

BONNEVILLE POWER ADMINISTRATION

2011 AMENDMENT

To

2010 RECORD OF DECISION

following the

MAY 20, 2010, NOAA FISHERIES
SUPPLEMENTAL BIOLOGICAL OPINION

to the

May 2008 FCRPS BIOLOGICAL OPINION

for

MANAGEMENT and OPERATION

of the

FEDERAL COLUMBIA RIVER POWER SYSTEM,

11 U.S. BUREAU OF RECLAMATION PROJECTS in the COLUMBIA BASIN,

and

ESA SECTION 10 PERMIT FOR
JUVENILE FISH TRANSPORTATION PROGRAM

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ABBREVIATIONS, ACRONYMS, AND DEFINITIONS

2008/2010 BiOp	NOAA Fisheries' 2008 BiOp, as amended by NOAA's 2010 Supplemental BiOp.
2008 FCRPS BiOp	NOAA's May 2008 Biological Opinion for Operation of the Federal Columbia River Power System, 11 Bureau of Reclamation Projects in the Columbia Basin and ESA Section 10(a)(1)(A) Permit for Juvenile Fish Transportation Program. NOAA Fisheries, May 5, 2008.
2008 BPA ROD	BPA's ROD to implement the 2008 BiOp RPA and ITS.
2010 Supplemental BiOp	Supplemental Biological Opinion for operation of the Federal Columbia River Power System, 11 Bureau of Reclamation Projects in the Columbia Basin and ESA Section 10(a)(1)(A) Permit for Juvenile Fish Transportation Program. NOAA Fisheries, May, 2010.
2010 BPA ROD	BPA's ROD to implement the 2008/2010 BiOp RPA and ITS.
Action Agencies	U.S. Department of the Interior, Bureau of Reclamation (Reclamation), U.S. Army Corps of Engineers, Bonneville Power Administration, the agencies responsible for management and operation of federal hydroelectric projects in the Columbia and Upper Snake Rivers
Biological Opinion	A document that states the opinion of NOAA Fisheries as to whether or not the Federal action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. See 50 C.F.R. § 402.02
BiOp	biological opinion
BPA	Bonneville Power Administration
Corps	U.S. Army Corps of Engineers
ESA	Endangered Species Act, 16 U.S.C. 1531 <u>et seq.</u>

Federal Defendants	The Federal Defendants in the <u>National Wildlife Federation v. National Marine Fisheries Service</u> , 01-cv-640-RE (D. Or.), are NOAA Fisheries, the Army Corps of Engineers, and Bureau of Reclamation.
FCRPS	Federal Columbia River Power System
Jeopardize	“Jeopardize the continued existence of” 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
NOAA Fisheries	National Marine Fisheries Service, an agency within the National Oceanic and Atmospheric Administration
Reasonable and Prudent Alternative (RPA)	Recommended alternative actions identified during formal consultation that can be implemented in a manner consistent with the purposes of the action, that can be implemented consistent with the scope of the federal agency’s legal authority and jurisdiction, that is economically and technologically feasible, and that NOAA Fisheries believes would avoid the likelihood of jeopardizing the continued existence of listed species or resulting in the destruction or adverse modification of critical habitat. See 50 C.F.R. § 402.02.
Reclamation	U.S. Bureau of Reclamation
ROD	Record of decision.
Spill	Water released from a dam over the spillway instead of being directed through the turbines.

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I. Summary

In a 2010 Record of Decision, BPA decided to implement, in coordination with other federal agencies, NOAA Fisheries' 2008/2010 ten-year biological opinion RPA for operation and management of the federal hydroelectric projects in the Columbia and Snake Rivers. In August 2011, a federal district court declined to set aside the 2008/2010 BiOp RPA's habitat mitigation measures through 2013 but criticized the post-2013 habitat measures as indefinite and not reasonably certain to occur. The district court ordered a remand to NOAA Fisheries, directing NOAA Fisheries to issue a new or supplemental biological opinion by January 1, 2014. To avoid reliance on measures found by the court to be invalid, BPA amends its 2010 decision to implement, in coordination with other federal agencies and in collaboration with state agencies and tribes, NOAA Fisheries' 2008/2010 biological opinion RPA through 2013 or until such as time as the new or supplemental BiOp ordered by the court takes effect, whichever is later.

II. Reasons for Decision

As described in Bonneville Power Administration's attached 2008 ROD at 1-3, the Bureau of Reclamation (Reclamation), U.S. Army Corps of Engineers (Corps), and Bonneville Power Administration (BPA) have various statutory responsibilities concerning the management and operation of the federal hydroelectric projects in the Columbia and Upper Snake Rivers. In addition, Reclamation operates reclamation projects in these rivers.

To meet responsibilities under the Endangered Species Act, these agencies (collectively the Action Agencies) consult with NOAA Fisheries. After consultation, NOAA Fisheries issues a biological opinion as to whether or not the Federal action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. After issuance of a biological opinion, BPA issues decision documents or records of decision.

NOAA Fisheries issued a biological opinion in 2008 and a supplemental BiOp in 2010 (collectively referred to as the 2008/2010 BiOp) on the operation of the Federal Columbia River Power System, 11 Bureau of Reclamation projects in the Columbia Basin, and a ESA Section 10(a)(1)(A) permit for juvenile fish transportation program. The 2008/2010 BiOp is a ten-year BiOp, covering the years from 2008 to 2018.

Most recently, BPA issued a June 11, 2010, Record of Decision providing that BPA will implement, in cooperation with the other Action Agencies, NOAA Fisheries' 2008/2010 BiOp's RPA and the terms, and conditions in the 2008/2010 BiOp Incidental Take Statement (ITS). In its 2010 ROD, BPA concluded that the 2008/2010 BiOp RPA and ITS are not likely to jeopardize listed species or result in the destruction or adverse modification of designated critical habitat.

To the extent not amended herein, this 2011 ROD incorporates by reference BPA's 2010 ROD and attaches it as an appendix. The 2010 ROD incorporates in turn BPA's ROD to implement the 2008 BiOp.

The 2008/2010 BiOp has now undergone judicial review. In National Wildlife Federation v. National Marine Fisheries Service, Case 3:01-cv00640-RE Document 1855, Slip Copy, 2011 WL 3322793 (D. Or. Aug. 2, 2011), Judge Redden left in place the BiOp, including the RPA's habitat mitigation measures through 2013, but criticized the NOAA Fisheries' reliance on post-2013 habitat mitigation actions as not reasonably certain to occur.

NOAA Fisheries relies on two types of habitat mitigation actions. The first includes specific identified projects scheduled to occur between 2008 and 2013. The second, however, includes broad, unidentified categories of projects that the Federal Defendants intend to develop and implement between 2013 and 2018. (Slip Op. at 12, 2011 WL 3322793 at 5.)

NOAA Fisheries updated various quantitative data, and identified specific habitat mitigation actions for 2010 through 2013. (Id. at 8, 2011 WL 3322793 at 4.)

But NOAA Fisheries has not identified any specific habitat projects after 2013. (Id. at 12, 2011 WL 3322793 at 5.)

NOAA Fisheries' reliance on undefined actions for such large survival increases is contrary to the ESA's requirements that mitigation must be specific, reliable, and certain to occur. (Id. at 14, 2011 WL 3322793 at 6.)

Judge Redden did not set aside the BiOp through 2013 but remanded the BiOp to NOAA Fisheries.

For the reasons above, I find that the no jeopardy decision for the entire ten-year term of the BiOp is arbitrary and capricious because NOAA Fisheries has failed to identify specific mitigation plans beyond 2013, that are reasonably certain to occur. Because the 2008/2010 BiOp provides some protection for listed species through 2013, however, I order NOAA Fisheries to fund and implement the BiOp until then. (Id. at 17 (emphasis in the original), 2011 WL 3322793 at 7.)

I will remand the BiOp to the action agencies and order NOAA Fisheries to keep this BiOp and its incidental take statement in place through 2013, when NOAA Fisheries' currently identified mitigation plans expire or are scheduled to be completed. The BiOp contains positive mitigation measures that provide adequate protection to the listed species through 2013. (Id. at 19, 2011 WL 3322793 at 8.)

Therefore, the court ordered that the 2008/2010 BiOp remain in place until December 31, 2013, the period over which the BiOp provides sufficiently specific mitigation actions and provides adequate protections for the listed species. Id. at 23, 2011 WL 3322793 at 10. The court also ordered that NOAA Fisheries produce a new or supplemental BiOp by January 1, 2014, to correct the 2008/2010 BiOp's reliance on post-2013 measures that the court concluded were unidentified and not reasonably certain to occur. Id. at 23, 2011 WL 3322793 at 10. The district court also required Federal Defendants to continue spring and summer spill in a manner consistent with the court's annual spill orders. Id. at 3, 22, 2011 WL 332793 at 2, 10. Federal Defendants have not sought a stay of the district court's remand order or grant of injunctive relief, and are moving forward in compliance with these measures on remand.

One practical effect of Judge Redden's opinion is to revise the temporal scope of the BiOp to run through 2013, to avoid reliance on post-2013 habitat measures that the court has rejected. Therefore, BPA amends its 2010 ROD to implement,

in cooperation with the other Action Agencies and in collaboration with state agencies and tribes, the 2008/2010 BiOp RPA through 2013, instead of through 2018, so that BPA's decision correspondingly relies only on habitat measures viewed by the court as reasonably certain to occur and providing adequate projection for the listed species through 2013.

III. Decision

Based on the 2008 and 2010 BiOps and supporting documents, BPA's RODs following these BiOps, and to act consistent with the NWF v. NMFS August 2, 2011, opinion and order, it is my decision that BPA will implement, in cooperation with the other Action Agencies and in collaboration with state agencies and tribes, the 2008/2010 BiOp's RPA, including the terms and conditions in the 2008/2010 BiOp Incidental Take Statement, through December 31, 2013, or until such as time as the new or supplemental BiOp ordered by the court takes effect, whichever is later. The RPA's habitat mitigation measures through 2013 were not set aside by the court as unspecific or not reasonably certain to occur, and BPA will also consult with NOAA Fisheries respecting the new or supplemental BiOp.

