UNITED STATES DISTRICT COURT

CENTRAL DISTRICT OF CALIFORNIA

SOUTHERN DIVISION

WISHTOYO FOUNDATION ET AL.,

Plaintiffs,

vs.

UNITED WATER CONSERVATION DISTRICT,

Defendant.

Case No.: CV 16-3869-DOC (PLAx)

ORDER RE: MOTIONS IN LIMINE [93] [94] [108] [109] [111] [113] [114] [117]; ORDER DENYING WITHOUT PREJUDICE CONDITIONAL MOTION FOR JOINDER AND MOTION TO DISMISS FOR FAILURE TO JOIN [163] [164]; ORDER DENYING AS MOOT RENEWED MOTION FOR PRELIMINARY INJUNCTION [201]; AND

FINDINGS OF FACT AND CONCLUSIONS OF LAW [176] HOLDING THAT PLAINTIFFS ARE ENTITLED TO DECLARATORY AND INJUNCTIVE RELIEF ON THEIR CLAIM FOR TAKE OF SOUTHERN CALIFORNIA STEELHEAD, BUT NOT ON THEIR CLAIM FOR TAKE OF SOUTHWESTERN WILLOW FLYCATCHER

I. INTRODUCTION

Located in Ventura and Los Angeles counties, the Santa Clara River flows westward from its headwaters in the San Gabriel Mountains, across the broad Santa Clara River valley and expansive Oxnard Plain, to the Pacific Ocean.[1] The Santa Clara River and its tributaries experience high flow variability, multi-year droughts, and extreme seasonal flooding, resulting in a highly dynamic system.[2] The Santa Clara River watershed is one of the largest on the coast of southern California, draining about 1,600 square miles.[3]

The Vern Freeman Diversion Dam ("VFD"), built in the late 1980s and early 1990s with federal funds, is a concrete diversion dam spanning the width of the Santa Clara River at about 10.5 river miles from the Pacific Ocean,[4] as shown below:

[1] Trial Exhibit List ("Trial") (Dkt. 178) Ex. 218 at 2.
[2] *Id.*
[3] *Id.*
[4] Trial Ex. 245 Fig. 1.

Defendant United Water Conservation District ("United" or "Defendant") operates VFD. Using a series of channels and gates, United can divert surface water from the River into recharge basins (which in turn recharge aquifers in the Oxnard plain to increase the availability of groundwater) or into a piping system to the Pleasant Valley water district.[5]

The Santa Clara River is also a habitat for steelhead—fish that are born in freshwater, can migrate to the ocean to mature, and return to freshwater as adults to spawn.[6] After spawning, steelhead can return to the ocean, and then come back again to freshwater to spawn, sometimes two or more times.[7] In the upper Santa Clara River watershed, the tributaries to the Santa Clara River provide spawning and rearing habitat for steelhead, and historically steelhead have migrated between the spawning grounds in the upper Santa Clara River and the Pacific Ocean.[8]

Today, in the Santa Clara River, steelhead hatch and rear upstream, above VFD.[9] As juveniles, steelhead can migrate downstream—either passing over the top of the crest of VFD or through VFD via a bypass pipe, flushing channel, or via trap and release—and

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[5] *See generally* Trial Ex. 218; Testimony of Anthony Emmert ("Emmert Test."), Dec. 15, 2017, Vol. 1; Testimony of Murray McEachron ("McEachron Test."), Dec. 18, 2017, Vol. 4. (When citing testimony for which the transcripts have not been produced for publication at this time, the Court will cite to the witness name, date, and volume number for that date.)

[6] *See* Trial Facts Stipulation ("TFS") (Dkt. 149) ¶ 21; Trial Ex. 2 ("Biological Opinion") at 8; 71 Fed. Reg. 834 (Jan. 5, 2006); TFS ¶¶ 14–16. Steelhead are fish in the species *Oncorhynchus mykiss* (or "*O. mykiss*"); *O. mykiss* includes two life history forms: (1) the anadromous form, called steelhead or steelhead trout; and (2) the resident form, often called rainbow trout. TFS ¶ 13. The difference between the two forms is that steelhead spends a portion of its life history in the ocean before returning to freshwater for spawning, whereas the resident form (rainbow trout) spends its entire life in freshwater. *Id.* ¶ 13. *O. mykiss* exhibit great plasticity and are capable of rearing in fresh water and growing to adults entirely in freshwater and residing in freshwater for multiple seasons before becoming anadromous steelhead and outmigrating to ocean waters when conditions are favorable; *O. mykiss* are even capable of reproducing several generations of purely resident rainbow trout, the offspring of which are capable of reverting to anadromous behavior when conditions are favorable. *Id.* ¶ 16.

[7] *See* Biological Opinion at 8; 71 Fed. Reg. 834 (Jan. 5, 2006); TFS ¶¶ 14–16.

[8] *See* Biological Opinion at 9–10; TFS ¶ 22.

[9] *See* TFS ¶ 22.

then swim to the estuary and the Pacific Ocean.[10] In the ocean, steelhead can mature into adults.[11] As adults, Steelhead can then return to the Santa Clara River to migrate upstream in an effort to reach their natal streams to spawn.[12] In order reach the upper Santa Clara River, steelhead must swim through the estuary and the lower portion of the river, and then pass through VFD via a fish ladder, and finally swim upstream above VFD toward the spawning habitat.[13]

Along this pathway, VFD presents two notable obstacles to steelhead migration, especially for adults. First, United's diversion of water at VFD reduces the availability of water downstream for steelhead migration.[14] For instance, during dry summer months, a sandbar typically builds up at the mouth of the Santa Clara River estuary, which (along with other dry portions over the river) cuts off migratory access to the Santa Clara River to or from the ocean.[15] But when river flow levels increase during the wet season—typically December through April—a migration corridor can be created, and the sandbar can be breached, allowing steelhead to migrate upstream and downstream (assuming there is sufficient water depth and height for the fish).[16] However, United—by diverting water at VFD—artificially shortens the frequency and durations of migration corridor periods, thereby reducing migration opportunities for steelhead.[17]

Second, VFD is a bottleneck in the river; and the only way for adult steelhead swimming upstream to pass VFD is to enter VFD's fish ladder, climb the ladder, and exit the ladder above VFD, but it is difficult for adult steelhead to successfully pass through the

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[10] *See* TFS ¶ 30; Biological Opinion at 11, 56; Testimony of Sharon Kramer ("Kramer Test."), Dec. 12, 2018, Vol. 1.
[11] TFS ¶ 14.
[12] *Id.* ¶ 20.
[13] *Id.* ¶ 45.
[14] *See, e.g.*, Biological Opinion at 45.
[15] TFS ¶¶ 35–37.
[16] *Id.*; McEachron Test., Dec. 18, 2017, Vol. 4.
[17] *See, e.g.*, Biological Opinion at 45.

fish ladder.[18] When significant river flows pass over the crest of VFD (often when flows are above 500 cubic feet per second), steelhead are drawn to the flow falling below the crest, and they have difficulty finding the entrances to the fish ladder, located on the extreme southern edge of VFD.[19] In other words, when there are significant flows of water over the crest, the fish ladder entrances (and adjacent auxiliary pipe) do not emanate sufficient "attraction flows" (water flows that draw steelhead to a particular location) to enable adult steelhead to find the fish ladder.[20] Thus, spill of water over the VFD crest tends to attract steelhead toward the dam's face and can preclude steelhead from finding the fish ladder entrances.[21] But, paradoxically, if United diverts more to reduce the spill flow, which makes it easier for adult steelhead to find the fish ladder, then less water is available to create a continuous migration corridor downstream.[22] In these ways, the structure and operation of VFD significantly hampers the migration of steelhead in the Santa Clara River to and from the Pacific Ocean.

In 1997, a federal agency, the National Marine Fisheries Service ("NMFS"), listed Southern California Steelhead (a specific population of steelhead in Southern California) as an endangered species.[23] In 2008, after a multiyear consultation, NMFS issued a biological opinion, which concluded that VFD—by impeding the migration of Southern California Steelhead in the Santa Clara River watershed (a significant steelhead population unit)—is likely to jeopardize the continued existence of the Southern California Steelhead and to destroy or adversely modify its critical habitat.[24] In this biological opinion, NMFS set forth "reasonable and prudent alternatives" for United to implement in order to allow for (or approximate) unimpeded steelhead migration.[25] These alternatives included:

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[18] *See, e.g.*, *id.* at 47; TFS ¶ 45.
[19] *See, e.g.*, Biological Opinion at 37.
[20] *Id.*
[21] *See id.*
[22] *Id.* at 50.
[23] *See* 62 Fed. Reg. 43937 (Aug. 18, 1997). TFS ¶ 17.
[24] *See* Biological Opinion at 50, 66.
[25] *See id.* at 67–78.

(1) physically modifying VFD's infrastructure to improve fish passage; and (2) reducing the diversion of water at VFD (in other words, increasing the bypass of water downstream) to improve the functioning of the steelhead migration corridor downstream of VFD.[26]

NMFS expected that United would implement the Biological Opinion's reasonable and prudent alternatives until 2011 (the period the Opinion was expected to cover); and then for the time period after 2011 acquire an incidental take permit.[27] (An incidental take permit that allows an activity to proceed even though it may result in the "incidental" taking of a species.) However, the U.S. Bureau of Reclamation (the federal agency that financed the construction of VFD) declined to adopt the Biological Opinion and United subsequently never acquired an incidental take permit; but since 2009 United has been working itself and with NMFS towards a Conservation Plan, a work product that United must develop in order to apply for an incidental take permit under the ESA.[28]

About eight years later, in 2016, Plaintiffs Wishtoyo Foundation ("Wishtoyo"), Ventura Coastkeeper ("Coastkeeper"), and Center for Biological Diversity's ("Center") (collectively, "Plaintiffs") brought this Endangered Species Act citizen suit against United, making allegations that parallel the conclusions reached by the federal government in the 2008 Biological Opinion—namely that VFD's water diversions and infrastructure harm or "take" steelhead by impeding migration; that United should physically modify VFD to improve steelhead passage; and that United should increase the bypass of water at VFD to improve steelhead migration.[29] Plaintiffs also brought an Endangered Species Act claim against United based on the alleged impact of VFD's water diversions on the migration habitat of endangered Southwestern Willow Flycatcher, a songbird that migrates to areas adjacent to VFD.[30] The federal government did not intervene in this action.

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[26] *Id.*
[27] Transcript, Jan. 4, 2018, Vol. 2 ("D10V2") (Dkt. 187) at 35–36.
[28] *See id.*; McEachron Test., Dec. 18, 2018, Vol. 4; Emmert Test., Dec. 15, 2017, Vol. 1; 16 U.S.C. § 1539(a)(1)(B).
[29] *See generally* Complaint (Dkt. 1).
[30] *See id.*

II. PROCEDURAL BACKGROUND

Plaintiffs brought this Endangered Species Act citizen suit on June 2, 2016, alleging that United did not alleviate the impacts of VFD on steelhead that were identified in the Biological Opinion, and that United has violated the Endangered Species Act by taking, without authorization, Southern California Steelhead. *See generally* Compl. Plaintiffs also allege that United's diversion of water at VFD resulted in take of three endangered or threatened bird species: the endangered Southwestern Willow Flycatcher, the endangered Least Bell's Vireo, and the threatened Western Yellow-Billed Cuckoo. *Id.* On June 16, 2017, the parties stipulated to the dismissal of Plaintiffs' claims regarding the Least Bell's Vireo and Western Yellow-Billed Cuckoo. *See* Order Dismissing with Prejudice Pls' Second and Third Claims (Dkt. 45). Plaintiffs have two remaining claims: (1) unauthorized take of the endangered Southern California steelhead distinct population segment ("Southern California Steelhead" or "Steelhead DPS"),[31] in violation of Section 9 of the ESA, 16 U.S.C. § 1538; and (2) unauthorized take of the endangered Southwestern willow flycatcher ("Flycatcher"), a migratory song bird, in violation of Section 9 of the ESA, 16 U.S.C. § 1538. Compl. ¶¶ 88–92, 105–11. Plaintiffs seek declaratory and injunctive relief on both claims. *Id.* at 51.

On December 1, 2017, the Court granted Plaintiffs' Motion for Summary Judgment on the issue of standing, and denied Plaintiffs' Motion for Summary Judgment on the merits of their claims for unauthorized take of Southern California Steelhead and Flycatcher. *See generally* Summary Judgment Order (Dkt. 128). Also on December 1, 2017, the Court denied without prejudice (Dkt. 129) Plaintiffs' Motion for Preliminary Injunction, or, in the alternative, Permanent Injunction. The Court conducted a bench trial

[31] The Southern California steelhead distinct population segment is referred to as "Southern California Steelhead" or "Steelhead DPS." Individual members of Steelhead DPS are referred to as "Steelhead." Steelhead from a distinct population segment other than the Southern California Steelhead, or all steelhead collectively, are referred to as "steelhead."

on December 11–15, 18–20, 2017, and January 3–5, 2018. *See* Minutes of Bench Trial (Dkts. 151, 153, 155, 158–62, 167, 171, 176); Witness List (Dkt. 177).

At the Court's request, counsel and staff for multiple federal agencies made appearances during oral argument on the Motion for Summary Judgment, and during bench trial, including counsel and/or staff for NMFS, the National Ocean and Atmospheric Administration ("NOAA") (of which NMFS is a part), and the Department of Justice ("DOJ"). Anthony Spina and Darren Brumback, two NMFS officials with expertise, knowledge, and involvement pertaining to the subject matter of this action, testified at trial. *See* Order Requesting Testimony of NMFS Officials (Dkt. 154).

On several occasions, the Court expressed concerns about the federal government's non-intervention into this action, given both the government's long-expressed views that VFD significantly impacts Southern California Steelhead, and the government's responsibilities in regards to endangered species. In light of these concerns, the Court made clear that it was considering involuntarily joining federal agencies (as well as state agencies) that have jurisdiction and responsibility over the species and habitat at issue.

On December 28, 2017, Plaintiffs filed, in response to the Court's concerns, Plaintiffs filed a Conditional Motion for Joinder ("Joinder Mot.") (Dkt. 163), to "conditionally join [NMFS] and the other federal and state agencies with regulatory authority to approve any [of United]'s project[s] to modify [VFD] to improve passage conditions for [Steelhead] should future developments warrant such joinder." Joinder Mot. at v. Plaintiffs attached a letter from DOJ, which expressed the opposition of NMFS and the United States to joinder. *Id.* at 1, Ex. 1. DOJ also stated that in the absence of a waiver of sovereign immunity, the Court lacks jurisdiction over the United States. *Id*. Plaintiffs concurred in the DOJ's legal analysis that requiring joinder at this stage of litigation would be "contrary to prevailing authority." *Id.* On January 2, 2018, United filed a Response (Dkt. 166) and Motion to Dismiss for Failure to Join Indispensable Parties ("MTD") (Dkt. 164), arguing that absent joinder of all of the essential regulatory and permitting agencies, this action must be dismissed for failure to join indispensable parties, on the basis that the

relief that Plaintiffs seek is unavailable without joinder. The Court will address those motions below, denying them without prejudice.

During the bench trial, the Court did not join the government agencies, but NMFS officials testified, and the Court requested that NMFS file an amicus brief regarding alternative fish passage designs for VFD, which NMFS did on January 19, 2018. *See* Order Requesting the Views of NMFS as Amicus Curiae (Dkt. 173); Amicus Brief of NMFS ("NMFS Br.") (Dkt. 179). Although the formal intervention of the responsible government agencies would have been advantageous, the Court appreciates that NMFS has voluntarily participated in this case. In addition, as discussed further below, joinder of responsible agencies is not necessary to resolving the claims brought forward, because the Court can provide adequate injunctive relief to Plaintiffs, at least at this juncture—without issuing any injunctive relief directed at the government.

Accordingly, having considering the testimony of the witnesses, the exhibits received in evidence, and the parties' proposed findings of fact and conclusions of law,[32] the Court will first resolve the motions in limine and then issue findings of fact and conclusions of law pursuant to Federal Rule of Civil Procedure 52.[33]

The Court HOLDS that Plaintiffs are entitled to declaratory and injunctive relief as to United's take of Southern California Steelhead—and the federal agencies are not indispensable parties at this stage of litigation. In addition, the Court HOLDS that Plaintiffs are not entitled to declaratory or injunctive relief as to their claim that United took Flycatcher.

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[32] After making its findings of fact, the Court also considered the amicus curiae brief filed by the National Marine Fisheries Service ("NMFS Br.") (Dkt. 179) in determining what injunctive relief is appropriate.

[33] To the extent that any findings of fact are included in the Conclusions of Law section, they shall be deemed findings of fact, and to the extent that any conclusions of law are included in the Findings of Fact section, they shall be deemed conclusions of law.

III. MOTIONS IN LIMINE

The parties filed eight motions in limine (Dkts. 93, 94, 108, 109, 111, 113, 114, 117) prior to trial. The Court issued rulings on the record before and during trial addressing many of the issues raised by these motions. Except to the extent that the Court has previously resolved these motions on the record, the Court, having reviewed the arguments and considered the evidence at trial, issues the following rulings:

United's Motions

- United's Motions (Dkt. 108, 109, 111) to exclude the testimony of Plaintiffs' experts Chris Hammersmark, Sharon Kramer, and Mary Whitfield are DENIED on the basis that these experts are well qualified and their opinions and methodologies are sufficiently reliable to be admitted into evidence. Further, United had an opportunity to raise its concerns about their opinions and/or methodologies on cross-examination.
- United's Motion (Dkt. 113) to exclude the testimony in the form of expert opinions from Kozmo Bates and Jonathon Mann is GRANTED IN PART as to Bates, in that Bates, because he was not disclosed as an expert, was only permitted to testify at trial as a lay witness. The Motion is DENIED IN PART AS MOOT as to Mann because Mann did not testify at trial. *See* Witness List (Dkt. 177).
- United's Motion (Dkt. 114) to exclude the Biological Opinion is DENIED, for the reasons stated in the Court's Summary Judgment Order at pp. 18–27.

Plaintiffs' Motions

- Plaintiffs' Motion (Dkt. 93) to exclude the testimony of United's experts John Hindley, Bruce Orr, and Steven Bachman (because Hindley is allegedly not qualified and because Orr and Bachman's testimonies are allegedly redundant) is: (1) DENIED IN PART as to Hindley, on the basis that Hindley is well qualified; and (2) DENIED AS MOOT as to Orr and Bachman because Orr did not testify, and therefore Orr and Bachman's testimonies cannot be redundant. *See* Witness List (Dkt. 177).
- Plaintiffs' Motion (Dkt. 94) to exclude United's res judicata and laches evidence, and the testimonies of John Buse and Jason Weiner is DENIED for the following four reasons. First, on November 29, 2017, the parties stipulated that United will withdraw its res judicata defense. *See* Minutes (Dkt. 122). Second, to the extent that laches evidence may have not been properly disclosed during discovery, the Court permitted Plaintiffs to depose the laches witnesses prior to trial. Third, John Buse did not testify at trial. *See* Witness List (Dkt. 177). Fourth, the Court permitted United to call Jason Weiner as a witness, and the Court made evidentiary rulings as to specific testimony on the record.
- Plaintiffs' Motion (Dkt. 117) to exclude the expert testimony of Michael Booth on the basis that United did not disclose him as an expert is GRANTED IN PART. During trial, the Court made specific evidentiary rulings on the record as to the permissible scope of Booth's testimony.

Next, the Court issues findings of fact and conclusion of law.

IV. FINDINGS OF FACT[34][35]

The case touches on three features of the Santa Clara River: VFD (the Vern Freeman Diversion Dam), Southern California Steelhead, and Flycatcher. To begin with, the Court will describe VFD, a concrete diversion dam that spans the width of the Santa Clara River at a point about 10.5 river miles from the Pacific Ocean. Next, the Court will discuss Southern California Steelhead, addressing in turn: (1) the listing of Southern

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[34] The admitted exhibits are identified in the Trial Exhibit List (Dkt. 178), the Pretrial Stipulation regarding Exhibits Admitted into Evidence ("Pretrial Ex. Stip.") (Dkt. 156), and on the record. To the extent that the list does not make clear that the Biological Opinion (Trial Ex. 2) has been admitted into evidence, the Court has admitted the Biological Opinion into evidence, for the reasons described in the Summary Judgment Order at 18–27 (admitting the Biological Opinion under the public records exception and finding that the Biological Opinion likely could also be admitted to explain the basis for expert testimony), and because Anthony Spina's trial testimony authenticated the Biological Opinion. *See, e.g.* Transcript, Jan. 4, 2018, Vol. 1 (Dkt. 196) at 21–26. In addition, there are two unresolved motions to admit exhibits into evidence concerning Trial Ex. 156, 166. *See* Transcript, Jan. 5, 2018, Closing Arguments ("Tr. D11 CA") at 84–89. First, the Court REAFFIRMS its tentative ruling sustaining United's hearsay objection to Plaintiffs' motion to admit Trial Ex. 156 into evidence; but, as stated on the record, the Court finds that Plaintiffs' experts were properly permitted to rely upon Trial Ex. 156 in forming their opinions. *See id.* at 84:12–85:13. Second, United objects on hearsay grounds to Trial Ex. 166, and Plaintiffs argue that their expert, Dr. Kramer testified about this excerpt from a third-party consultant's report, to explain her suggestion to the Court for an offsite mitigation project that would offset harm from VFD to steelhead, and Plaintiff suggests that it is being offered to describe to the Court what the project is that Plaintiff wants the Court to require United to do to compensate for harm. *Id.* at 85–87. Finding no applicable hearsay exception on point, the Court SUSTAINS United's hearsay objection and DENIES Plaintiff's motion to admit Trial Ex. 166.

[35] For clarity and reference, the Court sets out the following key acronyms:

ESA:	Endangered Species Act
VFD:	Vern Freeman Diversion Dam
NOAA:	U.S. National Oceanic and Atmospheric Administration
NMFS:	U.S. National Marine Fisheries Service (also known as NOAA Fisheries);
FWS:	U.S. Fish and Wildlife Service
DPS:	Distinct Population Segment
RPA:	Reasonable and Prudent Alternative
HCP:	Habitat Conservation Plan
MSHCP:	Multispecies Habitat Conservation Plan
FOM:	The Freeman Operations Model
HOSS:	Hydrologic Operations Simulation System
cfs:	Cubic Feet Per Second
CEQA:	California Environmental Quality Act
NEPA:	National Environmental Policy Act
CDFW:	California Department of Fish and Wildlife

California Steelhead as an endangered species; (2) VFD's impacts on Southern California Steelhead and the federal government's expressed concerns about these impacts; (3) United's responses to concerns about VFD's impacts; and (4) actions taken to address VFD's impacts on Southern California Steelhead, including regarding monitoring of Steelhead, fish passage infrastructure, water diversion operations, the instant ESA citizen suit and the federal government's enforcement actions (or lack thereof). Finally, the Court will address Flycatcher, a songbird that migrates to areas adjacent to VFD.

A. United Operates the Vern Freeman Diversion Dam ("VFD") on the Santa Clara River, Built in 1988–91 with Federal Funds

1. United is a water conservation district formed and existing under California's Water Conservation District Law of 1931, California Water Code §§ 74000 *et seq.*, and is a special district and governmental agency with its business office in Santa Paula, California. Trial Facts Stipulation ("TFS") (Dkt. 149) ¶ 1. United's purpose is to conserve, manage, and protect the ground water in its service area—the western and northern parts of Ventura County and southern Santa Barbara County. Testimony of Anthony Emmert ("Emmert Test."), Dec. 15, 2017, Vol. 1. United is primarily funded by extraction fees or charges from entities that pump water in the district, and California law regulates United's ability to charge such fees; United also receives some funds from property taxes. *Id.* United has about 60 employees, about 7 of whom are environmental specialists. *Id.*

2. Since 1991, United has operated VFD on the Santa Clara River ("River") in Ventura County, California. TFS ¶ 2. VFD is an approximately 1,200-foot-wide concrete diversion dam structure spanning the width of the Santa Clara River, with several features, including a water diversion infrastructure and a fish ladder. *Id.* ¶¶ 5, 6. VFD is located on the mainstem of the Santa Clara River about 10.5 river miles from the Pacific Ocean and the Santa Clara River Estuary ("Estuary"). *Id.* ¶ 4.

3. The U.S. Bureau of Reclamation ("Reclamation") funded the construction of VFD pursuant to a loan contract entered into with United in 1987 under the authority of the Small Reclamation Project Act of 1956. *Id.* ¶¶ 2, 3. Construction of VFD commenced in

1988 and was completed in 1991. *Id.* The loan for its construction was fully repaid in 2011. Emmert Test., Dec. 15, 2017, Vol. 1.

4. During construction, a deep excavation was dug in the riverbed to allow VFD to be founded on bedrock, for a total concrete height of up to about 65 feet, to provide stability in the event of deep scour during a 100-year storm or worse. Trial Ex. 245 at 2.

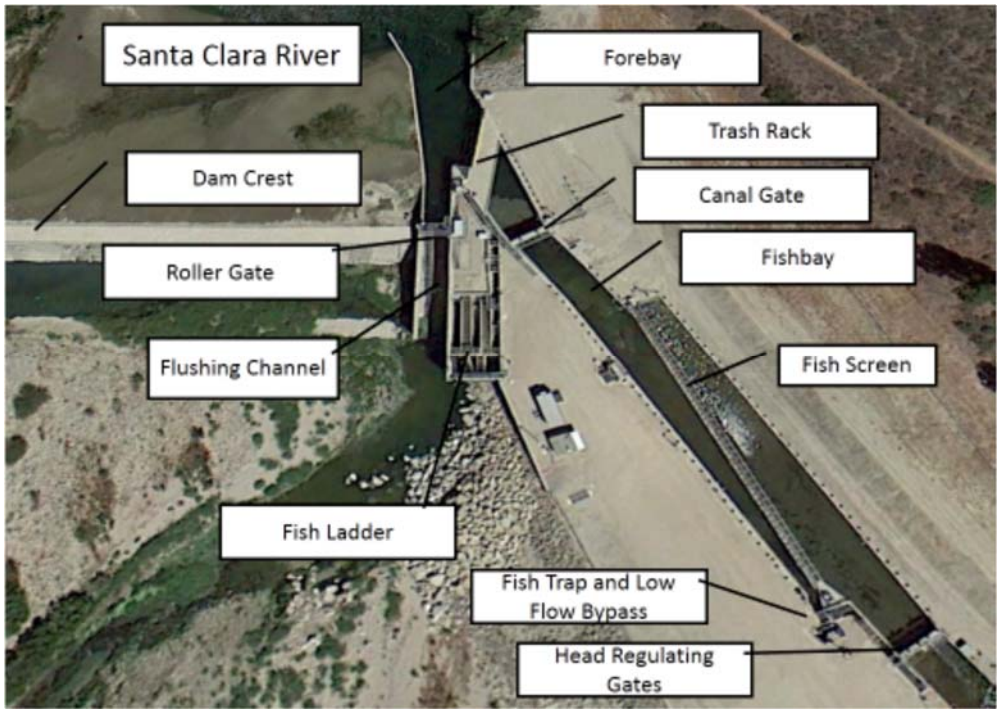
5. VFD, measured from downstream, is about 23.5 feet tall (the difference in ground elevation between the upstream and downstream faces of the dam) and thus creates a roughly 23.5-foot drop in elevation of the River. TFS ¶¶ 5, 6; Trial Ex. 245 at 2. The crest of VFD is at the original level of the river, and the riverbed downstream from VFD has been lowered by roughly 23.5 feet. Trial Ex. 245 at 3.

6. VFD does not store Santa Clara River flows, but rather, stabilizes the river bed historically affected by downward erosion due to gravel mining. TFS ¶ 7. It also directs the Santa Clara's flows toward the south bank into a diversion canal, and thereby also facilitates gravity diversion by and into water diversion infrastructure at a fixed point. *Id.* In other words, VFD "stabilizes the riverbed so that diversions can occur soon after peak storms." Trial Ex. 245 at 2.

7. United has water rights to divert up to 375 Cubic Feet Per Second ("cfs") of water at any given time, and no more than 144,630 acre-feet per year at VFD. Trial Ex. 2 ("Biological Opinion") at 30; Trial Ex. 245 at 8. United seeks to diverts as much water as possible at VFD, except during large storms, river water contamination, flushing and maintenance activities, when the river is dry, or when reducing diversion for fish migration ("fish bypass flows"). *See* Trial Ex. 245 at 8–9. United does not typically take the full 144,630 acre-feet per water year (although it once did, in 1995), because the amount of water flow varies, because if operational limitations due to dirty (or turbid) water, and because of fish bypass flows. Emmert Test., Dec. 15, 2017, Vol. 1. On average, United takes about 67,000 acre-feet per year. *Id.* In 2017, United was complying with RPA 2 of the Biological Opinion, pursuant to NMFS's interpretation (discussed in greater detail below). Emmert Test., Dec. 15, 2017, Vol. 1. While there was 125 percent of normal

rainfall in 2017, United diverted only about 10,000 acre-feet (although there were reduced opportunities to divert water because 2016 was a dry water year, and therefore the water flow after a storm tended to drop off quickly). McEachron Test., Dec. 18, 2017, Vol. 4.

8. The following figure identifies the major structural features of VFD:



Trial Ex. 245 at 3. VFD's structural features are summarized as follows:

9. *Dam Crest.* VFD is designed to pass water over the Dam Crest into the River below VFD. *Id.* at 2–3. During peak storms, water has flowed over the crest with a depth of over eight feet. *Id.*

10. *Flushing Channel.* The Flushing Channel is a channel about fifteen feet deeper than the main level of the riverbed behind VFD, and this channel is capable of passing up to 4,000 cfs of river water downstream. *Id.* The Flushing Channel has a Roller Gate that, when closed, prevents water from flowing down the Flushing Channel. *Id.* at 10. The function of the Flushing Channel is to scour the riverbed on the south bank and to create and maintain a deeper channel there, so that water can be diverted and the Fish Ladder can be operated. *Id.* at 3. During flushing operations, often during storms, when river water turbidity (i.e. sediment level) is high, the fish ladder is closed, the water diversion gates are

closed, the Flushing Channel's Roller Gate is opened, and water flows through the flushing channel (water also flows over the Dam Crest during large river flows).[36] *Id.* at 9; Biological Opinion at 58.

11. *Fish Ladder.* The Fish Ladder is a "denil" fish ladder with five main reaches of aluminum weirs designed to slow the water and to allow fish to migrate upstream through the ladder. Trial Ex. 245 at 6. Each reach of weirs is separated from the next by a resting pool, for fish to rest between reaches. *Id.* At the downstream end of the fish ladder are two fish entrance gates, one facing north, towards the Dam Crest, the other facing west, towards the main direction of river flow, and each entrance is 42 inches. *Id.*; Testimony of Sharon Kramer ("Kramer Test."), Dec. 13, 2017, Vol. 1. Within the fish ladder are five runs (or switchbacks), and each run is 24-feet long (although the bottom one is longer, but it is submerged so the entire length is not active). Testimony of Murray McEachron ("McEachron Test."), Dec. 18, 2017, Vol. 4. After climbing the fish ladder, fish pass through a fish exit gate into the area between the Trash Rack and the Canal Gate. Trial Ex. 245 at 6. The fish exit gate is a slide gate that opens to allow water to flow into the fish ladder. *Id.* The fish ladder is designed to flow at 40 cfs. *Id.* At the time of VFD's construction, NMFS was not involved in approving the Denil fish ladder. Transcript, Jan. 4, 2018, Vol. 1 ("D10V1") (Dkt. 196) at 73:19–74:19.

12. *Trash Rack.* The Trash Rack is a steel grating with chain-operated tines that lift up and remove the larger branches and debris that attempt to enter the Freeman intake. Trial Ex. 245 at 4. The Trash Rack grating has a four-inch spacing for most of its width, but near its upstream end, the grating spacing increases to six inches to allow for passage of larger steelhead, and a few of the grates have been removed below the normal water line in order to provide a larger opening for steelhead. *Id.* Just downstream of the Trash Rack is a stop-log structure about three-feet high, across the diversion intake, which was installed in 2001

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[36] United would engage in flushing operations when there may not have been water downstream for fish, create a risk of stranding but at some point, United discontinued flushing operations when there is no water downstream. *See* Kramer Test., Dec. 13, 2017, Vol. 2.

to try to keep sand out of the diversion structure, partly at the recommendation of NMFS, based on a desire to minimize the amount of flushing that is done. *Id.*

13. *Canal Gates.* There are two main Canal Gates that control water entering the diversion Freeman canal, which are electrically operated and controlled automatically by a computer system. *Id.* at 5. During low river flows, the gates open and close automatically to maintain high water levels on the river side of the diversion. *Id.* This allows sand to settle out upstream from the diversion in the large ponded area. *Id.* During high river flows, the gates limit the amount of water that is diverted into the canal and maintain flows within United's water right limit of 375 cfs.

14. *Fishbay and Fish Screen.* Inside the Canal Gates is a Fishbay, which contains a Fish Screen at the south end (approximately 160 feet long and 8 feet high, with 3/16 inch openings) intended to prevent downstream migrating fish from entering the water diversion canal. *Id.* at 7. The screen openings have a 3/16-inch clearance, designed to keep out trout fry (juvenile *O. mykiss*). *Id.* The fish screens are cleaned by a set of brushes that sweep back and forth to loosen floating matter that impinges on it. *Id.* The brushes extend nearly to the floor of the fish screen bay. *Id.* Behind each fish screen panel is a pair of stop-log slots that would allow wooden boards to be installed to control or distribute the flow through the screen. *Id.* Measurements show that the flow through the screens is not uniformly distributed along its length, but is concentrated near the downstream end. *Id.* Attempts have not been made to equalize the flows with these stop-logs. *Id.*

15. *Head Regulating Gates.* At the bottom of the Fishbay are Head Regulating Gates, which are electrically operated and computer controlled. *Id.* at 6. The gates maintain the water level in the fishbay, and at the same time allow water coming from the Canal Gates to flow into the water diversion canal. *Id.* at 6.

16. *Fish Trap and Low Flow Bypass Pipe.* Inside the Fishbay is a Low Flow Bypass Pipe. *Id.* at 8. In the past, there had been a Fish Trap. *Id.* The Fish Trap was a stainless steel frame with fine mesh, which could be lifted out of the water and was designed to trap and transfer downstream-migrating steelhead smolts. *Id.* Water would pass through the

trap bay in two ways: (1) a chute located on top of an adjustable weir flows from the surface directly into the Fish Trap; or (2) a floor gate below the Fish Trap can also be opened to return smolts to the River below VFD, just above the west-facing fish entrance gate, via the 36-inch diameter Low Flow Bypass Pipe: smolts flow through that pipe and free-fall into the river. *Id.* The Bypass Pipe is closed when fish trapping is underway. *Id.* United initially used the Fish Trap at the request of NMFS, but United discontinued the use of the Fish Trap around 2014 at the request of NMFS; now United only uses the Bypass Pipe. Kramer Test., Dec. 13, 2017, Vol. 1.

17. *Auxiliary Pipe*. An Auxiliary Pipe in the Fishbay conveys water to the fish ladder, where it combines with the fish ladder flow just before the entrance gates to provide supplemental attraction flows to draw fish into the ladder. Trial Ex. 245 at 8. The Fish Ladder provides about 36 cfs in attraction flow, and the Auxiliary Pipe provides about 40 cfs in contributory flow capacity, for a total of about 76 cfs in attraction flow to the fish ladder entrances. *See* Trial Ex. 3 at 4–6. The Auxiliary Pipe was originally designed to flow at 100 cfs. Trial Ex. 44 at 34. In the January 12, 2007 Biological Assessment of the Operation of the VFD, United proposed to undertake a redesign of the Auxiliary Pipe entrance to maximize its flow capacity, to the extent feasible and cost-effective; but United to date has not undertaken that redesign. *See* Trial. Ex. 44 at 35; *See* McEachron Test., Dec. 19, 2017, Vol. 3. In addition, the Bypass Pipe can provide an additional 80 cfs of attraction under certain flow conditions, and at times United opens the flushing channel to increase flow attraction. Kramer Test., Dec. 13, 2017, Vols. 1–2.

B. VFD Sits on a Migration Corridor for Southern California Steelhead, Listed As Endangered by the National Marine Fisheries Service in 1997

18. The Santa Clara River is habitat for endangered Southern California Steelhead, and VFD sits on the steelhead migration corridor. *Id.* ¶¶ 21–22.

19. On August 18, 1997, NMFS listed the Evolutionary Significant Unit ("ESU") of Southern California steelhead as an endangered species under the ESA, 16 U.S.C. §§ 1531, et seq.; 62 Fed. Reg. 43937 (Aug. 18, 1997). TFS ¶ 17. On January 5, 2006, NMFS revised

its ESA-listing of Southern California steelhead to list the Distinct Population Segment ("DPS") of Southern California Steelhead ("Steelhead" or "Southern California Steelhead") as an endangered species. 71 Fed. Reg. 834 (Jan. 5, 2006). *Id.* ¶ 18.

