonids) to mitigate these potential impacts on redds. And keep in mind also, there is no analysis about cumulative other impacts on river conditions that have already taken a high toll on the redds that are still typically present. Without that information on cumulative impacts, it is not possible to say whether up to an additional 5% loss of redds through dewatering – especially in light of the cumulative losses from all other impacts -- is a "significant" impact on the near-extinct population as a whole or not.

2. Spawning Habitat Loss

At page 11-111, after earlier describing the WUA ("weighted usable area") method used in your analysis, you state:

> "Almost all spawning by winter-run occurs in the upper two segments (Segment 6 and 5) of the Sacramento River, between Keswick Dam and Cow Creek, with spawning density (redds per RM) especially high in Segment 6 (Table 11K-1)….. Mean winter-run spawning WUA differs by less than 5% for most months and water year types, but mean WUA in Segment 6 under Alternatives 1, 2, and 3 is 5% to 6% lower than WUA under the NAA in May of Critically Dry Water Years (Table 11K-2)."

But then the draft goes on to say:

> "In general, Alternatives 1, 2, and 3 are not expected to substantially affect winter-run spawning WUA."

This latter assurance is, on its face, contradicted by the fact that at least during May, in Critically Dry water years, RDEIR/SDEIS tables show that up to 6.1 % percent of all the *very small amount of still remaining* winter-run Chinook spawning habitat is expected to be lost. *This impact, even by the Project's own questionable ≥5% significance level definition, is thus a significant impact.*

There are similar spawning area Segment 5 habitat losses projected for river Segment 5 for spring-run Chinook (see Table 11K-6) for Above Normal water years for Alternative 3 of 9.4% spawning area losses.

These relatively higher spawning area losses are of concern – please explain what, if any, mitigation measures Sites Authority will take (e.g., reducing Project intakes in Critically Dry years during peak egg-laying season for salmonids) to mitigate these significant impacts of spawning area losses.

It is also important to note that there should also be an analysis about cumulative other impacts on river conditions that have already taken a high toll on spawning areas that were once typically present. Without that information on cumulative impacts it is not possible to say whether up to an additional 5% loss of spawning habitat through dewatering is a "significant" impact on the population as a whole or not. Even a 5% loss of what may already be only a very small remnant of once abundant habitat could easily be "significant." And it would most certainly be a "take" as defined under the ESA!

3. Rearing Habitat Loss

At page 11-111, the RDEIR/SDEIS states:

> "These results indicate that Alternative 3 would have a moderate effect on rearing habitat for winter-run fry in the Sacramento River during October of Below Normal Water Years and the other alternatives would have no adverse effects."

This is an over-simplification, at best. As noted in Table 11K-23 for Segment 6 of the upper Sacramento River (one of the two main areas in which the winter-run still spawn), in September there would be a 5.1% winter-run fry rearing area reduction under Alternative 3, and in October under Below Normal conditions there would be a 7.1% loss under Alternative 3 and a 5.1% loss in Critically Dry years. And remember, these losses are cumulative <u>on top of</u> other major winter-run Chinook spawning and rearing habitat losses over many decades, losses which are in large part the trigger for their current ESA-listing as "endangered."

There are similar problems for loss of spring-run Chinook fry rearing habitat (see Table 11K-30 through 34) in Sacramento River Segments 4 and 5, and for fall-run Chinook as well under certain conditions (see Table 11K-46, looking at Sacramento River Segment 4).

These rearing habitat area losses projected are of some concern – please explain what, if any, mitigation measures you will take (e.g., reducing Project intakes in Critically Dry years during peak fry rearing season for salmonids) to mitigate these potential additional impacts that will lead to yet more fry rearing-area habitat losses.

There should also be an analysis about cumulative impacts on river conditions that have already taken a high toll on rearing habitat areas that were once typically occupied. Without that information on cumulative impacts, it is not possible to say whether up to an additional 5% loss of spawning habitat through dewatering is a "significant" impact on the population as a whole or not.

4. Increases in Juvenile Salmonid Strandings

There is an unfortunate dearth of analysis of salmonid juvenile stranding risk, as noted in Appendix 11-N (Other Flow-Related Upstream Analysis):

> **"11N.3.3 Juvenile Stranding**. A juvenile stranding analysis for salmonids was conducted in the Sacramento River only. No information is available from the Feather and American Rivers for relating changes in flow to numbers of juvenile salmonids stranded. Furthermore, daily flow data are needed to reliably estimate juvenile stranding, and only monthly data are available for these rivers."[1]

One would then have to assume, as a precautionary measure, that juvenile stranding problems in these other rivers would be comparable to typical stranding problems in the Sacramento. You cannot just assume them away from lack of data, as apparently was done. "Absence of evidence is not evidence of absence."

