

 KeyCite Yellow Flag - Negative Treatment
Distinguished by [Maine Council of the Atlantic Salmon Federation v. National Marine Fisheries Service of the National Oceanic and Atmospheric Administration](#), D.Me., August 18, 2016

184 F.Supp.3d 861
United States District Court,
D. Oregon.

National Wildlife Federation, et al., Plaintiffs,

v.

National Marine Fisheries
Service, et al., Defendants.

Case No. 3:01-cv-00640-SI

|
Signed 05/04/2016

Synopsis

Background: Environmental groups brought action challenging decision of National Oceanic and Atmospheric Administration (NOAA) Fisheries that operations of the Federal Columbia River Power System (FCRPS) did not violate the Endangered Species Act (ESA), and asserting that United States Army Corps of Engineers and Bureau of Reclamation violated the National Environmental Policy Act (NEPA) by failing to prepare an environmental impact statement in connection with their records of decision implementing NOAA's biological opinion (BiOp). Parties cross-moved for summary judgment.

Holdings: The District Court, [Michael H. Simon, J.](#), held that:

[1] biological opinion concluding that FCRPS did not jeopardize species listed under ESA was arbitrary and capricious under the Administrative Procedure Act (APA);

[2] biological opinion concluding that FCRPS would not adversely modify critical habitat pursuant to ESA was not arbitrary and capricious under APA;

[3] environmental groups did not waive their right to raise NEPA claim;

[4] decision by Army Corps of Engineers and Bureau of Reclamation not to prepare an environmental impact statement (EIS) under NEPA was not reasonable;

[5] biological opinion concluding that FCRPS was not likely to affect endangered Southern Resident killer whales pursuant to ESA was not arbitrary and capricious under APA.

Ordered accordingly.

West Headnotes (27)

[1] [Environmental Law](#) [Consultation](#)

An agency's failure to use best scientific and commercial data available when formulating a biological opinion, as required by Endangered Species Act's (ESA) "best available science" standard, violates the Administrative Procedures Act (APA). Endangered Species Act of 1973 § 7, [16 U.S.C.A. § 1536\(a\)\(2\)](#); [50 C.F.R. § 402.14\(g\)](#); [5 U.S.C.A. § 706\(2\)\(A\)](#).

[Cases that cite this headnote](#)

[2] [Environmental Law](#) [Plants and wildlife;endangered species](#)

Determination of what constitutes the best scientific and commercial data available, as required for Endangered Species Act's (ESA) "best available science" standard for administrative agency's formulation of a biological opinion, belongs to the agency's special expertise, and when examining this kind of scientific determination, as opposed to simple findings of fact, a reviewing court must generally be at its most deferential. Endangered Species Act of 1973 § 7, [16 U.S.C.A. § 1536\(a\)\(2\)](#); [50 C.F.R. § 402.14\(g\)](#).

[Cases that cite this headnote](#)

[3] [Environmental Law](#)

🔑 Consultation

Under Endangered Species Act's (ESA) "best available science" standard, consulting agency cannot ignore available biological information, and insufficient or incomplete information does not excuse an agency's failure to comply with the statutory requirement of a comprehensive biological opinion using the best information available where there was some additional superior information available. Endangered Species Act of 1973 § 7, 16 U.S.C.A. § 1536(a)(2); 50 C.F.R. § 402.14(g).

Cases that cite this headnote

[4] Environmental Law**🔑 Consideration of alternatives**

Under National Environmental Policy Act (NEPA), the analysis of alternatives to the proposed federal action is the heart of the environmental impact statement (EIS). National Environmental Policy Act of 1969, § 102(2)(C), 42 U.S.C.A. § 4332(2)(C); 40 C.F.R. § 1502.14(a).

Cases that cite this headnote

[5] Environmental Law

🔑 Duty of government bodies to consider environment in general

Environmental Law**🔑 'Hard look' test;reasoned elaboration**

Purpose of National Environmental Policy Act (NEPA) is twofold: (1) to ensure that agencies carefully consider information about significant environmental impacts, and (2) to guarantee relevant information is available to the public; in order to accomplish this, NEPA imposes procedural requirements designed to force agencies to take a hard look at environmental consequences. National Environmental Policy Act of 1969, § 2 et seq., 42 U.S.C.A. § 4321 et seq.

Cases that cite this headnote

[6] Administrative Law and Procedure

🔑 Arbitrary, unreasonable or capricious action; illegality

Administrative Law and Procedure**🔑 Clear error**

Under the Administrative Procedure Act's (APA) arbitrary and capricious standard of review, a reviewing court must consider whether the administrative decision was based on a consideration of the relevant factors and whether there has been a clear error of judgment. 5 U.S.C.A. § 706(2)(A).

Cases that cite this headnote

[7] Administrative Law and Procedure**🔑 Presumptions****Administrative Law and Procedure****🔑 Wisdom, judgment or opinion****Administrative Law and Procedure**

🔑 Arbitrary, unreasonable or capricious action; illegality

Although a court's inquiry under the Administrative Procedure Act's (APA) arbitrary and capricious standard of review must be thorough, the standard is highly deferential, the agency's decision is entitled to a presumption of regularity, and the court may not substitute its judgment for that of the agency. 5 U.S.C.A. § 706(2)(A).

Cases that cite this headnote

[8] Administrative Law and Procedure

🔑 Arbitrary, unreasonable or capricious action; illegality

While a court's review is under the Administrative Procedure Act's (APA) arbitrary and capricious standard is deferential, the court must engage in a careful, searching review to ensure that the agency has made a rational analysis and decision on the record before it. 5 U.S.C.A. § 706(2)(A).

Cases that cite this headnote

[9] Estoppel

🔑 [Claim inconsistent with previous claim or position in general](#)

Doctrine of judicial estoppel protects the integrity of the judicial process by prohibiting parties from deliberately changing positions according to the exigencies of the moment.

[Cases that cite this headnote](#)

[10] **Estoppel**

🔑 [Claim inconsistent with previous claim or position in general](#)

Under doctrine of judicial estoppel, a party may not successfully maintain a position in one judicial proceeding and then, simply because his interests have changed, assume a contrary position, especially if it be to the prejudice of the party who has acquiesced in the position formerly taken by him.

[Cases that cite this headnote](#)

[11] **Estoppel**

🔑 [Claim inconsistent with previous claim or position in general](#)

For judicial estoppel to apply, a party's later position must be clearly inconsistent with its earlier position.

[Cases that cite this headnote](#)

[12] **Estoppel**

🔑 [Claim inconsistent with previous claim or position in general](#)

In deciding whether to apply the doctrine of judicial estoppel in a particular case, a court may consider whether the party succeeded in persuading a court to accept that party's earlier position, so that judicial acceptance of an inconsistent position in a later proceeding would create the perception that either the first or the second court was misled and whether the party seeking to assert an inconsistent position would derive an unfair advantage or impose an unfair detriment on the opposing party if not estopped.

[Cases that cite this headnote](#)

[13] **Estoppel**

🔑 [Claim inconsistent with previous claim or position in general](#)

Judicial estoppel did not apply to preclude state from challenging biological opinion (BiOp) issued by National Oceanic and Atmospheric Administration (NOAA) Fisheries concluding that operations of the Federal Columbia River Power System (FCRPS) did not violate the Endangered Species Act (ESA), based on state's position in prior case supporting harvest management agreement, which was determined not to jeopardize any listed species; state's support for the agreement was not inconsistent with its opposition to the biological opinion's conclusion that despite the jeopardy caused by the FCRPS, "reasonable and prudent alternatives" described in biological opinion avoided that jeopardy. Endangered Species Act of 1973, § 2 et seq., [16 U.S.C.A. § 1531 et seq.](#)

[1 Cases that cite this headnote](#)

[14] **Environmental Law**

🔑 [Consultation](#)

Biological opinion (BiOp) of National Oceanic and Atmospheric Administration (NOAA) Fisheries evaluating reasonable and prudent alternatives and concluding that operation of the Federal Columbia River Power System did not jeopardize species listed under Endangered Species Act (ESA) was arbitrary and capricious under the Administrative Procedure Act (APA); NOAA Fisheries used "trending toward recovery" standard in biological opinion, which did not analyze recovery impacts with respect to reaching any recovery abundance level at any point in time, habitat projects relied on were not reasonably certain to occur and there was not a sufficient margin for error in expected survival benefits accruing from habitat mitigation, and NOAA Fisheries'

assertion that effects of climate change had been adequately assessed was not complete, reasoned, or adequately explained. Endangered Species Act of 1973, § 2 et seq., 16 U.S.C.A. § 1531 et seq.; 5 U.S.C.A. § 706(2)(A).

1 Cases that cite this headnote

[15] Administrative Law and Procedure

🔑 Report or opinion; reasons for decision

Although agency determinations are entitled to deference, an agency must articulate a satisfactory explanation for its conclusions and even when an agency's decision relies on scientific expertise, it can be rebutted if it is not reasoned.

Cases that cite this headnote

[16] Administrative Law and Procedure

🔑 Report or opinion; reasons for decision

Administrative Law and Procedure

🔑 Rational basis for conclusions

An agency must provide sufficient information so that a reviewing court can educate itself in order to properly perform its reviewing function, determining whether the agency's conclusions are rationally supported and whether the agency's actions were complete, reasoned, and adequately explained.

Cases that cite this headnote

[17] Environmental Law

🔑 Consultation

Biological opinion (BiOp) of National Oceanic and Atmospheric Administration (NOAA) Fisheries evaluating reasonable and prudent alternatives and concluding that operation of the Federal Columbia River Power System would not adversely modify critical habitat pursuant to Endangered Species Act (ESA) was not arbitrary and capricious under the Administrative Procedure Act (APA), in light of significant improvements to mainstem

habitat. Endangered Species Act of 1973, § 2 et seq., 16 U.S.C.A. § 1531 et seq.; 5 U.S.C.A. § 706(2)(A).

Cases that cite this headnote

[18] Environmental Law

🔑 Laches

Environmental groups challenging decision of National Oceanic and Atmospheric Administration (NOAA) concluding that operation of Federal Columbia River Power System did not violate the Endangered Species Act (ESA) did not waive their right to raise National Environmental Policy Act (NEPA) claim, even though environmental groups never before raised a NEPA claim in the more than 20-year litigation process; there was no draft environmental assessment (EA) or environmental impact statement (EIS) and no NEPA public comment period, and the underlying litigation primarily involved the sufficiency of the biological opinions and did not involve the sufficiency of agencies' obligations under NEPA. Endangered Species Act of 1973, § 2 et seq., 16 U.S.C.A. § 1531 et seq.; National Environmental Policy Act of 1969, § 2 et seq., 42 U.S.C.A. § 4321 et seq.

Cases that cite this headnote

[19] Environmental Law

🔑 Lead agency; responsible entity

The primary responsibility for National Environmental Policy Act (NEPA) compliance is with the agency; the agency bears the primary responsibility to ensure that it complies with NEPA. National Environmental Policy Act of 1969, § 2 et seq., 42 U.S.C.A. § 4321 et seq.

Cases that cite this headnote

[20] Environmental Law

🔑 Consultation

Decision by United States Army Corps of Engineers and Bureau of Reclamation not to prepare an environmental impact statement

(EIS) under National Environmental Policy Act (NEPA) in connection with implementing reasonable and prudent alternatives described in biological opinion (BiOp) issued by National Oceanic and Atmospheric Administration (NOAA) Fisheries, concluding that operations of the Federal Columbia River Power System did not violate the Endangered Species Act (ESA), was not reasonable; existing NEPA documents in the record unreasonably outdated and the more recent documents were either irrelevant or too narrow in scope to constitute compliance with NEPA. Endangered Species Act of 1973, § 2 et seq., 16 U.S.C.A. § 1531 et seq.; National Environmental Policy Act of 1969, § 2 et seq., 42 U.S.C.A. § 4321 et seq.

[1 Cases that cite this headnote](#)

[21] Environmental Law

🔑 [Assessments and impact statements](#)

Court reviews agency's decision that it need not prepare an environmental impact statement (EIS) under National Environmental Policy Act (NEPA) for reasonableness. National Environmental Policy Act of 1969, § 2 et seq., 42 U.S.C.A. § 4321 et seq.

[Cases that cite this headnote](#)

[22] Environmental Law

🔑 [Adequacy of Statement, Consideration, or Compliance](#)

For purposes of National Environmental Policy Act (NEPA) compliance, relying on data that is too stale to carry the weight assigned to it may be arbitrary and capricious under the Administrative Procedure Act (APA). National Environmental Policy Act of 1969, § 2 et seq., 42 U.S.C.A. § 4321 et seq.; 5 U.S.C.A. § 706(2)(A).

[Cases that cite this headnote](#)

[23] Environmental Law

🔑 [Constitutional provisions, statutes, and ordinances](#)

National Environmental Policy Act (NEPA) is to be given the broadest possible interpretation. National Environmental Policy Act of 1969, § 2 et seq., 42 U.S.C.A. § 4321 et seq.

[Cases that cite this headnote](#)

[24] Environmental Law

🔑 [Necessity for Preparation of Statement, Consideration of Factors, or Other Compliance with Requirements](#)

A central purpose of an environmental impact statement (EIS) under National Environmental Policy Act (NEPA) is to force the consideration of environmental impacts in the decisionmaking process; this requires that the NEPA process be integrated with agency planning at the earliest possible time, and the purpose cannot be fully served if consideration of the cumulative effects of successive, interdependent steps is delayed until the first step has already been taken. National Environmental Policy Act of 1969, § 2 et seq., 42 U.S.C.A. § 4321 et seq.; 40 C.F.R. § 1501.2.

[Cases that cite this headnote](#)

[25] Environmental Law

🔑 [Adequacy of Statement, Consideration, or Compliance](#)

National Environmental Policy Act (NEPA) regulations provide agencies flexibility to “tier” an environmental impact statement (EIS), if needed; this approach allows an agency to prepare a programmatic EIS followed by site-specific EIS. National Environmental Policy Act of 1969, § 2 et seq., 42 U.S.C.A. § 4321 et seq.; 40 C.F.R. § 1502.20.

[Cases that cite this headnote](#)

[26] Environmental Law

🔑 [Injunction](#)

District courts must narrowly tailor injunctive relief in National Environmental Policy Act (NEPA) cases and generally refrain from dictating the substance and manner of the agency's action on remand, nonetheless, targeted requirements such as setting a deadline for NEPA compliance may be appropriate in certain cases. National Environmental Policy Act of 1969, § 2 et seq., [42 U.S.C.A. § 4321 et seq.](#)

[Cases that cite this headnote](#)

[27] Environmental Law

🔑 Consultation

Biological opinion (BiOp) of National Oceanic and Atmospheric Administration (NOAA) Fisheries evaluating reasonable and prudent alternatives and concluding that operation of the Federal Columbia River Power System (FCRPS) was not likely to affect endangered Southern Resident killer whales pursuant to Endangered Species Act (ESA) was not arbitrary and capricious under the Administrative Procedure Act (APA); although environmental groups asserted that the biological opinion did not fully analyze the effect of reduced number of Chinook salmon resulting from the reasonable and prudent alternatives, which the whales had a preference for and heavily relied on, biological opinion concluded that hatchery fish more than offset the salmon mortality caused by the FCRPS, and available data did not indicate that there was a meaningful difference between hatchery and wild salmon in terms of supporting metabolic needs of the whales, and data indicated that whales primarily ate fish from river that was not affected by the FCRPS. Endangered Species Act of 1973, § 2 et seq., [16 U.S.C.A. § 1531 et seq.](#); [5 U.S.C.A. § 706\(2\)\(A\).](#)

[1 Cases that cite this headnote](#)

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OPINION AND ORDER

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INTRODUCTION AND OVERVIEW

In this lawsuit, Plaintiffs¹ raise two primary questions. First, did Defendant NOAA Fisheries² act arbitrarily and capriciously when it issued its latest biological opinion (the “2014 BiOp”), concluding that the operations of the Federal Columbia River Power System (“FCRPS”) do not violate the Endangered Species Act of 1973,³ based on the 73 “reasonable and prudent alternatives” described in the 2014 BiOp?⁴ Second, did Defendants U.S. Army Corps of Engineers (the “Corps”) and U.S. ***869** Bureau of Reclamation (“BOR”) violate the National Environmental Policy Act of 1969⁵ by failing to prepare an environmental impact statement in connection with their records of decision implementing the 73 reasonable and prudent alternatives described in the 2014 BiOp? The answers to both questions are yes.

A. Background

The Columbia River is the fourth largest river on the North American continent. Along with its primary tributary, the Snake River, the Columbia flows for more than 1,200 miles from the Canadian Rockies to the Pacific Ocean, through seven states and one Canadian province in the Pacific Northwest. Every year, salmon and steelhead (collectively, “salmonids”) travel up and down the Columbia and Snake Rivers, hatch in fresh water, migrate downstream to the Pacific on their way to adulthood, and later return upstream to spawn and die.⁶ This is the natural course of Columbia and Snake River salmonids. They also must attempt to survive the FCRPS, which consists of hydroelectric dams, powerhouses, and associated reservoirs on the Columbia and Snake Rivers.

In 1991 the Snake River sockeye were listed as “endangered” under the Endangered Species Act,⁷ and in 1992 the Snake River fall chinook joined the list as “threatened.”⁸ In 1992, NOAA Fisheries (then known as the “National Marine Fisheries Service” or “NMFS”) issued its first biological opinion relating to the FCRPS and in 1993, NOAA Fisheries issued a biological opinion that concluded that the operations of the FCRPS would not “jeopardize the listed species.”⁹ The Idaho Department of Fish and Game challenged that opinion in a lawsuit brought in the United States District Court for the District of Oregon.

The court granted summary judgment in favor of the plaintiff. The court ruled that the 1993 biological opinion was arbitrary and capricious because NOAA Fisheries failed adequately to explain several of the critical assumptions supporting its jeopardy analysis and conclusion.¹⁰ In the court's decision, U.S. District Judge Malcolm F. Marsh wrote:

NMFS has clearly made an effort to create a rational, reasoned process for determining how the action agencies are doing in their efforts to save the listed salmon species. But the process is seriously, “significantly,” flawed because it is too heavily geared towards a status quo that has allowed all forms of river activity to proceed in a deficit situation—that is, relatively

small steps, minor improvements and adjustments—*when the situation literally cries out for a major overhaul. Instead of looking for what can be done to protect the species from jeopardy, NMFS and the action agencies have narrowly focused their *870 attention on what the establishment is capable of handling with minimal disruption.*¹¹

Judge Marsh's decision was vacated on appeal as moot because NOAA Fisheries had issued a subsequent biological opinion that found that the FCRPS did, in fact, jeopardize the listed species.¹² After further litigation and additional agency action that is not directly relevant here, NOAA Fisheries issued a new biological opinion on December 21, 2000 (the “2000 BiOp”), which superseded its previous biological opinions on this subject.¹³

In 2001, 15 years ago, Plaintiffs filed this lawsuit. In their original complaint, Plaintiffs challenged the 2000 BiOp under the Endangered Species Act. In May 2003, U.S. District Judge James A. Redden ruled that the 2000 BiOp was arbitrary and capricious because it relied on (1) federal mitigation actions that were not subject to the consultation process that is required under the Endangered Species Act and (2) non-federal mitigation actions that were not shown to be reasonably certain to occur.¹⁴ Judge Redden ordered NOAA Fisheries to issue a new biological opinion by 2004 that addressed and cured these deficiencies.¹⁵

As time passed, more and more populations of Columbia and Snake River salmon and steelhead became listed as either endangered or threatened under the Endangered Species Act. Today, there are 13 species or populations of Columbia or Snake River salmonids that are either endangered or threatened. Meanwhile, Judge Redden continued to reject the federal government's 2000, 2004, and 2008 BiOps, and the 2010 Supplemental BiOp issued by NOAA Fisheries. In a decision written in 2011, Judge Redden reviewed the history of this lawsuit, beginning with his first decision. Judge Redden wrote:

In remanding the 2000 BiOp, I instructed NOAA Fisheries to ensure that a similarly ambitious but flawed mitigation plan was certain

to occur. Instead of following this court's instructions, NOAA Fisheries abandoned the 2000 BiOp and altered its analytical framework to avoid the need for any RPA [reasonable and prudent alternatives]. As the parties are well aware, *the resulting BiOp was a cynical and transparent attempt to avoid responsibility for the decline of listed Columbia and Snake River salmon and steelhead*. NOAA Fisheries wasted several precious years interpreting and reinterpreting the [Endangered Species Act's] regulations. Also during that remand period, NOAA Fisheries abruptly attempted to abandon summer spill, despite the 2000 BiOp's conclusion that it was necessary to avoid jeopardy. Even now, NOAA Fisheries resists ISAB's¹⁶ recommendation to continue recent spill operations. Given Federal Defendants' history of abruptly changing course, abandoning previous BiOps, and failing to follow through with their commitments to hydropower modifications proven to increase survival (such as spill) this court will retain jurisdiction over this matter to ensure that Federal Defendants develop and implement the mitigation measures required to avoid jeopardy.¹⁷

***871** In this decision, Judge Redden also stated:

As I have previously found, there is ample evidence in the record that indicates that the operation of the FCRPS causes substantial harm to listed salmonids.... NOAA Fisheries acknowledges that the existence and operation of the dams accounts for most of the mortality of juveniles migrating through the FCRPS. As in the past, I find that irreparable harm

will result to listed species as a result of the operation of the FCRPS.¹⁸

Judge Redden expressly ordered:

No later than January 1, 2014, NOAA Fisheries shall produce a new biological opinion that reevaluates the efficacy of the RPAs in avoiding jeopardy, identifies reasonably specific mitigation plans for the life of the biological opinion, *and considers whether more aggressive action, such as dam removal and/or additional flow augmentation and reservoir modifications are necessary to avoid jeopardy*.¹⁹

On November 28, 2011, Judge Redden stepped down from his many years of service on this case, and it was reassigned to the undersigned district judge.²⁰ NOAA Fisheries completed its 2014 BiOp, and Plaintiffs challenged that biological opinion under the Endangered Species Act in their seventh amended complaint in this lawsuit. Both sides moved for summary judgment, and the Court heard oral argument lasting an entire day. A large part of this opinion addresses whether Plaintiffs' challenge to the 2014 BiOp has merit.

In their seventh amended complaint, Plaintiffs challenge not only the 2014 BiOp, but also, for the first time since this lawsuit was filed in 2001, the failure of the Corps and BOR, which are the relevant federal "action agencies," to comply with the National Environmental Policy Act. Plaintiffs contend that this law requires that these action agencies prepare a comprehensive environmental impact statement encompassing all or most of the suite of 73 reasonable and prudent alternatives described in the 2014 BiOp. An environmental impact statement provides the public with an opportunity to comment and also requires the action agencies to consider *all* reasonable alternatives, regardless of whether there currently is a funding source or whether any particular alternative is reasonably likely to occur. In a decision issued in March 2014, the U.S. Court of Appeals for the Ninth Circuit ruled that federal action agencies adopting a record of decision implementing a biological opinion *must* prepare an environmental impact

statement when the relevant provisions of the National Environmental Policy Act have been triggered.²¹

It is this combination of the need of the consulting agency under the Endangered Species Act (here, NOAA Fisheries) to address and cure the continuing deficiencies in its biological opinions, including the 2014 BiOp under review, and the opportunity presented by requirement under the National Environmental Policy Act that the federal action agencies (here, the Corps and BOR) prepare a comprehensive environmental impact statement that evaluates a broad range of alternatives that may finally break the decades-long cycle of court-invalidated biological opinions that identify essentially the same narrow approach to the critical task of saving these dangerously imperiled species. The federal consulting and action agencies must do ***872** what Congress has directed them to do. The Court's legal analysis is set forth in detail in this lengthy opinion. To assist the reader, the Court next briefly highlights several of the key findings and conclusions contained in this decision.

B. "Trending Toward Recovery" Standard

In the 2008 BiOp, NOAA Fisheries concluded that the suite of reasonable and prudent alternatives would not jeopardize any of the listed species' likelihood of recovery if the species was "trending toward recovery." A population of an endangered or threatened species are considered "trending toward recovery" if certain measurements of population growth rates are expected to be anything greater than 1.0. At a growth rate of 1.0, a population is merely replacing itself; it is neither increasing nor declining. NOAA Fisheries incorporated this conclusion from its 2008 BiOp into its 2014 BiOp. Such a standard, however, does not take into account whether a population is already at a precariously low level of abundance.

A population that is dangerously low in abundance could, nevertheless, satisfy the "trending toward recovery" standard NOAA Fisheries uses merely by slightly increasing, even though it remains in a highly precarious state. The Ninth Circuit has already cautioned that the Endangered Species Act prohibits any federal agency action from allowing a species to have a "slow slide into oblivion" and that agency action may not "tip a species from a state of precarious survival into a state of likely extinction."²² Further, even NOAA Fisheries'

own *Consultation Handbook* recognizes that "the longer a species remains at low population levels, the greater the probability of extinction from chance events, inbreeding depression, or additional environmental disturbance."²³

NOAA Fisheries' standard of "trending toward recovery" does not consider the individual abundance levels of the various endangered or threatened populations or what growth trends would be necessary in each population to ensure that the likelihood of recovery of the population or the listed species is not appreciably diminished. According to NOAA Fisheries, it set a goal of "anything over 1.0" because it was not possible to define a single goal that was greater than 1.0 that applied to every population. There are at least three flaws with this approach.

First, there is no requirement that a single numerical goal be applicable to all populations, regardless of its present level of abundance. Indeed, NOAA Fisheries created the Interior Columbia Technical Review Team ("ICTRT"), which consists of a number of highly-qualified scientists in several different disciplines.²⁴ The ICTRT has already identified minimum viable abundance numbers for nearly all populations of the various listed species, yet the methodology NOAA Fisheries employs essentially ignores their findings without explanation. Second, a goal that can be satisfied with only infinitesimally small growth, despite populations that are already dangerously low in abundance, risks tipping species to a point where recovery is no longer feasible. As the Ninth Circuit noted, "a species can often cling to survival even ***873** when recovery is far out of reach."²⁵ Third, without tying its recovery metrics to any estimated recovery abundance levels and the timeframe needed to achieve those levels, even roughly, NOAA Fisheries cannot rationally conclude that its set of reasonable and prudent alternatives will be sufficient to avoid appreciably reducing a species' chance of recovery.

C. Uncertain Habitat Benefits

In the 2014 BiOp, NOAA Fisheries assumes very specific numerical benefits from habitat improvement. These benefits, however, are too uncertain and do not allow any margin of error. Further, a key measure of survival and recovery employed in the 2014 BiOp already shows a decline, but NOAA Fisheries has discounted this measurement, concluding that it falls within the 2008 BiOp's "confidence intervals." Those confidence intervals,

however, were so broad, that falling within them is essentially meaningless.

In addition, the 2014 BiOp was prepared more than halfway through the ten-year timeframe established in the 2008 BiOp. The fact that many of the projected significant gains in key survival measurements had not yet been realized (and, to the contrary, certain important measurements showed decline for many populations of endangered or threatened species) requires more analysis by NOAA Fisheries than merely asserting that any observed declines fall within the broad “confidence intervals” accepted in the 2008 BiOp. To accept NOAA Fisheries' statements at face value at this point contradicts the requirement of the Endangered Species Act that the consulting agency must give the “benefit of the doubt” to the endangered species.²⁶

Further, mitigation measures may be relied upon only where they involve “specific and binding plans” and “a clear, definite commitment of resources to implement those measures.”²⁷ Mitigation measures supporting a biological opinion's “no jeopardy”²⁸ conclusion must be “reasonably specific, certain to occur, and capable of implementation; they must be subject to deadlines or otherwise-enforceable obligations; and most important, they must address the threats to the species in a way that satisfies the jeopardy and adverse modification standards.”²⁹ There are significant deficiencies with this portion of NOAA Fisheries' 2014 BiOp.

D. Climate Change

The best available information indicates that climate change will have a significant negative effect on the listed populations of endangered or threatened species. Climate change implications that are likely to have harmful effects on certain of the listed species include: warmer stream temperatures; warmer ocean temperatures; contracting ocean habitat; contracting inland habitat; degradation of estuary habitat; reduced spring and summer stream flows with increased peak river flows; large-scale ecological changes, such as increasing insect infestations and fires affecting forested lands; increased rain with decreased snow; diminishing snow-packs; increased flood flows; and increased susceptibility to fish pathogens and parasitic organisms that are generally not injurious to their host until the fish becomes thermally stressed. Even a single year with detrimental

climate conditions can have a devastating effect on the listed salmonids.

The Court finds that NOAA Fisheries' assertion that the effects of climate change have been adequately assessed in the 2014 BiOp is not “complete, reasoned, [or] adequately explained.”³⁰ NOAA Fisheries' analysis does not apply the best available science, overlooks important aspects of the problem, and fails properly to analyze the effects of climate change, including: its additive harm, how it may reduce the effectiveness of the reasonable and prudent alternative actions, particularly habitat actions that are not expected to achieve full benefits for decades, and how it increases the chances of an event that would be catastrophic for the survival of the listed endangered or threatened species. NOAA Fisheries has information that climate change may well diminish or eliminate the effectiveness of some of the BiOp's habitat mitigation efforts, but it does not appear to have considered or analyzed that information. NOAA Fisheries also did not explain why the “warm ocean scenario” that it rejected was not more representative of expected future climate conditions. Notably, ISAB commented to NOAA Fisheries that even the “warm ocean scenario” may not be sufficiently pessimistic for a sound scientific analysis.

E. Designated Critical Habitat

Under the Endangered Species Act, federal action may not be taken if it is likely to result in “destruction or adverse modification” of designated “critical” habitat of listed species.³¹ The Endangered Species Act defines “critical habitat” to include those areas with the physical or biological features “essential to the conservation” of listed species.³² “Conservation,” in this context, means “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.”³³ NOAA Fisheries has designated critical habitat for 12 of the 13 relevant listed species.³⁴ The designated critical habitat includes the migratory corridor, and NOAA Fisheries concluded that “safe passage” through the migratory corridor, water temperature, water quantity, and water quality are some of the primary constituent elements of this critical habitat.

NOAA Fisheries acknowledges that the migration corridors, among other designated critical habitats, are

degraded, are not functional, and do not serve their conservation role. In this situation, where critical habitat is already severely degraded *875 and the operation of the FCRPS has been found to adversely modify critical habitat, questioning whether the suite of 73 reasonable and prudent alternatives is sufficient to allow this degraded habitat to retain its current ability to someday become functional fails to comply with the congressional directive of the Endangered Species Act. NOAA Fisheries must analyze whether the federal action will adversely modify—meaning alter in a manner that appreciably diminishes the value of critical habitat for either survival or recovery of the listed species—the designated critical habitat. Simply maintaining the status quo when there is severely degraded habitat that does not serve its conservation role and will be adversely modified unless changes are made to the operations of the FCRPS does not suffice. The reasonable and prudent alternatives need not restore habitat to a fully functioning level, but they must at least include improvements sufficient to avoid adverse modification. Notwithstanding that NOAA Fisheries applied an incorrect standard in considering adverse modification, this error is harmless in light of the actual analysis performed by NOAA Fisheries and does not render its conclusion that critical habitat will not be adversely modified arbitrary and capricious.

F. Environmental Impact Statement

Plaintiffs argue that the Corps and BOR did not prepare adequate environmental impact statements or engage in the proper analysis as required under NEPA. The Court agrees. The Corps and BOR rely on environmental impact statements prepared in 1992, 1993, and 1997 and some narrowly focused documents prepared more recently for certain projects in the Columbia River Basin. These are insufficient to constitute compliance with NEPA for the records of decision that are at issue today. For purposes of compliance with that law, relying on data that is too stale to carry the weight assigned to it may be arbitrary and capricious.³⁵ The 2000, 2004, 2008, 2010 Supplemental, and 2014 BiOps discuss actions taken during the past 20 years that affect the physical environment in the Columbia River Basin. Moreover, several new populations of salmonid species have been added during this time to the list of endangered or threatened species and much additional habitat has been designated as “critical” for their survival. NOAA Fisheries, however, does not explain how the environmental impact statements from the 1990s

sufficiently address effects to species that were not listed when those statements were prepared or the additional critical habitat. Even more importantly, since the 1990s, there have been significant developments in the scientific information relating to climate change and its effects. All of this new information leads to the conclusion that the relevant physical environment has changed and our understanding of this environment has improved such that environmental impact statements prepared in the 1990s are neither current nor sufficient. The newer documents, although not as stale, are narrowly focused and some are irrelevant to the FCRPS.

Congress enacted the National Environmental Policy Act to ensure a process in which all reasonable alternatives are given a “hard look” and all necessary information is provided to the public. In addition, a central purpose of an environmental impact statement is “to force the consideration of environmental impacts in the decisionmaking process.”³⁶ For example, the *876 option of breaching, bypassing, or even removing a dam may be considered more financially prudent and environmentally effective than spending hundreds of millions of dollars more on uncertain habitat restoration and other alternative actions.

G. Conclusion

More than 20 years ago, Judge Marsh admonished that the Federal Columbia River Power System “cries out for a major overhaul.”³⁷ Judge Redden, both formally in opinions and informally in letters to the parties, urged the relevant consulting and action agencies to consider breaching one or more of the four dams on the Lower Snake River.³⁸ For more than 20 years, however, the federal agencies have ignored these admonishments and have continued to focus essentially on the same approach to saving the listed species—hydro-mitigation efforts that minimize the effect on hydropower generation operations with a predominant focus on habitat restoration. These efforts have already cost billions of dollars, yet they are failing. Many populations of the listed species continue to be in a perilous state.

The 2014 BiOp continues down the same well-worn and legally insufficient path taken during the last 20 years. It impermissibly relies on supposedly precise, numerical survival improvement assumptions from habitat mitigation efforts that, in fact, have uncertain

benefits and are not reasonably certain to occur. It also fails adequately to consider the effects of climate change and relies on a recovery standard that ignores the dangerously low abundance levels of many of the populations of the listed species.