20. The following are basic biological and geographical characteristics of steelhead relevant to the listing of Southern California Steelhead as endangered and their presence in the Santa Clara River.

21. Steelhead are fish in the species *Oncorhynchus mykiss* (or "*O. mykiss*") that can migrate to the ocean. TFS ¶ 13. Fish classified in the species *O. mykiss* are one of six Pacific salmon of the genus *Oncorhynchus* native to the North American coast. *Id. O. mykiss* includes two life history forms: (1) the anadromous (or ocean-maturing) form, called steelhead or steelhead trout; and (2) the resident form, often called rainbow trout. *Id.* The difference between the two forms is that steelhead spends a portion of its life history in the ocean before returning to freshwater for spawning, whereas the resident form (or rainbow trout) spends its entire life in freshwater. *Id.*

22. After spawning in freshwater, often in tributaries (or natal streams), young steelhead emerge from nests as very small fish that are about 20 to 30 millimeters in length. Testimony of Sharon Kramer ("Kramer Test."), Dec. 12, 2018, Vol. 1. Juvenile steelhead that are less than one year old are often called "young of the year," and they can be about 100 to 120 millimeters in length. *Id.* The following is a Santa Clara River young of the year:

Trial Ex. 20, Appendix B, Photo 6. Young of the year often move from natal streams to main river systems to seek better habitat in which to rear. Kramer Test., Dec. 12, 2018, Vol. 1. Juvenile steelhead tend rear in riffles, runs and pools during much of a given year.

Biological Opinion at 11.

23. Juvenile steelhead typically live in freshwater habitats for one to three years until they undergo a change, called smoltification, that allows them to migrate to and mature in salt water before returning to their natal rivers or streams (i.e., streams where they were spawned) to reproduce. Kramer Test., Dec. 12, 2018, Vol. 1; TFS ¶ 14. *O. mykiss* that have undergone this change and are preparing to exit freshwater are called "smolts." *Id.* The visible sign of smoltification is the silvering coloration of the fish's scales indicating physiological transition from fresh to brackish or salt water. *Id.* Smolts tend to be 160 or 180 millimeters in length. Kramer Test., Dec. 12, 2018, Vol. 1. The following is a Santa Clara River steelhead smolt:

Trial Ex. 650, Appendix B, Photo 2.

24. Smolts can migrate to the ocean (the bigger the smolt that enters the ocean, the higher their likelihood of survival) at the ages of two to four or six years old, and they may remain in the ocean for up to four years and mature into adult steelhead. *Id.*; Biological Opinion at 10. The timing of migration to the ocean appears to be influenced by photoperiod, streamflow, and temperature. Biological Opinion at 10.

25. The largest adult steelhead are in the order of over 400 millimeters. *Id.* Kramer Test., Dec. 12, 2018, Vol. 1. Adult steelhead generally return from the ocean to spawn in the natal streams that they were spawned in, but they can also spawn in non-natal streams. Biological Opinion at 10. The following is an adult Steelhead at VFD:

Trial Ex. 10 at 1

26. Adults may migrate several miles to reach their spawning grounds. *Id.* Steelhead have evolved to migrate deep into the extreme fringes of a watershed to exploit environmental conditions that favor production of young. *Id.* Spawning can occur in late winter and early spring, but the specific timing of spawning may vary a month or more among streams within a region. *Id.* When adult steelhead return to freshwater to spawn steelhead need streambeds characterized by gravel and cobble substrate to spawn successfully; steelhead eggs are less likely to survive in streambeds that are dominated by sand and fine sediment. Kramer Test., Dec. 12, 2018, Vol. 1. Biological Opinion at 10–11. Female steelhead excavate a nest in the streambed and then deposit their eggs. Biological Opinion at 10–11. After fertilization by the male, the female covers the nest with a layer of gravel, and the embryos incubate within the gravel pocket. *Id.* Hatching time varies from about three weeks to two months depending on water temperature. *Id.* The young fish emerge from the nest about two to six weeks after hatching. *Id.* Suitable water depth and velocity, and substrate composition are primary requirements for spawning, but water temperature and turbidity are also important, and dissolved oxygen concentration, pH, and water temperature are factors affecting survival of incubating embryos. *Id.* In addition, fine sediment, sand and small particles can fill spaces between large substrate particles, reducing water flow and dissolved oxygen levels within a nest. *Id.*

27. Unlike other Pacific salmonids, adult steelhead do not necessarily die after spawning, but can return to the ocean as "kelts," where they can restore energy reserves and return back to freshwater to spawn again, sometimes two or more times. TFS ¶ 15. The following is a Steelhead kelt, captured in the downstream trap at VFD:

Trial Ex. 24, Appendix B, Photo 18.

28. For adult and juvenile migration, in general, discharge, water temperature, and water chemistry must be appropriate. Biological Opinion at 11. Low discharge, high water temperature, physical barriers, and low dissolved oxygen, can delay or halt upstream migration of adults and timing of spawning, and downstream migration of juveniles and entry into the estuary, lagoon, or ocean. *Id.*

29. Juvenile steelhead, for growth and survival during summer and winter, require living space, shelter from predators and harsh environmental conditions, food resources, and sufficient water quality and quantity. *Id.*

30. *O. mykiss* exhibit great plasticity with respect to their lifecycle behavior and anadromy (ability to migrate to the ocean). TFS ¶ 16. They are capable of rearing in fresh water and growing to adult maturity entirely in freshwater and residing in freshwater for multiple seasons before becoming anadromous and outmigrating to ocean waters when conditions are favorable. *Id. O. mykiss* are even capable of reproducing several generations of purely resident rainbow trout, the offspring of which are capable of reverting to anadromous behavior when conditions are favorable. *Id.* This allows *O. mykiss*/steelhead to survive prolonged droughts and resume anadromous behavior when flow conditions allow for resumed connection between their natal freshwater streams and the ocean. *Id.*

31. The number of individual Steelhead currently residing within the Southern

California range has been greatly reduced from historical levels (i.e. prior to 20th-century development), a key fact for NMFS listing Steelhead as endangered. *See* Pl. Br. No. 33 (citing 62 Fed. Reg. 43937-01, 43949 (Aug. 18, 1997); 71 Fed. Reg. 834-01, 851 (Jan. 5, 2006) ("The historical steelhead run for four of the major river systems within the range of the [Southern California Steelhead] DPS is estimated to have been between 32,000 and 46,000 adults. Recent run size for the same four systems, however, has been estimated to be fewer than 500 total adults.")).

32. A key factor in the present and potential for future survival of Steelhead is the production of smolts as the offspring of resident adult *O. mykiss*. *See* TFS ¶ 20. Such smolts are likely a very important contribution of population to the remaining oceangoing Steelhead found in Southern California ocean waters—and such smolts are still creating the potential for adult Steelhead to return and spawn successfully in freshwaters should barriers to adult Steelhead access to freshwaters be reduced. *Id.* Present conditions for Steelhead throughout its range have made it more unlikely for adult Steelhead to successfully return to their natal streams and spawn than for resident *O. mykiss* to produce anadromous offspring/smolts that make it successfully to the ocean. *Id.*

33. NMFS has designated critical habitat for the Southern California Steelhead DPS, which includes a total of 708 miles of stream habitat from the 32 watersheds within the range of this DPS, including the Santa Clara River. 70 Fed. Reg. 52488. The range for the Southern California Steelhead DPS includes coastal streams in ocean waters from the Santa Maria River, near Santa Maria, California to the California-Mexico border. Biological Opinion at 8. Steelhead have adapted to conditions in Southern California streams and are able to tolerate the warmer stream conditions in such streams, including temperatures that exceed the heat tolerance for steelheads in general. *Id.* at 11–12.

34. NMFS's designation of Southern California Steelhead DPS as endangered (in comparison to, for example, the Northern California Steelhead DPS) is based on geographic characteristics in Southern California that produce a distinctive steelhead in this region; genetic literature indicates that there are differences at the genetic level

between Southern California populations of Steelhead and other populations (such as the Northern California population), but if a person is holding a steelhead from Southern California in one hand and a steelhead from Northern California in the other hand, one will not observe much of a difference, other than coloration. Tr. D10V1 at 16:16–18:12.

35. The Santa Clara River watershed provides habitat for Steelhead, and tributaries to the Santa Clara River in the upper Santa Clara River watershed, above VFD, provide spawning and rearing habitat for Steelhead. TFS ¶¶ 21, 22. The endangered Southern California Steelhead DPS includes all adult steelhead that have been to the ocean, all *O. mykiss* that are migrating to the ocean as kelts or smolts, and all juvenile *O. mykiss*, in watersheds where adult Steelhead are found; therefore, Southern California Steelhead includes all adult Steelhead, kelps, smolts, and juvenile *O. mykiss* in the Santa Clara River, as adult Steelhead, kelps, and smolts have inhabited the Santa Clara River throughout the time United has operated VFD. *See* Summary Judgment Order at 17 ("NMFS clarified in its 2006 Listing that although juvenile steelhead can be hard to distinguish from resident rainbow trout, because Section 4(e) the ESA authorizes prohibiting the take of an unlisted species if its appearance closely resembles that of a listed species, NMFS has 'presumed that all juvenile *O. mykiss* in streams where listed steelhead occur are listed juvenile steelhead.'" (citing 71 Fed. Reg. 834, 841 (Jan. 5, 2006))).

36. NMFS considers the Santa Clara River Steelhead population a Core 1 population for the purposes of recovery of the DPS. TFS ¶ 23. NMFS's Steelhead Recovery Plan explains the significance of Core 1 populations:

> Core 1 populations are those populations identified as the highest priority for recovery actions based on a variety of factors, including the intrinsic potential of the population in an unimpaired condition; the role of the population in meeting the spatial and/or redundancy viability criteria; the current condition of the populations; the severity of the threats facing the populations; the potential ecological or genetic diversity the watershed and population could provide to the

> species; and the capacity of the watershed and population to respond to the critical recovery actions needed to abate those threats.

Id. NMFS research has found that the Santa Clara River population of Steelhead has one the highest intrinsic recovery values, in terms of ability to produce numbers of individual Steelhead, such that those individuals can go to other watersheds and help sustain populations in other watersheds. Tr. D10V1 20:6–21:13.

37. Steelhead migration in the Santa Clara River, like elsewhere in its range, is driven by peaks in Santa Clara River flow, and such peak flows are rainfall dependent and are highly variable throughout Southern California's wet season and into the spring months. TFS ¶ 32. The Santa Clara River is "flashy," i.e., subject to rapid increases in flow following rainstorms followed by a less rapid, but still relatively short duration decline in flow to base flow levels way below peak flows. *Id.*

38. The basic pathway for adult steelhead to migrate from the ocean to their spawning grounds above VFD is as follows.[37]

39. A sandbar typically builds up at the mouth of the Santa Clara River Estuary during dry summer months that cuts off access to the Santa Clara River to or from the ocean. TFS ¶¶ 35, 37. The sandbar is breached when flow levels increase in the Santa Clara River during the wet season. *Id.* Breaching of this sandbar is a prerequisite for successful adult Steelhead migration into the Santa Clara River or Steelhead kelt or smolt outmigration from the river into the ocean. *Id.*

40. If the sandbar has formed in the summer, and has not yet been breached at the start of the wet season (i.e. November or December), adult Steelhead do not die as a result of the lack of a migration corridor, but rather, adult Steelhead can wait offshore in the ocean for the sandbar to be breached. Tr. D10V1 at 55:20–57:3.

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[37] This pathway assumes that sufficient water is flowing to allow a continuous migration corridor is flowing below VFD, which can be affected by, among other things, United's diversion of water at VFD; the issue of river continuity is discussed briefly here and in greater detail later in the findings of fact.

41. Once the sandbar is breached, adult Steelhead can pass the Estuary. TFS ¶ 33. After passing the Estuary, the most difficult reach for adult Steelhead to pass in the lower Santa Clara River is an area known as "Reach 2A," often called the "critical reach" or "intermittent reach," which extends for about 4.4 to 4.5 miles—starting from the confluence of Ellsworth Barranca and the Santa Clara River about 1.5 miles downstream from VFD—and ending about 0.25 miles above the Highway 101 Bridge. *Id.*

42. The critical reach overlays a geologic feature known as the Oxnard Forebay, which is characterized by porous materials that causes River flow to percolate into the ground. *Id.* ¶ 34. The subsurface percolation of river flow makes the critical reach what is known as a "losing reach," because the river is losing flow to the ground as water moves down the river, although about six percent of the time it is actually a "gaining reach" in which water flows from the ground into the river channel. *Id.*; Testimony of Chris Hammersmark ("Hammersmark Test."), Dec. 13, 2017, Vol. 4. There are several areas within the critical reach where the wide channel shape and the losing reach characteristic of the critical reach can in some conditions result in areas that are shallower than other reaches. TFS ¶ 34. These areas are referred to as "critical riffles" (a riffle is a shallow area in a flowing channel). *Id.* The single riffle that is deemed the most difficult for Steelhead to pass, i.e., that is typically the most shallow of all points in the lower Santa Clara River, is frequently referred to as "the critical riffle." *Id.*

43. If there is sufficient water for adult Steelhead to travel up the Santa Clara River and pass the critical reach, they can approach VFD. *Id.* ¶ 45. However, to reach VFD from the ocean, there must be sufficient water available downstream in VFD to create a continuous migration corridor, but VFD's water diversions reduce the availability of water downstream, as discussed in greater detail below.

44. Once at VFD, the only way for adult steelhead to migrate past VFD is to ascend the fish ladder. *Id.* However, the existing fish ladder present obstacles to adult steelhead passage, which will also be discussed in greater detail below. In brief, and most significantly, it is difficult for adult steelhead to find the entrance of the ladder. *See*

generally Biological Opinion. When there is river flow coming over VFD's crest, steelhead will follow the flow, and if there's more than 500 cfs coming over the crest, steelhead will generally swim towards that high flow and have trouble locating the 48-inch entrance to the fish ladder which emanates about 76 cfs in attraction flow (combing flow from the fish ladder and auxillary pipe). *See* Trial Ex. 3 at 4–6. Kramer Test. Dec. 12, 2018, Vol. 2. To get to the ladder in the first place, adult steelhead must migrate tens of miles upstream before the flow conditions dropping to the point where they cannot reach the habitat or the habitat is unavailable for spawning; so a delay in reaching the habitat has significant implications for survival and breeding. Kramer Test. Dec. 12, 2018, Vol. 2. One consequence is that adult steelhead can expend significant energy looking for the entrance to the ladder that they would otherwise be using for migrating upstream and digging their nests. *Id.*

45. Once adult steelhead enter the fish ladder, they can experience excessive turbulence in the entrance pool and turning pools, which can make it more difficult for steelhead to make forward motion. *See* Trial Ex. 5 at 5-5; Testimony of Kozmo Bates ("Bates Test."), Dec. 12, 2018, Vol. 1; Kramer Test., Dec. 13, 2017, Vol. 1.

46. If adult steelhead are able to ascend the fish ladder, adult steelhead can then migrate upstream to spawn juvenile steelhead in natal streams. *See, e.g.* Biological Opinion at 8.

47. After juvenile steelhead are born upstream (they can be spawned from both steelhead and resident *O. mykiss*) juvenile steelhead can rear and migrate downstream from their natal streams into the river system, and then swim toward VFD. *See* Kramer Test. Dec. 12, 2018, Vol. 1. To pass VFD, juvenile steelhead must either pass over the top of the crest of VFD or through VFD via the fish bay into the flow bypass pipe, via the flushing channel, or via the fish trap (and a release into the bypass pipe or the river). *See* TFS ¶ 30; Biological Opinion at 11, 56; Kramer Test., Dec. 12, 2018, Vol. 1. The fish screen in the fish bay is designed to keep smolt-sized fish from going into the diversion canal, and to guide them into the bypass pipe or fish trap. Kramer Test., Dec. 12, 2018, Vol. 1. Further, steelhead that enter the fish trap can be subject to predation because bass and other

predator fish may also be in the trap with the steelhead. *Id.* In addition, the fish screen must be kept clean to ensure a downward motion to direct fish into the pipe or trap; debris on the screen can create hot spots that can stall fish. *Id.* Bates Test., Dec. 12, 2018, Vol. 1; Kramer Test., Dec. 12, 2018, Vol. 2. Further, if conditions are such that there is insufficient flow to move the fish in the fish bay downstream, they may be stranded in the fish bay. Kramer Test., Dec. 12, 2018, Vol. 2. Fish that pass through the bypass pipe exit through a water flow that falls into the river at an eight or ten foot drop; if the river level is low, fish can hit the bottom of the lake and be harmed, and the concentration of fish at the spot of the drop risks increased predation. *Id.* In addition, fish that pass over the crest of the dam, and drop about twenty five feet, can suffer injury if the river level is low. *Id.*

48. If juvenile steelhead pass VFD, they can then swim to the Estuary—assuming there is river connectivity and sufficient water height and depth. *Id.* Once at the Estuary—assuming there is a breach of the sandbar that forms at the mouth of the Santa Clara River, and the juvenile steelhead has already gone through smoltification—the smolt can swim from the Estuary to the ocean. *Id.* The timing of smolt migration downstream, like the timing of adult Steelhead migration upstream, is influenced by a variety of factors such as photoperiod, streamflow, temperature, and breaching of the sandbar at the mouth of the river. TFS ¶ 36. Steelhead smolts need significantly less water depth and width than full-grown adult steelhead to successfully migrate through the river (to the ocean) and thus are capable of migrating when streamflow conditions would be too low for adult steelhead. *Id.*

1. Multiple Federal Agencies, With United's Participation, Consulted Regarding VFD's Impact on Steelhead

49. Soon after NMFS listed Steelhead as endangered, NMFS began working with the U.S. Army Corp of Engineers ("Corps") regarding regulatory issues and potential effects of VFD on steelhead, as well as possible measures to reduce potential effects. *See* Summary Judgment Order at 20 (citing United's Genuine Disputes of Material Fact and Additional Material Facts in Opposition to Summary Judgment ("SUF") (Dkt. 91-1) No. 353 (citing Declaration of Murray McEachron in Opposition to Summary Judgment

("McEachron Decl.") (Dkt. 92-12) ¶¶ 32, 84–86; Declaration of Catherine McCalvin in Opposition to Summary Judgment ("McCalvin Decl.") (Dkt. 91-9) ¶ 14)). NMFS urged either the Corps or the Bureau of Reclamation—both of whom had some role in the construction of VFD—to engage in an ESA Section 7 consultation regarding the operations and maintenance of VFD and its effect on Steelhead. *Id.* (citing SUF Nos. 354, 355 (citing McEachron Decl. ¶ 38, 39, Ex. D, E; McCalvin Decl. ¶ 14, 15)). Since around 2000, United has been in dialogue with NMFS in regards to steelhead issues at VFD. McEachron Test., Dec. 18, 2017, Vol. 4.

50. ESA Section 7 requires federal agencies, "in consultation with what is known as the 'consulting agency,' to conserve species listed under the ESA." *Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv.*, 886 F.3d 803, 813 (9th Cir. 2018) ("*NWF*"). ESA Section 7(a)(2) requires each federal agency to "insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification" of a listed species' designated critical habitat. *Id.* (quoting 16 U.S.C. § 1536(a)(2)). "Section 7 and its implementing regulations delineate the consultation process for determining the biological impacts of a proposed action." *Id.* (citing 16 U.S.C. § 1536(a)-(c); 50 C.F.R. § 402). In brief, "if a proposed federal action may jeopardize listed species or adversely modify critical habitat, the 'acting agency' must consult with the 'consulting agency.'" *Id.* (citing 50 C.F.R. §§ 402.13, 402.14); *see also Karuk Tribe of California v. U.S. Forest Serv.*, 681 F.3d 1006, 1020 (9th Cir. 2012) (explaining that Section 7 of the ESA is the "heart of the ESA").

51. In a Section 7 consultation, the consulting agency prepares a biological opinion "setting forth its conclusions about whether the proposed action will affect a listed species or its designated critical habitat." *NWF*, 886 F.3d at 813 (citing 16 U.S.C. § 536(b)(3)(A)). "An action jeopardizes a listed species if it 'reasonably would be expected, directly or indirectly, 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.'"

Id. (quoting 50 C.F.R. § 402.02). "If the proposed action is likely to jeopardize a listed species' existence or adversely modify its critical habitat, the [biological opinion] must set forth a reasonable and prudent alternative to the action (the 'Alternative') that is not likely to jeopardize the species or adversely modify its habitat, if possible." *Id.* (citing 16 U.S.C. § 1536(b)(3)(A). "If the [biological opinion] concludes that jeopardy is not likely and that there will not be adverse modification of critical habitat, or that the Alternative avoids jeopardy and adverse modification and that the incidental taking of endangered or threatened species will not violate section 7(a)(2), the consulting agency can issue an 'Incidental Take Statement.'" *Id.* "If followed, the Incidental Take Statement exempts the action agency from the prohibition on takings found in section 9 of the ESA." *Id.* (citing 16 U.S.C. § 1536(b)(4); *Aluminum Co. of Am. v. Adm'r, Bonneville Power Admin.*, 175 F.3d 1156, 1159 (9th Cir. 1999)).

52. On June 1, 2001, NMFS (as the consulting agency) concluded a consultation with the Corps (as the acting agency), in which United participated. Biological Opinion at 1. The consultation's scope was confined to sediment flushing and trapping and trucking of smolts for the 2001 Steelhead migration season on the Santa Clara River. *Id.* Diversion of surface water and related effects on endangered steelhead were not considered. *Id.* The June 1, 2001 resulting biological opinion concluded that United's 2001 trap-and-truck and sediment-flushing operations were not likely to jeopardize the continued existence of the Southern California steelhead ESU, or result in destruction or adverse modification of critical habitat for this species. *Id.*

53. From May 2005 to July 2008, NMFS (as the consulting agency) and Reclamation (as the acting agency), along with United's participation, engaged in a consultation regarding the effects of VFD's water diversion operations and fish ladder on endangered steelhead and its critical habitat. *See* Biological Opinion at 1, 4, 8. The basis for this consultation was that when Reclamation had contracted with United in 1987 to lend funds for the construction of VFD, the loan contract provided that United "shall make no substantial change in the Project works without first obtaining the written consent of

[Reclamation]." *See* Summary Judgment Order at 20–21 (citing SUF No. 358 (citing Declaration of Anthony Emmert ("Emmert Decl.") (Dkt. 91-3) ¶9, Ex. A, art. 14(c)). Thus, the federal action under review was Reclamation's "approval of United's proposed operation of the Vern Freeman Diversion Dam and fish ladder." Biological Opinion at 4. United participated significantly (it is typical that a non-federal agency applicant like United that does much of the "heavy lifting" in a consultation). Transcript, Jan. 4, 2018, Vol. 1 ("Tr. D10V1") (Dkt. 196) at 10:3–12.

54. Formal consultation began in May 2005, and on September 30, 2005, NMFS issued a draft biological opinion to Reclamation and United, concluding that "operation of the diversion dam is likely to jeopardize the continued existence of endangered steelhead and is likely to destroy or adversely modify critical habitat for this species." Biological Opinion at 1–2. Following the draft biological opinion, there were numerous communications, including information exchanges, between United, Reclamation, and NMFS, with the intent to develop a proposed action that would minimize adverse effects on steelhead, which resulted in in a revised proposed action in early 2007. *Id.*

55. On May 24, 2007, NMFS official Anthony Spina emailed two officials from the NMFS Office of Law Enforcement regarding VFD and Steelhead, writing, "In a few cases, dead [steelhead] fish have been reported similar to the recent incident identified below . . ." Transcript, Jan. 5, 2018, Vol. 1 ("Tr. D11V1") (Dkt. 194) at 112:4–113:8. Spina was referring to other incidents of dead steelhead, including when in early 1999, an NMFS fisheries biologist, who was then the point of conduct for United, performed an assessment and determined that an adult steelhead died due to the structural and operational aspects of VFD. *Id.* at 113:9–115:6. Shortly after that conclusion, a series of discussions took place between NMFS and United to develop protocols that United began undertaking to minimize the likelihood of a similar death in the future. *Id.*

56. The May 24, 2007 email also stated:

> NMFS has been engaged in discussions and of formal consultation with United . . . on operation of the diversion for several years . . .

> while some progress has been made to modify operations. We still are a long way from fully minimizing effects of the diversion on endangered steelhead and critical habitat for these species. Collaborating with United has been challenging and they have been unwilling to modify operations to the degree needed to protect steelhead, despite decide NMFS's best efforts and flexibility."

Id. at 115:7–22. Spina expressed that collaborating with United had been challenging because in his view there were challenges such as United creating a perception in meetings with NMFS that United's operations would be modified in a certain way, and then subsequent to such a meeting, United providing a written narrative not consistent with the description provided during meetings. *Id.* at 116:9–117:5. For example, "United committing in meetings to propose a hardened ramp or some fishway and then, essentially, reneging on that . . . proposal. In subsequent letters, flip-flopping." *Id.* at 117:5–10. On two other occasions, United ("audaciously," in Spina's view) challenged NMFS to develop a jeopardy biological opinion. *Id.* at 117:12–120:1. In addition, it was NMFS's opinion that between early 2005 and 2008 prior to the issuance of the final Biological Opinion, United would make certain claims or statements that were not necessarily corroborated by the information available. Transcript, Jan. 5, 2018, Vol. 2 ("Tr. D11V2") (Dkt. 191) at 13:3–7.

57. In April 2008, NMFS issued a second draft biological opinion, and in June 2008 a draft incidental take incident; United and Reclamation provided comments in June–July 2008. *Id.* In response to the comments, NMFS produced the final Biological Opinion. *Id.*

2. National Marine Fisheries Service Issued a Biological Opinion in 2008 Finding that VFD is Likely to Jeopardize the Continued Existence of Southern California Steelhead

58. On July 23, 2008, NMFS issued the final Biological Opinion, concluding that VFD "is likely to jeopardize the continued existence of the Federally endangered Southern California steelhead DPS, and is likely to destroy or adversely modify critical habitat for this species." Biological Opinion at 1, 66. NMFS official Anthony Spina was the

Biological Opinion's principal author. Tr. D10V1 at 7:25–8:1.

59. The Biological Opinion, published by the agency of jurisdiction based on the work of its experts, provides significant analysis of many of the issues regarding VFD and steelhead that are in dispute in this action. Further, although NMFS's finding of take in the Biological Opinion (pursuant Section 7 of the ESA) is not binding in adjudicating the instant Steelhead take claim under Section 9 of the ESA, the Biological Opinion and its finding of take (and jeopardy) is highly relevant because the Ninth Circuit has held that Congress clearly intended the standard for take under Section 7 to be the same as the standard for take under Section 9. *See* Summary Judgment Order at 26–27 (citing *Arizona Cattle Growers' Ass'n v. U.S. Fish & Wildlife, Bureau of Land Mgmt.*, 273 F.3d 1229, 1238 (9th Cir. 2001)). Therefore, the Court has reviewed the Biological Opinion at length and adopts the factual findings as follows.

60. *Proposed Action.* The proposed federal action under review was Reclamation's approval of United's proposed operation of VFD and its fish ladder, whose larger purpose is for groundwater recharge and agricultural users. Biological Opinion at 4. The proposed action involves implementation of eight elements: (1) an adaptive management plan, (2) a plan to minimize take of steelhead, (3) fish-ladder operating criteria, (4) downstream fish-passage operating criteria, (5) rescue surveys for stranded steelhead, (6) a review and analysis of upstream fish passage, (7) maintenance activities at the diversion, and (8) fish-handling protocols and monitoring procedures (collectively, "proposed action" or "diversion operations"). *Id.*

61. *Interrelated and Interdependent Actions.* Elements of operation of Pyramid Dam (a feature of the California Aqueduct Project) on the mainstem Piru Creek upstream of Santa Felicia Dam, and operation of Santa Felicia Dam were considered interrelated with the proposed action. *Id.* at 5. The California Department of Water Resources and the City of Los Angeles (licensed operators of Pyramid Dam) were under contract to deliver water to United at Lake Piru. *Id.* Santa Felicia Dam, which forms Lake Piru, supplies water to downstream users at levels that would not otherwise exist if not for Pyramid Dam. *Id.*

United operates Santa Felicia Dam to deliver large quantities of stored water during the dry season downstream to VFD. *Id.* On May 5, 2008, NMFS issued a final biological opinion to the Federal Energy Regulatory Commission regarding the effects of operations of Santa Felicia Dam, which concluded that the operations of the Santa Felicia Dam, and effects due to interrelated activities, are likely to jeopardize the continued existence of Southern California Steelhead, and destroy or adversely modify critical habitat for this species. *Id.* The VFD Biological Opinion and the Santa Felicia biological opinion "can be viewed as a detailed assessment of the entirety of the larger action." *Id.* In addition, some of the groundwater pumping in the VFD service area is interdependent with operation of VFD, and the effects on steelhead and critical habitat due to groundwater pumping were considered in the VFD Biological Opinion. *Id.*

62. *Listed Species.* Only the anadromous form of *O. mykiss* and their progeny downstream of impassible barriers to upstream migration are protected under the ESA. *Id.* at 8. Through the construction of dams and other man-made barriers, certain steelhead that historically migrated to the ocean and returned to their natal freshwater stream are now confined to freshwater, and they are termed "residualized" or "non-listed steelhead" in the Biological Opinion because they exist upstream of an impassible barrier and are therefore not protected as endangered. *Id.* Though the resident form is not listed under the ESA, it is important to the viability of steelhead because it can give rise to the anadromous form and vice versa. *Id*. The listed unit of anadromous *O. mykiss* is termed a "distinct population segment" or DPS, which contains several individual or fish-bearing watersheds. *Id.* The DPS recognizes only the anadromous *O. mykiss*, whereas the term "evolutionarily significant unit," or ESU (no longer operative) refers to both the resident and anadromous (or residualized) *O. mykiss. Id.*

63. *Presence of Steelhead in Santa Clara River.* There is "much reliable genetic and ecological evidence," including genetic studies and steelhead observations," indicating [that] this species naturally occurred and reproduced in the [Santa Clara River] watershed." *Id.* at 9–10.

64. *Life History and Habitat Requirements*. *See supra*, § IV.B.

65. *Population Viability*. In evaluating the extinction risk to Southern California Steelhead, four factors were considered: abundance, population growth rate, population spatial structure, and population diversity. *Id.* at 13.

a) Abundance and Population Growth Rata. The historical run size of Southern California Steelhead adults (based on combined estimates for the Santa Ynez, Ventura, and Santa Clara rivers, and Malibu Creek) was estimated to be roughly at least 32,000 to 46,000; recent total run sizes for the same four waterways was estimated at less than 500 adults, and few adult steelhead have been reported in the Santa Clara River during the previous several years. *Id.* at 14. The number of streams supporting Southern California Steelhead had been greatly reduced from historical levels, and watershed-specific extinctions of steelhead had been documented. *Id.* The broad population appeared to be in a continued state of decline. *Id.* The magnitude of decline in the abundance of adult steelhead by itself indicates that the population is not replacing itself year after year. *Id.* at 16. The population growth rate has declined to "dangerously low levels." *Id.* Recent studies indicated that an abundance of 4,150 adult steelhead per year is needed for each independent population (steelhead-bearing watershed) in the DPS, including the Santa Clara River watershed, in order for Southern California Steelhead to be viable over the long term. *Id.* at 14. This number is based on the expectation that it would be sufficient to, in part, combat influences of environmental variability on the risk of extinction, without considering other influences such as human activities. *Id.*

b) Population Spatial Structure. Human activities, including man-made barriers, water storage projects, ground water pumping, and diversion of surface, have rendered many habitats inaccessible to adult steelheads. *Id.* at 17–18. Information suggests that human activities that render habitats no longer

accessible have increased the potential for steelhead to stray into non-natal streams, which is expected to reduce population viability, if strays are accessing unsuitable habitat or breeding with genetically unrelated fish. *Id.* Straying has been documented in Topanga Creek and San Mateo Creek. *Id.*

c) Population Diversity. Most fish-passage barriers in the DPS, such as dams and reservoirs, do not facilitate safe migration of adult and juvenile steelhead to and from spawning areas and the ocean, which results in the loss or reduction of anadromy and is expected to reduce gene flow. *Id.* at 19–20. Watershed-specific extinctions also reduce gene flow. *Id.* Alteration of habitat, including a restricted migration window due to water diversion is expected to adversely affect steelhead demographics and evolutionary processes, contributing to a decline in genetic diversity. *Id.*

d) In sum, the population viability factors indicate that "the DPS is not viable and is at a high risk of extinction." *Id.*

66. *Santa Clara River Population Unit.* The Southern California DPS contains ten population units that possess a "high and biologically plausible likelihood of being viable and independent." *Id.* at 20. The Santa Clara River population unit, which includes the Sespe Creek, Santa Paula Creek, Hopper Creek, and Piru Creek drainages, "is important to the viability and recovery" of Southern California Steelhead. *Id.* It is the largest steelhead-bearing watershed (and there are only two other large population units in the DPS: on the Santa Ynez and Ventura Rivers). *Id.* The Santa Clara River population unit is considered independent and is therefore expected to support steelhead numbers in several adjacent population units. *Id.* at 21. This population unit also has "ecologically significant attributes," not found in most other population units, in that it is an inland population, and therefore it extends to drier and warmer areas with longer migration units, and as a result this population unit is expected to promote both biological diversity and traits that favor the species' survival. *Id.* The independence of the population unit depends on subpopulations within the watershed (i.e. individual steelhead-bearing streams) and

available habitat. *Id.* at 22.