And it turns out there are also likely to be serious juvenile stranding problems within the Sacramento River:

> "The largest increases in juvenile stranding occur for the April cohort at all three locations [upper Sacramento River: Keswick Dam, Clear Creek, and Battle Creek], ranging as high as 30% in Dry Water Years under Alternative 1A, 1B, and 2 at the Keswick Dam location." [11-112]

But then, remarkably, this very troubling and clearly significant impact is dismissed out of hand with the following justifications:

> "The principal period of stranding vulnerability for the winter-run is for cohorts emerging in July through October, when some large reductions and increases in juvenile stranding occur, but large reductions in juvenile stranding are more frequent than large increases. Therefore, Alternatives 1, 2, and 3 are not expected to affect winter-run juvenile stranding (Table 11N-28 through Table 11N-30)." [Page 11-112]

> "The results generally show little evidence of major overall effects of Alternatives 1-3. The redd dewatering and juvenile stranding analyses found many increases in potential negative effects balanced by many reductions in such effects." [Appendix 11N-53]

<u>This is false, and at best, contradictory reasoning</u>. Stranding events and non-stranding events cannot be traded off against each other "on average" because they are not biologically symmetrical. Once an individual juvenile fish is stranded, even once, *it is dead* – it does not matter one bit if in other places at other earlier or later times, it would not been stranded at all or would have benefited in some way. It only takes a single event (not an "averaged sum") for a stranding to result in death. *Once a fish is dead, it stays dead. It cannot benefit from later more benign events.*[2] *In short, its death cannot be averaged away.*

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[1] RDEIR/SDEIS, pg. 11N-42.

[2] This is comparable to in-river fish mortality events in response to summer daily hot water temperature spikes. Once a spike occurs at fatal spike temperatures, <u>even once</u>, the fish affected by that spike are dead. It does not matter

Removing large numbers of juvenile fish from the river, including by periodic mortality events like strandings, just means fewer fish to benefit from later improving conditions. Dead fish, from whatever the cause, are in fact removed from the population. Juvenile stranding events with mortalities of as high as 30% of the fish present (see Table 11N-28 through Table 11N-30) thus represent significant mortality events that have serious implications – particularly for already extremely weak and now geographically very limited populations like the endangered winter-run Chinook. Mitigation measures to prevent these mortality events should be incorporated into the Project Plan and into its permits.

5. Migration Flow – Survival Relationships

At page 11-119, we find the following correct summary of what is now the best available science with regard to the relationship between higher flows of water through the Delta and out-migrating salmon survival rates:

> "Diversions from the Sacramento River to Sites Reservoir under Alternatives 1, 2, and 3 have the potential to affect survival of juveniles salmonids, including winter-run Chinook salmon, based on flow-survival relationships. Several recent analyses provided evidence for positive correlations between Sacramento River flows and survival of Chinook salmon [citations omitted]."

Later on that same page, the RDEIR/SDEIS also states:

> "The discussion in Section 11P.2 of Appendix 11P, *Riverine Flow-Survival*, illustrates that the Sites Reservoir diversion criteria generally minimizes diversions during the historical periods of fish movement … and application of the flow-threshold criteria … suggests that flow-survival effects on juvenile Chinook salmon (including winter-run Chinook salmon) would be greatly limited by the diversion criteria."

Project proponents also claim:

> "As discussed in Chapter 6, the effects of Alternatives 1A, 1B, 2, and 3 on water temperatures at the Sites Reservoir release site in the Sacramento River would be relatively small with the releases generally tending to cause a slight reduction in water temperature (Tables 6-12a through 6-12d). Therefore, temperature-related effects of Alternatives 1A, 1B, 2, and 3 on winter-run Chinook salmon at the Sacramento River release site would be minimal … For Alternatives 1A, 1B, 2, and 3, water temperatures at this location would either stay the same or be reduced due to Sites Reservoir releases." [11-120]

Hypothetical reductions in Sacramento water temperatures due to Sites Reservoir timed inputs, of course, depends on two things: (a) whether those inputs are applied directly to the

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thereafter what the "average daily temperature" was for that day. The "average daily temperature" is a mathematical construct while the high temperature spike is a real mortality event.