One of the benefits of a comprehensive environmental impact statement, which requires that all reasonable alternatives be analyzed and evaluated, is that it may be able to break through any logjam that simply maintains the precarious status quo. A comprehensive environmental impact statement may allow, even encourage, new and innovative solutions to be developed, discussed, and considered. The federal agencies, the public, and our public officials then will be in a better position to evaluate the costs and benefits of various alternatives and to make important decisions. The Federal Columbia River Power System remains a system that “cries out” for a new approach and for new thinking if wild Pacific salmon and steelhead, which have been in these waters since well before the arrival of *homo sapiens*, are to have any reasonable chance of surviving their encounter with modern man. Perhaps following the processes that Congress has established both in the National Environmental Policy Act and in the Endangered Species Act finally may illuminate a path that will bring these endangered and threatened species out of peril.

In our constitutional representative democracy, it is not the function of a federal court to determine what substantive course of action may be the best public policy. This is particularly true when there are a number of competing, difficult, and controversial choices. That is a decision that our Constitution places in our elected representatives and, when there is lawful delegation, in the expertise that resides in our executive agencies. Congress already has provided substantive policy direction. One substantive directive that Congress has set is the Endangered Species Act. *877 Congress also has provided certain procedural directions to ensure that before a federal agency acts with potentially serious adverse environmental results there will be a fair and adequate opportunity for public comment and the consideration of all relevant alternatives and cumulative effects. Congress provided for this when it passed the National Environmental Policy Act, which established requirements for preparing environmental assessments and environmental impact statements. It is the proper

function of a federal court under our Constitution to ensure that federal agencies comply with the requirements that Congress has established.

STATUTORY FRAMEWORK

A. Endangered Species Act

This case involves the application of Section 7 of the Endangered Species Act (“ESA”). Section 7 “requires federal agencies, in consultation with what is known as the ‘consulting agency,’ to conserve species listed under the ESA.” *NMFS III*, 524 F.3d at 924. Section 7 requires federal agencies 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 [designated critical] habitat” 16 U.S.C. § 1536(a)(2). “The ESA imposes a procedural consultation duty whenever a federal action may affect an ESA-listed species.... the agency planning the action, usually known as the ‘action agency,’ must consult with the consulting agency” in a process “known as a ‘Section 7’ consultation.” *NMFS III*, 524 F.3d at 924. In this case, NOAA Fisheries is the consulting agency and the action agencies are the Corps and BOR (collectively, the “Action Agencies”).

“After consultation, investigation, and analysis, the consulting agency then prepares a biological opinion.” *Id.* In a biological opinion, the consulting agency evaluates the effects of the proposed action on the survival and recovery of listed species and any potential destruction or adverse modification of designated critical habitat. *Id.*; 16 U.S.C. § 1536(a). The biological opinion process has been explained by the Ninth Circuit as follows:

The biological opinion includes a summary of the information upon which the opinion is based, a discussion of the effects of the action on listed species or critical habitat, and the consulting agency's opinion on “whether the action is likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of critical habitat” 50 C.F.R. § 402.14(h)(3). In making its jeopardy determination, the consulting agency evaluates “the current status of the listed species or critical habitat,” the “effects of the action,” and “cumulative effects.” *Id.* § 402.14(g)(2)–(3). “Effects of the action” include both direct

and indirect effects of an action “that will be added to the environmental baseline.” *Id.* § 402.02. The environmental baseline includes “the past and present impacts of all Federal, State or private actions and other human activities in the action area” and “the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation.” *Id.* If the biological opinion concludes that jeopardy is not likely and that there will not be adverse modification of critical habitat, or that there is a “reasonable and prudent alternative[]” to the agency action that 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” which, if followed, exempts the action agency from the prohibition *878 on takings found in Section 9 of the ESA. 16 U.S.C. § 1536(b)(4); *ALCOA v. BPA*, 175 F.3d 1156, 1159 (9th Cir.1999).

If the consulting agency concludes that an action agency's action may jeopardize the survival of species protected by the ESA, or adversely modify a species' critical habitat, the action must be modified. *ALCOA*, 175 F.3d at 1159. The consulting agency may recommend a “reasonable and prudent alternative” to the agency's proposed action. 16 U.S.C. § 1536(b)(3)(A).

The issuance of a biological opinion is considered a final agency action, and therefore subject to judicial review. *Bennett v. Spear*, 520 U.S. 154, 117 S.Ct. 1154, 137 L.Ed.2d 281 (1997); *Ariz. Cattle Growers' Ass'n [v. U.S. Fish & Wildlife]*, 273 F.3d 1229, 1235 (9th Cir.2001)].

NMFS III, 524 F.3d at 924–25 (alterations in original).

[1] [2] [3] The ESA requires a consulting agency to use “the best scientific and commercial data available.” 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.14(g). “An agency's failure to do so violates the [Administrative Procedures Act].” *San Luis & Delta–Mendota Water Auth. v. Locke*, 776 F.3d 971, 995 (9th Cir.2014). “The determination of what constitutes the ‘best scientific data available’ belongs to the agency's ‘special expertise.... When examining this kind of scientific determination, as opposed to simple findings of fact, a reviewing court must generally be at its most deferential.’ ” *San Luis & Delta–Mendota Water Auth. v. Jewell*, 747 F.3d 581, 602 (9th Cir.2014) (emphasis in original) (quoting *Baltimore Gas & Elec.*

Co. v. Nat. Res. Def. Council, 462 U.S. 87, 103, 103 S.Ct. 2246, 76 L.Ed.2d 437 (1983)). The consulting agency cannot ignore available biological information and “insufficient ... [or] incomplete information ... does not excuse [an agency's] failure to comply with the statutory requirement of a comprehensive biological opinion using the best information available where there was some additional superior information available.” *Id.* (alterations in original) (quotation marks omitted). “On the other hand, where the information is not readily available, we cannot insist on perfection: ‘[T]he best scientific ... data available,’ does not mean ‘the best scientific data possible.’ ” *Id.* (alterations in original) (quoting *Bldg. Indus. Ass'n v. Norton*, 247 F.3d 1241, 1246 (D.C.Cir.2001)).

B. National Environmental Policy Act

[4] [5] The National Environmental Policy Act (“NEPA”) “is our basic national charter for protection of the environment.” 40 C.F.R. § 1500.1(a).³⁹ “NEPA requires that ‘to the fullest extent possible ... all agencies of the Federal Government shall’ complete an environmental impact statement (EIS) in connection with ‘every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment.’ ” *Jewell*, 747 F.3d at 640–41 (alteration in original) (quoting 42 U.S.C. § 4332(2)(C)). “In addition to the proposed agency action, every EIS must ‘[r]igorously explore and objectively evaluate all reasonable alternatives’ to that action. 40 C.F.R. § 1502.14(a). The analysis of alternatives to the proposed action is ‘the heart of the environmental impact statement.’ ” *879 *Ctr. for Biological Diversity v. U.S. Dep't of Interior*, 623 F.3d 633, 642 (9th Cir.2010) (second citation omitted). The purpose of NEPA is twofold: “(1) to ensure that agencies carefully consider information about significant environmental impacts and (2) to guarantee relevant information is available to the public.” *N. Plains Res. Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1072 (9th Cir.2011). “In order to accomplish this, NEPA imposes procedural requirements designed to force agencies to take a ‘hard look’ at environmental consequences.” *Lands Council v. Powell*, 395 F.3d 1019, 1027 (9th Cir.2005) (citation omitted).

C. Administrative Procedures Act

[6] [7] [8] Neither the ESA nor NEPA provide a separate standard of review, so claims under these Acts

are reviewed under the standards of the Administrative Procedures Act (“APA”).⁴⁰ *Jewell*, 747 F.3d at 601. Under the APA, “an agency action must be upheld on review unless it is ‘arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.’ ” *Id.* (quoting 5 U.S.C. § 706(2)(A)). A reviewing court “must consider whether the decision was based on a consideration of the relevant factors and whether there has been a clear error of judgment.” *Id.* (quotation marks and citation omitted). The reviewing court’s inquiry must be “thorough,” but “the standard of review is highly deferential; the agency’s decision is entitled to a presumption of regularity, and [the court] may not substitute [its] judgment for that of the agency.” *Id.* (quotation marks and citation omitted). Although a court’s review is deferential, the court “must engage in a careful, searching review to ensure that the agency has made a rational analysis and decision on the record before it.” *NMFS III*, 524 F.3d at 927.

BACKGROUND

A. Listed Endangered and Threatened Species

There are 13 ESA-listed species of salmonids affected by the operations of the FCRPS along with the suite of 73 reasonable and prudent alternatives (the “RPA”). They are: (1) Snake River fall Chinook salmon; (2) Snake River spring/summer Chinook salmon; (3) Snake River steelhead; (4) Upper Columbia River spring Chinook salmon; (5) Upper Columbia River steelhead; (6) Middle Columbia River steelhead; (7) Snake River sockeye salmon; (8) Columbia River chum salmon; (9) Lower Columbia River Chinook salmon; (10) Lower Columbia River coho salmon; (11) Lower Columbia River steelhead; (12) Upper Willamette River Chinook salmon; and (13) Upper Willamette River steelhead. 2014 BiOp at 43. Of these, 11 are listed as “threatened” and two, the Upper Columbia River spring Chinook salmon and the Snake River sockeye salmon, are listed as “endangered.” Unless otherwise indicated, all 13 species are referred to herein as the “listed species.”

The history of the listed species and their population trends has been thoroughly chronicled in *NMFS I*, *NMFS II*, and *NMFS III*. Recent data shows that the listed species remain in a precarious state. *See* 2014 BiOp at 70–71 and Table 2.1–1 (compiling the most recent data, which shows that 65 percent of the populations

in the listed evolutionary significant units (“ESUs”)⁴¹ are at “high risk” of extinction *880 and 28.5 percent are at a “maintained” risk of extinction (the second-highest risk category), while only 4 percent are considered “viable” and 2.5 percent are considered “highly viable”). Although there have been some recent record-breaking returns of certain Chinook populations, those returns are dependent on good ocean conditions and are often dominated by hatchery fish and not wild fish. *See, e.g., id.* at 109, 112–13, and Table 2.1–17 (correlating better returns with better ocean conditions for Snake River spring/summer Chinook, used as an indicator for the general pattern of abundance for interior Columbia basin salmonids); 2008 BiOp at 8.2–3 (noting that since 2000, Snake River fall Chinook “hatchery returns have increased disproportionately to natural-origin returns” and that natural-origin populations are not replacing themselves).

B. Federal Columbia River Power System

The FCRPS is comprised of dams and their associated powerhouses and reservoirs. The dams relevant to this Opinion and Order include Bonneville, The Dalles, John Day, and McNary in the lower Columbia River basin; Chief Joseph, Grand Coulee and Banks Lake, Libby, Hungry Horse, and Albeni Falls Dams in the upper Columbia River basin; and Ice Harbor, Lower Monumental, Little Goose, Lower Granite, and Dworshak Dams in the lower Snake River basin. Grand Coulee Dam and Hungry Horse Dam are operated by BOR. The others are operated by the Corps.

C. Earlier BiOps Concerning FCRPS

The history of previous biological opinions relating to the FCRPS also has been set forth in detail in *NMFS I*, *NMFS II*, and *NMFS III*. Briefly, in 1992 NOAA Fisheries issued its first biological opinion relating to the FCRPS, which concluded that FCRPS operations would not jeopardize the listed species. NOAA Fisheries issued another biological opinion in 1993, which also concluded that the FCRPS would not jeopardize the listed species. This biological opinion was invalidated in 1994 in *IDFG*. The *IDFG* court’s invalidation of the 1993 biological opinion was vacated as moot because in 1995 NOAA Fisheries issued another biological opinion that found FCRPS operations would be likely to jeopardize the listed species and adversely modify their critical habitat, and accepted a set of reasonable and prudent alternatives

to avoid jeopardy and adverse modification. The 1995 biological opinion was challenged, and was upheld in *Am. Rivers v. NMFS*, 1997 WL 33797790 (D.Or. Apr. 3, 1997).

In 2000, NOAA Fisheries issued its fourth biological opinion covering FCRPS dam operations, and found that the FCRPS was likely to jeopardize eight listed species. NOAA Fisheries proposed a set of reasonable and prudent alternatives to avoid jeopardy. This biological opinion was challenged and was invalidated by Judge James A. Redden in this case in *NMFS I*. Judge Redden found the proposed mitigation actions and long-term comprehensive monitoring program were not reasonably certain to occur. Judge Redden, however, did not vacate the biological opinion and allowed NOAA Fisheries to keep its Incidental Take Statement in place to avoid serious disruption to the FCRPS.

In 2004, NOAA Fisheries issued another biological opinion, which concluded that FCRPS operations would *not* jeopardize the listed species or adversely modify critical habitat. In the 2004 BiOp, NOAA Fisheries dramatically changed its interpretation of the ESA and its regulations, determining that the dams were part of the environmental baseline because they were built before the ESA was enacted, the Action Agencies did not need to consult *881 on FCRPS operations that NOAA Fisheries deemed “nondiscretionary,” NOAA Fisheries could analyze the proposed operations of the FCRPS in a manner that did not take into account many of the adverse effects of dam operations, and hatchery fish could be counted as wild fish in determining whether a population required ESA protection. Both Judge Redden and the Ninth Circuit found NOAA Fisheries' analysis to be arbitrary and capricious. *NMFS II*, *NMFS III*. Judge Redden remanded the 2004 BiOp for further Section 7 consultation, to be completed in 2008, ordered the Federal Defendants to collaborate with the relevant state and Native American tribe sovereigns to develop a new biological opinion, and ordered additional spring and summer spill.⁴² *NWF v. NMFS*, 2005 WL 2488447 (D.Or. Oct. 7, 2005). The Ninth Circuit affirmed the remand order. *NMFS III*.

In 2008, NOAA Fisheries issued the 2008 BiOp. This BiOp no longer followed the 2004 BiOp's analytical framework. The 2008 BiOp used a new standard for considering jeopardy—asking whether, under the agency action, the listed species are on a “trend toward recovery.” See

e.g., 2008 BiOp at 1–12. The 2008 BiOp also used a new standard for considering whether the agency action adversely modifies the critical habitat of the listed species—asking whether the critical habitat “retains the [current] ability to become functional.” See, *e.g.*, *id.* The 2008 BiOp found that the operation of the FCRPS was likely to jeopardize the listed species and adversely modify their critical habitat.

Although generally when a consulting agency finds action agency conduct to violate the ESA the consulting agency proposes the RPA, here NOAA Fisheries adopted the RPA proposed by the Action Agencies. The RPA relied on a variety of habitat, hydropower, hatchery, and predation measures to avoid jeopardy. NOAA Fisheries concluded that under the RPA, the listed species would avoid jeopardy and adverse modification.

Also in 2008, Bonneville Power Association (“BPA”), the Corps, and BOR entered into ten-year agreements with the States of Idaho and Montana, the Confederated Tribes of the Warm Springs Reservation of Oregon, the Confederated Tribes of the Umatilla Reservation, the Confederated Tribes and Bands of the Yakama Nation, the Confederated Tribes of the Colville Reservation, and the Columbia River Inter-Tribal Fish Commission. These agreements are known as the Columbia Basin Fish Accords (“Fish Accords”). Under the Fish Accords, BPA committed to funding up to \$933 million over the term of the 2008 BiOp for mitigation projects to be implemented by the state and tribal parties to the Fish Accords. See, *e.g.*, BOR00001276; BOR 2008 AR, BR018207. In return, those parties signed Memoranda of Agreement, agreeing to support the 2008 BiOp in any subsequent litigation. See generally, NOAA 2008 AR, B.9, Columbia Basin Fish Accords; *NMFS IV*, 839 F.Supp.2d at 1123.

After President Barack Obama took office, NOAA Fisheries re-evaluated the 2008 BiOp and issued the 2010 Supplemental BiOp. This BiOp incorporated the adaptive management implementation plan, which was developed in response to concerns expressed by Judge Redden in this case after reviewing the 2008 BiOp, and updated certain data, but otherwise retained the analysis from the 2008 BiOp. The 2008 and 2010 BiOps were challenged and Judge Redden found that these BiOps *882 improperly relied on habitat mitigation measures that were not reasonably certain to occur. Accordingly, Judge Redden found in this case that NOAA

Fisheries' conclusion that with the set of reasonable and prudent alternatives the FCRPS would avoid jeopardy was arbitrary and capricious, remanded the 2008 and 2010 BiOps, and ordered NOAA Fisheries to issue a supplemental biological opinion in 2014. Judge Redden similarly did not vacate the 2008 or 2010 BiOps, but ordered NOAA Fisheries to implement the 2008 BiOp, to provide annual updates to the Court, and to continue court-ordered spill.

D. 2014 BiOp

In January 2014, NOAA Fisheries issued the 2014 Supplemental BiOp. NOAA Fisheries updated information after the 2008 and 2010 BiOps, reviewed its analyses in the 2008 BiOp, as supplemented in 2010, and determined that the new information is consistent with NOAA Fisheries' analyses and expectations as stated in the 2008 BiOp. NOAA Fisheries did not disturb its earlier finding that operation of the FCRPS would jeopardize the listed species and adversely modify their critical habitat, and concluded that under the RPA jeopardy and adverse modification would be avoided. Plaintiffs challenge the 2014 BiOp, and the underlying analyses in the 2008 BiOp on which the 2014 BiOp relies.

E. Pending Motions for Summary Judgment

Before the Court are six cross-motions for summary judgment. Plaintiffs National Wildlife Federation, Idaho Wildlife Federation, Washington Wildlife Federation, Sierra Club, Pacific Coast Federation of Fishermen's Association, Institute for Fisheries Resources, Idaho Rivers United, Northwest Sport Fishing Industry Association, Salmon for All, Columbia Riverkeeper, NW Energy Coalition, Federation of Fly Fishers, and American Rivers, Inc. filed a motion (Dkt. 1976) seeking summary judgment on their claims that NOAA Fisheries violated the ESA and APA, the Corps and BOR violated the ESA and APA, and the Corps and BOR violated NEPA. Intervenor-Plaintiff the State of Oregon moves for summary judgment (Dkt. 1985) on its claims that NOAA Fisheries violated the ESA and APA, the Corps and BOR violated NEPA and the APA, and the Corps and BOR violated the ESA and the APA. Amicus the Nez Perce Tribe filed briefs in support of these motions for summary judgment. Because these parties incorporate by reference or otherwise adopt each other's arguments, the Court simply attributes arguments collectively to Plaintiffs, unless otherwise specified.

Defendants NOAA Fisheries, the Corps, and BOR (the "Federal Defendants") move for summary judgment (Dkt. 2001) that they did not violate the ESA, APA, or NEPA. Intervenor-Defendants States of Idaho, Montana, and Washington filed a motion for summary judgment (Dkt. 1997) that the Federal Defendants did not violate the ESA, APA, or NEPA. Intervenor-Defendant Northwest RiverPartners ("RiverPartners") also filed a motion for summary judgment (Dkt. 2009) that the Federal Defendants did not violate the ESA, APA, or NEPA. Finally, Intervenor-Defendants Kootenai Tribe of Idaho and Confederated Salish and Kootenai Tribes move for summary judgment (Dkt. 2010) that the Federal Defendants did not violate the ESA, APA, or NEPA. Intervenor-Defendant Inland Ports and Navigation Group and Amici Columbia-Snake River Irrigators, Confederated Tribes of the Warm Springs Reservation of Oregon, Confederated Tribes of the Umatilla Indian Reservation, the Yakama Nation, and Confederated Tribes of the Colville Reservation filed briefs in opposition to Plaintiffs' motions for summary judgment and *883 in support of the Federal Defendants. Because these amici, the Federal Defendants, and the Intervenor-Defendants generally incorporate by reference and support one another's arguments, the Court simply attributes their arguments collectively to Defendants, unless otherwise specified.

STANDARD OF REVIEW

A party is entitled to summary judgment if the "movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law." *Fed. R. Civ. P. 56(a)*. The moving party has the burden of establishing the absence of a genuine dispute of material fact. *Celotex Corp. v. Catrett*, 477 U.S. 317, 323, 106 S.Ct. 2548, 91 L.Ed.2d 265 (1986). The court must view the evidence in the light most favorable to the non-movant and draw all reasonable inferences in the non-movant's favor. *Clicks Billiards Inc. v. Sixshooters Inc.*, 251 F.3d 1252, 1257 (9th Cir.2001). Although "[c]redibility determinations, the weighing of the evidence, and the drawing of legitimate inferences from the facts are jury functions, not those of a judge ... ruling on a motion for summary judgment," the "mere existence of a scintilla of evidence in support of the plaintiff's position [is] insufficient" *Anderson v. Liberty*

Lobby, Inc., 477 U.S. 242, 252, 255, 106 S.Ct. 2505, 91 L.Ed.2d 202 (1986). “Where the record taken as a whole could not lead a rational trier of fact to find for the non-moving party, there is no genuine issue for trial.” *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 587, 106 S.Ct. 1348, 89 L.Ed.2d 538 (1986) (citation and quotation marks omitted).

Where parties file cross-motions for summary judgment, the court “evaluate[s] each motion separately, giving the nonmoving party in each instance the benefit of all reasonable inferences.” *A.C.L.U. of Nev. v. City of Las Vegas*, 466 F.3d 784, 790–91 (9th Cir.2006) (quotation marks and citation omitted); see also *Pintos v. Pac. Creditors Ass'n*, 605 F.3d 665, 674 (9th Cir.2010) (“Cross-motions for summary judgment are evaluated separately under [the] same standard.”). In evaluating the motions, “the court must consider each party’s evidence, regardless under which motion the evidence is offered.” *Las Vegas Sands, LLC v. Nehme*, 632 F.3d 526, 532 (9th Cir.2011). “Where the non-moving party bears the burden of proof at trial, the moving party need only prove that there is an absence of evidence to support the non-moving party’s case.” *In re Oracle Corp. Sec. Litig.*, 627 F.3d 376, 387 (9th Cir.2010). Thereafter, the non-moving party bears the burden of designating “specific facts demonstrating the existence of genuine issues for trial.” *Id.* “This burden is not a light one.” *Id.* The Supreme Court has directed that in such a situation, the non-moving party must do more than raise a “metaphysical doubt” as to the material facts at issue. *Matsushita*, 475 U.S. at 586, 106 S.Ct. 1348.

DISCUSSION

A. Judicial Estoppel

[9] [10] [11] [12] The doctrine of judicial estoppel protects “the integrity of the judicial process” by “prohibiting parties from deliberately changing positions according to the exigencies of the moment.” *New Hampshire v. Maine*, 532 U.S. 742, 749–50, 121 S.Ct. 1808, 149 L.Ed.2d 968 (2001) (quotation marks and citations omitted). Under this doctrine, a party may not successfully maintain a position in one judicial proceeding and then, “simply because his interests have changed, assume a contrary position, especially if it be to the prejudice of the party who has acquiesced in the position formerly taken by him.” *Id.* at 749, 121 S.Ct. 1808 (quotation marks and citations omitted). For judicial

estoppel to apply, “a party’s later position must be clearly inconsistent *884 with its earlier position.” *Id.* at 750, 121 S.Ct. 1808 (quotation marks omitted). A court also may consider whether the party “succeeded in persuading a court to accept that party’s earlier position, so that judicial acceptance of an inconsistent position in a later proceeding would create the perception that either the first or the second court was misled” and “whether the party seeking to assert an inconsistent position would derive an unfair advantage or impose an unfair detriment on the opposing party if not estopped.” *Id.* (quotation marks and citations omitted).

RiverPartners argues that the doctrine of judicial estoppel precludes Oregon from challenging the 2014 BiOp because Oregon stated an opposite position on the validity of the jeopardy framework and the analyses underpinning the 2008 and 2014 BiOps in *United States v. Oregon*, Case No. 3:68–cv–0513–KI. That case involves the harvest allocation for salmon and steelhead among Washington, Idaho, Oregon, and several tribes with treaty rights on the Columbia River. RiverPartners asserts that Oregon took the position that the Harvest Management Agreement at issue in that case was fundamentally fair and consistent with applicable law. RiverPartners argues that Oregon’s position there is contrary to Oregon’s position in this case because the Harvest Management Agreement was “supported by” the 2008 Supplemental Comprehensive Analysis (“SCA”), which also supports the 2008 BiOp. These arguments are unavailing.

On August 11, 2008, Oregon, along with all of the other parties in *United States v. Oregon*, submitted to Judge Garr M. King a Joint Motion and Stipulated Order Approving the 2008–2017 *United States v. Oregon* Management Agreement. Case No. 68–513, Dkt. No. 2546. In this stipulated motion, the parties noted that NOAA Fisheries had issued a biological opinion addressing the Harvest Agreement that had determined that the agreement would not cause jeopardy to any listed species. Judge King then issued a stipulated order, which stated that the court found the Harvest Management Agreement to be fundamentally fair and consistent with applicable law.

[13] *New Hampshire* dictates that the two opinions taken by the party “must be clearly inconsistent” for judicial estoppel to apply. *New Hampshire*, 532 U.S. at 750, 121 S.Ct. 1808 (quotation marks omitted). Oregon’s

position here is not clearly inconsistent with Oregon's position in *United States v. Oregon*. The biological opinion at issue in *United States v. Oregon* concluded that the harvest of salmon and steelhead contained in the Harvest Agreement would not jeopardize any listed species. Here, the 2014 BiOp concludes that the FCRPS operations will jeopardize listed species, and then concludes that implementation of the RPA avoids that jeopardy. Oregon's support for the Harvest Agreement, which was determined not to jeopardize any listed species, is not inconsistent with Oregon's opposition to the 2014 BiOp's conclusion that despite the jeopardy caused by the FCRPS, the RPA avoids that jeopardy. The fact that the 2008 SCA was a document that "supported" both biological opinions does not render Oregon's position inconsistent.

Additionally, even if both biological opinions had the same legal and scientific framework, as argued by RiverPartners, that does not necessarily mean that Oregon approved of that legal and scientific framework. Oregon could have disagreed with the legal and scientific framework of the biological opinion but agreed with the biological opinion's ultimate conclusion that the Harvest Agreement did not jeopardize any listed species, and so chose not to dispute the legal and scientific framework of the biological opinion. The Stipulated *885 Order entered by Judge King and submitted by the parties states that the Harvest Agreement is consistent with applicable law, and as long as Oregon agreed with the biological opinion's conclusion that the Harvest Agreement did not jeopardize any listed species, it would not be inconsistent for Oregon to take the position that the Harvest Agreement complied with applicable law while at the same time disagreeing with the legal and scientific framework of the biological opinion. Accordingly, Oregon's positions are not necessarily inconsistent, and thus judicial estoppel does not apply.⁴³

B. "Trending Toward Recovery" Standard

1. Legal Framework

Section 7 of the ESA requires federal agencies 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" 16 U.S.C. § 1536(a)(2). To "jeopardize the continued existence of" a species means "to engage in an action that 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." 50 C.F.R. § 402.02. The Ninth Circuit has clarified that a species may be jeopardized even "if there is no appreciable reduction of survival odds" because "a species can often cling to survival even when recovery is far out of reach." *NMFS III*, 524 F.3d at 931. Thus, "NMFS must analyze effects on recovery as well as effects on survival." *Id.* at 932. "Recovery means improvement in the status of listed species to the point at which listing is no longer appropriate under the criteria set out in section 4(a)(1) of the Act." 50 C.F.R. § 402.02.

2. Parties' Arguments

Plaintiffs assert that the 2008 BiOp introduced, and the 2014 BiOp retained, a new and improper standard for evaluating the recovery prong of the jeopardy analysis: "trending toward recovery." Plaintiffs argue that this standard is flawed because it improperly focuses on whether there is any incremental increase in productivity instead of properly analyzing recovery, it fails to consider what constitutes recovery, which is required in order to ensure that the RPA actions do not appreciably reduce the likelihood of achieving that recovery, and it is an unexplained departure from NOAA Fisheries' prior practice. Plaintiffs also note that NOAA Fisheries and U.S. Fish & Wildlife's *Endangered Species Consultation Handbook* ("*Consultation Handbook*") defines "survival" for purposes of the jeopardy analysis as "the condition in which a species continues to exist into the future while retaining the potential for recovery." *Consultation Handbook* at xviii-xix, NOAA 2004 AR, B.251. Thus, Plaintiffs argue, because the "trending toward recovery" standard looks only to whether the species have "the potential for recovery," it functionally collapses "recovery" into "survival," despite the Ninth Circuit's clear admonition that recovery must have its own "full analysis."

Defendants respond that NOAA Fisheries' interpretation of the jeopardy standard is entitled to broad deference, the "trending toward recovery" standard properly considers recovery, and because a population must be increasing in order to meet the standard, it necessarily means that recovery is not being jeopardized. Defendants further argue that Plaintiffs are improperly *886 attempting to

incorporate a Section 4(f) recovery analysis into a Section 7 consultation.⁴⁴

3. Analysis

[14] In the 2008 BiOp, NOAA Fisheries evaluated whether: (1) “[s]hort-term extinction risk is sufficiently low to meet the *survival prong* of the jeopardy standard”; and (2) “[t]he populations within a species are expected to be on a trend toward recovery, the *potential for recovery prong* of the jeopardy standard.” 2008 BiOp at 7–5 (emphasis in original). NOAA Fisheries described the analytical steps taken in its application of the Section 7(a) (2) standards, with step four asking “whether the species can be expected to survive with an adequate potential for recovery (e.g. trending toward recovery) under the effects of the action, the effects of the environmental baseline, and any cumulative effects.” *Id.* at 1–10. In making this evaluation, “[g]enerally, a population would be deemed to be ‘trending toward recovery’ if average population growth rates (or productivities) are expected to be greater than 1.0.”⁴⁵ *Id.* at xxix. This same standard was incorporated into the 2014 BiOp. *See* 2014 BiOp at 48.

The Court is not persuaded by Plaintiffs' argument that analyzing whether a species is expected to survive with an adequate “potential for recovery” necessarily collapses the survival analysis into the recovery analysis. As the Ninth Circuit has noted, although both survival and recovery must be thoroughly considered, they are “intertwined needs.” *NMFS III*, 524 F.3d at 932. Further, the Ninth Circuit cited with approval the 1995 and 2000 BiOps' recovery standard, which analyzed the species' prospects of recovery by reference to and measurement of “the relevant species' chances to survive proposed operations ‘with an adequate potential for recovery.’ ” *Id.* at 933. The Court finds the relevant question is *how*, in the 2008 and 2014 BiOps, NOAA Fisheries measured the species' prospects for recovery, e.g., what constitutes “trending toward recovery.”

The “trending toward recovery” analysis includes three quantitative factors, or metrics. The first metric is the Biological Review Team (“BRT”) ⁴⁶ abundance trend. This is a productivity metric that “essentially fits a trend line through the spawner data to determine if the population is growing or declining and by how much.”⁴⁷ 2014 BiOp at 57. The basis of this trend metric is essentially an annual count of spawners, and the trend is

considered over a period of time. For example, the BRT trend for the 2008 BiOp base period (1981–2006) was 0.92, indicating that abundance is declining at 8 percent per year, whereas ⁸⁸⁷ the BRT trend for the 2014 BiOp extended base period ⁴⁸ (1981–2011) was 0.98, indicating that abundance is declining at 2 percent per year. 2014 BiOp at 58. The goal set by NOAA Fisheries for this metric is anything greater than 1.0, which would indicate that abundance is increasing, not declining.

The second metric is “lambda,” which measures the median annual change in population in four-year running sums. *Id.* at 59. A population growth rate of greater than 1.0 means the population is increasing. Although there is a wide range in the abundance of the various fish populations at issue in this case, “NOAA Fisheries defined the goal for this metric as simply being greater than 1.0 because it is not possible to define a specific level greater than 1.0 that would apply to all populations” 2008 BiOp at 7–25.

The final metric is recruits or returns per spawner (“R/S”), which also measures whether a population is maintaining itself. For example, if 100 spawners produce 100 progeny that survive to maturity and spawn, then R/S is 1.0, and population abundance is being maintained. 2014 BiOp at 61. If 101 progeny survive to maturity and spawn, then R/S is 1.01 and the population is increasing. This metric is measured per-generation, not annually like the other two metrics. NOAA Fisheries has described average R/S as “the most realistic assessment of the likelihood that a population will trend toward recovery in the absence of continued hatchery programs... because th[is] metric considers only the survival of natural-origin fish.” 2008 BiOp at 7–23. As with the other two metrics, the goal for this metric is anything greater than 1.0.

Defendants argue that the viable salmonid population (“VSP”) factors, which include measures of abundance, productivity, spatial structure, and diversity, are included in the jeopardy standard. The standard of “trending toward recovery,” however, does not require that any specific goals be met with respect to any of these factors. The 2008 BiOp explained that there are “three quantitative metrics indicative of the potential for recovery prong of the jeopardy analysis” and that “[t]he three metrics considered to evaluate the potential for recovery for the jeopardy analysis have different strengths and weaknesses, particularly with respect to the most recent returns

included in the analysis, the treatment of hatchery-origin fish, and the level of complexity (number of assumptions) and data requirements.” *Id.* at 7–20. The 2008 BiOp then identified the VSP factors but clarified that the quantitative analysis of the three productivity metrics “presents methods for quantitative estimation of abundance and productivity metrics relevant to the jeopardy analysis at the population level,” whereas a later section discusses “qualitative methods relevant to spatial structure and diversity.” *Id.* at 7–22. Similarly, the 2014 BiOp listed the VSP factors, but then clarified that “[t]he 2008 BiOp’s indicator metrics focused on abundance trends and productivity because operation of the FCRPS primarily influences these factors.... and the three productivity estimates, along with other relevant information such as abundance data, informed the recovery prong of the jeopardy standard.” 2014 BiOp at 48. The 2014 BiOp continued, explaining that each of the three “productivity metrics provides a complementary but slightly different view of the same underlying population processes.” *Id.* Thus, the “trending toward recovery” jeopardy standard is met when the three *888 productivity metrics are estimated to be greater than 1.0 and does not include any goals or requirements relating to the additional VSP factors of actual abundance, spatial structure, or diversity.