67. *Sespe Creek and Piru Creek Subpopulations.* Sespe Creek, located upstream of VFD, contains 47 miles of steelhead habitat, most of which lies on protected US. Forest Service land. *Id.* Sespe Creek is one of the largest steelhead-bearing drainages in the Santa Clara River basin—it provided reportedly over half of the historic spawning habitat, for an estimated 20,000 steelhead, and at this time, it supports some of the highest densities of *O. mykiss* in southern California. *Id.* Sespe Creek appears to be safeguarding the anadromous stock of *O. mykiss* in the Santa Clara River watershed, and the residual population of *O. mykiss* exhibits ancestral native steelhead genetics, and probably still transform into smolts that migrate to the ocean, as smolts have been captured in this area. *Id.* Therefore, Sespe Creek can still contribute steelhead to the Santa Clara River population unit, and this subpopulation is believed to be important to the viability the population unit. *Id.* Piru Creek, further inland than Sespe Creek, also appears to serve as a refuge freshwater habitat that is safeguarding the anadromous species. *Id.* Piru Creek habitat requires steelhead to have the ability to migrate long distances and it extends to a drier and warmer area than other subpopulation areas; these requirements are expected to promote genetic and ecological diversity among steelhead. *Id.* Much of the Piru Creek subpopulation also lives on protected US. Forest Service land, and several of the Piru Creek tributaries provide much steelhead spawning and rearing habitat (in some cases several miles). *Id.* Residual *O. mykiss* that exhibited ancestral steelhead genetics have been found in the Piru Creek drainage upstream of Santa Felicia and Pyramid Dams, suggesting that the area could one day be maintained as a large and naturally reproducing population to preserving steelhead. *Id.* The Piru Creek subpopulation is expected to buffer the DPS against extinction, particularly during extended droughts common to the region, during which migration of steelhead to and from the ocean does not occur. *Id.* During dry periods, perennial waterways, such as tributary streams in the upper Piru Creek, can possess flowing waters that serve as refuges for fish, and these may be the only places where reproduction of native steelhead occurs during extended droughts. *Id.*

68. *Critical Habitat in the DPS*. NMFS designed critical habitat for Southern California Steelhead on September 2, 2015, identifying primary constituent elements, which include freshwater spawning sites, freshwater rearing sites, freshwater migration corridors, and estuarine areas, and "contain the physical or biological features essential for conservation of the DPS." *Id.* "The physical or biological features that characterize these sites include water quality, quantity, depth, and velocity, shelter/cover, living space, and passage conditions." *Id.* This critical habitat can be impacted by: (1) forestry, (2) grazing, (3) agriculture and associated water withdrawals, (4) road construction, (5) modifications of a creek channel or bank, (6) urbanization, (7) sand and gravel mining, (8) mineral mining, (9) dams, (10) irrigation impoundments and water withdrawals, (11) wetland loss or removal, (12) introduction of exotic or invasive species, and (13) impediments to fish passage. *Id.* Various human activities have reduced steelhead habitat. *Id.* In many watersheds throughout the DPS, the damming of streams has created physical barriers and water flow impediments to juvenile and adult steelhead access to hundreds of miles of historical spawning and rearing habitat (such as the Twitchell Reservoir within the Santa Maria River watershed, Bradbury Dam within the Santa Ynez River watershed, Matilija Dam within the Ventura River watershed, Rindge Dam within the Malibu Creek watershed, Pyramid Dam and Santa Felicia Dam on Piru Creek). *Id.* Highway projects have also rendered habitats inaccessible to adult steelhead. *Id.* Within accessible stream reaches in many watersheds, urbanization has eliminated or dramatically reduced the quality and quantity of living space for juvenile steelhead, and this extensive degradation of habitat is one of the leading causes of the decline of steelhead in southern California and its listing as an endangered species. *Id.* NMFS review teams for the 2005 critical habitat designation ranked the potential of habitats to support species recovery—of the drainage assessed, 16% assessed were rank low, 41% were ranked medium, and 43% were ranked high. *Id.* The Santa Clara River watershed was ranked high because it has high value for species recovery because it possesses a considerable amount of critical habitat relative to the entire DPS. *Id.*

69. *Critical Habitat in Action Area.* The action area considered in the Biological Opinion includes (1) the portion of the Piru Creek mainstem inundated by Pyramid Lake and Pyramid Dam, (2) the Piru Creek mainstem extending from Pyramid Dam downstream to Lake Piru, (3) the Piru Creek mainstem inundated by Lake Piru and Santa Felicia Dam, (4) the Piru Creek mainstem extending from Santa Felicia Dam downstream to the confluence with the Santa Clara River, and (5) the Santa Clara River extending from the mouth of Piru Creek downstream to the ocean including the estuary (collectively, "action area"). *Id.* at 6, Fig. 2-1. The action area historically supported steelhead rearing. *Id.* at 26. But today, due to a variety of human activities—including the diversion of surface and ground water—the functional value of critical habitat in the action area (i.e. the freshwater migration corridor), has been diminished, and in some respects, eliminated. *Id.* Diversion of surface water "has altered the timing, frequency, duration, magnitude, and rate-of-change of surface water in the action area." *Id.* Though the reach of Piru Creek from Santa Felicia Dam to the confluence with the Santa Clara River mainstem has the potential to support spawning and rearing, effects of past and current dam-related flow alterations have reduced the functional value of critical habitat in this area. *Id.* All steelhead entering or leaving the Santa Clara River watershed must pass VFD, but fish-trapping activites at VFD since 1994 show relatively few juvenile steelhead and fewer adults (no more than 2 adults in any year); and a survey of the river from the mouth of Sespe Creek to Fillmore during the wet season found no steelhead. *Id.* The low number of adult steelhead passing VFD "is believed to be an artifact of the fish ladder, which steelhead are not expected to locate, particularly during periods of elevated flows that are sufficient to cause spills over the diversion dam." *Id.* at 26–27. In contrast, steelhead do return to neighboring streams upcoast and downcoast of the Santa Clara River, and smolts emigrate to the ocean from the Santa Clara River, which suggests that, if not for VFD, adult steelhead may have been returning to spawning and rearing tributaries upstream of VFD in greater numbers. *Id.*; *see also* Tr. D10V1 at 23:16–25:14. In additional, various human activities have impacted the critical habitat in the action area, including the construction and operation of many water

storage and diversion facilities, the conversion of wildlands, wastewater release to the river, land-use activities, and groundwater pumping. Biological Opinion at 27–34 (discussing these impacts in greater detail). VFD is a major water diversion in the action area, and its operations alter the critical habitat by: (1) reducing the magnitude of discharge and sometimes eliminate flow entirely within a year, (2) causing fluctuating discharge, (3) increasing the discharge recession rate, (4) abbreviating discharge duration within individual rain-induced discharge pulses, (5) reducing migration opportunity (i.e., conditions that allow movement between or among habitats) for adult and juvenile steelhead, and (6) increasing the potential for stranding, delaying, and precluding migration. *Id.* Live and dead steelhead have been found when tending to VFD (e.g., lowering flows to inspect or clean features of VFD or in the fish trap). *Id.* Finally, environmental factors such as drought, floods, and wildfire are expected to have a high influence on the critical habitat. *Id.* Droughts can lead to severe water reductions that can kill steelhead and wildfires can increase sand and small particles, which reduce available habitat. *Id.* Climate change is expected to increase air and water temperatures and reduce the amount of rain, which may decrease the amount of suitable habitat.[38] *Id.*

70. Next, the Court turns to the Biological Opinion's analysis of the expected effects of VFD's proposed diversion operations on steelhead over the course of 2008 to 2011 (the period in which the Biological Opinion was expected to be in effect). *See id.* at 35.

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[38] In addition, the NMFS 5-year status review of the Southern California Steelhead DPS, from 2016, found that threats to the DPS posed by environmental variability resulting from projected climate change are likely to exacerbate the factors affecting the continued existence of the DPS. Howard Test., Dec. 20, 2017, Vol. 3. Of note, the Ninth Circuit recently held that the Fish and Wildlife Service acted in an arbitrary and capricious manner by disregarding the effects of climate change (warming of temperatures and decreasing water flow) in reaching its decision not to list the arctic graying as threatened or endangered under the ESA. *Ctr. for Biological Diversity v. Zinke*, No. 16-35866, 2018 WL 3945543, at *14 (9th Cir. Aug. 17, 2018). The Ninth Circuit's holding underscores the likelihood in this matter that the effects of climate change—reducing the amount of rain in the Santa Clara River watershed and thus the availability of surface water—are expected to exacerbate the adverse impacts of VFD on critical Steelhead habitat. *See id.*; at Biological Opinion at 27–34.

71. The Biological Opinion analyzed two principle issues with respect to VFD's effects on steelhead and steelhead habitat: (1) bypass flows (the pattern and amount of water released downstream for steelhead migration, i.e. not diverted, which affects whether or not steelhead can migrate between VFD and the ocean and vice-versa); and (2) fish passage (whether steelhead can volitionally migrate past VFD upstream or downstream). *Id*. To complete these analyses, NMFS analyzed how VFD's operations would affect the pattern and magnitude of water discharge downstream—considering the flows available in the absence of diversion, under past and present operations, and under the proposed operations (the proposed operations were perfectly correlated with the present operations). *Id.* Next, NMFS analyzed when, within each period of elevated river discharge (i.e. rain-induced discharge pulses) a continuous freshwater migration corridor would form downstream, to be able assess whether steelhead could locate the fish ladder entrance during such periods, in light of spills of water over VFD's crest.[39] *Id.* The Court will first review the assumption made by NMFS in the analysis, and then address bypass flows and fish passage.

72. *Analytical Assumptions.* NMFS made the following assumptions based on its understanding of the proposed action, the dynamics of the Santa Clara River, the migration behavior, ecology, and habitat requirements. *Id.* at 44.

(a) Migration Season. In the Biological Opinion, NMFS assumed an adult steelhead migration season of January 1–May 31, and a juvenile steelhead

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[39] The analytical approach was empirical—that is, NMFS official Anthony Spina relied on hydrology data to inform an understanding of how the proposed diversion operations would affect the magnitude, duration, frequency, rate of change, and timing of discharge in the Santa Clara River. Tr. D10V1 at 32:1–19. Spina had conducted similar analyses many times before. *Id.* He also relied on statistical models to develop an understanding of how changes in flow, owing to the diversion operations, could translate into delays in the ability's the species to locate the fish ladder entrance and subsequently migrate upstream, and he applied certain methods to test the reliability of the output from the statistical models. *Id.* Then, the findings were combined with information published in the peer review literature by other investigators considering similar matters affecting anadromous salmonids. *Id.*

migration season of March 1–31, stating that this is the "principal migration period," but it may be an abbreviation of the true migration window, which investigators report as November to June. *Id.* Subsequent to the Biological Opinion, and currently, NMFS recommends that the migration season should be based on what is recorded in the literature: November through June.[40] Tr. D10V1 at 49:11–14. Anthony Spina and other NMFS staff negotiated with United for a migration season of January 1 to May 31 for adult steelhead and March 1 to May 31 for juvenile steelhead in the Biological Opinion. Tr. D10V1 at 49:19–50:5, 52:23–53:1, 67:13–60:1; Transcript, Jan. 7, 2018, Vol. 2 ("Tr. D10V2") (Dkt. 187) at 19:21–20:15. The negotiated migration period was intended to lessen the impact of bypass flows on United's yield. Biological Opinion at 44. However, when NMFS issued the Biological Opinion, they did not expect that this issue would be going on as long as it has, and Mr. Spina believes that if they knew in advance it was going to be "almost ten years down the road," they probably would not have agreed to shorten the migratory period to January through May. Tr. D10V1 at 50:15–20. At the time that the truncated migration window was negotiated, Mr. Spina felt pressure to demonstrate good faith to United. *Id.* at 55:10–18.

(b) Hydrology. NMFS also assumed that United's hydrology model is a reliable predictor of the effects of water diversion operations on the pattern and magnitude of water discharge on the river.[41] Biological Opinion at 44.

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[40] In addition, historical newspaper articles suggest that in the past, in the area where VFD now sets, the steelhead fishing season would began in December, or even late November. *See* Reiser Test., Dec. 20, 2017, Vol. 5.

[41] In addition, the parties in this action have stipulated that the Freeman Operations Model (FOM) and the Hydrologic Operations Simulation System (HOSS), as developed by United staff (Murray McEachron, Steve Howard, Mike Booth, and Catherine McCalvin) and United's consultant R2 Resources ("R2") (Dudley Reiser and Stuart Beck) in order to measure effects on species evaluated in United's Conservation Plan (Steelhead and Pacific Lamprey), and as modified to incorporate comments from NMFS, provides reasonably reliable modeling predictions of the

Further, NMFS assumed—based on the flow-related dependency of aquatic habitat, the connections between flow, riverine habitat, and steelhead life history, habitat needs, and population metrics—that alternations in the pattern and magnitude of river discharge, including the amount and extent of surface flow, would change the quality and quantity of the freshwater migration corridor. *Id.* at 45. NMFS also assumed that because discharge in the Santa Clara River watershed is naturally "flashy" (it rises and falls relatively quickly), and steelhead evolved under such conditions, that adult steelhead can volitionally migrate swiftly through the river. *Id.*

(c) Critical Riffle. The "critical riffle" is a riffle that is most difficult for an upstream steelhead to pass. *Id.* at 44 n.13. The critical riffle can move due to the ever changing river, especially when peak discharge exceeds several thousand cfs. *Id.* Normally the critical riffle is about 1.5 to 1.9 miles upstream of the highway 101 bridge. *Id.* NMFS assumed that when it specifies a minimum water discharge over the "critical riffle," this means that river discharge measured at the critical riffle or elsewhere on the river downstream of VFD, will not be less than the minimum discharge. *Id.* at 44.

73. *Bypass Flows.* NMFS concluded that the proposed action is expected "to continue to artificially truncate the frequency and duration of the freshwater migration corridor downstream of VFD," in that bypass flows will be infrequent and of short duration compared to what would exists if not for VFD. *Id.* These effects vary depending on the type of water year, as seen for example in the following figure, depicting a year below

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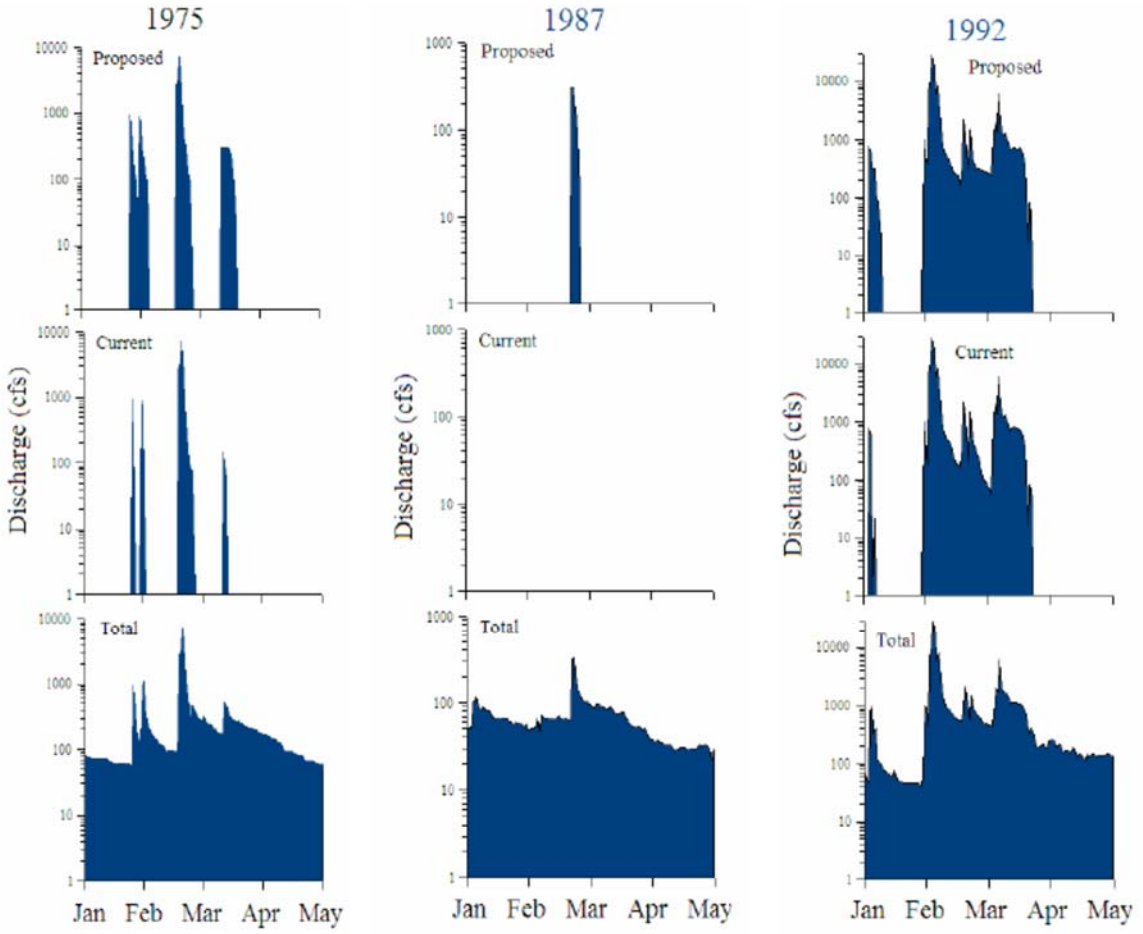
effects of VFD operations on flows in the Santa Clara River below VFD. TFS ¶ 46. The FOM/HOSS is based on daily flows over the 71-year period covering water years 1944 through 2014 (25 low flow years, 35 moderate flow years, and 11 high flow years), can be modified to include more recent time periods, and covers a diverse range of hydrologic conditions, including low flow years, moderate flow years, and high flow years. *Id.* ¶ 47. R2 used and relied upon the FOM/HOSS to model seven operational scenarios addressed in R2's Effects Analysis of United's operations. *Id.* ¶ 48. Plaintiffs also relied upon the FOM/HOSS model for their proposed water diversion operational scenarios. *Id.* ¶ 49.



normal (1987), normal (1975) and above normal (1992), and shows the water available downstream of VFD under: (1) proposed conditions; (2) current conditions (past and present operations); and (3) total (i.e. if no water was diverted):

Id. at 46, Fig. 5-1. The combination of VFD's water operations and groundwater withdrawal is expected to diminish the value of the freshwater migration corridor downstream of VFD. *Id.* at 46. Specifically, the water diversion at VFD is expected to continue to artificially increase the rate at which that the river recedes downstream of VFD (up to 375 cfs/24 hours). *Id.* Whereas in the absence of VFD, river discharge would cease gradually over several days, VFD's operations truncate the descending limb of the hydrograph (a graph that shows a flow rate versus time)—meaning that as a result of VFD, the freshwater migration corridor downstream of VFD dissipates more rapidly than it

otherwise would, giving steelhead a narrower window of time in which they can swim to VFD from the ocean. *See id.* As a result, VFD artificially truncates the frequency and duration of the migration corridor. *Id.* The quickened rate at which the water recedes is expected to increase the chance that adult and juvenile steelhead will be stranded or exposed to conditions disfavoring survival. *Id.* at 53. Because steelhead evolved under the natural flow regime, NMFS concludes that the VFD flow regime is harmful to the species, and is expected to cause missed migration opportunities, stranding, and migration failure. *Id. a*t 56. In addition, the widespread withdrawal of groundwater in the lower river valley worsens the effect of the receding river because groundwater withdrawal increases the rate of surface water percolation into the ground, with losses of 100 cfs to groundwater reported for the lower river. *Id.* at 46. This often requires discharges of greater than 180 to 200 cfs, particularly during periods of reduced groundwater storage, to maintain a continuous river and sufficient water depths for passage of steelhead through the river downstream of VFD. *Id.*

74. *Fish Passage.* Next, NMFS analyzed fish passage at the fish ladder and concluded that when river flow is over 500 cfs, adult steelhead are expected to be unable to locate the fish ladder entrance (although for flows of around 500 cfs, there may be some instances when steelhead can locate the entrance). *Id.* at 36, 39. In contrast, attraction flows at the fish ladder entrance, emanating from the entrance and auxillary pipe, are only expected to be effective in guiding steelhead to the fish ladder when spills over the dam crest are not sufficient to mask detection of the fish ladder entrance. *Id.* at 37. Per communication from United's hydrologist, Murray McEachron, observations suggested that spills associated with river flows of less than 500 cfs (typically producing spills over the crest of about 170 to 190 cfs, assuming a 120 cfs bypass flow at the fish ladder) may not obscure steelhead detection of the fish ladder, because such discharges produce "only minor turbulence

immediately downstream" of VFD.[42] *Id.* NMFS's review of a reference library of color photographs of spills at VFD suggests that river discharges over 500 cfs, and related spills, can obscure adult steelhead detection of the fish ladder entrance.[43] *Id.* NMFS expects that adult steelhead cannot adequately locate the fish ladder entrance when river discharge exceeds 500 cfs, both when water is and is not being diverted (for example, if the discharge is 500 cfs, and the diversion is at full 375 cfs capacity, the spill would be 125 cfs, and when the diversion is not operating, the spill would be 500 cfs). *Id.* Analyses at 1,000 cfs and 3,000 cfs corroborate these findings. *Id.* at 39. A review of the hydrology record indicated that discharge pulses (following storms) commonly exceed 500 cfs. *Id.* Investigators have shown that high flows and displays can preclude steelhead from detecting fishways. *Id.* at 37. Further, steelhead may swim along the downstream base of VFD until spills subside enough to allow steelhead detection of the fish ladder entrance, causing delays in migration. *Id.* Higher flows produce spills lasting for weeks, a prolonged period when migration through VFD is obstructed. *Id.* at 47. Under VFD's water diversion operations, NMFS expected few instances when elevated discharged does not delay

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[42] NMFS in the Biological Opinion assumed a 120 cfs bypass (or attraction) flow at the entrances to the fish ladder, but the fish ladder now provides about 36 cfs in attraction flow, and the auxiliary pipe provides about 40 cfs in contributory flow, for a total of about 76 cfs in attraction flow at the fish ladder entrances. *See* Trial Ex. 3 at 4–6; Biological Opinion at 36. Under certain flow conditions, the bypass pipe can provide an additional 80 cfs of attraction (and at times United now opens the flushing channel to increase flow attraction, even though generally the flushing channel is not open at the same time that the fish ladder is in operation). Kramer Test., Dec. 13, 2017, Vols. 1–2. However, when the attraction flow at the fish ladder is simply 76 cfs (i.e. from the fish ladder and auxiliary pipe), river flows of less than 500 cfs would be more likely to obscure steelhead detection of the fish ladder than was understood to be the case in the Biological Opinion, which assumed 120 cfs attraction to the fish ladder. *See* Biological Opinion at 36; *id.* at 38 ("We note that the capacity of the fish ladder and auxiliary to deliver an attraction flow is only 120 cfs; the elevated river discharges and spills of water observed at [VFD] commonly exceed the attraction flow by orders of magnitude").

[43] NMFS guidance is that a fish ladder structure should emanate five to ten percept of the total river flow, but at VFD the upper range of that percentage—ten percent—is appropriate because there is a 1200-foot-wide span of river flow compared to two 48-inch wide fish ladder entrances. Testimony of Dana Postlewait, Dec. 20, 2017, Vol. 3. So based on the 76 cfs typical attraction flow at the fish ladder entrances, when the river flow is over 760 cfs, VFD is no longer meeting the NMFS guidance for fish ladder attraction. *Id.*

detection of the fish ladder entrance. *Id.* at 48. The average maximum discharge pulse for the period on record was 6,857 cfs, which corresponds to an average migration delay of 10 days. *Id.* Prolonged elevated river discharge can lead to several weeks delay in possible fish ladder entrance detection. *Id.* at 56. The obscuring of the fish ladder entrance is expected to slow if not prevent adult steelhead from reaching their spawning habitat in tributaries in Sespe Creek, Hopper Creek, Santa Paula Creek, and Priu Creek upstream, and fish that cannot locate the entrance are existed to return to the ocean or perish. *Id.* Passage delays of five days or more can decrease energy reserves to levels harmful to survival, and even delays of a few hours to a few days is expected to adversely affect steelhead. *Id.*

75. In addition, once discharge in the river subsides enough for Steelhead to detect VFD's fish ladder entrance, discharge in the mainstem and tributaries upstream of VFD will have subsided by several thousand ft^3 per second, and river discharge upstream of VFD will be generally less than 800 cfs, which results in a lower quality upstream migration corridor. *Id.* at 49–50. Because high flows are necessary to promote adequate depth for steelhead migration, slowed or no migration is likely after river discharges subsided. *Id.* at 57.

76. Further, maintenance activities at VFD occasionally create harmful conditions.[44] *Id.* at 58. The flushing operations require closing both entrances to the fish ladder, blocking passage. *Id.* Dewatering the fish ladder for inspection and cleaning increases the likelihood of stranding and delayed migration—at least one adult steelhead has been found during maintenance, and flushing operations have resulted in juvenile steelhead (including a dead smolt) being collected downstream of VFD.[45] *Id.*

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[44] United acknowledges that a drawback of the existing fish passage system is that the fish ladder is not operable when flow is turned out of the canal or when the flushing gate is open. Emmert Test., Dec. 15, 2017, Vol. 2.

[45] United now visually searches the fish ladder to make sure there are not fish in there before they dewater. Kramer Test., Dec. 13, 2017, Vol. 1. In addition, prior to 2014, if United saw a stranded fish in or around VFD, United would attempt to relocate it to another part of the river, but as of

77. In sum, NMFS concluded that:

> [T]he continued operation of the Vern Freeman Diversion Dam as under the proposed action (including the interrelated activities) is projected to continue to disrupt if not eliminate migration of steelhead into and out of Piru Creek, reduce migration opportunities and success in the Santa Clara River, particularly downstream of [VFD], and continue to preclude steelhead from reaching historical spawning and rearing habitat in tributaries to the mainstem. The proposed action possesses aspects that are expected to continue to reduce straying and gene flow into and out of the watershed, and decrease recruitment of steelhead progeny (i.e., density of age-0 steelhead) in the watershed. The effects due to the proposed action are expected to extend to the Santa Clara River steelhead population unit and reduce the likelihood that the population unit would survive.
>
> Overall, continued operation of [VFD] under the proposed action contributes to increase the extinction risk to endangered steelhead by reducing and at times eliminating migration opportunities and success for endangered steelhead, and precluding migration of this species to historical spawning and rearing habitat, leading to spawning failure in the Santa Clara River watershed.

Id. at 64. Aggregate effects of the environmental baseline, proposed action and interrelated activities, future state, local, and private actions (*see id.* at 61), are expected "to exacerbate rates of habitat loss and destruction and preclude formation of a viable steelhead population in the Santa Clara River watershed." *Id.* at 65. In addition, environmental

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about 2014, NMFS does not permit United to touch any steelhead in or around VFD because United does not have a permit for incidental take—instead United must call staff from NMFS in Long Beach to assist. *Id.* However, at times NMFS has tried to minimize the need for rescues and only come out to VFD once or twice a year. McCalvin Test., Jan. 3, 2018, Vol. 2.

fluctuations including climate change, floods, wildfire, and drought, and demographic fluctuations (such as unpredictable birth and death rates) are expected to create an added risk of DPS extinction. *Id.*

78. *Means to Minimize Effects.* United proposed that after the issuance of the Biological Opinion, United would collaborate with NMFS to develop a plan to minimize the adverse effects of VFD. *Id.* at 59. However, NMFS concluded:

> [There was no assurance that such a plan] would specify the sorts of measures needed to actually minimize the adverse effects, including those effects related to harming, injuring, or killing steelhead. Mechanistic solutions such as trap-and-truck protocols are not sufficient, by themselves, to minimize effects of the proposed diversion operations on this endangered species. Whether the adverse effects would in fact be minimized is uncertain. As a result, NMFS cannot analyze an undefined concept. NMFS is certainly willing to collaborate with United on the aforementioned plan but our experiences attempting to collaborate with United on this proposed action have not always been fruitful. The administrative record that is the basis of this formal consultation shows that United has not adopted NMFS'[s] recommendations and, in at least one instance, United has proposed the very operating criteria that NMFS has recommended against. Therefore, NMFS is not confident that collaboration with United would result in an outcome that would favor endangered steelhead or critical habitat for this species.

Id. at 50–60 (citation omitted).

79. *Reasonable and Prudent Alternative.* NMFS issued a reasonable and prudent alternative ("RPA") (along with an incidental take statement), or an authorized action designed to minimize take, but allow incidental take, pursuant to

> [r]egulations (50 CFR §402.02) implementing section 7 of the ESA,

> [which] define reasonable and prudent alternatives as alternative actions, identified during formal consultation, that: (1) can be implemented in a manner consistent with the intended purpose of the action; (2) can be implemented consistent with the scope of the action agency's legal authority and jurisdiction; (3) are economically and technically feasible; and (4) would, as NMFS believes, avoid the likelihood of jeopardizing the continued existence of a listed species or destroy or adversely modify critical habitat.

Biological Opinion at 67.

80. The RPA involves two elements: RPA 1, dealing with fish passage, and RPA 2, dealing with bypass flows, and both elements are needed to achieve the RPA's objectives. *Id.* at 67–71. NMFS believed that the RPA was "necessary and appropriate to avoid the likelihood of jeopardizing the continued existence of the endangered Southern California DPS of steelhead or destroying or adversely modifying critical habitat for this species." *Id.* The RPA required "restoring and maintaining a continuous, unobstructed, and properly functioning freshwater migration corridor in the Santa Clara River during winter and spring for the purpose of providing or approximating unimpeded migration of steelhead past the diversion dam over a broad range of hydrologic events." *Id.*

81. RPA 1 sets for a process—composed of six sub-elements, RPA 1A–F—to implement interim and long-term physical modifications to VFD to improve fish passage. *Id.* at 67–71. RPA 2 sets forth operational requirements for the diversion of water at VFD—composed of two sub-elements, RPA 2A and 2B—to allow a properly functioning migration corridor downstream of VFD. *Id.* at 73.

82. *RPA 1.* United shall convene, facilitate, and fund a panel of qualified fish-passage engineers, hydrologists, and fish biologists ("Fish Panel"), which functions independently and performs science-based analyses as necessary to identify the specific physical modifications of VFD necessary to attain the fish passage objective, and undertake the following steps (with NMFS's written agreement as to steps (a)–(d)):

(a) Conceptual alternatives study. The panel shall conduct a conceptual alternative study to identify, consider, and list: (1) interim physical modifications and (2) long-term physical modifications, that may be appropriate. *Id.* at 67–68;

(b) Feasibility study. The panel will build greater detail and develop each design concept of merit (including a preliminary cost estimate) for the purpose of enabling selection of a preferred alternative. *Id.* at 68–69;

(c) Preliminary design development. A preliminary design must be developed in an interactive process with NMFS staff, based on a synthesis of the required site and biological information. *Id.*;

(d) Detailed design phase. The panel shall proceed to a detailed design phase and prepare the final design and specifications package suitable for a bid-solicitation process, or if the panel requests, United shall hire an engineering firm to do so. *Id.* NMFS engineering and biological staff must have the opportunity to review and provide comments at the 50% and 90% completion stages. *Id.*;

(e) Implementation. The final design shall be implemented and operational for interim modifications, no later than December 21, 2008, and for long-term modifications, the before the Bureau's discretion over operation of VFD lapses in 2011. *Id.* at 70; and

(f) Monitoring and maintenance. United shall monitor and maintain the modifications to ensure they function over time in a manner that would allow attainment of the fish-passage objective. *Id.*

83. *RPA 2A.* RPA 2A addresses bypass flows for adult steelhead migration downstream of VFD:

> When initiating the turning-in procedure (i.e., directing river water into the diversion intake), the daily rate at which [VFD] reaches its operating capacity of 375 cfs (ramping rate) shall not exceed the rates

in the following table for each category of total river discharge in the Santa Clara River as measured immediately upstream of the Vern Freeman Diversion Dam[46]. The rates in the table below apply only to turning-in procedures undertaken during the principal steelhead migration season (January through May) when total river discharge is ≤ 750 cfs:

Total river discharge	Ramping rate[47]
≤ 635 cfs	Upon initiating the turning-in procedure, and only after providing the necessary bypass flow required to maintain a minimum of 160 cfs over the critical riffle,[48] United shall divert no more than 20% of the remaining river discharge, provided that diverting 20% of the remaining river discharge does not reduce river discharge downstream of the diversion dam more than (1) the river discharge that is expected to result from the operating criteria that are the basis of the action as proposed by United and the Bureau, and (2) the river discharge resulting from reasonable and prudent alternative element 2(b)

[46] "The phrase 'total river discharge in the Santa Clara River immediately upstream of the Vern Freeman Diversion Dam' (and similar phrases) refers to the total amount of water that would pass downstream of the Vern Freeman Diversion Dam if none was diverted." Biological Opinion at 70 n.23.

[47] "Rates were developed from an analysis of discharge decay rates in Sespe Creek and the Santa Clara River." *Id.* at 70 n.24.

[48] The 160 cfs over the critical riffle figure was developed based on a 2005 study by Thomas R. Payne & Associates, a contractor for United, which determined that 160 cfs was needed to maintain 0.5 feet of water depth and ten feet of width to create a ribbon in which adult steelhead can swim. Kramer Test., Dec. 13, 2017, Vol. 2; Hammersmark Test., Dec. 13, 2017, Vol. 4 and Dec. 14, 2017, Vol. 1; Biological Opinion at 46. The reason that 0.5 feet of depth was chosen was because adult steelhead are usually about five to six inches, and it is possible for them to swim through 0.5 feet of water depth. Kramer Test., Dec. 12, 2017, Vol. 4; Hammersmark Test., Dec. 14, 2018, Vol. 2.

> 635 cfs and ≤ 750 cfs	Upon initiating the turning-in procedure, and only after providing the necessary bypass flow required to maintain a minimum of 160 cfs over the critical riffle, United shall divert no more than 30% of the remaining river discharge, provided that diverting 30% of the remaining river discharge does not reduce river discharge downstream of the diversion dam more than (1) the river discharge that is expected to result from the operating criteria that are the basis of the action as proposed by United and the Bureau, and (2) the river discharge resulting from reasonable and prudent alternative element 2(b).

Id. at 70.

84. *RPA 2B.* RPA 2B addresses bypass flows for juvenile steelhead migration downstream of VFD:

> Trapping and then trucking juvenile steelhead shall be undertaken solely as a rescue operation, not the principal means of moving juvenile steelhead to the Santa Clara River estuary or ocean especially when total river discharge is sufficient to maintain connectivity with the Santa Clara River estuary[49]. Therefore, when total river discharge immediately upstream of the Vern Freeman Diversion Dam is sufficient to maintain connectivity with the Santa Clara River estuary during the emigration season for juvenile steelhead (March 1 through May 31), United shall extend the proposed 18-day and 30-day bypass flows to ensure volitional emigration of juvenile steelhead to

[49] "A flow-related threshold effect has been noted in the Santa Clara River downstream of the Vern Freeman Diversion Dam. Under certain environmental conditions, in particular periods of low groundwater storage and low river discharge, surface water can percolate entirely into the channel bed downstream of the diversion dam, rendering the river discontinuous." *Id.* at 71 n.26.

> the estuary. The magnitude of the substantive aspects of the 18-day and 30-day bypass flows as defined under the proposed action are intended, in part, to maintain connectivity with the estuary and ocean; we expect that the same and at times lower bypass flows (particularly as total river discharge declines) will be necessary to meet the purpose and intent of reasonable and prudent alternative element 2(b). When total river discharge immediately upstream of the Vern Freeman Diversion Dam recedes to a magnitude no longer capable of maintaining connectivity with the Santa Clara River estuary, even with all water in the river passing downstream and none being diverted, the extension in the bypass flows that is required in this reasonable and prudent alternative may cease in accordance with the ramping down criterion set forth in the proposed action, provided that before ceasing the bypass flows, United documents that total river discharge immediately upstream of the Vern Freeman Diversion Dam is not sufficient to maintain connectivity with the estuary and then in writing notifies NMFS . . . of the documented conditions indicating that ceasing the bypass flows is warranted.

Id. at 71.

85. The RPA is expected to restore unobstructed steelhead access through the lower Santa Clara River to spawning habitats in tributaries to the mainstem, and re-establishes those bypass flows necessary to ensure a properly functioning migration corridor. *Id.* at 75.

86. *Incidental Take Statement*. Finally, the Biological Opinion includes a statement authorizing incidental take because operating VFD, even with the RPA, is expected to cause the following incidental take:

> 1. Decrease the magnitude (up to a 375 cfs reduction), frequency (up to a 100% reduction), and duration (up to a 100% reduction) of the freshwater migration corridor for adult and juvenile steelhead

> downstream of [VFD] during winter and spring, with the expectation of injuring and killing these steelhead life stages;
>
> 2. Increase the recession rate (up to 375 cfs/24 hours) of the freshwater migration corridor for adult and juvenile steelhead downstream of VFD during winter and spring, with the possibility of injuring and killing these steelhead life stages; and
>
> 3. Collect and relocate 2 adult and 900 juvenile steelhead annually as part of fish-rescue activities (including collection and relocation of steelhead that may be prompted by implementation of the reasonable and prudent alternative), diversion maintenance and operations, and monitoring activities, with the expectation of injuring or killing up to 2 adult and 90 juvenile steelhead annually.

Id. at 80–90. Nonetheless, NMFS concluded the anticipated level of take associated with the proposed action was not likely to jeopardize the continued existence of the endangered Southern California DPS of steelhead when all of the elements of the RPA are implemented. *Id.* Therefore, NMFS issued the incidental take statement, along with reasonable and prudent measures to monitor the incidental take. *Id.*

87. NMFS expressly indicated in its 2008 Biological Opinion that the Opinion would be temporary and would expire in December 2011—the date that Reclamation's loan to United for construction of VFD would be repaid and Reclamation would no longer have any discretionary involvement with VFD operation and maintenance. TFS ¶ 38; Biological Opinion at 3. Because the RPA would only authorize incidental take until December 2011, and because NMFS expected incidental take to continue after December 2011, NMFS expected United "to pursue and acquire a Section 10(a)(1)(B) incidental take permit from NMFS to cover [or authorize] take of steelhead related to operation of the Vern Freeman Diversion Dam." Biological Opinion at 3. Further, NMFS expressed its belief that the RPA "would provide much, if not most, of what would be expected to form the conservation program that is the basis of an application for an incidental take permit." *Id.*

88. Federal regulations provide that after a biological opinion is issued, "the [consulting] Federal agency shall determine whether and in what manner to proceed with the action in light of its section 7 obligations and the Service's biological opinion . . . [and] notify the Service of its final decision on the action." 50 C.F.R. § 402.15. It is up to an action agency that has consulted with the Service under Section 7 to determine whether and how to proceed with its proposed action (including permitting private activity) in light of an ITS [Incidental Take Statement] issued by the Service, but the action agency and private party must comply with the Service's ITS (unless they have obtained a separate Section 10 incidental take permit) if they wish to be insulated from ESA liability for taking species in conducting the action. *Sierra Club v. U.S. Army Corps of Engineers*, 803 F.3d 31, 41 (D.C. Cir. 2015).

89. Despite NMFS's expectation that United would implement the Biological Opinion's RPA until 2011 and acquire an ESA Section 10 incidental take permit for the time period after 2011, the Bureau of Reclamation (the acting federal agency) declined to adopt the Biological Opinion after it was issued (and thus the Opinion's incidental take authorization never took effect), and United never acquired an ESA Section 10 incidental take permit. Transcript, Jan. 4, 2018, Vol. 2 ("D10V2") (Dkt. 187) at 35–36. Reclamation took the position that the environmental baseline should be the existing facility that was already there (i.e. VFD), whereas NMFS adopted an environmental baseline consisting of the natural conditions of the river without VFD. McEachron Test., Dec. 18, 2017, Vol. 4.

3. United Took Steps to Address VFD's Impacts on Steelhead, But Also Dragged its Feet; and the Federal Government Failed to Take Concrete Action Prior to Plaintiffs Filing this Lawsuit

90. Because Reclamation did not adopt the Biological Opinion and because United never acquired an ESA Section 10 incidental take permit, United has operated VFD for several years without authorization to take Southern California Steelhead. See, e.g., D. Br. No. 8; P. Br. No. 408; McEachron Testiomony, Dec. 19, 2017, Vol. 1.