Sacramento River or not – which according to the description of the Project alternatives in the Executive Summary [Table ES-1 on pg. ES-8] could *only be achieved under Alternative 2*, and; (b) the initial temperature of the water originating at the Sites Reservoir at the upper end of the pipeline to the river.

Left to itself the Sites Reservoir is simply going to absorb sunlight, especially during summer months, and heat up, collecting and spreading that solar energy broadly through its increased surface area like any other lake. Unless the reservoir becomes temperature stratified, it will become just like a bathtub of warm water – water that might well be warmer (not cooler) than the Sacramento River at the time of inflow.

The RDEIR/SDEIS should explain in more detail any water temperature reduction measures, if any, that are planned for keeping the water temperatures of water delivered from Sites Reservoir to the Sacramento River as low-temperature as possible. For instance, is the reservoir expected to stratify in temperature, and if so, will there be temperature control devices sufficient to take water *only* from the lower-temperature level of that stratification? What will the average depth of the reservoir be? Will it be covered in some way – such as naturally with the introduction of floating water plants, or with floating solar collectors as some have proposed – in order to reduce initial water temperatures?

What is the initial water temperature (i.e., or water coming from the reservoir) that is assumed and built into Table 11-15? An overly-optimistic assessment of the water temperature effects on the slack-water, completely exposed reservoir from (particularly summertime) solar heating would lead to nonsensical conclusions.

Inadequate Mitigation Measures FISH-2.1 and FISH-3: Wilkins Slough Flow Protection Criteria: Problems with this mitigation as the Project's primary fish impacts mitigation measure is that this measure would be in place, by its own terms [11-131] *only* during March through May of each year. However, salmonid species like the ESA-listed winter-run and spring-run Chinook, and the non-listed but seriously depressed fall-run Chinook, are well known to be present and migrating through the system at other times of the year, during which times (according to your own analysis) these stocks would be more severely impacted. See for instance RDEIR/SDEIS at 11-130 to 11-131 that states:

> "Mitigation Measure FISH-2.1 will limit the potential for negative flow-survival effects to winter-run Chinook salmon during their dispersal to rearing habitat and/or migration downstream toward the Delta."

However, as the RDEIR/SDEIS admits, winter-run Chinook salmon migrate past the diversion points for Sites Reservoir (at the Red Bluff Diversion Dam and at Hamilton City) and past Wilkins Slough well before the month of March, which is when the protections provided by FISH-2.1 would only begin, and they are generally migrating out of the Delta between December and May. *See* RDEIR/SDEIS at 11-79 to 11-80 (noting that half of the annual migration of juvenile winter-run Chinook salmon have passed the Red Bluff Diversion Dam before late October and 90 percent before January 1; noting that winter-run Chinook salmon are caught in Knights Landing rotary screw traps between mid-September to mid-March, with the bulk of the

run (90 percent) generally passing between early October to mid-March; noting that winter-run Chinook salmon are generally caught in the Chipps Island trawls between December 1 and May); *see id*. at 11-124 ("the main period of juvenile winter-run Chinook salmon occurrence in the Delta (i.e., December–April"). Indeed, most migrating juvenile Chinook salmon, including nearly all juveniles of the winter-run and late-fall run, will not be protected by this bypass flow requirement as most of these fish would have migrated downstream of Knights Landing before March. *See* RDEIR/SDEIS at 11-120 and citations therein.

In short, mitigation measure FISH-2.1 will limit pumping that reduces flows in the Sacramento River below 10,700 cfs only ***after*** most winter-run Chinook salmon have already migrated downstream to the Delta, and as a result this mitigation measure wholly fails to protect juvenile winter-run Chinook salmon from the harmful effects of the proposed Project and alternatives as they migrate down the Sacramento River. The RDEIR/SDEIS's conclusion that the proposed Project and alternatives will not cause significant environmental impacts to winter-run Chinook salmon is simply unsupported by its own analysis, and is thus arbitrary and capricious, and the document must be revised to include adequate mitigation measures that apply when winter-run Chinook salmon are actually migrating down the Sacramento River.

Similar timing problems for related flow bypass measures also invalidate mitigation measures proposed to protect spring-run (FISH-3) and fall-run Chinook, as well. Since all these species are present in the river outside the very limited March through May mitigation period, these essentially unmitigated additional impacts on already severely depressed salmonid stocks could not be "insignificant" in any sense of the word.