As Defendants correctly point out, if all three of the productivity metrics are greater than 1.0, then the population is increasing. Defendants rely on *NMFS III* to argue that if the population is increasing, then there is no “new risk of harm” to the species and therefore there is no jeopardy to the species. *See NMFS III, 524 F.3d at 930* (noting that to jeopardize a species implies “some new risk of harm” and that “[a]gency action can only ‘jeopardize’ a species’ existence if that agency action causes some deterioration in the species’ pre-action condition”). Thus, argue Defendants, the “trending toward recovery” standard is proper. An increasing population, however, does not necessarily equate to a “no jeopardy” finding and thus does not demonstrate that the “trending toward recovery” standard is proper.

The “trending toward recovery” standard and its three metrics considered by NOAA Fisheries does not take into account whether populations remaining at significantly low abundance numbers, even though the populations may be growing incrementally, appreciably diminish the likelihood of recovery. NOAA Fisheries may not rely on

a jeopardy standard that is inconsistent with the ESA and its regulations. *Id.* at 931. The relevant regulation requires that NOAA Fisheries consider whether the RPA actions are expected to reduce appreciably the likelihood of recovery of the listed species in the wild. 50 C.F.R. § 402.02. In doing so, “NMFS must conduct a full analysis of [recovery] risks and their impacts on the listed species’ continued existence.” *NMFS III, 524 F.3d at 933.*

The metrics included in the “trending toward recovery” standard are all population abundance metrics that consider population *growth* regardless of actual population numbers. They are not tethered to any minimum population goal and do not consider the minimum viable abundance numbers identified by the ICTRT, or any other recovery abundance indicator. The three metrics indicate a trend in growth from wherever an existing population may be, but provide no rational connection from that existing population or the incrementally larger population anticipated after the RPA actions to ensuring no decreased risk of reaching recovery. A population that is dangerously low in abundance could be increasing, but by only a very few fish per year for the BiOp period, resulting in an abundance level at the end of the BiOp period that remains dangerously low despite the increase in population. Such a small increase in population could still result in all three of the recovery metrics being greater than 1.0, and thus under the “trending toward recovery” standard the population would be deemed not to be in jeopardy under the recovery prong, regardless of how far below minimum viable abundance the population may be at the end of the BiOp period.

This is demonstrated by considering abundance levels discussed in the 2014 BiOp. The 2014 BiOp 10-year geometric mean (“geomean”) ⁴⁹ abundance numbers for all but one of the populations of the Snake River spring/summer Chinook salmon ESU were well below their ICTRT *889 threshold abundance goal, and some were extremely low. 2014 BiOp at 80 (Table 2.1–5). Plaintiffs argue that “one more fish per year” will meet the 2014 BiOp’s recovery metrics, but will keep these fish at unsafe low abundance. Defendants respond that the phrase “one more fish per year” is a “simplistic soundbite” and will not suffice to increase the recovery metrics, which involve averages over many years, above 1.0. Based on how the three productivity metrics were calculated, however, an increase of very few fish per year would allow many populations to meet these metrics, and, for many

populations, meet them despite extremely low abundance. This conclusion can be seen using three representative populations of the Snake River spring/summer Chinook salmon ESU: Lemhi River; Sulphur Creek; and Lower Salmon River,⁵⁰ calculating the increase in fish needed for the productivity metrics to equal approximately 1.01.

The abundance status of the three representative populations in the 2014 BiOp was as follows: (1) Lemhi River, ICTRT abundance goal of 2000 fish, most recent 10-year geomean abundance of 81 fish; (2) Sulphur Creek, ICTRT abundance goal of 500, most recent 10-year geomean abundance of 58 fish; and (3) Lower Salmon River, ICTRT abundance goal of 2000, most recent 10-year geomean abundance of 125 fish. *Id.* Thus, all three populations have very low abundance.

The R/S metric for these populations could be met by a very small increase of fish per year for the remainder of the BiOp period. The prospective R/S is calculated by taking the extended base period mean R/S and multiplying it by the “survival multiplier.”⁵¹ See 2008 BiOp at 8.3–56 (Table 8.3.6.1–1) (summarizing how each recovery prong metric is calculated). That number is then multiplied by the 10-year geomean abundance to calculate the total number of fish required at the end of the BiOp period for the R/S metric to be greater than 1.0.

For Lemhi River, the mean extended R/S was 0.95,⁵² and the survival multiplier required to raise 0.95 to 1.01 is 1.06.⁵³ Multiplying this survival multiplier by the recent abundance of 81 fish equals 85.86. Thus, an abundance of 86 fish at the end of the remaining five-year period of the BiOp, which would occur if one more fish per year for five years returned, would meet the R/S metric. For Sulphur Creek and Lower Salmon River, the extended mean R/S is already estimated to be above 1.0, so no increase in the 10-year geomean abundance would be required to keep this metric above 1.0, and an increase of one more fish per year would more than suffice.

The lambda metric for these populations could be met by an increase of one fish per year for the remainder of the BiOp period. The prospective lambda is calculated by taking the extended base period lambda, multiplying it by the survival multiplier,⁵⁴ and raising that number to the power of 0.22.⁵⁵ See 2008 BiOp at 8.3–56 (Table *890 8.3.6.1–1) (summarizing how each recovery prong metric

is calculated). For Lemhi River the mean extended lambda is 1.0 and for Sulphur Creek and Lower Salmon River the mean extended lambda is greater than 1.0. Thus, an increase of one fish per year would more than suffice to keep this metric above 1.0 for these three populations.

The BRT Trend metric for these populations could also be met by an increase of only one fish per year. The prospective BRT Trend is calculated the same way as lambda, but using the extended base period BRT Trend instead of the extended base period lambda. For Lemhi River, the mean extended BRT Trend is 0.99,⁵⁶ multiplied by 1.06 equals 1.0494, to the power of .22 equals 1.01, multiplied by 81 equals 82 fish. Thus, an improvement of only one fish over the remaining BiOp period would result in this metric being above one. An increase of one fish per year for five years, which results in 86 fish, would more than suffice to raise this metric above one. For Sulphur Creek and Lower Salmon River, this metric is already at 1.0 or above, so an increase of one fish per year more than suffices to keep the BRT Trend above one.

As shown above, all three productivity metrics can be met with very little actual improvement in fish abundance. At the end of the five-year period, the three representative populations used by the Court could meet the three recovery metrics with an increase of only one fish per year, resulting in ending abundance levels of 86⁵⁷ for Lemhi River, 63⁵⁸ for Sulphur Creek, and 30⁵⁹ for Lower Salmon River. These abundances represent a fraction of their ICTRT minimum viable abundance threshold: 4.3 percent for Lemhi, 12.6 percent for Sulphur Creek, and 6.5 percent for Lower Salmon River.

The Ninth Circuit has emphasized the “highly precarious status” of the species at issue in this litigation. *NMFS III*, 524 F.3d at 933 (noting that due to the “highly precarious status” of the listed populations, “considering recovery impacts could change the jeopardy analysis”). The court cautioned that the ESA prohibits an agency action from allowing a species to have a “slow slide into oblivion” and that agency action may not “tip a species from a state of precarious survival into a state of likely extinction.” *Id.* at 930. Here, the listed fish remain in a highly precarious state. See, e.g., 2014 BiOp at 70–71 and Table 2.1–1 (compiling the most recent data, which shows that 65 percent of the populations in the listed ESUs are at “high

risk” of extinction and 28.5 percent are at a “maintained” risk of extinction (the second-highest risk category), while only 4 percent are considered “viable” and 2.5 percent are considered “highly viable”).

In upholding the jeopardy standard applied in NOAA Fisheries' 1995 BiOp, the Ninth Circuit noted:

In addition, NMFS correctly viewed incremental improvements as insufficient to avoid jeopardy in light of the already vulnerable status of the listed species. We agree with NMFS that the regulatory definition of jeopardy, *i.e.*, an appreciable reduction in the likelihood of both ***891** survival and recovery, **50 C.F.R. § 402.02**, does not mean that an action agency can “stay the course” just because doing so has been shown slightly less harmful to the listed species than previous operations. Here, the species already stands on the brink of extinction, and the incremental improvements pale in comparison to the requirements for survival and recovery.

Aluminum Co. of Am. v. Adm'r, Bonneville Power Admin., 175 F.3d 1156, 1162 n. 6 (9th Cir.1999). Similarly, in rejecting the argument that some improvement in survival necessarily equates to a no jeopardy conclusion when considering NOAA Fisheries' 1993 BiOp, Judge Malcom F. Marsh noted:

For example, if 100 listed species are expected to survive downstream juvenile migration in 1993, and 99 survived in 1990, [Defendant-Intervenor]'s argument would mandate a “no jeopardy” finding—even though a 100 survival level may still be considered so low as to constitute a continued threat to the species' existence.

IDFG, 850 F.Supp. at 899.

NOAA Fisheries has also recognized the dangers of sustained low abundance in listed species, explaining in its *Consultation Handbook* that “the longer a species remains at low population levels, the greater the probability of extinction from chance events, inbreeding depression, or additional environmental disturbance.” *Consultation Handbook* at 4–21, NOAA 2004 AR, B.251; *see also* 2008 BiOp at 7–16 and 7–35 (discussing risks of low abundance). NOAA Fisheries has further stated that “[i]mpeding a species' progress toward recovery exposes it to additional risk and so reduces its likelihood of survival. Therefore, in order for an action to not ‘appreciably reduce’ the likelihood of survival, it must not prevent or appreciably delay recovery.” August 26, 1999 NOAA Fisheries Memorandum on Habitat Approach from Rick Applegate and Donna Darm at 3, NOAA 2004 AR, B.154.

The “trending toward recovery” standard does not consider the individual abundance levels of the various populations or what growth trends would be necessary in each population to ensure the likelihood of recovery of the listed species is not appreciably diminished. After receiving comments on the 2007 Draft BiOp that more appropriate goals would be 1.08 for lambda and 1.42 for R/S, NOAA Fisheries responded that it chose the goal of anything over 1.0 for all populations because it was not possible to define a larger number that would work for all populations because the fish populations “are all of different sizes, with different carrying capacities, and at different levels of current abundance relative to carrying capacity.” 2008 BiOp at 7–26. This conclusion by NOAA Fisheries begs the question of how it was rationally possible for NOAA Fisheries to define the goal as anything greater than 1.0 as working for all populations. For example, under this definition, every population meets its lambda goal with a lambda calculation of 1.01, regardless of the individual characteristics of each population. If NOAA Fisheries could not rationally determine that 1.08 was an appropriate goal for all populations, then how did it rationally determine that anything above 1.0 was an appropriate goal for all populations? Moreover, there are a finite number of populations at issue and there are ICTRT minimum viable abundance numbers available for nearly all populations. NOAA Fisheries does not offer a reasonable explanation for why it did not use the best available science of existing and minimum viable abundance levels of the listed fish in considering impacts to the likelihood of achieving recovery, or why it did not set productivity goals

specific to each population, taking into consideration the populations that remain at dangerously ***892** low abundance. See *IDFG*, 850 F.Supp. at 899 (“I also find that NMFS should have fully considered the enhanced risks associated with small populations prior to discounting low range assumptions.”).

The “trending toward recovery” standard fails to consider the concerns expressed by courts and NOAA Fisheries relating to the dangers of sustained low abundance levels. The standard also does not include any consideration of the actual abundance numbers of the fish, but merely ascertains whether the existing population is growing at any detectable rate. Without a “full analysis” of the risks to recovery from whatever amount the population is growing, including proper consideration of the “highly precarious status” of the species and the dangers of sustained low abundance, NOAA Fisheries’ conclusion that any population that is “trending toward recovery” necessarily is not appreciably reducing the species’ likelihood of recovery is arbitrary and capricious. The additional cases relied on by Defendants that hold that an action need not boost the chances of recovery⁶⁰ are inapposite. The problem with the “trending toward recovery” standard is not that it fails to ensure that the chances of recovery are increased, but that it does not include any metric or goal that considers whether the incremental improvements to the currently low abundance levels are sufficient to avoid creating a “new risk of harm” by decreasing the chances of recovery of the listed species.

For the survival prong analysis, NOAA Fisheries used “quasi-extinction risk” modeling to determine the level of improvement necessary to achieve a five percent or less risk of extinction during the next 24 years. Defendants argue that because NOAA Fisheries considered the 24-year extinction risk of the populations in the survival prong analysis, the combination of the recovery metrics and the survival analysis are sufficient. This argument, however, ignores the Ninth Circuit’s admonition that recovery requires a thorough analysis because “a species can often cling to survival even when recovery is far out of reach.” *NMFS III*, 524 F.3d at 931. Thus, even if a species is expected to have a less than five percent risk of extinction in the next 24 years, that does not necessarily mean its chances of recovery are not being appreciably diminished.

Additionally, the three metrics used by NOAA Fisheries to determine whether the species are “trending toward recovery” did not incorporate any analysis of a recovery end point. In the 1995 and 2000 BiOps, NOAA Fisheries recognized the need for a recovery endpoint to analyze recovery impacts, and assessed the probabilities of reaching interim recovery abundance levels in 48 and 100 years.⁶¹ In the 2008 and 2014 BiOps, NOAA Fisheries used the “trending toward recovery” standard, which does not analyze recovery impacts with respect to reaching any recovery abundance level at any point in time.

***893** Plaintiffs argue that it is arbitrary and capricious for NOAA Fisheries to conclude that the RPA actions do not appreciably reduce the listed species’ likelihood of recovery when NOAA Fisheries did not even consider what abundance levels constitute recovery and what might be a reasonable time frame for achieving recovery numbers. Defendants respond that such considerations improperly incorporate the Section 4 recovery analysis into a Section 7 consultation and that the ESA and its regulations do not require NOAA Fisheries to determine what constitutes recovery and when it will be complete.

Defendants’ argument that requiring some idea of what constitutes recovery in order then to evaluate whether the agency action at issue diminishes the chances of recovery is not proper in a Section 7 consultation has already been rejected by the Ninth Circuit. In affirming Judge Redden’s decision in this case rejecting the 2004 BiOp, the Ninth Circuit held that:

The district court correctly held that NMFS inappropriately evaluated recovery impacts without knowing the in-river survival levels necessary to support recovery. It is only logical to require that the agency know roughly at what point survival and recovery will be placed at risk before it may conclude that no harm will result from ‘significant’ impairments to habitat that is already severely degraded. Requiring some attention to recovery issues does not improperly import ESA’s separate recovery planning provisions into the section 7 consultation process. Rather, it simply provides some

reasonable assurance that the agency action in question will not appreciably reduce the odds of success for future recovery planning, by tipping a listed species too far into danger.

[NMFS III, 524 F.3d at 936.](#)

The same logic applies to NOAA Fisheries' jeopardy recovery analysis in the 2008 and 2014 BiOps, and was recognized in the 2000 BiOp jeopardy recovery analysis. In the 2000 BiOp, the “recovery metric [was] defined as the likelihood that the 8-year geometric mean abundance of natural spawners in a population will be equal to or greater than an identified recovery abundance level.” 2000 BiOp at 1–14. Some interim abundance levels had been identified, but the ICTRT minimum viable abundance numbers were not yet available. Accordingly, the 2000 BiOp used the “best available estimates of recovery abundance” until the “technical recovery teams” could estimate recovery abundance. *Id.* Because recovery time frames were also not yet determined in the recovery process, for purposes of the Section 7 consultation, the 2000 BiOp assessed whether the species have a moderate to high likelihood of recovery under the proposed action within 48 years and 100 years. *Id.* This analytical framework for the recovery prong was cited with approval by the [Ninth Circuit when it rejected NOAA Fisheries' change to its recovery analysis in the 2004 BiOp.](#) See [NMFS III, 524 F.3d at 932–33.](#)

Additionally, the survival prong of the 2014 BiOp's jeopardy analysis used as a metric the risk of extinction in 24 years. NOAA Fisheries offers no explanation for why, in the recovery prong, NOAA Fisheries cannot consider how the RPA actions' affect the future risk to recovery in some time frame (*e.g.*, 48 or 100 years), but in the survival prong, NOAA Fisheries can consider the RPA actions' effect on the future risk of extinction in 24 years. The regulatory framework governing the survival and recovery jeopardy analyses is the same and does not dictate such a difference.

For the 2008 and 2014 BiOps, NOAA Fisheries had available the ICTRT minimum viable abundance levels. These levels are listed in many of the tables in the *894 BiOps. Although NOAA Fisheries acknowledged the importance of actual abundance and considering recovery abundance goals, this data was not used to

set goals for either the survival or recovery metrics. See 2014 BiOp at 55 (“Unlike the other metrics described in this section, the 2008 BiOp did not set an average abundance goal indicative of either the survival or recovery prong of the jeopardy standard, and the Base Period average abundance was not adjusted prospectively to reflect estimated effects of the RPA. However, average abundance is important to track as an element of species status because it indicates current status relative to recovery abundance goals and because we can determine if a population is getting closer to the recovery goals over time.”). Without identifying “rough” recovery abundance levels and time frames, NOAA Fisheries cannot logically conclude that the RPA actions will not appreciably reduce the likelihood that recovery will be attained. See [NMFS III, 524 F.3d at 936.](#) This logic was noted by NOAA Fisheries' own biologists. See *e.g.*, NOAA 2008 AR, August 4, 2006 Email from Chris Toole, Att. 1, *Jeop. Criteria Metrics Table 040806*, at 1 (“Note that in order to assess a ‘trend towards recovery,’ with meaningful metrics, one must have some idea of what constitutes recovery. The tables assume that Interior TRT recommendations represent the best available scientific information relative to the ESUs most affected in the remand.”).

Defendants are correct that NOAA Fisheries need not identify a full recovery plan in making its jeopardy determination, or provide precise recovery abundance levels and dates. Without tying its recovery metrics to any rough estimated recovery abundance level or time frame, however, NOAA Fisheries cannot rationally conclude that the RPA actions will not appreciably reduce the species' chances of recovery. See [NMFS III, 524 F.3d at 936](#); see also [Alaska v. Lubchenko, 723 F.3d 1043, 1054 \(9th Cir.2013\)](#) (noting that the “goal of the ESA is not just to ensure survival, but to ensure that the species recovers to the point that it can be delisted” and that NOAA Fisheries “therefore had to consider whether the proposed action, continued fishing, could prevent the species from achieving the [recovery] goals for delisting”). If there is no roughly identified end point, how can NOAA Fisheries rationally determine that the RPA actions will not appreciably diminish the likelihood of reaching that unidentified end point?

Finally, Defendants argue that NOAA Fisheries' determination of the recovery standard to apply in its jeopardy analysis is entitled to broad deference. NOAA Fisheries has, however, repeatedly changed its jeopardy

standard over the past several BiOps. The Ninth Circuit declined to give NOAA Fisheries' 2004 jeopardy standard deference in part because it was a change from NOAA Fisheries' 1995 and 2000 standards, without a rational explanation provided. *NMFS III*, 524 F.3d at 933. Similarly, in the 2008 and 2014 BiOps, NOAA Fisheries did not follow its standards set forth in the 1995 and 2000 BiOps because NOAA Fisheries dropped consideration of whether the agency action will appreciably reduce the likelihood of recovery by assessing the actions' impacts on the probabilities of reaching interim recovery abundance levels in 48 and 100 years.

Defendants argue that this change was required because in this case Judge Redden had rejected the 2000 BiOp for relying on future actions that are not reasonably certain to occur. Notably, the BiOp itself does not include any discussion of why this analytical change occurred. See, e.g., *Pac. Coast Fed'n of Fishermen's Assoc. v. U.S. Bureau of Reclamation*, 426 F.3d 1082, 1091 (9th Cir.2005) (noting that “we cannot infer an agency's reasoning from mere silence” and that “an agency's action must *895 be upheld, if at all, on the basis articulated by the agency” (quotation marks omitted)). Regardless, this is not a rational explanation for why NOAA Fisheries abandoned its recovery prong framework that looked to the effects of the RPA actions on the chances of achieving recovery in 48 and 100 years. The 1995 and 2000 BiOps' recovery prong framework has been cited with approval by this Court and the Ninth Circuit. See *NMFS III*, 524 F.3d at 932–33; *NMFS II*, 2005 WL 1278878, at *17. What was rejected by Judge Redden in reviewing the 2000 BiOp was the fact that for eight of the twelve relevant ESUs, NOAA Fisheries relied on future actions that were not reasonably certain to occur to reach its no jeopardy conclusion. *NMFS I*, 254 F.Supp.2d at 1214–15. For those eight ESUs, Judge Redden found the no jeopardy conclusion to be arbitrary and capricious. *Id.* at 1215. The problem was not that the recovery prong looked to whether the relevant actions would affect the chances of reaching recovery in 48 and 100 years, but that the relevant actions themselves were uncertain to occur. Because the agency again has dramatically changed its approach, its latest interpretation of the jeopardy standard is entitled to less deference than a court normally gives. See *NMFS III*, 524 F.3d at 933; see also *Christopher v. SmithKline Beecham Corp.*, 567 U.S. 142, 132 S.Ct. 2156, 2166, 183 L.Ed.2d 153 (2012) (noting that deference is not warranted “when the agency's interpretation conflicts

with a prior interpretation, or when it appears that the interpretation is nothing more than a ‘convenient litigating position,’ or a ‘*post hoc* rationalizatio[n]’ advanced by an agency seeking to defend past agency action against attack” (citations omitted) (alteration in original)). Even applying deference, however, for the reasons discussed above, the Court finds NOAA Fisheries' “trending toward recovery” standard to be arbitrary and capricious.

C. NOAA Fisheries' Jeopardy Analysis

In performing the Section 7(a)(2) consultation, NOAA Fisheries generally engaged in a five-step process, as follows:

1. Define the biological requirements and current status of each affected listed species and the conservation role and current function for affected designated critical habitat.
2. Evaluate the relevance of the environmental baseline and activities with cumulative effects, occurring in the action area, to the current status of affected listed species and designated critical habitat.
3. Determine the likely effects of the prospective action on listed species and designated critical habitat.
4. Determine
 - (a) whether the species can be expected to survive with an adequate potential for recovery (e.g. trending toward recovery) under the effects of the action, the effects of the environmental baseline, and any cumulative effects, and
 - (b) whether affected designated critical habitat is likely to remain functional (or retain the ability to become functional) to serve the intended conservation role for the species in the near and long term under the effects of the action, environmental baseline and any cumulative effects.
5. If necessary, identify reasonable and prudent alternatives (RPAs) to a proposed or continuing action when the action is likely to jeopardize the continued existence of a listed species or destroy or adversely modify its critical habitat.

Id. at 1–10.

The first step “accounts for the principal life history characteristics of each affected listed species,” including “attention to their geographic distribution and population structure as well as their habitat requirements *896 for spawning, rearing[,] and migration to and from the ocean.” 2008 BiOp at 1–11.

The second step “concerns the factors for the decline of the species and the ongoing effects on the species and critical habitat from past and present activities plus the expected future effects of actions that are ‘reasonably certain to occur.’ ” *Id.* This step informs the development of the RPAs by helping to understand the threats to the species in order properly to focus mitigation efforts.

The third step “evaluates the likely effects of the action, both adverse and beneficial. It determines the nature and extent of those effects and their relevance for the biological requirements and status of the listed species and the conservation role of critical habitat likely to be affected.” *Id.* at 1–12. This step looks to the certainty of whether actions will be implemented and the timing for which benefits can be expected to accrue.

Step four looks at the aggregate effects of the actions, environmental baseline, and cumulative effects on the species' survival and recovery. It “identifies the factors limiting improvement in the species' status toward a recovered status and assess[es] whether such limiting factors (considering both biological and listing factor criteria) will be lessened or eliminated.” *Id.* (alteration added). It requires that the species have a “high probability of continued survival” and be “on a trend toward eventual recovery.” This step considers the quantitative factors of lambda, BRT trend, R/S, and the 24-year extinction calculation (collectively, “four jeopardy metrics”), plus looks to relevant qualitative considerations including the VSP factors, recent abundance and productivity, the degree to which hatchery programs are utilized, the degree to which limiting factors are addressed, and whether the actions are improving spatial structure and diversity.

Step five requires identification of RPAs that “will have to both reduce or offset the adverse effects associated with the proposed action to a level that does not likely jeopardize the species, and maintain (or restore) essential habitat features so as to not be likely to result in the adverse modification of designated critical habitat.”⁶² *Id.*

at 1–13. Essentially, under this step, the suite of 73 RPA actions were identified in order to offset the adverse effects of the original agency action, operating the FCRPS, which NOAA Fisheries had concluded was causing jeopardy. The RPA actions were then analyzed under the same five-step framework to determine if the full suite of actions avoided the jeopardy caused by the FCRPS.

Plaintiffs argue that this analysis is significantly flawed and is thus arbitrary and capricious. Plaintiffs argue that in the 2014 BiOp, NOAA Fisheries: (1) failed properly to analyze whether the agencies' actions will appreciably reduce the likelihood of recovery; (2) improperly relied on estuary and tributary habitat restoration measures that are not reasonably certain to occur and have uncertain benefits; (3) failed to use the best available science and irrationally considered climate change; (4) improperly relied on expected survival improvement from kelt⁶³ management; (5) improperly relied on expected survival improvement from avian predation mitigation measures; (6) compounded the 2008 BiOp's arbitrary and illegal treatment of *897 uncertainty, which improperly places the burden of risk on the listed species; (7) improperly considered the environmental baseline and cumulative effects; and (8) included contingency measures that are insufficient to ensure the required benefits to the species are reached.

Defendants respond that the 2008 and 2014 BiOps are the most comprehensive and thoroughly evaluated BiOps in the history of the region. Defendants emphasize that these BiOps are the product of unprecedented collaboration among the region's states, sovereign Indian tribes, federal agencies, and scientific and technical experts. Defendants argue that NOAA Fisheries properly exercised its broad discretion in evaluating jeopardy by using a reasoned five-step framework that thoroughly analyzes whether the listed species can be expected to survive with an adequate potential for recovery under the effects of the RPA actions, environmental baseline, and cumulative effects. Defendants further argue that NOAA Fisheries used appropriate qualitative and quantitative metrics, properly treated uncertainty, properly considered the environmental baseline, cumulative effects, and climate change, and properly relied on a suite of actions, including habitat mitigation, mainstem reforms, avian predation measures, and kelt improvements, to reach its no jeopardy determination. Defendants assert that Plaintiffs are ignoring the substantial level of deference

to which NOAA Fisheries is entitled and that Plaintiffs are merely offering a different interpretation of how to perform the jeopardy analysis, which is improper under the required standard of review in this case. Defendants contend that NOAA Fisheries used the best available science and considered all the relevant factors in its jeopardy analysis.

1. Whether Effect on Likelihood of Recovery was Properly Analyzed⁶⁴

As discussed above, Plaintiffs argue that actual abundance was not properly considered in recovery and that the focus was on productivity trends untethered to actual abundance. Plaintiffs also argue that NOAA Fisheries arbitrarily addressed the fact that R/S generally has been declining since the 2008 BiOp estimates, irrationally disregarding this decline as falling within the broad “confidence intervals” of the 2008 BiOp and concluding that this decrease in productivity was caused by “density dependence.”⁶⁵ Oregon further argues that the estimates of mainstem survival were overly optimistic and used skewed testing at the dams, the jeopardy analysis does not properly consider latent mortality, which is mortality occurring outside the mainstem but caused by the stressors and other effects of the FCRPS, and that NOAA Fisheries should have considered as a metric smolts-to-adult returns (“SAR”), which Oregon contends is a more appropriate metric. Oregon's separate arguments will be addressed first, and the others in turn.

a. Oregon's arguments regarding SAR, latent mortality, and dam testing

NOAA Fisheries considered Oregon's arguments regarding use of SAR as an independent metric and rejected them. *See* 2014 BiOp at 123–25. NOAA Fisheries noted *898 that SAR “essentially depicts a significant component of the R/S survival metric and can illuminate the degree to which changes in R/S correspond to changes in migration corridor and estuary/ocean survival versus changes in tributary spawning and rearing survival.” *Id.* at 124. NOAA Fisheries ultimately concluded that “additional information is needed to relate these SARs to smolt production and R/S goals. However, they are useful for showing the pattern of combined survival through juvenile migration, the estuary, and ocean over a multi-decadal time period.” *Id.* at 125. Oregon offers

testimony from their experts explaining why Oregon believes SAR would be a preferred metric, but Oregon points to no scientific consensus that NOAA Fisheries ignored in deciding not to use SAR as an independent metric. The Court is mindful that “ [w]hen examining this kind of scientific determination ... a reviewing court must generally be at its most deferential.” *Jewell*, 747 F.3d at 592–3 (alterations in original) (quoting *Baltimore Gas*, 462 U.S. at 103, 103 S.Ct. 2246). NOAA Fisheries' determination to consider SAR as a tool but not an independent metric is entitled to deference and is not arbitrary and capricious.

Similarly, Oregon's arguments regarding latent mortality and the testing conducted at the dams are attacks on NOAA Fisheries' methodology and determination of the best available science, which are entitled to deference. The testing at the dams was conducted pursuant to strict protocols and methodologies that were reviewed by independent scientists and the concerned sovereigns. *See* ACE_256080–85. Regarding latent mortality, the life-cycle analysis conducted by NOAA Fisheries in its jeopardy analysis encompasses all forms of mortality. Thus, the mortality associated with effects of the FCRPS but resulting in mortality in the estuary or ocean is not omitted from NOAA Fisheries' analysis. Although NOAA Fisheries concedes that latent mortality exists but found that it was too uncertain to quantify, that fact does not render NOAA Fisheries' analysis arbitrary and capricious.

b. Arguments regarding abundance and recovery end-points

As discussed above, the “trending toward recovery” standard does not rationally address recovery because it is untethered to actual population levels and is not tied to any rough understanding of what constitutes recovery so that NOAA Fisheries can reasonably determine that the RPA actions do not appreciably diminish the chances of reaching recovery. The actual analysis performed by NOAA Fisheries suffers from these same deficiencies and is similarly arbitrary and capricious.

c. Arguments regarding declining R/S

Regarding R/S, NOAA Fisheries emphasized that this factor is the “most realistic assessment” of whether the agencies' actions are likely appreciably to reduce the likelihood of achieving recovery. 2008 BiOp at 7–23. In the 2008 BiOp, in reaching its no jeopardy conclusion, NOAA Fisheries relied, in part, on the estimates that R/S would increase significantly during the time frame of the BiOp. Compare 2008 BiOp at 8.3–47 (Table 8.3.2–1) (listing base period recovery metrics, including R/S) with 2008 BiOp at 8.3–56 (Table 8.3.6.1–1) (listing estimated metrics after improvements from RPA, with R/S higher in all of the populations, with an average R/S increase of 57.2 percent and a median increase of 42 percent). Yet in the 2014 BiOp, NOAA Fisheries found that the extended base period estimates of mean base period R/S were lower for most populations (18 of 27 Chinook and 12 of 19 steelhead). 2014 BiOp at 89. NOAA Fisheries discounted this drop, however, because the new estimates “were within the 2008 BiOp's 95% confidence intervals, indicating that the results are within the range of *899 statistical uncertainty described in the 2008 BiOp.” *Id.* Thus, despite the fact that the 2014 analysis was conducted more than halfway through the 2008 BiOp's ten-year period and most of the R/S estimates were declining instead of increasing, NOAA Fisheries determined that fact did not require further analysis because the levels fell within the 2008 BiOp's confidence intervals. Defendants argue that this conclusion by NOAA Fisheries' is entitled to substantial deference.

[15] Although agency determinations are entitled to deference, an agency must articulate a satisfactory explanation for its conclusions and even when an agency's decision relies on scientific expertise, it can be rebutted if it is not reasoned. See *Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43, 103 S.Ct. 2856, 77 L.Ed.2d 443 (1983) (“Nevertheless, the agency must examine the relevant data and articulate a satisfactory explanation for its action including a ‘rational connection between the facts found and the choice made.’” (quoting *Burlington Truck Lines v. United States*, 371 U.S. 156, 168, 83 S.Ct. 239, 9 L.Ed.2d 207 (1962))); *Brower v. Evans*, 257 F.3d 1058, 1067 (9th Cir.2001) (“The presumption of agency expertise can be rebutted when its decisions, while relying on scientific expertise, are not reasoned.”). The problem with NOAA Fisheries' discounting the decline in R/S because it falls within the 2008 BiOp's confidence intervals is that those

confidence intervals were so broad that falling within them is essentially meaningless.

The R/S confidence intervals in the 2008 BiOp were very broad. See 2008 BiOp at 8.3–47 (Table 8.3.2–1). For example, for the Yankee Fork population the estimated base period R/S at the lower confidence interval was 0.28, meaning that a population that is declining by nearly 75 percent, while the estimated R/S at the upper confidence interval was 1.29, meaning a population that is increasing by nearly 30 percent. Thus, this population could, in one generation, be *declining by nearly three-fourths or increasing by nearly one-third*, and both would fall within the 2008 BiOp's wide confidence intervals. One, however, would appreciably diminish the populations' likelihood of survival and recovery, while the other might not. Similarly, the Lemhi River population had an estimated base period R/S at the lower confidence interval of 0.63 and an upper confidence interval of 1.84. Thus, the population could be decreasing by 37 percent or increasing by 84 percent in one generation and both scenarios would fall within the wide confidence intervals.

NOAA Fisheries argues that wide confidence intervals are needed because of the nature of the life-cycle metric of the listed species. That may well be. But even if wide confidence intervals cannot be avoided, they cannot be used as a shield in the 2014 BiOp against the need for further analysis and possible changes in the RPA actions when the assumptions on which the 2008 BiOp's no jeopardy conclusion was based are not coming to fruition. To reach its no jeopardy conclusion in the 2008 BiOp, NOAA Fisheries relied on the assumption that R/S would significantly increase within the 10-year time frame of the BiOp. Notably, NOAA Fisheries relied on the survival changes in the productivity metrics occurring “instantaneously” and “immediately” affecting average life-cycle survival. This aspect of the productivity analysis was explained in the 2008 BiOp:

It is important to understand that the proportional change approach applied in this analysis (and the others described above) has a single time step. This means that the analysis assumes that all survival changes occur instantaneously and that average life-cycle survival is immediately affected. For the extinction *900

risk analysis, two alternatives for considering implementation of Prospective Actions were considered, as described below in Section 7.1.1.1. However, for productivity estimates, the time period associated with the estimates begins with full implementation of the expected survival changes. The best way to think of the productivity estimates is that they represent the initial productivity following achievement of the expected survival rate changes resulting from the Prospective Actions.