91. Since 2009, United has been working on a habitat conservation plan ("HCP"), one

of the first steps to obtaining—or filing an application to obtain—an incidental take permit pursuant to Section 10 of the ESA. United has submitted two draft HCP plans: a first draft HCP in 2012 and a second draft HCP in 2016, but United's HCP has not been finalized by United or approved by the regulatory agencies; and the draft HCP's various sections are still in various stages of development. *See* McEachron Test., Dec. 18, 2018, Vol. 4; Testimony of Catherine McCalvin ("McCalvin Test."), Jan. 3, 2018, Vol. 1; Tr. D11V1 at 96:19–22; 16 U.S.C. § 1539(a)(1)(B).

92. Early on in the process, in a March 24, 2009 letter, NMFS provided United with several recommendations about work that should be done to develop a draft HCP. Tr. D11V1 at 96:23–97:11.

(a) The first recommendation was that a draft HCP should have more about "the specification activities including location to become consideration for take coverage in the HCP." *Id.* at 97:16–23. NMFS repeated that recommendation to United in a January 13, 2012 letter. *Id.* at 93:14–18, 97:24–98:4.

(b) The second recommendation was to provide information about "[c]onditions and effects, including amount and extent, temporal and spacial each activity is creating (e.g., effects to species and its habitat)." *Id.* at 98:5–17. As of 2018, United has not to NMFS's satisfaction described the conditions and effects, temporal and spatial, of each of United's activities on steelhead. *Id.* at 98:18–100:3. Specifically, the recent riverine effects analysis produced by United's consultants (described in greater detail below) uses methods that underestimate the effects, which in an NMFS March 2017 comment letter was articulated through specific examples via graphs. *Id.* United responded to those comments with a table of responses to various parts of the comments, but those responses led NMFS to conclude that United still has not provided a sufficient response. *Id.*

(c) The third recommendation was for information about how such conditions and effects translate into take of the species, as required by the regulations

for issuing an incidental take permit. *Id.* at 100:4–12.

(d) The fifth recommendation was for information about "[t]he biological goals and objectives to guide development of the draft conservation program, including the minimization and compensatory mitigation measures." *Id.* at 103:18–104:2. This has been a longstanding area of concern for NMFS, and NMFS officials have recently taken the view United's stated goals and objectives are not ecologically meaningful or expected to lead to a meaningful conservation program for the species. *Id.* at 104:4–105:3.

93. In January 2012, NMFS issued a Southern California Steelhead Recovery Plan, which stated that "The Vern Freeman diversion, Santa Felicia Dam, and Pyramid Dam on Piru Creek effectively impeded or blocked fish passage to spawning and rearing habitat in the major tributaries of the Santa Clara River." Tr. D11V2 at 22:16–23:3, 24:8–24.

94. In a January 13, 2012, NMFS sent a letter to United to address United's schedule for developing an acceptable draft habitat conservation plan, which was one of several letters than NMFS wrote to United with that purpose. Tr. D11V1 at 93:10–94:8. The letter stated, among other things, "However, as supported by the administrative record, United's Vern Freeman Diversion and associated operations continue to result in the unauthorized take of endangered steelhead." *Id.* at 94:9–95:1. NMFS's administrative record still shows such a conclusion. *Id.* The January 2012 letter also stated: "United's progress for developing the draft HCP and, therefore, the application for an incidental take permit is of concern." *Id.* at 95:2–10. NMFS at the time was concerned about the amount of time it was taking to develop a draft HCP, and NMFS is still concerned about delays in United's development of a complete HCP, in particular because "the facility continues to operate and create effects to the species and its habitat that [NMFS] alluded to in the biological opinion of 2008." *Id.* at 95:11–19. The January 2012 letter also stated: "The initial components of the draft HCP, namely, the section involving covered species and covered activities, have been in various stages of developments since August 2008 notwithstanding NMFS's ongoing advice to United on various matters for developing the draft HCP." *Id.* at

95:20–96:7. It is still true today that between 2012 and 2018, NMFS has continued to provide United with ongoing advice for developing a draft HCP. *Id.* 96:13–18. The January 2012 letter also had discussion of United's April 2010 draft screening assessment, stating that "it had been roughly 18 months since the draft assessment was produced. NMFS has still not received this document or an update to its delivery." *Id.* at 105:4–14. Nothing in the record indicates that NMFS has since received the screening assessment work product. *Id.* at 105:15–19. The 2012 letter also expressed concerns about the amount of time United was taking to review certain material. *Id.* at 105:20–107:9. Additionally, the 2012 letter also stated that "[d]uring the meeting of April 8th, 2011, [NMFS] recommended that the operational criteria described in the [Biological Opinion's] RPA served as a starting point for developing operational flows under the draft HCP." *Id.* at 107:14–108:16. NMFS's guidance about using the flow rules dated back to a meeting between United and NMFS leadership in 2008, shortly after Reclamation exited the consultation, in which NMFS leadership advised United to implement the flow rules in the Biological Opinion's RPA. *Id.*

95. In a March 12, 2012 letter from United to NMFS, FWS, and California Department of Fish and Game, United wrote that "United fully understands that some of its activities at the Freeman Diversion near Saticoy in Ventura County are resulting in authorized take of the federally endangered southern California steelhead." Emmert Test., Dec. 15, 2017, Vol. 3. United also wrote that it has taken steps to minimize this take. *Id.* Catherine McCalvin, who wrote this letter on behalf of United, was referring to Steelhead getting trapped in VFD prior to rescue and handling; and she believes that the adoption of protocols starting in 2014 for NMFS to rescue fish (discussed further below) has addressed this conclusion of take. McCalvin Test., Jan. 3, 2018, Vol. 2.

96. In July 2012, United—with the assistance of its then consultant Entrix—submitted a draft habit conservation plan to the relevant regulatory agencies. *See* McCalvin Test., Jan. 3, 2018, Vol. 1.

97. Between July 2012 and March 2014, United continued developing the HCP and

submitted different chapters or studies to NMFS in a serial fashion. *Id.* at Vol. 2.

98. In a March 18, 2014 letter from NMFS to United, NMFS expressed that it prefers United not to submit HCP material in sections, and in the future to submit material in the form of an entire second draft HCP. *Id.*

99. In response, in a April 15, 2014 letter from United to NMFS, United stated that it and its consultant had been working diligently on various aspects of the HCP and California Environmental Quality Act ("CEQA") compliance as well as initiating efforts regarding other permitting requirements for constructing and operating the new fish passage facility. *Id.*

100. In October 2016, United submitted its second draft habit conservation plan, produced by United's staff as well the assistance of consultants such as R2 Resources, Stillwater Sciences, Rincon, AECOM, and NHC. *See* McCalvin Test., Jan. 3, 2018, Vol. 1. Discussions between United and NMFS about the 2016 draft HCP are detailed below.

101. A 2016 NMFS Southern California Steelhead status review found that "There is little new evidence to suggest that the status of the Southern California coast steelhead DPS has changed appreciably in either direction since publication of the last status review 2011," and so Southern California Steelhead is to remain endangered. Transcript, Jan. 4, 2018, Vol. 3 ("Tr. D10V3") (Dkt. 189) at 46:1–48:14. The risk of extinction to Southern California Steelhead is about the same as it was at the time of the Biological Opinion in 2008. *Id.* at 49:4–50:14.

102. Because the HCP process has not progressed further than a draft HCP, United does not have incidental take permit authorization for take of steelhead at VFD. *See, e.g.*, D. Br. No. 8; P. Br. No. 408. Given this lack of authorization, the Court will now discuss additional issues pertaining to United's operation of VFD as relevant to Steelhead—first United's observations of steelhead in and around VFD; second developments regarding United's approach to water diversion and fish passage from 2008–2016 (as well as the involvement of NMFS and Plaintiffs in these issues); and third Plaintiffs' instant lawsuit and subsequent related developments.

a. Monitoring of Steelhead at VFD

103. United has monitored for the presence of adult Steelhead moving upstream at VFD in the following ways since 1993. TFS ¶ 24.

(a) Between 1993 and June 1997, United's Steelhead monitoring efforts were composed of stranding surveys within components of VFD (the VFD fish screen bay, Denil fish ladder, and diversion canal), and upstream fish trap and counting tubes within the fish ladder. Pl. Br. No. 45; Trial Ex. 10 at 2.

(b) In 1998, United only monitored upstream Steelhead passage past VFD "via occasional stranding surveys in the Denil fish ladder." Pl. Br. No. 46; Trial Ex. 10 at 2.

(c) From 1998 until 2002, United monitored adult Steelhead upstream passage "haphazardly, through stranding surveys of the dewatered fish ladder." Pl. Br. No. 47; Trial Ex. 10 at 3.

(d) In 2002, as part of its new Steelhead passage monitoring approach, United installed a false weir upstream of the Denil plates in the fish ladder. TFS ¶ 25. The false weir "creates a barrier within the ladder that forces upstream migrant steelhead to jump out of the water approximately six inches to traverse a small cascade and continue migrating upstream." Pl. Br. No. 48; Trial Ex. 10 at 3. But the barrier created by the false weir is not significant, and Steelhead can jump over it. *See* Testimony of Michael Booth, Dec. 18, 2017, Vol. 2; Testimony of Kozmo Bates, Dec. 12, 2017, Vol. 1. Nonetheless, there is some concern among steelhead biologists, including at NMFS, that the false weir may be somewhat delaying upstream movement of Steelhead, but NMFS does not appear to have formalized that concern or made a specific recommendation about it. Tr. D11V2 at 18:4–19:2.

(e) Between 2002 and 2010, United employed an infrared scanner across the false weir referred to in the preceding paragraph along with passive DVR/VCR recording equipment to record adult Steelhead jumping over the

weir that disrupted the infrared scanner beams. TFS ¶ 26. During this time frame, United also used one twenty-five watt fluorescent light to illuminate the false weir at night, but in 2009 United identified problems with these methods, including poor video resolution at night, and false hits from water, birds, insects, and debris. Pl. Br. No. 49; Trial Exs. 10 at 3, 21 at 3-4–3-5.

(f) In 2010, United upgraded its DVR/VCR system to a computer-based surveillance system and added two additional cameras to the weir, and this system automatically saves clips when any fish movement is detected. TFS ¶ 27. Additionally, from 2010 to 2014, United employed three twenty-five watt fluorescent lights to illuminate the false weir at night. *Id.* From 2011–2014, United installed several additional cameras to provide different viewing angles that could be used for motion detection.[50] *Id.*

(g) From 1994 to 2014, United was operating a downstream migrant fish trap in the fish bay, and from 1998 to 2014, United was monitoring juvenile and smolts in the trap—and smolts would be released immediately downstream of VFD if there was sufficient water for them to migrate to the ocean, or be transported to the estuary. TFS ¶ 29; Trial Ex. 10, 15. United observed fish during dewatering of the fish bay, whereby for fish bay dewatering, the water is lowered to six inches in the fish bay for surveys, which often last a few hours, and water can otherwise be maintained at three to five feet if fish remain in the bay for longer periods (dewatering of the fish bay is typically done at the end of the migration season, while United conducts turn out or flushing operations—i.e. sending water down the flushing channel rather than the diversion channel when United determines that the water is too dirty

[50] In addition, in 2016–17, to improve the performance of the surveillance system, United replaced the camera was high-resolution network cameras and connected them to a more reliable automated system, and added a tarp cover to protect both the cameras and infrared scanners on the false weir and improved the image quality. *See* Booth Test., Dec. 18, 2017, Vol. 2.

for diversion, or in the case of flushing if there is too much sediment in the water or to pull the river to the south bank side). *Id.* Booth Test, Dec. 18, 2017, Vols. 1–2, 4; McEachron Test., Dec. 18, 2017, Vol. 4. Pursuant to direction provided by NMFS (including NMFS's Office of Law Enforcement ("OLE")) in 2014 and 2015, United discontinued its practice of trapping fish in the fish trap or otherwise trapping and transporting fish on its own. Booth Test., Dec. 18, 2017, Vols. 1–2; McEachron Test., Dec. 19, 2017, Vol. 3. Tr. D10V3 at 14–18. Since that time, pursuant to United's adoption of a Standard Operating Procedure, dated October 7, 2015, that instructs its employees not to trap or transport steelhead without NMFS authorization, and based on a negotiation initially worked out in 2016 by phone calls between United and NMFS's OLE, NMFS comes generally from Long Beach and oversees and authorizes United—at the end of the migration season (or in other period)—to dewater, trap with nets downstream migrants that remain in the fish bay, put them into buckets or coolers, and transport them via truck (juveniles are transported upstream and smolts are transported downstream). Booth Test., Dec. 18, 2017, Vols. 1–2; McCalvin Test., Jan. 3, 2018, Vols. 2–3. Despite United's Standard Operating Procedure, nothing in the record suggests that United has made any formal, binding commitment that United will not restart the handling and transporting of Steelhead on its own in the future. *See* Trial Ex. 743. In fact, United in 2016 proposed to restart the trapping and trucking operation. Howard Test., Dec. 20, 2017, Vol. 3.

104. In performing the above monitoring since 1993—which was not comprehensive or representative of adult steelhead who have migrated to and/or past VFD, and has changed and improved substantially over time—United has detected 11 adult Steelhead entering the fish ladder. Specifically, United detected the following number of adult Steelhead entering the ladder in the following years:

1994:	1
1995:	1
1996:	1
1999:	1[51]
2000:	2
2001:	2
2009:	1[52]
2012:	2

See TFS ¶ 29; Pl. Br. No. 53.

105. Of these 11 adult Steelhead, United observed only two fish passing through the fish ladder and successfully climbing over the false weir and exiting the upstream exit of the ladder—two adult Steelhead detected by United in 2012—but there is no evidence that these fish actually made it through the trash rack back into the mainstem of the River. Pl. Br. No. 51; Trial Exs. 1 at 9, 10 at 10, 655, 666; Kramer Test., Dec. 13, 2017, Vol. 1; Booth Test. Dec. 18, 2017, Vol. 4. These fish were detected on April 15 and 16, 2012, when total river flow was 347 and 323 cfs respectively, the amount of water diverted was 127 and 103 cfs respectively, 220 cfs flow was provided for fish on both days, and there was no water spilling over the dam—which means that issues of poor flow attraction to the fish ladder entrances did not come into play on those days. Booth Test. Dec. 18, 2017, Vol. 4; Pl. Supp. Br. No. 31.; Trial Exs. 24, 251; Kramer Test., Dec. 13, 2017, Vol. 1.

106. United detected the other nine adult Steelhead in fish traps or during fish stranding

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[51] On March 17, 1999, United wrote a report that on March 16, 1999, United staff found a dead adult steelhead in the fish screen bay, following a flush and the draining of the fish screen bay—but it is not clear if the one Steelhead reported in the body test refers to this dead adult steelhead or another fish. *See* Trial Ex. 28; Booth Test., Dec. 18, 2017, Vol. 3.

[52] This adult Steelhead was apparently detected by United's migration monitoring equipment but not filmed due to low light, and then was observed trapped in the fish screen bay during a turn out event, suggesting it had passed through the fish ladder and then—likely in the area between the fish ladder exit and the trash rack, fallen back into the fish bay; United then transported the steelhead to a location that United believed was safe. Trial Ex. 21 at 3-4, Ex. 33; Booth Test., Dec. 18, 2017, Vol. 3.

surveys during dewatering events in the fish ladder and/or the fish screen bay/canal area adjacent to the exit of the fish ladder and downstream of the trash rack exit to the Santa Clara River. Pl. Br. No. 51; Trial Exs. 10 at 10, 15 at 3-6, 21 at 3-4, 3-5, 4-3, 4-4. United did not observe any of these other nine adult Steelhead actually leaving the fish ladder and exiting upstream through the trash rack. Pl. Br. No. 51; Trial Ex. 10 at 10. For some of these adult Steelhead that United observed, it is a certainty that these fish did not successfully navigate the fish ladder because United removed them from where United observed them and transported them in holding containers to other locations. Pl. Br. No. 51; *e.g.* Trial Exs. 21 at 4-3–4-4.

107. Three kelts have been observed traveling downstream at VFD, but they did not match any upstream migrants, which suggests that three adults may have climbed the fish ladder undetected, spawned, and returned downstream as kelts. Trial Ex. 10 at 10. On April 16, 2009, when United was diverting all of the water in the river (73 cfs), and on April 3, 2012, when United was also diverting all of the river flow (106 cfs), a steelhead kelt was collected in VFD's downstream migrant trap. Trial Exs. 21 at 2-5,24 at 2-7, 251; Booth Test., Dec. 18, 2017, Vol. 3.

108. United observed in the fish bay or fish trap—between 1993 and 2014—2,128 steelhead smolts attempting to migrate downstream of VFD (including smolts migrating as late as July); and in the same time period, United also observed 210 *O. mykiss* parr or fry (juvenile steelhead). TFS ¶¶ 30, 31; Booth Test., Dec. 18, 2017, Vol. 2; Ex. 21 at 1-4. Smolt and juvenile steelhead (and kelts) can also pass VFD over the dam crest, and through the fish ladder, bypass pipe, or flushing channel; therefore, these observations lack value with respect to providing an estimate of downstream migrants (other than providing a minimum amount). *See* Booth Test., Dec. 18, 2017, Vol. 2.

109. United's records show occasions when United has observed juveniles, smolts, and kelts, showing up at VFD during times when United is diverting all or most of the Santa Clara flow (and United transported the juveniles and smolts elsewhere on at least some of those occasions). *Id.* Vol. 3. Trial Ex. 24 at 2-1, 2-7, Ex. 251.

110. Extensive details about United's monitoring of Steelhead—and live and dead Steelhead found in and around VFD—can be found in United's annual reports from 2007–2013, Trial Exs. 17–25, and the summary of United's monitoring from 1993–2014. Certain facts from these reports (and other related testimony) that were put forth at trial are specified below:

(a) In 2006, United staff found a 14-inch one pound female Steelhead still at VFD, a staff person put the fish and put it in an ice cooler, and that fish subsequently died. McEachron Test., Dec. 19, 2017, Vol. 3.

(b) In 2007, a resident rainbow and 60 young of the year were found at the VFD fish trap. Kramer Test., Dec. 12, 2017, Vol. 2; Ex. 19 at 1–3.

(c) In 2008, the fish ladder was shut down sixteen times during the steelhead migration, blocking upstream fish passage; and a total of twenty turn out events, including ten for sediment flushing, and due to high turbidity. Kramer Test., Dec. 12, 2017, Vol. 2; Ex. 20 at 3-4, 4-3. Generally during turn-outs, the canal gate is closed and the fish bay is dewatered, and during these events, United conducted thirteen stranding surveys, six of which yielded 40 smolts and two resident trout; two smolts were relocated to the river at the 101 bridge; one smolt perished following tagging surgery for a research study; and 37 smolts were relocated to the estuary. Ex. 20 at 4-3. During such relocations, typically fish are packed into a container such as an ice chest, and during transport the water can warm up and slosh around, which can lead to stress, mortality, and other adverse impacts. *See* Kramer Test., Dec. 12, 2017, Vol. 2. United also conducts surveys below VFD during turn-out events, because water from the flushing can create a pool of water downstream without further river connectivity. *Id.* During one survey in 2008, three fish were observed that appeared to have been previously smolting but appear to be losing their smolt characteristics—two were found near VFD's base and were relocated to Sespe Creek; one was found dead 1.5

miles downstream of VFD.[53] *See* Ex. 20 at 4-3.

(d) In 2009, 160 smolts and three resident trouts were trapped and relocated. Ex. 21 at 2-5. Also in that year, the fish ladder was closed four times and six turn-out events took place (during which 44 smolts were detected in the fish bay, and relocated). *Id.* at 3-5; Kramer Test., Dec. 12, 2017, Vol. 2. Following turn-outs, six stranding surveys were conducted below VFD; during one survey on July 14, fourteen smolts were observed following a flush; seven were found near the base of VFD and relocated to the estuary; the remaining seven smolts died from "thermal stress." Ex. 21 at 4-5. Also in 2009, one adult steelhead was detected passing the fish ladder on March 4, 2009, and then the adult was observed in the fish bay during a turn-out event, meaning the adult steelhead got above the ladder and then fell back into the fish bay. *See* Ex. 20 at 3-4; Kramer Test., Dec. 12, 2017, Vol. 2.

(e) In 2010, following two sediment flush turn-outs on June 17 and June 19, two river surveys yielded thirteen smolts on June 17 (seven of which died following the flush) and one smolt on June 19; those smolts that survived were relocated to the estuary. Ex. 22 at 4-3; Kramer Test., Dec. 12, 2017, Vol. 2.

(f) In 2011, surveys during operational flushes and fish screen bay checks yielded nineteen smolts and four resident trout were trapped and relocated; two dead smolts were found in the trap, one on April 18 and one on April 19. Ex. 23 at 2-5. Six turn-out events occurred and four fish screen stranding surveys were conducted, yielding three smolts that were released below VFD. *Id.* at 4-3; Kramer Test., Dec. 12, 2017, Vol. 2.

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[53] In 2008, two adult hatchery steelhead were observed at the lower resting pool of the fish ladder, and excavating a spawning bed in sand below the fish ladder, and there were discussion of these fish at trial, but hatchery steelhead are not part of the DPS. *See, e.g.*, Trial Ex. 20 at 4-4. Kramer Test. Dec. 12, 2017, Vol. 2 & Dec. 13, 2017, Vol. 1; McEachron Test. Dec. 19, 2017, Vol. 3.

(g) In 2012, surveys during flushes and fish bay checks yielded thirty-one smolts, one kelt, 59 young of the year, and five resident trouts, which were trapped and relocated; one dead young of the year was found in the trap on June 29, 2012, and this mortality appeared to be caused by a bird. Ex. 24 at 2-5–2-6; Kramer Test., Dec. 12, 2017, Vol. 2.

(h) In 2013, one young of the year and one resident trout were captured in the trap. Ex. 25 at viii; Kramer Test., Dec. 12, 2017, Vol. 2.

111. In addition, a reasonable inference can be drawn from the expert testimony that steelhead, particularly smolts and kelts, can be injured when they pass downstream over the concrete dam face, with a drop in elevation of about twenty-five feet into an river area that flows over boulders (possibly leading to fish hitting rocks and being injured), even though there was no direct evidence of these effects (and United has not systematically studied this issue). *See* Kramer Test., Dec. 12, 2017, Vol. 3; Postlewait Test., Dec. 20, 2017, Vol. 4; Booth Test., Dec. 18, 2017, Vol 3.

b. Fish Passage Infrastructure 2008–2016

112. In the years following the issuance of the 2008 Biological Opinion, United made at least the following infrastructure changes to improve fish passage. In 2009, United installed lights at or near the fish ladder to improve attraction. *See* McEachron Test., Dec. 19, 2017, Vol. 3; Trial Ex. 4 at 14. In 2009, United removed some of the bars in the trash rack so there would be a wider opening through which fish come travel. *See* McEachron Test., Dec. 19, 2017, Vol. 3; Trial Ex. 4 at 14. In 2011, United added a traveling screen on the auxiliary pipe to prevent fish from entering it. *See* McEachron Test., Dec. 19, 2017, Vol. 3; Trial Ex. 4 at 14. In 2012, United coated the false weir with rubber to make it easier for fish to slide over it, and in 2014, United installed a tarp over the false weir and installed fish ladder drain plugs. *See* McEachron Test., Dec. 19, 2017, Vol. 3; Trial Ex. 4 at 14; Testimony of Steven Howard ("Howard Test."), Dec. 19, 2017, Vol. 6.

113. In October 2008, NMFS and United approved the appointment of six engineers and biologists to an independent panel, funded by United, that would evaluate the upstream

passage of adult Steelhead at VFD ("Fish Panel"). Trial Ex. 5 ("Fish Panel Report") at xii.

114. On January 1, 2009, the nonprofit California Trout, Inc. sued United and the Bureau of Reclamation alleging violations of the Endangered Species Act due to VFD's impacts on Southern California Steelhead, including that United and Reclamation's refusal to accept the Biological Opinion is a failure to ensure that VFD does not jeopardize the existence and recovery of Steelhead. *See California Trout, Inc. v. Bureau of Reclamation et al*, CV 09-0312, GHK (FMOx), Complaint (C.D. Cal., Jan, 1, 2009) ("*Caltrout*") (a related case to this action). On April 30, 2009, Plaintiff Wishtoyo sent United a 60-day notice of intent to sue, to join the *Caltrout* ligitation, or sue separately for VFD's impacts on Steelhead violations. Weiner Test, Jan. 3, 2018, Vol. 4. Ultimately, Wishtoyo did not proceed with that intent to sue, because Judge George H. King (the presiding Judge in *Caltrout*) had denied the Pleasant Valley Water District's motion to intervene. *Id.* Judge King gave guidance to the parties that he would likely also deny a request by Wishtoyo to intervene; instead he wanted to get a solution in place as soon as possible, rather than complicate the matter. *Id.* Wishtoyo understood that Judge King gave the parties guidance that United was violating the ESA and that the parties should settle, and that it was likely that they would settle. *Id.* The action settled shortly thereafter. *Id.* Wishtoyo made public comments to the effect that it believed that the pressure of having another group issue a notice letter, especially one with more than a fishing interest—a native American cultural interest—would have some impact on the resolution. *Id.* The *Caltrout* settlement included, among other things, requirements that: (1) United follow certain water diversion operations rules from 2010–13 (the 2009 Interim Operating Rules supplemented by RPA 2A and a refined plan for smolt bypass operations); and (2) United use its best efforts to ensure that the Fish Panel's report be released by 2010. *See Caltrout* Stipulation for Dismissal (09-0312, Dkt. 113), Ex. A. United also stated that it intended to submit an application to NMFS for an incidental take permit. *See id.*

115. On September 15, 2010, the Fish Panel issued its Vern Freeman Dam Fish Passage Conceptual Design Report ("Fish Panel Report"). Fish Panel Report at xii; Testimony of

Dana Postlewait (fish panel member) ("Postlewait Test."), Dec. 20, 2017, Vol. 3.

116. Fish Panel members agreed that it is well understood among people who are knowledgeable in the field of fishery science in the Southern California area that VFD is a barrier or partial barrier to the migration of steelhead on the Santa Clara River. Postlewait Test., Dec. 20, 2017, Vol. 3. It was the consensus of the Panel that under high flow conditions at VFD there is no question that the existing fish ladder has poor attraction flow; the Panel scored the ladder 2 out of 10 in terms of attraction, the lowest score assigned to any of the options that the Panel studied. *Id.*; Fish Panel Report at 7–13.

117. The Panel conducted a risk assessment, and as a result, recommended a range of flows at which fish passage would be possible at river flows from 45 cfs up to 6,000 cfs, to minimize loss of long-term annual spawning success. Fish Panel Report at xii. The Santa Clara River is fairly unique in that it has a wide range of flows and the flows are flashy—the River can go from dry to over 100,000 cfs relatively quickly—with flows up to 140,000 cfs. Postlewait Test., Dec. 20, 2017, Vol. 3.

118. The Panel concluded that "improvements to the existing fish ladder would not improve passage sufficiently to be a viable alternative compared to alternatives of a new passage facility" and "[t]he cost to improve the existing fish ladder to state-of-the-art standards could be comparable to the cost of the fish passage alternatives." Fish Panel Report at 7–13.

119. The Panel brainstormed potential fish passage solutions, considering ten alternatives:

(1) dam removal and pipeline from Lake Piru;

(2) replace VFD with inflatable dam near highway 101;

(3) left bank vertical slot fish ladder with notch in dam;

(4) full depth notch in dam with new technical fishway;

(5) full width rock ramp;

(6) partial width rock ramp (which also evolved into the hardened ramp, an alternative discussed below);

(7) left bank vertical slot fish ladder in expanded footprint of existing fish ladder;

(8) left bank nature-like fishway;

(9) trap and haul facility; and

(10) improve existing fishway;

Id. at 5-1–5-8.

120. The Panel then narrowed the list to five alternative solutions: a vertical slot fishway ("vertical slot"), a rock ramp (partial width rock ramp at 4% slope), a hardened ramp (variant of the rock ramp, at 6% slope, employing concrete roughness elements in lieu of loose boulders), a nature-like fishway, and dam removal. *Id.* at xiii, 6-1–6-42. The Panel concluded that the alternative of dam removal should be investigated as a long-term goal of the interested parties, but the Panel did not develop the concept because it involve many issues far beyond the scope and expertise of the Panel. *Id.* The four other concepts that were developed ranked very closely to each other in the comparison matrix and, at this level of detail and precision, they were considered to have equal scores. *Id.* Conceptual-level opinions of probable construction cost were estimated for each of the four alternatives, with the vertical slot estimated as $24 million; the rock ramp estimated at $46 million; the hardened ramp estimated at $24 million, and the nature-like fishway at $28 million. *Id.*

121. After considering costs and the evaluation results, the Panel recommended that additional work be focused on the development of two alternatives: the vertical slot and the hardened ramp because they offer distinct passage improvements and varying risks of development. *Id.* at xiv. The Panel recommended that next steps include the consideration of these alternatives in future discussions, such as the Habitat Conservation Plan, additional engineering analyses, new geotechnical investigation, additional and more detailed drawings, and operational studies coordinating the diversion and fish passage operations. *Id.*

122. Following the Fish Panel's Report, NMFS staff encouraged United to build a new

fish passage as soon as possible, rather than ask United to implement short-term fixes. Emmert Test., Dec. 15, 2017, Vol. 3. NMFS recommended and supported advancing the design of the hardened ramp. McEachron Test., Dec. 19, 2017, Vol. 3; Emmert Test., Dec. 15, 2017, Vol. 1.

123. During the period from 2010–16, United convened United HCP stakeholder meetings, at least one or two of which Plaintiff Wishtoyo's representative Jason Weiner attended—in January and/or February 2011. Weiner Test, Jan. 3, 2018, Vol. 4. Some of the stakeholders (which did not including Wishtoyo) asked United to hold off on the hardened ramp, and encouraged United to consider a damless diversion (i.e. removing the diversion completely or partially). *Id.* at 99:18 – 100:7, 108:9–21; McEachron Test., Dec. 19, 2017, Vol. 3; McCalvin Test., Jan. 3, 2018, Vol. 3.

124. Wishtoyo did not ask United to hold off on the hardened ramp—Wishtoyo felt that the hardened ramp should be studied and designed (along with a damless diversion) before a decision on construction was made.[54] Testimony of Jason Weiner ("Weiner Test"), Jan. 3, 2018, Vol. 4.

125. Around 2011, United decided to hold off on the design of the hardened ramp for over a year, while the subgroup was studying the damless diversion using consultants Stillwater Sciences, whose studies were funded by Cal Trout, and those studies were shared with United. Weiner Test, Jan. 3, 2018, Vol. 4; McEachron Test., Dec. 19, 2017, Vol. 3.

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[54] Wishtoyo also participated in a group called the Steelhead Coalition; and United approached the coalition in 2013 to discuss the HCP process, and during that period; Wishtoyo also opposed United becoming a member of the coalition, due to Wishtoyo's views on United's take of Steelhead, but encouraged United to make presentations to the coalition. Weiner Test., Jan. 3, 2018, Vol. 4. at 108:4–110:25. Some time in late 2013 or early 2014, the coaltion encouraged United to study both the hardened ramp and a notch or damless diversion concurrently. *Id.* at 112:10–113:5. Also, in 2014 Wishtoyo issued a NEPA/CEQA comment letter to United and the resource agencies indicating that the Fish Panel did not study a damless or notched alternative and that Wishtoyo felt that United should concurrently pursue a hardened ramp option, study and design of a hardened ramp option, and some sort of a damless diversion alternative which includes a notched alternative, which remains Wishtoyo's position. *Id.* at 77:1–8.

126. Ultimately, United did not see the damless diversion as an alternative that they could pursue, and United decided to study the hardened ramp in earnest in 2012, and continued until 2016 when it reach 60% design, but then decided to hold off on further design development, deciding instead to pursue design of a notched dam alternative. Emmert Test., Dec. 15, 2017, Vol. 2; McEachron Test., Dec. 19, 2017, Vols. 3–4.

c. Water Diversion Operations After the Biological Opinion

127. From 2009 to 2016, United followed water diversion operation rules set forth in its 2009 Interim Operations Plan (Trial Ex. 146). McEachron Test., Dec. 19, 2017, Vol. 1. From 2010 to 2016, United also followed the rules in its 2010 Smolt Bypass Plan (Trial Ex. 147).[55] *Id.*

128. These operating rules together (summarized in Trial Ex. 148) mandate that United release sufficient bypass flows past VFD to obtain 160 cfs instream flow through the critical riffle whenever river flows are at a sufficient level to obtain this target flow from January 1 through May 31. Trial Exs. 146–48; Pl. Br. No. 218. These rules further provide for an 18-day ramp-down schedule for gradually reducing river flows between January 1 and March 14 following peak flow events exceeding 160 cfs flow at the critical riffle—in

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[55] United asserted at trial that it developed the Smolt Bypass Plan because it thought that RPA 2B could be harmful to smolts, in that there could be times when water was released for smolts to migrate downstream, but there would not be sufficient connectivity which could lead to stranding. *See, e.g.*, D10V4 at 7:11–13:23. However, there is no data suggesting that stranding has actually occurred as a result of RPA 2B. Howard Test., Dec. 20, 2017, Vol. 1. United asserted that it developed this plan based on a study by Thomas Hardy, commissioned by NMFS, in which Hardy found that RPA 2B was vague with respect to how to achieve connectivity for juvenile steelhead downstream migration, and it could be more protective of steelhead by more clearly defining how to achieve such connectivity. *See* D10V4 at 7:11–13:23. NMFS developed RPA 2B to increase the protection of juvenile steelhead during downstream migration, because the proposed action in the Biological Opinion was not protective in that regard. Tr. D10V2 at 20:16–22:3. RPA 2B was intended to force a process by which United and NMFS would engage at the proper time of the year to assess when bypass flow should be terminated to the downstream reach, thereby increasing the protection of steelhead by enlarging the migration window. *Id.* To the extent that the parties have concerns that RPA 2B does not sufficiently define how to achieve connectivity, the parties are in a better position than the Court to implement modifications, and the parties may move to amend the Judgment to define more specifically the operational criteria for properly maintaining RPA 2B's juvenile steelhead migration corridor.

attempt to reduce risks of adult Steelhead stranding due to rapid declines in flow. Trial Exs. 146–48; Pl. Br. No. 218. These rules include additional diversion restrictions that depend on United's "turn in" procedures, i.e., when United is diverting water into its diversion canal. Trial Exs. 146–48; Pl. Br. No. 218. These rules further specify that United release sufficient bypass flows to maintain a 120 cfs target instream flow for Steelhead juveniles from March 1 through May 31 with a five-day ramp-down period when flow at the critical riffle is expected to decline below an 80 cfs minimum flow for a continuous smolt migration corridor. Trial Exs. 146 – 48; Pl. Br. No. 218. However, United was only required to meet these juvenile flow requirements after first diverting at least 50 cfs of river flow to meet what United deemed its "critical diversion." Trial Exs. 146–48; Pl. Br. No. 218.

129. NMFS sent a letter to United on February 24, 2009, objecting to the Interim Operations Plan for reasons related to the 2008 Biological Opinion, which did a comprehensive analysis on those proposed flow operations, and because in NMFS's view the interim operating criteria that United was proposing did not achieve United's data objectives to minimize potential impacts on Steelhead. Transcript, Jan. 4, 2018, Vol. 4 ("Tr. D10V4") (Dkt. 193) at 32:1–41:1; Tr. D11V1 at 91:12–20. In addition, NMFS appraised the 2010 Smolt Bypass Plan, which resulted in the same finding as that NMFS reached in regards to the Interim Operations plan. Tr. D10V4 at 12:24–13:18. NMFS did not support it because it included essentially the same conditions that would result from the proposed action that NMFS analyzed in the 2008 Biological Opinion. *Id.* But NMFS did not appear to send a letter at the time to United to that effect. *See id.*

130. Around 2010, United minimized its flushing operations by eliminating flushing when there is no water downstream, to prevent fish stranding. McEachron Test., Dec. 19, 2017, Vol. 3;

131. From 2010–2013, United was required—pursuant to the settlement of the related

Caltrout litigation[56]—to implement the 2009 Interim Operating Rules supplemented by the Biological Opinion's RPA 2A, as well as a refined plan for smolt bypass operations. *See Caltrout* Stipulation for Dismissal, August 20, 2009 (09-0312, Dkt. 113), Ex. A.