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COMMENTS ON SITES REVISED DRAFT ENVIRONMENTAL IMPACT REPORT/SUPPLEMENTAL DRAFT ENVIRONMENTAL IMPACT STATEMENT REGARDING THE TRINITY RIVER

The modeling for Sites RDEIR/SDEIS purports to show that the Project would not harm the Trinity River because it shows no changes in the current pattern of exports, river releases and storage for the Trinity River Division (TRD) of the Central Valley Project (CVP). However, since no operating plan for Sites has been released along with the RDEIR/SDEIS, it is impossible to ascertain if real time operations would impact the Trinity River.

Furthermore, the Trinity River does not have temperature protection incorporated into the Bureau of Reclamation's (BOR) state water permits. Until the State Water Resources Control Board (SWRCB) updates BOR's Trinity River water permits, objections to Sites Reservoir are valid because impacts can and will occur.

The Sites Project Authority claims that it has no authority to change TRD operations, which is true. However, it cannot say the same for one of its member agencies that controls the TRD -- the Bureau of Reclamation (BOR). Given that BOR owns, operates, and has full control of the TRD and will likely have a percentage ownership in Sites Reservoir, it's very clear that construction and operation of Sites could and likely would negatively impact the Trinity River.

For instance, examination of the modeling for the 2017 Sites DEIR/DEIS found that during drier years, BOR would export more Trinity water to the Sacramento River in spring and late winter, while concurrently reducing Trinity exports during critical fall spawning months when Lewiston Reservoir warms substantially. The modeling, if done adequately, should also have shown increased temperatures for spawning salmon in the Trinity River. This so-called "modeling error" has been corrected for the current RDEIR/SDEIS. However, without an operations plan, the modeling is meaningless, but the previous modeling exercise gives a clear example of how Sites could negatively impact the Trinity River through BOR operations.

The issue is: "How can the Sites Project Authority be held responsible for BOR's actions related to the operation of Sites Reservoir?" There is a way to ensure that the Trinity River is not harmed by BOR's partial ownership of Sites, and that is through amendment of Reclamation's Trinity River water permits. The legislative and legal history of the TRD of the CVP is rife with requirements to "do no harm" to the Trinity River and its fishery. The proposed Sites Reservoir clarifies the need for BOR to have its state water permits amended to not harm the Trinity River because under the current regulatory scenario, harm to the Trinity River is inevitable.

What Constitutes "Harm" to the Trinity River?

State Water Resources Control Board Water Right Order 90-5[3] partly identifies what is "harm" to the Trinity River as it relates to the export of Trinity water for temperature control in the Sacramento River:

> *"IT IS FURTHER ORDERED that Permits 11966, 11967, 11968, 11969, 11970, 11971, 11973, 12364, and 12365 and License 9957, on Applications 5627, 5628, 15374, 15375, 15376, 16767, 17374, 17376, 17375, and 15424, be amended to add a condition as follows:*
>
> *"Permittee shall not operate its Trinity River Division for water temperature control on the Sacramento River in such a manner as to adversely affect salmonid spawning and egg incubation in the Trinity River. Adverse effects shall be deemed to occur when average daily water temperature exceeds 56°F at the Douglas City Bridge between September 15 and October 1, or at the confluence of the North Fork Trinity River between October 1 and December 31 due to factors which are*
>
> *(a) controllable by permittee and*
>
> *(b) are a result of modification of Trinity River operations for temperature control on the Sacramento River.*
>
> *"If the temperatures in the Trinity River exceed 56°F at the specified locations during the specified periods, Permittee shall immediately file with the Chief of the Division of Water Rights a report containing project operational data sufficient to demonstrate that the*

[3] See https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/1990/wro90-05.pdf

exceedance was not due to modifications of Trinity River operations for water temperature control on the Sacramento River. If, within fifteen days, the Chief of the Division of Water Rights does not advise Permittee that it is violating this condition of its water right, Permittee shall be deemed not to have caused the exceedance in order to control temperature on the Sacramento River.

"This term is not to be construed as interfering with the U. S. Department of Interior Andrus Decision dated January 14, 1981, relative to Trinity River releases."

The Trinity River protections found in WR 90-5 do not provide any protection from other projects or purposes such as diversions to Sites Reservoir, hydropower production or water supply. Water Right Order 90-5 only limits BOR's export of Trinity River to do no harm to Trinity River salmon because of operations for temperature control on the Sacramento River.