Pending the new or supplemental BiOp, these actions will meet BPA's responsibilities under the ESA to avoid taking actions that are likely to jeopardize listed species or destroy or adversely modify critical habitat. These actions also further BPA's commitment to meet its responsibilities under the Northwest Power Act to protect species and also be consistent with BPA's multiple statutory responsibilities.

Issued in Portland, Oregon, this 15th day of December 2011.

/s/ Stephen J. Wright

Stephen J. Wright
Administrator and Chief Executive Officer

Appendix

BPA 2010 ROD following the 2010 FCRPS Supplemental BiOp

2010 BPA ROD following the 2010 Supplemental BiOp

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ABBREVIATIONS, ACRONYMS, AND DEFINITIONS

2008 FCRPS BiOp	NOAA's May 2008 Biological Opinion on operation and configuration of the Federal Columbia River Power system.
2008 BPA ROD	BPA's ROD to implement the 2008 BiOp RPA and ITS.
2010 Supplemental BiOp	Supplemental Biological Opinion for operation of the Federal Columbia River Power System, 11 Bureau of Reclamation Projects in the Columbia Basin and ESA Section 10(a)(1)(A) Permit for Juvenile Fish Transportation Program. NOAA Fisheries, May, 2010.
2010 BPA ROD	BPA's ROD to implement the 2008 BiOp RPA and ITS, as amended by the 2010 Supplemental BiOp.
Action Agencies	U. S Department of the Interior Bureau of Reclamation (Reclamation), U.S. Army Corps of Engineers, Bonneville Power Administration, the agencies responsible for management and operation of federal hydroelectric projects in the Columbia and Upper Snake Rivers
Adaptive Management	The process of adjusting management actions and/or directions based on new information.
AMIP	Adaptive Management Implementation Plan, Adopted September 11, 2009
Anadromous Fish	Species that are hatched in freshwater migrate to and mature in salt water and return to freshwater to spawn
BA	Biological Assessment
Biological Assessment	The Action Agencies' analysis of impacts of their proposed actions on species listed and proposed to be listed under the ESA. The Action Agencies produced biological assessments on projects in the Federal Columbia River Power System in the Columbia River and on projects in the Upper Snake River. See definition at 50 C.F.R. 402.02.

Biological Opinion	A document expressing NOAA Fisheries' opinion regarding whether and how a proposed action avoids jeopardy to listed species and the destruction or adverse modification of their designated critical habitat. See 50 C.F.R. § 402.02
BiOp	biological opinion
BPA	Bonneville Power Administration
Columbia Basin Accords	Agreements signed by the Action Agencies, five tribes, and two states to support the 2008 FCRPS BiOp and provide additional benefits to fish. Also includes an Agreement signed with the State of Washington to support the 2008 FCRPS BiOp and provide additional benefits to fish in the estuary.
Comprehensive Analysis (CA)	The analysis conducted by the Action Agencies to assess impacts of proposed operation of major projects in the Federal Columbia River Power System (FCRPS). The CA provides the basis underlying the biological assessments on the FCRPS and Upper Snake projects.
Corps	U.S. Army Corps of Engineers
Cumulative Effects	Effects of future State or private activities, not involving federal activities, that are reasonably certain to occur. See definition at 50 C.F.R. 402.02.
EFH	Essential fish habitat under the Magnuson Stevens Fisheries Management Act
EIS	environmental impact statement
Environmental Baseline	Past and present impacts of all federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of state or private actions which are contemporaneous with the consultation in process. See definition at 50 C.F.R. 402.02.
ESA	Endangered Species Act, 16 U.S.C. 1531 <u>et seq.</u>

ESA Recovery Plan	A plan to recover a species listed as threatened or endangered under the U.S. Endangered Species Act (ESA). The ESA requires that recovery plans, to the extent practicable, incorporate (1) objective, measurable criteria that, when met, would result in a determination that the species is no longer threatened or endangered; (2) site specific management actions that may be necessary to achieve the plan's goals; and (3) estimates of the time required and costs to implement recovery actions.
ESU	Evolutionarily Significant Unit
Evolutionarily significant unit (ESU)	A group of Pacific salmon or steelhead trout that is (1) substantially reproductively isolated from other specific units and (2) represents an important component of the evolutionary legacy of the species.
FCRPS	Federal Columbia River Power System
Jeopardize	Jeopardize the continued existence of 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 (definition of "jeopardize")
NEPA	National Environmental Policy Act
NOAA Fisheries	National Marine Fisheries Service, an agency within the National Oceanic and Atmospheric Administration
NW Power and Conservation Council	Pacific Northwest Electric Power and Conservation Planning Council, created under the Pacific Northwest Electric Power Planning and Conservation Act, which develops a power plan and a fish and wildlife program to guide activities by the Bonneville Power Administration and other federal and nonfederal entities in the Pacific Northwest.
Prospective Actions	The federal agency actions reviewed by NOAA's 2008 Supplemental Comprehensive Analysis and 2008 BiOps and 2010 analyses and 2010 Supplemental BiOp on operation and configuration of FCRPS projects, operation and configuration of Reclamation Upper Snake Projects, a permit to the Corps of

Engineers to transport fish, and the United States v. Oregon Harvest Management Agreement (collectively described as the “Prospective Actions”).

Reasonable and Prudent Alternative (RPA)	Recommended alternative actions identified during formal consultation that can be implemented in a manner consistent with the purposes of the action, that is consistent with the scope of the federal agency’s legal authority and jurisdiction, that is economically and technologically feasible, and that NOAA Fisheries concludes will ensure it is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of designated critical habitat. See definition at 50 C.F.R. § 402.02.
Reclamation	U.S. Bureau of Reclamation
Recovery	Improvement in the status of a species to the point at which listing under the ESA is no longer warranted.
ROD	Record of decision.
RPA	Reasonable and Prudent Alternative
Spill	Water released from a dam over the spillway instead of being directed through the turbines.
Supplemental Comprehensive Analysis	An analysis by NOAA Fisheries of the effects of three actions in the context of the environmental baseline and cumulative effects. The SCA provides the analysis underlying the evaluations in NOAA Fisheries’ 2008 BiOps on operation of FCRPS projects, operation of Upper Snake River projects, and harvest activities under U.S. v. Oregon.
<u>U.S. v. Oregon</u>	Litigation under which federal, state, and tribal parties resolve differences respecting harvest levels of anadromous fish.

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I. Summary

In May 2008, NOAA Fisheries concurrently issued Biological Opinions on the operations of FCRPS projects consistent with NOAA's recommended reasonable and prudent alternative (RPA), operations of Reclamation's Upper Snake Projects, and the *United States v. Oregon* Harvest Management Agreement (collectively described as the "Prospective Actions"). The collective effects of these actions were evaluated in the Supplemental Comprehensive Analysis that NOAA Fisheries issued simultaneously with the biological opinions listed above. NOAA Fisheries concluded that the reasonable and prudent alternative recommended in the 2008 FCRPS BiOp avoids jeopardizing listed species and the destruction or adverse modification of their designated critical habitat.

In its ROD dated August 12, 2008, the Bonneville Power Administration (BPA) expressed its decision to implement the Reasonable and Prudent Alternative (RPA) FCRPS action and incidental take statement (ITS) terms and conditions recommended by the May 5, 2008, the National Marine Fisheries Service (NOAA Fisheries) Biological Opinion (BiOp) on Operation and Configuration of Major Projects in the Federal Columbia River Power System (FCRPS). BPA made this decision because it determined that the RPA met BPA's ESA responsibilities to ensure that its actions to operate the FCRPS did not jeopardize ESA-listed species and did not destroy or adversely modify designated critical habitat (2008 BPA ROD).

On February 19, 2010, the National Wildlife Federation v. National Marine Fisheries Service (NWF v. NMFS) court allowed a limited, voluntary remand of the BiOp to enable the federal agencies to "consider, among other actions, integrating the Adaptive Management Implementation Plan and its administrative record into the 2008 BiOp." During this remand, NOAA Fisheries and the Action Agencies (Bonneville Power Administration, Army Corps of Engineers, and Bureau of Reclamation) and NOAA reinitiated formal consultation. Exhibits 2 & 3,

Notice of Completion of Remand, May 20, 2010. Concluding consultation, on May 20, 2010, NOAA issued a supplemental biological opinion to the 2008 BiOp (2010 Supplemental BiOp).

This current BPA document records BPA's decision to implement the 2010 Supplemental BiOp. Because the 2010 Supplemental BiOp builds upon the 2008 BiOp, BPA's 2010 ROD builds upon and incorporates by reference BPA's 2008 ROD and attaches it as Attachment A. BPA concludes that the 2008 BiOp RPA and ITS, as amended by the 2010 Supplemental BiOp, does not jeopardize listed species and does not result in the destruction or adverse modification of their designated critical habitat. The particular species addressed by the 2010 BiOp follow.

Interior Columbia River Basin Salmon and Steelhead. NOAA Fisheries continues to find that the RPA, as amended through this remand, is not likely to jeopardize the continued existence of listed SR spring/summer Chinook, SR fall Chinook, SR steelhead, SR sockeye, MCR steelhead, UCR spring Chinook, or UCR steelhead or destroy or adversely modify their designated critical habitat. 2010 Supplemental BiOp, § 4.1

Lower Columbia Basin Salmon and Steelhead. NOAA Fisheries continues to find that the RPA, as amended through this remand, is not likely to jeopardize the continued existence of listed CR chum, LCR Chinook, or UWR Chinook salmon or of LCR or UWR steelhead or destroy or adversely modify their designated critical habitat. The modified RPA is also not likely to jeopardize the continued existence of LCR Coho salmon (critical habitat has not yet been designated for this species). 2010 Supplemental BiOp, § 4.2.

Southern Resident Killer Whale Distinct Population Segment (DPS). NOAA Fisheries concurs with the Action Agency determination that the FCRPS RPA may affect, but is not likely to adversely affect this listed DPS of killer whales. 2010 Supplemental BiOp, § 4.3.

Southern Resident DPS of North American Green Sturgeon. NOAA Fisheries concludes that the RPA may affect, but is not likely to adversely affect green sturgeon. 2010 Supplemental BiOp, § 4.4.

The 2010 Supplemental BiOp and BPA's 2010 ROD are also products of the federal agencies' responses to issues with prior biological opinions, as expressed in opinions and orders by the federal District Court of Oregon and Courts of Appeal for the Ninth Circuit in the NWF v. NMFS litigation.