132. However, NMFS and United disagree about how to interpret RPA 2A. Specifically, they disagree about whether or not RPA 2A applies if United initiates a water diversion when the river flow is above 750 cfs. *See, e.g.*, Tr. D10V4 at 49:5; Biological Opinion at 70 (RPA 2A). United's position is that the ramping rates in RPA 2A do not apply if United starts to divert when the river flow is above 750 cfs. McEachron Test., Dec. 18, 2017, Vol. 4 and Dec. 19, 2017, Vol. 1. In other words, United believes that if United initiates diversion during a storm event when the river is above 750 cfs, United should be permitted to continue to divert its maximum 375 cfs water rights for the duration of that diversion event, even as the river flow recedes below 750 cfs. *See id.* NMFS's position is that RPA 2A's ramping rates—which limit the amount of water that United can divert—apply when the river flow is at 750 cfs or less, regardless of whether or not United initiates a diversion operation above 750 cfs. *See, e.g.* Transcript, Jan. 4, 2018, Vol. 6 ("Tr. D10V6") (Dkt. 190) at 81:19–23; McEachron Test., Dec. 18, 2017, Vol. 4 and Dec. 19, 2017, Vol. 1.

133. In early 2010, NMFS had a meeting with United where they reviewed the RPA together, and United was in agreement with NMFS that United was interpreting RPA 2A the same was as NMFS (i.e. that the ramping rates would apply whether or not United initiates diversion above 750 cfs). Tr. D10V4 at 51:12–19.

134. In an email exchange and meeting involving Steven Howard of United and Darren Brumback of NMFS in 2013, it became apparent to Mr. Brumback that United was not operating its water diversions in the manner that NMFS understood RPA 2A to require—i.e. United was not following the ramping rates if it initiated diversion above 750 cfs. Tr. D10V6 at 77:22–78:14. In conversations between NMFS and United in 2013, including an in-person meeting in Long Beach in September 2013, and in written correspondence from

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[56] *California Trout, Inc. v. Bureau of Reclamation et al*, CV 09-0312, GHK (FMOx) (C.D. Cal. 2009).

NMFS to United in 2013 (including an email from Mr. Brumback to Mr. Howard), NMFS made clear to United: (1) that NMFS believed that RPA 2A's limitations on water diversions apply whether or not United begins diverting water when the river flow is at or above 750 cfs; and (2) that NMFS objected to the Interim Operations and Smolt Bypass plan. McEachron Test., Dec. 19, 2017, Vol. 1; McCalvin Test., Jan. 3, 2018, Vol. 2; Tr. D10V6 at 77:6–14; Tr. D11V1 at 91:21–93:9. However, nothing in the record suggests that NMFS referred these water diversion issues to the NMFS Office of Law Enforcement prior to 2016. Tr. D10V4 at 32:1–41:1.

135. The goal of RPA 2A was twofold: (1) to provide an ecologically meaningful descending limb of the hydrograph to protect the species from stranding or truncating the migration corridor; and (2) to provide United with the opportunity to continue to divert, albeit at much lower levels once the total river discharge fell below 750 cfs.[57] Tr. D11V1 at 21:13–20.

136. The ramping rates in RPA 2 limit the amount of water that United can divert when the river flow is less than 750 cfs (there are certain limits when the river is between 635 cfs and 750 cfs and another set of limits for below 635 cfs). *See* Biological Opinion at 70. RPA 2A uses the term "initiating" when describing the application of the ramping rates. *See* McEachron Test., Dec. 18, 2017, Vol. 4 and Dec. 19, 2017, Vol. 1. More specifically, RPA 2A uses the language "[w]hen initiating the turning-in procedure" and "upon initiating the turning-in procedure" in setting forth the ramping rates, and RPA 2A also specifies that "the rates in the table . . . apply only to turning-in procedures undertaken during the principal steelhead migration season (January through May) when total river discharge is ≤ 750 cfs . . . ." *See id.*; Biological Opinion at 70. Another portion of the Biological Opinion states:

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[57] Thus, the Biological Opinion's stated expectation that "United would primarily, if not exclusively, undertake the turning-in procedure when river discharge exceeds 750 cfs," was intended to show that RPA 2A was written to allow United to meet their broader purpo\e of diverting water, by allowing full water rights diversion when the river flow remains above 750 cfs. *See* Tr. D10V4 at 61:12–62:13.

> With regard to the ramping rates (reasonable and prudent alternative element 2a), the ramping rates apply to the operation of the Vern Freeman Diversion Dam only when United undertakes the 'turning-in procedure' at total river discharges ≤ 750 cfs. If United initiates the turning-in procedure when total river discharge is > 750 cfs, the ramping rates defined in this reasonable and prudent alternative do not apply. We expect United would primarily, if not exclusively, undertake the turning-in procedure when river discharge exceeds 750 cfs based on our knowledge of past diversion operations and because under the proposed action United will attempt to divert water as soon as possible after a storm (i.e., periods of elevated flows induced by rainfall).

Biological Opinion at 71–72.

137. While a literal reading of RPA 2A's use of the word "initiates" suggests that RPA 2A would only applies to diversions that are initiated when the river is below 750 cfs, Anthony Spina drafted RPA 2A "inartful[ly]." *See, e.g.*, Tr. D10V4 at 57:23–58:14. He (and NMFS) intended RPA 2A's ramping rates to apply whether or not United initiates diversions above 750 cfs. *See id.*

138. United takes the position that not applying the ramping rates when United initiates above 750 cfs makes sense because when there is less water in the river, the fish need more protection. *See* McEachron Test., Dec. 18, 2017, Vol. 4 and Dec. 19, 2017, Vol. 1. United presented to NMFS (and to the Court) hydrographs modeling their contrasting position for one particular storm event in 2003, which according to United shows that applying the ramping rates below 750 cfs, when diversion starts above 750 cfs, creates an unnatural spike in the discharge, rather than allowing a natural-occurring drop off in river flow. *See* McEachron Test., Dec. 19, 2017, Vol. 1 (discussing Trial Ex. 854, 855, 856). However, the upward spike in the discharge in the storm is consistent with the twin goals of RPA 2 to preserve the core of the Steelhead migration season while still allowing United an

opportunity to continue to divert a portion of the water and the spike is not necessary problematic for migrating steelhead because the baseline flows are already elevated. Tr. D11V1 at 35:7–37:1. Further, the application of United's approach to that one storm, cuts off the hydrograph prematurely (i.e. truncating the time available for steelhead passage) because under United's interpretation of RPA 2A, the total river flow drops to zero on day 19 of the storm; whereas under NMFS's interpretation, the river continues to flow until at least day 27 of the storm—lengthening the hydrograph, and extending the river recession, as intended by the Biological Opinion. *See* McEachron Test., Dec. 19, 2017, Vol. 3 (discussing Trial Ex. 854). The approach to the hydrograph that United recommends for this 2003 storm (diverting United's full water rights as the river recedes below 750 cfs) is exactly the kind of approach that NMFS recommend against to United in meetings prior to the 2008 Biological Opinion. Tr. D11V1 at 23:8–26:25. United's approach creates effects (artificially truncating the Steelhead migration window) that combined with other potential effects of the proposed action, led NMFS to conclude that the proposed action was likely to cause jeopardy to the species and adversely modify or destroy designated critical habitat for the species. *Id.* at 23:8–27:13.

139. In November 2013, Wishtoyo filed a California public trust complaint with the California State Water Resources Control Board against United, asking United to change its water diversion practices to release more water for Steelhead. McEachron Test., Dec. 19, 2017, Vol. 4. United did not change its water diversion practices in response to that petition. *Id.*

140. Another aspect of United's water diversion practices pertains to "turning-out," i.e. not diverting water and closing the fish ladder when the turbidity in the Santa Clara River reaches certain levels, and sending muddy water down the flushing channel (because the sediment-filled water can create problems in the VFD infrastructure and recharge basis). *See, e.g.*, Hammersmark Test., Dec. 14, 2017, Vol. 2; McEachron Test., Dec. 18, 2017, Vol. 4. For some period of time before 2016, United did not divert water when the turbidity level was 3,000 NTU (Nephelometric Turbidity Unit) or higher. Hammersmark

Test., Dec. 14, 2017, Vol. 2; Trial Ex. 225 at 31–53; Trial Ex. 234 at 18–20; Trial Ex. 141 at 14–15. These closures result in lost Steelhead passage days—and closures at 3,000 NTU or higher resulted in about two lost Steelhead passage days per year on average. *See* Hammersmark Test., Dec. 13, 2017, Vol. 4 and Dec. 14, 2017, Vol. 2. In 2016, United increased its turbidity turn-out threshold to 5,000 NTU, and in 2017, United increased the threshold to roughly 10,000 NTU, or suspended solids levels of 7,000 mg/l. *Id.*; McEachron Test., Dec. 18, 2017, Vol. 4. An increased threshold results in fewer lost Steelhead passage days and increased water diversion for United, but it also requires United to dredge more sentiment from the silting basin with trucks. *See* Hammersmark Test., Dec. 13, 2017, Vol. 4 and Dec. 14, 2017, Vol. 2. McEachron Test., Dec. 18, 2017, Vol. 4. In moving to a 5,000 NTU threshold, United had to spend about $80,000 to $100,000 in increased costs; and to move to 10,000 NTU, United will maybe have a further 50% increase in those costs. *Id.*

d. Plaintiffs' Instant 2016 Lawsuit and Subsequent Developments

141. On June 2, 2016, Plaintiffs, indigenous and environmental nonprofits, filed this citizen suit under the Endangered Species Act.[58] *See* Compl.[59]

142. Plaintiff Wishtoyo Foundation is a California nonprofit public interest organization with over 700 members that operates in Ventura and Los Angeles Counties. Wishtoyo's

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[58] Plaintiffs sent a letter to United on February 17, 2016, notifying United of Plaintiffs' intention to sue United for Plaintiffs' four ESA claims asserted in this action. United received this letter on February 19, 2016. TFS ¶ 9. Plaintiffs sent a letter to the Secretary of Commerce on February 17, 2016, notifying the Secretary of Plaintiffs' intention to sue United for Plaintiffs' ESA claims asserted in this action, and the Secretary received this letter on March 7, 2016. *Id.* ¶ 10. Plaintiffs sent a letter to the Secretary of the Interior on February 17, 2016, notifying the Secretary of Plaintiffs' intention to sue United for Plaintiffs' ESA claims asserted in this action, and the Secretary received this letter on March 7, 2016. *Id.* ¶ 11. Plaintiffs filed this action on June 2, 2016, more than 60 days after providing notice of their intention to file the claims in this action to United, the Secretary of Commerce, and the Secretary of the Interior. *Id.* ¶ 12.

[59] As relevant to United's laches defense, United witness Catherine McCalvin (former United staff member during the period in question) could not identify any way in which United has been harmed by Plaintiffs not suing United at an early date—other than the time that United spent on this lawsuit instead of developing the HCP (but it is unknown if that time would have in fact been spent on the HCP). *See* McCalvin Test., Jan. 3, 2018, Vol. 3.

mission is to preserve, protect, and restore Native American Chumash culture and the natural resources for the Chumash and all people. *See* Summary Judgment Order (Dkt. 128) at 4–5. Plaintiff Ventura Coastkeeper is a program of Wishtoyo with a mission to protect, preserve, and restore the ecological integrity and water quality of Ventura County's inland water bodies, coastal waters, and water sheds. *Id.* The Chumash peoples and members of Wishtoyo and Ventura Coastkeeper have an ongoing and historic interaction with the Santa Clara River. *Id.* Wishtoyo, Coastkeeper, and their members conduct Chumash ceremonies at sacred sites adjacent to the River and use natural cultural resources harvested from the River for such ceremonies. *Id.* They have conducted environmental monitoring and studies of the river; trash clean up; educational programs; and legal environmental actions. *Id.* Plaintiff Center for Biological Diversity is a California nonprofit organization with members who reside in Ventura and Los Angeles Counties. Its mission is to protect endangered species and wild places through science, policy, education, and environmental law. *Id.* at 6. As detailed in this Court's Summary Judgment Order, Plaintiffs' members regularly visit the Santa Clara River, have observed Steelhead and Flycatcher there, have specific plans to return to the River, and desire to see Steelhead and Flycatcher there. *Id.* at 33–34.

143. On June 9, 2016, seven days after Plaintiffs filed this lawsuit, the Law Enforcement Division of NOAA's NMFS, or the NMFS Office of Law Enforcement ("OLE") sent a letter ("OLE June 2016 Letter") to United "to notify [United] that a significant issue regarding ongoing take of endangered southern California (SC) steelhead exists at [VFD.]." *See* Trial Ex. 91.[60] The letter also states the following:

> The Freeman Diversion (including its fish ladder) is not designed or operated in a way to account for the migratory behavior of [Southern California] steelhead, and therefore it significantly limits and at times precludes access to upstream spawning and rearing habitats and

[60] On the record, the Court received this Exhibit for the truth of the matter asserted. *See* Emmert Test., Dec. 15, 2017, Vol. 3.

reduces both the magnitude and duration of river flows, as well as altering the timing of flows necessary for immigration of adult steelhead and emigration of juvenile steelhead. As such, NMFS believes that the Freeman Diversion is the most significant impediment to SC steelhead migration in the main stem Santa Clara River.

United initially sought incidental take authorization under Section 7 of the ESA with the Bureau of Reclamation, which resulted in a jeopardy finding by NMFS in a 2008 Biological Opinion. United is now working with NMFS on the development of a [HCP] in conjunction with an incidental take permit for [Southern California] steelhead under Section I0(a)(l)(B) of the ESA. Despite eight years of effort, take authorization, and the accompanying criteria and measures for the operation of the Freeman Diversion to reduce take of [Southern California] steelhead, appear to be several years off.

The negative impacts to fish and fish habitat in the Santa Clara River from the operation of the Freeman Diversion are well established, and can be summarized as follows:

- The impediment or preclusion of [Southern California] steelhead upstream and downstream migration resulting from the diversion structure and its operation by United.
- The stranding of [Southern California] steelhead associated with inadequate flows released from the diversion.
- The death or harm to [Southern California] steelhead that occurs during the rescue, trapping and trucking operations required to protect the fish from death caused by the diversion.

NMFS staff is of the opinion that United's operation of the Freeman Diversion has annually resulted in take of [Southern California] steel

> head through death, capture and significant impairment of essential behavioral patterns. Furthermore, without specific modifications, operation of the Freeman Diversion will certainly continue to result in take of [Southern California] steelhead on an annual basis. Because United does not have any authorization for the take of SC steel head, all such takes are in
> violation of Section 9 of the ESA.
> NMFS is deeply concerned that in the eight years since the issuance of the 2008 Biological Opinion, United has failed to institute key operational criteria set forth in the Reasonable and Prudent Alternative (RPA) that would have lessened the impacts of the Freeman Diversion on [Southern California] steelhead. Despite United's cooperation with NMFS on development of the Section 10 incidental take authorization, its ongoing unauthorized take of [Southern California] steelhead without pursuing available take minimization strategies is unacceptable. United's cooperation to date in pursuing long term incidental take authorization through Section 10, while encouraging, has not included sufficient interim protection for [Southern California] steelhead. Given United's current, multi-year schedule for obtaining an incidental take permit, and the dwindling number of adult [Southern California] steelhead returning to the Santa Clara River, NMFS believes that United must commit to implementing interim operating measures that are consistent with the operational criteria set forth in the RPA (i.e., elements 2(a) and 2(b)) and appurtenant terms and conditions (i.e., l(a), 2(a-c). and 4(a-c)) of the 2008 Biological Opinion. In order to be effective in protecting [Southern California] steelhead during the 2017 migration season and

> subsequent migration seasons pending issuance of an incidental take permit, these measures must be in place before December l, 2016. Absent a firm commitment by United to timely implement the RPA criteria and measures, combined with timely and accurate monitoring of implementation, NMFS intends to pursue legal options available under the ESA to ensure that adequate interim operating measures are in place to minimize the impending take of [Southern California] steel head at the Freeman Diversion pending NMFS's evaluation of United's incidental take permit application. I encourage United in the strongest terms possible to immediately institute the operational criteria and measures of the RPA.

Id.

144. Prior to the OLE June 2016 Letter, (other than when NMFS told United to stop trapping) there were no known letters from law enforcement threatening legal or environmental action concerning water flow operations at VFD—although NMFS did send United letters warning United that it was violating the Endangered Species Act. Emmert Test., Dec. 15, 2017, Vol. 3; Booth Test., Dec. 18, 2017, Vol. 4. In general, United's response to NMFS's previous letters was to attempt to have meetings with NMFS to seek alternative pathways. Booth Test. Dec. 18, 2017, Vol. 4.

145. United understood the OLE June 2016 Letter to reflect ongoing disagreement between United and NMFS since 2013 over how to interpret the Biological Opinion's RPA 2A with respect to when the ramping rates apply and RPA 2B with respect to United's concerns that RPA 2B could result in downstream stranding—and, in a letter from United to NMFS dated August 8, 2016, United stated its understanding of the dispute as such, and its hope that United could engage NMFS further to persuade NMFS to follow United's interpretation of RPA 2. Emmert Test., Dec. 15, 2017, Vol. 3 (Discussing Trial Ex. 768).

146. After receiving the OLE June 2016 Letter, United communicated with NMFS staff and starting January 1, 2017, United implemented RPA 2 in accordance with NMFS's

interpretation that RPA 2A's ramping rates apply whether or not United initiates diversion when the river flow is above 750 cfs. Emmert Test., Dec. 15, 2017, Vol. 3. However, United is not willing stipulate in writing that United needs to continue to follow RPA 2 in this manner on an ongoing basis. *Id.*

147. In addition, since 2010, United—through their consultants R2 and AECOM—advanced the design of the hardened ramp, producing drafts at 10% and 30% design, which were approved or commented on by NMFS; and in July 2016, United submitted the 60% design. Postlewait Test., Dec. 20, 2017, Vol. 3; McEachron Test., Dec. 18, 2017, Vol. 4; McCalvin Test., Jan. 3, 2018, Vol. 2.

148. To achieve the 60% design, the consultants first worked on modeling, defining the hardened ramp body (width, length, slope, cross sectional area and configuration) and the "roughness elements," which are meant to mimic large boulders. Postlewait Test., Dec. 20, 2017, Vol. 3. This helped define hydraulic characteristics on the "ramp rating curve," such that the more flow goes down the ramp, the higher the water goes up and down. *Id.* The River also has a rating curve, and as the flow rises over that, the curve rises. *Id.* The hardened ramp is designed to have "head works," which involve gates and controls, to match the flow height at all the different flows in the River to corresponding flows going down the ramp. *Id.* Defining the ramp characteristics was the first 30% of the design to provide the parameter to work from to design the head works, which has been started. *Id.* The R2 design team went through iterations and made recommendations. *Id.* Dana Postlewait, a member of the Fish Panel, and the president of R2, believes that the head works issue is a solvable engineering problem and that it would probably take a year and a half to two years to complete the hardened ramp design. *Id.*; *see also* McEachron Test., Dec. 19, 2017 (opining that it is a solvable problem).

149. After R2 submitted the 60% hardened ramp design, NMFS provided comments on the design. Postlewait Test., Dec. 20, 2017, Vol. 3. Specifically, on September 8, 2016, NMFS sent a letter to United with recommendations, including: (1) to design the fish passage facility and operate the diversion in a manner that provides fish passage conditions

that equal or approach unimpeded migration rates, consistent with the recommendations of the Fish Panel; (2) to finalize the head works design project, including physically modeling the three headworks alternatives in the report in order to address the problem of sediment; (3) to select a preferred headworks alternative; and (4) to consider a design that avoids the need for flushing. Emmert Test., Dec. 15, 2017, Vol. 2; Transcript, Jan. 4, 2018, Vol. 6 ("Tr. D10V6") at 6:11–24:1.

150. United received a $700,000 grant for modeling the hardened ramp and to create a physical scale model (which NMFS wanted United to build and run water through); but United paused design of the hardened ramp due to concerns about dealing with sediment in the headworks, and thus United has not used that grant. *Id*.; Emmert Test., Dec. 15, 2017, Vol. 3; McEachron Test., Dec. 18, 2017, Vol. 4; McCalvin Test., Jan. 3, 2018, Vol. 3. NMFS wanted United to build three different model versions of the head works with two different ramp slopes, which would have cost more than $1 million and up to $4 million. Emmert Test., Dec. 15, 2017, Vol. 3. Instead, United decided to look at a notched dam alternative, and although there was nothing preventing United from studying both at the same time, United decided that it would be too expensive to work on both the hardened ramp and the notch at once. Postlewait Test., Dec. 20, 2017, Vol. 3; McCalvin Test., Jan. 3, 2018, Vol. 3. NMFS was "quite surprised" when the hardened ramp concept stopped and United never provided a written response to NMFS's September 8, 2016 letter concerning the hardened ramp and the headworks modeling. Tr. D10V6 at 23:24–24:1, 28:2–7.

151. On October 11, 2016, United provided NMFS with United's Administrative Draft Multi-Species Habitat Conservation Plan ("2016 Draft HCP") (Trial Ex. 7) to cover (1) water diversion operations; (2) maintenance of VFD; (3) construction, operation, maintenance of a new fish passage facility—citing to the hardened ramp 60% design report, and incorporating an NHC design reports about a 200-foot notch and an infiltration gallery (which involves removal of the dam); (4) restoration, enhancement, and management of mitigation lands; (5) monitoring of covered species (including other bird

species in the area, including the Least Bell's Vireo, the Yellow-Billed Cuckoo, southwestern Willow Flycatcher, the Yellow Warbler, and the Yellow breasted Chat); and (6) adaptive management measures. Trial Ex. 7 at 3-8; TFS ¶¶ 39, 40; McCalvin Test., Jan. 3, 2018, Vol. 2; Emmert Test., Dec. 15, 2017, Vol. 3.

152. United also provided as a companion document to the 2016 Draft HCP a roughly 600-page document prepared by R2 Resources called the Riverine Effects Analysis of Freeman Diversion Flow Releases on Steelhead and Pacific Lamprey ("Riverine Effects Analysis") (Dkt. 770). Emmert. Test. Dec. 15, 2017, Vol. 1. The Riverine Effects Analysis provides an analytical tool for considering effects of water diversion operations on Steelhead (which can be used by others including NMFS to conduct analysis), and it defines specific operational scenarios for evaluation, including:

(a) Scenario 1 (S1): No diversion (United diverts no river flow);

(b) Scenario 2 (S2): Water Right Operations (United diverts according to its water rights);

(c) Scenario 3 (S3): Interim Bypass Operations (United diverts according to the 2009 Interim Operations Plan and 2010 Smolt Bypass Plan);

(d) Scenario 4 (S4): 2008 Biological Opinion (United diverts according to RPA 2);

(e) Scenario 5 (S5): Yield Neutral – Mimic Flow Recession (United diverts to mimic the natural flow recession with similar net yield loss as in S3);

(f) Scenario 6 (S6): Proposed Operations (United attempts to balance mimicking the natural flow recession while minimizing net yield loss compared to S3); and

(g) Scenario 7 (S7): Increased Diversion Rate Operation (United obtains additional water rights and increases its diversion rate to a maximum of 750 cfs and implements the flow regime described in S6).

Trial Ex. 770 at xvii–xix.

153. The results found that S4 (Biological Opinion) was the closest to S1 (no diversion),

and S2 (Water Right Operations) was the furthest from S1; whereas S3, S5, S6, and S7 were intermediate between S2 and S4. *Id.* at xx. The results also found that:

(a) S2 performs poorly for all biological and hydrological metrics (such as steelhead passage days) with the exception of diversion yield (and even for this metric, S7 (Increased Diversion Rate Operations) creates more yield with much smaller biological impacts);

(b) S3 (Interim Bypass Operations) constituted a decrease in yield combined with improvements to biological impacts;

(c) S4 (2008 Biological Opinion) shows improvement in all metrics, with a substantial decrease in diversion yield;

(d) S6 (Proposed Operations) shows clear improvement over S3 in the majority of the metrics, especially in the two metrics dealing with passage through VFD; and

(e) S7 (Increased Diversion Rate Operations) shows some small decreases, but holds most biological metrics stable and also improves diversion yield.

Id. at xx–xxi.

154. However, United's Board of Directors never approved the 2016 Draft HCP—and United classified the 2016 Draft HCP as provisional, subject to the Board's approval. McCalvin Test., Jan. 3, 2018, Vol. 2; Tr. D10V2 at 12:15–22. Further, the 2016 Draft HCP was available to United's Board, but it is unclear whether the Board looked at it. McCalvin Test., Jan. 3, 2018, Vol. 2.

155. United received responses to the 2016 Draft HCP from the California Department of Fish and Wildlife ("CFDW") (a February 1, 2017 letter) and NMFS (as detailed below), but not from FWS. McCalvin Test., Jan. 3, 2018, Vol. 2.

156. In a meeting between United staff with NMFS staff around February 2017, Mr. Spina indicated that that it was frustrating that United was coming upon difficult design challenges and that after having seen the 2016 Draft HCP and the 60% hardened ramp design, based on uncertainties about the reliability of the hardened ramp in all conditions,

he thought that he could only issue perhaps a five-year or at most a ten-year incidental take permit. Emmert Test. Dec. 15, 2017, Vols. 1–2.

157. In a February 13, 2017 letter from NMFS to United, NMFS commented on United's proposed fish passage design project, observing that NMFS understood that United was pausing the development of the hardened ramp in consideration of other design alternatives; and NMFS further commented that it reviewed United's feasibility report with respect to two alternatives: the notch and infiltration gallery (with dam removal), but those alternatives were not sufficiently developed to allow for an in-depth review, and NMFS was skeptical about whether the notch was really a viable option. *Id.* at Vol. 2; McCalvin Test., Jan. 3, 2018, Vol. 2. NMFS expressed that United should continue to explore the hardened ramp (estimated to cost about $35–40 million), infiltration gallery (estimated to cost about $150 million), and notch (estimated to cost about $35–50 million), and come up with a process and schedule for selecting an alternative.[61] McCalvin Test., Jan. 3, 2018, Vol. 2; Tr. D10V6 at 28:11–29:25, 68:3–69:4; Emmert Test. Dec. 15, 2017, Vol. 3. United did not advance the infiltration gallery or hardened ramp any further; but United did, around that time, commission a further study of the notch by its consultant NHC. *Id.*; Emmert Test. Dec. 15, 2017, Vol. 2.

158. In a March 1, 2017 letter from NMFS to United (which is NMFS's most comprehensive comment letter to date concerning the 2016 Draft HCP), NMFS expressed the view that the 2016 Draft HCP includes proposed flow operations of VFD that are functionally the same or similar to the diversion operations that are the basis of the 2008 Biological Opinion, which truncate the hydrograph and can physically limit the ability of steelhead to migrate; therefore if the proposed flow operations are maintained, NMFS did not expect the 2016 Draft HCP to meet issuance criteria for an incidental take permit (and NMFS's view on this issue has not changed since the March 1, 2017 letter). *See* Tr.

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[61] The 2010 Fish Panel report estimated the vertical slot construction cost as $24 million, rock ramp as $46 million, hardened ramp as $24 million, and the nature-like fishway as $28 million. *See* Howard Test., Dec. 20, 2017, Vol. 3.

D10V2 at 13:24–14:3, 15:1–20; Tr. D10V4 at 77:19–78:5. Emmert Test., Dec. 15, 2017, Vol. 2; TFS ¶ 42. While United did change their flow operations after the Biological Opinion, adopting the 2009 Interim Operations Plan and 2010 Smolt Bypass Plan, NMFS has also found those plans to be inadequate to minimize potential impacts on Steelhead. Emmert Test. Dec. 15, 2017, Vol. 2; Tr. D10V4 at 12:24–13:18, 32:1–41:1; Tr. D11V1 at 91:12–20.

159. The March 1, 2017 letter expressed NFMS's view that the 2016 Draft HCP remains incomplete and requires considerable development and consideration in several key areas.[62] McCalvin Test., Jan. 3, 2018, Vol. 3. The letter provided detailed comments about the Riverine Effects Analysis—namely that its approach to "the proposed action underestimates the true type, amount and extent of effects on adult and juvenile steelhead" for eight reasons:

(a) The analysis relies on migration windows for adult and juvenile steelhead that are abbreviations of the true migration window (NMFS recommended that United adopt the adult Steelhead migration season of November through June—and not United's proposed season of January 1 to May 31, Tr. D10V2 at 17: 8–15, and that the juvenile migration period can be broader than March 1 to May 31);

(b) The analytical approach based on minimum flow criteria represents extremely narrow consideration of the effects due to the diversion operation (i.e. it does not fully consider the shape of the hydrograph;

(c) The effects approach only considers passage, not migration;

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[62] For example, the letter states that "[t]he proposed adaptive management framework,"—which involves monitoring biological and physical phenomena for information as to whether to course correction is needed—"is lacking in information and process to fully address and resolve uncertainties or issues that may arise during the life of the permit." Tr. D10V4 at 90:20–91:15. In an October 20, 2017 meeting between United, NMFS, CDFW, and FWS, NMFS recommended that United consider the adaptive management framework that they have been working with NMFS on in regard to the Santa Felicia Dam Hydroelectric Project, and that appeared to be fully acceptable to United. *Id.* at 92:4–17.

(d) The effects on adult and juvenile steelhead are not adequately considered;

(e) The approach assumes the river reach, extending from VFD to the ocean, has historically functioned solely as a migration corridor with no consideration of how the proposed action precludes or significantly delays the capacity of the habitat to develop essential physical or biological features for rearing;

(f) The analytical framework omits consideration of how the proposed action affects the variety of life history pathways that juvenile steelhead express in nature;

(g) The effects analysis does not consider effects on parr (pre-smolt) steelhead; and

(h) The approach does not consider effects at the steelhead population level, to the survival and recovery of the species.

Tr. D10V4 at 78:6–90:19. The letter also provided a series of graphs that NMFS drew illustrating the technical points that they were making. McCalvin Test., Jan. 3, 2018, Vol. 3. Darren Brumback, one of the NMFS staff members that provided the above comments on the Riverine Effects Analysis, did not read the Effects Analysis in its entirety, but skimmed through portions of it, and he considered one of the inadequacies of the 2016 Draft HCP to be that it did not summarize or explain the key findings of the Effects Analysis. Tr. D10V6 at 49:8–50:1, 79:2–16. Anthony Spina indicated that while NMFS did not review the Riverine Effects Analysis in complete, it was their understanding that the important elements of that analysis that were rolled into the 2016 Draft HCP, which they reviewed quite comprehensively, illustrate that the effects approach leads to an underestimate. Tr. D11V1 at 85:13–23. United's R2 consultant, Dudley Reiser, one of the key persons developing the Riverine Effects Analysis, did not spend any time really looking at the details of NMFS's comments on the Riverine Effects Analysis. Reiser Test., Dec. 20, 2017, Vol. 4. United has not given NMFS information that satisfies the eight concerns with the Riverine Effects analysis listed above. Transcript, Jan. 4, 2018, Vol. 5 ("Tr. D10V5") (Dkt. 197) at 36:3–15. United has not provided NMFS with an effects

analysis that quantifies or qualifies in a complete or reliable way the physical impacts to habitat and the ecological and behavioral impacts to endangered steelhead from operation of VFD Vern Freeman Dam. Tr. D11V1 at 85:1–13.

160. In a June 23, 2017 letter from United to NMFS, United provided a status report regarding fish passage design and the habitat conservation plan. Emmert Test., Dec. 15, 2017, Vol. 2. This was United's most recent substantive written communication to NMFS regarding these issues. *Id.* After that letter, United and NMFS agreed that they would meet in person and work through the detailed areas where NMFS had concerns. *Id.*

161. On October 10, 2017, United representatives Anthony Emmert and Murray McEachron met with NMFS staff, including Anthony Spina and Darren Brumback, along with staff from FWS and CDFW. TFS ¶ 43; Tr. D10V4 at 92:4–9. The purpose of the meeting was to discuss strategy for moving forward on the habitat conservation plan. Emmert Test., Dec. 15, 2017, Vol. 2. United proposed that it should be allowed or would like to put forth a conservation plan that would allow United not to include a Steelhead passage improvement element for some period of time, and then to propose a new fish passage design in the future. *Id.* In a follow-up email, Mr. Spina wrote that efforts to avoid or minimize take of the species are needed now for the existing facility and should not be depended on or deferred to the implementation of a future expansion project. *Id.* Also at that meeting, Mr. McEachron presented some information to the effect of, if NMFS's interpretation of RPA 2A is implemented, it will have an impact on the yield of the diversion. Tr. D10V6 at 86:21–87:8. NMFS's recommendation was to focus on RPA 2A (according to NMFS's interpretation) as a starting point for a higher likelihood a desirable outcome in meeting the issuance criteria for an incidental take permit. *Id.* at 88:12–22. The meeting also entailed a discussion of the effects analysis—NMFS observed that it was lacking a depiction or summary of the key findings and a clear depiction of the effects of water diversion practices. Tr. D10V5 at 37:6–38:19, 56:3–15; Tr. D10V6 at 51:21–52:19. United wanted to have smaller workshops to discuss the effects analysis further, and NMFS wanted United work with their consultants to develop draft segments to inform

further small group discussions. Tr. D10V5 at 37:6–38:19, 56:3–15; Tr. D10V6 at 51:21–52:19, 60:2–61:8.

162. On November 13, 2017, United representatives met with Lisa Van Atta, the assistant regional administrator of the NMFS California Coastal Office and other NMFS staff. TFS ¶ 45. As of December 2017, United was trying to schedule a day-long workshop with NMFS and bring a consultant to walk NMFS through the effects analysis. Emmert Test., Dec. 15, 2017, Vol. 3.

163. In November 2017, United consultant NHC submitted a report on a 400-foot notch option, which is similar to the rock ramp that the Fish Panel considered as one if its top five options (but not as one of the top two). Postlewait Test., Dec. 20, 2017, Vol. 3; McEachron Test., Dec. 19, 2017, Vol. 4. But under the notch option, the rock ramp includes a gated notch cut into the dam, about halfway up the dam, and a ramp for the remaining 12.5 to 13-foot drop. Postlewait Test., Dec. 20, 2017, Vol. 3; McEachron Test., Dec. 19, 2017, Vol. 4. NHC's 400-foot notch report of November 2017 represents about a 10% design level. McEachron Test., Dec. 19, 2017, Vol. 4. It would likely take about two years to get the notch up to the level of where the hardened ramp is. *Id.* The Fish Panel in 2010 felt there were other alternatives better suited for this site and did not recommend moving forward with the rock ramp or a notch variation. *See* Postlewait Test., Dec. 20, 2017, Vol. 3.

164. At this time, NMFS does not have a recommendation as to which fish passage option United should pursue. Tr. D10V6 at 66:14–16. NMFS recommends that United describe a process and schedule for advancing the ongoing designs (hardened ramp, notch, and infiltration gallery), and a process for selecting or eliminating a certain design. *Id.* at 70:6–9.

165. United staff indicated that its first option at this point is the hardened ramp. McEachron Test., Dec. 19, 2017, Vol. 4. United then indicated that its second option would be the vertical slot, one of the Fish Panel two recommended design choices (along with the hardened ramp), but the Court took that off the table because United made no

movement on the vertical slot since the Fish Panel's 2010 Report. *Id*. Without the slot, United indicated that its second choice would be the 400-foot notch. *Id.*

166. United's HCP process for VFD is taking more time than is normal. Reiser Test., Dec. 20, 2017, Vol. 4.

167. United developed a document (Trial Ex. 710) that outlines the different regulatory processes and approvals United needs to in order to complete and implement the HCP. McCalvin Test., Jan. 3, 2018, Vol. 2. These requirements include permitting, certification, and/or approval processes (collectively, "Regulatory Authorization") before the following agencies: (1) NMFS; (2) FWS; (3) U.S. Army Corps of Engineers; (4) CDFW; and (5) California State Water Resources Control Board (collectively, the "Regulatory Agencies"), pursuant to the following statutes: (1) the Federal ESA; (2) the California ESA; (3) NEPA; (4) CEQA; (5) the Clean Water Act; (6) California Fish & Game Code § 1600, *et seq.*; (7) Migratory Bird Treaty Act; and (8) California Fish & Game Code § 3503, *et seq. See* McCalvin Test., Jan. 3, 2018, Vol. 2.[63][64]

4. Plaintiffs Propose Remedies to Reduce Impacts on Steelhead

168. To remedy the alleged taking of Steelhead, Plaintiffs propose injunctive relief to address: (1) water diversions; (2) monitoring and adaptive management; (3) new fish passage infrastructure; (4) interim modifications to VFD; and (5) compensatory mitigation measures. *See* Pl. Supp. Br. Nos. 43–58. The Court will discuss certain additional facts pertaining to some of these proposed remedies—specifically water diversion operations and the fish screen—that have not yet been fully addressed, and are germane to the Court's ruling on injunctive relief.

169. *Water Diversion.* Plaintiffs' experts developed three types of proposed water diversion regimes as potential remedies:

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[63] For context, a summary provided by United can be found at Dkt. 164, pp. 8–9.

[64] Among other regulatory requirements, United has not submitted a Streambed Alteration Agreement application to the CDFW for a new fish passage project at VFD. McCalvin Test., Jan. 3, 2018, Vol. 3.

(a) the Enhanced Biological Opinion scenario, intended to prevent United's diversion from causing harm to Steelhead;

(b) the Recovery scenario, designed to promote Steelhead recovery; and

(c) the No Take remedy, to eliminate or greatly minimize take.