2008 BiOp at 7–12.⁶⁶

The R/S gains relied on by NOAA Fisheries averaged 57.2 percent, with expected increases ranging from 38.9 percent to 118.8 percent. Compare 2008 BiOp at 8.3–47 (Table 8.3.2–1) (listing base period recovery metrics, including R/S) with 2008 BiOp at 8.3–56 (Table 8.3.6–1) (listing estimated metrics after improvements from RPA). The fact that more than halfway through the 2008 BiOp's time frame these significant gains in R/S have not been realized and that, to the contrary, R/S has mostly declined requires more analysis than the mere fact that the decline fell within the broad confidence intervals established in the 2008 BiOp. To hold otherwise contradicts the ESA's requirement that NOAA Fisheries must give the “benefit of the doubt” to the endangered species. *Sierra Club v. Marsh*, 816 F.2d 1376, 1386 (9th Cir.1987), abrogation on other grounds recognized by *Cottonwood Env'tl. Law Ctr. v. U.S. Forest Serv.*, 789 F.3d 1075, 1088 (9th Cir.2015).⁶⁷ NOAA Fisheries must provide a rational explanation for why it is brushing aside the fact that R/S, the metric NOAA Fisheries describes as the “most realistic” assessment of whether the likelihood of reaching recovery is affected, is not only failing to increase as expected, but is declining.

NOAA Fisheries does offer one further explanation—density dependence. This explanation, however, ignores the fact that the 2008 BiOp expressly excluded any consideration of density dependent interactions as occurring within the BiOp's 10-year time period when calculating the survival benefits and associated improvements in prospective productivity metrics, noting

only that the benefits would be reduced over time. After explaining, as quoted above, that the productivity metrics assume an instantaneous survival benefit that immediately affects the average life-cycle survival, the 2008 BiOp stated:

As described in Section 7.1.1.2, there is a relationship between abundance and productivity, such that abundance will increase following a change in survival and productivity. However, as abundance increases, density-dependent interactions will also increase, which will reduce average productivity over time. Therefore, *the estimates of average prospective productivity calculated in this analysis are not expected to be maintained indefinitely and over time will be reduced to a lower rate.*

2008 BiOp at 7–12 (emphasis added); see also 2008 BiOp at 7–30 and 7–31 (noting that expected survival changes of the actions are “not affected by density”). In the 2014 BiOp, NOAA Fisheries specifically noted that alternative methods of analyses are available that incorporate density dependence in estimating future trends following survival rate changes, but that those methods have been developed for only a limited number of populations and were rejected for use in the 2014 BiOp. 2014 BiOp at 53.

NOAA Fisheries thus relies on the fact that density dependence is occurring during the time period of the BiOp to disregard the decline in R/S, while at the same time refusing to consider the negative effects of density dependence when calculating the survival estimates and prospective productivity increases relied on as accruing within the time frame of the BiOp. These positions are inconsistent—if the best available science shows that density dependence is occurring within the 10-year time frame of the BiOp, then density dependence should be considered in analyzing the estimated survival improvements and prospective productivity increases, but if the best available science shows that density dependence is not occurring during the BiOp time frame, then it cannot be relied on to explain the decrease in R/S. NOAA Fisheries cannot have it both ways. Treating density dependence as not occurring for purposes of calculating its detrimental effects on survival benefits and productivity

increases but as occurring for purposes of explaining why the decrease in R/S during the first half of the BiOp period is not problematic is inconsistent, arbitrary, and capricious.⁶⁸ At a minimum, NOAA Fisheries should have explained why these positions are not inconsistent or, if they are inconsistent, why it is not arbitrary and capricious to treat density dependence differently in the context where it would have negative effects than in the context where it is relied on to explain-away the fact that improvements relied-upon in the no jeopardy conclusion are not being realized.

2. Estuary and Tributary Habitat Actions

Much of the anticipated survival improvements expected from the RPA actions come from improvements to the estuary and tributary habitats. The 2008 BiOp was remanded because it was “based on unidentified habitat mitigation measures that are not reasonably certain to occur.” *NMFS IV*, 839 F.Supp.2d at 1125. As explained by Judge Redden in remanding the 2008 BiOp in this case:

Mitigation measures may be relied upon only where they involve “specific and binding plans” and “a clear, definite commitment of resources to implement those measures.” [*NMFS III*, 524 F.3d at 935–36] (finding agency’s “sincere general commitment to future improvements” inadequate to support no jeopardy conclusion). Mitigation measures supporting a biological opinion’s no *902 jeopardy conclusion must be “reasonably specific, certain to occur, and capable of implementation; they must be subject to deadlines or otherwise-enforceable obligations; and most important, they must address the threats to the species in a way that satisfies the jeopardy and adverse modification standards.” *Ctr. for Biological Diversity v. Rumsfeld*, 198 F.Supp.2d 1139, 1152 (D.Ariz.2002) (citing *Sierra Club v. Marsh*, 816 F.2d 1376 (9th Cir.1987)).

Id.

Plaintiffs argue that the 2014 BiOp’s reliance on estuary and tributary actions suffers from the same deficiencies as in the 2008 BiOp. Plaintiffs argue that predictions of the benefits anticipated from habitat mitigation measures are uncertain and lack scientific support, that the implementation of habitat mitigation is dramatically behind schedule and it is irrational to presume it will be completed in a timely manner and provide all of the

expected benefits NOAA Fisheries required in reaching its no jeopardy determination, and that the 2014 BiOp again relies on uncertain and unidentified future actions.

Defendants acknowledge that implementation of habitat mitigation actions are far behind schedule, but argue that the agencies now have an understanding of what is required to implement these actions and that the remaining actions will be implemented at much faster pace. Defendants also argue that NOAA Fisheries is entitled to deference in its calculation of survival benefits and that to require more scientific certainty would set an impossible standard and is not appropriate in a Court’s review of a Section 7 consultation. Finally, Defendants respond that future mitigation measures are adequately identified and follow the scope of this Court’s remand.

a. Estuary

Survival benefits in the estuary are now evaluated by the Expert Regional Technical Group (“ERTG”). *See* 2014 BiOp at 325. The ERTG is comprised of “regional scientists with strong research experience in estuarine ecology and habitat restoration as well as fisheries biology.” *Id.* In the 2008 BiOp, the estuary improvements were expected to increase survival by six percent for stream-type fish and nine percent for ocean-type fish. *See* 2008 BiOp at 8.2–37 (Table 8.2.5–1), 8.3–54 (Table 8.3.5–1), 8.5–56 (Table 8.5.5–1). For the 2014 BiOp, the ERTG created a new estuary benefit scoring method: “Survival Benefit Units” (“SBU”). 2014 BiOp at 326. Under this scoring method, each percentage increase of survival equals five SBUs. *Id.* Because the 2014 BiOp relied on the same level of survival increases from estuary mitigation measures as did the 2008 BiOp, to avoid jeopardy the survival benefit increase from estuary mitigation measures must equal at least 30 SBUs for stream-type fish and 45 SBUs for ocean-type fish. *Id.*

When estuary projects are proposed, the ERTG scores each project. 2014 BiOp at 327. The projects are scored on a scale of one to five in three areas—certainty of success, access, and capacity. *Id.* This scoring combines evaluation of the quantitative aspects of a project (*e.g.*, water surface elevation and weighting factors based on fish densities) and ERTG’s professional judgment.

From 2007 through 2013, 45 projects in the estuary were completed or expected to be completed. 2014 BiOp at 330. NOAA Fisheries estimated that these projects will provide 8.2 SBUs for ocean-type fish (18.2 percent of the total required SBUs) and 3.4 SBUs for stream-type fish (11.3 percent of the total required SBUs). *See id.* at 331, 332–33 (Table 3.2–2). Accordingly, estuary projects from 2014 through 2018 must achieve the vast majority of the expected benefits; an additional 36.8 SBUs for ocean-type fish and 26.6 SBUs for *903 stream-type fish. NOAA Fisheries stated that the program had “matured sufficiently” for NOAA Fisheries to conclude that the identified estuary projects expected in 2014 through 2018 “are likely to make up this sizeable difference.” *Id.*

i. The predicted survival benefits are not reasonably certain to occur

There are several layers of uncertainty in predicting benefits from habitat improvement. First, it is uncertain how much improvement to habitat quality each project will provide. Second, it is uncertain whether habitat quality improvements (“HQIs”) will translate into improvements in survival and overall condition during the portion of the fish's life cycle in that habitat. And third, it is uncertain whether habitat improvements will correlate to improvements in survival over the full life cycle of the fish, resulting in greater numbers of fish returning to spawn. *See, e.g.*, NMFS0288245 (NOAA Fisheries' Response to Comments on the 2013 draft BiOp) (explaining that “more data are needed to determine with statistical significance whether changes in habitat status and trends and corresponding changes in fish production are occurring”); NOAA 2010 AR, CC.2.1 ⁶⁹ (March 26, 2010 email from Michelle McClure attaching notes from a BiOp workshop with outside scientists) (containing numerous references to uncertainties with habitat actions, including concern over the lack of “connections between habitat actions and conditions and, more important, habitat conditions and survival”). Although the Court acknowledges the importance of habitat improvement, as Judge Redden previously noted in this case, there are “serious concerns about the specific, numerical survival benefits NOAA Fisheries attributes to habitat mitigation.... [and] the lack of scientific support for specific survival predictions is troubling.” *NMFS IV*, 839 F.Supp.2d at 1125 n. 3; *see also id.* at 1129–30 (“Everyone agrees that habitat improvement is vital to recovery and

may lead to increased fish survival, but the lack of scientific support for NOAA Fisheries' specific survival predictions is troubling. Although the BiOp concludes that these specific survival improvements are necessary to avoid jeopardy, NOAA Fisheries' own scientists, the independent scientists who reviewed the 2008 BiOp, and [ISAB] have expressed skepticism about whether those benefits will be realized.”). ERTG's new SBU scoring model relied on in the 2014 BiOp does not allay the concern expressed by Judge Redden regarding the lack of scientific support and uncertainty that the survival benefits will be realized, and appears to add another layer of uncertainty. These concerns were reiterated by ISAB, who in 2014 reviewed ERTG's new SBU scoring process. *See ACE_0135243–65*. Although ISAB recognized that ERTG members are highly qualified, it found significant problems and uncertainties with the scoring process and the assignment of specific, numerical survival benefits to specific habitat projects.

ISAB found that the scoring criteria are “partially based on sound science,” “partially supported by available scientific information,” and that the scoring should be viewed as “informed hypotheses.” *ACE_0135247*. ISAB further concluded that “the ability of projects to actually succeed in increasing the survival of salmon through their residence and migration in the Columbia River estuary cannot be determined from the Scoring Criteria” and that “[t]he statistical accuracy and precision of scoring of restoration projects are not estimated and are *probably low in terms of the actual survival benefit expected from a specific project.*” *Id.* (emphasis added); *see also ACE_0135250* (“The fact *904 that the ERTG has chosen to include an additional weighting factor in the SBU calculator to correct for ‘inconsistent’ estimates of fish densities associated with various subactions in the Estuary Module suggests that the estimated total benefit might be quite misleading.”). ISAB found that the ERTG scoring is most beneficial in comparing projects against one another for prioritization, but is least beneficial in determining actual survival benefits for each project. *ACE_0135247–48*. ISAB concluded that whether “the selected projects will actually succeed in increasing the estuarine survival of salmonids will remain uncertain until quantitative estimates of improvements in estuarine survival of salmonids become available.” *ACE_0135248*. ISAB also noted that the ERTG scoring process does not appear to include major socioeconomic processes such as harvest, hatchery production, and hydropower

operations, which affect the diversity and resilience of salmon populations, and concluded that the “ERTG is operating under a high level of scientific uncertainty to qualitatively evaluate the identified processes.” *Id.* ISAB further concluded that it was not provided with review materials that “include systematic and repeatable methods for quantitatively assessing the net changes in the Columbia estuary ecosystem that would produce data and analysis to validate ERTG’s Survival Benefit estimates.” *Id.* Finally, ISAB made numerous suggestions on how the ERTG scoring process could be improved to become based on sound science and to provide more validation of the SBUs allocated for each project. ACE_ 0135249–50.

Defendants argue that NOAA Fisheries used the best available science and a rigorous qualitative analysis to calculate the SBUs predicted for each project. Defendants further argue that requiring more certainty is not feasible given the state of the science. NOAA Fisheries may not, however, make general assertions that it applied the “best available science” and deserves deference without providing a reasonable explanation and addressing the fact that independent scientists have repeatedly expressed skepticism regarding the specific, numeric survival benefits assigned to habitat mitigation. *See, e.g., N. Spotted Owl (Strix Occidentalis Caurina) v. Hodel*, 716 F.Supp. 479, 483 (W.D.Wash.1988) (“The Court will reject conclusory assertions of agency ‘expertise’ where the agency spurns unrebutted expert opinions without itself offering a credible alternative explanation.” (citing *Am. Tunaboat Ass’n v. Baldrige*, 738 F.2d 1013, 1016 (9th Cir.1984))). ISAB offered many suggestions on how the ERTG scoring process could become more scientifically-sound, and NOAA Fisheries does not offer any explanation for why the ERTG scoring process could not originally have been developed in the manner later suggested by ISAB, to ensure that the ERTG scoring process applied the best available science. NOAA Fisheries simply concludes that the ERTG applied the best available science. The Court rejects this conclusory statement.

NOAA Fisheries also urges the Court to accept the “expert judgment” of the ERTG and argues that predicted survival improvement need not be proven to occur with absolute certainty. Although the ESA does not require that an agency act with “absolute confidence,” *Ariz. Cattle Growers’ Ass’n v. Salazar*, 606 F.3d 1160, 1164 (9th Cir.2010), it does require that the risk that mitigation

may not succeed “must be borne by the project, not by the endangered species.” *Sierra Club*, 816 F.2d at 1386. In reaching its no jeopardy conclusion in the 2014 BiOp, NOAA Fisheries relied on a six percent, or 30 SBU, survival improvement for stream-type fish from estuary habitat mitigation measures, and presumed that projects will be completed that provide that exact amount of benefit before 2018. There was no margin for error, *905 despite the significant uncertainties with estimating specific survival benefits from habitat mitigation actions.

An additional 26.6 stream-type SBUs are needed from the 2014–2018 projects. Notably, the ERTG had scored only five of the 43 estuary habitat projects listed for completion in the 2014–2018 Implementation Plan. *See* NMFS004338–80 (FCRPS 2014–2018 Implementation Plan at 182–224, App’x A, Estuary Habitat Projects). Of those five, three projects had only preliminary ERTG scores, totaling 14.09 stream-type SBUs, and two projects⁷⁰ had a final ERTG score, totaling 0.79 stream-type SBUs. The remaining required 11.72 stream-type SBUs were expected to come from projects that had been preliminarily scored by the Action Agencies. Thus, the “expert judgment” of the ERTG had not yet been applied in providing final survival benefits scores expected from the majority of the planned estuary habitat mitigation projects.

Additionally, setting aside the risk that the projects themselves may not be completed, which is discussed below, the risk of inaccuracy in any of the numerous underlying assumptions that were made in calculating the expected SBUs (that ISAB cautions should be considered no more than “informed hypotheses” and that ISAB found to be “probably low” in accuracy) falls squarely on the species. Even assuming that the ERTG could not, in the time before completion of the 2014 BiOp, create a more scientifically-sound scoring process, NOAA Fisheries provides no reasonable explanation for why it did not require any “cushion” so that the anticipated benefits relied on in the 2014 BiOp would exceed the 30 SBUs calculated as necessary to avoid jeopardy.⁷¹ This would provide some room for error in a decision that outside scientists, NOAA Fisheries, and the ERTG all acknowledge is rife with uncertainty. *See, e.g.,* 2014 BiOp App’x G at G-8 (“While it is not possible to predict the actual incremental survival benefit to salmon populations from a restoration project, the ERTG could address the rearing potential *906 of a

site. In doing so, though, they identified inconsistencies in the relationships between the potential number of juvenile salmon produced and the total possible SBUs as outlined as goals in the Module/BA.”); ACE_0135243–265 (ISAB Report on ERTG Scoring); NMFS009162–68 (“ERTG Uncertainties” memorandum prepared by the ERTG, dated June 9, 2012) (discussing many “scientific uncertainties” that are associated with salmon recovery and estuary habitat actions); NOAA 2008 AR, C.685 (memorandum regarding proposed estuary actions prepared by Usha Varanasi, NOAA Fisheries Science and Research Director, dated September 5, 2007) (concluding that the actions in the estuary are insufficient and the predicted benefits are significantly overestimated). Instead, NOAA Fisheries places all of the risk of that uncertainty on the species. This is precisely what the ESA does not permit. *See, e.g., Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 194, 98 S.Ct. 2279, 57 L.Ed.2d 117 (1978) (hereinafter “*TVA*”) (“Congress has spoken in the plainest of words, making it abundantly clear that the balance has been struck in favor of affording endangered species the highest of priorities, thereby adopting a policy which it described as ‘institutionalized caution.’”); *Sierra Club*, 816 F.2d at 1376, 1386 (noting that the “benefit of the doubt” must be given to the endangered species and that the risk of failure of mitigation must fall on the project).

Further, NOAA Fisheries acknowledges that the benefit of habitat mitigation measures “may take years to achieve,” NMFS0288246 (NOAA Fisheries’ Response to Comments on the 2013 draft BiOp), yet at the same time calculates the benefits as instantaneously accruing as soon as the project is completed. 2014 BiOp at 53. This tension also fails to give the “benefit of the doubt” to the listed species. NOAA Fisheries’ acceptance that all of the required survival benefits from estuary habitat mitigation projects will accrue before 2018 is “neither cautious nor rational.” *NMFS IV*, 839 F.Supp.2d at 1128.

ii. The projects are not reasonably certain to occur

In reviewing the 2008 BiOp and the 2010 Supplemental BiOps, Judge Redden expressed concern that the estuary habitat mitigation program was behind schedule and “there is no indication that [NOAA Fisheries] will be able to identify and implement the actions necessary to catch up.” *NMFS IV*, 839 F.Supp.2d at 1128. The estuary

program has not only failed to catch up in the four years since the 2010 Supplemental BiOp, but has fallen further behind. The 2014 BiOp reviewed projects completed or expected to be completed by 2013, six years into the 10-year BiOp time frame, and then considered future projects. Projects estimated to produce approximately 18 percent of the needed survival benefits to ocean-type fish and approximately 11 percent of the needed survival benefits to stream-type fish had been completed or were expected to be completed by 2013. NOAA Fisheries relied on commitments by the Action Agencies that they will implement sufficient estuary habitat mitigation measures in the remaining four years of the BiOp period to achieve the remainder of the required survival benefits.

Defendants argue that the projects expected to produce the remaining SBUs are sufficiently specific and reasonably certain to occur. There are 43 estuary habitat projects listed in the 2014–2018 implementation plan. *See* NMFS004338–80 (FCRPS 2014–2018 Implementation Plan at 182–224, App’x A, Estuary Habitat Projects). In the “final planning phase before the Action Agencies proceed with construction,” each project will be given a final score by the ERTG. 2014 BiOp at 338. ERTG final scores “are based on the final *907 project templates prepared at between 60% and construction-ready status.” *Id.* at 337. As discussed above, 38 of the 43 projects had not yet been scored by the ERTG, and only two projects had final ERTG scores. Thus, as of the 2014 BiOp, only two projects were in the “final planning phase.” Those two projects represent only 0.79 stream-type SBUs. The three projects with ERTG preliminary scores were scored during the “concept stage of development,” *id.* at 338, so their preliminary scores do not indicate that the project is further along in development.

Accordingly, the vast majority of the anticipated estuary habitat mitigation projects must reach their final planning stage, be scored by the ERTG, become construction ready, be constructed, and have time for the expected survival benefits to accrue, all before 2018. NOAA Fisheries noted that if any project proves infeasible, “the Action Agencies will ensure that the total sum of projects implemented, including any replacement projects, will collectively reach the BiOp estuary habitat survival benefit performance standards.” *Id.* at 338. No replacement projects, however, were identified and it does not appear that any planning has begun for any possible replacement projects for projects that prove infeasible or supplemental

projects in the event that the Action Agencies' estimated SBUs are higher than ERTG's final estimated SBUs. NOAA Fisheries relied on nothing other than the Action Agencies' commitments to complete additional projects if needed.

NOAA Fisheries stated that it “is confident, based on the Action Agencies' implementation record, that they will implement habitat improvement projects that meet the 9% and 6% survival improvement standards based on ERTG's final scores.” *Id.* at 339. This is not a rational conclusion based on the facts found. More than halfway through the BiOp period, the Action Agencies had implemented only 18 percent and 11 percent, respectively, of the required nine percent and six percent survival improvements. This low implementation came despite Judge Redden's expression of concern in 2011 that the habitat program was behind schedule and the Action Agencies' commitment in 2010 that the estuary program would “catch-up.” *See, e.g.,* ACE_0005133 (FCRPS 2010–2013 Implementation Plan, dated June 2010) (“Estuary actions are behind schedule, but a catch-up plan has been formulated, with many new estuary projects under development for completion in 2010–2013.”).

The Action Agencies' plan to “catch-up” between 2010 and 2013 has failed. The only explanation that NOAA Fisheries offered for accepting that the Action Agencies' 2014–2018 plan will succeed where past implementation plans have failed was that the estuary program had “matured.” It may well be that with additional experience the Action Agencies now have more insight into effectively implementing habitat improvement projects, but NOAA Fisheries failed adequately to ensure that the Action Agencies can *complete* sufficient projects, most of which are still in the early planning stages, within the few years remaining in the BiOp period, before 2018. There is much that can go wrong as projects move forward from early planning stages, and a significant risk that projects will ultimately prove to be infeasible. For example, many of the estuary projects require that the Action Agencies purchase land and whether the land will, in fact, be able to be purchased is uncertain.⁷²

***908** Defendants argue that the robust adaptive management plan will suffice to ensure that all survival benefits occur because if one project cannot be completed then the Action Agencies will implement other projects.

The 2014 BiOp stated as much, noting that if any projects prove infeasible, the Action Agencies will implement sufficient replacement projects to achieve all required SBUs. 2014 BiOp at 338. But without any replacement or supplemental projects identified, this constitutes no more than a generalized aspiration that benefits will be achieved. This is not sufficient to satisfy the requirement of “specific and binding plans” with “a clear, definite commitment of resources for future improvements.” *NMFS III*, 524 F.3d at 935–36. Even the expressed “commitment” by the Action Agencies that they will implement sufficient projects to reach the survival benefit requirement does not render those projects reasonably certain to occur. *See id.* (finding agency's “sincere general commitment to future improvements” inadequate to support no jeopardy conclusion); *NMFS IV*, 839 F.Supp.2d at 1127 (“Apart from a vague process for identifying replacement estuary projects if a particular action proves infeasible, there is no mechanism in the 2008 BiOp to ensure that the action agencies will implement specific projects in the 2013–2018 time frame or that ‘equally effective’ actions even exist. NOAA Fisheries' reliance on undefined actions for such large survival increases is contrary to the ESA's requirement that mitigation must be specific, reliable, and certain to occur. Reliance on a ‘commitment’ to achieve a certain percent increase in salmon survival does not relieve NOAA Fisheries of the requirement to rely only on those actions that are reasonably certain to occur.”).

Further, NOAA Fisheries acknowledged that there is often a lag before survival benefits will accrue from habitat mitigation projects and that some habitat mitigation projects will take “decades” to achieve their full benefit. *See, e.g.,* 2008 BiOp at 7–45 (“However, other habitat improvements, such as sediment reduction in ***909** spawning gravels and the restoration of riparian vegetation and stream structure, may take decades to realize their full benefit (Beechie et al. 2003). NOAA Fisheries was able to quantitatively or qualitatively consider the post-2018 effect of identified actions proposed for implementation between 2007 and 2009 (Corps et al. 2007a, Appendix C Attachment C-1).”); 2014 BiOp at 244 (“Also, depending on the type of tributary habitat improvement action, there may be a lag between completion of the action and the projected change in habitat function: for example, riparian treatments and restoration of the riparian zone, including tree planting, fencing, and removal of invasive species, may take years

to achieve their full benefits. This will result in a lag in any corresponding survival change for the affected life stage (i.e., egg-to-smolt survival). Even after the life-stage survival change occurs, it may not be immediately detectable because of natural variability in abundance and productivity.”). Despite these admissions, and the fact that nearly all of the 2014–2018 estuary projects were not even in their final planning stage, NOAA Fisheries concluded that sufficient estuary projects are reasonably certain to occur and that all survival benefits expected from the estuary program will be achieved before 2018. The Court finds this conclusion to be arbitrary and capricious.

b. Tributary

i. Estimated survival benefits

Survival benefits from tributary habitat actions were calculated by the Action Agencies based on information from expert panels. *See* 2014 BiOp at 245, 316. The expert panels identified and weighed the factors that limit the functionality of tributary habitat and evaluated the changes in those limiting factors that can be expected from habitat improvement projects. *Id.* at 245. The Action Agencies calculate the expected survival improvement based on the “corresponding change in fish survival that is likely to occur as the productive capacity of habitat changes.” *Id.* at 230; *see also id.* at 316. The Court has the same concerns with the survival improvements attributed to tributary habitat actions that the Court has with respect to the specific survival improvements attributed to estuary habitat actions. The scientific uncertainty in calculating specific, numerical survival benefits from habitat actions is equally applicable to tributary habitat mitigation actions as with estuary habitat actions.

What is less clear with the tributary habitat actions is whether NOAA Fisheries allocated any “cushion” allowing for the predicted specific, numeric survival benefits not to accrue precisely as estimated. With the estuary habitat actions, NOAA Fisheries identified the specific survival benefit needed to avoid jeopardy (45 and 30 SBUs for ocean-type and stream-type fish, respectively) and then identified exactly how many of those SBUs the RPA actions are anticipated to achieve (82.7 and 30, respectively). With tributary habitat actions, it is not as clear whether the predicted survival benefit is exactly what

NOAA Fisheries requires in order to reach its no jeopardy conclusion. NOAA Fisheries attributed a specific amount of survival benefit from tributary habitat actions for each fish population and used those specific survival amounts as part of the calculation of the total “survival multiplier,” which was used in the jeopardy analysis in concluding that the RPA actions avoid jeopardy. *See, e.g.*, 2008 BiOp at 8.3–54, Table 8.3.5–1 (setting out the survival multiplier for each category of RPA action and the resulting total survival multiplier for Snake River spring/summer Chinook salmon).

[16] An agency must provide sufficient information so that a reviewing court can educate itself in order to properly perform *910 its reviewing function —“determining whether the agency’s conclusions are rationally supported” and whether the “agency’s actions were complete, reasoned, and adequately explained.” *Nw. Coal. for Alts. to Pesticides (NCAP) v. U.S. E.P.A.*, 544 F.3d 1043, 1052 n. 7 (9th Cir.2008) (quoting *Ctr. for Auto Safety v. Peck*, 751 F.2d 1336, 1373 (D.C.Cir.1985) (Wright, J., dissenting)). NOAA Fisheries failed adequately to explain how much survival benefit was needed from tributary habitat actions to avoid jeopardy and whether NOAA Fisheries included any “cushion” in the survival benefit needed. It appears, however, that there was not an “excess” in survival improvement and that all of the survival improvement estimated to occur from tributary habitat mitigation projects (and all other RPAs) was relied on to avoid jeopardy. *See, e.g.*, 2014 BiOp at 469 (discussing new information indicating lower base-to-current survival than originally estimated in the 2008 BiOp, and noting that “[t]here do not appear to be additional RPA survival estimates that are higher than expected to offset these reductions in the hatchery environmental baseline estimates”). Accordingly, the Court finds that there is not a sufficient margin for error in the expected survival benefits accruing from tributary habitat mitigation.

Because the 2014 BiOp does not provide room for error that the specific, numeric survival benefits associated with tributary habitat improvements might not all accrue precisely as estimated, the Court finds, as it found with the estuary stream-type survival improvements, that this is an improper allocation of risk onto the listed species. All parties agree that there is significant scientific uncertainty in allocating estimated survival benefits. The ESA does not require scientific certainty. The ESA does, however,

require that the risk of such an uncertain calculation achieving 100 percent of its expected benefits should not fall onto the listed species. *See TVA*, 437 U.S. at 194, 98 S.Ct. 2279; *Sierra Club*, 816 F.2d at 1386. The 2014 BiOp's conclusion that all of the expected benefits from the tributary habitat program necessary to avoid jeopardy are reasonably likely to occur is, therefore, arbitrary and capricious.

ii. Expected tributary projects

The 2014 BiOp analyzed the tributary habitat projects that were completed through 2011, which is four years into the ten-year BiOp time frame. Within this period, the tributary projects implemented had achieved more than 33 percent of RPA Action 35's required HQIs for 48 of the affected 56 populations, with all of the required HQIs achieved for 35 of those populations. *See* 2014 BiOp at 269, 277–279, Tables 3.1–2, 3.1–3, and 3.1–4. Based on the expert panels' evaluation of tributary projects anticipated to be implemented through 2018, the Action Agencies determined that the tributary projects identified and reviewed for implementation would meet or exceed the HQI performance standard and associated survival improvements for all but seven populations. *Id.* at 281. For those seven populations, the Action Agencies evaluated why the HQIs were not expected to be attained and took steps to address any impediments. The Action Agencies worked with local implementing partners to identify and evaluate supplemental projects for these seven populations. With the addition of the supplemental projects, the Action Agencies estimated that the required HQIs will be achieved for all populations except Catherine Creek, a population within the Snake River spring/summer Chinook salmon ESU.

NOAA Fisheries considered the implementation progress made to date, the evaluation of the expert panels and the Action Agencies for projects expected to be completed before 2018, and, with “additional *911 scrutiny,” considered the supplemental projects. *See id.* at 268–70, 283. NOAA Fisheries concluded that for all populations, including Catherine Creek, the Action Agencies were reasonably likely to achieve all of the HQIs, and their associated survival benefits, from tributary habitat mitigation required in the 2008 BiOp to avoid jeopardy. *Id.* at 317.

Plaintiffs argue that the tributary habitat program is behind schedule and that, particularly for the populations for which tributary habitat actions had not yet achieved 33 percent or greater of the required improvement and for the seven populations that require supplemental projects, projects sufficient to achieve all of the required HQIs are not reasonably certain to occur. The Nez Perce Tribe offers, by way of example, the supplemental projects that the tribe is supposed to complete on the Lochsa River and South Fork Clearwater River. These supplemental projects are expected to provide the shortfall in HQIs needed to increase the survival of Snake River steelhead. *See id.* at 281; NMFS004435–39 (2014–2018 Implementation Plan at 279–283, App'x B, Tributary Habitat Supplemental Actions). The Nez Perce Tribe notes that the 2014 BiOp fails to disclose the process by which tributary habitat actions are completed and that this process requires expert panel evaluation before funding is allocated. The Nez Perce Tribe argues that even if the projects are evaluated by the expert panels in 2015, funding would not be available until 2016, and the earliest the projects could be initiated on-the-ground would be summer of 2017, assuming these supplemental projects could be reviewed, funded, and constructed along with all of the other original projects that are in the pipeline for this same time period. Thus, concludes the Nez Perce Tribe, NOAA Fisheries' determination that all of the original and supplemental tributary habitat projects will be *completed* and all of the HQIs (and associated survival benefit) will be *achieved* within the time frame of the BiOp is not rational. NOAA Fisheries responds that the Nez Perce's concerns are more akin to policy concerns than challenges to NOAA Fisheries' reliance on tributary habitat actions in its no jeopardy conclusion. The Court disagrees.

The concerns raised by the Nez Perce Tribe are not policy issues, but are challenges to NOAA Fisheries' conclusion that the supplemental actions, which are early in the implementation process, will be completed during the BiOp time frame. Funding is necessary to conclude that a project will be completed because without funding there is no habitat restoration. *See, e.g., NMFS III*, 524 F.3d at 935–36 (noting that mitigation measures must have “a clear, definite commitment of resources for future improvements”). Some of the supplemental projects are quite significant—for example the supplemental projects in Catherine Creek, Grande Ronde Upper Mainstem, Entiat, and Lochsa River are all expected to provide

HQIs equal to or greater than all of the original projects combined.

The Court does not agree, however, that NOAA Fisheries irrationally concluded that the supplemental (and original) tributary habitat projects are reasonably certain to occur. In contrast to the estuary habitat projects, the Action Agencies had an extensive track record of success in completing tributary habitat projects and most of the outstanding tributary projects were farther along in development. The expert panels had reviewed all but the supplemental projects.⁷³ Through 2011, *912 less than halfway through the BiOp period, the Action Agencies had implemented hundreds of tributary mitigation projects that are estimated to have met or exceeded the total HQIs needed as set forth in the 2008 BiOp for 35 of 56 populations, achieved 50 percent or greater of the total HQIs needed for seven populations, achieved between 33 and 50 percent for six populations, and achieved below 33 percent for eight populations. 2014 BiOp at 269–70, 277, Table 3.1–2. After considering all the remaining projects scheduled for implementation before 2018, the Action Agencies determined that there would be a shortfall in HQIs for seven populations. Because of that shortfall, the 2014 BiOp included supplemental projects that had not yet been reviewed by the expert panels.

In considering whether sufficient tributary habitat actions were reasonably certain to occur, NOAA Fisheries gave “additional scrutiny” to the populations for which less than 33 percent of HQIs had been achieved as of 2011 and for the supplemental projects. *Id.* at 283, 317. NOAA Fisheries evaluated whether the shortfall of HQIs was reasonably certain to be achieved, with differing considerations for each population but with some general considerations as follows:

General considerations included actions previously reviewed by expert panels and not implemented but that the Action Agencies now are likely to implement; additional actions that paralleled actions in particular assessment units that would proportionately increase the benefits the expert panels had previously identified for similar actions in specific assessment units; additional actions identified

based upon results from recently completed tributary and reach assessments; the extent to which actions targeted the most heavily weighted limiting factors in the most heavily weighted assessment units; and the extent to which implementation strategies appeared to be consistent with accepted watershed restoration principles (e.g., Beechie et al. 2010, Roni et al. 2002, Roni et al. 2008).

