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UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF CALIFORNIA

PACIFIC COAST FEDERATION OF
FISHERMEN’S ASSOCIATIONS, *et al.*,

Plaintiffs,

v.

WILBUR ROSS, *et al.*,

Defendants.

No. 1:20-cv-00431-DAD-EPG

ORDER DENYING WITHOUT
PREJUDICE MOTION FOR
PRELIMINARY INJUNCTION AS TO
SHASTA OPERATIONS

(Doc. No. 81)

INTRODUCTION

Plaintiffs in the above-captioned action, *Pacific Coast Federation of Fishermen’s Associations v. Ross*, 1:20-CV-00431-DAD-EPG (*PCFFA*), are a coalition of six environmental organizations led by PCFFA (collectively, “PCFFA”). A closely related case, *California Natural Resources Agency v. Ross*, No. 1:20-CV-00426-DAD-EPG (*CNRA*), is also pending before the undersigned. In *CNRA*, plaintiffs are the People of the State of California, California’s Natural Resources Agency, and California’s Environmental Protection Agency (collectively, “California”).

Both sets of plaintiffs bring claims against the National Marine Fisheries Service (NMFS), the U.S. Fish and Wildlife Service (FWS), the U.S. Bureau of Reclamation (Reclamation), and

1 various official representatives of those agencies. (*CNRA*, Doc. No. 51, First Amended
2 Complaint (FAC); *PCFFA*, Doc. No. 52, FAC.) Plaintiffs in both cases challenge the adoption by
3 NMFS and FWS, respectively, of a pair of “biological opinions” (BiOps) issued in 2019 pursuant
4 to the Endangered Species Act (ESA), 16 U.S.C § 1531 *et seq.*, regarding the impact on various
5 ESA-listed species of implementing Reclamation’s updated plan for the long-term operation of
6 the Central Valley Project (CVP) and the State Water Project (SWP) (collectively, “Water
7 Projects” or “Proposed Action”). FWS’s 2019 BiOp (2019 FWS BiOp) addressed the impacts of
8 the Proposed Action on Delta smelt, while NMFS’s 2019 BiOp (2019 NMFS BiOp) addressed
9 the impacts of the updated plan upon, among others, three species of salmonids: winter-run
10 Chinook salmon (winter-run) and spring-run Chinook salmon (spring-run), and California Central
11 Valley steelhead (CCV steelhead). All plaintiffs allege that NMFS and FWS violated the
12 Administrative Procedure Act (APA), 5 U.S.C. § 706, in various ways by concluding that the
13 Water Projects would not jeopardize the continued existence of the ESA-listed species addressed
14 in each biological opinion. Both sets of plaintiffs also bring claims against Reclamation under the
15 ESA for unlawfully relying on the 2019 BiOps in formally adopting and implementing the
16 Proposed Action, and the National Environmental Policy Act (NEPA), 42 U.S.C. § 4321 *et seq.*¹

17 In an order issued on May 11, 2020, the court resolved certain aspects of overlapping
18 requests for preliminary injunctive relief filed by *PCFFA* and California, namely issues related to
19 species impacts caused by the Water Projects’ export pumping operations in the southern portion
20 of the Sacramento-San Joaquin Delta (Delta) as well as potential impacts related to the operation
21 of New Melones Dam on the Stanislaus River. (*CNRA*, Doc. No. 106; *PCFFA*, Doc. No. 173
22 (Delta/Stanislaus PI Order).) However, in part in order to expedite the issuance of its May 11,
23 2020 ruling, the court held in abeyance certain issues raised in *PCFFA*’s motion for preliminary
24 injunction (*PCFFA* PI Motion) concerning instream temperature management measures aimed at

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27 ¹ California’s complaint in *CNRA* also alleges that Reclamation has violated the APA by failing
28 to comply with measures California put in place under the California Endangered Species Act
(CESA) to protect Longfin smelt, compliance with which California alleges is required by various
provisions of federal law.

1 protecting winter-run and spring-run eggs and juveniles in the reaches of the Upper Sacramento
2 River below Shasta and Keswick Dams. (*See id.*)

3 On May 18, 2020, the court ordered the parties to submit supplemental information and
4 briefing addressing the remaining Upper Sacramento temperature management issues posed by
5 the pending motion. (Doc. No. 179.) First, recognizing that Reclamation had yet to issue a final
6 temperature management plan for the Upper Sacramento River and that the facts on the ground
7 were evolving, the court ordered Reclamation to submit the final plan, which was due to be
8 released only a few days later—on May 20, 2020. (*Id.* at 18) The court also ordered the Federal
9 Defendants to submit supplemental information indicating what, if any, efforts had been
10 undertaken this water year to model temperature management scenarios that might have enabled
11 Reclamation to provide more favorable temperature conditions (and, relatedly, lower temperature
12 dependent mortality) in the Upper Sacramento River. (*Id.* at 18–19.) Thereafter, PCFFA was
13 permitted to supplement its motion by articulating, with specificity: (a) what PCFFA is
14 requesting by way of an injunction; (b) how, under present conditions (i.e., not based solely upon
15 rough projections set forth in the 2019 NMFS BiOp), the requested injunction would benefit the
16 species of concern; and (c) the possible tradeoffs in terms of impacts (i.e. to spring run or other
17 species) that would likely have to be made if the requested injunction were granted. (*Id.* at 20.)
18 In addition, PCFFA was directed to provide “at least a basic showing, understanding that PCFFA
19 may not have access to all of the relevant information, that Reclamation has the ability and
20 sufficient discretionary authority (i.e., is not constrained by other legal or contractual
21 requirements) to implement the requested relief.” (*Id.*)

22 In keeping with the supplemental briefing schedule, Reclamation submitted the final
23 temperature management plan to the court on May 21, 2020. (Doc. No. 182.) On May 24, 2020,
24 Federal Defendants submitted the Third Declaration of Kristin White. On June 1, 2020, PCFFA
25 submitted a supplemental brief along with numerous attachments. (Doc. No. 185.) Federal
26 Defendants submitted a response on June 8, 2020, along with several declarations and
27 attachments. (Doc. No. 188.) Defendant Intervenors also submitted a combined responsive brief,
28 along with objections to evidence offered by PCFFA. (Doc. Nos. 189, 190.)

1 Having carefully reviewed the extensive record and for the reasons set forth below, the
2 court will deny PCFFA’s motion for preliminary injunction as to Shasta operations without
3 prejudice.

4 **FACTUAL BACKGROUND**

5 **A. Winter-Run, Spring-Run and Shasta Dam**

6 Winter-run are listed as endangered under the ESA. (*PCFFA*, Doc. No. 85-2 (2019
7 NMFS BiOp) at 65.) Before construction of Shasta Dam, the winter-run had access to the
8 Sacramento River upstream of Shasta Dam’s present location and to the upper tributaries where
9 springs provided cold water throughout the summer. (*Id.* at 69–70.) Shasta Dam and Keswick
10 Dam (a smaller, regulating dam that sits nine miles downstream of Shasta) block access to this
11 extensive former spawning habitat. (*Id.* at 70.) As a result, the only population of winter-run
12 spawns exclusively in the reaches of the Upper Sacramento River below Keswick Dam and this
13 “single population . . . has been supported by cold water management operations at Shasta Dam.”
14 (*Id.*) Generally, winter-run adults migrate upstream through the San Francisco Bay-Delta region
15 during the winter and spring months and spawn in the upper Sacramento river in the summer
16 months. (*Id.* at 70–71.)² The ocean stage of the winter run life cycle typically lasts three years.
17 (*PCFFA*, Doc. No. 85-18 (2009 NMFS BiOp) at 87.)

18 Spring-run are listed as threatened under the ESA. (2019 NMFS BiOp at 79.) They are
19 somewhat more geographically widespread than winter-run, with populations at varying levels of
20 viability known to spawn on several tributaries to the Sacramento River. (*Id.* at 89.) The ocean
21 stage of the spring-run life cycle typically lasts one to five years. (*Id.* at 88.) Spring-run adults
22 typically migrate upstream, unsurprisingly, in the spring, from January to June. (*Id.* at 89.) In at
23 least one location (Clear Creek), adult spring-run “hold” for several months in the mid-to-late
24 summer before spawning in September and October. (*Id.* at 85.) Some spawning also occurs in

25 ² According to the 2019 NMFS BiOp: “Sacramento River winter-run Chinook salmon are
26 particularly important among California’s salmon runs because they exhibit a life-history strategy
27 found nowhere else in the world. These Chinook salmon are unique because they spawn during
28 the summer months when air temperatures usually approach their warmest. As a result, winter-
run Chinook salmon require stream reaches with cold-water sources to protect their incubating
eggs from the warm ambient conditions.” (*Id.* at 65.)

1 the mainstem Sacramento River (*id.* at 89), although the numbers of fish spawning there have
2 generally been limited in recent years. (*Id.* at 91.) Juvenile spring-run exhibit varied rearing
3 behavior and outmigration timing. Some juveniles may reside in upstream areas for 12 to 16
4 months (these individuals are characterized as “yearlings”), while some may migrate to the ocean
5 shortly after hatching as “young-of-the-year.” (*Id.* at 85.)