See Kramer Test. Dec. 12–13, 2017; Hammersmark Test., Dec. 14, 2017.

170. As mentioned above, NMFS has relied on a 2005 study by Thomas R. Payne & Associates, for example in the development of the 2008 Biological Opinion's RPA 2A's ramping rates that require United, during the adult Steelhead migration season, to maintain a minimum of 160 cfs over the critical riffle, creating a passage depth of 0.5 feet of water and a width ten feet to create a ribbon in which adult steelhead can swim. *See* Kramer Test., Dec. 13, 2017, Vol. 2; Hammersmark Test., Dec. 13, 2017, Vol. 4 and Dec. 14, 2017, Vol. 1; Biological Opinion at 46. United and its consultants have also relied on this study, for example in their Riverine Effects Analysis. *See e.g.*, Trial Ex. 8.

171. The Thomas R. Payne & Associates study relied on a modified form of the Oregon method— which is a method that recommends a depth of 0.6 feet over at least 25 percent of the total width with at least ten percent contiguous, or in a single channel. Hammersmark Test., Dec. 14, 2017, Vol. 1. Thomas R. Payne & Associates study modified that standard criteria, reducing the depth to 0.5 feet and using an absolute minimum channel width of at least five feet or a single channel at least ten feet wide. *Id.* In addition, the CDFW lists a minimum depth criteria of 0.7 feet for adult steelhead passage. *Id.*

172. Plaintiffs contend that RPA 2 causes depths at the critical riffle to be too shallow at times for unimpeded adult Steelhead migration because, among other reasons, it only requires United to maintain 160 cfs and a depth of 0.5 feet at the critical riffle. *See* Pl. Br. No. 227. Plaintiffs' experts' proposed No Take Scenario would require United to maintain 700 cfs and a depth of 0.8 feet at the critical riffle. *See* Pl. Br. No. 367; Pl. Supp. Br. No. 43; Hammersmark Test., Dec. 14, 2017, Vol. 1; Kramer Test. Dec. 12, 2017, Vol. 3.

173. In addition, at certain flows between 120 and 160 cfs, a depth of 0.5 feet at the

critical riffle is possible. Hammersmark Test., Dec. 14, 2017, Vol. 1. Therefore, Plaintiff also contends that United should be required to maintain at a minimum flow of 120 cfs and above at the critical riffle during adult Steelhead migration. *See* Pl. Br. No. 370.

174. Plaintiffs' experts also propose providing a flow of 0.1 cfs at the critical riffle during the juvenile migration window to maintain continuous flow from VFD to the Estuary. *See id.* This is intended to allow fish already moving downstream to reach the Estuary—but it may create risks of increased bird predation to juvenile steelhead, and it may be result in a ribbon that is too shallow for a smolt to swim through. *See id.*; Reiser Test., Dec. 20, 2017, Vol. 4.

175. Under United's combined Interim Operations and Smolt Bypass rules, in effect from roughly 2010 until 2016, the initiation of bypass flows for adult Steelhead (and the operation of the fish ladder) are triggered by: (1) a storm occuring between January 1 and May 31 that results in a sustained increase of 200 cfs over base flow (24 hour running average) at the Sespe Creek gauging station; and (2) a calculation that there is sufficient water to allow a migration flow of 160 cfs across the critical riffle (collectively, the "Sespe Creek Trigger"). *See* Trial Ex. 148 at 1. The Sespe Creek Trigger was originally part of the proposed action that constituted the Biological Opinion; and the Biological Opinion did not mention the trigger. Tr. D11V1 at 41:6–10. The Sespe Creek gauge has been in place for over 80 years and is considered very accurate and reliable. Kramer Test., Dec. 13, 2017, Vol. 2. NMFS has approved the Sespe Creek Trigger and nothing in the record suggests that NMFS has ever expressed any opposition to it or asked United to change it. *Id.*; McEachron Test., Dec. 19, 2017, Vol. 3. Typically when the Sespe Creek Trigger occurs, it results in greater than one day of Steelhead passage. Hammersmark Test., Dec. 14, 2017, Vol. 2. However, there are some instances where there could be some Steelhead passage available, and the Sespe Creek Trigger is not triggered, based on the 24 hour running average. *Id.*

176. Plaintiffs' proposed "3 Day Trigger" involves "a prediction that given forecasted storm events, flow levels in the Santa Clara River are expected to be sufficient to sustain

flows of 160 cfs or greater at the critical riffle for three days." Pl. Br. No. 372; Kramer Test., Dec. 12, 2017, Vol. 3. The 3 Day Trigger would rely on NOAA Fisheries weather prediction forecasting—and include calculations of water downstream near the critical riffle based on the Victoria gauge; if the 3 Day Trigger conditions are met, Unite would release water even if there is not sustained increase of 200 cfs over base flow (24 hour running average) at the Sespe Creek gauge. Kramer Test., Dec. 12, 2017, Vols. 2–3; Hammersmark Test., Dec. 14, 2017, Vol. 1. This would give Steelhead three days to reach VFD from the Estuary. Kramer Test., Dec. 12, 2017, Vols. 2–3.

177. NMFS asked United to use a forecast trigger for the Santa Felicia Dam project, upstream of VFD, and the forecast trigger is similar to Plaintiffs' "3 Day Trigger." McEachron Test., Dec. 19, 2017, Vol. 3. United has been using that forecast trigger since 2011, but it has not worked out well, because during a storm the forecasts can become very inaccurate, leading to missed migration opportunities. *Id.* NMFS wants United to consider using a different trigger for the Santa Felicia Dam project. *Id.*

178. *Fish Screen.* As discussed above, inside VFD's canal gates is a fishbay, which contains a Fish Screen at the south end (approximately 160 feet long and 8 feet high, with 3/16-inch openings) intended to prevent downstream migrating fish from entering the water diversion canal. Trial Ex. 245 at 7. The fish screen was built in 1990 according to the standards and criteria of 1989. Trial Ex. 140 at 2, 14. United has not made a modification of the Fish Screen since January 1, 2007. Trial Ex. 3 at 4.

179. A 2006 appraisal of the screen prepared for United by MWH Americas found a number of deficiencies, including: (1) turbulent flow enters the fish screen area from the Canal Gates; (2) inclined screen set back from the head wall creates a dead zone at the surface of the upstream end of the screens; (3) the fish screen cleaning mechanism creates considerable turbulence along the screen face; (4) the screen cleaning mechanism is early 1990's technology and newer screen sweepers typically have one or two brushes, which run the whole length of the screen face; (5) the approach velocity locally exceeds criteria (hot spots) due to uneven flow distribution, although there is sufficient gross screen area to

meet approach velocity criteria; and (6) there is little or no bypass flow or sweeping velocity at the downstream end of the screens when the bypass is not operating, which violates present agency criteria requiring bypass flows to maintain the same sweeping velocities at the downstream end of the screen, and increases debris buildup on the downstream screens. Trial Ex. 140 at 14. MWH made several recommendations to address these issues. *Id.*

180. The February 2008 NMFS criteria for fish screen design are an authoritative source for engineering design for fish screens. McEachron Test., Dec. 19, 2017, Vol. 3; Kramer Test., Dec. 13, 2017, Vol. 3. The VFD screen is a slotted screen. McEachron Test., Dec. 19, 2017, Vol. 3. The NMFS criteria for a slotted screen is 1/16-inch opening. *Id.* The VFD Screen at 3/16-inch openings does not meet that criteria. *Id.* The NMFS criteria have a provision for grandfathering in fish screens that were constructed before the criteria, and in accordance with NMFS criteria established in 1989 or later, and meet six conditions. *Id.* One of the required conditions is that no emergent fry are likely to be located in the screen, as agreed to by a NMFS biologist familiar with the site. *Id.* No NMFS biologist communicated this to United. *Id.* Another condition is that there has been no mortality, injury, impingement, migration delay, or harm being caused by the facility. *Id.*

181. The Fish Panel concluded in 2010 that the fish screen structure is deficient and should be upgraded. Trial Ex. 5 at xiii. The Panel cited and commented on the MWH report, noting that the screen appeared to not comply with current screening criteria, that high approach velocities (hot spots) were observed on the screen, sediment deposition can restrict screen cleaner movement, turbulence and backflow through the screen requires higher approach velocities on the screen's downstream portions, the screen cleaning system concentrates debris, and fish bypass flows are causing a slowing of sweeping flows across the screen face. Trial Ex. 5 at 8-1. The fish screen must be kept clean to ensure a downward motion to direct fish into the pipe (or previously the trap); debris on the screen can create hot spots that can stall fish, preventing them from continuing through the bypass, and exposing them to predation. Bates Test., Dec. 12, 2018, Vol. 1; Kramer Test.,

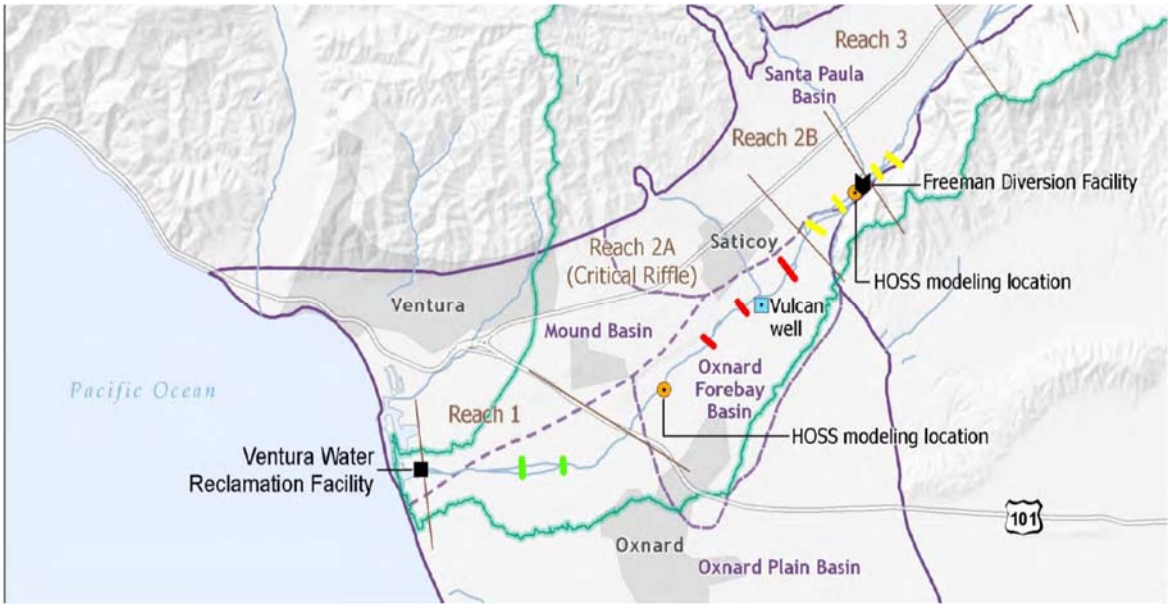
Dec. 12, 2018, Vol. 2. The Fish Panel found that the cleaning system and flow distribution were inadequate, resulting in hot spots stalling the fish. Bates Test., Dec. 12, 2018, Vol. 1. The Fish Panel made several recommendations to address these issues, including a new cleaning system, adjusting the bypass flows, providing baffles behind the screen to adjust velocities, and making various structural changes to the screen structure. Trial Ex. 5 at 8-1.

182. In 2015, United consultant NHC produced a report that evaluated the fish screen, and found that sediment deposits accumulate near the screen, particularly immediately downstream, and pebbles from the diverted flow clog the screen and impede the functioning of the cleaning wipers. Trial Ex. 142 at 8; McEachron Test., Dec. 19, 2017, Vol. 4. In 2016, NHC considered whether United could increase diversions from 375 cfs to 750 cfs, and NHC recommended an expansion of existing fish screen to provide providing a duplicate system and parallel screen, which NHC estimated would cost about $4.4 million. Ex. 142 at 68; Kramer Test., Dec. 13, 2017, Vol. 3.

C. Flycatcher, an Endangered Bird, Migrates to Areas Adjacent to VFD

183. The Southwestern willow flycatcher (*Empidonax traillii extimus*), a small migratory song bird, is an endangered species with migration patterns in proximity to VFD. TFS ¶ 50–51. Historically, the Flycatcher was common in all lower elevation riparian (wetlands adjacent to rivers and streams) areas of the southern third of California, including the Santa Clara River. *Id.* ¶ 51. A significant decline of the Flycatcher population since the 1940s led to FWS listing it as an endangered species in 1995. *Id.* ¶ 52.

184. Reach 1 & 2 of the Santa Clara River, from VFD to the Estuary, spanning roughly 10.5 miles, is critical habitat for Flycatcher. *See* 78 Fed. Reg. 344, 366–67, 503–04 (January 3, 2013); Transcript December 14, 2017, Vol. 4 ("Tr. D4V4") (Dkt. 186) at 116:10–21; Trial Ex 218, Table 1. Reach 1 extends from the estuary to Highway 101 and Reach 2 extends from Highway 101 to VFD.



Trial Ex 218 at 4.

Id. The upper part of Reach 1 (Reach 1 upstream of the Victoria Avenue Bridge) is also referred to as the "Victoria Reach," and Reach 2-B (depicted above) is considered the "Ellsworth Reach." *See, e.g.* Trial Ex 218, Table 1; Tr. D4V4 at 25–26, 129, 132.

Today, Flycatcher populations have been drastically reduced in its historic range, and Flycatcher sightings occur, but are infrequent in the Santa Clara River watershed and in

Reach 1 & 2 of the Santa Clara River. TFS ¶ 51.

185. The Court will proceed through following topics: (1) Flycatcher biology and behavior, including breeding and migration habitat; and (2) Flycatcher in the Santa Clara River watershed, including VFD's impact on Flycatcher.

1. Flycatcher Biology and Behavior

186. Flycatchers are "neotropical" migrants that spend three to four months in the spring and summer breeding in North America, and then migrate to Latin America to spend the winter. TFS ¶ 61; Tr. D4V4 at 91:2–6. Flycatchers migrate approximately 1,500–8,000 km each way between wintering and breeding areas. TFS ¶ 62. Flycatcher breeding habitat is restricted to relatively dense growths of trees and shrubs in riparian ecosystems with surface water in the arid southwestern United States, and possibly extreme northwestern Mexico. TFS ¶ 50.

187. Flycatchers typically arrive on breeding grounds between early May and early June. *Id.* ¶ 63. Second-year females (one year-old females breeding for the first time) sometimes do not arrive until mid-June. *Id.* Males typically leave their breeding territories in early to mid-August, although some leave in late July. *Id.* Females leave their breeding territories a week to two weeks later, as they feed their young for up to three weeks from the time they fledge from their nests. *Id.* Adults that are successful in raising young may however remain at breeding sites through mid-September, although most leave their breeding ground territories in mid to late August. *Id.* Fledglings likely stay in the watershed for another week or two after their parents depart, and thus may not leave until mid-September. *Id.* Flycatcher migration through riparian habitats in the Southwestern United States occurs during this same time, period between early May and mid-September, though Flycatcher are typically not migrating between June 22 and July 20 when they are expected to be in their breeding territories. *Id.* ¶ 64.

188. Migration can impose significant costs on individual Flycatchers. *Id.* ¶ 65. Several studies on birds (including pon Flycatcher) indicate that mortality is higher during migration than during the stationary periods of the annual cycle (i.e., breeding and

wintering). *Id.* Higher Flycatcher mortality during migration is not surprising given the hazards that migrants face: (1) energetic demands of flying; (2) unfamiliar habitats which vary in suitability; (3) conflicting demands of predator avoidance and food acquisition; (4) completion with other migrants and resident birds for limited resources; (5) unfavorable weather; and (6) orientation errors. *Id.* ¶ 66.

189. Breeding Flycatchers are insectivorous, and consume a wide range of prey that range in size from small leafhoppers to large dragonflies, and include true bugs, flying ants, bees, wasps, flies, beetles, butterflies, moths, caterpillars, and spittlebugs. *Id.* ¶ 67. Flycatchers forage primarily by sallying from a perch to perform aerial hawking and gleaning insects from foliage. *Id.* ¶ 68. Flycatchers forage within and above the canopy, along the patch edge, in openings within the territory, above water, and glean from tall trees as well as herbaceous ground cover. *Id.* They occasionally capture insects on the ground. *Id.* Foraging frequently takes place at external edges or internal openings within a habitat patch, or at the top of the upper canopy. *Id.*

190. Most Flycatchers survive for 1–2 years, but some live much as long as 9–11 years. *Id.* ¶ 69. Flycatcher survivorship within the breeding season can be very high in good locations (e.g., averaging 97 percent at one location), whereas estimates of between-year survivorship of adults can be variable, ranging from approximately 55 to 65 percent. *Id.* Juvenile survivorship, from hatching to the next breeding season, is significantly lower than adult survivorship, at roughly 34%. *Id.* Early fledglings have higher rate of survival than those that leave their nests later in the breeding season, which underscores the importance of the presence of adequate habitat with abundant insect food sources throughout the period fledglings are likely to be present at a site. *Id.*

191. Adequate habitat throughout the time period fledglings and adults are expected to be present in a breeding territory and watershed is especially important to survival, as without this habitat containing adequate food sources, Flycatchers (and especially fledglings) are not accumulating the energy reserves needed to survive migration and become susceptible to predation when they expand their search and efforts for food before

departing on their migration. *Id.* ¶ 71.

192. During spring to late summer months, Flycatcher breeds in arid to semi-arid climates across a wide elevation, from near sea level to more than 2,600 meters high. *Id.* ¶ 72. The habitat needs for flycatcher is dense riparian habitat. Tr. D4V4 at 102:2–7. More specifically, the two primary constituent elements of Flycatcher breeding habitat, both which must be present for individual Flycatchers and the Flycatcher population to not experience potential harm, are: (1) relatively, but not uniformly dense growth of trees and shrubs with interior openings or openings along the edges in riparian ecosystems in arid to semi-arid climates within the species range; and (2) the presence of lentic water (still or slow-moving surface water) during normal to wet precipitation years from May 1 through September 15 where attainable, but at least from May 1 through the end of August (with areas of damp soil from September 1–September 15 if lentic water is not present during this time), and in below normal and dry precipitation years, the presence of lentic water from May 1 for as long as possible through September 15, followed by the presence of damp soil through September 15, as attainable. TFS ¶ 73.

193. As to vegetation, though habitat characteristics—such as plant species composition, size and shape of habitat patch, canopy structure, vegetation height, and vegetation density—vary across the Flycatcher's range, there are general unifying characteristics of Flycatcher habitat. *Id.* In most cases this dense vegetation occurs within the first 3–4 meters above ground, dense twig structure, and high levels of live green foliage. *Id.* These dense patches are often interspersed with small openings, open water, or shorter/sparser vegetation, creating a mosaic that is not uniformly dense. *Id.*

194. As to lentic water, in almost all cases, for adequate breeding habitat, lentic water must be present at or near breeding sites during wet or normal precipitation years from May 1 through September 15, where attainable, but at least from May 1 through the end of August (with areas of standing water or damp soil from September 1 through September 15 if lentic water is not present during this time), and in below normal and dry precipitation years, from May 1 for as long as possible through September 15, followed by

the presence of saturated soil through September 15, as attainable. *Id.* ¶ 75.

195. These water conditions provide critical breeding, fledgling rearing, and migratory stopover habitat for almost all Flycatchers, the vast majority of which use this habitat from May through August with a small percentage using this habitat in early parts of September. *Id.* ¶ 76. When lentic water is only available through the end of August, for the few (if any) Flycatchers that remain, the rich food sources (insects) which are present with lentic water would still be expected to persist for couple weeks into mid-September as lentic conditions transition to wet soil. *Id.* ¶ 77.

196. Lentic water is important for arriving males and female because it helps them choose the habitat in which they will settle—lentic water provides a moist habitat with more insects. Tr. D4V4 at 103:16–104:23. Lentic water also is important for nesting—to provide food for the young and because these birds tend to return to breeding sites to re-nest, and if a site is dry, the breeding may be unsuccessful; and it is important for fledglings, who need to find food on their own, and may roam to areas with increased predation in search of food. *Id.* at 104:25–107:3.

197. Hydrological conditions in the Southwest can be highly variable within a season and between years. *Id.* ¶ 78. When areas are subject to drying out multiple years in area, you tend to start losing Flycatchers in those sites. Tr. D4V4 at 108:1–9. In dry years, a breeding site may only have these essential hydrological characteristics for breeding in May and part of June during the early part of the breeding season. *Id.* Thus, in below normal and dry precipitation years, matching the natural hydrology and providing lentic water for as long it would be present without human water extraction impacts, especially in the beginning of the breeding season from May through the early part of June is critical. *Id.* In below normal and dry water years, lentic water must be present in May and in the early part of June to attract Flycatchers for breeding, and then saturated soil must be present from mid-June through July to sustain the appropriate vegetation characteristics for nesting, and a minimal food base that accompanies naturally drier climates. *Id.* ¶ 79.

198. For migratory habitat, Flycatchers use a wider array of forest and shrub habitats

than they do for breeding habitat. TFS ¶ 80. Nonetheless, the same riparian habitat conditions that a Flycatcher requires for breeding is the preferred migration habitat type, as the presence of lentic water and healthy dense riparian vegetation provides the Flycatcher with cover and sufficient insect food sources needed for survival during and after migration. *Id.* Areas of adequate migration stopover habitat are critically important resources affecting local and regional Flycatcher productivity and survival. *Id.*

199. First-year migrants travel southward through unfamiliar habitats, and may have difficulty locating stopover sites if the sites are small or highly fragmented. *Id.* ¶ 81. If stopover sites are inadequate habitat, migrating Flycatchers could fail to find sufficient food and perish, or arrive at breeding grounds late and/or in poor physical condition. *Id.*

200. Flycatchers are known to make significant pre-breeding movements prior to settling into their nesting territories. *Id.* ¶ 99. Year-old Flycatchers likely spend more time with this activity because they almost always settle in a different habitat patch than their natal patch and must explore a greater number of unfamiliar areas than the older adults. *Id.* Thus, they need to have a variety of suitable habitat patches at least a kilometer or more away from their natal patch. *Id.*

201. First-year males frequently are not able to find mates and when they do set up territories and are not successful in attracting a female, they will start post-breeding movements within (sometimes outside) of the watershed starting in mid-July. *Id.* ¶ 100. Sometimes these young adults never set up territories and act as floaters, moving around the watershed most of the summer. *Id.* These Flycatchers expend a large amount of energy moving around the areas as well as increased risk of predation. *Id.* They need good quality habitat that contains sufficient food to make these movements. *Id.*

202. Areas of adequate migration stopover habitat are critically important resources affecting local and regional Flycatcher productivity and survival. *Id.* ¶ 101. If you have a Flycatcher in one water shed, it is more likely to stay in that watershed than move to other ones. Tr. D4V4 at 110:12–14. If Flycatchers are successful in nesting, adults will try to come back to the same nesting place; typically if they are not successful, the female may

move to a different habitat patch; and the young almost always move to a different habitat patch, so as to avoid inbreeding. *Id.* at 170:24–171:7.

2. Flycatcher in the Santa Clara River Watershed

203. Historically, the Flycatcher was common in all lower elevation riparian areas of the southern third of California. *Id.* ¶ 51. River systems where the Flycatcher persists include the Colorado, Owens, Kern, Mojave, Santa Ana, Pilgrim Creek, Santa Margarita, San Luis Rey, San Diego, San Mateo Creek, San Timoteo Creek, Santa Clara, Santa Ynez Sweetwater, San Dieguito, and Temecula Creek. *Id.* ¶ 60. Based on numbers from both 2007 and 2012 or 2013, estimates of total Flycatcher breeding "territories" (which refers to singing male Flycatcher that stay throughout the summer, and is a measure of Flycatcher population) in any location, is 1,299, which is less than the 1,950 territories needed for the species to no longer be listed as endangered. *Id.* ¶ 57; Tr. D4V4 at 153:17–154:4, 158:4–7. In 2007, there were 171 Flycatcher breeding territories estimated in California, and in 2011 there were 256 territories estimated in California. TFS ¶ 58.

204. The Santa Clara Flycatcher Management Unit (which contains the Santa Clara River watershed) is one of four Management Units in the Coastal California Recovery Unit for Flycatcher, and it includes portions of the following watersheds: the Santa Clara River, Ventura River, San Francisquito Creek, Soledad Canyon, Big Tujunga Creek, and the San Gabriel River *Id.* ¶¶ 82, 84. The other Management Units are the Santa Ynez, Santa Ana, and San Diego Management Units. *Id.* The Coastal California Recovery Unit as a whole stretches along southern California's coast from the Mexico board to just north of Point Conception. *Id.* The Coastal California Recovery Unit has experienced the overall largest proportion of decline in the number of known Flycatcher territories since 2002 with a 35% overall decline in territories from 186 to 120 known territories. *Id.* ¶ 83. The decline has been proportional between all of its four Management Units. *Id.*

205. The Santa Clara River is one of the Southern California rivers (along with Castaic Creek, Ventura River, San Gabriel River, Piru Creek and Big Tujunga Canyon) essential to Flycatcher protection because it is one of these rivers "anticipated to provide [breeding]

habitat for meta-population stability, gene connectivity through this portion of the Flycatcher's range, protection against catastrophic population loss, population growth and colonization potential," and important migratory stopover habitat. *Id.* ¶ 92 (citing 78 Fed. Reg. 344, 366–67 (January 3, 2013)). "As a result, these river segments and associated Flycatcher habitat are anticipated to support the strategy, rationale, and science of Flycatcher conservation" in order to protect the species and maintain the population. *Id.* (citing 78 Fed. Reg. 344, 366–67 (January 3, 2013)). FWS has designated the mainstem of the Santa Clara River, 46.7 miles, as part of the Flycatcher's critical habitat (including the 10.5 miles from the Estuary to VFD), because this area is "within the geographical area known to be occupied by flycatchers at the time of listing and have the physical or biological features essential to the conservation of the species which may require special management consideration or protection." *Id.* ¶¶ 54–56, 95 (citing 78 Fed. Reg. 344, 366–67, 503–04 (January 3, 2013)). The Santa Clara River mainstem has three general reaches separated by spans of intermittent river reaches or dry gaps, and each of these general reaches, listed below, contain different actual or potential Flycatcher breeding territories with patches of Flycatcher habitat: (1) the Lower Reach (an approximately 3.45 mile reach from the Santa Clara River Estuary to approximately 0.25 miles upstream of Highway 101); (2) the Middle Reach (an approximately 22 mile reach from the top of the Critical Reach to the 6 Mile "Dry Gap" near the upstream end of Fillmore); and (3) the Upper Reach (which encompasses all sites upstream of the Dry Gap, at approximately 3.5 miles downstream of Ventura – Los Angeles County line, to Bouquet Canyon Road). *Id.* ¶¶ 86, 87.

206. Flycatchers use Santa Clara River habitat from May 1 to September 15 for breeding, migratory preparation, fledgling rearing, and migratory stopovers. *Id.* ¶ 96.

207. The riparian vegetation in the Ellsworth Reach presently appears suitable for Flycatcher breeding and migratory stopover habitat. *Id.* ¶ 97. The riparian vegetation in the Victoria Reach, and also as far as another half mile upstream, contains numerous suitable patches of riparian vegetation to support breeding Flycatchers even after the die off of some

willow stands during the recent drought. *Id.* ¶ 98.

208. In the Santa Clara Flycatcher Management Unit, Flycatcher breeding territories have been detected in small numbers with estimates ranging from zero to seven territories annually between 1995 and 2001. *Id.* ¶ 85. Four actual Flycatcher breeding territories have been identified on the Santa Clara River: two in Santa Paula, one in Fillmore, and one in Saticoy. *Id.* ¶ 88. Two breeding sites have also been identified on Piru Creek. *Id.*

209. FWS's 2014 Flycatcher 5-Year Review found that the Coastal California Recovery Unit for Flycatcher experienced the overall largest proportion of decline in the number of known Flycatcher territory since 2002—the decline of 66 territories is about 35 percent of the 2002 total—and the numbers have been reduced in all four of the coastal management units within the Coastal California Recovery Unit, but "it may be that the lack of recent survey information to determine whether Flycatchers still occur at breeding sites combined with the known decline of territories at some key breeding sites has contributed to the change," and "the detected declines at known sites have no obvious cause," and another contribution to the decline is "due to the reduction in the overall amount of surveys being performed." Tr. D4V4 at 143:20–145:18, 146:22–24, 182:17–183:4. For the Santa Clara Flycatcher Management Unit, FWS' 5-Year Review identified declines occurring at Camp Pendleton, the Santa Margarita River, Prado Basin, and the Santa Ana River but did not specifically mention declines at the Santa Clara River. *Id.* at 145:21–146:21.

210. United's 2016 draft Multi-Species Habitat Conservation Plan reported that surveys for Flycatcher in Heritage Valley Park in Fillmore detected one breeding pair in 2005, two pairs in 2006, and three pairs in 2008; at least one breeding pair was detected near the City of Santa Paula Wastewater Recycling Facility Project in 2008; and in 2014, one pair was observed in Santa Paula within the Nature Conservancy's Hanson Preserve about one river mile upstream of VFD. Trial Ex. 7 at 4-26. The 2014 pair "exhibited breeding behavior but no nest was located." *Id.* In 2016, during a drought year, in which there was no flow in the river, "[o]ne Flycatcher pair, positively identified as the federally endangered subspecies, was observed nesting in [Saticoy] along the north bank of the Santa Clara River near

Ellsworth Barranca" approximately 1.5 miles downstream of VFD, and the "pair successfully fedged three young" in 2016. *Id.*; Tr. D4V4 at 154:6–19. There was some water in the area, possibly from agricultural flow. *Id.* at 154:20–23. In 2017, another pair was seen in the same area in the Ellsworth reach and the Flycatcher population was growing—it appeared to increase from one to two, and a biologist noted "This is good news. Our [Flycatcher] population is growing" and "[Flycatcher] is back." *Id.* at 155:8–14, 190:9–12, 198:13–15.

211. Currently, the known population of Flycatcher on the Santa Clara River is two territories that are located below VFD. *Id.* at 157:17–19. There have also been territories of upstream of VFD in the past, but the area upstream of VFD is less hospitable in terms of viewing for surveys. *Id.* at 158:1–3; 172:23–173:4. However, there have not been consistent Flycatcher surveys in the area of VFD to determine the actual population of Flycatchers over time. *Id.* at 157:3–16.

212. There was no evidence or examples in the record that United has directly harmed or injured Flycatcher. Tr. D4V4 at 138:9–11.

213. There is no evidence in the record of any actions taken by federal agencies against United for the Flycatcher. *Id.* at 185:21–24.

214. There is no analysis in the record as to the potential impact United was having on the overall population of Flycatcher, as there is no reasonable estimate of the population size. *Id.* at 162:3–8.

215. Declines in Flycatcher can result from predation, encroachment of urban areas such as Ventura, Oxnard, and Fillmore, and pesticides. *Id.* at 164:13–165:4.

216. There is no study in the record of what impact, if any, the recent five-year drought had on Flycatchers downstream of VFD, because there were not enough surveys of Flycatchers in that reach to perform a credible analysis. *Id.* at 156:20–157:2.

217. The areas above and below VFD are influenced by similar geologic conditions, including percolating river water and rising groundwater, which may "be conducive to the recovery of certain groundwater dependent riparian aquatic habitat." *Id.* at 159:1–160:20.

218. By diverting water at VFD, United has caused some areas downstream of VFD to become drier, reducing the amount of water and insects, including at the Ellsworth and Victoria Reaches. *Id.* at 175:25–176:3. Hammersmark Test, Dec. 14, 2017, Vols. 1, 3.

219. However, there has been lentic water downstream of VFD, including in the summer of 2017, when a Flycatcher pair was spotted, and that lentic water could come from agricultural flow and/or groundwater; there was lentic water at Ellsworth Reach in September 2017, which primarily came from groundwater; and groundwater can rise from the north bank of the river in Reach 1 (including Victoria Reach) in varying amounts based on rain levels and other factors, including in the summer months when water from VFD does not reach that area (i.e. June through September). Tr. D4V4 at 17:7–18:25,180:25–182:6; Testimony of Steven Bachman, Dec. 18, 2017, Vol. 1.

220. Even during the dry season, lentic water downstream of VFD can arise from: (1) subdrains built underneath VFD through which water from upstream can pass to the downstream area; (2) the Santa Paula basin on the north side of the river where groundwater elevations tend to be higher than the riverbed; or (3) from agricultural run-off. McEachron Test., Dec. 19, 2017, Vol. 3.

221. There is suitable Flycatcher habitat upstream of VFD, and United's actions are potentially creating a positive effect for Flycatcher habitat upstream of VFD (and likely not harming the upstream habitat), but there is no study of the effect of VFD on the upstream habitat, if any, in the record. Tr. D4V4 at 147:11–13, 151:18–20, 167:8–168:14, 185:8–20; *see also* Testimony of John Hindley ("Hindley Test"), Jan. 3, 2018, Vol. 4.

222. If United implements an alternative fish passage at VFD to benefit Steelhead, doing so could potentially have a detrimental impact on Flycatcher habitat; and the federal regulatory agencies—NMFS and FWS—in the process of approving a potential alternative fish passage could issue an incidental take permit to United with respect to Flycatcher. Tr. D4V4 at 193:14–197:2.

V. CONCLUSIONS OF LAW

A. Jurisdiction, Venue, and Standing

223. The Court has subject matter jurisdiction, pursuant to federal question jurisdiction, over ESA claims brought under the ESA citizen-suit provision. *See* 16 U.S.C. § 1540(g)(1)(A); *Consol. Salmonid Cases*, 713 F. Supp. 2d 1116, 1155 (E.D. Cal. 2010), *supplemented* (June 1, 2010). As required under the ESA citizen-suit provision, prior to filing suit, Plaintiff provided proper sixty days written notice United, the Secretary of Commerce, and the Secretary of the Interior. *See* 16 U.S.C. § 1540(g)(2)(A)(i); Pl. Br. No. 388. This Court further has jurisdiction pursuant to 28 U.S.C. 1331 (civil action arising under the laws of the United States); 28 U.S.C. § 2201 (declaratory relief), and 28 U.S.C § 2202 (injunctive relief).

224. The Court has personal jurisdiction over United because United is a California public agency with offices in Ventura County. *See* Pl. Br. No. 389; *In re W. States Wholesale Nat. Gas Antitrust Litig.*, 715 F.3d 716, 741 (9th Cir. 2013) ("To establish general jurisdiction [pursuant to personal jurisdiction], the plaintiff must demonstrate that the defendant has sufficient contacts to constitute the kind of continuous and systematic general business contacts that approximate physical presence." (internal marks omitted)).

225. Venue in the United States District Court for the Central District of California is proper under 28 U.S.C. §§ 1391(b)(1)–(2) because the events or omissions giving rise to the claim occurred in this District, in Ventura County, and because is a California public agency with offices in Ventura County. *See* Pl. Br. No. 389; 28 U.S.C. §§ 1391(b)(1)–(2).

226. As explained in the Summary Judgment Order (Dkt. 128) at 30–34 (granting Plaintiff's Motion for Summary Judgment on standing), Plaintiffs Wishtoyo Foundation (along with its Ventura Coastkeeper Program) and Center for Biological Diversity have standing to pursue the following claims in this matter: (1) Plaintiffs' first claim for unauthorized "take" of the Southern California Steelhead Distinct Population Segment in violation of section 9 of the ESA; and (2) Plaintiffs' fourth claim for unauthorized "take" of the Southwestern willow flycatcher in violation of section 9 of the ESA. TFS ¶ 9; *see*

Summary Judgment Order at 30–34.

B. Unauthorized Take under ESA Section 9

227. The ESA's purpose is to "provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of [international] treaties and conventions." 16 U.S.C. § 1531(b).

228. Section 9 of the ESA makes it unlawful for any "person" to "take" any species listed as endangered under the ESA, absent specific exceptions. *Id.* § 1538(a)(1)(B).

229. The term "person" includes "any officer, employee, agent, department, or instrumentality of the Federal Government, of any State, municipality, or political subdivision of a State, or . . . any State, municipality, or political subdivision of a State." *Id.* § 1532(13).

230. Congress has defined "take" under the ESA to mean "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." *Id.* § 1538(a)(1)(B).

231. Under a Section 7 consultation, NMFS or FWS can authorize incidental "take," immunizing a party from section 9 liablity, if the agency and the party agree to operate a project consistently with a reasonable and prudent alternatives and incidental take statement in a biological opinion. *See Arizona Cattle Growers' Ass'n v. U.S. Fish & Wildlife, Bureau of Land Mgmt.*, 273 F.3d 1229, 1239 (9th Cir. 2001) (citing 16 U.S.C. § 1536(b)(4); 50 C.F.R. § 17.3.).

232. Section 10 of the ESA allows the Secretary of the Interior to grant a permit for a taking otherwise prohibited when "such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity." 16 U.S.C. § 1539(a)(1)(B).