Id. at 283.

The supplemental projects were identified by population, with the specific limiting factors to be addressed, the associated metrics, and the implementing partner also identified. *See* NMFS004437–39 (2014–2018 Implementation Plan at 281–83, App'x B, Tributary Habitat Supplemental Actions, Table B-1). The expert panels were scheduled to review these projects in 2015. *See* NMFS004436 (FCRPS 2014–2018 Implementation Plan at 280). NOAA Fisheries acknowledged, however, that some of the supplemental projects might need to be implemented before the scheduled expert panel review and noted that the expert panels could review such projects after completion. *See* 2014 BiOp at 283 n.101. This addresses the Nez Perce Tribe's timing concern if expert panel review is required before project implementation. NOAA Fisheries also considered the availability of funding, and noted that many of the projects will be funded through the Fish Accords and that in some cases supplemental projects had already been submitted for funding approval. *Id.* at 282. Thus, NOAA Fisheries did consider the Nez Perce Tribe's timing and funding concerns and offered a reasonable explanation for its conclusion that those issues will not prevent the supplemental tributary projects from being reasonably certain to occur. NOAA Fisheries also evaluated the adaptive management framework for the tributary habitat program, including considering the Action Agencies' ability to refine selection, design, and sequencing of tributary habitat projects to maximize HQIs. *Id.* at 280, 284–85.

With respect to the Catherine Creek population, assuming all HQIs are *913 achieved from the original and supplemental projects, this population still was expected to have an eight percent shortfall in HQIs.

NOAA Fisheries concluded that this shortfall would be achieved because the Action Agencies would work with implementation partners to expand the scope of some actions already reviewed by the expert panels. The short fall would also be achieved because the Action Agencies and their implementation partners would “identify additional actions based on tributary and reach assessments and an additional assessment tool—the Catherine Creek Atlas—that is in development.” *Id.* at 289. NOAA Fisheries' conclusion that this eight percent HQI will somehow be achieved from unidentified projects is not supported by any “specific and binding plans” and involves little more than the “sincere general commitment” of the [Action Agencies, which is insufficient](#). *NMFS III*, 524 F.3d at 935–36.

The Court is also concerned with NOAA Fisheries' conclusions regarding the Yankee Fork population. As of 2011, no projects had been implemented and thus no HQIs had been achieved in the tributary habitat of the Yankee Fork population. NOAA Fisheries explained in the 2014 BiOp that this was expected, and cited to the fact that the 2006 expert panel convened to evaluate Yankee Fork habitat improvement actions noted that no on-the-ground action should be anticipated for five years, citing to NOAA Fisheries' 2008 supplemental record. 2014 BiOp at 295, citing to NOAA 2008 AR, S.31. This pessimistic information from the 2006 expert panel was, therefore, available to NOAA Fisheries in drafting the 2008 BiOp. The 2008 BiOp, however, specifically relied on 10 percent HQI being achieved between 2007 and 2009 from tributary habitat actions for the Yankee Fork population. *See* 2008 BiOp RPA Table at 44, Table 5. In 2008, NOAA Fisheries apparently ignored the expert panel's 2006 conclusion that no HQI would be achieved for the Yankee Fork population for the first five years. Yet in 2014, when no HQI had been achieved, NOAA Fisheries relied on the expert panel's conclusion to support the 2014 BiOp's conclusion that despite no HQI being achieved thus far, all HQIs would be achieved before 2018. Although NOAA Fisheries' pattern of discounting pessimistic information is troubling, it is a high bar to find the conclusions of an agency arbitrary and capricious. In the 2014 BiOp, NOAA Fisheries offered a detailed discussion of expected tributary actions for the Yankee Fork population and an explanation for why NOAA Fisheries believed HQIs in excess of that required in RPA 35⁷⁴ would be achieved for the Yankee Fork population despite the projects getting started later in the BiOp time frame. Although the 2008

BiOp's conclusion that 10 percent HQI would be achieved before 2009 may have been irrational, the 2014 BiOp's conclusion that the necessary HQIs will be achieved before 2018 is adequately explained by NOAA Fisheries under the deferential standard of a Section 7 consultation review.

Other than with the Catherine Creek population, the Court finds that NOAA Fisheries considered all of the relevant factors and its conclusion that sufficient tributary habitat projects, including the supplemental projects, to achieve the required HQIs are reasonably certain to occur is not irrational and is entitled to deference. As discussed above, however, the assignment of specific, numerical survival benefits to the HQIs and NOAA Fisheries' reliance on achieving those precise survival benefits is arbitrary and capricious.

*914 c. Conclusion

The parties and the Court acknowledge that there is significant benefit to the listed species from habitat improvement. The flaws in the 2014 BiOp with respect to habitat improvement projects are not that NOAA Fisheries relied on habitat mitigation efforts to avoid jeopardy, but that some of the habitat projects relied on are not reasonably certain to occur and that NOAA Fisheries relied on habitat mitigation projects achieving the exact amount of extremely uncertain survival benefits required to avoid jeopardy. The Court shares Judge Redden's previously-expressed concern that “[i]f NOAA Fisheries cannot rely on benefits from habitat improvement simply because they cannot conclusively quantify those benefits, they have no incentive to continue to fund these vital habitat improvements.” *NMFS IV*, 839 F.Supp.2d at 1130. The ESA, however, tips the scale toward listed species and requires that the risk that mitigation will not be achieved be placed on the project. Requiring habitat improvement projects to achieve some amount of survival benefit beyond the minimum survival benefit required to avoid jeopardy complies with Congress's directive to afford endangered species the highest of priorities, while not imposing upon NOAA Fisheries or the Action Agencies a requirement of certainty that is unreasonable or unattainable.

3. Climate Change

The best available information indicates that climate change will have a significant negative effect on the listed species. Climate change effects that have harmful impacts to certain of the listed species include: warmer stream temperatures; warmer ocean temperatures; contracting ocean habitat; contracting inland habitat; degradation of estuary habitat; reduced spring and summer stream flows with increased peak river flows; large-scale ecological changes, such as increasing insect infestations and fires affecting forested lands; increased rain with decreased snow; diminishing snow-packs; increased flood flows; and increased susceptibility to fish pathogens and parasites, organisms that are generally not injurious to their host until the fish becomes thermally stressed. 2008 SCA at 5–64 to 5–67 (NMFS027632–35). A single year with detrimental climate conditions can have a devastating impact on fish. For example, in 2002 more than 33,000 adult salmon, primarily fall Chinook, died in the lower 36 miles of the Klamath River from a disease outbreak, which was primarily caused by high water temperatures, atypically low river flows, and high fish densities. *See* NMFS015494. Similarly, in late July 2013 low flows and high temperatures caused adult sockeye and summer Chinook salmon and steelhead to refuse to enter the fish ladder at Lower Granite Dam for approximately one week. 2014 BiOp at 355. This one-week delay caused an estimated 30 percent of sockeye and 15 percent of summer Chinook to die without spawning. *Id.* at 356. A similar event occurred in September 2013, blocking passage for Snake River fall Chinook salmon and steelhead for approximately one week, with estimated losses of approximately seven percent for Snake River fall Chinook salmon and twelve percent for Snake River steelhead. *Id.*

i. How the BiOps analyzed climate change

The 2008 BiOp incorporated by reference the climate change discussion from the 2008 SCA, Chapter 5. In this discussion, NOAA Fisheries summarized some of the expected effects from climate change, primarily based on ISAB's 2007 climate change study, and noted that the effects of climate change are considered both quantitatively and qualitatively in Chapter 7. NOAA Fisheries further noted that “the timeframe, and the scope of climate *915 change is not clear For the ten year term of this Opinion, NOAA Fisheries employs conservative assumptions and sets the stage for mitigation

actions should they become necessary.” 2008 SCA at 5–67 (NMFS027635).

The 2008 BiOp only quantitatively considered the effects of climate change on ocean conditions, and did not quantitatively analyze climate impacts to freshwater life stages, relying instead upon a qualitative analysis. 2008 BiOp at 7–13 and 7–14; *see also* 2014 BiOp at 435 (“The 2008 BiOp did not quantitatively consider effects of climate change on survival for these species during freshwater life stages, as it did for survival during ocean residence”). For its quantitative analysis affecting ocean residence, the 2008 BiOp applied the same climate conditions that existed during the base period, approximately 1980 through 2001. 2008 BiOp at 7–12. In other words, as described by NOAA Fisheries, “the analysis can be thought of as the base period repeating itself, except for the specific survival changes (e.g., resulting from management actions) that are applied.” *Id.* This base time period is roughly equivalent to ICTRT's “recent” ocean period, which is the mid-range climate scenario considered by NOAA Fisheries. NOAA Fisheries also considered a “warm” climate scenario, considering climate conditions from 1977 through 1997,⁷⁵ which was the most pessimistic scenario with the least favorable climate conditions and a “historical” climate scenario, considering climate conditions from approximately 1946 through 2001, which was the scenario representing the most favorable climate conditions. *Id.* at 7–13 to 7–14.

For its qualitative analysis, NOAA Fisheries considered whether any of the RPA actions were consistent with actions ISAB recommended as being potentially ameliorative for climate impacts. *Id.* at 7–32. NOAA Fisheries also considered whether the RPA actions included monitoring for climate change effects, a mechanism for updating and synthesizing new information, and mechanisms for modifying implementation plans as needed to respond to new information.⁷⁶ *Id.* NOAA Fisheries listed actions contemplated under various RPAs, including planning actions, habitat mitigation efforts, and mainstem hydropower actions, that are consistent with actions recommended by ISAB to address climate change. *Id.* at 8–20 to 8–22. NOAA Fisheries concluded that the “full breadth of long-term climate change is ... unlikely to be realized in the ten-year term of this Opinion” and that “sufficient actions have been adopted to meet current and anticipated climate changes” *Id.* at 8–22.

The 2014 BiOp acknowledged that significant new information relating to climate change was published after the 2008 BiOp. *See* 2014 BiOp at 173. The 2014 BiOp noted that hundreds of papers, studies, and models were published, and specifically discussed several of them. The 2014 BiOp listed the many expected effects of climate change and much of the new information *916 available relating to climate change. *Id.* at 153–182. The 2014 BiOp then concluded that the new information “continue[s] to be within the range of assumptions considered in the 2008 BiOp and 2010 Supplemental BiOp.”⁷⁷ *Id.* at 179; *see also id.* at 174 (noting that “recent observations of climate trends in the scientific literature are generally consistent with expectations in the 2008 BiOp”); 175 (noting that the new scientific “projections are generally consistent with expectations in the 2008 BiOp”); 176 (noting that recent scientific studies regarding the biological effects of climate change are “generally consistent with expectations in the 2008 BiOp”).

The 2014 BiOp also summarized the Action Agencies' review of the RPA actions implemented that may address climate change. 2014 BiOp at 435–442. NOAA Fisheries reviewed these projects in the context of ISAB's 2007 recommendations and more recent climate literature. *Id.* at 435. NOAA Fisheries ultimately concluded “that sufficient actions consistent with ISAB's (2007b) recommendations for responses to climate change have been included in the RPA and are being implemented by the Action Agencies as planned.” *Id.* at 442.

ii. The Parties' arguments

Plaintiffs argue that the 2014 BiOp fails properly to consider climate change because it does not adequately apply the best available science and “double counts” for mitigation measures designed to offset the adverse effects of the FCRPS. Plaintiffs argue that the 2008 BiOp did not properly analyze climate change, but merely determined whether the RPA actions proposed to offset the adverse effects of the FCRPS were “consistent with” the types of actions ISAB had identified as being potentially ameliorative for the effects of climate change. Plaintiffs note that although the 2014 BiOp acknowledges the voluminous amount of additional information relating to climate change and its impacts on Pacific Northwest salmonids after the 2008 BiOp, the 2014 BiOp fails to

actually use any of that additional information or perform any additional analysis relating to climate change and merely concludes the new information is consistent with the assumptions in the 2008 BiOp. Plaintiffs argue that it is unreasonable for NOAA Fisheries to conclude that all of the new *917 information after 2008 falls within the 2008 BiOp's general and unspecified “expectations.” Plaintiffs further argue that the 2014 BiOp improperly follows the 2008 BiOp in relying on a conclusion that the RPA actions are “consistent with” those types of actions ISAB identified. By only looking at whether RPA actions are “consistent with” the types of actions that might ameliorate climate change effects without analyzing the magnitude and extent of the effects of climate change, argue Plaintiffs, NOAA Fisheries cannot rationally conclude that those actions are sufficient to address climate impacts in addition to addressing the harms from the FCRPS. Plaintiffs also argue that NOAA Fisheries offers no rational explanation why it did not analyze climate change in a similar manner as it did in the Biological Opinion and Conference Opinion on the Long-term Operations of the Central Valley Project and State Water Project (hereinafter “CVP BiOp”). NOAA 2010 AR, BB.281.

Defendants respond that Plaintiffs misunderstand the BiOp and that the RPA actions are not meant to “offset” harms of the FCRPS, but that NOAA Fisheries analyzes the baseline, cumulative effects, and effects of the action, and that climate change impacts are part of that overall analysis. Defendants also respond that the 2014 BiOp thoroughly considered the new data relating to climate change and properly concluded that the new information fell within the 2008 BiOp's expectations and that NOAA Fisheries' conclusion that sufficient actions are being implemented to address any climate impacts is well-founded and entitled to deference.

iii. Analysis

The Court finds that NOAA Fisheries' analysis and conclusion that the effects of climate change have been adequately assessed in the 2014 BiOp is not “complete, reasoned, [or] adequately explained.” *Nw. Coal*, 544 F.3d at 1052 n. 7. NOAA Fisheries' analysis does not apply the best available science, overlooks important aspects of the problem, and fails properly to analyze the effects of climate change, including its additive harm, how it may

reduce the effectiveness of the RPA actions, particularly habitat actions that are not expected to achieve full benefits for “decades,” and how it increases the chances of a catastrophic event.

As an initial matter, the 2008 and 2014 BiOps started with the underlying conclusion that operation of the FCRPS, along with the environmental baseline and cumulative effects, will jeopardize the listed species. *See* 2008 BiOp at 1–6 to 1–7. The BiOps then considered whether, with the addition of the RPA actions, jeopardy could be avoided. In so doing, the BiOps themselves repeatedly stated that the RPA actions are designed to offset the adverse effects of the FCRPS and thus avoid jeopardy. *See* 2014 BiOp at 319 (noting that estuary habitat actions are to partially offset adverse effects of FCRPS); 2008 BiOp at 1–4 (noting that “the subject for this consultation is for a ten year duration, including not only hydropower projects but also a variety of non-hydro mitigation actions designed to benefit the listed salmonid species and thereby offset the adverse hydro effects”); *id.* at 1–13 (“The RPA will have to both reduce or offset the adverse effects associated with the proposed action to a level that does not likely jeopardize the species, and maintain (or restore) essential habitat features so as to not be likely to result in the adverse modification of designated critical habitat.”); *id.* at 4–4 (defining part of the action area as “[t]he subbasins that are the focus of the Action Agencies’ proposed non-hydro mitigation projects, designed to offset adverse effects of their proposed hydro operations.”); *id.* at 15–8 (“Pursuant to MSA § 600.905, NOAA Fisheries recommends that the Action *918 Agencies implement the final RPA actions to avoid, minimize, mitigate, or otherwise offset potential adverse effects of operating the FCRPS.”). Thus, Plaintiffs’ contention that the RPA actions are designed to offset the adverse effects of the FCRPS is well-founded.

One inadequacy with NOAA Fisheries’ analysis of climate impacts is that it does not consider whether the effectiveness of the RPA actions, designed to offset the adverse effects of the FCRPS, will be diminished by climate change. For the survival prong of the jeopardy analysis, NOAA Fisheries analyzed the 24-year extinction risk. This metric thus included consideration of conditions through the year 2032. For the recovery prong of the jeopardy analysis, NOAA Fisheries considered the three productivity metrics (BRT Trend, lambda, and R/S). In order to meaningfully analyze impacts to recovery,

NOAA Fisheries necessarily needs to look beyond the 10-year time frame of the BiOp, particularly in light of the precarious state of many of the listed species, where a few poor years can decimate a population. *See Wild Fish Conservancy v. Salazar*, 628 F.3d 513, 524 (9th Cir.2010) (noting the agency must consider a period “long enough for the [agency] make a meaningful [jeopardy] determination”); *see also id.* at 525 (noting that in order to complete an appropriate jeopardy analysis, the agency was required to “tak[e] a long view” of the effects on the listed species); CVP BiOp at 674 (“The long-term effects analysis for winter-run reveals that climate change and growth are likely to increase adverse effects especially associated with temperature related egg mortality on the Upper Sacramento River in the summertime. A prolonged drought could result in extinction of the species by resulting in significant egg mortality for three years in a row.”). Thus, the climate condition through at least the 2030s was relevant to the BiOp.

In considering how the jeopardy metrics apply in the future, NOAA Fisheries assumed recent climate conditions would remain the same and did not engage in any analysis as to whether the survival benefits attributed to habitat actions would be diminished by the future effects of climate change. NOAA Fisheries noted that many habitat actions would take years, even decades, to fully accrue. *See* 2008 BiOp at 7–45. NOAA Fisheries indicated that it “was able to quantitatively or qualitatively consider the post-2018 effect of identified [habitat] actions” and that the BiOp assumed implementation of habitat actions providing both short-term and longer-term benefits. *Id.* Yet, NOAA Fisheries did not indicate that it similarly quantitatively or qualitatively considered the post-2018 impact of climate change, despite the fact that climate change is clearly anticipated to have post-2018 impacts. NOAA Fisheries had information that climate change may well diminish or eliminate the effectiveness of some of the BiOp’s habitat mitigation efforts but does not appear to have analyzed these effects. *See* NOAA 2010 AR, CC.2.1⁷⁸ (April 1, 2010 email from Michelle McClure attaching notes from a science workshop) (scientists commenting that “climate impacts [are] greater than impacts of RPA” and that it is “difficult to tell whether our actions have changed productivity given climate variability”).

Another inadequacy with NOAA Fisheries’ analysis of climate impacts in the 2008 BiOp, and compounded in the

2014 BiOp, is NOAA Fisheries' decision to use the base period, or “recent” ocean conditions in its quantitative analysis. NOAA Fisheries assumed the base period would “repeat itself” and did not presume any worsening *919 climate conditions. NOAA Fisheries explained that this choice encompassed the most likely climate scenario because the base period includes many years with warmer conditions. 2008 BiOp at 7–13. NOAA Fisheries offered as part of its “sensitivity analysis” a “warm” ocean scenario, but relied on the base period scenario in reaching its no jeopardy conclusion.

NOAA Fisheries did not explain why the “warm” ocean scenario was not more representative of expected future climate conditions. Notably, ISAB commented that even the “warm” scenario may not be pessimistic enough. NOAA 2008 AR, B.214 at 3 (“Moreover, oceanic conditions are probably going to get worse for salmon than they have been in recent years, perhaps substantially worse, so the pessimistic scenario may not be sufficiently pessimistic.”). NOAA Fisheries acknowledged this comment by ISAB, but noted that while worsening ocean climate conditions may well be achieved “over a longer time period, it is unlikely to apply to the period of the Prospective Actions and the metrics considered in this opinion.” 2008 BiOp at 7–13. This explanation is unreasonable for several reasons. First, this comment addresses why NOAA Fisheries did not use estimated ocean conditions even worse than the “warm” scenario, but does not address why NOAA Fisheries did not use the “warm” scenario.

Second, the jeopardy metrics considered conditions into the 2030s, and perhaps longer for the recovery prong analysis. There was scientific literature concluding that climate conditions are expected to worsen as early as the 2020s and 2030s. *See, e.g.*, NMFS000626–647 (Abdul-Aziz, et al. 2011 study) (assessing impacts in the 2020s, among others); NMFS048800–822 (Wu, et al. 2012 study) (same); NMFS018943–979 (Mantua, et al. 2010 study) (same); CVP BiOp at 153, 172–73, 189–91, 251–54, 266–68, 464–65 (discussing the many negative effects to salmon expected to arise by 2030 as a result of climate change, citing to various publications). Moreover, independent scientists in addition to ISAB criticized NOAA Fisheries' longer-term climate assumptions. *See* NOAA 2010 AR, CC.2.1⁷⁹ (April 22, 2010 email from Bruce Suzumoto attaching the final critique of some outside scientists) (concluding that “from the 2020s

onward [] the assumptions underlying the BiOp's climate assessment are not valid” and noting that there are a “wealth” of future scenarios “from which climate change vulnerability and impacts assessments can be carried out”). NOAA Fisheries' disregard of the independent scientists' critique because it looked too far in the future disregards that NOAA Fisheries had to consider future effects in making its jeopardy determination and that there was scientific information estimating climate change impacts in the 2020s, a time period relevant to the BiOp.

Third, NOAA Fisheries' conclusion that worsening ocean conditions would not make a difference during the BiOp period is belied by NOAA Fisheries' own determinations. The 2008 BiOp acknowledged that under the “warm” climate scenario one or more of the recovery metrics possibly would not meet the BiOp's required standards for some of the listed ESUs. *See* 2008 BiOp at 8.2–30 (Snake River fall Chinook); 8.3–31 (four of six populations of Snake River spring/summer Chinook, Grande Ronde/Imnaha MPG); 8.3–35 (one of six populations of Snake River spring/summer Chinook, Middle Fork MPG); 8.3–37 (two of seven populations of Snake River spring/summer Chinook, Upper Salmon MPG); 8.6–29 (all three populations of Upper Columbia River spring Chinook); 8.8–35 (Middle Columbia River *920 steelhead). NOAA Fisheries also estimated the overall survival impact of the “warm” scenario to the BiOp time period calculations. 2008 BiOp at 7–13 (noting that survival “under the warm PDO climate scenario is 12% lower than the ‘base’ period survival for SR spring summer Chinook, 3% lower for Upper Columbia River spring Chinook, and 2% lower for listed interior Columbia River steelhead species (ICTRT 2007a)”); *see also* NMFS044442, 2007 SCA at 5–12 (noting that survival under the “pessimistic” ocean condition scenario was 15 percent lower than the “recent” scenario for Snake River spring and summer Chinook salmon and 36 percent lower for Upper Columbia spring Chinook Salmon).

Another example of warmer temperatures causing effects during the BiOp time period is the 2013 fish ladder blockage and resulting mortality from high water temperatures. NOAA Fisheries notes that cold water releases from Dworshak are an example of an RPA action that can ameliorate this type of harm and other climate change effects. *See* 2014 BiOp at 178. Dworshak releases, however, have been occurring since at least the 1995 BiOp to help offset the adverse effects of the FCRPS

operations, primarily to augment flow for the spring and summer juvenile migration seasons. *See id.* at 441. Yet NOAA Fisheries did not engage in an analysis to ascertain whether Dworshak has the capacity for flow releases during the spring and summer juvenile migration plus additional releases that might be required due to climate change effects and rising water temperatures, such as during the adult migration. Storage reservoirs have limited storage capacity and many uses besides helping salmon and steelhead. This is a problem with only analyzing whether the RPA actions are consistent with ISAB-recommended actions without properly analyzing the extent and severity of the expected harm from climate change impacts—it is not clear that the actions are *sufficient in number and magnitude* to ameliorate for climate change, even if they are *of a type* that might ameliorate for climate change.

Another inadequacy in the 2014 BiOp is its analysis of climate change effects on freshwater salmonid life stages. The 2008 BiOp did not use any quantitative analysis for freshwater climate conditions. The 2008 BiOp noted that there was only one study involving quantitative freshwater effects, and it was not relied on because it assumed instantaneous attainment of 2040 climate conditions, which NOAA Fisheries deemed was outside of the BiOp period. 2008 BiOp at 8–22. Setting aside the fact that a meaningful recovery analysis under the facts of this case may require NOAA Fisheries to evaluate effects on recovery in the 2040s, 20 years beyond the BiOp period (as did the 1995 and 2000 BiOps' recovery analysis), by the time of the 2014 BiOp there was more scientific literature relating to climate impacts on freshwater life stages of salmonids, including some information estimating effects in the 2020s, which is within the BiOp's survival and recovery analyses. *See, e.g.*, 2014 BiOp at 160–179 (summarizing new information, including freshwater information), 175 (noting the Wu, et al. 2012 study estimating a 19.3 percent decrease in summer stream flows by the 2020s and a 1.6–3.7°F increase in stream temperature), 178–179 (referencing NOAA literature review summaries of predicted impacts to salmon growth, survival, and migration); NMFS242286–302 (study estimating a significant average reduction by 2020 in summer streamflow for the Yakima, Okanogan, Methow, and Wenatchee sub-basins by 2020). Yet, NOAA Fisheries merely recited or ignored all the new information and did not apply any of it. New quantitative information regarding the effects on freshwater climate

cannot be within the 2008 BiOp's “expectations” because the 2008 BiOp did not quantitatively *921 assess climate effects on the freshwater life stage and specifically noted that it only considered, and rejected, a single quantitative study because it related to 2040 conditions.

The 2014 BiOp does not explain why NOAA Fisheries could not use the best available climate information to quantitatively *estimate* climate impacts to freshwater life stages. By contrast, the CVP BiOp quantitatively estimated climate impacts to freshwater residence.⁸⁰ *See, e.g.*, CVP BiOp at 288, 291 (predicting a 1–3°F temperature increase in Lower American River water temperature by 2030 as a result of climate change, and assuming a 3°F increase); 464 (reciting expected quantitative impacts and concluding that “[a]t the population level, the added impacts of the proposed action with climate change in the future baseline decreases adult abundance for all listed fish species”).

Defendants argue NOAA Fisheries need not consider certain climate effects, particularly those beyond 2018, because they are too uncertain. The ESA, however, does not require scientific certainty. *See Nw. Ecosystem All. v. U.S. Fish & Wildlife Serv.*, 475 F.3d 1136, 1147 (9th Cir.2007) (NOAA Fisheries “may not ignore evidence simply because it falls short of absolute scientific certainty”); *see also Ariz. Cattle Growers' Ass'n*, 606 F.3d at 1164 (noting that using the “best scientific data available” means that “[a]lthough the [consulting agency] cannot act on pure speculation or contrary to the evidence, the ESA accepts agency decisions in the face of uncertainty” and the agency does not have to act “only when it can justify its decision with absolute confidence”). Notably, in the 2014 BiOp NOAA Fisheries relies on numerous analytical tools and methodologies that are not scientifically certain, some of which have much less scientific data available than does climate change.⁸¹ Moreover, the Crozier and Zabel 2013 study, which the 2014 BiOp describes as “[a] key piece of new information,”⁸² notes that “uncertainty in climate projections generally did not affect the direction of population response, but only its magnitude.” NMFS006619. Thus, uncertainty does not excuse NOAA Fisheries from conducting an analysis using the best available science regarding climate change and its effects.

The 2014 BiOp's failure to *apply* any of the new information regarding climate impacts was not limited to information relating to the freshwater life stages—the 2014 BiOp did not apply any of the new information relating to climate change. NOAA Fisheries listed significant additional quantitative and qualitative information and then summarily concluded that all of the new information was included in the 2008 BiOp's assumptions and expectations. The 2008 BiOp, however, provided little more than general statements of possible effects, a quantitative analysis that assumed the base period climate conditions repeat, and a qualitative analysis that was limited to assessing whether the RPA actions were consistent with ISAB's recommendations for types of actions that may ameliorate climate change. Scientifically-sound consideration ***922** of climate impacts requires more than that.

Appropriate consideration of climate impacts is of particular importance in the survival and recovery jeopardy prongs that consider future impacts and requires more than an assertion that all new information falls within the 2008 BiOp's general and unspecified "expectations." As an initial matter, it does not appear that the 2008 BiOp considered climate impacts after 2018, so any new information regarding impacts in the 2020s could not be within the 2008 BiOp's general expectations. There is scientific evidence that climate change will cause its own harm in ocean and freshwater life stages. One example is the Abdul-Aziz study, which is cited in the 2014 BiOp as "dramatically" illustrating the "major concern" of ocean range shifts or contractions and is found to be "a particularly relevant study." 2014 BiOp at 178–79. The 2014 BiOp notes that this study shows that climate scenarios imply a large contraction of the summer thermal range, 30–88 percent depending on the species, by the 2080s. *Id.* at 178. The BiOp ignores, however, that this study also showed that climate scenarios imply a smaller contraction, five to 24 percent depending on the species, by the 2020s. NMFS000634 (Abdul-Aziz, et al., 2011 study, Table 5) (projecting declines in 2020s, 2040s, and 2080s); *see also* 2014 BiOp App'x D at D-132 (citing to Abdul Aziz, et al. 2011 study). This new information regarding the "major concern" of ocean contraction of between five and 24 percent by the 2020s was not considered by the 2008 BiOp and could not have been part of its "assumptions." NOAA Fisheries admits as much, describing the Abdul-Aziz study as "new information" that indicates climate effects on ocean conditions "may be

greater than previously anticipated." 2014 BiOp at 178. Yet this study was not applied in any new analysis in the 2014 BiOp.

Another example, involving harm not related to degraded habitat, is the Crozier and Zabel 2013 study, which found that "despite high altitude and largely pristine environment of the Salmon River Basin," a majority of the relevant populations showed reduced carrying capacities under warmer conditions. NMFS006619. This study concluded that "for most of the populations residing under relatively wild conditions at high elevation, our results indicate that the most significant environmental limiting factors in the spawner-to-smolt stage are fall flow and summer temperature." *Id.* The study also noted that "[o]cean conditions profoundly affected population metrics as well, as found by Zabel et al (2006) and when both ocean and freshwater climate changes had negative effects, extinction risks increased dramatically." *Id.* Although NOAA Fisheries identified this study as "key" and providing "new details" that "have implications that are particularly relevant to listed salmonids in the Columbia River basin," it did not apply the "new details" from this study (or any others) to any qualitative or quantitative analysis. 2014 BiOp at 176.

Moreover, the effects of climate change may not only reduce effectiveness of habitat mitigation efforts and cause additive harm, but may result in a catastrophic event that can quickly imperil the listed species. *See* 2014 BiOp App'x D at D-116 ("Disease impacts on migration survival documented in Fraser River sockeye warn of the potential for a very rapid decline in survival, unlike the linear projections generally forecasted, with little managerial recourse."); NOAA 2010 AR, CC.2.1 ⁸³ (April 1, 2010 email from Michelle McClure attaching notes from a science workshop) (scientists commenting that "climate likely to make things change rapidly ... possibility ***923** of catastrophic event"). In light of the fragile state of many of the listed species, such a potential catastrophe should be considered. *Cf.* CVP BiOp at 674 (considering as a potentially catastrophic impact from climate change extinction from three drought years and requiring new passage be developed to provide the listed salmon access to historical habitat that has been blocked).

The 2008 BiOp performed only a broad, general analysis of climate change and thus virtually any new information could be classified as falling within it. The 2014 BiOp's

categorical assumption that the enormous volume of new scientific information on climate impacts were all captured in the 2008 BiOp's analysis does not constitute a complete, reasoned, and adequately explained analysis. *Nw. Coal.*, 544 F.3d at 1052 n. 7. By the 2014 BiOp, NOAA Fisheries had before it a significant amount of new scientific information on the effects of climate change but chose merely to recite some of the information and then apply the 2008 BiOp's general conclusion that because the RPA actions included actions that are consistent with the types of actions recommended by ISAB, the RPA actions sufficiently address climate change. The Court agrees with Plaintiffs that this analysis is insufficient, not based on the best available science, and inconsistent with how NOAA Fisheries analyzed climate change in the CVP BiOp. NOAA Fisheries failed properly to evaluate the degree to which climate change will cause added harm and reduce the effectiveness of the RPA's mitigation measures, the estimated climate impacts after 2018 but within a reasonable time period for a meaningful jeopardy analysis, and whether the benefits expected from the RPA actions are sufficient in light of that expected added harm and decrease in effectiveness of RPA actions. NOAA Fisheries also failed to consider the potentially catastrophic impact of climate change. Without these analyses, NOAA Fisheries could not rationally conclude that the RPA actions, while consistent with the types of actions recommended by ISAB, are sufficient in scope and breadth to avoid jeopardy in light of the harm from the FCRPS with the added impacts of climate change.

4. Kelt Management

Plaintiffs argue that the 2014 BiOp irrationally relies on a six percent survival improvement expected from kelt management actions that are not reasonably certain to occur. RPA 33⁸⁴ requires a Snake River kelt management plan that provides six percent survival improvement by improving in-river survival of kelts, transporting kelts, and reconditioning kelts to make them healthy enough to spawn again. 2014 BiOp at 383. Six percent improvement equates to approximately 180 spawners annually. *Id.* NOAA Fisheries noted that the benefits of increasing the in-river survival of kelts through operating surface passage systems outside the juvenile spill season, improving survival through juvenile bypass systems, and improving survival through turbines, “appears to have long-term potential” for increasing the relevant steelhead population. *Id.* The kelt-specific operations at the Dalles

Dam are estimated to provide 0.9 percent improvement during the BiOp period. *Id.* NOAA Fisheries also noted that there may be incidental benefit to kelts from overall improved travel time through the FCRPS. *Id.* at 384. Transportation was found not to provide much benefit to kelts. *Id.*

Outside of vague assertions of some long-term benefit to kelts from operations improvements, the bulk of the remaining 5.1 percent improvement within the BiOp time frame required from RPA 33 is expected *924 from kelt reconditioning. *See id.* at 385 (“Long-term reconditioning continues to have some potential for increasing kelt survival in the short term. Even with relatively low survival rates back to the spawning grounds, the potential percentage of kelts returning after reconditioning currently exceeds that of the other strategies ...”). The 2014 BiOp noted, however, that “[r]esearch-level efforts in long-term reconditioning have not yet reliably produced enough kelts to meet the 6% survival improvement assumed in the quantitative analysis in the 2008 BiOp.” *Id.* at 387. NOAA Fisheries acknowledged the uncertainties surrounding the survival benefit of kelt reconditioning, including whether there will be actual spawning success and issues relating to nutrition and proper maturation of kelts being held, and noted that research is “currently underway” on these issues. *Id.* at 386.