This decision by BPA complies with the regulations on Endangered Species Act consultation, which provide, "following issuance of a biological opinion, the federal agency shall determine whether or in what manner to proceed with the

action in light of its section 7 [of the Endangered Species Act (ESA)] obligations and the Service's [National Oceanic and Atmospheric Administration (NOAA)] biological opinion." 50 CFR § 402.15(a).

II. Background

BPA's August 2008 ROD summarizes BPA responsibilities, the FCRPS action, a chronology of documents and events leading to the 2008 BiOp and decision to implement the 2008 BiOp RPA. See additional descriptions in the 2008 FCRPS BiOp itself and the accompanying administrative records for NOAA and the Action Agencies.

Subsequent to issuance of the 2008 BiOp, the Action Agencies proceeded to implement the 2008 BiOp's RPA. In 2009 the Obama administration thoroughly reviewed the BiOp, carefully considering the Court's suggestions in its May 18, 2009 letter to the parties. See AMIP § 1.A, including Appendix 1 at 3-6. The court observed, and the United States agrees, "that the concept of 'adaptive management' is flexible enough to allow the implementation of additional and/or modified mitigation actions within the structure of the existing BiOp." Four different Cabinet-level agencies and the White House were represented in this process. The lead official for each agency in this review was: NOAA Administrator Dr. Jane Lubchenco for the Department of Commerce; Council on Environmental Quality Chair, Nancy Sutley for the White House; Principal Deputy Assistant Secretary of the Army, Terrence "Rock" Salt for the Department of Defense; Associate Deputy Secretary, Laura Davis for the Department of the Interior; and, for the Department of Energy, Bonneville Power Administration Administrator Steve Wright.

Dr. Jane Lubchenco, the administrator of the National Oceanic and Atmospheric Administration, led the Administration's review. Dr. Lubchenco met with parties to the litigation, consulted with NOAA staff and scientists from the Northwest Fisheries Science Center, and heard from some of the most respected fisheries scientists in the nation, who had reviewed the 2008 FCRPS BiOp. In July 2009, these scientists met with Dr. Lubchenco and the leadership of the other federal agencies involved in this litigation to present the results of their individual independent reviews.

The independent scientists viewed the 2008 BiOp as based on the best available science and information. The methodology used in the BiOp to link habitat improvements to improved salmon survival was deemed to be sound, given the limitations of the underlying science. While confirming the fundamental soundness of the BiOp's scientific underpinnings, the reviewers noted that uncertainty existed with respect to the BiOp's future projections – both due to the state of the science and the likely future impacts of global climate change.

In response to these recommendations, the Action Agencies and NOAA Fisheries jointly developed the Adaptive Management Implementation Plan

(AMIP), which set out a more precautionary approach to the implementation of the 2008 BiOp. The AMIP enhances and strengthens implementation of activities, research, and contingencies within the RPA's adaptive management provisions. The AMIP addresses uncertainties about the future condition of the affected salmon and steelhead, particularly focusing on how climate change may affect these species and their habitat.

The AMIP consists of four basic components: (1) immediate acceleration and enhancement of RPA mitigation actions (Section II); (2) enhanced research, monitoring, and evaluation (RM&E) actions to increase and improve the data and analytic tools available to know how salmon and steelhead are performing and to inform what to do if they are declining (Section III); (3) new biological triggers that, if exceeded, will activate a range of specified near- and long-term responses to address significant fish declines (Section IV); and (4) clearer definition of regional collaboration, scientific review and dispute resolution (Sections IV-VI).

One important AMIP enhancement to the RPA is the Memorandum of Agreement on Columbia River Estuary Habitat Actions with the State of Washington (Estuary MOA), which adds 21 protection and restoration projects including significant RM&E by making available an additional \$4.5 million annually (equivalent to \$40.5 million over the 9-year term of the MOA). AMIP §§ I.B, II.A, Appendix 3. Other AMIP enhancements include additional efforts to control predators and invasive species, and biologically based changes to spring and summer spill. AMIP §§ II.C&D.

RM&E enhancements include expanded adult status and trend monitoring to help evaluate whether the BiOp's mitigation actions are having the intended effect and to improve scientific understanding of the entire salmonid lifecycle; expanding Intensively Monitored Watersheds (IMWs) to monitor the effects of climate change; a new Life-cycle model to evaluate contingent actions; and enhanced research on predators, invasive species and potential reintroduction. AMIP § III.

The AMIP's biological triggers and contingency plans are insurance against unexpected declines in species abundance – not a substitute for the BiOp's performance standards and metrics. AMIP § IV. The first trigger is an Early Warning Indicator intended to indicate the potential for a significant decline in abundance in the near future. This trigger would set contingency actions in motion if it is determined that a significant decline in abundance is likely to occur within one to two years. The second trigger is the Significant Decline trigger, which automatically triggers short-term contingency measures ("Rapid Response Actions") that could be implemented within a relatively short period of time. These actions include possible modifications to hydrosystem operations that would exceed juvenile dam passage performance standards in the BiOp by altering spill or transport, additional efforts to target predators and invasive species, modifications to harvest management (within existing agreements), and the possible use of safety-net hatcheries. If a Significant Decline Trigger is

reached, concurrent with the determination of what Rapid Response Actions will be taken, the Action Agencies will initiate an All-H Diagnosis informed by life-cycle modeling of potential Long-term Contingency Actions. The AMIP calls for the development of these more detailed short term (Rapid Response) and longer term (Long-Term Contingency Actions) contingency plans by specific dates. The Action Agencies and NOAA have begun work on these plans.

Finally, the AMIP adds greater detail and specificity to the ongoing regional collaboration between federal agencies, States and Tribes through the Regional Implementation Oversight Group (RIOG). AMIP § V.

After completion of the Administration's review and submission of the AMIP to the Court, procedural objections were made to the Court's consideration of the AMIP in ruling on the merits of the 2008 BiOp. On February 19, 2010, the Court authorized a three-month remand "to allow these Agencies [NOAA, the Bureau of Reclamation and the U.S. Army Corps of Engineers] to consider, among other actions, integrating the Adaptive Management Implementation Plan and its administrative record into the 2008 BiOp." The Court clarified that the voluntary, limited, remand was granted without any finding concerning the legal sufficiency of the 2008 BiOp. The Court has retained jurisdiction throughout this entire process.

During the remand, the Action Agencies formally requested that NOAA Fisheries reinstate formal consultation on the 2008 FCRPS BiOp for the purpose of integrating the AMIP into the BiOp in a procedurally sound fashion and conducting a thorough review of new and relevant scientific information not available at the time the 2008 BiOp was completed. Exhibits 2 & 3 to the Notice of Completion of Remand, May 20, 2010. As part of its review, NOAA solicited new scientific information from Northwest states and tribes, parties to the litigation, its Northwest Fisheries Science Center, and the Independent Scientific Advisory Board (ISAB). The new and relevant scientific information that was submitted and considered by NOAA included:

- new information on salmon and steelhead status;
- new information on the physical and biological effects of climate change;
- new information on impacts from avian predation;
- new information on ecological interactions between hatchery and wild salmon and steelhead;
- new harvest information
- and new information with respect to Southern Resident Killer Whales and the Southern DPS of North American Green Sturgeon.

NOAA found the new quantitative information on species status to be within the range of variability anticipated in the BiOp. BPA agrees with NOAA's interpretation. Most importantly, species abundance has improved when new information is considered and trends in abundance are stable or increasing for all listed species with the exception of Snake River Sockeye salmon, due to the degree of artificial propagation necessary to maintain this ESU. Under the 2008 BiOp's RPA 3, the Action Agencies will conduct a Comprehensive Evaluation of species status and BiOp implementation in 2013.

Climate change was a particular concern raised by many of the independent scientific reviewers and commenters during the voluntary remand process. After a thorough review of new climate science, NOAA concluded in the Supplemental BiOp that the physical effects of climate change, for the remainder of the BiOp, are likely to be within the range of effects considered in the BiOp. Most importantly, as noted at section 8.1.3 of the 2008 BiOp: "The full breadth of long-term climate change is unlikely to be realized in the ten-year term of this Opinion."

In response to the new information NOAA considered, and consistent with the RPA and AMIP, the Action Agencies and NOAA developed the additional implementation actions noted below to amend and further enhance the AMIP. As a precautionary measure, a number of these new actions are intended to further reduce uncertainties associated with climate change. Others address uncertainties regarding the potentially adverse effects of hatchery fish, non-indigenous species and toxics. The specific actions are listed below.

A. Amendments to the 2008 BiOp RPA and AMIP

Amendment 1:

"Under RPA Action 55 the Action Agencies will undertake selected hydrosystem research to resolve critical uncertainties. As part of this action, by June 2012, the Corps will complete a NOAA Fisheries Supplemental FCRPS Biological Opinion report to identify the use and location of adult salmon thermal refugia in the lower Columbia and lower Snake Rivers using existing information on adult migration, temperature monitoring data, and modeling efforts. Additional investigation or action may be warranted based on the results of this report."

Amendment 2:

"Under RPA Action 52, the Action Agencies will enhance fish population monitoring. As part of this action, in February 2011 the Corps will initiate a study at The Dalles and John Day Dams to determine a cost effective adult PIT tag detection system design and whether installation of PIT tag detectors will improve inter-dam adult survival estimates. The study will be completed by

December 2012. Following the results of the study, by April 2013, the Action Agencies will determine in coordination with NOAA if one or both of these PIT tag detectors substantially improve inter-dam adult loss estimates. If warranted, the Action Agencies will proceed to construction. Funding will be scheduled consistent with the RPA requirement and priorities for performance standard testing and achievement of these performance standards at the projects.”

Amendment 3:

”Under RPA Action 15, the Action Agencies are providing water quality information and implement water quality measures to enhance fish survival and protect habitat. As part of this action, the Action Agencies will contribute to regional climate change impact evaluations by providing NOAA past and future water temperature data from their existing monitoring stations, to be used as part of a regional temperature database. The Action Agencies will begin to provide data to NOAA within 6 months following the establishment of a regional database and annually thereafter. NOAA anticipates having a regional database established no later than 2012.”