6 Shasta Dam is equipped with a temperature control device (TCD) that allows Reclamation
7 to control the temperature of water released from the Dam. (*PCFFA*, Doc. No. 85-12 (2019
8 Biological Assessment (BA)) at 4-26.) “The TCD has four levels of gates from which water can
9 be drawn.” (*Id.*) During mid-winter and early spring, Reclamation uses the highest possible
10 elevation gate(s) to draw from the upper levels of the lake and conserve the deeper, colder water.
11 (*Id.* at 4-27.) During late spring and summer, as Shasta Reservoir elevation decreases,
12 Reclamation progresses to open deeper gates to release the colder water. (*Id.*)

13 Generally, temperature management below Shasta/Keswick involves the release of cold
14 water to meet target temperatures at various temperature compliance points (TCP) along the
15 Sacramento River. Keswick Dam is located at River Mile 302. (2019 BA at 2-13.³) The furthest
16 upstream TCP is Clear Creek (about 10 river miles below Keswick), then Airport Road Bridge
17 (15 river miles below Keswick), Balls Ferry (25 river miles below Keswick), and Bend Bridge
18 (44 river miles below Keswick). (*Id.*) The general purpose of these temperature compliance
19 points is to keep water temperatures cool enough to avoid damaging salmon eggs, a phenomenon
20 known as “temperature-dependent mortality.” (*See* BA 4-29; *PCFFA*, Doc. No. 82, Declaration
21 of Dr. Jonathan Rosenfield (Rosenfield Decl.) at ¶ 138.)

22 **B. 2009 NMFS BiOp & RPA**

23 On June 4, 2009, NMFS issued, and Reclamation accepted, a BiOp that concluded that
24 “the long-term operations of the CVP and SWP are likely to jeopardize the continued existence”
25 of various listed species, including winter-run and spring-run, and “destroy or adversely modify”
26

27 ³ While the parties have submitted excerpts from the 2019 BA, the court here references pages
28 from the complete document, which is available at: <https://www.usbr.gov/mp/bdo/docs/ba-final-biological-assessment.pdf> (last visited June 10, 2020).

1 those species' critical habitats. (2009 NMFS BiOp at 575.) Specifically, as relevant to this order,
2 the 2009 NMFS BiOp explained that:

3 Water operations result in elevated water temperatures that have
4 lethal and sub-lethal effects on egg incubation and juvenile rearing
5 in the upper Sacramento River. The immediate operational cause is
6 lack of sufficient cold water in storage to allow for cold water
7 releases to reduce downstream temperatures at critical times and
8 meet other project demands. This elevated temperature effect is
9 particularly pronounced in the Upper Sacramento for winter-run
10 and mainstem spring-run, and in the American River for steelhead.
The RPA includes a new year-round storage and temperature
management program for Shasta Reservoir and the Upper
Sacramento River, as well as long-term passage prescriptions at
Shasta Dam and re-introduction of winter-run into its native habitat
in the McCloud and/or Upper Sacramento rivers.

11 (*Id.* at 576–77.)

12 As required under the ESA, *see* 16 U.S.C. §§ 1536(a)(2), (b)(3)(A), the BiOp included a
13 “Reasonable and Prudent Alternative” (2009 RPA) designed to allow the projects to continue
14 operating without causing jeopardy to the species or adverse modification to its critical habitat.
15 (*Id.* at 575–671). Most relevant here, for the summer, as part of “Action Suite I.2” of the 2009
16 RPA, Reclamation was required to develop a temperature management plan and implement
17 Shasta Dam operations to achieve daily average water temperatures not in excess of 56°F
18 between Balls Ferry and Bend Bridge from May 15 through September 30 for the protection of
19 winter-run, and not in excess of 56°F between Balls Ferry and Bend Bridge from October 1
20 through October 31 for the protection of spring-run in the mainstem Sacramento River “whenever
21 possible.” (*Id.* at 601.) The 2009 RPA acknowledged that “extending the range of suitable
22 habitat by moving the compliance point downstream from Balls Ferry” must be balanced against
23 the need to conserve storage in order to accumulate a sufficient cold water pool for use during the
24 subsequent temperature management season. (*Id.* at 602.) The 2009 RPA also provided drought
25 exception procedures and contingency plans if these temperatures could not be achieved. (*Id.* at
26 600.)⁴

27 ⁴ The 2009 Shasta Dam RPA also created long-term performance measures related to
28 Reclamation’s success at maintaining appropriate temperature control and the volume of stored
water carried over through the winter into the subsequent season. (*Id.* at 592.)

1 **C. Loss of Temperature Control in 2014 & 2015; Reinitiation of Consultation**

2 In 2014 California was in the third year of a drought. (2019 NMFS BiOp at 69.)
3 According to PCFFA’s expert, Dr. Rosenfield, early in 2014, Reclamation moved the temperature
4 compliance point “far upstream above Clear Creek’s confluence with the Sacramento River,”
5 predicting it could provide required water temperatures to that point. (Rosenfield Decl. at ¶ 171.)
6 However, despite initial modeling that indicated compliance was possible and despite
7 Reclamation obtaining various waivers from state Delta outflow requirements that Reclamation
8 asserted were necessary to maintain appropriate water temperatures, river temperatures at the
9 revised temperature control point nonetheless exceeded 56°F. (*Id.*) This resulted in temperature
10 dependent egg mortality in 2014 of 77% (*id.*) and extremely poor egg-to-fry survival (measured
11 as the percentage of eggs that survived to produce fry capable of passing Red Bluff Diversion
12 Dam on the lower Sacramento River) of approximately 4%. (2019 NMFS BiOp at 69) (citations
13 omitted).

14 The story was much the same in 2015. (*See* Rosenfield Decl. at ¶ 172.) Indeed, egg-to-
15 fry survival that year was the lowest on record (approximately 3%), “due to the inability to
16 release cold water from Shasta Dam in the fourth year of the drought.” (*Id.*) As a result, and as
17 the 2019 NMFS BiOp explains, “[w]inter-run [] returns in 2016 to 2018 were low, as expected,
18 due at least in part to poor in-river conditions for juveniles from brood year 2013 to 2015 during
19 drought years.” (*Id.*) Although “[t]he 2018 adult winter-run return (2,639) improved from 2017
20 (977),” it was “dominated by hatchery-origin fish.” (*Id.*)

21 NMFS acknowledged the precarious situation of the winter run in a 2016 request for re-
22 initiation of the inter-agency consultation process required by the ESA, *see* 16 U.S.C. § 1536,
23 stating: “recent data demonstrate []extremely low abundance levels for endangered Sacramento
24 River winter-run. . . .” (*PCFFA*, Doc. No. 85-5 at 2.) NMFS also drafted an amendment to the
25 2009 RPA actions related to Upper Sacramento temperature management. (*PCFFA*, Doc. No. 85-

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1 8.)⁵ That draft RPA amendment called for Reclamation to operate Shasta Dam to ensure that
2 temperatures did not exceed 56°F daily average temperature at a compliance location between
3 Balls Ferry and Bend Bridge from the start of winter-run spawning, based on aerial redd⁶ or
4 carcass⁷ surveys, through 100% winter-run “emergence” (i.e., when the eggs hatch). (*Id.* at 18.)
5 The draft also called for the maintenance of 56°F daily average temperatures at the same
6 compliance location through October 31 for protection of mainstem spring run “whenever
7 possible.” (*Id.*) Among other things, the draft also proposed to place strict limits on temperature
8 dependent mortality below Shasta Dam. (*Id.* at 14 (proposing that temperature dependent
9 mortality should not exceed 30% in critically dry years, 8% in dry years, and 3% in below
10 normal, above normal, and wet years).) Reclamation responded to that proposal by indicating
11 that additional work would be needed to ensure that the objectives identified by NMFS were
12 “feasible, scientifically sound, and address[ed] impacts to the other requirements and beneficial
13 uses of the CVP and SWP.” (*PCFFA*, Doc. No. 85-9 at 2.)

14 The 2019 NMFS BiOp describes how temperature management was actually implemented
15 from 2016 through the issuance of the 2019 BiOp as follows:

16 On August 2, 2016, Reclamation requested using the adaptive
17 management provision in the NMFS 2009 Opinion related to Shasta
18 Reservoir operations. The basis for this request included recent,
19 multiple years of drought conditions, new science and modeling,
20 and data demonstrating the low population levels of endangered
21 winter-run Chinook salmon and threatened CV spring-run Chinook
22 salmon. In response, Reclamation implemented a 2017 pilot
approach that applied new science on the thermal tolerance of
Chinook salmon eggs (Martin et al. 2016) and which was designed
to efficiently utilize Shasta Reservoir’s limited supply of cold water
by basing the spatial distribution of protective temperatures on the
within-season spatial distribution of winter-run Chinook salmon

23 ⁵ In connection with their supplemental filings, Defendant Intervenors object to the court’s
24 consideration of this document on various grounds. (Doc. No. 190 at 6–7.) However, here the
25 court is simply considering the document as part of the consultation history and context, not for
26 the truth of the matters addressed therein. Nothing in Defendant Intervenors’ objections suggests
27 consideration of this document for contextual purposes is improper.

28 ⁶ Salmon eggs incubate for weeks to months in gravel nests, known as redds. (Rosenfeld Decl. at ¶ 136.)

⁷ Chinook salmon die after spawning. (Rosenfeld Decl. at ¶ 136.)