233. For a plaintiff to prevail on an unauthorized "take" claim, they must prove "take" by a preponderance of the evidence. *See Defs. of Wildlife v. Bernal*, 204 F.3d 920, 925 (9th Cir. 2000).

234. Federal agencies and courts have construed the individual words that appear in the statutory definition of "take" (described above) including "harass," "harm," "trap," "capture," etc. as different forms of "take." *See, e.g.*, 50 C.F.R. § 17.3; *Forest Conservation Council v. Rosboro Lumber Co.*, 50 F.3d 781, 784 (9th Cir. 1995).

235. The forms of take relevant to this case are "harm" and "harass."

236. The Department of the Interior regulation that implements the ESA defines the word "harm" (in the statutory definition of "take") as "an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering." 50 C.F.R. § 17.3; *see also* 50 C.F.R. § 222.102 (same definition under NMFS regulations); *Babbitt v. Sweet Home Chapter of Communities for a Great Oregon*, 515 U.S. 687, 692, 697 (1995) (upholding this definition as reasonable).

237. Harm to a species can be indirect, but habitat modification does not constitute harm unless it "actually kills or injures wildlife significantly impairing essential behavioral patterns, including breeding, feeding or sheltering." *Defs. of Wildlife v. Bernal*, 204 F.3d 920, 924–25 (9th Cir. 2000) (quoting 50 C.F.R. § 17.3). Habitat degradation that "merely retards recovery of a depleted species" is not harm unless there is a showing of "significant impairment of the species' breeding or feeding habits and [proof] that the habitat degradation prevents, or possibly, retards, recovery of the species." *Arizona Cattle Growers' Ass'n v. U.S. Fish & Wildlife, Bureau of Land Mgmt.*, 273 F.3d 1229, 1238 (9th Cir. 2001) (quoting *National Wildlife Federation v. Burlington Northern Railroad*, 23 F.3d 1508 (9th Cir.1994)).

238. A plaintiff can establish harm to wildlife with evidence of past injury, present injury, or an "imminent threat" of future injury. *Rosboro*, 50 F.3d at 785 (holding that a plaintiff had sufficiently established, at the summary judgment stage, that a proposed plan to harvest timber caused harm because this habitat modification was "reasonably certain to injure" a pair of endangered owls by "significantly impairing their essential behavioral

patterns, including breeding, feeding, and sheltering."). However, "potential injury" is not actionable. *Id.* (explaining that imminent is "ready to take place; near at hand," whereas potential "may or may not occur."). As long as the injury to wildlife occurs, either in the past, present, or future, the injury requirement may be satisfied. *Id.*

239. Showing "harm" under the ESA also requires establishing proximate cause. *Our Children's Earth*, 2015 WL 12745786, at *6. Ninth Circuit courts apply the following standard: "whether the alleged injury is fairly traceable to the challenged action of Defendants." *Id.* (brackets and ellipses omitted) (citing *Cascadia Wildlands v. Kitzhaber*, 911 F. Supp. 2d 1075, 1084 (D. Or. 2012); *Rosboro*, 50 F.3d 78 at 787).

240. While natural events on their own might not constitute "take," acts of nature that interact with a structure, such as a river flowing into a dam, can constitute "take." *See Tennessee Valley Auth. v. Hill*, 437 U.S. 153, 153 (1978) (finding an endangered fish would be harmed by water flowing into a dam and flooding the fish's habitat); *but see Alabama v. U.S. Army Corps of Engineers*, 441 F. Supp. 2d 1123, 1134 (N.D. Ala. 2006) ("Takes that result from acts of nature do not fall within the prohibition" of section 9).

241. Harm that stems from a structure's preexistence can constitute take. *See Our Children's Earth*, 2015 WL 12745786, at *7–*8 (citing 64 Fed. Reg. 60727-01) (rejecting argument that preexisting ownership, operation, and maintenance of a dam cannot cause take).

242. A Department of the Interior regulation defines "harassment" as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering." 50 C.F.R. § 17.3.

243. Cases applying the "harassment" standard involve disruptive human activities such as bird watching, logging, or tree harvesting. *Our Children's Earth*, 2015 WL 12745786, at *6 (citing *Palila v. Hawaii Department of Land & Natural Res.*, 852 F.2d 1106, 1108 (9th Cir. 1988) (only reference to harassment pertains to bird watching); *Marbled Murrelet v. Babbitt*, 83 F.3d 1060, 1064 (9th Cir. 1996) (lower court's discussion of harassment

related to disruptive and noisy tree harvesting activities); *Cascadia Wildlands v. Kitzhaber*, 911 F. Supp. 2d 1075, 1086 (D. Or. 2012) (logging operations can cause take by harassment)).

1. United Took Steelhead

244. There is ample evidence in the record that VFD and United's water diversions at VFD have resulted in harm to Southern California Steelhead, by killing and injuring steelhead, and significantly impairing their essential behavioral patterns, including breeding and migration in the Santa Clara River—designated as critical habitat for Steelhead—preventing and degrading recovery of the species, in a manner fairly traceable to United, which constitutes take under the ESA.

245. The 2008 Biological Opinion found that VFD "is likely to jeopardize the continued existence of the Federally endangered Southern California steelhead DPS, and is likely to destroy or adversely modify critical habitat for this species." *See* Biological Opinion at 1, 66. In the 2008 Biological Opinion, NMFS issued a reasonable and prudent alternative, as well as an incidental take statement in the Biological Opinion. *Id.* at 71–90. NMFS is precluded from issuing incidental take statements without finding that the activity addressed by a biological opinion is taking ESA-listed species. 80 Fed. Reg. 26832, 26837 (May 11, 2015);. The inclusion of the incidental take statement in the 2008 Biological Opinion constitutes a formal NMFS finding that VFD and United's water diversions at VFD are taking Steelhead. *See id.*; *Ariz. Cattle Growers' Ass'n v. U.S. FWS*, 273 F.3d 1229, 1237, 1240–42 (9th Cir. 2001) (holding that Congress clearly intended the standard for take under Section 7 to be the same as the standard for take under Section 9); *see also* Pl. Br. No. 406. This Court adopts the Biological Opinion's take finding as persuasive and well supported by the record, including by the trial testimony of the Opinion's principal author Anthony Spina. The Biological Opinion's take finding is also valid as applied the period following the Biological Opinion's issuance, based on the evidence that the essential conditions as proposed in the 2016 Draft HCP plan essentially mirror the proposed operations that were the basis of the 2008 Biological Opinion. *See, e.g.*, Tr.

D10V4 at 90:5–19; Tr. D10V2 at 13:24–14:3.

246. VFD and United's water diversions at VFD cause take and harm Steelhead due to three types of effects, which independently and cumulatively constitute take and harm: (1) the existing fish ladder is inadequate and hinders and at times completes blocks adult Steelhead from migrating upstream to the historic Steelhead breeding habitat in the tributaries to the Santa Clara River located above VFD, significantly impairing essential breeding and migration patterns and impeding recovery of the species, s*ee* Pl. Br. No. 403; (2) adult and juvenile Steelhead (including smolt and kelt) are injured and killed as they pass through VFD's infrastructure, s*ee* Pl. Br. No. 404; (3) United's water diversions at VFD substantially diminish the functioning of a downstream migration corridor for adult and juvenile Steelhead, significantly impairing their essential breeding and migration patterns and impeding recovery of the species, s*ee* Pl. Br. No. 405; and (4) United has also harmed and harassed Steelhead in the past by operating the fish bay fish trap, as well as trapping and transporting Steelhead without NMFS authorization. The Court will review some of the factual bases for these conclusions, and otherwise incorporates by reference the Findings of Fact.

247. *Fish Passage*. As NMFS concluded in the Biological Opinion, because the fish ladder has low attraction flow, high flows over the VFD dam crest often extensively delay or prevent adult steelhead from finding and entering the fish ladder, and fish that cannot locate the entrance are forced to return to the ocean or perish. *See* Biological Opinion at 36–57. And once discharge in the river subsides enough for Steelhead to detect VFD's fish ladder entrance, discharge in the river and tributaries upstream of VFD will have subsided significantly, resulting in slowed or no migration. *Id.* The expert members of the Fish Panel agreed that it is well understood among people who are knowledgeable in the field of fishery science in the Southern California area that VFD is a barrier or partial barrier to the migration of steelhead on the Santa Clara River. Postlewait Test., Dec. 20, 2017, Vol. 3. It was the consensus of the Fish Panel that under high flow conditions at VFD there is no question that the existing fish ladder has poor attraction flow; the Panel scored the

ladder 2 out of 10 in terms of attraction, the lowest score assigned to any of the options that the Panel studied. *Id.*; Fish Panel Report at 7–13. The Panel also concluded that "improvements to the existing fish ladder would not improve passage sufficiently to be a viable alternative compared to alternatives of a new passage facility." *Id.* at xiii. Adult steelhead in the fish ladder can experience excessive turbulence in the entrance pool and turning pools, which can make it more difficult for steelhead to make forward motion. *See* Trial Ex. 5 at 5-5; Bates Test., Dec. 12, 2018, Vol. 1; Kramer Test., Dec. 13, 2017, Vol. 1. The NMFS Office of Law Enforcement's June 9, 2016 letter states, among other things: "The Freeman Diversion (including its fish ladder) is not designed or operated in a way to account for the migratory behavior of SC steelhead, and therefore it significantly limits and at times precludes access to upstream spawning and rearing habitats and reduces both the magnitude and duration of river flows, as well as altering the timing of flows necessary for immigration of adult steelhead and emigration of juvenile steelhead." *See* Trial Ex. 91. Finally, at times United must close the fish ladder entrance for various maintenance and operational purposes. *See, e.g.*, Trial Ex. 21 at 3-5; Kramer Test., Dec. 12, 2017, Vol. 2. The inadequate fish passage at VFD actually kills and injures adult Steelhead by causing adult Steelhead to perish in the river downstream without spawning, and by, at many times completely, and at other times significantly, preventing adult Steelhead from engaging in the their essential breeding behaviors upstream at VFD. This take is perpetual and ongoing and will continue until United constructs new Steelhead fish passage infrastructure at VFD.

248. *Injury and Death in Infrastructure*. Steelhead are also injured and killed in passing through VFD's infrastructure, including: (1) juvenile Steelhead that fall over the dam's face are likely injured during some flow conditions; and (2) the VFD fish screen traps and injures or kills juvenile Steelhead (and exposes them to increased predation) when they are caught on hot spots and debris on the screen. Dead steelhead have also been observed in and around VFD following maintenance operations. For example, smolts that have died during sediment flush turn-outs, and a dead adult steelhead found in the fish screen bay,

following a flush and the draining of the fish screen bay. *See, e.g.*, Trial Ex. 28; Booth Test., Dec. 18, 2017, Vol. 3; Trial Ex. 22 at 4-3; Kramer Test., Dec. 12, 2017, Vol. 2. These takings due to the design and maintenance of VFD are perpetual and ongoing, and will continue until United constructs new Steelhead passage infrastructure.

249. *Water Diversion*. United's water diversion from the Santa Clara River at VFD strands migrating adult and juvenile Steelhead by delaying or precluding adult Steelhead migrating upstream, and delaying or precluding juvenile and kelt Steelhead migrating downstream, via: (1) reducing the magnitude of river flow and sometimes eliminating the river's flow entirely within a year or during periods critical for Steelhead migration in the Santa Clara River to complete the fish's lifecycles; and (2) increasing the river's flow recession rate and abbreviating flow duration within individual rain-induced discharge pulses in the river (i.e., causes levels in the River to recede quicker and to lower levels than would occur naturally, i.e. artificially truncating the hydrograph). *See, e.g.*, Biological Opinion at 30. This results in eliminating or reducing migration opportunities (by reducing the time in which there is river connectivity during migration seasons) and reducing the flows that cue adult Steelhead to migrate from the ocean. *See, e.g.*, *id.* On numerous occasions, NMFS has informed United that its proposed water operating rules are inadequate to minimize impacts on Steelhead, including in the Biological Opinion, in response to the 2009 Interim Operating Rules and 2010 Smolt Bypass Plan, in the 2016 NMFS OLE letter, and in response to the 2016 Draft HCP.

250. The Court believes that absent Court intervention, this taking will continue in the future. The taking that results from United's preferred water diversion operations has occurred for most of the past decade-plus. In response to a June 2016 Letter from NMFS Office of Law Enforcement, United in 2017 implemented RPA 2, which minimizes but does not eliminate take. But United remains unwilling to stipulate to follow such a water diversion operating regime in the future. Further, the federal government has not taken enforcement action against United related to its water diversion at VFD, other than the 2016 NMFS OLE Letter, which was sent just after Plaintiffs' filed this lawsuit. Therefore,

the Court believes that absent Court intervention, United's water diversion taking at VFD will continue.

251. *Trapping and Trucking*. In the past, United operated the fish bay fish trap, and trapped and transported Steelhead without NMFS authorization, causing harm to Steelhead (to the extent the Findings of Fact demonstrates that Steelhead were injured or killed during such activities), and harassing Steelhead by halting their migration and transporting them out of the water in thermally stressful conductions, so as to create "the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering." *See* 50 C.F.R. § 17.3. Because United proposed to restart its trapping and trucking operation in 2016, *see* Howard Test., Dec. 20, 2017, Vol. 3, there is a likelihood that this taking will continue in the future.

252. *Recovery*. The Biological Opinion found that such effects at VFD jeopardize the continued existence of Southern California Steelhead, which it found "is not viable and is at a high risk of extinction." Biological Opinion at 50, 66. The Opinion found that the DPS's Santa Clara River population unit "is important to the viability and recovery" of Southern California Steelhead; is the largest steelhead-bearing watershed; is considered independent and is therefore expected to support steelhead numbers in several adjacent population units; is "ecologically significant attributes," not found in most other population units, and as a result is expected to promote both biological diversity and traits that favor the species' survival; has high value for species recovery because it possesses a considerable amount of critical habitat relative to the entire DPS. *See id.* at 13–34. The Biological Opinion found that climate change is expected to increase air and water temperatures and reduce the amount of rain, which may decrease the amount of suitable habitat. *Id.* Regarding the effects of VFD on the DPS and the critical habitat in the Santa Clara River, NMFS concluded that:

> [T]he continued operation of the Vern Freeman Diversion Dam as under the proposed action (including the interrelated activities) is

> projected to continue to disrupt if not eliminate migration of steelhead into and out of Piru Creek, reduce migration opportunities and success in the Santa Clara River, particularly downstream of [VFD], and continue to preclude steelhead from reaching historical spawning and rearing habitat in tributaries to the mainstem. The proposed action possesses aspects that are expected to continue to reduce straying and gene flow into and out of the watershed, and decrease recruitment of steelhead progeny (i.e., density of age-0 steelhead) in the watershed. The effects due to the proposed action are expected to extend to the Santa Clara River steelhead population unit and reduce the likelihood that the population unit would survive.
>
> Overall, continued operation of [VFD] under the proposed action contributes to increase the extinction risk to endangered steelhead by reducing and at times eliminating migration opportunities and success for endangered steelhead, and precluding migration of this species to historical spawning and rearing habitat, leading to spawning failure in the Santa Clara River watershed.

Biological Opinion at 64. In January 2012, NMFS issued a Southern California Steelhead Recovery Plan, which stated that "[t]he Vern Freeman diversion, Santa Felicia Dam, and Pyramid Dam on Piru Creek effectively impeded or blocked fish passage to spawning and rearing habitat in the major tributaries of the Santa Clara River." Tr. D11V2 at 22:16–23:3, 24:8–24. A 2016 NMFS Southern California Steelhead status review found that "[t]here is little new evidence to suggest that the status of the Southern California coast steelhead DPS has changed appreciably in either direction since publication of the last status review 2011," and the review found that threats to the DPS posed by environmental variability resulting from projected climate change are likely to exacerbate the factors affecting the continued existence of the DPS. *See* Howard Test., Dec. 20, 2017, Vol. 3; Tr. D10V3 at 46:1–48:14. The risk of extinction to Southern California Steelhead is about the same as it

was at the time of the Biological Opinion in 2008, with an increased risk due to climate change. Howard Test., Dec. 20, 2017, Vol. 3.; Tr. D10V3 at 49:4–50:14.

253. Therefore, the effects described are ongoing and perpetual (other than trapping and trucking, which has been suspended, and the limited extent to which the federal government might require United to comply with RPA). These effects preclude a properly functioning migration corridor and breeding habitat in the Santa Clara River watershed for Southern California Steelhead, which is important to the viability and recovery of the species. Therefore United's operation and maintenance of VFD and diversions of river flows at VFD not only constitute take, but are preventing the recovery of the species.

254. For United's operation and maintenance of VFD and diversions of river flows at VFD to be legal under the ESA, United must obtain an Incidental Take Permit under ESA § 10 or take authorization pursuant to a biological opinion issued under ESA § 7 for Southern California Steelhead. 16 U.S.C. §§ 1537, 1539. United does not currently have any "take" authorization under the ESA with respect to Southern California Steelhead. *See, e.g.*, D. Br. No. 8; P. Br. No. 408; McEachron Testimony, Dec. 19, 2017, Vol. 1.

255. Therefore, United's maintenance and operation of VFD and diversion of Santa Clara River flows at VFD constitute unauthorized take of Southern California Steelhead under Section 9 of the ESA. *See* 16 U.S.C. § 1538(a).

256. Nonetheless, United contends that it is entitled to an affirmative defense of laches, arguing that: (1) Plaintiff lacked diligence in pursuing their ESA citizen suit claims; (2) the lack of diligence cause prejudice; and (3) Plaintiffs Wishtoyo Foundation, its Ventura Coastkeeper program, and Center for Biological Diversity are only nominally separate parties. *See* D. FFCL (Dkt. 144) ¶¶ 13–15.

257. "Laches must be invoked sparingly in environmental cases because ordinarily the plaintiff will not be the only victim of alleged environmental damage." *Pres. Coal., Inc. v. Pierce*, 667 F.2d 851, 854 (9th Cir. 1982). "A less grudging application of the doctrine might defeat Congress's environmental policy." *Id.* "Furthermore, the Endangered Species Act places an overriding premium on protecting listed species." *Bays' Legal Fund v.*

Browner, 828 F. Supp. 102, 107 (D. Mass. 1993) (applying the Ninth Circuit's reasoning in *Pierce*, 667 F.2d at 854, to deny an ESA laches defense) (citing *TVA v. Hill*, 437 U.S. at 174 ("[T]the language, history, and structure of the [Endangered Species Act] indicates beyond doubt that Congress intended endangered species to be afforded the highest of priorities.")); *see also Loggerhead Turtle v. Cty. Council of Volusia Cty., Fla.*, 896 F. Supp. 1170, 1178 (M.D. Fla. 1995).

In support of United's argument that Plaintiffs are nominally separate parties for the purposes of laches, United cites to *Vinton v. Adam Aircraft Industries, Inc.*, 232 F.R.D. 650, 664 (D. Colo. 2005), a case in which a district court held that a magistrate judge did not abuse his discretion in limiting two defendants to 25 interrogatories under Federal Rule of Civil Procedure 33, where the plaintiff had asserted that the defendants were alter egos and should be treated as a single entity. *See* D. FFCL ¶ 15 (citing *Vinton*, 232 F.R.D. at 664 (citing 8B Fed. Prac. & Proc. Civ. § 2168.1 (3d ed.) ("[I]n some instances nominally separate parties should be considered one party for purposes of the 25-interrogatory limitation.")). *Vinton*, which deals with a ruling limiting interrogatories for alleged alter egos, appears to have no discernable bearing on whether parties may be considered nominal parties for an ESA laches defense; United does not cite any authority or make a clear argument suggesting that it does. *See Vinton*, 232 F.R.D. at 664. Further, United has not asserted that Plaintiffs are in fact alter egos of one another, and United does not point to any factual evidence in the record suggesting that Plaintiffs are alter egos of one another or are in fact only nominally separate parties (and the Court is not aware of such evidence). *See* D. FFCL ¶ 15. Accordingly, United's assertion that Plaintiffs are nominally separate parties is unavailing. As a result, because United has not put forth any evidence to suggest, or argued, that Plaintiff Center for Biological Diversity delayed in pursuing its claims, United's defense of laches fails as to Center for Biological Diversity.

258. Next, the Court turns to United's defense of laches with respect to Wishtoyo and its program Ventura Coastkeeper.

259. United argues that Wishtoyo lacked diligence in pursuing their claims because they

have long been on notice of the claims alleged in this case since at least the time in 2009 that they served on United a 60-day notice of intent to sue, have communicated with United in various capacities in the years leading up to this lawsuit, were on notice by August 2013 that United would exclusively pursue study of the hardened ramp alternative, and failed to communicate that they did not approve of United's exclusive study of the hardened ramp alternative—and as a result United lost time and resources committed to the hardened ramp alternative.[65] D. Br. No. 8.

260. However, the record shows that in 2014 Wishtoyo issued a NEPA/CEQA comment letter to United and the resource agencies indicating that Wishtoyo felt that United should concurrently pursue a hardened ramp option, study and design of a hardened ramp option, and some sort of a damless diversion alternative which includes a notched alternative, which remains Wishtoyo's position. *Id.* at 77:1–8. Therefore, Plaintiffs were diligent in providing notice to United of their position.

261. In addition, with respect to the alleged lack of diligence in bringing the ESA claims, given that Wishtoyo: (1) refrained from intervening in *Caltrout* in light of Judge King's denial of another motion to intervene and desire to seek a resolution; (2) refrained from bringing claims during the process of the *Caltrout* settlement commitments from 2010–13; (3) and sought administrative relief in 2013 at the California State Water Resources Control Board, it would be "particularly unfair to [Wishtoyo], and the public, to find that laches bars this action when [Wishtoyo] reasonably attempted to resolve its . . . concerns administratively in the first instance before spending the necessary time and expense to litigate." *See Ocean Advocates v. U.S. Army Corps of Engineers*, 402 F.3d 846, 863 (9th Cir. 2005).

262. Further, even assuming that Wishtoyo lacked diligence, United has not established

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[65] United also argues that Wishtoyo lacked diligence because it obstructed United's collaboration with a stakeholder group expressly concerned with Steelhead in the Santa Clara River (the Steelhead Coalition) by opposing United's membership in the coaltion. D. Br. No. 8. However, it is unclear how this issue demonstrates a lack of diligence on Wishtoyo's part in bringing its claims against United.

prejudice, because NMFS (along with the Fish Panel) encouraged United to commit resources to the hardened ramp alternative. In addition, United witness Catherine McCalvin (former United staff member during the period in question) could not identify any way in which United has been harmed by Plaintiffs not suing United at an early date—other than the time spent on this lawsuit, which purportedly had not been spent on developing the HCP (although it is unknown if that time would have been spent on the HCP). *See* McCalvin Test., Jan. 3, 2018, Vol. 3. Therefore, United has also not established prejudice.

263. Finally, even if United had established prejudice, "laches typically does not bar prospective injunctive relief . . . . [because] almost by definition, [a] plaintiff's past dilatoriness is unrelated to a defendant's ongoing behavior that threatens future harm." *See Danjaq LLC v. Sony Corp.*, 263 F.3d 942, 959–60 (9th Cir. 2001)

264. Accordingly, United is not entitled to an affirmative defense of laches.

265. Therefore, because United is not entitled to an affirmative defense of laches, Plaintiffs are entitled to a declaratory judgment that United violated ESA section 9 by taking endangered Southern California Steelhead DPS in the Santa Clara River without authorization. *See* Complaint (Dkt. 1) at 51.

2. Plaintiffs Do Not Prevail on their Claim for Take of Flycatcher

266. Next, Plaintiffs have not demonstrated by a preponderance of the evidence that United is in violation of ESA section 9's prohibition on the unauthorized take of Flycatcher.

267. Specifically, Plaintiffs have not shown United's operations at VFD and United's water diversions, in a manner "fairly traceable" to those actions, do not "actually kill or injure" Flycatcher by "significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering." D. Br. No. 11 (citing Summary Judgment Order at 36). Plaintiffs have not shown that upstream of VFD was impacted negatively in terms of Flycatcher habitat—it may have been positively impacted. And Plaintiffs have not shown that downstream of VFD was significantly affected such that it would outweigh potential

benefits, particularly in light of the lack of accurate data about the Flycatcher population on the Santa Clara River, recent possible increases in Flycatcher population, and the fact that declines in Flycatcher population can result from predation, encroachment of urban areas such as Ventura, Oxnard, and Fillmore, and pesticides. *See supra,* § IV.D.4.

268. Thus, considering the areas proximal to VFD, Plaintiff has not shown by a preponderance of the evidence a significant impairment of the species' breeding or feeding habits, that is "fairly traceable" to VFD, rising to the level of harm. *See, e.g.*, *Our Children's Earth*, 2015 WL 12745786, at *6.

269. Accordingly, because Plaintiffs have not shown take of Flycatcher under the ESA, Plaintiffs are not entitled to declaratory relief on their claim for take of Flycatcher. Further, because Plaintiffs have not shown take of Flycatcher, they also have not shown irreparable harm, and thus are not entitled to injunctive relief as to take of Flycatcher.

C. Permanent Injunction for Take of Steelhead

270. The ESA authorizes citizen suits "to enjoin any person . . . who is alleged to be in violation of any provision of this chapter or regulation issued under the authority thereof . . . 16 U.S.C. § 1540(g)(1)(A); *see e.g.*, *Marbled Murrelet v. Babbitt*, 83 F.3d 1060, 1068 (9th Cir. 1996) (affirming permanent injunction based upon "reasonable certainty of imminent harm" to endangered species).

271. Generally, in order for a Court to grant a permanent injunction, plaintiffs must demonstrate: (1) actual success on the merits; (2) a likelihood of irreparable injury if injunctive relief is not granted; (3) a balance of hardships favoring Plaintiff; and (4) that an injunction will advance the public interest. *Winter v. Natural Res. Def. Counsel*, 555 U.S. 7, 20 (2008).

272. "The ESA strips courts of at least some of their equitable discretion in determining whether injunctive relief is warranted." *NWS*, 886 F.3d at 817 (brackets omitted) (citing *Cottonwood Envt'l Law Ctr. v. U.S. Forest Serv.*, 789 F.3d 1075, 1090 (9th Cir. 2015)). "The ESA removes the latter three factors in the four-factor injunctive relief test from [the Court's] equitable discretion." *Id.* "When considering an injunction under the ESA, [the

Court] presume[s] that remedies at law are inadequate, that the balance of interests weighs in favor of protecting endangered species, and that the public interest would not be disserved by an injunction." *Id.* (citing *Cottonwood*, 789 F.3d at 1090). "The ESA does not, however, restrict [the Court's] discretion to decide whether a plaintiff has suffered an irreparable injury." *Id.* (*Cottonwood*, 789 F.3d at 1090). "Plaintiffs must demonstrate that irreparable injury 'is *likely* in the absence of an injunction.'" *Id.* (citing *Winter*, 555 U.S. at 22). "A 'possibility' of irreparable harm cannot support an injunction." *Id.* (citing *Winter*, 555 U.S. at 22).

273. Because Plaintiff seek a permanent injunction to remedy the taking of Southern California Steelhead under the ESA, the Court turns to the key question: whether irreparable injury is likely in the absence of an injunction.

1. Irreparable Harm

274. Plaintiffs seeking injunctive relief must show both irreparable harm to the listed species and irreparable harm to Plaintiffs' own interests stemming from the irreparable harm to the listed species. *Id.*

a. Irreparable Harm to Steelhead

275. Irreparable harm to a listed species does not require a finding of "an extinction-level threat to the listed species." *Id.* Rather, irreparable harm "should be determined by reference to the purposes of the statute being enforced." *Id.* The Ninth Circuit explained the appropriate determination of irreparable harm with respect to the ESA as follows:

> One of the ESA's central purposes is to conserve species. *See* 16 U.S.C. § 1531(b) (a purpose of the ESA is to provide "a program for the conservation of ... endangered species and threatened species"). The "plain intent" of Congress in enacting the ESA was "to halt and reverse the trend toward species extinction, whatever the cost." *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 184 (1978); *see also* 16 U.S.C. § 1532(3) (defining "conservation" as "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"). The ESA accomplishes its purpose in incremental steps, which include protecting the remaining members of a species. *See* 16 U.S.C. § 1538(a)(1)(B) (prohibiting the "take" of any animal from a listed species). Harm to those members is irreparable because "[o]nce a member of an endangered species has been injured, the task of preserving that species becomes all the more difficult." *FCC v. Rosboro Lumber*, 50 F.3d 781, 785 (9th Cir. 1995); *see also Marbled Murrelet v. Babbitt*, 83 F.3d 1060, 1066 (9th Cir. 1996) (concluding that habitat modification which significantly impaired breeding and sheltering of a listed species amounted to "harm" under ESA, even though plaintiffs did not allege extinction-level threat to the species).

Showing an extinction-level threat to listed species is not required before an injunction can issue under the ESA: "We are not saying that a threat of extinction to the species is required before an injunction may issue under the ESA. This would be contrary to the spirit of the statute, whose goal of preserving threatened and endangered species can also be achieved through incremental steps. However, what we require is a definitive threat of future harm to protected species, not mere speculation." *Nat'l Wildlife Fed'n v. Burlington N. R.R.*, 23 F.3d 1508, 1512 n.8 (9th Cir. 1994). Thus, a threat of harm to a listed species that falls below an imminent extinction threat can justify an injunction . . . . [T]he ESA's underlying purpose is the conservation of species, and that purpose animates both sections 7 and 9. *See Cottonwood*, 789 F.3d at 1091–92 (recognizing that the "purposes and objectives" of the ESA provide "fundamental direction to the district

> courts when confronted with a request for injunctive relief to remedy a procedural violation of the ESA," and the ESA's purpose is to conserve "species and the ecosystems that support them").

NWS, 886 F.3d at 818–19.

276. Plaintiffs have demonstrated that VFD and United's operation of VFD constitute not only a "definitive threat of future harm to" Southern California Steelhead, but also a threat that is preventing the recovery of this endangered species, thus establishing irreparable harm. *See id.* (quoting *Burlington N. R.R.*, 23 F.3d 1508, at 1512 n.8); *id.* at 822 ("[I]mpeding a species' progress toward recovery exposes it to additional risk and so reduces its likelihood of survival." (citations omitted)).

277. First, as discussed above in the takings analysis, Plaintiffs have clearly established that VFD and United's operation of VFD constitute past, ongoing, and future harm to Southern California Steelhead, with respect to fish passage, infrastructure, water diversions, and trapping, resulting in take that violates the ESA.

278. Second, over the past decade-plus, United has taken some positive steps to reduce these impacts on Steelhead. For example, in terms of operations, United has discontinued flushing operations when there is no water downstream, increased the turbidity level at which it will divert water, and been willing to provide some bypass flows for Steelhead migration. With respect to infrastructure, United installed lights near the fish ladder to improve attraction, removed some of the bars in the trash rack so there would be a wider opening through which fish could travel, added a traveling screen on the auxiliary pipe to prevent fish from entering, coated the false weir with rubber to make it easier for fish to slide over, installed a tarp over the false weir, and installed fish ladder drain plugs. Nonetheless, the record clearly demonstrates that in the last decade or more United has proved unable and unwilling to tackle the two key problems repeatedly identified as perpetuating harm to Steelhead: (1) the inadequate fish ladder and the need for a new fish passage structure; and (2) the need for sufficient bypass flows to mimic the natural flow of the river and preserve the bulk of migration opportunities for Steelhead downstream of

VFD.[66]

279. With respect to fish passage, after the 2010 Fish Panel Report recommended that additional work be focused on the development of two alternatives: the hardened ramp and vertical slot. United took six years to reach a 60% design level on the hardened ramp and United never proceeded at all with the vertical slot. Then, after NMFS reviewed the 60% hardened ramp design, NMFS wanted United to build three different model versions of the head works with two different ramp slopes, but instead United put the hardened ramp on hold, and decided to pursue a notch alternative. Then, after United submitted a feasibility report with respect to the notch and another alternative, the infiltration gallery, NMFS concluded that those alternatives were not sufficiently developed to allow for an in-depth review, and NMFS was skeptical about whether the notch was really a viable option. NMFS expressed that United should continue to explore the hardened ramp, infiltration gallery, and notch, and come up with a process and schedule for selecting an alternative. Instead, United proceeded with further study of only the notch. United staff indicated that its first option at this point is the hardened ramp. United then indicated that its second option would be the vertical slot, but the Court took that off the table because United made no movement on the vertical slot since the Fish Panel's 2010 Report. Without the vertical slot, United indicated that its second choice would be the 400-foot notch. This protracted design process, which has not resulted in a single completed design, illustrates that United has lacked the will or ability to achieve a new fish passage structure.

280. Next, since 2008, United has proposed various water diversion operations—the 2009 Interim Operations Plan, 2010 Smolt Bypass Plan, United's interpretation of RPA 2A, the 2016 Draft HCP, and in discussions with NMFS in 2017— each of which would create in essence the same effects (artificially truncated the Steelhead migration window), which, combined with other effects of the proposed action, led NMFS to conclude that the proposed action in the Biological Opinion was likely to cause jeopardy to the species and

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[66] Another significant issue that the Fish Panel and United's consultants identified concerns hot spots and debris on the fish screen, which can trap juvenile Steelhead.

adversely modify or destroy designated critical habitat for the species. Even after receiving a June 2016 letter from NMFS Office of Law Enforcement to comply with RPA 2A (under NMFS's interpretation), United agreed to comply in 2017, but remains unwilling to stipulate to continue to do so in the future.

281. VFD and United's operation of VFD is causing ongoing harm to Steelhead, particularly in terms of fish passage and water diversions. There is a definite threat of future harm, but no one is in the driver's seat, no one is steering this complex issue towards a solution. United has proven unable or unwilling to act, and the federal government appears to be splintered or at times incapacitated. The Bureau of Reclamation declined to adopt NMFS's Biological Opinion—two federal agencies could not come to agreement. For years, NMFS engaged in a protracted dialogue with United that has not yielded a resolution. NMFS failed to take enforcement action for years, despite United lacking ESA authorization. Finally, in 2016, Plaintiffs brought this litigation, and seven days later, the NMFS Office of Law Enforcement sent a letter demanding that United follow RPA 2. Nonetheless, the federal government declined to intervene in this litigation.

282. For these reasons, "continuation of the status quo is likely to result in irreparable harm to the listed species." *See Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv.*, No. 3:01-CV-0640-SI, 2017 WL 1829588, at *5 (D. Or. Apr. 3, 2017), *aff'd in part, appeal dismissed in part*, 886 F.3d 803 (9th Cir. 2018).

b. Irreparable Harm to Plaintiffs

283. Next, "Plaintiffs seeking injunctive relief must show that they themselves are likely to suffer irreparable harm absent an injunction." *NWF*, 886 F.3d at 822.

284. Here, Plaintiffs have shown irreparable harm to their interests stemming from the irreparable harm to the listed species. For example, as detailed in the Summary Judgment Order, Plaintiffs have submitted declarations from five organizational members: Mati Waiya (founder of Wishtoyo and Coastkeeper); Isabel Ayala and Nicholas Hernandez (Wishtoyo members and volunteers); and Ileene Anderson and Ron Bottorff (members of the Center), establishing that these members regularly visit the Santa Clara River, have

observed Steelhead there, have specific plans to return, and desire to see Steelhead in the River region for cultural practices, ancestral connections, aesthetic enjoyment, educational interests, and scientific study. *See* Summary Judgment Order at 4–7, 33–34 (also establishing that Wishtoyo, Coastkeeper, and their members conduct Chumash ceremonies at sacred sites adjacent to the River, using natural cultural resources harvested from the River; and that the River and many of its native species—including Steelhead—are an integral part of Chumash culture and ceremonies, traditional song, dance, storytelling, oral history, and spiritual connections with ancestors); *NWF*, 886 F.3d at 822 (holding that declaration from a plaintiff's member that his recreational pursuits on Idaho's rivers depended on the health of listed salmonid population, sufficient to show irreparable harm to plaintiffs' interest stemming from the irreparable harm to the listed species) (citing *All. for the Wild Rockies v. Cottrell*, 632 F.3d 1127, 1135 (9th Cir. 2011) (upholding finding of irreparable harm where plaintiff organization asserted "that the Project will harm its members' ability to 'view, experience, and utilize' the areas in their undisturbed state")).

285. Accordingly, Plaintiffs have satisfied all the prerequisites for injunctive relief, and the Court turns to the nature of the injunctive relief that is warranted.

2. Injunctive Relief

286. An injunction should be narrowly tailored to avoid the irreparable harm identified. *NWS*, 886 F.3d at 823. "In fashioning equitable relief, a court 'must act within the bounds of the statute and without intruding upon the administrative province,' but it 'may adjust its relief to the exigencies of the case in accordance with the equitable principles governing judicial action.'" *NWS*, 886 F.3d at 823 (quoting *Sierra Pac. Indus. v. Lyng*, 866 F.2d 1099, 1111 (9th Cir. 1989) (quoting *Ford Motor Co. v. NLRB*, 305 U.S. 364, 373 (1939))). "A trial court abuses its discretion 'by fashioning an injunction which is overly broad.'" *Id.* (quoting *United States v. AMC Entm't, Inc.*, 549 F.3d 760, 768 (9th Cir. 2008)). "It is not an abuse of discretion for a court to issue an injunction that does not completely prevent the irreparable harm that it identifies." *NWS*, 886 F.3d at 823.