Amendment 4:

”Under RPA Action 35, the Action Agencies are identifying tributary habitat projects for implementation and consider potential effects of climate change on limiting factors. As part of this action, the Action Agencies will continue to coordinate with NOAA in its efforts to use existing tributary habitat effectiveness studies, IMWs, and the NOAA enhanced lifecycle modeling to track climate change impacts. Starting in September 2011, the Action Agencies will annually provide NOAA with study data to be used as part of a regional climate change database. After 2011, new climate change findings will be provided to the tributary habitat expert panels to apply and use to help identify and prioritize habitat improvement actions.”

Amendment 5:

“Under RPA Action 35, the Action Agencies are identifying tributary habitat projects for implementation based on the population specific overall habitat quality improvement identified in the RPA Action. As part of this action, after 2011, the Action Agencies will include as a consideration in the expert panel project evaluation process 1) the presence of invasive species and 2) site-specific toxicology issues, based on information made available by the appropriate state and Federal agencies.”

Amendment 6:

“Under RPA Action 64 and under the AMIP Hatchery Effects p. 22, the Action Agencies are supporting efforts to resolve hatchery critical uncertainties. As part

of this effort, beginning in December 2010, the Action Agencies will assist NOAA to further develop or modify existing studies that address the Ad Hoc Supplementation Workgroup Recommendations Report and that additionally address potential density-dependent impacts of FCRPS hatchery releases on listed species. These studies would provide support for future hatchery management actions to reduce potential adverse hatchery effects. By December 2010, the Action Agencies will work with NOAA to convene a technical workgroup with fishery managers to discuss potential studies and potential management tools. The goal for the workgroup will be to complete its work by December 2011.”

B. New RPA to integrate AMIP as amended into the 2008 BiOp

NOAA also integrated the AMIP into the 2008 BiOp as a new RPA. The text of that decision follows.

“NOAA has further determined that the AMIP as amended should be integrated into the 2008 BiOp by including in the 2008 RPA the following New RPA Action 1A:

“New RPA Action 1A:

The Adaptive Management Implementation Plan (AMIP), as adopted by NOAA on September 14, 2009, and as further amended on May 19, 2010, is hereby integrated into the 2008 BiOp’s RPA. The AMIP, as amended, is integrated into the implementation of the 2008 RPA as more fully described in the AMIP, Chapter 1.C at page 14.

“Integration of 2008 BiOp and its RPA, as amended, into the 2010 Supplemental Biological Opinion

“NOAA hereby integrates into this supplemental biological opinion the 2008 BiOp and its RPA, as amended to include new RPA Action 1A.”

C. Supplement to the 2008 BiOp’s Incidental Take Statement

NOAA then supplemented the 2008 BiOp’s incidental take statement as follows.

“5.1 Introduction

This section supplements the Incidental Take Statement (ITS) of the 2008 BiOp (Section 14.2.6 - Amount of Incidental Take from RM&E Actions). It documents NOAA Fisheries’ conclusion that additional take of ESA-listed adult salmon and steelhead is necessary for research to assess transport of adult sockeye salmon as a method of increasing late summer survival from Lower Granite Dam to Sawtooth Valley lakes (or artificial production facilities). Estimates of take provided in this section are in addition to those already specified in the 2008

BiOp (Section 14.2) and the reasonable and prudent measures (and related terms and conditions) to reduce take associated with these activities, as specified here, are also in addition to those already specified in the 2008 BiOp (Sections 14.4 and 14.5). As explained in Section 4, NOAA Fisheries concludes that the incidental taking of threatened or endangered species specified in the 2008 BiOp's ITS as supplemented here will not violate ESA Section 7(a)(2).

5.2 Capture and Transport of Adult Sockeye

5.2.1 Amount or Extent of Anticipated Take

Implementation of RPA 42 is intended to evaluate the benefits of transporting up to half of adult listed Snake River sockeye salmon arriving at Lower Granite Dam. Incidental take will occur for the capture and handling of these adults that is necessary to implement this RPA action. Mortalities associated with this measure will result in losses of no more than 5% of the number of adults captured (or one fish – whichever is greater).¹ Adult listed Chinook salmon and steelhead will also likely be handled incidentally to the capture of sockeye for transport. However, effects (minor handling and delayed passage) on these species, considering that only a small proportion of spring-summer Chinook and steelhead pass Lower Granite Dam in July when the majority of sockeye are passing, should be minimal. Mortalities for these non-targeted species, collectively, shall not exceed 10 individuals per species as a result of this action.

¹ Losses of sockeye salmon between Lower Granite Dam and the Sawtooth Valley lakes can be high (in the general range of 25 to 50%) in the mid- to late-summer; most likely due to the relatively high temperatures in the snake and Salmon rivers. If effective, adult transport (to Sawtooth Valley Lakes or artificial production facilities) could substantially improve adult survival rates.

5.2.2 Reasonable and Prudent Measures

The FCRPS Action Agencies (or their designated contractors conducting research) shall conduct research and handle fish at the adult trapping facilities in accordance with existing NOAA Fisheries-approved protocols (use of anesthetics, handling criteria, trap operation criteria, NOAA Fisheries Supplemental FCRPS Biological Opinion temperature criteria, etc.) to ensure that lethal take resulting from the handling of adults salmon and steelhead is minimized to the extent practicable.

5.2.3 Terms and Conditions

No additional terms and conditions are needed beyond those prescribed in the 2008 BiOp, Sections 14.5.3.”

III. Reasons for Decision

A. BPA Reviewed and Concurs with NOAA's Reasoning and Determinations in the 2010 Supplemental BiOp.

Based on its review of new scientific information, NOAA Fisheries concluded that the operation of the FCRPS, through the 2008 BiOp RPA, as amended by the AMIP and through this remand, is not likely to jeopardize the continued existence of listed salmon and steelhead considered in the 2008 FCRPS BiOp or destroy or adversely modify their designated critical habitat. 2010 Supplemental BiOp, §§ 4.1, 4.2.

The 2010 Supplemental BiOp reaches similar conclusions with respect to the listed Southern Resident Killer Whale Distinct Population Segment (DPS). NOAA based its conclusions on NOAA's scientific assessment that the new information does not represent a significant deviation from the information and conditions analyzed in the 2008 BiOp. NOAA reasons the FCRPS RPA will continue to positively affect the survival and recovery of listed salmon and steelhead and bolsters protection for salmon and steelhead on the Columbia and Snake rivers in the Pacific Northwest by adding contingency measures that provide extra insurance that the fish will survive with an adequate potential for recovery, and that hatchery production contained in the FCRPS RPA more than offsets losses to the killer whale prey base. Therefore, NOAA Fisheries concurs with the Action Agency determination that the FCRPS RPA may affect, but is not likely to adversely affect Southern resident killer whales. 2010 Supplemental BiOp § 4.3.

NOAA also concludes that the 2008 RPA, as amended by the 2010 Supplemental BiOp, may affect, but is not likely to adversely affect the listed Southern Resident DPS of North American Green Sturgeon. NOAA's review of the new scientific information did not change its determinations respecting effects of the RPA on the listed green sturgeon and concludes that the RPA may affect, but is not likely to adversely affect green sturgeon. 2010 Supplemental BiOp § 4.4.

As described in this ROD, during implementation of the RPA, and reinitiation of formal consultation leading to the 2010 Supplemental BiOp, BPA has provided information and analysis to NOAA, reviewed NOAA's analyses and reasoning, and concurs with NOAA's conclusions that the RPA as amended by the 2010 Supplemental BiOp, ensures that the FCRPS action is not likely to jeopardize listed salmon and steelhead or result in the destruction or adverse modification of their designated critical habitat. BPA will also, together with the other Action Agencies, implement the measures and terms and conditions of 2008 BiOp's incidental take statement, as supplemented by the 2010 Supplemental BiOp. BPA has also reviewed and concurs with NOAA's conclusions respecting Southern Resident killer whales and Southern Resident green sturgeon.

B. Reviewing Action Agency Analyses, BPA Concludes the FCRPS Action Is Not Likely to Jeopardize Listed Species or Result in the Destruction or Adverse Modification of their Designated Critical habitat.

During the reinitiation of consultation in 2010, the Action Agencies reviewed their Biological Assessment and Comprehensive Analysis leading to the 2008 BiOp, the 2008 BiOp and Supplemental Comprehensive Analysis by NOAA, and scientific information and analyses becoming available after their decisions to implement the 2008 BiOp RPA. The Action Agencies also conducted their own review of the new information considered by NOAA.

With respect to the new species status information considered by NOAA, the Action Agencies conclude that the NOAA Fisheries 2009 Government Performance and Results Act review of species status provides the most recent ESU-level status review. 2010 Supplemental BiOp, section 2.1.1.1.2. The GPRA report's conclusions that all listed ESUs considered in the 2008 FCRPS BiOp are stable or increasing in size is consistent with both the datasets gathered for the AMIP and the updated population-level datasets considered in NOAA's review.

NOAA also considered a number of updated population-level datasets representing a subset of the datasets used in the Supplemental Comprehensive Analysis. As part of its review, NOAA updated the metrics derived from these datasets. These metrics formed the basis for the quantitative analysis in the SCA. It is important to stress, however, that the 2008 Biological Opinion appropriately considered multiple metrics indicative of species status. Each of these metrics provides a complementary but slightly different view of the same underlying population processes. Each has its strengths and weaknesses. As NOAA indicated in its July 12, 2006 jeopardy standard memo, "Because of the uncertainty attendant to any metric regarding the prospects for recovery and the difficulty in extrapolating from the population level on which those metrics are based, no one metric will be used to assess an ESU's potential for recovery. Instead, NOAA will consider a number of metrics, including those generated in the recovery planning process, along with other qualitative biological information and apply its best professional judgment as to an ESU's prospects for recovery."

With respect to the updated metrics, extinction risk modeling results are little changed from the BiOp when new information is considered, suggesting that the survival prong of the BiOp's analysis remains sound. Respecting recovery, while extended base period average recruit-per-spawner and lambda estimates have declined compared to the BiOp's base period, the declines are within the range of annual variability anticipated in the BiOp's analysis. Furthermore, the decline in average recruit-per-spawner productivity appears to be caused by a temporary period of poor ocean conditions that has not had a significant effect on longer term abundance or abundance trends. With stronger than average adult returns expected in 2010 and 2011, it is likely that these estimates will improve over the next two to three years. Finally, the updated status metrics are conservative

because they do not incorporate or assume the survival improvements anticipated under the 2008 BiOp.