There have also been problems with the program itself, including inadequacies in the facility at Dworshak Dam, inadequate water supply, and the inability to collect enough kelts to recondition. *Id.* at 385. There is a plan in place to address the inadequacies at the facility, but NOAA Fisheries does not explain whether the improvements to the facility will be completed in time to affect the kelt program during the BiOp period, how much the improved facility is expected to improve the kelt reconditioning program, and how much survival improvement can be expected after the facility is modified. With respect to the number of kelts available to collect and recondition, NOAA Fisheries discussed a study finding that only 5.6 percent of kelts passing through Lower Granite Dam entered the juvenile bypass system (where the kelts are collected for reconditioning), which is far below the 33 percent estimated in the 2008 BiOp. 2014 BiOp at 385. NOAA Fisheries then noted that the Corps plans to complete an overhaul of the juvenile bypass system in 2016 that should “substantially

improve” the condition for steelhead kelts and their capture for reconditioning. *Id.* at 386. NOAA Fisheries does not explain, however, how this will provide any survival benefit within the BiOp time period. NOAA Fisheries opined that as improvements to the program are made and “when kelt reconditioning moves into the production phase,” kelt reconditioning “could make a more significant contribution.” *Id.* at 387. In 2012, only nine natural origin reconditioned kelts were released in the Snake River, well short of the 180 annual requirement (assuming all 180 successfully spawn). *See* NMFS002658.

The Independent Scientific Review Panel (“ISRP”) reviewed the kelt reconditioning program as part of its Retrospective Report in 2011. *See* ACE_0135312. The ISRP concluded that kelt reconditioning “is in an early stage of development,” and that long-term reconditioning shows “some promise,” but that “[it] remains to be seen whether reconditioning can contribute meaningfully as a recovery strategy.” *Id.* at 28 (ACE_0135347).

In the 2014 BiOp, NOAA Fisheries summarized the many problems with the kelt management program and then, incongruously concluded that “substantial progress” had been made to attain the six percent survival goal and that there is funding for “the facilities and research necessary to provide a high level of certainty that some combination of operations to improve the survival of inriver migrants, kelt transportation, or longer-term reconditioning will achieve the 6% survival improvement goal by 2018.” 2014 BiOp at 387. This is not “a rational connection between the facts found and the choice made.” *Motor Vehicle Mfrs. Ass'n*, 463 U.S. at 43, 103 S.Ct. 2856 (quotation marks omitted). As NOAA Fisheries acknowledged, transportation is not effective for kelts and the kelt reconditioning program *925 is plagued with uncertainties and difficulties. Most of the improvements expected to help the reconditioning program will not occur until near the end of the BiOp period, and even with those improvements there is uncertainty as to whether kelt reconditioning can offer the benefits expected. Whatever promise the kelt reconditioning program may have, as discussed above, the facts found by NOAA Fisheries show that the program is not collecting or releasing reconditioned kelts at the rate expected in the 2008 BiOp and had only released a total of nine kelts through 2012. With all of the uncertainties surrounding the reconditioning program and its lack of progress, NOAA Fisheries fails to provide a reasonable and rational explanation how the kelt

management plan will provide an improvement of 180 spawners per year, or even the additional 153 per year after taking into consideration the 0.9 percent improvement from operations changes, by 2018. Thus, NOAA Fisheries' jeopardy analysis is also arbitrary and capricious for relying on six percent improvement as a result of the kelt management plan.

5. Avian Predation

a. Double-crested cormorants

The 2008 BiOp did not include any mitigation measures relating to double-crested cormorants (“DCCO”); it assumed the base period mortality from DCCO would continue into the future. The mortality caused by DCCO, however, increased, resulting in additional mortality estimated at 3.6 percent for Columbia basin steelhead and 1.1 percent of certain listed salmon. 2014 BiOp at 409. Thus, the 2014 BiOp added to RPA 46⁸⁵ action to reduce mortality caused by DCCO to the Base Period estimates.

Plaintiffs concede that DCCO consume millions of fish. Plaintiffs, however, argue that the plan to address the mortality caused by DCCO is undefined, that NOAA Fisheries improperly relied on a cormorant program from Leech Lake to establish the 2014 BiOp's DCCO plan, ignoring the most recent negative data relating to the Leech Lake program and instead relying on the more positive older data, and that NOAA Fisheries continues its pattern of unreasonable optimism in assuming that 100 percent of the expected survival improvements will be achieved through its DCCO reduction plan. Defendants respond that the DCCO reduction plan is based on more than the Leech Lake study, that the new data on Leech Lake does not indicate that cormorant reduction plans are unsuccessful, and that NOAA Fisheries assumptions regarding the survival benefits from the DCCO plan were reasoned and entitled to deference.

The 2014 BiOp requires a plan to reduce DCCO to the levels of the Base Period. *Id.* at 410. It is a reasonable assumption by NOAA Fisheries that reducing DCCO to Base Period levels will also reduce fish mortality caused by those DCCO to Base Period levels. In determining that the Action Agencies will be able to successfully implement a DCCO reduction plan, the 2014 BiOp cites to the cormorant reduction plan at Leech Lake as a “recent”

example, but it also cites to the fact that cormorant plans have been successfully implemented in Europe and Japan. *Id.* at 411 (citing to Russell, *et al.* 2012; Carss 2003; USFWS 2009). NOAA Fisheries' conclusion that a plan can be implemented that will achieve the expected results is reasonable and rationally based on the facts found. NOAA Fisheries' determination is entitled to deference.

b. Caspian Terns

RPA 45⁸⁶ in the 2008 BiOp anticipated that the acreage of Caspian tern nesting *926 on East Sand Island would be reduced from approximately 6.5 acres to between 1.5 and 2.0 acres. 2008 RPA Table at 64. This reduction in Caspian tern habitat was expected to result in a decrease in nesting pairs of Caspian terns on East Sand Island from approximately 9,000 pairs to approximately 3,125 pairs. 2008 BiOp at 7–48. This reduction in nesting pairs was anticipated to provide survival improvements ranging from 0.7 percent to 7.8 percent, depending on the ESU.⁸⁷

NOAA Fisheries acknowledges that with respect to benefits from reducing avian predation, “compensatory mortality” may be a factor. *See id.* “Compensatory mortality” arises because fish that are eaten by Caspian terns are “predestined to die as a result of illness, poor condition or other predators.” *Id.* NOAA Fisheries noted that current literature and studies do not provide specific estimates or ranges for compensatory mortality, and thus “NOAA Fisheries assumes that tern predation likely falls between being completely additive or completely compensatory (Roby *et al.* 2003). Consequently, in estimating the effect of reducing tern predation NOAA Fisheries assumed a hypothetical compensatory mortality of 50% (Roby *et al.* 2003).” *Id.* Yet, in calculating the benefits of reduced Caspian tern predation in each ESU, the 2008 BiOp states:

However, assuming a hypothetical compensatory mortality of 50% (Roby *et al.* 2003), the range of survival benefits from reducing tern predation across the affected ESUs would decline from 0.7–3.4% to 0.3–1.7%, approximately. As a result of the small incremental reduction in survival that results from reducing predation by terns nesting on

East Sand Island, consideration of compensatory mortality does not significantly alter the estimated benefits of this action.

See id. at 8.3–26 (discussing compensatory mortality and expected benefits for Snake River spring/summer Chinook—similar statements are made with respect to other ESUs).

In the 2014 BiOp, NOAA Fisheries notes that RPA 45 has reduced the Caspian terns' nesting acreage from approximately 6 acres to approximately 1.58 acres, resulting in a reduction of nesting pairs from approximately 9,000 to approximately 6,000 to 6,500. 2014 BiOp at 411. Approximately 8.3 acres of new nesting habitat have been developed and approximately 1,500 pairs of Caspian terns have relocated to this new habitat. NOAA Fisheries acknowledges that the Caspian tern relocation from East Sand Island is below the relocation anticipated in the 2008 BiOp. *Id.* NOAA Fisheries further acknowledges that the reduction in nesting pairs on East Sand Island has not resulted in any decline in smolt consumption by Caspian terns. *Id.* NOAA Fisheries concludes that the expected improved survival from Caspian tern relocation is not likely to occur unless the Action Agencies can develop additional alternative habitat and further reduce the habitat at East Sand Island. *Id.* at 411–12. The Action Agencies plan to reduce Caspian tern habitat by another 0.58 acres, to approximately one acre, and plan to develop additional, coastal habitat where Caspian terns can relocate. NMFS004237 (FCRPS 2014–2018 Implementation Plan at 81, RPA 45). NOAA Fisheries concludes in the 2014 BiOp that with these additional measures, it remains likely that the reduction in Caspian terns and their associated *927 fish consumption will reach the levels anticipated in the 2008 BiOp.

Plaintiffs argue that the conclusion by NOAA Fisheries that Caspian tern reduction will occur and will provide the estimated survival benefits is arbitrary and capricious in light of the Caspian tern management plan's total failure to date and the irrational decision to exclude consideration of compensatory mortality despite acknowledging that it exists and estimating its existence to be approximately 50 percent. Defendants argue that NOAA Fisheries reasonably concluded, based on other tern hazing projects, that the additional 0.58 reduction in acreage will result in the anticipated reduction in Caspian

terns, reasonably concluded that the reduced number of Caspian terns will eat fewer fish as anticipated, and reasonably concluded that compensatory mortality was insignificant.

The 2008 and 2014 BiOps rely on obtaining all of the survival improvement estimated for Caspian tern reduction in reaching their no jeopardy conclusions. The fact that NOAA Fisheries stated it believes that a proper estimation of compensatory mortality for Caspian tern predation is 50 percent and then refused to apply that 50 percent reduction because it “does not significantly alter the estimated benefits” is arbitrary and capricious. 2008 BiOp at 8.3–26.⁸⁸ NOAA Fisheries did not conclude in the 2008 BiOp that the science of compensatory mortality is uncertain and thus it is not applying compensatory mortality. Instead, NOAA Fisheries concluded that an appropriate reduction for compensatory mortality would be 50 percent, and then NOAA Fisheries inexplicably determined that it would not apply that 50 percent reduction because it was not significant. Survival benefits assumed from Caspian tern reduction range from 0.7 to 7.8 percent, and NOAA Fisheries offers no rational explanation for why reducing those benefits by half would not have any effect on NOAA Fisheries' no jeopardy determination, which relies on all of the cumulative survival improvements for all RPA actions. Reliance on full survival improvements that NOAA Fisheries acknowledges should be reduced by half fails to give the “benefit of the doubt” to the endangered species. *Sierra Club*, 816 F.2d at 1386.

Further, NOAA Fisheries' determination that the full benefits anticipated in the 2008 BiOp will occur despite the total failure of the Caspian tern management plan offers no “rational connection between the facts found and the choice made.” *Motor Vehicle Mfrs. Ass'n*, 463 U.S. at 43, 103 S.Ct. 2856 (quotation marks and citation omitted). Between 2008 and 2014, the Caspian tern population was reduced by approximately 3,000 nesting pairs, and yet there was zero survival improvement. NOAA Fisheries does not explain how an additional reduction of 3,000 nesting pairs will achieve all of the originally-estimated survival benefits when a reduction of 3,000 nesting pairs did not achieve any survival benefit. Additionally, the habitat of the Caspian terns was reduced by nearly 4.5 acres and there was zero survival benefit achieved. NOAA Fisheries does not provide a reasonable explanation for why a reduction of an additional 0.5 acres will suddenly

provide 100 percent of the originally-anticipated survival benefits. The 2014 BiOp's conclusion that 100 percent of the 2008 BiOp's anticipated survival benefits from Caspian tern reduction will be achieved is arbitrary and capricious and thus the no jeopardy conclusion is arbitrary and capricious because it relies on these benefits accruing in full.

***928 6. Treatment of Uncertainty**

The Court has some concern with the 2014 BiOp's inconsistent treatment of uncertainty. Where uncertain information *supported* NOAA Fisheries' no jeopardy conclusion, NOAA Fisheries relied on that information, including without limitation, relying on: (1) the 2008 BiOp's wide confidence intervals for expected impacts in the recovery metrics to support continued reliance on the 2008 BiOp's conclusions despite R/S declining instead of increasing as anticipated; (2) specific, numeric survival benefits attributed to habitat improvement; (3) immediate survival benefits from habitat restoration even though such benefits may take years to accrue and cannot be detected; (4) uncertain base period estimates; (5) survival benefits attributed to kelt reconditioning; and (6) survival benefits attributed to reduction in Caspian tern habitat. Conversely, where information was uncertain but may *not* have supported NOAA Fisheries' no jeopardy conclusion, NOAA Fisheries disregarded or discounted it, including effects of climate change, density dependence, and latent mortality. NOAA Fisheries may not, without an adequate explanation, “prefer[] uncertain favorable model results and reject[] other equally uncertain model results tending to undermine a no jeopardy conclusion.” *IDFG*, 850 F.Supp. at 899. Because the Court discussed the relevant treatment of uncertainty in analyzing Plaintiffs' other specific challenges to the 2014 BiOp, however, the Court does not separately address Plaintiffs' arguments regarding uncertainty.

7. Environmental Baseline, Cumulative Effects, and Contingency Plan

Plaintiffs argue that NOAA Fisheries did not rationally consider the environmental baseline or cumulative effects because the agency: (1) failed properly to calculate the expected additive benefit or negative effects of the additional federal projects identified in the 2014 BiOp; (2) measured and considered positive effects while ignoring negative effects; and (3) failed to consider whether, six years after the 2008 BiOp, there are additional non-federal

projects that are reasonably certain to occur. Defendants respond that in 2008 NOAA Fisheries properly considered the environmental baseline and all cumulative effects, considering both positive and negative effects of all relevant actions, and that NOAA Fisheries properly considered additional actions between 2008 and 2014.

Plaintiffs further argue that the 2014 BiOp does not include contingency measures that are sufficient to ensure the required benefit to the species is reached. Plaintiffs argue that the “trigger” points for any contingency action require such a dramatic decline in the status of the species that they are essentially meaningless, and that the actions, once “triggered” are insufficient to overcome the precarious state of the species. Nez Perce argues that without including in the contingency plan efforts to begin assessing the feasibility of dam breaching, no contingency plan can truly be effective. Defendants respond that biological opinions are not required to have contingency plans and that the contingency measures in the 2014 BiOp are based on sound science and provide more than sufficient adaptability. Defendants also respond that dam breaching requires Congressional action and biological opinions can only contain actions that are reasonably certain to occur, so including dam breaching as a contingency would be inappropriate.

Because the Court has already found the 2014 BiOp to be arbitrary and capricious, the Court declines to address these arguments.

D. Critical Habitat

Under the ESA, federal action may not be “likely to” result in “destruction or ***929** adverse modification” of designated “critical” habitat of listed species. [16 U.S.C. § 1536\(a\)\(2\)](#). The ESA defines “critical habitat” to include those areas with the physical or biological features “essential to the conservation” of listed species. [16 U.S.C. § 1532\(5\)\(A\)](#). “Conservation” in this context means “to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary.” *Id.* at [§ 1532\(3\)](#). In other words, conservation means improvement to the point of delisting. “Destruction or adverse modification” is defined as:

a direct or indirect alteration that appreciably diminishes the value of

critical habitat for both the survival and recovery of a listed species. Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical.

[50 C.F.R. § 402.02](#). The Ninth Circuit instructs that this regulation must be read to mean that adverse modification includes alterations that appreciably diminish the value of critical habitat for either survival or recovery, and requires an analysis of the impacts to recovery of the alterations to critical habitat. *See Gifford Pinchot Task Force v. U.S. Fish & Wildlife Serv.*, [378 F.3d 1059, 1069 \(9th Cir.2004\)](#).

NOAA Fisheries has designated critical habitat for 12 of the 13 relevant listed species.⁸⁹ *See* 2014 BiOp at 43. This designated critical habitat includes the juvenile and adult migration corridors of the Snake River and Columbia River. *See* 2008 BiOp at 3–5 to 3–6. NOAA Fisheries also concluded that “safe passage” through the migratory corridor, water temperature, water quantity, and water quality are some of the primary constituent elements (“PCE”) of this critical habitat. *Id.* NOAA Fisheries has described the PCEs for the migration corridors as:

Freshwater migration corridors free of obstruction with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival. These features are essential to conservation because without them juveniles cannot use the variety of habitats that allow them to avoid high flows, avoid predators, successfully compete, begin the behavioral and physiological changes needed for life in the ocean, and reach the ocean in a timely manner. Similarly, these features are essential for adults because they allow fish in a non-feeding condition to successfully

swim upstream, avoid predators, and reach spawning areas on limited energy stores.

Id. at 3–6.

Plaintiffs' challenges to the adequacy of the 2008 and 2014 BiOps' adverse modification analysis focuses on the mainstem habitat—the migration corridors. Plaintiffs argue that NOAA Fisheries did not properly analyze whether the migration corridors are adversely modified under the 2014 BiOp because NOAA Fisheries failed properly to consider recovery. Plaintiffs also argue that the NOAA Fisheries created a new and improper standard to evaluate critical habitat—determining whether the habitat “retains the [current] ability to become functional.” Defendants respond that the standard is proper, and even if it *930 were not it is irrelevant because the analysis performed demonstrates that the migration corridors are being improved under the RPA and are not being adversely modified.

1. “Retaining the Current Ability to Become Functional” Standard

For its critical habitat analysis, NOAA Fisheries considered “whether affected designated critical habitat is likely to remain functional (or retain the ability to become functional) to serve the intended conservation role for the species in the near and long term under the effects of the action, environmental baseline and any cumulative effects.” 2008 BiOp at 1–10. The Court finds that this standard fails to comply with the ESA.

NOAA Fisheries acknowledged that the migration corridors, among other designated critical habitat, are degraded, are not functional, and do not serve their conservation role. *See* 2014 BiOp at 148 (“Habitat alterations that have resulted in the loss of important spawning and rearing habitat and the loss or degradation of migration corridors were described in Chapter 8 of the 2008 BiOp. In general, critical habitat is still not able to serve its conservation role in many of the designated watersheds.”); 2008 BiOp at 3–7 (noting that critical habitat is degraded and concluding “[t]hus, critical habitat is not able to serve its conservation role in its current condition in many of the designated watersheds”). Further, NOAA Fisheries concluded that operation of the FCRPS will adversely modify critical habitat. *See id.* at 1–6. NOAA Fisheries and the Action Agencies developed

the RPA, in part, to avoid adversely modifying the critical habitat.

In this situation, where critical habitat is already severely degraded and the operation of the FCRPS has been found to adversely modify critical habitat, asking whether the RPA allows this degraded habitat to retain its current ability to someday become functional fails to comply with the ESA's directive. NOAA Fisheries must analyze whether the federal action will adversely modify—meaning alter in a manner that appreciably diminishes the value of critical habitat for either survival or recovery of the listed species—the designated critical habitat. Maintaining the status quo when there is severely degraded habitat that does not serve its conservation role and will be adversely modified unless changes are made to FCRPS operations does not suffice. *See Nez Perce Tribe v. NOAA Fisheries*, 2008 WL 938430, at *6 (D.Id. Apr. 7, 2008) (“Because critical habitat for the steelhead is being destroyed by the current operation of the [projects], the ESA forbids the BOR from continuing that operation. To put it affirmatively, the BOR must improve ... operations to stop the destruction of critical habitat.”).

In defending the “retain the current ability to become functional” standard, Defendants rely on cases where the current habitat is functional, and the proposed federal agency action either maintains the status quo functionality or even slightly reduces the functionality. *See, e.g., Rock Creek Alliance v. U.S. Fish & Wildlife Serv.*, 663 F.3d 439, 442 (9th Cir.2011) (affirming the consulting agency's conclusion that “[a]ll [critical habitat] elements in Rock Creek are expected to remain functional, albeit at a lower [functional] level” (alterations in original)). That is not the situation here because NOAA Fisheries already has concluded that the habitat is not functional.

2. NOAA Fisheries' Critical Habitat Analysis

Although the standard of allowing critical habitat to retain its current ability to become functional at some point fails to comply with the ESA, the analysis conducted *931 by NOAA Fisheries demonstrates that its conclusion that the RPA is not adversely modifying critical habitat did more than just permit the status quo. Because the FCRPS operations were found to adversely modify critical habitat, the RPA must improve the FCRPS operations or the critical habitat to a point where the critical habitat is no longer being adversely modified. To find otherwise ignores NOAA Fisheries'

original finding that the FCRPS operations, without the RPA, will appreciably diminish the value of critical habitat for survival or recovery of the listed species. The RPA need not restore habitat to a fully functioning level, but it must at least include improvements sufficient to avoid the adverse modification of the FCRPS.

Plaintiffs dispute NOAA Fisheries' critical habitat analysis relating to the migratory corridors. Specifically, Plaintiffs argue that the RPA does not avoid adverse modification for the safe passage, water quality, water temperature, and water quantity PCEs of the migratory corridor critical habitat. Thus, the Court's analysis focuses on the migratory corridor and these specific PCEs.

NOAA Fisheries considered the past, current, and future functioning of critical habitat PCEs, including those of the migratory corridor. NOAA Fisheries' analysis demonstrates that significant improvements to migratory corridor PCEs have been or are expected to be implemented under the RPA. Unlike with NOAA Fisheries' jeopardy recovery analysis using the improper "trending toward recovery" standard, which ensured only that the three productivity metrics were met, here *how* critical habitat was deemed to meet the improper "retain the current ability to become functional" standard involved much more than the standard required and included significant improvements. For example, in discussing the critical habitat for the Snake River fall Chinook salmon, NOAA Fisheries noted:

NOAA Fisheries designated critical habitat for SR fall Chinook salmon including all Columbia River estuarine areas and river reaches upstream to the confluence of the Columbia and Snake rivers; all Snake River reaches from the confluence of the Columbia River upstream to Hells Canyon Dam; the Palouse River from its confluence with the Snake River upstream to Palouse Falls; the Clearwater River from its confluence with the Snake River upstream to its confluence with Lolo Creek; and the North Fork Clearwater River from its confluence with the Clearwater River upstream to Dworshak Dam. The environmental baseline within the action area, which encompasses all of these areas, has improved over the last decade but does not yet fully support the conservation value of designated critical habitat for SR fall Chinook. The major factors currently limiting the conservation value of critical habitat are juvenile mortality at mainstem [hydro](#) projects in the lower Snake and Columbia rivers; avian

predation in the estuary; and physical passage barriers, reduced flows, altered channel morphology, excess sediment in gravel, and high summer temperatures in tributary spawning and rearing areas.

Although some current and historical effects of the existence and operation of the hydrosystem and tributary and estuarine land use will continue into the future, critical habitat will retain at least its current ability for PCEs to become functionally established and to serve its conservation role for the species in the near- and long-term *Prospective Actions will substantially improve the functioning of many of the PCEs*; for example, implementation of surface passage routes at Little Goose, Lower Monumental, McNary, and John Day dams, in concert with training spill to provide ***932** safe egress (i.e., avoid predators) will improve safe passage in the juvenile migration corridor. Reducing predation by Caspian terns and northern pikeminnows will further improve safe passage for juveniles.

2008 BiOp at 8.2–31 (emphasis added). NOAA Fisheries engaged in a similar discussion for the other listed species, noting the relevant mainstem improvements. *See id.* at 8.3–46 (Snake River spring/summer Chinook); 8.4–23 (Snake River sockeye); 8.5–49 (Snake River steelhead); 8.6–33 (Upper Columbia River spring Chinook); 8.7–43 (Upper Columbia River steelhead); 8.8–46 (Middle Columbia River steelhead); 8.10–52 (Lower Columbia River Chinook) (focusing on predation efforts along the mainstem); 8.12–33 (Lower Columbia River steelhead) (same).

Similarly, in the 2014 BiOp, NOAA Fisheries considered improvements to the migratory corridors as follows:

The RPA specifies a program of actions for the operation and structural modification of the mainstem dams to achieve fish survival performance standards coupled with storage and release of water to maintain adequate river migration flows (RPA Actions 4–33 and 50–55). Juvenile salmon and steelhead survival is also limited in the mainstem by fish and bird predators that inhabit the dams and reservoirs. Marine mammals also

prey on adult salmonids in the lower Columbia River and estuary. The RPA calls for programs to reduce predation on listed salmonids through relocation, hazing, and bounties, guided by an ongoing research program (RPA Actions 43 through 49 and 66 through 70).

2014 BiOp at 35. The 2014 BiOp also confirmed that the RPA is “substantially improving the functioning of many PCEs.” *Id.* at 477.

Plaintiffs argue that despite this analysis, because NOAA Fisheries did not set in-river survival levels, its critical habitat analysis does not properly consider recovery and must fail under *NMFS III*, 524 F.3d at 936 (“It is only logical to require that the agency know roughly at what point survival and recovery will be placed at risk before it may conclude that no harm will result from ‘significant’ impairments to habitat that is already severely degraded.”). The Court remains concerned regarding NOAA Fisheries failure to consider what constitutes a rough recovery level. But with regard to the migratory corridor critical habitat, although NOAA Fisheries did not identify an in-river recovery or survival level, it did model and analyze the survival improvements in the mainstem habitat resulting from the RPA. *See* 2008 BiOp at 7–37 to 7–43 (describing “NOAA Fisheries’ analytical approaches to estimating how proposed changes in FCRPS system and individual project operations and changes in individual project configurations (e.g. new RSWs, etc.), collectively termed **Hydro** Actions, will affect fish survival”); 2014 BiOp at 345–46 (discussing the surface passage structures installed on all eight lower Snake River and lower Columbia River dams, the spillway wall constructed on the Dalles Dam, the addition of avian wires, the relocation of juvenile bypass system outfalls, and the alteration of spillway operations). The RPA has resulted or is expected to result in quantifiable improvements to the number of juveniles passing through the turbines (NMFS003297, 3445–47), the predation on juveniles (2014 BiOp at 345–46; NMFS003298, 3448–53), the juvenile dam passage survival rate (2014 BiOp at 358–60), juvenile travel time (2014 BiOp at 441; NMFS003296, 3220), and juvenile reach⁹⁰ survival (2014 BiOp at 360–61).

[17] *933 Although NOAA Fisheries could have done more in its analysis of how the mainstem habitat affects the recovery of the listed species, NOAA Fisheries’ analysis is not irrational or in clear error. In light of the significant improvements to the mainstem habitat, the Court does not find arbitrary or capricious NOAA Fisheries’ conclusion that the RPA will not adversely modify the designated critical habitat. *Cf. Rock Creek Alliance*, 663 F.3d at 443 (“A fair reading of the Fish and Wildlife Service’s biological opinion, coupled with the deference due to the agency, leads to the conclusion that the Fish and Wildlife Service adequately considered the impact that the mine could have on the habitat’s value for bull trout recovery.”). Accordingly, Plaintiffs’ motion regarding NOAA Fisheries’ conclusion that the RPA is not likely to adversely modify critical habitat is denied and Defendants’ cross motion is granted.

E. National Environmental Policy Act

Provisional adoption and implementation of a biological opinion by an action agency triggers the action agency’s obligation to comply with NEPA. *Jewell*, 747 F.3d at 641–42. Accordingly, the record of decisions (“ROD”) of the Corps and BOR adopting and implementing the 2014 BiOp triggered those agencies’ obligation to comply with NEPA. Defendants do not argue that the Corps and BOR were not required to comply with NEPA. They argue instead both that Plaintiffs have waived their right to raise a NEPA claim and that there are sufficient NEPA documents in the record to comply with the Action Agencies’ NEPA obligations because one single, programmatic EIS is not required or feasible in this case.

1. Waiver

[18] Defendants argue that because there have been decades of litigation involving various BiOps relating to the FCRPS and Plaintiffs have never before raised a NEPA claim, Plaintiffs have waived their right now to assert their NEPA claim. Defendants argue that there is no reason Plaintiffs could not have raised their NEPA claim at some point before their Seventh Amended Complaint. In neither the briefing nor oral argument did any Defendant articulate precisely at what point Plaintiffs had an obligation to raise their NEPA claim to avoid waiver, but failed to do so. It appears Defendants are making a cumulative waiver claim; because there has been so much litigation, Plaintiffs could have raised a NEPA

claim at some earlier point in time. This argument is unavailing.

This case is unusual in the NEPA context because no draft environmental assessment (“EA”) or EIS was prepared and there were no NEPA proceedings. Generally, an agency prepares a draft EA or EIS, circulates that draft for public review and comment, reviews and responds to any comments, makes appropriate changes if needed, and circulates a final EA or EIS. See *Pac. Coast Fed’n of Fishermen’s Assocs. v. Blank*, 693 F.3d 1084, 1088 (9th Cir.2012) (citing to 40 C.F.R. §§ 1500–1508). In this process, “[p]ersons challenging an agency’s compliance with NEPA must ‘structure their participation so that it ... alerts the agency to the [parties’] position and contentions,’ in order to allow the agency to give the issue meaningful consideration.” *Dep’t of Transp. v. Pub. Citizen*, 541 U.S. 752, 764, 124 S.Ct. 2204, 159 L.Ed.2d 60 (2004) (quoting *934 *Vermont Yankee Nuclear Power Corp. v. Nat. Res. Def. Council, Inc.*, 435 U.S. 519, 553, 98 S.Ct. 1197, 55 L.Ed.2d 460 (1978)) (second alteration in original). Failure to do so may be deemed a waiver, but even under the general NEPA process, the Ninth Circuit “has declined to adopt ‘a broad rule which would require participation in agency proceedings as a condition precedent to seeking judicial review of an agency decision.’” *Ilio’ulaokalani Coalition v. Rumsfeld*, 464 F.3d 1083, 1092 (9th Cir.2006) (quoting *Kunaknana v. Clark*, 742 F.2d 1145, 1148 (9th Cir.1984)). Notably, the Ninth Circuit “explicitly distinguish[es] between claims based on procedural violations [of NEPA] and situations like *Vermont Yankee* and *Havasupai Tribe [v. Robertson]*, 943 F.2d 32 (9th Cir.1991)] that ‘involve[] the failure to raise a specific factual contention regarding the substantive content of an EIS during the NEPA public comment process.’” *Id.* at 1092 (quoting *Nw. Envtl. Def. Ctr. v. Bonneville Power Admin.*, 117 F.3d 1520, 1535 (9th Cir.1997) (noting the Northwest Power Act, which *Bonneville Power* addressed, was “analogous to NEPA in that it ‘governs the public comment process.’”)).

[19] Here, there was no draft EA or EIS and no NEPA public comment period. Plaintiffs allege that the Corps and BOR failed entirely to follow NEPA and its required procedures, as opposed to the usual allegation that the involved EA or EIS is deficient. Thus, Plaintiffs’ NEPA claim is more analogous to *Ilio’ulaokalani* and *Northwest Environmental Defense Center*, and not to situations such as *Vermont Yankee*. Importantly, “the primary

responsibility for NEPA compliance is with the agency: ‘the agency bears the primary responsibility to ensure that it complies with NEPA’” *Ilio’ulaokalani*, 464 F.3d at 1092; see also *Friends of the Clearwater v. Dombeck*, 222 F.3d 552, 559 (9th Cir.2000) (“Compliance with NEPA is a primary duty of every federal agency; fulfillment of this vital responsibility should not depend on the vigilance and limited resources of environmental plaintiffs.”). This is particularly critical in a case like this, where the action agency does not prepare any NEPA analysis.

The fact that there have been years of underlying litigation in this case does not change the Court’s analysis. First, the underlying litigation primarily has involved the sufficiency of the biological opinions issued by NOAA Fisheries under its ESA obligations. It has not involved the sufficiency of the Action Agencies’ obligations under NEPA. The two statutes contain different requirements. For example, NEPA requires analysis of alternative actions that may not be funded and are outside the jurisdiction of the lead agency, whereas a reasonable and prudent alternative in a section 7 ESA biological opinion must be reasonably certain to occur, with specific and binding plans and committed resources. Thus, the actions proposed on which public and stakeholder comment was obtained in the ESA process may not be analogous to what will be required in a NEPA process.

Second, Defendants’ inability to articulate where in the more than 20-year litigation process Plaintiffs were obligated to raise their NEPA claim to avoid waiver is telling. Defendants argue that a comprehensive EIS was prepared in 1992 and supplemented in 1993. At what point were Plaintiffs obligated to argue that EIS was outdated and a new one was required? Defendants do not contend that after five or ten years those NEPA documents were automatically outdated and triggered some obligation by Plaintiffs to challenge the NEPA documents or waive any challenge. To the contrary, even now Defendants are relying in part on those older NEPA documents as satisfying the Corps and BOR’s current NEPA obligations.

*935 Third, the Ninth Circuit issued its opinion in *Jewell* on March 13, 2014. In *Jewell*, the Ninth Circuit held clearly and explicitly, for the first time, that action agencies adopting an ROD implementing a biological opinion generally *must* prepare an EIS. *Jewell*, 747 F.3d at 640–42. Plaintiffs sought leave to file a Seventh

Amended Complaint on June 17, 2014. Dkt. 1921. In their memorandum in support of this motion, Plaintiffs expressly noted that they were adding NEPA claims and cited to *Jewell* for the proposition that Plaintiffs' NEPA claim was “grounded in established legal requirements.” Dkt. 1922 at 10–11. Plaintiffs' motion was granted, and they filed their Seventh Amended Complaint on July 9, 2014, which expressly cites to *Jewell* in alleging NEPA violations. It is reasonable to conclude that the Ninth Circuit's opinion in *Jewell* brought the Action Agencies' alleged NEPA violations to the attention of Plaintiffs and that before the Ninth Circuit explicitly declared in *Jewell* that failure to prepare an EIS when adopting an ROD implementing a biological opinion violated NEPA, Plaintiffs reasonably focused their litigation efforts elsewhere in this case. This further supports the conclusion that Plaintiffs were not under an obligation to raise their NEPA claim earlier to avoid risk of waiver. Defendants' argument that Plaintiffs waived their right to raise a claim under NEPA is rejected.