1 redds. The intent was to provide daily average water temperatures
2 of 53°F or less to the Clear Creek gauging station as a surrogate for
3 the furthest downstream redds. The 2009 RPA requirement was a
4 daily average temperature of 56°F or less at compliance locations
5 between Balls Ferry and Bend Bridge, which are not based on the
6 within-season redd distribution. [T]he 2017 pilot approach, along
7 with one of the wettest years on record (in water year 2017),
8 resulted in an estimated 44 percent egg-to-fry survival, one of the
9 highest estimates on record. The pilot approach was implemented
10 in 2018 and . . . 2019. In July 2019, CDFW aerial redd surveys
11 indicated redd distribution was further downstream than the
12 targeted temperature management location at CCR. Per the request
13 of the fish agencies, and as a result of Reclamation’s temperature
14 modeling that indicated the operation was feasible, on August 7,
15 2019, Reclamation initiated temperature management to target
16 53.5°F at the Airport Road location.

17 (2019 NMFS BiOp at 173.)

18 **D. The 2019 NMFS BiOp**

19 Further consultation between NMFS and Reclamation, including at one point the issuance
20 of a draft “jeopardy” opinion by NMFS (*PCFFA*, Doc. No. 85-13), resulted in revisions to the
21 final Proposed Action and ultimately to the issuance by NMFS of a “no jeopardy” biological
22 opinion. (*See generally* 2019 NMFS BiOp.) The final Proposed Action implements a tiered
23 Shasta temperature management strategy designed, at least facially, to account for the real-time
24 spatial and temporal distribution of redds designed to attempt to conserve cold water for use when
25 it is most needed. The operation manager of Reclamation’s Central Valley Office, Kristin White,
26 describes this tiered approach generally as follows.

27 The tiered strategy recognizes that cold water is a scarce resource
28 and that additional measures may be required when hydrology and
meteorology do not provide sufficient cold water to avoid
temperature dependent mortality throughout the entire temperature
management period. The tiered strategy is intended to optimize use
of cold water at Shasta for Winter-Run Chinook Salmon eggs based
on life-stage-specific requirements during the temperature
management season.

(*PCFFA*, Doc. No. 119-1, Declaration of Kristin White (White Decl.) at ¶ 23 (citing BA at 4-31
to 4-32).)

NMFS concluded that the Clear Creek TCP serves as a reliable surrogate for controlling
temperatures at the farthest downstream redd location. (*See* 2019 NMFS BiOp at 173, 237.)

1 Although historically spawning was expected to begin in April, in recent years, the onset of
2 spawning has been later—into May and June. (2019 NMFS BiOp at 243–4.) The tiered strategy
3 adopts the view that using cold water too early (i.e., before redds are deposited) and/or to meet a
4 TCP too far downstream of the actual location of redds, wastes cold water that is needed later in
5 the season during the critical incubation season. Thus, the tiered strategy “allows for strategically
6 selected temperature objectives,” based on projected total storage, the available “cold water
7 pool,” meteorology, and downstream conditions (which can influence how much water
8 Reclamation must release for other reasons), among other things. (2019 BA at 4-28.)

9 The temperature targets for each “Tier” are as follows:

- 10 • In Tier 1 years, Reclamation will operate to maintain daily average temperatures of
11 53.5°F at Clear Creek throughout the entire temperature management season (May 15
12 through Oct 30). (2019 NMFS BiOp at 241–2.)
- 13 • In Tier 2, Reclamation will target 53.5°F during the “critical egg incubation period.”
14 (*Id.* at 242.)
- 15 • Tier 3 is the proposed operation when the cold water pool in Shasta Reservoir on May
16 1 is less than 2.3 million acre-feet or when modeling suggests that maintaining 53.5°F
17 at the Clear Creek TCP would have higher mortality than a warmer temperature. (*Id.*)
18 In a Tier 3 year, Reclamation would target 53.5°F–56°F degrees during the critical egg
19 incubation period and would consider “intervention measures.”⁸ (*Id.*) Reclamation
20 would not allow temperatures to exceed 56°F but would decrease temperatures to
21 below that during the periods of greatest temperature stress on the species. (*Id.*)
- 22 • Tier 4 conditions are “defined by mid-March storage and operations forecasts of
23 Shasta Reservoir total storage less than 2.5 million acre-feet at the beginning of May,
24 or if Reclamation cannot meet 56°F at Clear Creek gauge.” (*Id.* at 243.) In this
25 scenario, “Reclamation proposes to initiate discussions with FWS and NMFS on

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27 ⁸ “Intervention measures” would include “consulting with [FWS and NMFS, increasing
28 hatchery intake, adult rescue, and juvenile trap and haul.” (*Id.* at 249.) NMFS notes in the 2019
NMFS BiOp that “any benefits from implementation of these measures is not included in results
presented [therein] due to their inability to be characterized by the modeling.” (*Id.* at 243.)

1 potential intervention measures to address low storage conditions that continue into
2 April and May.” (*Id.* at 243.)

3 There is no dispute between the parties that this year, circumstances place the Water Projects into
4 Tier 3. (Tr. 101.)

5 NMFS reviewed the tiered management strategy in some detail in the 2019 NMFS BiOp
6 and summarized its own evaluation of the impacts that it anticipated would result from operations
7 under each of these Tiers.

- 8 • In Tier 1 years, NMFS expects an average modeled temperature dependent egg
9 survival of 94–95%. (*Id.* at 241–2.) Reclamation is expected to operate under Tier 1
10 in 68% of years. (*Id.*)
- 11 • In Tier 2 years, average modeled temperature dependent egg survival is anticipated to
12 be 85–88%, which is expected to occur in 17% of years. (*Id.* at 750.)
- 13 • Modeling suggests Tier 3 would be in place for 7–15% of years. (*Id.* at 243, 248.)
14 The 2019 NMFS BiOp indicates that temperature conditions in a Tier 3 year would
15 result in an estimated temperature-dependent mortality of between 28% and 34%
16 according to the two dominant modeling approaches, respectively. (*Id.*)
- 17 • NMFS expects Tier 4 conditions to exist in five to 7% of years. (*Id.* at 252.) Modeling
18 indicates that during Tier 4 years, 53.5°F is exceeded on 86% of days that fall within
19 the temperature management period. (*Id.*) “This exposure corresponds to an
20 estimated temperature-dependent mortality in Tier 4 years of between 79% and 81%.”
21 (*Id.*)

22 Reclamation’s Proposed Action, as analyzed in the 2019 NMFS BiOp, plans for certain
23 other measures designed with an intent to benefit winter-run. Within 18 months of adoption of
24 the Proposed Action, Reclamation will develop a “voluntary toolkit to be exercised at the
25 discretion of Reclamation, DWR, other agencies, participating water users, and/or others for the
26 operation of Shasta Reservoir during critical hydrologic year types.” (2019 BA at 4-89.) Among
27 other things, the Proposed Action notes a Resolution adopted by the Sacramento River Settlement

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1 (SRS) Contractors⁹, pursuant to which, during dryer water years (Tier 3 and Tier 4), the SRS
2 Contractors will meet and confer with Reclamation, NMFS, and other agencies as appropriate to
3 determine if there is any role for the SRS Contractors in connection with Reclamation’s
4 operational decision-making for Shasta Reservoir annual operations. (*Id.*) While a pre-
5 determined reduction (25%) in deliveries to the SRS Contractors is automatically triggered in
6 certain dry years under their “settlement” contracts, other actions may be considered, including:
7 (1) modifying the scheduling of spring diversions by the SRS Contractors; (2) voluntary,
8 compensated water transfers by the SRS Contractors subject to Reclamation approval; and
9 (3) delayed SRS Contractor diversion for rice straw decomposition during the fall months. (*Id.*)
10 The Proposed Action also includes non-flow measures such as spawning and rearing habitat
11 restoration, construction of lower intakes in critical areas, and other fish passage projects. (*Id.* at
12 4-40 to 4-42.)

13 Overall, however, NMFS conceded in its 2019 BiOp that

14 The proposed action will result in ongoing adverse effects to
15 Sacramento River winter-run Chinook salmon. The most
16 significant adverse effects, as described throughout this Opinion,
17 are temperature dependent egg mortality that will occur in all of the
18 Summer Cold Water Pool Management tier types, but most
19 significantly in tier 3 and 4 years.

20 (2019 NMFS BiOp at 753.)

21 NMFS acknowledged that it had previously concluded in 2009 that Water Project
22 operations would “result[] in an appreciable reduction in both the survival and recovery of
23 Sacramento River winter-run Chinook salmon” and therefore developed the 2009 NMFS BiOp
24 RPA. (*Id.*) But in its 2019 BiOp, NMFS reasoned that the Proposed Action “includes many
25 components that were developed through an iterative process” that

26 ⁹ The SRS Contractors are “individuals and entities . . . that individually hold settlement
27 agreements (the SRS Contracts) with [] Reclamation.” (2019 NMFS BiOp at 8.) The SRS
28 Contractors hold “senior” rights that pre-date the CVP and SWP, and thus Reclamation’s
“without action” scenarios assume these senior rights holders would continue to divert water
under their pre-CVP/SWP rights, because that is what they previously did in absence of the
operation of the CVP and SWP. (BA 3-17.) Accordingly, Reclamation considers at least certain
aspects of these diversions to be part of the “environmental baseline” for various environmental
analyses. (*See id.*)

1 included NMFS sufficiency reviews, draft effects analyses that
2 identified areas where the action was likely to place the individuals
3 and the ESU at high risk, many director meetings where these high
4 risk situations were elevated and Reclamation changed the
5 proposed action to reduce these risks. . . . [T]his iterative process
6 resulted in Reclamation identifying specific actions that would
7 improve Shasta Storage, a commitment to stay within Summer Cold
8 Water Management Tiers, the development of Upper Sacramento
Performance Metrics and four and eight year independent panel
reviews, a financial commitment to reintroduction work on Battle
Creek, Delta Cross Channel operational commitments, and the
Delta Performance Objectives to cap juvenile loss at the export
facilities at the rates experienced over the past 10 years.