Also, in addition to addressing contingencies in the AMIP for steep declines, the Action Agencies will use adaptive management to respond to new information about species status.

The Action Agencies concur with NOAA that new climate change information is consistent with the BiOp's assumptions and is appropriately addressed by the actions called for in the RPA and as supplemented by new RPA Action 1A, integrating the AMIP as amended.

The BiOp RPA calls for a Comprehensive Evaluation of RPA implementation and species status in 2013. This date was chosen in order to allow the effects of some of the BiOp's RPA actions to be reflected in updated data expected to be available at that time. As noted above, the new data available for this review do not reflect the effects of any of the actions implemented so far under this BiOp. With the addition of the AMIP's safeguards, it is reasonable to continue implementation of the BiOp's RPA and revisit the status of these species in the 2013 Comprehensive Evaluation.

Based on this review, the Action Agencies conclude that the 2008 BiOp RPA, as supplemented by the 2010 Supplemental BiOp, ensures that FCRPS operations and configuration are not likely to jeopardize ESA-listed species and are not likely to result in the destruction or adverse modification of their designated critical habitat.

C. The FCRPS Action and BiOp Continue to Use Guidance from and Address Concerns Expressed by the NWF v. NMFS District and Appellate Courts.

BPA's ROD to implement the 2008 BiOp RPA describes how this decision is consistent with guidance and responds to concerns expressed by the NWF v. NMFS and appellate courts. BPA has reviewed these decisions again, plus subsequent decisions, and concludes that implementation of the 2008 BiOp RPA, as revised by the 2010 Supplement, continues to respond to these courts' opinions.

D. The 2010 Supplement to the 2008 BiOp Continues to Take into Account the Importance of the Habitat Program and the Support to the Program Afforded by the Columbia Basin Fish Accords among the Action Agencies and Tribes and States.

Since the 2008 BiOp, the Action Agencies have: (1) identified specific habitat projects beyond 2009 for implementation in the 2010-2012 period; (2) committed substantial funding for implementation of habitat projects through the Fish Accords and other contracts; (3) identified specific habitat implementation

partners; and (4) identified and are implementing specific scientific reviews during habitat project selection. AMIP Appendix 1, p. 7. Together, these actions increase the certainty that selected habitat actions will have the intended benefits for ESA-listed salmon and steelhead.

As noted previously, in response to the Court's concerns, and in conjunction with the Administration's review of the 2008 BiOp, the Action Agencies have also added to the Fish Accords executed in 2008¹ by negotiating and entering into a new Fish Accord with Washington in September, 2009 addressing the Columbia River estuary (Estuary MOA) and which makes available \$40.5 million over the course of 9 years for on-the-ground habitat actions.² This effort is in addition to the BPA and Corps estuary habitat funding under the 2008 BiOp.

These collective commitments increase certainty with respect to implementation both from a funding standpoint and in the identification of specific projects (in the case of the Columbia Basin Fish Accords through 2018). The project selection process for 2008 BiOp implementation (which includes scientific scrutiny of all projects, including those specified in the Accords), is designed to ensure that the best available science is used to determine the biological value of habitat improvements to salmon and steelhead.

The 2008 BiOp RPA's habitat measures use an adaptive management framework designed to meet specific habitat quality improvement performance standards by 2018. See RPA Nos. 35 and 51, for example. BPA, with the other Action Agencies, will implement these RPA measures, actively monitor progress, and make any needed adjustments through adaptive management to remain on course for successful completion of the RPA measures by 2018.

Examples of Adaptive Management include the following:

In the Upper Columbia, the Action Agencies have initiated a very large increase in their tributary habitat program and are working in concert with local entities (including the salmon recovery board constituted by the State of Washington) to integrate FCRPS BiOp habitat projects with other salmon recovery efforts in the

¹ May 2, 2008, Memorandum of Agreement Among the Umatilla, Warm Springs and Yakama Tribes, the Bonneville Power Administration, U.S. Army Corps of Engineers, and the U.S. Bureau of Reclamation. *May 2, 2008*; Memorandum of Agreement between the Confederated Tribes of the Colville Reservation, the Bonneville Power Administration, the U.S. Army Corps of Engineers, and the U.S. Bureau of Reclamation; May 2, 2008; Memorandum of Agreement between the State of Idaho, the Bonneville Power Administration, the U.S. Army Corps of Engineers, and the U.S. Bureau of Reclamation. *May 2, 2008*; Memorandum of Agreement between the State of Montana, the Bonneville Power Administration, the U.S. Army Corps of Engineers, and the U.S. Bureau of Reclamation; and November 7, 2008, Memorandum of Agreement between the Shoshone-Bannock Tribes, the Bonneville Power Administration, the U.S. Army Corps of Engineers, and the U.S. Bureau of Reclamation.

² Memorandum of Agreement on Columbia River Estuary Habitat Actions Between the State of Washington, The Bonneville Power Administration, the U.S. Army corps of Engineers, and the U.S.. Bureau of Reclamation. Sept. 16, 2009.

area. This extensive expansion of effort by the Action Agencies took a year or more to fully establish and the program is now proceeding efficiently to achieve the performance requirements of the BiOp.

In the estuary, the Action Agencies have also initiated a large increase in effort and are engaging local organizations to assist in implementation. As with the effort in the Upper Columbia tributaries, the increase in effort has required a ramp up in infrastructure to execute the program, and the Agencies have made a concerted effort to build the program capacity needed to achieve the estuary performance requirements during the term of the BiOp. In order to accelerate the speed at which the Agencies will attain their commitments, the Agencies executed the Washington MOA (described above) which makes available an additional \$40.5 M for implementation of habitat actions in the estuary in partnership with the State of Washington. In addition, the Agencies have modified their strategies to place more emphasis on larger, more complex projects to increase the level of biological benefit for each project and further accelerate the pace to achieve their commitments. Recently, the Action Agencies convened meetings with local organizations to describe this increased emphasis on larger projects and this collaboration has already yielded some promising proposals. As the Agencies adaptively manage implementation to meet performance requirements, continued collaboration with local organizations will be foundational to that effort.

With respect to the method developed through the regional collaboration to assess benefits of tributary and estuary habitat actions, the majority of tribal, state, and federal scientists involved in the collaboration support the method adopted in the 2008 BiOp. The Action Agencies' Comprehensive Analysis, in Appendix C, and Appendix D and Section 7.2.2 and 7.2.3 in the 2008 BiOp, provide a comprehensive overview of the analysis used to estimate habitat improvement and survival benefits. The benefits assigned to tributary habitat improvements are reasonable because they are based on expert judgment informed by scientific data and because the benefits are specific to the project, population and limiting factors being addressed. The benefits assigned to estuary habitat improvements are reasonable because they are based on recommended recovery actions addressing significant limiting factors in NOAA's draft *Columbia River Estuary Recovery Plan Module* (NMFS 2006) and evaluated relative to the project's contribution to completing the recovery action. Also, as part of RPA No. 57, the Action Agencies will "expand and refine models relating habitat actions to ecosystem function and salmon survival by incorporating research and monitoring results and other relevant information."

The Administration reviewed the methods used to estimate survival benefits from habitat projects and stated its conclusion that they are sound and retain the needed flexibility to respond to evolving scientific data, as well as to implementation challenges and opportunities

E. The 2010 Supplement to the 2008 BiOp endorses a rigorous system of expert scientific evaluation and review for projects selected to implement the BiOp's tributary and estuary habitat programs.

The Action Agencies are actively implementing the extensive program of tributary and estuary habitat actions called for in the 2008 RPA. Projects for the 2007-2009 implementation cycle that were specifically identified in the 2007 Biological Assessment (BA) are now either completed, being implemented, or being replaced by more feasible projects and projects for the 2010-2012 implementation period are underway.³

Project selection in the tributaries occurs in three ways, each of which incorporates independent scientific review and information gathered through ongoing research, monitoring and evaluation.

- (1) Consistent with RPA Action 35, the Action Agencies regularly convene expert panels comprised of state, tribal and federal specialists familiar with local habitat condition. The expert panels identify specific habitat actions to be implemented or available for implementation, evaluate the limiting factors addressed, and estimate the associated habitat improvements. In 2009 these panels were convened for the populations listed in bold type in RPA Action 35, Table 5. The panels evaluated the habitat improvements estimated from 2007-2009 completed implementation and estimated habitat improvements from projects identified for 2010-2012 implementation. Based on this expert assessment, the Action Agencies have selected projects for 2010 – 2012 implementation. Consistent with RPA Action 35, the expert panels will be reconvened in 3-year cycles to identify projects for each remaining implementation period of the BiOp. Beginning in 2011, the expert panels will also be provided climate change, temperature, invasive species and toxics information consistent with AMIP amendments 4 and 5 to apply and use as they identify and prioritize habitat improvement actions.
- (2) Tributary habitat actions funded under the Accords are linked to biological benefits based on limiting factors for ESA-listed fish, consistent with recovery plans and subbasin plans. In the areas where habitat expert panels are convened, the habitat projects advanced under the Accords will be reviewed by these panels to confirm habitat improvements and survival estimates.
- (3) All projects funded by BPA are subject to Independent Science Review Panel (ISRP) review.⁴

³ See Action Agencies' FCRPS 2008 Progress Report and Action Agencies' Draft 2010-2013 FCRPS Implementation Plan.

⁴ ISRP review is provided pursuant to the Northwest Power Act to help assure that projects recommended by the Council and funded by BPA are consistent with the Council's Program, are based on "sound scientific principles, benefit fish and wildlife, and have clearly a defined objective and outcome with provisions for monitoring and evaluation of results" (see 16 USC

Project selection in the estuary also occurs in three ways and, as in the tributary program, each project selection path incorporates rigorous independent scientific review and information gathered through ongoing research, monitoring and evaluation.

- (1) Projects selected and implemented through the Washington estuary MOA are assessed by a regional expert technical group (expert panel) assembled in accordance with RPA Action 37 to determine associated biological benefits.
- (2) Projects selected through BPA's Columbia Basin Fish and Wildlife Program are selected on an annual basis and utilize both the ISRP and the expert panel under RPA Action 37.
- (3) Projects selected by the Corps through its Section 536 WRDA 2000 program are also assessed for biological benefits by the RPA Action 37 expert panel.