2. Deference

[20] [21] Defendants argue that the Action Agencies' decision not to produce a single EIS is entitled to deference. Generally, an agency's determination of the scope of an EIS is entitled to deference. *See, e.g., Selkirk Conservation All. v. Forsgren*, 336 F.3d 944, 962 (9th Cir.2003) (“The selection of the scope of an EIS is a delicate choice and one that should be entrusted to the expertise of the deciding agency.”). Because the Action Agencies did not conduct an EA or EIS, however, the Court finds that the appropriate standard of review is to consider the Action Agencies' determination for “reasonableness.” *See Jewell*, 747 F.3d at 641 n. 46 (“We review an agency's decision that it need not prepare an EIS for ‘reasonableness.’” (citation omitted)). For the reasons discussed below, the Court finds the Action Agencies' decision not to produce an EA or EIS for the 2014 BiOp RPA was not reasonable.⁹¹

3. Adequacy of Existing NEPA Documents

Defendants argue that there are sufficient NEPA documents in the record to meet the Corps' and BOR's obligations under NEPA. The Corps' ROD addressed NEPA in two paragraphs. ACE_0000010 (ROD at 9). In the first paragraph, the Corps listed several NEPA documents as “relevant” to its decision to adopt and implement the 2014 BiOp: (1) unidentified “individual

project” EISs;⁹² (2) 1992 Columbia River Salmon Flow Improvement Measures Options Analysis EIS (“Flow EIS”); (3) 1993 Supplemental Flow EIS; (4) 1997 System Operation Review EIS; (5) 2002 Lower Snake River Juvenile Migration Feasibility Report EIS; (6) 2006 Upper Columbia Alternative Flood Control and Fish Operations EIS; (7) 2011 Albeni *936 Falls Flexible Winter Operations EA; and (8) 2014 Inland Avian Predation Management Plan and EA. In the second paragraph, the Corps concluded that it

believes that the effects of the action are within the range of the analyses conducted in the existing NEPA documents. For studies of certain future structural modifications and operations, or other actions, such as future estuary habitat actions, hatchery reform actions, and elements of the strategy to further reduce avian predation, the Corps will complete additional NEPA analysis.

Id.

BOR's 2014 ROD is a “supplemental” decision document, and it does not specifically mention NEPA. BR0000002–11. It does, however, attach BOR's 2010 Supplemental Decision Document, which discusses NEPA in footnote eight, noting that BOR considered the following previous NEPA documents as relevant: (1) 1992 Flow EIS; (2) 1993 Supplemental Flow EIS; (3) 1997 System Operation Review EIS; (4) 2006 Upper Columbia Alternative Flood Control and Fish Operations EIS; (5) Lake Roosevelt Incremental Storage Release Project FONSI and EIS; and (6) 2004 Banks Lake Drawdown EIS. BR0000024 (2010 Supplemental ROD at 9). BOR also acknowledged that future “site-specific” EISs might be necessary. *Id.*

Plaintiffs argue that these documents are unreasonably outdated and the more recent documents are either irrelevant or too narrow in scope to constitute compliance with NEPA for the RODs. The Court agrees.

a. The older documents are unreasonably stale.

The 1992, 1993, and 1997 EISs relate to the FCRPS and are relevant. Plaintiffs argue, however, that they fail to meet the Action Agencies' NEPA obligations in this case because they are outdated and do not consider all of the actions in the RPA.

[22] For purposes of NEPA compliance, relying “on data that is too stale to carry the weight assigned to it may be arbitrary and capricious.” *N. Plains* 668 F.3d at 1086 (citing *Lands Council*, 395 F.3d at 1031 (finding that six-year-old data, without updated habitat surveys, was too stale)). Notably, the Council of Environmental Quality, which promulgates the NEPA regulations, has emphasized that NEPA documents more than five years old should be “carefully reexamined” for supplementation. See Council on Environmental Quality, Executive Office of the President, Publication of Memorandum to Agencies Containing Answers to 40 Most Asked Questions on NEPA Regulations, 46 Fed. Reg. 18026–01 at *18036 (1981) (“CEQ FAQ”) (“32. Q. Under what circumstances do old EISs have to be supplemented before taking action on a proposal? A. As a rule of thumb, if the proposal has not yet been implemented, or if the EIS concerns an ongoing program, EISs that are more than 5 years old should be carefully reexamined to determine if the criteria in Section 1502.9 compel preparation of an EIS supplement.”).

Defendants argue that the older NEPA documents are not too stale because there is no new information bearing on the proposed action or its effects and the physical environment has essentially remained unchanged. Defendants, however, do not cite to any scientific studies or record testimony supporting this conclusion. To the contrary, throughout this case Defendants have argued that the RPA actions, both as already implemented and expected to be implemented, make significant changes to the physical environment and the effects of the FCRPS. Part of Defendants' arguments regarding whether the RPA actions adversely modify critical habitat is that the RPA actions significantly *improve* the mainstem habitat for fish and *do not* maintain the status quo. Defendants' opposite *937 contention for purposes of NEPA is without merit.

The 2000, 2004, 2008, and 2014 BiOps discuss actions taken over the past 20 years that affect the physical environment. Moreover, several new species have been listed and much additional habitat has been designated

as critical habitat. Defendants do not explain how the EISs from the 1990s properly addressed impacts to species that were not yet listed. Cf. *Friends of the Clearwater*, 222 F.3d at 558 (finding agency violated NEPA by failing to consider whether the listing of seven new species as sensitive species required a supplemental EIS). Furthermore, since the 1990s there has been significant new scientific information relating to climate change and its effects. All of this information supports a finding that the relevant physical environment has changed and thus the EISs prepared in the 1990s are no longer current.

Additionally, even if the physical environment remained unchanged, the Court agrees with the Ninth Circuit's analysis in *N. Plains* that Defendants do not show how such a fact “necessarily and logically leads to the conclusion that the information regarding habitat and populations of numerous species remains the same as well.” *N. Plains*, 668 F.3d at 1086; see also *Lands Council*, 395 F.3d at 1031 (“Evidence of the current habitat conditions, and any degradation or improvement in the last thirteen years, is relevant evidence in analyzing and determining what, if any, impact the current Project will have on the cumulative effect of current and past timber harvesting on trout habitat and on trout population. Instead, the Forest Service predicted the Project's impact on the Westslope Cutthroat Trout (and its habitat) using stale habitat data.”). It strains credulity to assert that information regarding habitat and fish populations remains the same in 2014 as it did in the 1990s.

Moreover, in addition to requiring a supplemental EIS when there are significant new circumstances or information relevant to environmental concerns, NEPA regulations also require that an agency prepare a supplemental EIS when “[t]he agency *makes substantial changes in the proposed action* that are relevant to environmental concerns.” 40 C.F.R. § 1502.9(c)(1)(i) (emphasis added). After arguing that the 2008 and 2014 BiOps make numerous, significant changes to, among other things, habitat, predation, and dam operations and facilities in order to avoid jeopardy and adverse modification of habitat, the Court finds it disingenuous for Defendants to argue for purposes of NEPA, that no changes to the proposed action have been made since the 1990s. The Court gives this argument no credence.

The existing NEPA documents relevant to the FCRPS from 1992 to 1997 are too stale. The Action Agencies'

reliance on them was unreasonable, arbitrary, and capricious. More importantly, however, those documents do not address the RODs because they are not parallel in scope and thus supplementation of those documents would not be sufficient. A new EIS is required for the 2014 BiOp RPA, as discussed further below.

b. The recent documents are insufficient

Regarding the more recent, discrete NEPA documents, such as the avian predation and narrowly-focused flood control EISs, the Court finds that they are insufficient to meet the Corps and BOR's NEPA obligations. Some of these documents involve measures that are unrelated to the 2014 BiOp RPA and are thus irrelevant (such as the Albeni Falls operations EA). Others, such as the avian predation plan or Lower Snake River juvenile migration *938 plan, are relevant but too narrow in scope to meet the Action Agencies' NEPA obligations, as discussed further below.

4. Whether One EIS is Required

The RPA actions are broad and diverse, and include actions such as restoring habitat, regulating fish harvest, implementing operational measures such as spill requirements and surface weirs, and killing DCCO to reduce avian predation. Standing alone, these types of actions are not connected such that they would require a single EIS, even if they all have a general underlying purpose of benefiting salmonids. See *Nw. Res. Info. Ctr., Inc. v. Nat'l Marine Fisheries Serv.*, 56 F.3d 1060, 1069 (9th Cir.1996) (“Nevertheless, we cannot agree with NRIC's argument, and the district court's conclusion, that the transportation program and the flow improvement measures are so interdependent as parts of the larger action of improving the survival of the salmon that they must be addressed in the same NEPA document. On this rationale, measures involving harvest limits, hatchery releases, and habitat maintenance are also interdependent parts of every action taken to benefit the salmon.”). The 73 separate RPA actions, however, do not stand alone.

a. Single plan

As the Federal Defendants contend in the jeopardy portion of their summary judgment brief, the threats

facing the listed species and the required responses are “simply too interconnected” to have any response other than a response of a “suite” of “all-H”⁹³ measures. Dkt. 1998 at 14–15. In the 2014 BiOp, NOAA Fisheries and the Action Agencies developed a “suite” of 73 RPA actions that work collectively and all must achieve their required benefits to avoid jeopardy. These types of agency plans or programs require a single EIS. See *Earth Island Ins. v. U.S. Forest Serv.*, 351 F.3d 1291, 1304–05 (9th Cir.2003) (noting that a single EIS is required where there is one plan governing the projects *or* the projects are connected, cumulative, or similar); *Native Ecosystems Council v. Dombek*, 304 F.3d 886, 893–94 (9th Cir.2002) (“A single NEPA review document is required for distinct projects when there is a single proposal governing the projects, *or* when the projects are ‘connected,’ ‘cumulative,’ or ‘similar’ actions under the regulations implementing NEPA.” (emphasis added) (citations omitted)); cf. *Kleppe v. Sierra Club*, 427 U.S. 390, 400–01, 409, 415, 96 S.Ct. 2718, 49 L.Ed.2d 576 (1976) (noting that a single EIS may be required “where several proposed actions are pending at the same time” but finding no single EIS was required because “there exists no proposal for regionwide action that could require a regional impact statement,” repeatedly relying on the factual finding that there was no evidence of “a proposal for an action of regional scope” or that the individual projects “are integrated into a plan or otherwise interrelated”); *Pac. Coast Fed. of Fishermen's*, 693 F.3d at 1098 n. 12 (distinguishing *Native Ecosystems* and *Kleppe* because they “were concerned with whether an EIS was required for nonexistent programmatic proposals, not whether two or more existing proposals were a ‘single course of action’ ”); *City of Tenakee Springs v. Clough*, 915 F.2d 1308, 1312 (9th Cir.1990) (“Where there are large scale plans for regional development, NEPA requires both a programmatic and site-specific EIS. This court has held that where several foreseeable similar projects in a geographical region have a cumulative impact, they should be evaluated in a single EIS.” (citations omitted)).

*939 The RPA actions are part of a single plan, the 2014 BiOp, designed to work synergistically to improve survival and recovery prospects and avoid jeopardy. See, e.g., Dkt. 2001 at 13 (“In fact, this RPA, as amended, represents the most comprehensive, coordinated set of FCRPS operations and mitigation actions developed to benefit fish under any FCRPS BiOp to date.”). Thus, the RPA actions are not 73 different proposals, but are parts of a

single proposal with a single purpose—to avoid jeopardy, as directed by the ESA. This is the situation envisioned in *Native Ecosystems*, where a regional plan is in place involving multiple actions, and is unlike the situation in *NRIC*, which involved separate actions being considered by the agency—flow augmentation and transportation—that were not part of a single plan or proposal. Here, the Action Agencies and NOAA Fisheries contend that all 73 RPA actions contain specific actions that are specifically identified, reasonably certain to occur, and cumulatively necessary to avoid jeopardy. The Supreme Court in *Kleppe* provides guidance that a single EIS is needed where a regional proposal would “define fairly precisely the scope and limits of the proposed development” and would provide the “factual predicate for the production of an environmental impact statement of the type envisioned by NEPA.” *Kleppe*, 427 U.S. at 402, 96 S.Ct. 2718 (finding because no such regional plan was in place, there was no need for a single regional EIS). The 2014 BiOp RPA is such a regional plan. Accordingly, a single EIS is required because the 2014 BiOp RPA constitutes one plan or proposal.

b. Connected actions

Even if the 2014 BiOp RPA did not constitute one plan or proposal requiring a single EIS, under the facts of this case, the RPA actions are sufficiently “connected” as to require a single EIS. The CEQ regulations define “connected actions” as actions that are “closely related and therefore should be discussed in the same impact statement.” 40 C.F.R. § 1508.25(a)(1). The regulations further explain that actions are “connected” when they:

- (i) Automatically trigger other actions which may require environmental impact statements.
- (ii) Cannot or will not proceed unless other actions are taken previously or simultaneously.
- (iii) Are interdependent parts of a larger action and depend on the larger action for their justification.

Id.

The Ninth Circuit has applied an “independent utility” test to determine whether multiple actions are connected so as to require consideration in a single EIS. See *Great Basin Mine Watch v. Hankins*, 456 F.3d 955, 969 (9th

Cir.2006). “The crux of the test is whether each of two projects would have taken place *with or without the other* and thus had independent utility.” *Sierra Club v. Bureau of Land Mgmt.*, 786 F.3d 1219, 1226 (9th Cir.2015) (emphasis in original) (quotation marks omitted).

One of the factors considered in determining whether actions are “connected” for purposes of NEPA is whether the completion of one action affects implementation of another action. See *Thomas v. Peterson*, 753 F.2d 754, 758 (9th Cir.1985), abrogation on other grounds recognized by *Cottonwood Envt'l Law Ctr.*, 789 F.3d at 1088. At a micro level, the projects in the 2014 BiOp are independent—*e.g.*, if a particular habitat mitigation project proves infeasible, it will not prevent the Caspian tern action from being completed. But at a macro level, these projects are all connected because they are needed to offset the adverse effects of the FCRPS, and thus they are dependent at a project level. If one action is replaced with a different action providing greater survival benefits, another “independent” action will not be *940 required. For example, if a very large offset can be achieved through bypassing one or more of the four lower Snake River dams,⁹⁴ then many other actions may not need to occur, such as killing DCCO, hazing Caspian terns, or improving the estuary habitat.

The purpose of a single EIS is so that the Action Agencies, the public, and public officials can take a hard look at the programmatic plan to offset the adverse effects of the FCRPS and consider the reasonable alternatives. See, *e.g.*, 40 C.F.R. § 1500.1(b) (“NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken.”); *Headwaters, Inc. v. Bureau of Land Mgmt., Medford Dist.*, 914 F.2d 1174, 1180 (9th Cir.1990) (noting that the “touchstone” of NEPA's alternatives analysis is whether the EIS's “selection and discussion of alternatives fosters informed decision-making and informed public participation”). Without a single or programmatic EIS, no other site-specific EIS provides the opportunity to meaningfully consider programmatic alternatives, such as comparing the cost and effects of dam bypass with the cost and effects of habitat mitigation, or determining if some other alternative provides enough survival benefit to replace killing the DCCO.

This concern is demonstrated by the Double-crested Cormorant Management Plan to Reduce Predation of

Juvenile Salmonids in the Columbia River Estuary Final EIS (“DCCO FEIS”).⁹⁵ The Corps ROD cites generally to the avian predation management plan and EA, but the DCCO FEIS was completed after the ROD was issued. This is one of the “site specific” future NEPA documents, which both RODs rely on as providing proper NEPA compliance. *See* BR0000024 (2010 Supplemental ROD at 9) (noting that site-specific future NEPA documents may be necessary); ACE_0000010 (2014 ROD at 9) (noting that the Corps will complete additional NEPA analyses, including relating to reducing avian predation).

The DCCO FEIS notes that:

Development and implementation of a management plan to reduce avian predation is a *requirement* from the Corps' consultation under the Endangered Species Act with the National Marine Fisheries Service of the National Oceanic and Atmospheric Administration (NOAA Fisheries) for the operation of the hydropower dams that make up the Federal Columbia River Power System. The proposed management plan in this Final Environmental Impact Statement was developed *to comply with* reasonable and prudent alternative action 46 in the 2008 and associated 2010 and 2014 Supplements to the Federal Columbia River Power System Biological Opinion issued by NOAA Fisheries.

DCCO FEIS at 1 (emphasis added). In responding to public concerns that alternatives other than reducing⁹⁶ the DCCOs were not considered, the Corps responded:

the [draft] EIS defined the purpose and need for the proposed action and developed a range of alternative[s] to meet that purpose and need. The purpose and need was specific to implementing RPA action 46 in the Federal Columbia River Power System Biological Opinion. That *941 RPA, action 46, concerns reducing DCCO

predation of ESA-listed juvenile salmonids in the Columbia River Estuary. Accordingly, the range of reasonable alternatives includes those alternatives that might meet RPA action 46.

DCCO FEIS App'x J at 26–27. The Corps further responded that the DCCO FEIS could not consider any reasonable alternatives to increasing salmon survival other than reducing DCCO predation because to do so “would not achieve the specific objective of RPA action 46 ... and these other courses of action are more relevantly addressed in other RPA actions, such as those specific to dam operations, habitat, harvest, and hatcheries.” DCCO FEIS App'x J at 4. Thus, the Corps narrowly defined the scope of the DCCO FEIS as what is required to meet the needs of the 2014 BiOp's RPA Action 46 and relied on the 2014 BiOp to explain why the Corps could not consider any alternative other than reducing DCCOs.

The interrelationship between the 2014 BiOp RPA and the site-specific actions such as the DCCO FEIS support the conclusion that they are “connected” for purposes of NEPA. First, without the 2014 BiOp RPA, there would be no site specific action because the purpose of those actions is to implement a specific RPA action. Thus, for example, the 2014 BiOp RPA justifies the DCCO FEIS because it is implementing RPA Action 46, supporting a finding that the actions are connected. *See Thomas, 753 F.2d at 758* (consideration of whether one action justifies the other is relevant to whether the actions are connected).

Second, the Corps rejected the “no action” alternative in the DCCO FEIS because “[c]ompliance with reasonable and prudent alternative 46 and fulfillment of the purpose and need would not be met.” DCCO FEIS Exec. Summ. at 14, Table ES-2. This also supports a finding that the 2014 BiOp RPA and site-specific actions such as the DCCO are connected. *See, e.g., Thomas, 753 F.2d at 758–59* (finding that where one action's environmental assessment rejected the “no action” alternative because that alternative would not provide what is needed for another action, those actions are connected).

Third, the “benefits” of the DCCO FEIS are an estimated increase in salmon survival to help offset the “survival gap” identified in the 2014 BiOp. These are the factors the Ninth Circuit found sufficient to support the requirement of a single EIS. *See id.*; *see also Save the Yaak Comm.*

v. *Block*, 840 F.2d 714, 719–20 (9th Cir.1988) (analyzing the same factors as *Thomas* and concluding that road reconstruction, timber harvest, and feeder roads are all connected actions that must be analyzed in a single EIS).

Additionally, as the DCCO FEIS aptly demonstrates, the site-specific NEPA documents cannot suffice to evaluate the large-scale project of the 2014 BiOp RPA and its alternatives. If, as Defendants' argue, no programmatic or single EIS addressing the 2014 BiOp RPA needs to be produced because site-specific EISs will suffice, and the site-specific EISs narrowly define their scope as only what the specific RPA action being implemented necessitates, it results in a circular argument under which NEPA consideration of the RPA as a whole and its reasonable alternatives is never evaluated. At the BiOp level the agencies argue that it is too complex, but that there is no need to worry because the site-specific EISs will take care of the needed analysis, and at the site-specific level the agencies argue that they are constrained by the BiOp and can only consider whether there are different alternatives to reach the objective as defined by the BiOp. As the Ninth Circuit admonished in an analogous situation in *'Ilio'ulaokalani*, the *942 agencies “can't have it both ways.” 464 F.3d at 1097.

In *'Ilio'ulaokalani*, the Army issued a programmatic EIS (“PEIS”) for “transforming” the armed forces throughout the nation. *Id.* at 1098. The Army then issued site-specific EISs (“SEIS”) for specific transformation proposals, including one in Hawaii to transform the 2nd Brigade. *Id.* at 1090. As explained by the Ninth Circuit:

The way the Army would have it, it was neither required to examine alternatives to transformation in Hawaii in the PEIS (because the site-specific threshold had not yet been crossed) nor in the SEIS (because on-site transformation of the 2nd brigade was mandated by the PEIS as articulated in the SEIS purpose and need statement). The Army can't have it both ways. Either it needed to explain in the PEIS its decision to transform the 2nd Brigade in Hawaii and consider reasonable alternatives in the PEIS or it needed to explain that decision in the SEIS, but the Army cannot

simultaneously argue that the decision had been made in the PEIS and that it had not. Somewhere, the Army must undertake site-specific analysis, including consideration of reasonable alternatives.

Id. at 1097. Although not directly on point, because here the Action Agencies have refused to prepare a programmatic EIS, the underlying concern in this passage from *'Ilio'ulaokalani* is the same—the agencies cannot use circular reasoning to avoid undertaking the necessary NEPA review. In *'Ilio'ulaokalani*, reasonable alternatives were not discussed in the PEIS or the SEIS. Here, the agency skipped preparing a PEIS, and instead wholly relies on site-specific EISs that are narrowly-focused and constrained by the 2014 BiOp, and thus, as in *'Ilio'ulaokalani*, no EIS provides the requisite “hard look” at the alternatives to the RPA. Properly analyzing alternative actions is the “heart” of an EIS. *Id.* at 1095. “[O]mission of a reasonably complete discussion of possible mitigation measures would undermine the ‘action-forcing’ function of NEPA. Without such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse effects.” *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 352, 109 S.Ct. 1835, 104 L.Ed.2d 351 (1989).

When considering whether actions are connected for purposes of NEPA, courts routinely consider whether the actions were broken down into smaller pieces to avoid a comprehensive NEPA evaluation. *See, e.g., Hankins*, 456 F.3d at 969; *Churchill Cnty. v. Norton*, 276 F.3d 1060, 1079–80 (9th Cir.2001), *as amended by* 282 F.3d 1055 (9th Cir.2002). Although there is no indication that the RPA was developed with the express purpose of preventing NEPA consideration, the history of this case and the fact that the Action Agencies resist preparing a comprehensive NEPA evaluation despite the fact that programmatic EISs for very complex federal actions are regularly prepared raises concerns that the resistance to preparing a single EIS is to avoid the “hard look” and public participation that would be required under NEPA, specifically the “hard look” at *all* reasonable alternatives.

Although the Court is not predetermining any specific aspect of what a compliant NEPA analysis would look like in this case, it may well require consideration of the reasonable alternative of breaching, bypassing, or

removing one or more of the four Lower Snake River Dams. This is an action that NOAA Fisheries and the Action Agencies have done their utmost to avoid considering for decades. Judge Redden repeatedly and strenuously encouraged the government to at least study the costs, benefits, and feasibility of such action, to no avail. Because action alternatives *943 in a NEPA analysis need not be under the jurisdiction or control of the lead agency, a comprehensive NEPA analysis would likely need to include such a reasonable alternative. See 40 C.F.R. § 1502.14(c) (an EIS “shall” “[i]nclude reasonable alternatives not within the jurisdiction of the lead agency”). Notably, the Council on Environmental Quality, which promulgates the NEPA regulations that are binding on the federal agencies, has stated that:

2b. Q. Must the EIS analyze alternatives outside the jurisdiction or capability of the agency or beyond what Congress has authorized?

A. An alternative that is outside the legal jurisdiction of the lead agency must still be analyzed in the EIS if it is reasonable. A potential conflict with local or federal law does not necessarily render an alternative unreasonable, although such conflicts must be considered. Section 1506.2(d). Alternatives that are outside the scope of what Congress has approved or funded must still be evaluated in the EIS if they are reasonable, because the EIS may serve as the basis for modifying the Congressional approval or funding in light of NEPA's goals and policies. Section 1500.1(a).

CEQ FAQ, 46 Fed. Reg. at *18027.

It is doubtful the Action Agencies could demonstrate that breaching, bypassing, or removing one or more of the Snake River dams is not “reasonable” under NEPA. This is in contrast to a Section 7 biological opinion, which can only include mitigation actions that are “reasonably certain to occur,” and have specific, binding plans with a “clear, definite commitment of resources.” *NMFS III*, 524 F.3d at 936 & n. 17. Thus, the process for the 2014 BiOp, even though it included some public comment, did not provide the same opportunity and did not involve the same underlying analysis as would a NEPA process.

The U.S. District Court for the Eastern District of California has repeatedly held in a similar context involving the CVP project and its associated biological opinions that a single EIS is required.

See *Westlands Water Distr. v. U.S. Dep't of Interior, Bureau of Reclamation*, 275 F.Supp.2d 1157, 1190–91 (E.D.Cal.2002) (“*Westlands III*”), *aff'd in part, rev'd in part & remanded on other grounds*, 376 F.3d 853 (9th Cir.2004); *Westlands Water Distr. v. U.S. Dep't of Interior, Bureau of Reclamation*, 2001 WL 34094077, at *17–19 (E.D.Cal. Mar. 22, 2001) (“*Westlands II*”); *Westlands Water Dist. v. U.S. Dep't of Interior, Bureau of Reclamation*, 850 F.Supp. 1388, 1422 (E.D.Cal.1994) (“*Westlands I*”). The court noted that “[w]hatever nomenclature is applied to the relationship between the BiOps' RP[A]s, the EIS, and the ROD, the end result is that they are inextricably intertwined as part of the same action to restore Trinity River fishery, which in turn requires they be analyzed in the same EIS.” *Westlands III*, 275 F.Supp.2d at 1190. The U.S. District Court for the District of Alaska has similarly held that the actions of a biological opinion were required to be considered in an EIS. See *Alaska v. Lubchenko*, 3:10–cv-0271–TMB, Dkt. 130 at 43–55 (Opinion and Order dated January 19, 2012), *aff'd* 723 F.3d 1043 (9th Cir.2013).

[23] The Court also is cognizant that NEPA is to be given “the broadest possible interpretation.” *Westlands Water Dist. v. Nat. Res. Def. Council*, 43 F.3d 457, 460 (9th Cir.1994). The statute itself directs that “to the fullest extent possible” all agencies are to prepare an EIS for major federal action. 42 U.S.C. § 4332(2)(C); see also *Jewell*, 747 F.3d at 640–41. The Court considers the purposes of NEPA and the volume of case law holding that at its core, NEPA is to ensure a process in which all reasonable alternatives are given a “hard *944 look” and the necessary information is given to the public. With that in mind, the Court rejects under the facts of this case the construction of the “independent utility” test posited by Defendants in which the separate RPA actions are viewed through a narrow lens to determine whether they are interdependent. Instead, in the context of a biological opinion that relies on one suite of actions to achieve the single goal of avoiding jeopardy, the Court finds that those actions are “connected” for purposes of NEPA and require a single EIS.

c. Cumulative actions

The 2014 BiOp RPA actions may also require a single EIS if they are “cumulative actions” under NEPA. See, e.g., *Hankins*, 456 F.3d at 969, 971–72. “Cumulative actions”

under NEPA are those that “when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact statement.” 40 C.F.R. § 1508.25(a)(2). The Ninth Circuit has held under “cumulative impacts” that a single EIS is required where individual actions are part of a broader plan, announced simultaneously, reasonably foreseeable, and located in the same region. *Earth Island*, 351 F.3d at 1305; *Blue Mountains Biodiversity Proj. v. Blackwood*, 161 F.3d 1208, 1214–15 (9th Cir.1998).

[24] Additionally, a central purpose of an EIS is “to force the consideration of environmental impacts in the decisionmaking process.” *Thomas*, 753 F.2d at 760. This “requires that the NEPA process be integrated with agency planning ‘at the earliest possible time,’ 40 C.F.R. § 1501.2, and the purpose cannot be fully served if consideration of the cumulative effects of successive, interdependent steps is delayed until the first step has already been taken.” *Id.* In the case of the 2014 BiOp RPA, allowing the program to move forward without a comprehensive EIS allows for certain actions to be taken that “swing[] the balance” in favor of other actions that might have been disfavored had all actions been considered together. *Id.* For example, the option of breaching, bypassing, or removing one or more of the Snake River dams may be considered more financially prudent and environmentally effective versus spending additional hundreds of millions of dollars on uncertain habitat restoration.

Under the principles articulated in Ninth Circuit case law, the Court finds that a single EIS is required for the RPA actions as “cumulative actions.” Many individual actions of this comprehensive plan do not and will not have any EA or EIS prepared, and others have only narrowly-focused NEPA documents that do not consider the regionwide impacts from the RPA. These documents do not constitute a “hard look” at the environmental consequences and alternatives of the Action Agencies’ federal action of adopting and implementing the 2014 BiOp RPA.

d. Feasibility

Defendants argue that even if a single EIS was required, compliance would be excused because it is not feasible. *See Kleppe*, 427 U.S. at 414, 96 S.Ct. 2718

(noting that “practical considerations of feasibility might well necessitate restricting the scope of comprehensive statements”); *Blue Mountains*, 161 F.3d at 1215 (“We also recognize that ‘NEPA does not require the government to do the impractical.’ ” (quoting *Inland Empire Pub. Lands Council v. U.S. Forest Serv.*, 88 F.3d 754, 764 (9th Cir.1996))). Defendants rely on *Northwest Resource Information Center*, where the Ninth Circuit noted in discussing flow, transportation, habitat, harvest, and hatchery measures, “we also cannot force an agency to aggregate diverse actions to the point where problems must be tackled from every angle at once. *945 To do so risks further paralysis of agency decisionmaking.” *NRIC*, 56 F.3d at 1069. Considering NEPA compliance in adopting the 2014 BiOp RPA is distinguishable from the agency action in *Northwest Resource Information Center*, however, because here the Action Agencies and NOAA Fisheries themselves already have chosen to tackle the problem from multiple angles. By requiring compliance with NEPA, the Court is not forcing the Action Agencies to tackle the problem of the FCRPS with an “all-H” approach—the Action Agencies and NOAA Fisheries have themselves created a single plan that includes diverse actions, including flow, transportation, dam operation, habitat, harvest, predator control, and hatchery actions. The Court would not be risking paralysis of agency decisionmaking because the agencies already have taken the time and effort to consider the problem from all angles and to aggregate diverse actions in response. What NEPA requires is that the Action Agencies give a “hard look” to this aggregated plan and, particularly, to reasonable alternatives to the plan, and to provide the information to the public for review and comment.

[25] Moreover, NEPA regulations provide the agencies flexibility to “tier” an EIS, if needed. *Ilio’ulaokalani*, 464 F.3d at 1094. This approach allows an agency to prepare a “programmatic” EIS followed by site-specific EISs. *Id.* This tiered approach is encouraged

to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision at each level of environmental review (§ 1508.28). Whenever a broad environmental impact statement has been prepared (such as a program or policy statement) and a subsequent statement or environmental assessment is then

prepared on an action included within the entire program or policy (such as a site specific action) the subsequent statement or environmental assessment need only summarize the issues discussed in the broader statement and incorporate discussions from the broader statement by reference and shall concentrate on the issues specific to the subsequent action.

40 C.F.R. § 1502.20. In the context of national forest management, the Ninth Circuit has described programmatic and site-specific EISs as follows:

we defined the programmatic stage as the level “at which the [agency] develops alternative management scenarios responsive to public concerns, analyzes the costs, benefits and consequences of each alternative in an environmental impact statement (‘EIS’), and adopts an amendable forest plan to guide management of multiple use resources.” *Ecology Ctr., Inc. v. U.S. Forest Serv.*, 192 F.3d 922, 923 n. 2 (9th Cir.1999). Following the programmatic stage is the “implementation stage during which individual site specific projects, consistent with the forest plan, are proposed and assessed.” *Id.* A programmatic EIS must provide “sufficient detail to foster informed decision-making,” but an agency need not fully evaluate site-specific impacts “until a critical decision has been made to act on site development.” *Friends of Yosemite Valley v. Norton*, 348 F.3d 789, 800 (9th Cir.2003).

* * *

The agency's challenge and [the reviewing court's] is to find the right balance between the efficiency benefits of tiering, described in 40 C.F.R. § 1502.20, deference to the agency's definition of the purpose and need of the proposed action, and the recognition that the [programmatic] EIS constrains future decision-making and must therefore analyze alternatives in sufficient detail to prevent *946 foreclosure of options with insufficient consideration.

Ilio'ulaokalani, 464 F.3d at 1094, 1096.

With respect to a programmatic EIS, the Ninth Circuit has further held that:

An agency may not avoid an obligation to analyze in an EIS environmental consequences that foreseeably arise from an RMP [regional management plan] merely by saying that the consequences are unclear or will be analyzed later when an EA is prepared for a site-specific program pursuant to the RMP. “[T]he purpose of an [EIS] is to evaluate the possibilities in light of current *and contemplated* plans and to produce an informed estimate of the environmental consequences Drafting an [EIS] necessarily involves some degree of forecasting.” *City of Davis v. Coleman*, 521 F.2d 661, 676 (9th Cir.1975) (emphasis added). If an agency were able to defer analysis ... of environmental consequences in an RMP, based on a promise to perform a comparable analysis in connection with later site-specific projects, no environmental consequences would ever need to be addressed in an EIS at the RMP level if comparable consequences might arise, but on a smaller scale, from a later site-specific action proposed pursuant to the RMP.

Once an agency has an obligation to prepare an EIS, the scope of its analysis of environmental consequences in that EIS must be appropriate to the action in question. NEPA is not designed to postpone analysis of an environmental consequence to the last possible moment. Rather, it is designed to require such analysis as soon as it can reasonably be done. *See Save our Ecosystems v. Clark*, 747 F.2d 1240, 1246 n. 9 (9th Cir.1984) (“Reasonable forecasting and speculation is ... implicit in NEPA, and we must reject any attempt by agencies to shirk their responsibilities under NEPA by labeling any and all discussion of future environmental effects as ‘crystal ball inquiry’” [citation omitted]). If it is reasonably possible to analyze the environmental consequences in an EIS for an RMP, the agency is required to perform that analysis. The EIS analysis may be more general than a subsequent EA analysis, and it may turn out that a particular environmental consequence must be analyzed in both the EIS and EA. But an earlier EIS analysis will not have been wasted effort, for it will guide the EA analysis and, to the extent appropriate, permit “tiering” by the EA to the EIS in order to avoid wasteful duplication.

Kern v. U.S. Bureau of Land Mgmt., 284 F.3d 1062, 1072 (9th Cir.2002) (first alteration added, remaining alterations in original).