9 (*Id.* at 753–54.) NMFS noted that some aspects of the 2009 RPA were not “carried forward” but
10 that Reclamation “adopted” the goals and objectives of those RPA actions; that Reclamation
11 made clear funding commitments to support a plan to create a second population of winter run;
12 that actions in other parts of the ecosystem will help control losses in the Upper Sacramento
13 River. In sum, the 2019 BiOp states:

14 NMFS expects that despite ongoing adverse effects of the Central
15 Valley Project on individuals and their respective populations, and
16 the continued and significant adverse effects that are part of the
17 environmental baseline such as the loss of historical habitat related
18 to the physical presence of Keswick and Shasta Dams, the proposed
action also includes measures intended to maintain the abundance,
productivity, and diversity, and may improve the spatial structure of
the ESU.

19 ***

20 After considering its current rangewide status, the environmental
21 baseline within the action area, the effects of the proposed action,
22 effects of any interrelated and interdependent actions, and
23 cumulative effects, NMFS concludes that the proposed action is not
likely to appreciably reduce the likelihood of both the survival and
recovery of the Sacramento River winter-run Chinook salmon ESU.

24 (*Id.* at 755–56.)

25 **E. Incidental Take Statement**

26 As part of the 2019 NMFS BiOp, NMFS included an Incidental Take Statement (ITS) that
27 serves to insulate the Proposed Action against ESA liability, so long as its terms are complied
28 with. 16 U.S.C. § 1536(o); *Aluminum Co. of Am. v. Adm’r, Bonneville Power Admin.*, 175 F.3d

1 1156, 1159 (9th Cir. 1999) (“In addition, if NMFS concludes that no jeopardy exists or that RPAs
2 would avoid jeopardy and that the incidental taking of endangered or threatened species will not
3 violate section 7(a)(2), NMFS must issue an Incidental Take Statement specifying the conditions
4 under which incidental taking may occur.”) (citing 16 U.S.C. § 1536(b)(4)). As the ITS indicates,
5 the Proposed Action creates a variety of stressors, some of which are expected to result in the
6 incidental take of listed species, including water temperature in the upper Sacramento River.
7 (2019 NMFS BiOp at 799.) The ITS articulates the “anticipated” level of take for each Tier level
8 and then indicates that the anticipated level of take will be exceeded if there are:

- 9 ○ Two consecutive years of egg-to-fry survival of less than 15
10 percent followed by a third year of less than 21 percent based on fry
11 production at Red Bluff Diversion Dam.
- 12 ○ Two consecutive years where temperature-dependent egg
13 mortality modeled from actual operations exceeds the average plus
14 one standard deviation for the tier determined in the annual
15 temperature management plan and egg-to-fry survival is less than
16 average egg-to-fry survival for the tier. Specifically:
 - 17 ○ Under a Tier 1 year, take would be exceeded if, in two
18 consecutive years, temperature-dependent mortality exceeds 15
19 percent (average of 6 percent plus one standard deviation of 9)
20 and egg-to-fry survival is less than 29 percent.
 - 21 ○ Under a Tier 2 year, take would be exceeded if, in two
22 consecutive years, temperature-dependent mortality exceeds 31
23 percent (average of 15 percent plus one standard deviation of
24 16) and egg-to-fry survival is less than 21 percent.
 - 25 ○ Under a Tier 3 year, take would be exceeded if, in two
26 consecutive years, temperature-dependent mortality exceeds 65
27 percent (average of 34 percent plus one standard deviation of
28 31) and egg-to-fry survival is less than 21 percent.

(*Id.* at 801–802.)

24 **F. The 2020 Temperature Management Plan**

25 Reclamation finalized its temperature management plan for this year on May 20, 2020.
26 (*See* Doc. No. 182-2 (2020 TMP).) As mentioned, it is undisputed that current hydrologic
27 conditions render 2020 a “Tier 3” year under the 2019 NMFS BiOp’s tiered management system.
28 In accordance with the BiOp’s definition of Tier 3 years (*see* 2019 NMFS BiOp at 242), the 2020

1 TMP indicates that, given the available cold water pool as of May 1, 2020, Reclamation “cannot
 2 maintain” 53.5°F at the temperature compliance point above Clear Creek for the entire
 3 temperature management season (May 15 through October 31), but a temperature between 53.5°F
 4 and 56°F can be maintained for shorter periods of time. (See Doc. No. 182-2 at 1.) Specifically,
 5 after modeling various scenarios, Reclamation chose from those scenarios a strategy that
 6 anticipates targeting the following temperatures at Clear Creek (CCR) and Balls Ferry (BSF)
 7 compliance points:

Week Beginning	CCR	BSF
April 30, 2020		56.0
May 7, 2020		56.0
May 14, 2020	54.5	56.0
May 21, 2020	54.5	56.0
May 31, 2020	53.5	56.0
June 7, 2020	53.5	56.0
June 14, 2020	53.5	56.0
June 21, 2020	53.5	56.0
June 30, 2020	54.0	56.0
July 7, 2020	54.0	56.0
July 14, 2020	54.0	56.0
July 21, 2020	54.0	56.0
July 31, 2020	54.0	56.0
August 7, 2020	54.0	56.0
August 14, 2020	54.0	56.0
August 21, 2020	54.0	56.0
August 31, 2020	54.0	56.0
September 7, 2020	54.0	56.0
September 15, 2020	54.0	56.0
September 21, 2020	56.0	
September 30, 2020	56.0	
October 7, 2020	56.0	
October 14, 2020	56.0	
October 21, 2020	56.0	
October 31, 2020	56.0	

1 (Adapted from Doc. 182-2 at 8–9 (Table 2).) According to Reclamation, “[t]he planned
 2 temperature management operation anticipates targeting the compliance point that encompasses
 3 the majority of the winter-run Chinook salmon redds.” (*Id.* at 8.) Reclamation applied two
 4 modeling approaches to estimate the temperature dependent mortality that may occur as a result
 5 of the implementation of the 2020 temperature management plan. According to the “Martin”
 6 model, temperature dependent mortality will be 28%; according to the “Anderson” model,
 7 temperature dependent mortality will be 15% for the chosen management approach. (*Id.* at 3.)

8 STANDARD OF DECISION

9 “The proper legal standard for preliminary injunctive relief requires a party to demonstrate
 10 ‘that he is likely to succeed on the merits, that he is likely to suffer irreparable harm in the
 11 absence of preliminary relief, that the balance of equities tips in his favor, and that an injunction
 12 is in the public interest.’” *Stormans, Inc. v. Selecky*, 586 F.3d 1109, 1127 (9th Cir. 2009) (quoting
 13 *Winter v. Nat. Res. Def. Council, Inc.*, 555 U.S. 7, 20 (2008)); *see also Ctr. for Food Safety v.*
 14 *Vilsack*, 636 F.3d 1166, 1172 (9th Cir. 2011) (“After *Winter*, ‘plaintiffs must establish that
 15 irreparable harm is likely, not just possible, in order to obtain a preliminary injunction.’” (citation
 16 omitted)); *Am. Trucking Ass’n, Inc. v. City of Los Angeles*, 559 F.3d 1046, 1052 (9th Cir. 2009).
 17 The Ninth Circuit has also held that an “injunction is appropriate when a plaintiff demonstrates
 18 . . . that serious questions going to the merits were raised and the balance of hardships tips sharply
 19 in the plaintiff’s favor.” *All. for Wild Rockies v. Cottrell*, 632 F.3d 1127, 1134–35 (9th Cir. 2011)
 20 (internal quotation and citation omitted).¹⁰ For the purposes of injunctive relief,

21 “serious questions” refers to questions which cannot be resolved
 22 one way or the other at the hearing on the injunction and as to
 23 which the court perceives a need to preserve the status quo lest one
 24 side prevent resolution of the questions or execution of any
 judgment by altering the status quo. Serious questions are
 substantial, difficult and doubtful, as to make them a fair ground for
 litigation and thus for more deliberative investigation.

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 26 ¹⁰ The Ninth Circuit has found that this “serious question” version of the circuit’s sliding scale
 27 approach survives “when applied as part of the four-element *Winter* test.” *All. for the Wild*
 28 *Rockies*, 632 F.3d at 1134. “That is, ‘serious questions going to the merits’ and a balance of
 hardships that tips sharply towards the plaintiff can support issuance of a preliminary injunction,
 so long as the plaintiff also shows that there is a likelihood of irreparable injury and that the
 injunction is in the public interest.” *Id.* at 1135.

1 *Republic of the Philippines v. Marcos*, 862 F.2d 1355, 1362 (9th Cir. 1988) (quotations marks and
2 citation omitted).

3 The party seeking an injunction bears the burden of proving these elements. *Klein v. City*
4 *of San Clemente*, 584 F.3d 1196, 1201 (9th Cir. 2009); *see also Caribbean Marine Servs. Co. v.*
5 *Baldrige*, 844 F.2d 668, 674 (9th Cir. 1988) (citation omitted) (“A plaintiff must do more than
6 merely allege imminent harm sufficient to establish standing; a plaintiff must demonstrate
7 immediate threatened injury as a prerequisite to preliminary injunctive relief.”). Finally, an
8 injunction is “an extraordinary remedy that may only be awarded upon a clear showing that the
9 plaintiff is entitled to such relief.” *Winter*, 555 U.S. at 22.