The independent science reviews and assessments common to all of these project selection processes for tributary and estuary habitat projects help ensure that the most knowledgeable experts are reviewing potential projects for their biological value to salmon and steelhead and incorporating the results of RM&E in that process. These RM&E activities, implemented under the 2008 RPA Actions 56 & 57, involve status and trend monitoring to improve the general understanding of productivity and abundance for specific salmon and steelhead populations, and effectiveness monitoring to better quantify improvements in habitat quality and the survival of salmon and steelhead populations from tributary habitat projects. For example, specific scientific investigations in six tributary subbasins, called Intensively Monitored Watersheds (IMWs), aim to contribute empirical information that ultimately can be used to inform the tributary habitat survival estimates developed through the collaboration process. Monitoring and evaluating the effects of selected individual habitat restoration actions at project sites and developing and implementing a methodology to estimate the cumulative effects of habitat conservation and restoration projects in terms of cause-and-effect relationships affecting salmon habitats and performance in the estuary is another example of efforts to better quantify improvements in habitat quality to fish survival.

839b(h)(10)(D)(iv). In the current process, the entity that will undertake the project submits a narrative of the project for ISRP review; the results of the ISRP review are made available, and if needed, the project sponsor responds; both the Council and BPA take this information into account when making their respective decisions. The ISRP process is tracked by the Council and is posted at <http://www.nwcouncil.org/fw/projectselection/BiOp/Default.asp> (for new BiOp projects) and at <http://www.nwcouncil.org/fw/projectselection/accord/Default.asp> (for new Accord projects).

Finally, additional activities help address the inherent uncertainties associated with habitat benefits. The first is that, though adaptive management, new information available from RM&E (particularly from the Intensively Monitored Watersheds), recovery plans, the scientific literature, and other sources will inform future tributary habitat project benefit estimates (see RPA Actions 35, 56, and 57 and AMIP amendments 4 and 5).

F. The FCRPS Action and BiOp Result from and Offer Opportunities for Continued Dialogue and Collaboration.

BPA's ROD to implement the 2008 BiOp describes how implementation of the 2008 BiOp RPA results from collaboration among Federal Agencies, states, tribes, and other entities and individuals, and provides opportunities for continued collaboration. The RPA, as amended by the 2010 Supplemental BiOp, results from consideration of others' views, implementation of the Accords, and continues to offer avenues for continued collaboration. AMIP at 40; AMIP Appendix 1 at 22-23.

G. The FCRPS Action Is Consistent with Other Federal Laws and Responsibilities.

1. Essential Fish Habitat Recommendations under the Magnuson-Stevens Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), § 305, NOAA makes conservation recommendations to mitigate adverse effects on essential fish habitat (EFH) of species regulated under federal fishery management plans. As part of the 2008 FCRPS BiOp, NOAA considers EFH designated by the Pacific Fisheries Management Council (PFMC) for Chinook and Coho salmon, groundfish, and coastal pelagic species. 2008 FCRPS BiOp § 15.2, p. 15-4. The 2010 Supp does not amend NOAA's conservation recommendations. As stated in this decision document, BPA will, as one of the Action Agencies, continue to implement the 2008 BiOp's recommended RPA, as amended by the 2010 Supplemental BiOp, and thereby also implement NOAA's MSA conservation recommendation.

2. Tribal Treaty and Trust Responsibilities

BPA's ROD to implement the 2008 BiOp RPA describes how its decision furthers BPA's tribal treaty and trust responsibilities. BPA's commitment to implement the RPA in the 2008 FCRPS BiOp, as amended by the 2010 Supplemental BiOp, continues action that helps fulfill the Federal tribal treaty and trust responsibilities. The RPA meets ESA responsibilities to avoid jeopardy to listed fish and the destruction or adverse modification of their designated critical habitat. It took into account the many discussions and dialogue with tribes during the remand

collaboration and the extensive commitments to tribes through the ten-year Columbia Basin Accords.

3. National Environmental Policy Act (NEPA)

BPA's ROD to implement the 2008 BiOp describes how several existing BPA programmatic NEPA documents provide the environmental analysis of the effects of implementing BPA's activities described in the 2008 BiOp, plus the terms and conditions of the BiOp's Incidental Take Statement. These existing NEPA documents include the System Operation Review EIS, Wildlife Mitigation Program EIS, Watershed Management Program EIS, Fish and Wildlife Implementation Plan EIS and associated RODs. BPA therefore relied on these NEPA documents to implement the 2008 BiOp and the terms and conditions of the BiOp's Incidental Take Statement. BPA continues to rely on these NEPA documents for its decision to implement the 2008 BiOp RPA, as amended by the 2010 Supplemental BiOp, because these NEPA documents also provide the environmental analysis for the types of BPA activities identified in the 2010 Supplemental BiOp. For BiOp actions that are within the scope of these existing NEPA documents, BPA will determine whether the environmental effects of the actions are adequately covered by the existing NEPA documents and no further NEPA documentation is necessary, or whether it will prepare additional NEPA documentation such as a tiered ROD or Supplement Analysis. To the extent that long-term implementation of the BiOp identifies proposed[s] actions in the future that are not covered by BPA's existing NEPA analyses, BPA will conduct additional environmental analyses, including any necessary NEPA documentation, as appropriate. In preparing our NEPA analyses, BPA also integrates other related and applicable environmental laws.

4. Equitable treatment

The Northwest Power Act requires that Bonneville exercise its responsibilities for hydropower operations consistent with the purposes of the Act "in a manner that provides equitable treatment for . . . fish and wildlife with the other purposes for which such system and facilities are managed and operated."⁵ The NW Power and Conservation Council describes equitable treatment as "meet[ing] the needs of salmon with a level of certainty comparable to that accorded the other operational purposes."⁶ Historically, BPA has provided equitable treatment on a system-wide basis primarily by implementing the Council's integrated fish and wildlife program and relevant Biological Opinions related to FCRPS operations.⁷

⁵ 16 U.S.C. § 839b(h)(11)(A)(i). The Action Agencies operate the FCRPS to fulfill multiple purposes such as flood control, fish mitigation, irrigation, and power production.

⁶ Council Program 1992, Vol. II. p. 9.

⁷ See, e.g., BPA, System Operation Review Environmental Impact Statement Record of Decision, page 14 (Feb. 21, 1997) (selecting an FCRPS operating strategy in which "[c]onflicts between power and fish are resolved in favor of the fish, providing equitable treatment of fish and wildlife with the other purposes for which the FCRPS is operated"); BPA, Fish and Wildlife Implementation Plan Environmental Impact Statement, pages 2-33 to 2-36 (Apr. 2003)

Implementation of the 2008 FCRPS BiOp's RPA as amended through the May 2010 Supplement continues this approach. It continues and expands upon BPA's commitments to benefit fish and wildlife. Implementation of the BiOp furthers BPA's contribution to manage the FCRPS equitably for both fish and power.

5. In Lieu Provision

Under section 4(h)(10)(A) of the Northwest Power Act, Congress expressly limited BPA's authority to provide protection, mitigation, and enhancement in the in-lieu provision, which states:

Expenditures of the Administrator pursuant to this paragraph shall be in addition to, not in lieu of, other expenditures authorized or required from other entities under other agreements or provisions of law.⁸

As explained by the House of Representative's Interior Committee, "other fisheries efforts outside this Act . . . are expected to continue and to be funded separately."⁹

Thus, if another entity is authorized or required under other agreements or provisions of law to undertake an activity, BPA cannot fund the activity under the authority of section 4(h)(10)(A) unless BPA's funding is in addition to, not in lieu of that other entity's funding. The in-lieu provision helps ensure that BPA's funding for fish and wildlife protection, mitigation and enhancement under section 4(h)(10)(A) is additive to on-going and future mitigation conducted by others, and is not simply supplanting other efforts outside of the Northwest Power Act. As it implements measures in the 2008 BiOp RPA, BPA will comply with the in-lieu provision.

6. Adequate, Efficient, Economical, and Reliable Power Supply

The data and analysis supporting the BiOp and RPA show that implementing the 2008 RPA, as amended by the 2010 Supplemental BiOp, will provide measurable benefits for fish and marine species. Implementing the 2008 RPA as amended by the 2010 Supplemental BiOp also helps fulfill BPA's responsibilities under the Northwest Power Act to protect, mitigate and enhance fish and wildlife. However, as discussed in the August 2008 ROD on the 2008 BiOp, implementation of the 2008 BiOp and RPA posed significant challenges to BPA's

(summarizing how BPA provides equitable treatment in FCRPS management); FCRPS Action Agencies, Biological Assessment for Effects of FCRPS and Mainstem Effects of Other Tributary Actions on Anadromous Salmonid Species Listed under the ESA, pages 1-9 to 1-15 (Aug. 2007) (describing the FCRPS' overhaul—structural and operations changes for fish since 1994).

⁸ 16 U.S.C. § 839b(h)(10)(A).

⁹ H.R. Rep. No. 976, 96th Cong., 2d Sess., pt. 2, at 45. See also 126 Cong. Rec. H9846 (daily ed. Sept. 29, 1980) (Rep. Lujan: section 4(h)(10)(A) would "insure that the program will not call for measures already being implemented to protect, mitigate, and enhance fish and wildlife").

ability to meet its responsibilities under the Northwest Power Act for fish and wildlife while also maintaining an adequate, efficient, economical, and reliable power supply. The 2010 Supplemental BiOp does not significantly increase or decrease those challenges. As a result, the challenges and costs of operations to benefit fish remain as described in the August 2008 ROD on the 2008 BiOp. These include an estimated reduction in federal hydro system production by over 900 annual average megawatts of electricity when compared to an operation without changes to benefit fish and constraints to the flexible operation of the hydro system; currently the total average annual energy produced by all FCRPS projects is approximately 9000 aMW. BPA 2010 Rate Case.