287. "There must be a 'sufficient causal connection' between the alleged irreparable

harm and the activity to be enjoined, and showing that 'the requested injunction would forestall' the irreparable harm qualifies as such a connection." *Id.* at 819 (quoting *Perfect 10, Inc. v. Google, Inc.*, 653 F.3d 976, 981–82 (9th Cir. 2011)). "However, a plaintiff 'need not further show that the action sought to be enjoined is the exclusive cause of the injury.'" *Id.* (quoting *M.R. v. Dreyfus*, 697 F.3d 706, 728 (9th Cir. 2012)).

288. Plaintiffs request permanent injunctive relief pertaining to (a) water diversion; (b) monitoring and adaptive management; (c) long term fish passage infrastructure; (d) interim fish passage infrastructure; (e) trapping; and (f) compensatory measures. Pl. Supp. Nos. 44–47, 49–58. To determine the appropriate relief, the Court has carefully considered the applicable law, the extremely complex facts in this case as detailed above, the views of the parties, and the amicus curiae views of NMFS. The Court will address in turn the categories of requested injunctive relief, beginning with water diversion.

a. Water Diversion

289. Plaintiffs request the following injunctive remedies regarding water diversion:

(a) Commencing December 1, 2017, until United secures incidental take authorization for VFD, United shall adhere to Plaintiffs' "No Take" water diversion rules and 3 Day Trigger. Pl. Supp. No. 44 (outlining the "No Take" diversion rules with greater specificity); and

(b) United shall continue to divert a higher turbidity levels (about 7,000 mg/L) and complete a study regarding this issue. *Id.* No. 45.

290. The Court ORDERS United to fully comply with the 2008 Biological Opinion's RPA 2—with RPA 2A understood in accordance with NMFS's interpretation such that the ramping rates apply whether or not United "initiates" diversion operations at, above, or below 750 cfs. The Court will not require United to implement the 3 Day Trigger—United may continue to use the Sespe Creek Trigger.

291. The Court recognizes that RPA 2 will not fully eliminate take of Steelhead with respect to water diversion because RPA 2 does not cover the full steelhead migration season because it only runs from January 1–May 31 for adult Steelhead and March 1 to

May 31 for juvenile Steelhead. Plaintiffs request a broader period to cover a migration period of November 1 to June 30 for adult Steelhead and November 1 to July 31 for juvenile Steelhead. Also, RPA 2 does not fully replicate the pre-VFD hydrograph (i.e. water flow pattern). However, RPA 2 is a well-reasoned compromise between weighty interests that expert scientists at the agency of jurisdiction developed in order to ensure a properly functioning migration corridor. (Further, take does not necessarily occur in the outer fringes of the migration season because Steelhead can wait in the ocean until a migration corridor can form in January.) Therefore, the Court ADOPTS a migration period of January 1–May 31 for adult Steelhead and March 1 to May 31 for juvenile Steelhead as found in RPA 2.

292. RPA 2 is a workable water operation regime that has been previously implemented by United and fully vetted by scientific experts at the NMFS, the federal agency of jurisdiction. RPA 2A does not require the Court to be in the precarious position of supervising and monitoring a newly and untested developing water operation regime. The same can be said for the Sespe Creek Trigger, which is vetted and approved by NMFS. In contrast, Plaintiffs 3 Day Trigger has never been implemented at the Santa Clara River and may come with uncertainty with respect to forecasting accuracy. Likewise, the Court declines to order Plaintiffs' requested adjustment to the required migration corridor width at the critical riffle (0.5 feet to 0.8 feet) and a revisiting of the critical riffle measurements previously done by Thomas R. Payne & Associates in 2005. If existing operational methods and metrics did not exist, the Court might be in a different position. But given the availability of an existing set of operational parameters, the Court declines to order and supervise the implementation of Plaintiffs' requested revisions of such parameters, which should be addressed in the permitting and regulatory process.

293. Nonetheless, RPA 2A is an adequate equitable remedy because as the Biological Opinion necessarily concluded, RPA 2A will eliminate all but incidental take with respect to water diversions, and thus it will significantly forestall the irreparable harm identified with respect to water diversions.

294. Further, the Court resolves the ambiguity in RPA 2A in favor of NMFS, requiring United to apply the ramping rates in RPA 2A whether or not United initiates water diversions above, at, or below 750 cfs. Anthony Spina, a non-lawyer, committed an "inartful" drafting error, but the clear intention of RPA 2A was to apply even if United initiates diversions above 750 cfs. *See, e.g.*, Tr. D10V4 at 57:23–58:14. In fact, in early 2010, NMFS had a meeting with United where they reviewed the RPA together, and United was in agreement with NMFS that United was interpreting RPA 2A the same was as NMFS (i.e. that the ramping rates would apply whether or not United initiates diversion above 750 cfs). Tr. D10V4 at 51:12–19. In addition, United agreed to follow NMFS's interpretation in 2017. The context in the Biological Opinion supports NMFS's interpretation. For example, the Biological Opinion recognizes that United would "primarily, if not exclusively, undertake the turning-in procedure when river discharge exceeds 750 cfs, based on [NMFS's] knowledge of past diversion operations and because under the proposed action United will attempt to divert water as soon as possible after a storm (i.e., periods of elevated flows induced by rainfall)." Biological Opinion at 71–72. This illustrates the incongruity of United's literal interpretation of RPA 2. If NMFS knew that United would primarily initiate diversions above 750 cfs, it would make no sense to create a rule intended to protect adult Steelhead migration that only limits United's ability to divert water in the rare circumstances when United initiates diversions below 750 cfs. Such a rule would be inconsistent with the twofold goal of RPA 2A: (1) to provide an ecologically meaningful descending limb of the hydrograph to protect the species from stranding or truncating the migration corridor; and (2) to provide United with the opportunity to continue to divert, albeit at much lower levels once the total river discharge fell below 750 cfs. Tr. D11V1 at 21:13–20. Thus, the Court adopts NMFS's understanding of RPA 2.

295. In addition, the Court declines to order United to continue to divert at higher turbidity levels, as United did in 2017, or to conduct a study of the matter. The Court appreciates the benefits of United's efforts to divert more water at higher turbidity (and

thus higher flows) to reduce the need to divert at lower flows when more water is needed for Steelhead. But the Court has pause about requiring United to maintain that higher level, given the possible effects of sediment buildup on United's infrastructure. The Court believes that a study about the effects would be beneficial, but such a study would not forestall the identified irreparable harm. United is encouraged but not ordered to continue to divert at higher turbidity levels, if possible, and to further study the matter.

296. Accordingly, the Court GRANTS IN PART Plaintiffs' request for injunctive relief with respect to water diversion. Commencing on **October 22, 2018**, United shall adhere to the water diversion operating rules set forth in RPA 2 of the NMFS 2008 Biological Opinion for VFD, pursuant to NMFS's interpretation of RPA 2A such that the ramping rates apply whether or not United initiates diversion procedures above 750 cfs, until such time as United secures incidental take authorization from NMFS for the maintenance and operation of VFD with respect to Southern California Steelhead, or unless the parties move for relief from those operating rules and the Court approves the motion.

b. Monitoring and Adaptive Management

297. Regarding monitoring and adaptive management, Plaintiffs' first request is for the following relief:

> (a) Commencing January 6, 2018, United shall implement an adaptive management monitoring system for compliance and effectiveness of the flow criteria used in United's operations. United shall adhere to the directives in terms and conditions 1(a) of the incidental take statement in the NMFS 2008 Biological Opinion for VFD: "For the purpose of ensuring that flow criteria are met, United shall apply a noncontact method (e.g., continuous wave microwave radar, monostatic UHF Doppler radar, pulsed Doppler microwave radar, acoustic Doppler technologies, and or emerging drone based videography), or other method that is agreeable to NMFS, to continuously monitor instantaneous river discharge in the Santa Clara River where the Highway 118 bridge and the Highway 101 bridge cross the river."

Pl. Supp. Br. No. 45.

298. The Court finds that this request is narrowly tailored to avoid the irreparable harm because it will ensure that United will accurately meet the flow criteria set forth in RPA 2. *See NWS*, 886 F.3d at 823.

299. Next, Plaintiffs request the following relief:

> (b) To implement Plaintiffs' 3 Day Trigger, and ensure flow criteria at the critical riffle are met, United shall implement an Acoustic Doppler Current Profiler (ADCP) paired with a Real Time Kinematic Global Positioning System (RTK GPS). Pl. Supp. Br. No. 45.

300. First, to the extent this measuring system would facilitate the 3 Day Trigger, this request is moot because the Court is not ordering the 3 Day Trigger. Further, during trial United in good faith attempted to deploy downstream a Doppler that they had already purchased, but a turbidity issue made it "not a reasonable method of measuring." Tr. D10V4 at 93:15–97:9. Therefore, the Court declines to order a Doppler at this time.

301. Next, Plaintiffs request that the following field measurements be taken:

> (c) United shall annually take new cross-section measurements, and after every storm event generating flow equal to or exceeding 3000 cfs, to determine the location and configuration/channel dimensions of the critical riffle. United shall thereafter take water depth and wetted width measurements in the critical riffle during the next two storm events to field verify predictions of what the depth and wetted width will be in the new channel configuration given differing levels of river flow. Pl. Supp. Br. No. 46.
>
> (d) United shall take field measurements to verify its predictions of the percolation loss through the critical riffle after the first rain event of every wet seasons that produces flow of at least 697 cfs at the compliance point, immediately after every storm that results in 5,000 cfs at the compliance point, and every two weeks after every storm that results in 5,000 cfs at the compliance point. *Id.* No. 47.

302. However, as discussed above, given the availability of an existing set of operational parameters, even if they may be imperfect, the Court declines to order and supervise the implementation of Plaintiffs' requested revisions of such parameters, which should be addressed in the permitting and regulatory process.

303. Accordingly, the Court GRANTS IN PART Plaintiffs' request for permanent injunctive relief regarding monitoring and adaptive management. Commencing **January 1, 2019,** United shall adhere to the directives in terms and conditions 1(a) of the incidental take statement in the NMFS 2008 Biological Opinion for VFD: "For the purpose of ensuring that flow criteria are met, United shall apply a noncontact method (e.g., continuous wave microwave radar, monostatic UHF Doppler radar, pulsed Doppler microwave radar, acoustic Doppler technologies, and or emerging drone based videography), or other method that is agreeable to NMFS, to continuously monitor instantaneous river discharge in the Santa Clara River where the Highway 118 bridge and the Highway 101 bridge cross the river." *See* Biological Opinion at 81.

c. Long Term Fish Passage Infrastructure

304. Plaintiffs request injunctive relief that requires United to complete design of long term steelhead passage infrastructure (principally the hardened ramp and 400-foot notch, along with the vertical slot and infiltration gallery as secondary alternatives), select a preferred alternative, submit completed permit applications, and upon issuance of permits, build new fish passage infrastructure. *See* Pl. Supp. Br. Nos. 49–51.

305. At the Court's request (Dkt. 173), NMFS filed an Amicus Brief ("NMFS Br.") (Dkt. 179) with respect to long term fish passage infrastructure. NMFS takes no position on the question of United's take liability. NMFS Br. at 2. NMFS states, "The most effective fish passage design has not been identified because the engineering, hydrological, and biological work to determine the most appropriate design is moving apace, but is not yet completed." *Id.* Consequently, NMFS characterizes its response as a preliminary assessment, based on the best available information at the time. *Id.* NMFS provided the declaration of NMFS biologist Anthony Spina ("Spina Decl.") (Dkt. 179-1) as its

substantive response. *Id.* at 1. Based on the best information available at this time, NMFS recommends the following two designs be considered further: (1) the "notch alternative" described in NHC's 2017 report; and (2) the hardened ramp described in AECOM's 2016 report. Spina Decl. ¶ 10. Further, Spina recommends that: "In an effort to promote efficiency and level of cost control, United and NMFS could benefit from the following process: (1) develop each alternative to the 70% feasibility design level; (2) make modifications to each alternative to achieve NMFS's recommended steel—head passage goal and six related objectives (described below); (3) carry out a process with NMFS's input for comparing and selecting the preferred alternative; (4) conduct physical modeling of the preferred alternative; (5) advance the preferred alternative to 100% design; and (6) construct and implement the preferred alternative. *Id.* Spina recommends that designs consider the following six objectives:

(a) improve steelhead-passage opportunity spatially (through the project impact area) and temporally (throughout the steelhead-migration period, i.e. November through June) for all flows between 45 to 6,000 cfs;

(b) not interrupt steelhead-passage opportunities by facility operations for sediment management or other maintenance;

(c) create upstream and downstream passage in the form of ramps;

(d) preclude nuisance attraction flows over the range of steel-head passage flows;

(e) Steelhead should not be challenged by or be required to transit partially open gates and/or weirs; and

(f) install fish screens that protect all life stages of steelhead, by fish screen designs meeting the most recent NMFS fish-screening guidelines that work in conjunction with any proposed ramps and associated headworks.

Id. ¶ 11. The Court greatly appreciates NMFS's input, particularly the six guidelines, which United shall strongly consider, and shall only reject with clearly articulable reasons, in developing its design plans and permit applications.

306. The Court ORDERS United to complete 100% design of the following two alternatives: (1) the hardened ramp and (2) 400-foot notch. The hardened ramp's design has been the most developed, to a 60% level in 2016. In addition, United in 2017 proceeded with further study of only the notch, resulting in a November 2017 NHC report on the 400-foot notch. Plaintiffs seek the hardened ramp and 400-foot notch in their request for injunctive relief. Pl. Supp. Br. 59. And NMFS recommends the hardened ramp and 400-foot notch in its amicus brief. *See* Spina Decl. ¶ 10. United staff indicated that its first option at this point is the hardened ramp. McEachron Test., Dec. 19, 2017, Vol. 4. United then indicated that its second option would be the vertical slot, which along with the hardened ramp was one of the Fish Panel two recommended design choices, but the Court took the vertical slot off the table because United made no movement to advance the vertical slot since the Fish Panel's 2010 Report. *Id*. Without the vertical slot, United indicated that its second choice would be the 400-foot notch. *Id.* Because the hardened ramp and 400-foot notch are furthest along, and recommended by NMFS, the Court will order the 400-foot notch over the vertical slot. However, if Plaintiffs and United are willing to stipulate to substitute the vertical slot in place of the 400-foot notch, which has only been designed to about a 10% level, the Court is willing to consider such a stipulation.

307. In addition, the Court ORDERS United to conduct a reasonable study of secondary alternatives: (1) the vertical slot; and (2) the damless diversion in conjunction with an infiltration gallery.

308. The completion of long term fish passage infrastructure is the most important remedy needed to address the irreparable harm identified, and shall be completed with deliberate speed. Therefore, the Court declines to adopt NMFS's recommendation that the top-two designs achieve 70% design before the preferred alternative is selected, because that could lead to more delay. Instead, United shall achieve 100% design of the top-two designs, including physical modeling, before the preferred alternative is selected.

309. Accordingly, the Court GRANTS IN PART Plaintiffs' request for injunctive relief

with respect to long term fish passage infrastructure. Thus, by the dates provided below, United shall complete forthwith the necessary studies to evaluate all reasonable alternatives to the existing fish ladder, select a preferred alternative, and submit complete regulatory authorization requests to NMFS, USFWS, the U.S. Army Corps of Engineers, the CDFW, and the California State Water Resources Control Board. United shall fully complete engineering design (including necessary modeling) on the: (1) hardened ramp; and (2) 400-foot notch. As part of its required National Environmental Policy Act ("NEPA")/California Environmental Quality Act ("CEQA") environmental review, United shall further analyze the other two options discussed in trial testimony: the vertical slot and a damless diversion in conjunction with an infiltration gallery. However, United shall not be required at this stage to do in-depth modeling/engineering analysis of these two options. Instead, United shall simply include reasonable analysis of these alternatives for purposes of NEPA/CEQA environmental review. Therefore:

(a) by **no later than January 31, 2020**, United shall complete evaluations and designs of the following alternative Steelhead fish passage infrastructures for VFD, including physical modeling and complete engineering design, sufficient for United to choose a preferred alternative and to meet NMFS's directions for the detail required for an adequate habitat conservation plan submittal: (i) the hardened ramp and (ii) the 400-foot notch;

(b) by **no later than January 31, 2020**, United shall complete the alternatives analysis for the (i) vertical slot and a (ii) damless diversion in conjunction with an infiltration gallery, sufficient for purposes of NEPA/CEQA environmental review;

(c) by the earlier of **April 31, 2020,** or **three months after** completion of the evaluations and designs of the hardened ramp and 400-foot notch, United shall select a preferred Steelhead fish passage infrastructure project. The Steelhead passage alternative selected must meet the Steelhead passage design criteria set forth by NMFS during NMFS's review and approval of the

alternative, including in regards to attraction flow, velocities and turbulence through the passage, and in regards to the flow ranges in which the passage will provide for Steelhead passage (i.e, for the hardened ramp, NMFS indicates that the ramp shall be designed to provide for Steelhead passage between 45 to at least 6,000 cfs river flow). This alternative must include design of monitoring of Steelhead migration in the reach of the Santa Clara River below VFD and through VFD and its new fish passage infrastructure selected;

(d) by **no later than June 30, 2020**, United shall submit completed regulatory applications for the following:

i. ESA § 10 incidental take permit and MSHCP to NMFS and the USFWS for operation and maintenance of VFD and United's Diversion at the VFD and/or a biological assessment in conjunction with ESA § 10 consultation with NMFS and the USFWS. These applications shall be accompanied by a complete Draft Environmental Impact Statement and Draft Environmental Impact Report so that the § 10 permit is ready for the institution of environmental review under NEPA and CEQA. These applications shall include proposals for a new fish passage infrastructure project at VFD, bypass flows from VFD sufficient to avoid jeopardizing the survival and recovery of Steelhead and otherwise minimizing take of Steelhead consistent with ESA directives to include reasonable and prudent measures for reducing take of listed species in any authorization for species take, appropriate compliance monitoring reasonably consistent with term and condition 4 in the incidental take statement in NMFS's 2008 Biological Opinion for VFD, and adaptive management reasonably consistent with term and condition 3 in the incidental take statement in NMFS's 2008 Biological Opinion for VFD;

ii. Army Corps Clean Water Act 404 permit for the New Fish Passage Infrastructure Project;

iii. State Board Clean Water Act section 401 Water Quality Certification for the New Fish Passage Infrastructure Project; and

iv. CDFW Lake and Streambed Alteration Agreement for the New Fish Passage Infrastructure Project; and

(e) by no **later than two years from** receiving final regulatory approvals for a new Steelhead fish passage infrastructure project, United shall complete construction of and commence operating such new infrastructure. This project shall include such infrastructure as needed for implementation of a long term monitoring and counting system for upstream migrating adult Steelhead and downstream migrating Steelhead kelts and juveniles that do not require Steelhead to navigate around or over an obstacle for the purposes of being counted.

d. Interim Fish Passage Infrastructure

310. Plaintiffs also request interim modifications to VFD to be implemented prior to long term fish passage. Pl. Supp. Br. at 52–55. Specifically, Plaintiffs request: (1) modifications to the baffles and baffle addition in the existing fish ladder; (2) provisional removal of the false weir and addition of the DIDSON Camera; (3) modifications to the fish screen; and (4) modifications to the auxiliary pipe and auxiliary pipe screen. *Id.*

311. The Court declines to order modifications to the baffles, baffle additions, auxiliary pipe, and auxiliary pipe screen, prioritizing long-term structural changes to VFD's fish passage infrastructure at the expense of short-term fixes to the existing fish ladder and auxiliary pipe. Although short-term fixes would have benefits for steelhead, the price of ordering them is too steep—in terms of the time, attention, energy, and regulatory and permitted efforts that would be diverted from developing long term fish passage. The task of achieving long term fish passage requires focus and commitment. The Fish Panel's conclusion is significant in this regard—it found that "improvements to the existing fish

ladder would not improve passage sufficiently to be a viable alternative compared to alternatives of a new passage facility" and "[t]he cost to improve the existing fish ladder to state-of-the-art standards could be comparable to the cost of the fish passage alternatives." *See* Fish Panel Report at xii. Accordingly, equitable principles favors an injunction that directs a meaningful long-term fix to fish passage even though this will not result in immediate change to fish passage or "completely prevent the irreparable harm." *See NWS*, 886 F.3d at 823.

312. Nonetheless, Plaintiffs' request for United to add a DIDSON camera near the fish ladder is reasonable, would be beneficial to assessing VFD's impact on Steelhead, and should not require significant cost or regulatory work. United already owns a DIDSON camera and is not presently using it. *See* Pl. Supp. Br. No. 28; Booth Test.; Howard; Test; McEachron Test. Therefore, United can and shall install the DIDSON near the fish ladder exit to monitor adult Steelhead exiting the ladder and Steelhead migrating downstream. However, the Court will not require removal of the false weir because of the stated concerns about interim modifications to the fish ladder.

313. Further, United shall modify or replace the fish screen to comply with NMFS criteria and eliminate the hot spots and debris that harm juvenile Steelhead. However, the Court believes that this should be done in conjunction with the long term fish passage structure design and incidental take permit application, because the updated fish screen may need to be designed to function properly in conjunction with proposed ramps and headworks, or with any changes in the grade of the water diversion infrastructure. *See, e.g.*, Spina Decl. ¶ 11.

314. Accordingly, the Court GRANTS IN PART Plaintiffs' request for injunctive relief with respect to long term fish passage infrastructure. Therefore:

(a) by **no later than November 1, 2018**, and as early as possible, United shall install a DIDSON camera in the area between the trash rack and Denil fish ladder upstream exit gate upstream of the diversion canal gate that lets water into the fish screen bay to monitor adult steelhead passage from the VFD

infrastructure upstream into the Santa Clara River. United shall also monitor downstream movement of adult, kelt, and juvenile Steelhead entering the VFD infrastructure through this camera;

(b) by **no later than January 31, 2020**, and no later than the completion of the top-two fish passage alternative designs, United shall develop and submit a plan to NMFS for modifying the VFD diversion canal fish screen in the VFD fish screen forebay to meet NMFS criteria's for approach and sweeping velocity for fish screens; to eliminate velocity hot spots (*i.e.*, localized areas where velocity levels are elevated on the fish screen face that will tend to trap, suck through, or injure juvenile Steelhead); to ensure reliable cleaning and prevention of clogging; to contain brushes that run the entire length of the screen face; and to contain appropriate screen opening sizes fry cannot pass through and that meet NMFS's Anadromous Salmonid Passage Facility Design fish screen criteria for Steelhead fry. United's plan shall address and respond to recommendations in the MWH report, NHC report, and the Biological Assessment, and shall either include provisions for these recommendations or explanations for any recommendations that it determines not to follow. United's plan shall address any design considerations needed to function effectively in conjunction the top-two new fish passage alternatives;

(c) by **no later than June 30, 2020,** United shall submit a completed regulatory application for NMFS approval (and the approval of the Army Corps of Engineers, California State Water Resources Control Board, and the California Department of Fish and Wildlife, if such approval is required). Any required fish screen regulatory applications may be submitted in conjunction with or separately from the long term fish passage regulatory applications; and

(d) by **no later than two years** (but significantly earlier, if feasible) from

receiving final regulatory approvals for a modified or new fish screen, United shall complete construction of and commence operating such a fish screen.

e. Trapping

315. Plaintiffs request that "United shall not resume hauling or any handling of Steelhead without Endangered Species Act take authorization." Pl. Sup. No. 56.

316. Injunctive relief to enjoin this taking is warranted, particularly because in 2016 United proposed to restart its trapping and trucking operation. *See* Howard Test., Dec. 20, 2017, Vol. 3.

317. Accordingly, the Court GRANTS Plaintiffs' request for injunctive relief with respect to trapping. United shall not resume hauling or any handling of Steelhead without authorization from NMFS. Because United must request NMFS Long Beach's assistance and supervision when stranded fish need to be hauled or handled, NMFS shall respond promptly to a request for such assistance.

f. Compensatory Measures

318. Plaintiffs request compensatory mitigation measures to mitigate the past and future harms of VFD inflicted upon Steelhead. Pl. Supp. Br. Specifically, Plaintiffs request that by no later than April 30, 2018, United shall contribute up to $6 million in funding to Cal Trout toward implementation of the Phase II of the Steelhead passage project at the Harvey Diversion on Santa Paula Creek in the Santa Clara watershed, and up to $1,105,000 to Friends of the Santa Clara River for the Steelhead passage project on Sisar Creek, a tributary to Santa Paula Creek, or such lesser amount given the acquisition of matching funds as is necessary to secure implementation of this project.

319. Plaintiffs' expert Dr. Kramer testified that these projects would be beneficial to Steelhead in the Santa Clara River watershed, Kramer Test. Dec. 13, 2017, Vol. 3, but as discussed above, the Court sustained United's hearsay objection to Trial Ex. 166, which purportedly contains the details that explain the projects. Therefore, the Court has limited facts to assess these projects.

320. In any event, in the Court's discretion, the Court declines to award compensatory measures under specific facts of this case. On the one hand, these projects may provide benefits to Steelhead in the Santa Clara River watershed, and therefore, might or might not be appropriate aspects of an Incidental Take Permit, to mitigate the effects of VFD on Steelhead. *See* 16 U.S.C. § 1539(a)(2)(B)(ii). However, the record does not demonstrate that these projects address with sufficient specificity the irreparable harm caused by VFD so as to warrant injunctive relief. *See NWS*, 886 F.3d at 823. Accordingly, the Court DENIES Plaintiffs' request for compensatory mitigation.

g. Compliance

321. To ensure compliance with the Permanent Injunction, United shall file with the Court on the docket Compliance Reports setting forth in detail the manner and form in which United has complied with the Permanent Injunction. United shall file such Compliance Reports: (1) every 120 calendar days from the date of Judgment; and (2) within five calendar days of any deadline contained in the Permanent Injunction.

322. If during any period between Compliance Reports, United receives any written comments from any of the Regulatory Agencies (NMFS, FWS, U.S. Army Corps of Engineers, CDFW, and California State Water Resources Control Board) related to United's efforts to develop or achieve approval of Regulatory Authorization applications pertaining Steelhead and VFD (including related to fish passage infrastructure, the fish screen, water diversion operations, or adaptive management monitoring), United shall attach the agencies' comments to the next Compliance Report, subject to any applicable laws of privilege. If United provides the Regulatory Agencies with any written responses to such comments, United shall attach its responses to the following Compliance Report, subject to any applicable laws of privilege.

323. The Court will appoint a Special Master to monitor compliance with the Permanent Injunction and the progress of the parties. The Court will appoint Judge James L. Smith (Ret.), who is the retired judicial officer who accompanied the federal court and the parties to view the VFD and surrounding habitat in December 2017. The Court SCHEDULES a

hearing concerning the Special Master's roles and duties on **October 15, 2018, at 8:30 a.m**.

h. Retention of Jurisdiction

324. The Court will retain jurisdiction over this matter for the purposes of enforcing or modifying the terms of the Permanent Injunction. *See Transgo, Inc. v. Ajac Transmission Parts Corp.*, 768 F.2d 1001, 1030 (9th Cir. 1985) ("The district court has continuing jurisdiction over such matters as the modification of injunctive relief"); *Saga Int'l, Inc. v. John D. Brush & Co.*, 984 F. Supp. 1283, 1285 (C.D. Cal. 1997) (A district court has "continuing jurisdiction to enforce a permanent injunction." (citing *Reebok Int'l Ltd. v. McLaughlin*, 49 F.3d 1387, 1390 (9th Cir 1995)).

325. In the event that following United's submission of proper permit applications for building new fish passage infrastructure at VFD, any of the Regulatory Agencies (NMFS, FWS, U.S. Army Corps of Engineers, CDFW, and California State Water Resources Control Board) are not completing their reviews in a timely fashion, are not providing sufficient guidance to United, or it is clear that permits will not be issued and compliance with the ESA will not be forthcoming, the Court will entertain appropriate motions to join—or the Court will involuntarily join—any such Regulatory Agency at that time, or the Court will otherwise reconsider the balance it has struck.

326. The Permanent Injunction shall remain in effect until each of the following conditions are met: (1) United receives ESA incidental take authorization for VFD; and (2) United completes construction and commences operations of a new fish passage structure that has been approved by NMFS pursuant to ESA incidental take authorization. When such conditions are met, United shall move to dissolve the Permanent Injunction.

VI. TRIAL AND POST-TRIAL MOTIONS

On December 28, 2017, Plaintiffs filed a Conditional Motion for Joinder ("Joinder Mot.") (Dkt. 163), to "conditionally join [NMFS] and the other federal and state agencies with regulatory authority to approve any [of United]'s project[s] to modify [VFD] to improve passage conditions for [Steelhead] should future developments warrant such

joinder." Joinder Mot. at v. Plaintiffs attached a letter from DOJ, which expressed the opposition of NMFS and the United States to joinder. *Id.* at 1, Ex. 1. DOJ also stated that in the absence of a waiver of sovereign immunity, the Court lacks jurisdiction over the United States. *Id*. Plaintiffs concurred in the DOJ's legal analysis that requiring joinder at this stage of litigation would be "contrary to prevailing authority." *Id.* On January 2, 2018, United filed a Response (Dkt. 166) and Motion to Dismiss for Failure to Join Indispensable Parties ("MTD") (Dkt. 164), arguing that absent joinder of all of the essential Regulatory Agencies, this action must be dismissed for failure to join indispensable parties, on the basis that the relief that Plaintiffs seek is unavailable without joinder.

Federal Rule of Civil Procedure 12(b)(7) allows a defendant to move to dismiss a complaint for failure to join a party under Federal Rule of Civil Procedure 19. Fed. R. Civ. P. 12(b)(7). Such a motion is not waived by failure to raise it in the pleading stage. Fed. R. Civ. P. 12(h). Rule 19 sets forth a method to determine whether a necessary party is so "indispensable" to an action that the case must be dismissed absent the party's joinder. Fed. R. Civ. P. 17. The moving party has the burden of demonstrating that dismissal is appropriate. *See Makah Indian Tribe v. Verity*, 910 F. 2d 555, 558 (9th Cir. 1990).

To determine whether a party is "indispensable" under Rule 19, the Court conducts a two-part inquiry. Fed. R. Civ. P. 19. First, the Court determines if the absent party is "necessary" to the dispute. Fed. R. Civ. P. 19(a). If the party is necessary and cannot be joined, the court next determines if the absent party "indispensable" such that "in equity and good conscience" the suit should be dismissed. Fed. R. Civ. P. 19(b).

A party is "necessary" and must be joined if feasible,

> (A) in that person's absence, the court cannot accord complete relief among existing parties; or
>
> (B) that person claims an interest relating to the subject of the action and is so situated that disposing of the action in the person's absence may:

> (i) as a practical matter impair or impede the person's ability to protect the interest; or
>
> (ii) leave an existing party subject to a substantial risk of incurring double, multiple, or otherwise inconsistent obligations because of the interest.

Fed. R. Civ. P. 19(1).

At the outset, the Court notes that because the Regulatory Agencies are not "person[s] claims an interest relating to the subject of the action," Rule 19(1)(B) does not apply. Next, with respect to Rule 19(1)(A), United argues that the Regulatory Agencies are necessary parties because an order against United will necessarily implicate one or more of the Regulatory Agencies. MTD at 13. United further argues that without the Agencies' presence in this matter, the full extent of this implication will be unknown, and the labyrinth of regulatory processes and approvals United will need to complete is extremely complex, intertwined, and far-reaching. *Id.* If United were ordered to take action that involves any one or more of these regulatory processes, United argues that inevitable prejudice would result from the fact that any one or more of the Regulatory Agencies were not parties to the order. *Id.* "United would be in a precarious position, subject to contempt, with obligations from multiple sides, and potentially no recourse. This would be extremely prejudicial to United." *Id.*

In response, Plaintiff argues that even though the Regulatory Agencies are necessarily implicated in the remedy, the Court can impose a remedy without the need for the joinder at this time. Opp'n to MTD (Dkt. 169) at 12 (citing, e.g., *Sierra Club v. Young Life Campaign, Inc.*, 176 F. Supp. 2d 1070, 1078 (D. Colo. 2001)). The Court agrees. Complete relief can be accorded among existing parties by: (1) requiring United to complete all the steps necessary to submit the permitting applications for new fish passage infrastructure; and (2) if United receives approval from the Regulatory Agencies, requiring United to construct and commence operations of the new fish passage infrastructure (along with other injunctive requirement). Thus, the Court's Permanent Injunction ordering

United to apply for permits, and to carry out the project if and when the permits are approved, does not require the agencies to be joined as parties. *See Romero-Barcelo v. Brown*, 478 F. Supp. 646, 707 (D.P.R. 1979) (ordering the U.S. Navy to apply for a Clean Water Act section 402 discharge permit without joining the EPA as a party), *aff'd in relevant part sub nom. Weinberger v. Romero-Barcelo*, 456 U.S. 305, 320 (1982) ("[The Federal Water Pollution Control Act] permits the district court to order that relief it considers necessary to secure prompt compliance with the Act . . . . The District Court did not face a situation in which a permit would very likely not issue, and the requirements and objective of the statute could therefore not be vindicated if discharges were permitted to continue. Should it become clear that no permit will be issued and that compliance with the FWPCA will not be forthcoming, the statutory scheme and purpose would require the court to reconsider the balance it has struck."). As discussed, in the event that following United's submission of proper permit applications, the Regulatory Agencies are not are not completing their reviews in a timely fashion or are not providing sufficient guidance, or it is clear that permits will not be issued and compliance with the ESA "will not be forthcoming," the Court will entertain appropriate motions to join—or the Court will involuntarily join—any such Regulatory Agencies at that time, or otherwise "reconsider the balance it has struck." *See Weinberger*, 456 U.S. at 320.

Accordingly, the Court DENIES WITHOUT PREJUDICE Plaintiffs' Motion for Conditional Joinder and United's Motion to Dismiss for Failure to Join Indispensable Parties.

On August 30, 2018, Plaintiffs filed a Renewed Motion for a Preliminary Injunction (Dkt. 201), seeking relief before the next Steelhead migration season, but acknowledging that if the Court issues its post-trial ruling and judgment prior to the hearing noticed for October 15, 2018, the renewed motion would be moot.

Accordingly, the Court DENIES Plaintiffs' Renewed Motion for a Preliminary Injunction AS MOOT.

VII. DISPOSITION

For the reasons stated above, the Court ORDERS that:

- United's Motions (Dkt. 108, 109, 111) to exclude the testimony of Chris Hammersmark, Sharon Kramer, and Mary Whitfield are DENIED;
- United's Motion (Dkt. 113) to exclude expert opinions from Kozmo Bates and Jonathon Mann is GRANTED IN PART as to Bates, and DENIED IN PART AS MOOT as to Mann;
- United's Motion (Dkt. 114) to exclude the Biological Opinion is DENIED;
- Plaintiffs' Motion (Dkt. 93) to exclude the testimony of John Hindley, Bruce Orr, and Steven Bachman is DENIED IN PART as to Hindley and DENIED AS MOOT as to Orr and Bachman;
- Plaintiffs' Motion (Dkt. 94) to exclude United's res judicata and laches evidence, and John Buse and Jason Weiner's testimonies, is DENIED;
- Plaintiffs' Motion (Dkt. 117) to exclude the expert testimony of Michael Booth is GRANTED IN PART;
- Plaintiffs' Conditional Motion for Joinder (Dkt. 163) and United's Motion to Dismiss for Failure to Join Indispensable Parties (Dkt. 164) are DENIED WITHOUT PREJUDICE; and
- Plaintiffs' Renewed Motion for a Preliminary Injunction (Dkt. 201) is DENIED AS MOOT.

With respect to Plaintiffs' claims, the Court HOLDS that Plaintiffs are entitled to declaratory relief that Defendant United Water Conservation District's actions constituted unauthorized "take" of the Distinct Population Segment of Southern California Steelhead in violation of section 9 of the Endangered Species Act. Plaintiffs are also entitled to a permanent injunction to address United's take of Steelhead, in the form outlined above.

The Court HOLDS that Plaintiffs are not entitled to declaratory relief that United's actions constitute unauthorized "take" of Flycatcher in violation of section 9 of the Endangered Species Act; Plaintiffs are not entitled to injunctive relief as to Flycatcher.

Plaintiffs shall file a proposed Judgment and Permanent Injunction consistent with this Order **on or before September 26, 2018.**

In addition, the Court SCHEDULES a hearing concerning the Special Master's roles and duties on **October 15, 2018, at 8:30 a.m**.

DATED: September 23, 2018

DAVID O. CARTER
UNITED STATES DISTRICT JUDGE