10 An injunction must be narrowly tailored to avoid the identified irreparable harm. *Nat’l*
11 *Wildlife Fed’n v. Nat’l Marine Fisheries Serv.*, 886 F.3d 803, 823 (9th Cir. 2018). “There must
12 be a sufficient causal connection between the alleged irreparable harm and the activity to be
13 enjoined, but a plaintiff need not further show that the action sought to be enjoined is the
14 exclusive cause of the injury.” *Id.* (internal quotation and citation omitted). Moreover, “[i]t is not
15 an abuse of discretion for a court to issue an injunction that does not completely prevent the
16 irreparable harm that it identifies.” *Id.*

17 **REQUESTED INJUNCTIVE RELIEF**

18 As noted in this court’s Delta/Stanislaus PI Order, PCFFA originally requested a broad
19 preliminary injunction “temporarily setting aside” the 2019 BiOps and prohibiting the Federal
20 Defendants from implementing or taking any actions in reliance on either the 2019 FWS BiOp or
21 the 2019 NMFS BiOp, including prohibiting Reclamation from implementing the Proposed
22 Action in reliance on those BiOps. (*PCFFA*, Doc. No. 81-1 at 2–3.) PCFFA also requested that
23 the court order the Federal Defendants to instead adhere to the operational regime for the Water
24 Projects authorized pursuant to the previously-controlling BiOps issued in 2008 and 2009 by
25 FWS and NMFS, respectively, until this court can resolve the merits of PCFFA’s claims asserted
26 in this action. (*Id.* at 2.)

27 In part because the 2008 FWS and 2009 NMFS BiOps covered a wide range of Water
28 Project operations, many of which were wholly unaddressed in the briefing submitted in support

1 of and in opposition to the motion for preliminary injunction, the court’s May 18, 2020 Order,
2 sought clarification from PCFFA as to the specific relief requested in connection with Shasta
3 operations. (*See* Doc. No. 179 at 14.) In response, PCFFA has indicated that it is seeking to have
4 the court enter a preliminary injunction requiring compliance with the entirety of the 2009 NMFS
5 BiOp RPA directed at Shasta Operations, referred to in that document as “Action Suite I.2.”
6 (Doc. No. 185 at 3; *see also* 2009 NMFS BiOp at 590–603.)¹¹ PCFFA argues that the granting of
7 such an injunction would mandate compliance with the following “requirements” of Action Suite
8 I.2:

9 (1) that Reclamation use more conservative modeling to plan
10 temperature management operations; (2) that Reclamation meet a
11 temperature compliance point of 56°F between Balls Ferry and
12 Bend Bridge for the duration of the temperature management
13 season (May through October), including by reducing all
14 discretionary CVP contract allocations as needed to achieve that
15 temperature control point; and (3) that NMFS have authority to
16 approve all CVP allocations and operations plans and require
17 changes therein to achieve the preferred temperature compliance
18 point.

19 (Doc. No. 185 at 4.)¹²

20 DISCUSSION

21 For purposes of this discussion, the court will assume without deciding that plaintiffs have
22 raised a serious question going to the merits of the 2019 NMFS BiOp’s tiered system by, among
23 other things, calling into question how NMFS could possibly conclude that the Proposed Action
24 poses no jeopardy to the already seriously imperiled winter-run, given the amount of temperature

25 ¹¹ Federal Defendants point out, correctly, that certain aspects of Action Suite I.2 pertain to time
26 periods that have already come and gone for purposes of injunctive relief. (Doc. No. 188 at 4.)
27 For example, Action Suite I.2 contains a spring action covering February through March (*see*
28 2009 NMFS BiOp at 592–97) and provides for a planning period that spans April 15, through
May 15 (*id.* at 602). Federal Defendants’ suggestion that the injunction sought by PCFFA is
overbroad simply because these steps do not (or at least no longer) pertain to summer temperature
management puts form over substance in the court’s view. Plaintiffs obviously are not requesting
that the court go back in time. The request to impose the remaining aspects of Action Suite I.2 is
discrete enough to permit evaluation here.

¹² Federal Defendants and Defendant Intervenors maintain that PCFFA’s motion is based on a
mischaracterization of the requirements of the 2009 NMFS BiOp. (*See* Doc. Nos. 188 at 5; Doc.
189 at 5.) Where material, the court addresses aspects of that dispute in this order.

1 dependent mortality allowed under that BiOp. Assuming as much, the inquiry turns to whether or
2 not irreparable harm is likely in the absence of the granting of an injunction. That question
3 cannot be evaluated and answered in a vacuum. Plaintiffs are not advocating that the CVP and
4 SWP stop operating. Moreover, given the precarious state of the species of concern, some set of
5 protective measures must be implemented. As detailed above, plaintiffs advocate reversion to the
6 2009 NMFS BiOp RPA applicable to Shasta operations (Action Suite I.2). Accordingly, from a
7 practical perspective, the court must examine whether or not there will be any practical difference
8 between implementation of the two operational regimes (i.e., Action Suite I.2 from the 2009
9 NMFS BiOp RPA versus the 2020 TMP finalized under the 2019 NMFS BiOp’s tiered system)
10 during the pendency of this action; and (2) whether any such difference would materially benefit
11 the species of concern. Having reviewed the entire present record, the court concludes that
12 PCFFA’s motion fails this practical test because the evidence presented to date does not indicate
13 that the requested injunction is likely to materially improve conditions vis-à-vis the current
14 operating regime for the species of concern during the current temperature management period.

15 At the outset, PCFFA argues that reversion to Action Suite I.2 from the 2009 NMFS BiOp
16 would require Reclamation to utilize “more conservative modeling.” (Doc. No. 185 at 4.) It is
17 not entirely clear what modeling requirements PCFFA is referring to in this regard. Action Suite
18 I.2 required Reclamation to use a 90% exceedance hydrology¹³ in its temperature management
19 planning. (Doc. No. 85-15 at 602.) However, the 2020 TMP also used 90% exceedance
20 hydrology in its forecasting. (Doc. No. 182-2 at 2–3.) To the extent PCFFA is suggesting that
21 Reclamation should be required to use similarly conservative meteorological (e.g., temperature)
22 inputs to its modeling, PCFFA looks not to Action Suite I.2 for that requirement but to NMFS’s

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28 ¹³ In a “90 percent exceedance forecast, there is a 10 percent chance that hydrology will be drier . . . than assumed in the forecast.” (White Decl. ¶ 10.)

1 2017 draft (i.e., proposed) amendment to Action Suite I.2 that was never formally adopted. (*See*
2 Doc. No. 153 at 13 n.1 (citing 2017 draft RPA amendment).)¹⁴

3 PCFFA makes the facially straightforward argument that the proposed injunction would
4 provide greater protection for winter-run and spring-run this year because the terms of the 2009
5 NMFS BiOp RPA would require Reclamation to manage Shasta operations to maintain 56°F at
6 Balls Ferry throughout the temperature management season, whereas the 2020 TMP “results in
7 significantly hotter – indeed lethal – water temperatures in September and October.” (Doc. No.
8 185 at 7.) First, however, in advancing this argument PCFFA fails to acknowledge significant
9 caveats built into the 2009 NMFS BiOp. As mentioned, Action Suite I.2 of the 2009 NMFS
10 BiOp RPA generally required Reclamation to achieve daily average water temperatures not in
11 excess of 56°F between Balls Ferry and Bend Bridge from May 15 through September 30 for the
12 protection of winter-run, but indicated that temperatures should not exceed 56°F between Balls
13 Ferry and Bend Bridge from October 1 through October 31 for the protection of spring-run in the
14 mainstem Sacramento River “*whenever possible.*” (2009 NMFS BiOp at 601 (emphasis added).)
15 Accordingly, even if Action Suite I.2 was in force this year, it would not mandate maintenance of
16 56°F between Balls Ferry and Bend Bridge in October.

17 The reality on the ground further narrows this dispute. The final 2020 TMP promulgated
18 under the 2019 NMFS BiOp does indeed anticipate that 56°F will be maintained at Balls Ferry
19 through mid-September. (Doc. 182-2 at 8–9 (Table 2).) As such, the Federal Defendants
20 accurately characterize the central dispute here as centering around the water temperatures
21 targeted for the last two weeks of September. During those two weeks, the final 2020 TMP
22 indicates that temperatures will be maintained at 56°F at Clear Creek. Given that all of the
23 modeling runs consistently show temperatures two degrees higher at Balls Ferry than at Clear
24 Creek during the relevant timeframes, it appears reasonable to assume that when water

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26 ¹⁴ Moreover, the planning horizon set up in Action Suite I.2 called for a draft temperature
27 management plan to be submitted by Reclamation to NMFS by April 15, with the final plan due
28 May 15. (2009 NMFS BiOp at 602.) That time horizon has obviously now passed and it is
unclear how revised modeling approaches could be incorporated into Reclamations planning at
this late stage of the year.

1 temperature is maintained at 56°F at Clear Creek, temperatures will be higher at Balls Ferry,
2 which is fifteen miles downstream of Clear Creek.