During the development of the AMIP and the consultation that resulted in the 2010 Supplemental BiOp, a number of hydro operations alternatives were proposed by some parties in the region, including additional spill volumes and restrictions on reservoirs. These operations were considered, evaluated, and addressed during development of the 2008 BiOp. The 2010 Supplemental BiOp retains the 2008 BiOp's performance based approach to achieve effective fish passage rather than prescribing higher spill levels. Higher spill levels may not be necessary to achieve the BiOp performance standard but would certainly reduce hydro system output. To the extent that these alternative operations would further reduce the generation of the hydrosystem or restrict its flexibility in meeting load, they would escalate the costs and intensify the challenges of maintaining an adequate, effective, economical and reliable power supply.

For the same reasons, the proposed alternative hydro operations would also be counterproductive to the regions goals of reducing CO₂ emissions. Every 100 MW of energy lost because of spill in excess of what is needed to achieve the BiOp performance standards would increase CO₂ emissions by approximately 350¹⁰ million metric tons, the equivalent of roughly 65 cars on the road¹¹

While the impacts of climate change on ESA listed fish are examined in the 2010 Supplemental BiOp, there is an element of climate change that deserves further recognition: the benefits of the FCRPS in providing clean, renewable power for use in the Northwest and for California. According to the NW Power and Conservation Council's Sixth Power plan, it is unlikely that there will be sufficient cost effective conservation and renewable energy development to meet expected load growth. Therefore, the replacement of carbon-free hydro electricity production in the Pacific Northwest will almost always increase the use of fossil

¹⁰ Northwest Power and Conservation Council "*Marginal Carbon Dioxide Production Rates of the Pacific Northwest Power System*" (June 2008) This paper forecasts the marginal CO₂ production rate for the Northwest Power System to be between 0.7 lbs to 0.9 lbs per kWh for the time period 2010 to 2025 under interim base case assumptions. In this base case analysis, natural gas fired combined cycle plants are on the margin most of the time followed by biomass and coal fired power plants, and demand response programs.

¹¹ Source EPA: <http://www.epa.gov/otaq/climate/420f05004.htm>

fuel fired units and on average increase greenhouse gas emissions. This means actions taken to enhance salmon restoration that reduce federal hydro system output will lead to increases in greenhouse gas emissions.

In addition, constraints on flexibility in operating the hydro system limit the system's ability to support wind power production, another renewable resource. Large amounts of wind energy resources have been developed in the Pacific Northwest in recent years. Nearly 1300 MW of wind capacity have been added since the 2008 BiOp was issued, almost doubling the total installed wind capacity. To put that in perspective, 2009 average control area load was approximately 6200 MW, so wind capacity as a percentage of average control area load has increased from about 24% to about 45% between May 2008 and May 2010. These wind facilities primarily rely on BPA to integrate them into the regional transmission grid and to use the FCRPS hydro system as a giant battery to level out the volatility inherent from wind production and to assure reliability.

Installed wind capacity is expected to increase to over 6000 MW by 2013 which is expected to give BPA the highest ratio of wind power to load of any power system in the United States. 2009 Draft Resource Program, § 4.4. BPA's 2009 Draft Resource Program estimates that by 2013 a tipping point will be reached when the projected available system reserves will be insufficient to integrate additional wind power resources. Proposals to limit reservoir operations and to limit or prohibit load following would deplete the available system reserves and as a result hasten the date when the region reaches that tipping point. Any non-hydro resources developed to replace the flexibility of the hydro system to integrate wind resources are likely to be fossil fuel fired, leading to further greenhouse gas emissions.

Some regional parties continue to advocate for removal of the four lower Snake River Dams. The 2010 Supplemental BiOp, by incorporating the AMIP into the RPA properly recognized this as an option of last resort in part because of the impact removal would have both on climate change and on maintaining an adequate, efficient, economical, and reliable power supply.

The four lower Snake River dams are major power plants critical for energy, peak loads, reliability, and wind integration. Each of the four lower Snake River dams provides significantly more power capacity than a typical coal plant. The nameplate capacity of the four lower Snake River dams totals 3,033 MW. In an extended cold-snap or other power emergency, such as another power plant shutting down unexpectedly, these four dams can produce in excess of 2,650 MW over a sustained period of 10 hours per day for five consecutive days. The four lower Snake River dams produce about 1200 aMW, annually almost as much as BPA's conservation programs have achieved in 27 years — at an investment of more than \$2.3 billion¹²: Together, the four Snake River dams

¹² Four lower Snake River dams:1,022 aMW, BPA conservation programs (1982–2008):1,190 aMW.

supply 12 percent of the average energy production of the entire FCRPS and 5 percent of the Pacific Northwest. This is enough energy to serve a city about the size of Seattle.

The four lower Snake River dams carry roughly one-quarter of BPA's operating reserves, capacity that utilities are required to have available to meet unexpected hourly changes in load. Without the flexibility and operating reserves that these dams supply, BPA would lose a substantial amount of its ability to deliver energy to the power system.

Hydropower generated by the FCRPS is a renewable resource and produces virtually no greenhouse gas emissions. Replacing the power from the four lower Snake River dams would result in increased carbon emissions of 3.0 million tons year, according to the NW Power and Conservation Council's Sixth Power Plan. This is an amount five times greater than the amount of carbon saved by renewable resource standards adopted by the states of Oregon, Washington and Montana combined. A 2007 Council study on the Northwest's carbon footprint concluded¹³ that:

“Removal of the lower Snake River dams will not make additional CO₂-free energy resources available to meet future load growth or retire any existing coal plants. More than 1,000 MW of emission-free generation eventually will have to be replaced unless the supplies of renewables and conservation are considered unlimited. Given the difficulty of reducing CO₂ emissions, discarding existing CO₂-free power sources has to be considered counterproductive.”

The study also found that replacing the power from the four lower Snake River dams would cost an estimated \$530 million annually, resulting in an increase in BPA's wholesale power rate of 24 percent to 29 percent.¹⁴ Similarly, BPA's own analysis found that replacing the power from the four lower Snake River dams would cost the Northwest \$444 million to \$501 million (net of the dams' annual \$38 million operation and maintenance costs), increasing BPA's wholesale power rates by roughly 25 percent. As indicated by this information, the four lower Snake River dams are important to the Northwest's power needs and help keep our system low in carbon emissions.

In summary, implementing the 2008 RPA, as amended by the 2010 Supplemental BiOp will provide benefits to listed fish and marine species. However, actions reducing federal hydro system output can limit the system's ability to integrate wind power resources, and substitute resources can increase greenhouse gas emissions.

¹³ Northwest Power and Conservation Council, “Carbon Dioxide Footprint of the Northwest Power System” (Nov. 2007), p. 11.

¹⁴ Ibid.

7. Water Quality, Clean Water Act

In developing the proposed RPA for the 2008 BiOp the Action Agencies collaborated extensively with the four Columbia Basin states and various Columbian Basin Tribes throughout the consultation, and considered their comments during the development of the proposed RPA. The Action Agencies considered the respective ecological objectives of the ESA and the Clean Water Act (CWA) and harmonized federal dam operations to comply with both the ESA requirements, determined by the NMFS and FWS, and the state and tribal water quality standards. The 2008 RPA, as amended by the 2010 Supplemental BiOp, will continue to implement actions to attain water quality standards (e.g., reducing Total Dissolved Gas (TDG) and improving water temperature) that will benefit ESA-listed species. In addition, the amended 2010 RPA specifically calls for the Action Agencies to collect and share information related to climate change and water temperature, to help evaluate regional climate change impacts that may occur throughout the term of the BiOp. As these climate change evaluations are completed, their findings will be provided to the tributary habitat expert panels to apply and use to help identify and prioritize habitat improvement actions.

IV. Decision

Based on the 2008 BiOp and supporting documents, implementation of the 2008 BiOp, development of the AMIP, the 2010 Supplemental BiOp and supporting analyses and new information, and collaboration with and comments from federal and state agencies and tribes and interested persons and entities, it is my decision that BPA, in cooperation with the other Action Agencies, will implement the 2008 BiOp's RPA and measures, terms, and conditions in the 2008 BiOp Incidental Take Statement, as amended by the 2010 Supplemental BiOp and Incidental Take Statement.

My decision requires a significant commitment of resources from the region's ratepayers, including spill and flow augmentation, repayment to the Treasury for configuration improvements, extensive support for research, monitoring, and evaluation of the system and off-site measures, and new actions within our already extensive off-site mitigation program. These actions, taken together, will meet BPA's responsibilities under the ESA to avoid jeopardizing and allow for an adequate potential for recovery of species that are the subject of this

consultation, and avoid the destruction or adverse modification of their designated critical habitat. These actions also further BPA's commitment to meet its responsibilities under the Northwest Power Act to protect species and also be consistent with BPA's multiple statutory responsibilities.

Issued in Portland, Oregon, this 11th day of June 2010.



Stephen J. Wright
Administrator and Chief Executive Officer

Attachment A to 2010 BPA ROD following the 2010 Supplemental BiOp

Attachment A - BPA 2008 ROD following the 2008 FCRPS BiOp

BONNEVILLE POWER ADMINISTRATION

RECORD OF DECISION

following the

MAY 2008 NOAA FISHERIES
FCRPS BIOLOGICAL OPINION

on

OPERATION

of the

FEDERAL COLUMBIA RIVER POWER SYSTEM,

11 U.S. BUREAU OF RECLAMATION PROJECTS in the COLUMBIA BASIN,

and

ESA SECTION 10 PERMIT FOR JUVENILE FISH TRANSPORTATION
PROGRAM

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ABBREVIATIONS, ACRONYMS, AND DEFINITIONS

Action Agencies	U. S Department of the Interior Bureau of Reclamation (Reclamation), U.S. Army Corps of Engineers, Bonneville Power Administration, the agencies responsible for management and operation of federal hydroelectric projects in the Columbia and Upper Snake Rivers
Adaptive Management	The process of adjusting management actions and/or directions based on new information.
Anadromous Fish	Species that are hatched in freshwater migrate to and mature in salt water and return to freshwater to spawn.
BA	Biological Assessment
Biological Assessment	The Action Agencies' analysis of impacts of their proposed actions on species listed and proposed to be listed under the ESA. The Action Agencies produced biological assessments on projects in the Federal Columbia River Power System in the Columbia River and on projects in the Upper Snake River. See definition at 50 C.F.R. 402.02.
Biological Opinion	A document expressing NOAA Fisheries' opinion regarding whether and how a proposed action avoids jeopardy to listed species and the destruction or adverse modification of their critical habitat. See 50 C.F.R. § 402.02
BiOp	biological opinion
BPA	Bonneville Power Administration
Columbia Basin Accords	Agreements signed by the Action Agencies, four tribes, and two states to support the 2008 FCRPS BiOp and provide additional benefits to fish.
Comprehensive Analysis (CA)	The analysis conducted by the Action Agencies to assess impacts of proposed operation of major projects in the Federal Columbia River Power System (FCRPS). The CA provides the basis underlying the biological assessments on the FCRPS and Upper Snake projects.
Corps	U.S. Army Corps of Engineers
CRITFC	Columbia River Intertribal Fish Commission
Cumulative Effects	Effects of future State or private activities, not involving federal activities, that are reasonably certain to occur. See definition at 50 C.F.R. 402.02.
EFH	Essential fish habitat under the Magnuson Stevens Fisheries Management Act
EIS	environmental impact statement