A more comprehensive definition of harm to the Trinity River can be found in the North Coast Regional Water Quality Control Board's "Water Quality Control Plan for the North Coast Region" (North Coast Basin Plan).[4] While the North Coast Basin Plan Trinity River 56° temperature objective is included in WR Order 90-5, the 60°F July 1- September 15 temperature objective is not. BOR has made it very clear that because the 60°F objective is not included in WR Order 90-5, that BOR is not required to meet it and clearly does not meet it in many years such as 2021. Therefore, Water Right Order 90-5 is not adequately protective of Trinity River salmon. In this case, the 60°F temperature objective is intended to protect holding adult spring Chinook salmon prior to spawning. Trinity River spring Chinook were recently listed as threatened under the California Endangered Species Act.

The lack of full protection for the Trinity River from diversions for various uses other than temperature control on the Sacramento River leaves the Sites Project Authority vulnerable to criticism that the Project will harm the Trinity River and the Lower Klamath River below the Trinity confluence because BOR will have the ability to move Trinity water into Sites. How can this be fully mitigated? The answer lies with the history of Water Right Order 90-5 dating back to 1989 and the need for promises to be kept, not broken.

In 1989, State Water Resources Control Board Water Quality Order 89-18[5] directed that meeting Central Valley Basin Plan temperature objectives for the Sacramento River would be met through the water rights process, not Waste Discharge Requirements. It directed that the water right hearing for Water Right Order 90-5 be initiated to amend BOR's CVP water rights to include temperature protection for Sacramento River salmon. The County of Trinity participated

[4] "Water Quality Control Plan for the North Coast Region" Footnote 5, Table 3-1, page 3-8.00: Accessed at http://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/083105-bp/04_water_quality_objectives.pdf

Daily Average Not to Exceed	Period	River Reach
60°F	July 1- Sept 15	Lewiston to Douglas City Bridge
56°F	Sept 15-Oct 1	Lewiston to Douglas City Bridge
56°F	Oct 1- Dec 31	Lewiston to North Fork Confluence

[5] See https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/1989/wq1989_18.pdf

in the hearing, concerned that protections for Sacramento salmon might harm the Trinity River. As a result, the SWRCB made the following finding (page 17):

> *"The State Board should conduct water right proceedings to consider whether the Bureau's permits should be modified to establish temperature limitations or other conditions to assure adequate water quality for protection of the fishery in the Trinity River."*

The SWRCB directed that a water right hearing on Trinity River temperatures be held (page 18):

> *"IT IS FURTHER ORDERED that the Division of Water Rights shall initiate proceedings for the State Board to consider modifying the Bureau's permits for the Trinity River Unit of the Central Valley Project to set appropriate conditions to maintain water quality in the Trinity River. The State Board may review Trinity River water quality in the same water rights proceedings* as *it reviews upper Sacramento River water quality, or in subsequent proceedings to the extent that the issues may properly be considered separately.*"

The commitment to protect the Trinity River water quality in Water Quality Order 89-18 was also carried into Water Right Order 90-5 (page 31):

> *"We have already announced our intention to conduct a water right proceeding to consider whether the Bureau's Trinity River water rights should be modified to establish temperature limitations and other controls on water quality to protect the fishery in the Trinity River. See Order No. WQ 89-18. The proceedings on the Bureau's Trinity River water rights are expected to be commenced late this year. Our hearing record -for this decision is not adequate to set fishery protections for the Trinity River."*

Unfortunately, the water right hearing to consider a full range of temperature protection measures for amendment of BOR's water permits has yet to be scheduled **thirty-three years later**. The BOR has expressed opposition to imposing any additional terms and conditions on its Trinity River water rights, calling it "unnecessary and ill-advised."

BOR's objection to conforming its Trinity River water permits to the North Coast Basin Plan water quality objectives stands as a roadblock in assuring that Sites Reservoir will not harm the Trinity River's fishery resources. If BOR opposes updating its Trinity River water permits, objections to Sites are valid and will be the basis of water right protests.

A mitigation measure must therefore be added to the approvals for the Record of Decision, Notice of Determination, water rights and operating plan for the proposed Sites Reservoir as follows:

> *"Sites Reservoir operations by the Sites Project Authority and its members do not cause harm to the Trinity River, as defined by violation the Trinity River Temperature Objectives contained in the 'Water Quality Control Plan for the North Coast Region'[6]. Construction*

[6] Ibid

permits shall not be issued, and construction shall not commence until the State Water Resources Control Board amends the Bureau of Reclamation's Trinity River Water Permits to implement North Coast Basin Plan temperature objectives for the Trinity River."

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This concludes the Supplemental Comments. Thanks for the opportunity to comment, and please place these comments in the Administrative Record.

Sincerely,

Glen H. Spain
NW Regional Director
PCFFA/IFR