3 Setting aside for the moment the question of whether it is possible for Reclamation to
4 maintain 56°F at Balls Ferry through the end of September (let alone the end of October), the
5 record currently before the court does not clearly demonstrate that winter-run would be better off
6 if Reclamation was required to do so. Plaintiffs maintain, generally, that 56°F is lethal to
7 Chinook salmon eggs. (*See* Doc. No. 185 at 7.) There appears to be significant scientific dispute
8 over the exact relationship between temperatures over 56°F and egg mortality. For example,
9 Defendant Intervenors' expert, Mr. Cavallo, opines that egg mortality at temperatures over 56°F
10 depends on the magnitude and duration of that exposure. (Doc. No. 189-1, Declaration of
11 Bradley Cavallo (Cavallo Decl.) at 2.) Yet, the 2019 NMFS BiOp itself acknowledges "lethal
12 and sublethal effects" to eggs at temperatures at or even below 56°F. (*See, e.g.*, 2019 NFMS
13 BiOp at 238 ("Martin et al. (2017), suggests that in natural redds where dissolved oxygen (DO) is
14 variable, the target temperature of 56°F may be too high in some cases since salmon egg mortality can
15 occur at lower temperatures in hypoxia.")) Regardless, central to the 2019 NMFS BiOp's tiered
16 temperature management regime is the theory that cold water can be more effectively and
17 efficiently used by targeting that water to locations and times of the year when winter-run eggs
18 need to be protected. In other words, the primary goal of the tiered temperature management
19 regime is to control temperatures at locations and times when winter-run eggs are the most
20 vulnerable. The 2019 NMFS BiOp and the 2020 TMP attempt to game out the effectiveness of
21 this strategy by using models to forecast temperature dependent mortality based upon information
22 about where and when winter-run redds *are actually deposited/positioned during incubation*.
23 (*See* Cavallo Decl. at ¶ 21 (indicating that modeling used in the 2020 TMP assumed an average
24 spatial and temporal distribution of redds); 2019 NMFS BiOp at 276 (reviewing estimated
25 temperature dependent mortality results for each temperature management tier).) As mentioned
26 above, applying such modeling techniques, the 2020 TMP anticipates 28% temperature dependent

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1 mortality according to the “Martin” model and 15% according to the “Anderson” model. (Doc.
2 182-2 at 3.)¹⁵

3 This is where the rubber meets the road when it comes to the practical inquiry the court
4 faces: comparing the anticipated impacts to winter-run of the present operating regime against
5 those that likely would occur under PCFFA’s proposed injunction. As the court recognized in its
6 May 18, 2020 Order, some temperature dependent mortality has occurred historically during dry
7 years such as this one. (Doc. No. 179 at 16 (citing data from Reclamation’s BA)¹⁶.) PCFFA does
8 not appear to dispute this, but instead attempts to demonstrate that applying the 2009 NMFS
9 BiOp would result in reduced temperature dependent mortality of winter-run as compared to the
10 2019 NMFS BiOp’s tiered management scheme.

11 PCFFA points to 2009 and 2013 as examples of dry year scenarios when, they contend,
12 temperature dependent mortality was kept relatively lower than the anticipated temperature
13 dependent mortality for this year. (*See* Doc. No. 185 at 7 (“the 28% temperature dependent
14 mortality of winter-run Chinook salmon estimated to occur this year is significantly higher than
15 the temperature dependent mortality that was observed in *all dry years* under the 2009 NFMS
16 BiOp”).) First, PCFFA argues that in 2009, Reclamation was “required to meet the water
17 temperature requirements of RPA Action Suite I.2 by, if necessary, reducing discretionary
18 allocations for water service contractors.” (*Id.* at 4.) As plaintiffs point out, 2009 was a dry year
19 that followed a critically dry year in 2008, meaning that Reclamation had even less water in
20 storage at the end of April 2009 (3.0 million acre feet) (Doc. No. 85-8 at 39) than it did at the end
21 of April 2020 (3.2 million acre feet)) (Doc. No. 185-16 (PCFFA Ex. AW) at 2). Yet, according to
22 figures cited by PCFFA—taken from NMFS’s 2017 draft RPA amendment—temperature
23 dependent mortality in 2009 was 18.8% (Doc. No. 85-8 at 39), which is lower than the 28%
24 mortality predicted by the Martin model for the 2020 TMP.

25 ¹⁵ PCFFA does not appear to take issue with the modeling approaches utilized to produce these
26 estimates and in fact repeatedly relies on those figures in support of its motion.

27 ¹⁶ The court has read and considered plaintiffs critique of the temperature dependent mortality
28 modeling in the BA. (*See* Doc. No. 185 at 8 n. 11.) The court does not rely on the figures in the
BA here and therefore does not find it necessary to engage fully in plaintiffs’ critique at this time.

1 But, as Federal Defendants and Defendant Intervenors point out, this comparison is
2 materially flawed in several respects. First, the 2009 NMFS BiOp was not signed until June 2009
3 (Doc. No. 85-18 at 2), which was after Reclamation announced water allocations for that year.
4 According to NMFS’s Senior Policy Advisor Howard Brown, the 2009 NMFS BiOp did not have
5 any practical influence on water temperature management planning or allocations in 2009. (Doc.
6 No. 188-3, Second Declaration of Howard Brown (2d Brown Decl.) at ¶ 26.) Even if operations
7 that year had been controlled by the 2009 NMFS BiOp, the 18.8% temperature dependent
8 mortality figure PCFFA cites for 2009 is not comparable to the 28% figure estimated for 2020.
9 This is because the 18.8% figure was produced using a “hindcast” model, while the 28% figure is
10 a “forecast,” two modeling approaches that use materially distinct inputs from one another.
11 Among other things, the temperature dependent model forecast used in connection with the 2020
12 TMP used the “90% exceedance hydrology,” while the modeled hindcasts (such as the hindcast
13 that produced the 18.8% figure for 2009) used actual hydrology. (*Id.* at ¶ 21.) This means that
14 the forecast is a “conservative prediction[]” of temperature dependent mortality that “may prove
15 higher than actual [temperature dependent mortality], especially in dryer water year types where
16 real-time operations and [agency] coordination increase operational flexibility to improve
17 conditions.” (*Id.*) In contrast, “the hindcast model runs are a closer approximation of actual
18 [temperature dependent mortality] because they use the actual hydrology and meteorology
19 experienced during the temperature management season.” (*Id.*)

20 Defendant Intervenor’s expert, Bradley Cavallo, points out another reason why the
21 hindcast temperature dependent mortality figures from the 2017 draft RPA amendment relied
22 upon by PCFFA are distinct from the 2020 temperature management plan’s forecasted
23 temperature dependent mortality. The hindcast figures applied models that used actual egg/redd
24 locations and temporal distributions gathered from field observations, while the forecast figures
25 used inputs that represent average spatial and temporal distribution of redds. (Doc. No. 189-1,
26 Declaration of Bradley Cavallo (Cavallo Decl.) at ¶ 21.) As a result, according to Cavallo,
27 comparing the hindcast to the forecast results is an “apples to oranges” comparison. (*Id.* at 22.)
28 In his declaration, Cavallo suggests that if the modeling approach used to produce the 28%

1 temperature dependent mortality estimate anticipated for 2020 were applied to 2009 conditions,
2 the temperature dependent mortality forecast for 2009 would have *exceeded* 28%. (*See id.* at ¶ 21
3 & Figure 6).

4 Similar, if not more significant, problems pervade PCFFA’s comparison between 2020
5 and 2013. PCFFA points out that that in 2013, another dry year, North of Delta and South of
6 Delta agricultural allocations were reduced to 75% and 20% respectively. (Doc. Nos. 185-3
7 (PCFFA Ex. AJ), 185-8 (PCFFA Ex. AO), 185-9 (PCFFA Ex. AP).) Again citing the 2017 draft
8 RPA Amendment’s *hindcast* figures, PCFFA notes that temperature dependent mortality was
9 limited to 9.6% that year. (Doc. No. 85-8 at 39.) As with 2009, this comparison suffers from the
10 “apples to oranges” flaw. Mr. Cavallo’s declaration suggests that if the method used to create the
11 2020 TDM forecast were applied to 2013 data, the forecasted temperature dependent mortality
12 would be approximately 25%. (2d Cavallo Decl. ¶ 22 (Figure 6).)¹⁷ Moreover, as Federal
13 Defendants point out, the hydrologic situation in 2013 more closely resembled a Tier 2 year, with
14 a greater volume of cold water available for temperature management. (2d Brown Decl. at ¶ 19.)
15 In sum, the present record with respect to the temperature dependent mortality figures does not
16 support a finding that imposition of the 2009 NMFS BiOp’s Action Suite I.2 would result in a
17 material benefit to the winter-run this year.

18 Several other issues merit some discussion. A central thread underlying PCFFA’s motion
19 is that better temperature management results might be possible if Reclamation reduced
20 discretionary deliveries to CVP water users. PCFFA suggests that imposing Action Suite I.2
21 would either mandate that Reclamation reduce discretionary deliveries to achieve better results, or

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23 ¹⁷ The court recognizes that it would not be reasonable to expect PCFFA to be able to point to a
24 perfectly analogous prior year, given the number of variables that could distinguish one year from
25 another. Yet, it is powerful to see the modeling exercise presented in Mr. Cavallo’s declaration,
26 in which he takes the modeling approach used by Reclamation in the 2020 TMP to forecast
27 temperature dependent mortality—the results of which PCFFA cites as part of its critique of the
28 2020 TMP’s anticipated impact to winter-run—and applies that approach to 2009 and 2013. (2d
Cavallo Decl. ¶ 22 (Figure 6).) As mentioned, if that particular forecasting approach had been
used in 2009, the forecasted temperature dependent mortality that year would have been
somewhere on the order of 35–40% (higher than the forecast for 2020), while the forecasted
temperature dependent mortality for 2013 would have been somewhere on the order of 25% (only
slightly lower than the forecast for 2020).