Defendants argue that a comprehensive or programmatic EIS would be impractical because the 2014 BiOp RPA involves multiple agencies, diverse actions, and multiple resources. Defendants offer no argument, however, why national forest plans, national and regional resource management plans, national plans to transform the Army, or national mining plans, such as those discussed in *Kleppe*, all of which involve multiple resources and locations, are not too complex for a programmatic EIS, while the regional plan described in the 2014 BiOp is too complex. Notably, the 2014 BiOp process already has done much of the heavy lifting for an EIS, except for the consideration of reasonable alternatives, and this will serve to reduce the burden on the Action Agencies in preparing an EIS.

NEPA encompasses broad and complex federal actions and its regulations provide guidance for how to most efficiently prepare EISs for such actions. As explained by the U.S. District Court for the Eastern *947 District of California in rejecting similar arguments as Defendants raise and finding that NOAA Fisheries' prescribed actions to avoid jeopardy in a Federal Central Valley Project biological opinion required a single EIS:

40 C.F.R. § 1501.5 *et seq.* prescribes the procedure where more than one federal agency is interested in action which requires an EIS by providing a designation of a lead agency, and 40 C.F.R. § 1502.25 calls for integrated preparation of an EIS to the fullest extent possible. It is left to the agencies to coordinate their EIS efforts.

The biological opinion developed by [NOAA Fisheries] provides for specific revisions to the procedures and standards for operation of the CVP, which the Bureau was obligated to consider, unless an express exemption was obtained under 16 U.S.C. § 1536(h). Alleged redundancy is not a bar to relief. Under these circumstances, NEPA compliance for a programmatic EIS is not precluded unless it can be shown that the systemic and connected agency decisions for the CVPIA could not be coordinated.

Westlands I, 850 F.Supp. at 1422 (citation omitted).

Arguments relating to complexity and feasibility were also rejected by the U.S. District Court for the Northern District of California in considering the application of NEPA to a broad, nationwide rule. The court stated:

NEPA requires *some* type of procedural due diligence—even in cases involving broad, programmatic changes—a fact defendants ignore in their briefs. Although defendants' position regarding the feasibility and practicality of preparing an EIS or an EA in the case of broad, programmatic rules is not nonsensical, it is contrary to the purpose of NEPA and to the existing case law.

Citizens for Better Forestry v. U.S. Dep't of Agric., 481 F.Supp.2d 1059, 1085 (N.D.Cal.2007) (emphasis in original).

The Action Agencies have discretion in complying with NEPA and may develop a proper programmatic EIS and subsequent site-specific EISs, or may coordinate and prepare a comprehensive EIS that does not contemplate site-specific EISs. What they may not do, is ignore the fact that adoption of the 2014 BiOp RPA is a major federal action and requires NEPA compliance. Further, as emphasized by the Ninth Circuit, “the fact that completing an EIS might be time consuming or costly does not excuse an agency from complying with NEPA; that is a balance struck by Congress, not the courts.” *Jewell*, 747 F.3d at 644. The Court finds that completing a programmatic or comprehensive EIS would not be so impractical or infeasible such as to excuse the Action Agencies' duty to comply with NEPA.

5. Conclusion

For more than 20 years, NOAA Fisheries, the Corps, and BOR have ignored the admonishments of Judge Marsh and Judge Redden to consider more aggressive changes to the FCRPS to save the imperiled listed species. The agencies instead continued to focus on essentially the same approach to saving the listed species—minimizing hydro mitigation efforts and maximizing habitat restoration. Despite billions of dollars spent on these efforts, the listed species continue to be in a perilous state.⁹⁷ One of the benefits of a NEPA *948 analysis, which requires that all reasonable alternatives be analyzed, is that it allows innovative solutions to be considered and may finally be able to break through any bureaucratic logjam that

maintains the status quo. The agencies, public, and public officials will be able evaluate the costs and benefits of various alternatives. The FCRPS remains a system that “cries out” for a new approach. A NEPA process may elucidate an approach that will finally move the listed species out of peril.

Plaintiffs' motions for summary judgment that the Action Agencies failed to comply with NEPA are granted. The Action Agencies' adoption of the RODs triggered their obligation to comply with NEPA. The documents relied on by the Action Agencies as meeting this obligation are insufficient.

6. NEPA Injunction

[26] District courts must narrowly tailor injunctive relief and generally refrain from dictating “the substance and manner” of the agency's action on remand. *NMFS III*, 524 F.3d at 937; *see also Stormans, Inc. v. Selecky*, 586 F.3d 1109, 1140 (9th Cir.2009) (“Injunctive relief ... must be tailored to remedy the specific harm alleged.”) (alteration in original); *NMFS IV*, 839 F.Supp.2d at 1129 (“In the absence of ‘substantial justification,’ ... a court should not dictate to an administrative agency ‘the methods, procedures, and time dimension’ of the remand.” (citation omitted)). Nonetheless, targeted requirements such as setting a deadline for NEPA compliance may be appropriate in certain cases. *See High Sierra Hikers Ass'n v. Blackwell*, 390 F.3d 630, 644–45 (9th Cir.2004) (affirming the district court's requirement that the cumulative effects analysis be completed by a certain date, and before the site-specific analysis).

The Court intends to set a reasonable deadline for the Action Agencies to comply with NEPA, and to retain jurisdiction to supervise compliance with the injunction. Within 14 days from the date of this order, Defendants shall submit a brief setting forth their proposed timing for a reasonable NEPA process and other arguments regarding the scope of appropriate injunctive relief relating to NEPA. Plaintiffs will have 14 days to file their response. Defendants will then have 14 days to file their reply.

F. Endangered Orcas

[27] The 2014 BiOp considered whether the RPA will have an effect on the endangered Southern Resident killer whales (“Southern Resident”). These whales are in danger

of extinction. As of September 2013, there were only 81 Southern Residents remaining. Accordingly, the loss of even a single whale can reduce the likelihood of survival and recovery of the Southern Residents. *See CVP BiOp* at 573.

Plaintiffs argue that NOAA Fisheries improperly evaluated the effect of the FCRPS on Southern Residents because the 2014 BiOp did not fully analyze the effect of the reduced number of salmon resulting from the RPA. Southern Residents have a preference for, and heavily rely on, Chinook salmon for food. 2014 BiOp at 483. Specifically, Southern Residents rely on older and larger salmon. *Id.* at 483–84. The 2014 BiOp notes that although earlier research had indicated a linear relationship between Chinook salmon abundance and killer whale survival, in 2012 an independent scientific panel “identified low confidence that the predicted changes in prey availability due to salmon fisheries would affect the population growth rate of Southern Residents (Hilborn et al. 2012).” *Id.* at 482; *see also id.* at 485 (noting that the Hilborn study “notes that ‘considerable caution is warranted in interpreting results as confirming a linear *949 causative relationship between Chinook salmon abundance and Southern Resident survival’ ”).

Regardless of the link between Chinook abundance and Southern Resident survival, the 2014 BiOp adopted the 2008 BiOp's conclusion that hatchery fish more than offset the salmon mortality caused by the FCRPS. *Id.* at 487. The available data does not indicate that there is a meaningful difference between hatchery and wild salmon in terms of supporting Southern Resident's metabolic needs. *Id.* at 485. The 2014 BiOp also cites to data showing that during the summer months, Southern Residents primarily eat fish from the Fraser River, which is not affected by the FCRPS. *Id.*

NOAA Fisheries' reliance on the most recent independent study questioning the correlation between Chinook availability and Southern Resident survival is the type of scientific reliance that is accorded significant deference. *Jewell*, 747 F.3d at 593. NOAA Fisheries' additional conclusions that Southern Residents' dominant diet in the summer does not consist of FCRPS-affected salmon and that hatchery salmon are more than sufficient to offset the FCRPS-caused reduction in salmon abundance is similarly entitled to deference. The Court finds that NOAA Fisheries' conclusion that the RPA is not likely

to affect the Southern Residents is not arbitrary and capricious.

G. BiOp Remand and Non-Vacatur

For the reasons discussed above, the Court finds the 2014 BiOp's no jeopardy conclusion is arbitrary and capricious because it applies an improper jeopardy standard, fails properly to consider impacts to recovery and from climate change, and relies on actions that are not reasonably certain to occur or have uncertain benefit, including estuary and tributary habitat mitigation, Caspian tern mitigation, and kelt management. When a biological opinion is unlawful, the ordinary remedy is to vacate and remand for immediate reinitiation of consultation. *NMFS IV*, 839 F.Supp.2d at 1128 (citing *Fla. Power & Light v. Lorion*, 470 U.S. 729, 744, 105 S.Ct. 1598, 84 L.Ed.2d 643 (1985)). As this Court has previously acknowledged, however, there are "circumstances where vacatur is not mandatory. District courts have 'broad latitude in fashioning equitable relief when necessary to remedy an established wrong,' and sometimes equity requires an invalid agency action to remain in place while the agency revisits the action." *Id.* at 1129 (quoting *NMFS III*, 524 F.3d at 936). "Despite the APA's requirement that an invalid agency action be 'set aside,' equity can authorize the district court to keep an invalid biological opinion in place during any remand if it provides protection for listed species within the meaning of the ESA." *Id.*

Here, vacatur is inappropriate for several reasons. First, the ten-year 2008 BiOp, as supplemented by the 2014 BiOp, expires at the end of 2017, and NOAA Fisheries has indicated that it intends to prepare a new biological opinion relating to FCRPS operations. Second, the 2014 BiOp provides some protection for the listed species. Third, vacatur could result in the cessation of FCRPS operations. Accordingly, the 2014 BiOp is remanded for further consultation to be completed by March 1, 2018.

In addition, NOAA Fisheries and the Action Agencies are directed to keep in place the 2014 BiOp and the related incidental take statement. Finally, the Action Agencies shall continue to fund and implement the 2014 BiOp until the 2018 biological opinion is prepared and filed.

CONCLUSION

Plaintiffs' motions for summary judgment (Dkts. 1976 and 1985) are **GRANTED IN PART AND DENIED IN PART**. *950 Plaintiffs' motions are granted with respect to their claims that NOAA Fisheries violated the ESA and APA in determining in the 2014 BiOp that the RPA does not jeopardize the listed species and that the Corps and BOR violated NEPA. The Federal Defendants' and Intervenor-Defendants' motions for summary judgment (Dkts. 1997, 2001, 2009, and 2010) are **GRANTED IN PART AND DENIED IN PART**. These motions are granted with respect to the claims that NOAA Fisheries did not violate the ESA and the APA in determining in the 2014 BiOp that the RPA does not adversely modify critical habitat and is not likely adversely to affect endangered Southern Resident Killer Whales, and are denied in all other respects. Not later than March 1, 2018, NOAA Fisheries is directed to file with the Court its new biological opinion. The Court retains jurisdiction over this matter to ensure that the Federal Defendants: (1) develop appropriate mitigation measures to avoid jeopardy; (2) produce and file a biological opinion that complies with the ESA and APA; and (3) prepare an EIS that complies with NEPA.

IT IS SO ORDERED.

All Citations

184 F.Supp.3d 861

Footnotes

- 1 The plaintiffs are National Wildlife Federation, Idaho Wildlife Federation, Washington Wildlife Federation, Sierra Club, Pacific Coast Federation of Fishermen's Association, Institute for Fisheries Resources, Idaho Rivers United, Northwest Sport Fishing Industry Association, Salmon for All, Columbia Riverkeeper, NW Energy Coalition, Federation of Fly Fishers, and American Rivers. The State of Oregon is an Intervenor-Plaintiff. The Nez Perce Tribe is an amicus curiae. These parties are collectively referred to as "Plaintiffs."
- 2 Defendant National Marine Fisheries Service ("NMFS") is an agency within the National Oceanic and Atmospheric Administration ("NOAA"). Although NMFS is the official name of the agency, it is often referred to simply as "NOAA Fisheries." In this opinion, the Court generally will refer to NMFS as NOAA Fisheries.

3 16 U.S.C. §§ 1531 *et seq.*

4 The 2014 BiOp is the latest in a series of biological opinions issued by NOAA Fisheries since 1992 relating to operations of the FCRPs. NOAA Fisheries previously issued biological opinions that were challenged in this lawsuit in 2000, 2004, and 2008, and a supplemental biological opinion in 2010. Each time, the Court, acting through U.S. District Judge James A. Redden, found certain conclusions by NOAA Fisheries in the biological opinions to be arbitrary and capricious. See *Nat'l Wildlife Fed. v. Nat'l Marine Fisheries Serv.*, 254 F.Supp.2d 1196 (D.Or.2003) (“*NMFS I*”) (2000 BiOp); *Nat'l Wildlife Fed. v. Nat'l Marine Fisheries Serv.*, 2005 WL 1278878 (D.Or. May 26, 2005) (“*NMFS II*”), *aff'd by Nat'l Wildlife Fed. v. Nat'l Marine Fisheries Serv.*, 524 F.3d 917, 924 (9th Cir.2008) (“*NMFS III*”) (2004 BiOp); and *Nat'l Wildlife Fed. v. Nat'l Marine Fisheries Serv.*, 839 F.Supp.2d 1117 (D.Or.2011) (“*NMFS IV*”) (2008 BiOp). In 2005, the U.S. Court of Appeals for the Ninth Circuit provided a detailed history of this case in an opinion that affirmed in part and remanded in part Judge Redden's granting of a preliminary injunction. See *Nat'l Wildlife Fed. v. Nat'l Marine Fisheries Serv.*, 422 F.3d 782, 788–93 (9th Cir.2005).

5 42 U.S.C. §§ 4321 *et seq.*

6 All salmon and most steelhead die shortly after spawning.

7 *NMFS I*, 254 F.Supp.2d at 1200.

8 *NMFS III*, 524 F.3d at 925. An endangered species is “any species which is in danger of extinction throughout all or a significant portion of its range,” and a threatened species is “any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” 16 U.S.C. § 1532. In other words, endangered species “are at the brink of extinction now” and threatened species “are likely to be at the brink in the near future.” *What is the Difference Between Endangered and Threatened*, available at <http://www.fws.gov/midwest/wolf/esastatus/e-vs-t.htm> (last visited May 3, 2016).

9 *NMFS III*, 524 F.3d at 925.

10 *Idaho Dept. of Fish & Game v. NMFS*, 850 F.Supp. 886 (D.Or.1994) (“*IDFG*”).

11 *Id.* at 900 (emphasis added).

12 *NMFS III*, 524 F.3d at 925.

13 *Id.*

14 *Id.*

15 *Id.*

16 “ISAB” refers to the Independent Scientific Advisory Board that serves NOAA Fisheries and others by providing independent scientific advice and recommendations regarding relevant scientific issues.

17 *NMFS IV*, 839 F.Supp.2d at 1130 (emphasis added) (internal footnote added).

18 *Id.* at 1131.

19 *Id.* at 1131 (emphasis added).

20 Dkt. 1882.

21 *San Luis & Delta–Mendota Water Auth. v. Jewell*, 747 F.3d 581, 602, 640–42 (9th Cir.2014).

22 *NMFS III*, 524 F.3d at 930.

23 NOAA Fisheries, *Consultation Handbook* at 4–21, NOAA 2004 AR, B.251.

24 NOAA Fisheries created geographically-based technical review teams. These teams are multi-disciplinary science teams that are tasked with providing science support to recovery planners by developing biologically based viability criteria, analyzing alternative recovery strategies, and providing scientific review of draft plans. See <http://www.nwfsc.noaa.gov/trt/domains.cfm> (last visited May 3, 2016).

25 *NMFS III*, 524 F.3d at 931.

26 *Sierra Club v. Marsh*, 816 F.2d 1376, 1386 (9th Cir.1987), *abrogation on other grounds recognized by Cottonwood Envtl. Law Ctr. v. U.S. Forest Serv.*, 789 F.3d 1075, 1088 (9th Cir.2015). This requirement of the Endangered Species Act is similar to what Professor Douglas A. Kysar has called the “precautionary principle,” which he defines as “an ex-ante governmental stance of precaution whenever a proposed activity meets some threshold possibility of causing severe harm to human health or the environment.” Douglas A. Kysar, REGULATING FROM NOWHERE: ENVIRONMENTAL LAW AND THE SEARCH FOR OBJECTIVITY 9 (2010).

27 *NMFS III*, 524 F.3d at 935–36.

28 Case law and industry publications often use the shorthand term “no jeopardy” to indicate a Section 7 consultation agency's determination that an action agency's action is not likely to jeopardize the continued existence of any endangered species or threatened species.

- 29 *Ctr. for Biological Diversity v. Rumsfeld*, 198 F.Supp.2d 1139, 1152 (D.Ariz.2002) (citing *Sierra Club*, 816 F.2d 1376); *NMFS IV*, 839 F.Supp.2d at 1125.
- 30 *Nw. Coal. for Alts. to Pesticides (NCAP) v. U.S. E.P.A.*, 544 F.3d 1043, 1052 n. 7 (9th Cir.2008).
- 31 16 U.S.C. § 1536(a)(2).
- 32 *Id.* at § 1532(5)(A).
- 33 *Id.* at § 1532(3).
- 34 NOAA Fisheries also published a proposed rule designating critical habitat for the 13th listed species, the Lower Columbia River coho salmon. See 2014 BiOp at 43; 78 Fed. Reg. 2726–01 (Jan. 14, 2013).
- 35 *N. Plains Res. Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1086 (9th Cir.2011) (citing *Lands Council v. Powell*, 395 F.3d 1019, 1031 (9th Cir.2005)).
- 36 *Thomas v. Peterson*, 753 F.2d 754, 760 (9th Cir.1985), *abrogation on other grounds recognized by Cottonwood*, 789 F.3d at 1088.
- 37 *IDFG*, 850 F.Supp. at 900.
- 38 See, e.g., *NWF v. NMFS*, 2005 WL 2488447, at *3 (D.Or. Oct. 7, 2005) (“This remand, like the remand of the 2000 BiOp, requires NOAA and the Action Agencies to be aware of the possibility of breaching the four dams on the lower Snake River, if all else fails.”) (emphasis in original).
- 39 The Council on Environmental Quality promulgates regulations implementing NEPA (40 CFR Parts 1500–1508) that are binding on federal agencies and are given substantial deference by courts. See *Cal. ex rel. Imperial Cnty. Air Pollution Control Dist. v. U.S. Dep’t of the Interior*, 767 F.3d 781, 789 n. 3 (9th Cir.2014) (given substantial deference by courts); *ONRC Action v. Bureau of Land Mgmt.*, 150 F.3d 1132, 1138 n. 3 (9th Cir.1998) (binding on federal agencies).
- 40 5 U.S.C. §§ 701 *et seq.*
- 41 For purposes of the BiOp, an ESU is “a group of Pacific salmon or steelhead trout that is (1) substantially reproductively isolated from other conspecific units and (2) represents an important component of the evolutionary legacy of the species. Equivalent to a distinct population segment and treated as a species under the Endangered Species Act.” 2014 BiOp at 24.
- 42 The court-ordered spill involves spilling water over certain dams versus running water through the turbines at specified times to augment flow during certain salmonid migration periods.
- 43 Because the Court finds Oregon’s positions are not clearly inconsistent, it need not consider the other factors suggested in *New Hampshire*.
- 44 Section 4(f) of the ESA requires the Secretary of the Interior to design and carry out “recovery plans” and to implement programs to conserve the species. Thus, Section 4 entails a determination of when and how recovery will be obtained. Section 7, as discussed above, requires that the consulting agency determine whether a federal action is likely to jeopardize survival or recovery.
- 45 A population growth rate of 1.0 means that a population is just replacing itself; no more and no less. Population growth rates below 1.0 mean that a population is declining, and population growth rates above 1.0 mean that a population is increasing.
- 46 NOAA Fisheries forms the BRT, which is composed of scientists with diverse backgrounds. The BRT examines the biological conditions of the listed species, including current population, population trends, reasons for any population declines or improvements, factors that may put the species at risk, and a range of other factual aspects of a population’s condition. See http://www.westcoast.fisheries.noaa.gov/publications/esa_biological_status_reviews.html (last visited May 3, 2016).
- 47 A “spawner” is a mature female fish at spawning time.
- 48 The 2014 BiOp used an “extended base period” that added in additional years subsequent to the 2008 BiOp’s base period. The precise years used varied according to the salmonid population and the productivity trend being considered.
- 49 The geometric mean is a type of mean or average, which indicates the central tendency or typical value of a set of numbers by using the product of their values (as opposed to the arithmetic mean which uses their sum). The geometric mean is defined as “the *n* th root of the product of *n* numbers.” *Webster’s Third New International Dictionary* 949 (unabridged ed. 2002).
- 50 The Court chose to use three populations for brevity; other populations would also meet the greater-than-1.0 goal of the three productivity metrics with an increase of only a few fish.
- 51 The survival multiplier in the Court’s hypothetical is the multiplier needed for the prospective R/S to be at approximately 1.01.
- 52 2014 BiOp at 90 (Table 2.1–9).

- 53 The survival multiplier required to raise this metric to 1.01 is calculated by taking 1.01 and dividing it by 0.95.
- 54 In this example, the multiplier is the number that equates to the gain required to have lambda equal approximately 1.01.
- 55 The BiOp explains that this multiplier is one divided by the mean generation time of 4.5 years. One divided by 4.5 equals 0.22.
- 56 2014 BiOp at 105 (Table 2.1–15).
- 57 This population started with an abundance of 81, the Court assumes an increase of one more fish per year for five years, which results in an ending abundance of 86.
- 58 This population started with an abundance of 58, the Court assumes an increase of one more fish per year for five years, which results in an ending abundance of 63.
- 59 This population started with an abundance of 125, the Court assumes an increase of one more fish per year for five years, which results in an ending abundance of 130.
- 60 Defendants rely on *Salmon Spawning & Recovery All. v. NMFS*, 342 Fed.Appx. 336, 338 (9th Cir.2009) (noting that an action “need not boost the [species] chances of recovery; [NOAA] must only determine those chances are not ‘appreciably’ diminished by the plan”) and *Cabinet Res. Grp. v. U.S. Fish & Wildlife Serv.*, 465 F.Supp.2d 1067, 1082–83 (D.Mont.2006) (concluding that “FWS satisfied its legal obligation” under Section 7(a)(2) even where the action does “slightly more for recovery and survival than the status quo”).
- 61 In the 2004 BiOp, NOAA Fisheries changed its jeopardy standard and did not consider recovery separate from survival. That approach was rejected by this Court and the Ninth Circuit.
- 62 This section discusses Plaintiffs’ arguments regarding NOAA Fisheries’ analysis relating to whether the RPA Actions jeopardize survival or recovery. Section D discusses Plaintiffs’ arguments regarding NOAA Fisheries’ analysis with respect to the adverse modification of critical habitat.
- 63 “Kelts” are adult salmonids that may spawn more than once.
- 64 Because there are several listed ESUs, for simplicity the Court will discuss the data and analysis relating to the Snake River spring/summer Chinook salmon ESU in discussing whether recovery impacts were properly analyzed. The 2014 BiOp has also used this ESU as “an indicator of the general pattern of abundance for interior Columbia basin salmonids.” 2014 BiOp at 109.
- 65 Density dependence is a process where as abundance increases, productivity decreases due to competition for resources and other related effects. See *id.* at 113–15.
- 66 The 2014 BiOp reiterated this standard, although it further noted that no certain date is identified as the date that the “instantaneous” benefit accrues. 2014 BiOp at 53. The 2014 BiOp conceded that the survival benefit of many of the actions, such as tributary habitat restoration, “may take years to be fully achieved.” *Id.* Nonetheless, NOAA Fisheries relied on the expected instantaneous benefit accruing in full at some point during the BiOp period in order to reach its no jeopardy conclusion. *Id.*; see also 2008 BiOp at 7–31.
- 67 To the extent *Sierra Club* has been abrogated, it does not apply in this case. *Cottonwood* noted that to the extent *Sierra Club* held that there is a presumption of irreparable harm under the ESA where a preliminary injunction is sought, that holding was effectively overruled by the Supreme Court’s decisions in *Winter v. Natural Resources Defense Council, Inc.*, 555 U.S. 7, 129 S.Ct. 365, 172 L.Ed.2d 249 (2008), and *Monsanto Co. v. Geertson Seed Farms*, 561 U.S. 139, 130 S.Ct. 2743, 177 L.Ed.2d 461 (2010). This case does not involve a preliminary injunction.
- 68 The 2014 BiOp also noted: “When the more recent data points were plotted *against the 95% prediction intervals*, only one point fell below the interval and four points fell above, ‘providing no support for the hypothesis that recent conditions are less productive than those experienced during the Base Period.’” 2014 BiOp at 115 (emphasis added) (quoting 2014 BiOp App’x C at C-9, the analysis relating to density dependence). Just as the wide confidence intervals cannot shield NOAA Fisheries from determining the effect that the declining R/S has on the 2008 BiOp’s improvement assumptions underlying its no jeopardy conclusion, relying on an analysis that hinges on the fact that few data points were outside of those wide confidence intervals is similarly irrational.
- 69 Also available at Dkt. 1804–5, NWF’s excerpts of record, Att. E, ER 119.
- 70 Although the 2014 BiOp Appendix A, Estuary Habitat Projects, showed only one project having a final ERTG score, the 2014 BiOp noted in footnote 119 on page 337 that the Wallooski–Young’s Bay Confluence project later received final ERTG scores. It is unclear whether those final scores are different than the scores reflected in the 2014–2018 Implementation Plan, Appendix A, Estuary Habitat Projects. The Court assumes for purposes of this opinion that the final scores were the same as the scores reflected in Appendix A.
- 71 NOAA Fisheries did estimate that there will be significantly more ocean-type SBUs achieved through estuary habitat actions than are required (82.7 SBUs (16.54 percent improvement) estimated to be achieved when only 45 SBUs (nine

percent improvement) are required). This is the type of “cushion” the Court was expecting to see because it allows for some level of project failure, whether in completion or in achievement of actual survival benefit. The Court notes, however, that the revised survival benefit is nearly double the survival benefit calculated in the 2008 BiOp, was calculated under the new SBU calculation system, which has been found to be “likely misleading” by ISAB, and that all of the survival benefits estimated from estuary habitat projects originate from the Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead, which attributed up to a total 20 percent survival benefit for a combined host of actions (not all of which are included in the RPA) and cautioned that such target survival benefits are to be used for planning purposes only and were not an actual prediction of survival benefits. Because, however, even under the new SBU calculation method, the stream-type SBUs estimated to be achieved are precisely the 30 SBUs that NOAA Fisheries has determined are required to avoid jeopardy and the Court finds reliance that those 30 SBUs will be achieved to be arbitrary and capricious, the Court does not reach the question of whether the estimated 82.7 SBUs for ocean-type fish is reasonable or rational.

72 This is illustrated, for example, by the breakdown of negotiations in early 2016 for the “Large Dike Breach” project in Reach E, which was given an ERTG preliminary score of 11.08 stream-type SBUs, representing more than 41 percent of the required remaining stream-type SBUs. See Dkt. 2063. The Large Dike Breach project, by a significant margin, was the largest estuary project in the 2014–2018 Implementation Plan. This project was relied on to provide nearly half of the remaining required stream-type survival benefit. Because this project required acquisition of at least some private land and the negotiation for purchase of the private land broke down, as of early 2016 this project was no longer feasible in full. It appears NOAA Fisheries anticipated that this project might fall apart and prove infeasible because the 2014 BiOp expressly noted that if this project proves infeasible the Action Agencies “will implement others that collectively contribute an equivalent number of SBUs.” 2014 BiOp at 336. Yet there were no replacement projects listed in the BiOp that can make up for the significant loss of the SBUs anticipated from this (or any other) project. The Court acknowledges that this breakdown in negotiations occurred well after the 2014 BiOp was completed and is not part of the administrative record, and also acknowledges that negotiations may resume and ultimately prove fruitful. The breakdown of negotiations in early 2016 is not relied on by the Court in reaching its conclusions, but is offered merely as an illustrative example of the Court’s concerns regarding NOAA Fisheries’ conclusion in the 2014 BiOp that the estuary program will achieve all of the required survival benefits before 2018 despite the estuary program being well behind schedule, the fact that no replacement or supplemental projects were identified, and the fact that the majority of the projects that had been identified were in such early planning stages that numerous factors may go wrong before the projects are completed, resulting in the project proving infeasible. Moreover, as noted, the 2014 BiOp itself specifically identified the Large Dike Breach project, representing more than 41 percent of required stream-type SBUs, as one that might ultimately prove infeasible and yet NOAA Fisheries still concluded that all SBUs will be achieved without any additional projects identified that could obtain this project’s 41 percent of the remaining required stream-type SBUs.

73 This is in contrast to the estuary habitat projects, for which only two projects had received final ERTG review.

74 RPA 35 is the action relating to the 2010 to 2018 tributary habitat mitigation efforts.

75 The 2008 BiOp states that it incorporates its “warm” scenario from ICTRT’s pessimistic ocean scenario, and that those dates run from 1975 to 1997. 2008 BiOp at 7–13. The 2014 BiOp, however, states that the “warm” scenario considered by the 2008 BiOp was from 1977 to 1997. 2014 BiOp at 152. ICTRT’s pessimistic ocean scenario has been described both as from 1975 to 1997, see NOAA 2008 AR B.196 at 6, and as from 1977 to 1997, see NOAA 2008 AR B.197 at 6. Accordingly, the Court considers the 2008 BiOp’s “warm” scenario and ICTRT’s “pessimistic” scenario interchangeably and does not find there to be a material difference whether it is from 1975 to 1997 or 1977 to 1997.

76 Plaintiffs do not dispute that the RPA contains actions to *study* climate change. Plaintiffs contend that beyond studying and modelling, the RPA actions do little else to address climate change.

77 The Court is troubled by the emphasis NOAA Fisheries apparently placed on ensuring that the climate literature reviews, which the 2014 BiOp heavily relies on, bolstered NOAA Fisheries’ contention that all new climate information is encompassed by NOAA Fisheries’ previous analysis. For example, the Executive Summary section of the 2011 climate literature review concludes with a paragraph noting that the “new information from 2011 publications was generally consistent with previous analyses in reporting ongoing trends in climate consistent with climate change projections and negative implications for salmon.” 2014 BiOp App’x D at D-116. The original draft, however, did not contain such a concluding paragraph and Lisa Crozier, the author, was asked to add such a paragraph because it “was of critical importance” to NOAA Fisheries. NMFS159551. Ms. Crozier then added a new concluding paragraph that opened by remarking that all new information was generally consistent with previous analyses, but closed by remarking that “the institutional barriers to action on protecting salmon and cumulative effects papers indicate that it might be time for a more proactive precautionary approach.” NMFS160054. By the time of publication, however, this conclusion had been toned

down to state, “Several papers demonstrated how cumulative effects of climate change over the entire life cycle are likely to be much higher than previously predicted from effects on individual life stages. Finally, new adaptation plans for the PNW are being developed but institutional barriers to climate change adaptation for some agencies and water use sectors create challenges for effective response.” 2014 BiOp App’x D at D-116.

78 *Also available at* Dkt. 1804–6, Plaintiff’s excerpts of record, Att. F, ER 123.

79 *Also available at* Dkt. 1804–7, NWF’s excerpts of record, Att. G, ER 137.

80 The Court acknowledges that the time period of the agency action reviewed in the CVP BiOp extended until 2030, unlike the 2014 BiOp, which extends until 2018. This difference is not substantial for purposes of the Court’s discussion of climate change, however, because the 2008 and 2014 BiOps conducted a 24-year extinction risk analysis, which considers impacts through 2032, and engaged in a forward-looking recovery analysis. *See, e.g.*, 2008 BiOp at 7–5; 2014 BiOp at 47.

81 As noted below, the Court is troubled by NOAA Fisheries’ inconsistent treatment of scientific uncertainty.

82 2014 BiOp at 176.

83 *Also available at* Dkt. 1804–6, Plaintiff’s excerpts of record, Att. F, ER 123.

84 RPA 33 is the action relating to the kelt management plan.

85 RPA 46 is the proposed action relating to DCCO management.

86 RPA 45 is the proposed action relating to Caspian tern management.

87 The 2008 BiOp adopted the expected survival benefits from the 2007 Comprehensive Evaluation Attachment F, Table 4. Accordingly, the benefits anticipated from the Caspian tern reduction were as follows: 0.7 percent for subyearling Chinook; 2.1 percent for yearling Chinook; 3.4 percent for steelhead; and 7.8 percent for coho. *See* NMFS045245.

88 The 2014 BiOp offers no further explanation for why compensatory mortality was not considered in estimating Caspian tern benefits.

89 NOAA Fisheries published a proposed rule designating critical habitat for the 13th species, the [Lower Columbia River coho salmon](#). *See* 2014 BiOp at 43; 78 Fed. Reg. 2726–01 (Jan. 14, 2013).

90 “Reach” is “[a] length of stream between two points.” 2014 BiOp at 26. For purposes of analyzing juvenile reach survival, the relevant reach is Lower Granite Dam to Bonneville Dam. 2014 BiOp at 360.

91 To the extent the decision to conduct discrete EISs with narrow scopes, such as the DCCO EIS, is entitled to deference and should be reviewed under the arbitrary and capricious standard, for the same reasons the Court finds reliance on the discrete EISs to be unreasonable, the Court finds them to be arbitrary and capricious.

92 The Court notes the Corps’ AR also includes a 2004 Juvenile Bypass EIS and 2005 Caspian Tern EIS, among some older EAs and other NEPA documents.

93 The “all H” approach indicates looking to habitat, hatchery, harvest, and hydropower to address the threats to salmonids.

94 Ice Harbor, Lower Monumental, Little Goose, and Lower Granite.

95 *available at* http://www.nwp.usace.army.mil/portals/24/docs/environment/eis/cormorants/final_eis_cormorant_feb2015.pdf (last visited May 3, 2016).

96 The plan calls for “reducing” DCCOs by shooting them, oiling eggs so they will not hatch, and destroying DCCO nests.

97 *See, e.g.*, 2014 BiOp at 70–71 and Table 2.1–1 (compiling the most recent data, which shows that approximately 93.5 percent of the populations are at some risk of extinction, while only 4 percent are considered “viable” and 2.5 percent are considered “highly viable”).