1 at least would make such a scenario more likely. PCFFA invokes 2018 as an example of a year in
2 which the temperature management planning process set forth in Action Suite I.2 produced such
3 beneficial results. At first, 2018 appeared to be a dry water year type. In response to
4 Reclamation’s initial temperature management plan, in a February 16, 2018 letter, NMFS refused
5 to concur with Reclamation’s initial allocations to certain water users, suggesting that NMFS at
6 least thought Reclamation could make further adjustments to improve the temperature
7 management situation for that year. (Doc. No. 153-6 at 4–5.) Shortly thereafter, on February 20,
8 2018, in an action that arguably appears to be related to NMFS’s expressed concerns,
9 Reclamation backed away from its initial 50% allocation to North-of-Delta agricultural
10 contractors (Doc. No. 185-3 (PCFFA Ex. AJ) at 2) and instead indicated it would “not be
11 providing an initial allocation of water to North-of-Delta Contractors at [that] time, in part
12 because of uncertainty in the ability to manage Shasta Reservoir in a way that will provide
13 adequate temperatures for the protection of endangered salmon species in the Sacramento River
14 throughout the summer and fall in 2018.” (Doc. No. 185-12 (PCFFA Ex. AS) at 4.) However, it
15 is undisputed that hydrologic conditions improved later in 2018, allowing Reclamation to again
16 increase allocations. (Doc. No. 185-13 (PCFFA Ex. AT); 2d Brown Decl. at ¶ 19 (indicating
17 2018 ended as an “Above Normal” year).) It remains unclear to the court how the events in 2018
18 bear upon the present circumstances. While the record does reflect that temperature dependent
19 mortality of winter run may have been entirely avoided in 2018,¹⁸ there is no indication
20 whatsoever that this had anything to do with Reclamation’s early-season (February 2018)

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26 ¹⁸ It is somewhat noteworthy that Reclamation produced a “forecast” on May 18, 2018 that
27 estimated temperature dependent mortality would be 24.5–24.9% that year depending on the
28 model used. (See 2d Brown Decl., Ex 1 at 141.) Yet, the hindcast TDM estimate calculated by
NMFS for purposes of the pending motion suggests 0% temperature mortality actually occurred
that year. (2d Brown Decl. ¶ 19 (Table 1).)

1 allocation decisions, particularly given that allocations were eventually increased due to late
2 season storms.¹⁹

3 PCFFA also offers a rough calculation of the volume of water that might be considered
4 “discretionary” this year. These rough calculations are based upon how much water Reclamation
5 has “allocated” to various classes of water users this year and whether Reclamation’s contracts
6 with those users contain language permitting Reclamation to reduce allocations to meet legal
7 obligations, such as obligations under the ESA. (*See* Doc. No. 185 at 7–10.) According to
8 PCFFA’s calculations, “discretionary” allocations to “North-of-Delta”²⁰ and “South-of-Delta”
9 agricultural users total more than 600,000 acre feet²¹ of water. (*Id.*) This is an impressive
10 volume of water. It would seem logical to assume, as PCFFA indeed does, that if Reclamation
11 could (and chose to) avoid delivering that water to users during the temperature management
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13 ¹⁹ To the extent PCFFA is suggesting that if the 2009 NMFS BiOp controlled, NMFS would be
14 empowered to intervene and *require* Reclamation to reduce allocations and/or take other
15 actions to improve/expand temperature management options, it is not clear that there is any real
16 distinction between the 2009 and 2019 NMFS BiOps in terms of NMFS’s power. The court can
17 identify nothing in the 2009 NMFS BiOp that gave NMFS a veto power over water allocations.
18 Moreover, in practice, at least this year, NMFS and Reclamation appear to have engaged in close
19 consultation since early 2020 on the development of the 2020 TMP. (2d Brown Decl. ¶¶ 8–17.)
According to NMFS’s declarant, this resulted in “significant improvement” to the temperature
management situation. (*See id.* at ¶ 16.) Therefore, even assuming a material distinction exists in
terms of NMFS’s power between the 2009 NMFS BiOp and the 2019 NMFS BiOp, nothing
before the court suggests that NMFS would actually have asserted that power to any different
effect this year.

20 ²⁰ Reclamation suggests that Section 4005 of the Water Infrastructure Improvements for the
21 Nation Act (WIIN Act), Pub. L. No. 114-322, 130 Stat. 1628, 1855 (2016), constrains
22 Reclamation’s ability to reduce North of Delta agricultural water allocations. (*See* Doc. No. 183-
23 1 (Third Declaration of Kristin White), at ¶ 18(p).) PCFFA disputes this assertion. (Doc. 185 at
24 10.) The court finds it is not necessary to resolve this dispute at this time because, even assuming
PCFFA is correct, it has not met its burden of justifying the granting of the requested injunctive
relief.

25 ²¹ PCFFA’s brief also lists an additional 286,656 acre feet of water as “discretionary” based upon
26 the assumption, included in Reclamation’s early allocation forecasts, that this year’s hydrology
27 would trigger certain shortage provisions in contracts that apply to the delivery of water to
28 “South-of-Delta” wildlife refuges. As the Fourth Declaration of Kristin White makes clear, the
hydrologic situation has shifted in recent weeks such that the relevant shortage provisions no
longer apply, rendering delivery of this volume of water mandatory. (*See* Doc. No. 188-1 (Fourth
Declaration of Kristin White (4th White Decl.)) at ¶ 9.)

1 season and instead retained that water behind Shasta Dam, the temperature management situation
2 could be improved and, relatedly, temperature dependent mortality avoided. However, the
3 Federal Defendants and Defendant Intervenors offer *numerous* reasons why it is not that simple.

4 First, the deliveries PCFFA label as discretionary do not necessarily originate from behind
5 Shasta Dam. For example, deliveries to South-of-Delta agricultural water service contractors are
6 made by exporting available water in the delta, “partly made available by releases from Trinity,
7 Shasta, Folsom, New Melones, and tributaries throughout the basin.” (4th White Decl. at ¶ 11.)
8 In fact, recent increased allocations for South-of-Delta agricultural and municipal contractors
9 were due to projected increased releases from Folsom Dam during the summer based upon
10 improved hydrology on the American River. (*Id.*) Moreover, as of June 7, 2020, Reclamation
11 had approximately 381,000 acre feet of water stored in the federal portion of San Luis Reservoir,
12 which is located south of the delta. (Doc. No. 189-3 (Declaration of Lee Bergfeld) at ¶ 12.) That
13 water is available to meet the water supply needs of South-of-Delta water service contractors and
14 represents a volume of water that cannot be moved back into Shasta Lake. (*Id.*) In addition, the
15 nearly all diversions by agricultural water users are made downstream of both Clear Creek and
16 Balls Ferry. As a result, water that is released from Shasta Dam *for temperature management*
17 may be available for diversion after it has met its temperature management purposes. (*Id.* at ¶
18 21.) Finally, simply leaving a certain volume of water in Shasta Lake “does not translate directly
19 into an equivalent amount of cold water in storage available for temperature management.” (Doc.
20 No. 189-2 (Declaration of Michael Deas (Deas Decl.)) at ¶ 9.) Rather, numerous factors would
21 need to be assessed to determine how additional stored water could be utilized to achieve
22 temperature targets in the Sacramento River. (*Id.*) Indeed, this is one reason why Reclamation
23 runs numerous simulations in connection with developing a temperature management plan. (*Id.*)
24 In sum, it is not enough to simply point to a volume of water that is “discretionary,” because it is
25 speculative to assume that withholding those deliveries would result in any particular volume of
26 water being retained behind Shasta Dam nor that retaining that additional volume of water would
27 materially improve temperature management options.

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1 This conclusion also precludes any finding that the granting of the requested injunction is
2 independently warranted to protect spring run. PCFFA suggests that imposition of Action Suite
3 I.2 would benefit spring-run because it would require Reclamation to sustain colder temperatures
4 later into September (and possibly into October). (*See* Doc. No. 185 at 6.) In theory, better
5 temperature conditions could benefit eggs deposited by those spring-run that spawn in the
6 mainstem Sacramento River below Keswick Dam.²² As the court mentioned in its May 18, 2020
7 order, “the record suggests there are real-world tradeoffs involved in temperature management,”
8 particularly in regard to temperature management toward the end of the summer and early fall.
9 (Doc. 179 at 16.) There, the court explained that, “generally, under the tiered approach, keeping
10 water temperatures low in the summer may mean that water temperatures are higher than they
11 might otherwise be in September and October, with resulting risk (and likely egg mortality) for
12 later-spawning winter run and those spring-run that spawn in the mainstem Sacramento River.”
13 (*Id.*) However, as the court noted, the evidence cited by PCFFA’s expert, Dr. Rosenfield suggests
14 that *in a dry year*, temperatures under the tiered approach would actually be *lower* on average
15 through October under the 2019 NMFS BiOp than they would have been under the 2009 NMFS
16 BiOp. (*Id.*) The present record before the court appears to bear this out. Defendant Intervenor’s
17 declarant indicates that if the 2009 BiOp’s Action I.2 were in place this year (i.e., if Reclamation
18 was required to ensure 56°F or colder temperatures at Balls Ferry from September 21 through
19 September 30), this would either require warmer temperatures in October than currently
20 projected, or warmer temperatures earlier in the summer, or both. (*See* Deas Decl. at ¶¶ 10–12.)
21 Therefore, given the absence of evidence showing temperature management options can be
22 expanded, the court cannot find on the present record that PCFFA’s requested injunction would
23 improve conditions for any spring run eggs deposited in the mainstem Sacramento. Rather, the
24 requested injunction could potentially have detrimental impacts on later-spawning winter-run.

25 ²² For purposes of this analysis, the court assumes without deciding that the population of spring-
26 run likely to spawn in the Upper Sacramento River are important to the spring-run population
27 overall. The court acknowledges that this is disputed. (*See* Cavallo Decl. at ¶¶ 27–39 (opining
28 that the population of spring run likely to spawn in the mainstem Sacramento River cannot
appreciably contribute to viability or recovery of that population in part because their numbers are
small and the population is not sufficiently segregated from more abundant fall run Chinook).)

1 (See Cavallo Decl. ¶ 26 (indicating that requiring Reclamation to maintain 56°F at Balls Ferry
2 through October would potentially have adverse impacts on winter run because it could exhaust
3 the cold water pool before winter run incubation is complete or delay onset of cold water
4 management)).

5 The court has also carefully read and considered the correspondence between California’s
6 State Water Resources Control Board (Water Board) and Reclamation regarding the 2020 TMP.
7 (See Doc. No. 185-25 (PCFFA Ex. BF).) In a June 1, 2020 letter, citing its authority under Water
8 Board Order 90-5,²³ the Water Board requested that Reclamation “provide information on
9 operational scenarios other than those proposed in [the 2020] TMP.” (*Id.* at 2.) Among other
10 things, the Water Board requested that Reclamation model a scenario in which exports for service
11 contractors are reduced to provide 100,000 acre feet of additional storage in Shasta Reservoir as
12 well as a similar scenario where up to 250,000 acre feet of added storage are provided “if
13 feasible.” (*Id.* at 9.) Reclamation committed itself to producing that information to the Water
14 Board by June 22, 2020, (4th White Decl. at ¶ 19), and did so, producing a copy to the court
15 pursuant to the court’s recent request. (See Doc. Nos. 197, 200.)²⁴

16 According to Reclamation’s response to the Water Board, Reclamation is actively
17 working within the “Sacramento River Temperature Task Group” (SRTTG)²⁵ to review potential
18 updates to the 2020 TMP to reflect the most up-to-date hydrologic information, which has

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20 ²³ According to the June 1, 2020 letter, State Water Board Order 90-5 requires Reclamation to
21 take actions “reasonably within its control to protect winter-run Chinook salmon and other native
22 species from elevated temperatures and other adverse conditions created by Reclamation’s
operations on the Sacramento River.” (*Id.* at 2.)

23 ²⁴ Reclamation did not model a scenario in which exports for service contractors are reduced to
24 provide 250,000 acre feet of additional storage in Shasta Reservoir or at least no such model
appears in Reclamation’s response to the Water Board that was filed with the court.

25 ²⁵ The record before the court does not appear to define the SRTTG in great detail. The 2009
26 NMFS BiOp describes it as one of several “Fisheries and Operations Technical Teams whose
27 function is to make recommendations for adjusting operations to meet contractual obligations for
28 water delivery and minimize adverse effects on listed anadromous fish species.” (2009 NMFS BiOp
at 581.) The 2019 NMFS BiOp requires Reclamation, through the SRTTG, to consider technical
assistance from NMFS regarding the development of annual temperature management plans. (2009
NMFS BiOp at 815.)

1 improved somewhat since May of this year. (Doc. No. 200-1 at 2–3.) Those efforts are ongoing
2 and appear to be bearing some fruit in the form of three possible scenarios (SRTTG Scenarios)
3 that could be implemented *without reducing deliveries* while also lowering temperature
4 dependent mortality to some extent. (*Id.* at 2; *see also* Doc. No. 200-5 at 1–2.) In response to the
5 Water Board’s June 1 request, Reclamation also performed preliminary modeling for a scenario
6 that would reduce releases from Keswick Dam by 100,000 acre feet in July of this year²⁶ (“July
7 Reduced Releases Scenario”). (Doc. No. 200-1 at 3–4.)

8 Reclamation modeled how the three SRTTG Scenarios and the July Reduced Releases
9 Scenario could impact temperatures and temperature dependent mortality. (*See* Doc. Nos. 200-4;
10 200-5 at 1–2.) Reclamation indicates that the modeling results show similar summer
11 temperatures across all four modeling scenarios. (Doc. 200-1 at 3–4.) Indeed, Reclamation has
12 indicated that the modeling for the July Reduced Releases Scenario actually “shows minor
13 warming between Clear Creek and Balls Ferry on a monthly average.” (*Id.* at 4.) The exhibits
14 attached to Reclamation’s June 22, 2020 response appear to support these conclusions. (*See* Doc.
15 No. 200-3.) Perhaps most important is the information Reclamation provides about likely
16 temperature dependent mortality. The following table provided by Reclamation to the Water
17 Board presents the results under both the Anderson and Martin models for operations as planned
18 under the current 2020 TMP, as well as for the three SRTTG Scenarios and the July Reduced
19 Releases Scenario that Reclamation modeled at the Water Board’s request.

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28 ²⁶ According to Reclamation, “the primary opportunity to reduce releases and increase Shasta Reservoir storage is the month of July.” (Doc. No. 200-1 at 4.)

Scenario	Stage Dependent Egg Mortality (%) [Anderson Model]	Stage Independent Egg Mortality (%) [Martin Model]
Scenario 148 – Temperature Management Plan (SRTTG May 26) [2020 TMP]	12.2	21.7
Scenario 148 – Delay Side Gate Use	11.6	26.2
Scenario 148 – Extend 53.5°F in August	5.9	19.3
Scenario 148 – Extend 54°F in September	10.4	15.8
Reduce Keswick Release by 100 TAF in July	15.8	16.1

(Doc. No. 200-5 at 1–2.)

First, the court notes that the updated temperature dependent mortality figures for the 2020 TMP (without any operational modifications in light of new hydrology) provided in the first row of the table are slightly improved over the original figures provided upon finalization of that plan as of May 20, 2020.²⁷ Moreover, at least two of the operational scenarios presently being considered by the SRTTG lower projected temperature related mortality even further under *both* models, while the third only lowers projected temperature related mortality under one of the models. Returning then to what plaintiff PCFFA has requested in moving for a preliminary injunction, namely reduced deliveries, it is far from obvious based upon the information provided in the above table that the July Reduced Releases Scenario represents a material improvement over any other scenario under consideration.²⁸ Those models suggest that there may be very little difference in the results likely to be achieved in terms of water temperature management between the 2020 TMP and a plan under which exports for service contractors are reduced so as to provide 100,000 acre feet of additional storage in Shasta Reservoir. Moreover, it appears that at least two operational scenarios under consideration may be likely to produce more favorable results in that

²⁷ At that time, as discussed above, the Anderson model indicated 15% mortality, while the Martin model indicated 28% mortality.

²⁸ According court's own somewhat crude calculation, the average of the two modeling approaches for each Scenario are 16.95% (2020 TMP using June 12, 2020 data), 18.9% (Delay Side Gate Use Scenario), 12.6% (Extend 53.5°F in August), 13.1% (Extend 54°F in September, and 15.95% (Reduce Keswick Release by 100 TAF in July).

1 regard than either of the first two. In short, the court does not believe that Reclamation’s
2 response to the Water Board, nor any of the scenarios disclosed in that response, provides support
3 for the granting of the requested injunctive relief at this time.

4 The court cautions the parties against misinterpreting the court’s findings in this regard.
5 This should not in any way be read as a finding that reduced deliveries should not be considered
6 or that they could not make a material difference in temperature management. Rather, there is
7 simply an absence of proof with respect to this issue in the present record before the court. This
8 is particularly problematic in the present context. As the court observed in its May 18, 2020
9 order, it approaches the management issues presented here with great caution:

10 This is an incredibly complex regulatory arena. As discussed
11 above, two federal agencies with extensive and long-running
12 expertise—NMFS (in fisheries) and Reclamation (in Water Project
13 operations)—have struggled for many years to identify and develop
14 a regulatory regime that is both sufficiently protective of the
15 impacted species and legally and practically feasible. In prior years
16 of extended drought, these efforts resulted in what all parties appear
17 to characterize as a disaster: the near extirpation of two brood years
18 (2014 and 2015) of the critically endangered winter-run. These
19 losses occurred at least in part because Reclamation “lost control”
20 of temperatures in the Upper Sacramento River. From 2016
21 through 2019, NMFS and Reclamation (along with others) have
22 both battled and cooperated over the appropriate way forward. The
23 result of this back-and-forth is before the court in the form of the
24 2019 NMFS BiOp, which, at least facially, appears to have
25 attempted to address the failures of the past by adjusting the
26 mandated approach to temperature management so as to account for
27 where the fish in need of protection are actually located in any
28 given year and by conserving cold water for the most critical times
for incubating eggs, while also attempting, where possible, to
provide suitable spawning conditions for those spring-run that
spawn in the Upper Sacramento.

22 (Doc. No. 179 at 15.) In light of the absence of evidence that the granting of the requested
23 injunction would benefit either of the species of concern this year, the court will not take the
24 extraordinary step of interfering in this complex regulatory regime.

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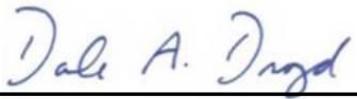
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CONCLUSION

For the reasons set forth above, the remaining aspects of PCFFA’s motion for preliminary injunction (Doc. No. 81) involving Upper Sacramento temperature management issues are DENIED.

IT IS SO ORDERED.

Dated: June 24, 2020



UNITED STATES DISTRICT JUDGE