Environmental Baseline	Past and present impacts of all federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of state or private actions which are contemporaneous with the consultation in process. See definition at 50 C.F.R. 402.02.
ESA	Endangered Species Act, 16 U.S.C. 1531 <u>et seq.</u>
ESA Recovery Plan	A plan to recover a species listed as threatened or endangered under the U.S. Endangered Species Act (ESA). The ESA requires that recovery plans, to the extent practicable, incorporate (1) objective, measurable criteria that, when met, would result in a determination that the species is no longer threatened or endangered; (2) site specific management actions that may be necessary to achieve the plan's goals; and (3) estimates of the time required and costs to implement recovery actions.
ESU	Evolutionarily Significant Unit
Evolutionarily significant unit (ESU)	A group of Pacific salmon or steelhead trout that is (1) substantially reproductively isolated from other specific units and (2) represents an important component of the evolutionary legacy of the species.
FCRPS	Federal Columbia River Power System
Federal Caucus	Eight agencies operating in the Columbia River Basin that have natural resource responsibilities related to the Endangered Species Act (ESA). Through the Federal Caucus, these agencies coordinate their activities.
ICTRT	Interior Columbia Basin Technical Recovery Team
Jeopardize	to reduce appreciably the likelihoods of survival and recovery of a species listed as threatened or endangered under the ESA. See 50 C.F.R. § 402.02 (definition of "jeopardize")
Multipurpose Facilities	The Columbia River and the reservoir system are used for many purposes or uses. Projects that were authorized to serve a variety of purposes are referred to as "multipurpose."
NEPA	National Environmental Policy Act
NOAA Fisheries	National Marine Fisheries Service, an agency within NOAA
NW Power and Conservation Council	Pacific Northwest Electric Power and Conservation Planning Council, created under the Pacific Northwest Electric Power Planning and Conservation Act, which develops which develops power plans and a fish and

	wildlife programs to guide activities by the Bonneville Power Administration and other federal and nonfederal entities in the Pacific Northwest.
Prospective Actions	The four federal agency actions reviewed by NOAA's 2008 Supplemental Comprehensive Analysis and 2008 BiOps: operation and configuration of FCRPS projects, operation and configuration of Reclamation Upper Snake Projects, a permit to the Corps of Engineers to transport fish, and the <u>United States v. Oregon</u> Harvest Management Agreement (collectively described as the "Prospective Actions").
Reasonable and Prudent Alternative (RPA)	Recommended alternative actions identified during formal consultation that can be implemented in a manner consistent with the purposes of the action, that is consistent with the scope of the federal agency's legal authority and jurisdiction, that is economically and technologically feasible, and that NOAA Fisheries believes would avoid the likelihood of jeopardizing the continued existence of listed species or resulting in the destruction or adverse modification of critical habitat. See definition at 50 C.F.R. § 402.02.
Reclamation	U.S. Bureau of Reclamation
Recovery	Improvement in the status of a species to the point at which listing under the ESA is no longer appropriate.
ROD	Record of decision.
RPA	Reasonable and Prudent Alternative
Spill	Water released from a dam over the spillway instead of being directed through the turbines.
Supplemental Comprehensive Analysis	An analysis by NOAA Fisheries of the effects of three actions in the context of the environmental baseline and cumulative effects. The SCA provides the analysis underlying the evaluations in NOAA Fisheries' BiOps on operation of FCRPS projects, operation of Upper Snake River projects, and harvest activities under U.S. v. Oregon.
<u>U.S. v. Oregon</u>	Litigation under which federal, state, and tribal parties resolve differences respecting harvest levels of anadromous fish.

BONNEVILLE POWER ADMINISTRATION
RECORD OF DECISION
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FEDERAL COLUMBIA RIVER POWER SYSTEM,
11 U.S. BUREAU OF RECLAMATION PROJECTS in the COLUMBIA BASIN,
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PROGRAM

I. Summary

This document records the Bonneville Power Administration's (BPA) decision to implement the Reasonable and Prudent Alternative (RPA) FCRPS action recommended by the May 5, 2008, the National Marine Fisheries Service (NOAA Fisheries) Biological Opinion (BiOp) on Operation and Configuration of Major Projects in the Federal Columbia River Power System (FCRPS), plus the measures, terms, and conditions provided in the BiOp's Incidental Take Statement. BPA's decision, like the 2008 FCRPS BiOp and products and activities leading to this decision, responds to opinions and orders by the federal District Court of Oregon and Courts of Appeal for the Ninth Circuit in the National Wildlife Federation v. National Marine Fisheries Service litigation, where these courts found fault with NOAA's previous 2004 FCRPS BiOp. It also responds to the regulations on Endangered Species Act consultation, which provide, "following issuance of a biological opinion, the federal agency shall determine whether or in what manner to proceed with the action in light of its section 7 [of the Endangered Species Act (ESA)] obligations and the Service's [National Oceanic and Atmospheric Administration (NOAA)] biological opinion." 50 CFR § 402.15(a).

II. Background

A. BPA Authorities and Responsibilities

The U.S. Army Corps of Engineers (Corps), U.S. Bureau of Reclamation (Reclamation), and Bonneville Power Administration (BPA) (collectively termed the Action Agencies) are responsible for ensuring their actions are not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. The Corps and Reclamation are authorized by Congress to operate and maintain the

projects referenced, for purposes of this consultation, as the Federal Columbia River Power System (FCRPS)¹

Congress authorized, and the Federal Government completed construction of, the FCRPS projects. Congress also directed the Corps and Reclamation to operate and maintain these projects for multiple purposes, including flood control throughout the Columbia River Basin, navigation in the Columbia and Snake rivers; hydropower generation to serve the Pacific Northwest, irrigation, fish and wildlife, municipal and industrial water supply, and recreation. BPA is responsible for the marketing and transmission of the power generated from these projects.

The Federal Columbia River Transmission System Act designated the Bonneville Administrator "as the marketing agent for all electric power generated by federal generating plants in the Pacific Northwest, constructed by . . . the Bureau of Reclamation or the United States Corps of Engineers. . . ." 16 U.S.C. § 838f. BPA has a duty to provide the Pacific Northwest with "an adequate, efficient, economical and reliable power supply," 16 U.S.C. § 839(2). BPA must set rates having regard to the recovery of its costs and "with a view to encouraging the widest possible diversified use of electric power at the lowest possible rates to consumers" 16 U.S.C. § 838g; see also 16 U.S.C. § 825s. Congress directed BPA to set its rates, 16 U.S.C. §§ 825s, 838g, and fulfill its other Northwest Power Act mandates in a sound and businesslike manner. 16 U.S.C. § 839f(b).

The Northwest Power Act directs the Administrator to protect, mitigate, and enhance fish and wildlife affected by Columbia River basin federal hydroelectric projects from which BPA markets power, consistent with the fish and wildlife program developed by the Northwest Power and Conservation Council (Council). 16 U.S.C. § 839b(h)(10)(A). BPA undertakes significant offsite enhancement of habitat for fish and wildlife and funds extensive hatchery activities and research programs under the Northwest Power Act as a part of an integrated program of activities for ESA-listed and non-listed species in a manner consistent with the Council's Fish and Wildlife Program and the ESA.

With regard to management of the FCRPS, the Northwest Power Act also requires BPA to "protect, mitigate, and enhance fish and wildlife, including related spawning grounds and habitat, affected by such projects . . . in a manner that provides equitable treatment for such fish and wildlife with the other purposes for

¹ For purposes of the 2008 FCRPS BiOp, the FCRPS comprises 14 federal multipurpose hydropower projects. There are 12 projects operated and maintained by the Corps, which are: Bonneville, The Dalles, John Day, McNary, Chief Joseph, Albeni Falls, Libby, Ice Harbor, Lower Monumental, Little Goose, Lower Granite, and Dworshak dams. Reclamation operates and maintains the following two FCRPS projects: Hungry Horse Project and the Columbia Basin Project, which includes Grand Coulee Dam. The FCRPS consultation also includes the mainstem effects of other tributary projects in the Columbia Basin.

which such system and facilities are managed and operated.” 16 U.S.C. § 839b(h)(11)(A)(i). BPA provides equitable treatment on a system-wide basis primarily by implementing an integrated fish and wildlife program and relevant Biological Opinions.

Under section 7(a)(2) of the Endangered Species Act, federal agencies must “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 [critical] habitat of such species.” 16 U.S.C. § 1536(a)(2). If a federal action may affect a listed species or critical habitat, the federal agency consults with the appropriate fish and wildlife agency, which will render an opinion as to whether the proposed action is likely to jeopardize the continued existence of the species or to adversely modify critical habitat. This process led to the Comprehensive Analysis Biological Assessments by the Action Agencies, and the Supplemental Comprehensive Analysis and Biological Opinions by NOAA.

B. The FCRPS Action

The May 5, 2008 NOAA FCRPS BiOp recommends an action – a reasonable and prudent alternative – with some changes from the action proposed by the FCRPS Action Agencies in their August 2007 FCRPS Biological Assessment. NOAA sets forth its RPA in the Reasonable and Prudent Alternative Table appended to the 2008 FCRPS BiOp.

The BiOp refers to the Action Agencies’ Biological Assessment for additional information relevant to the RPA. The Action Agencies describe their proposed RPA in section 2 of their FCRPS Biological Assessment, “Summary of the Proposed Reasonable and Prudent Alternative,” and Appendix B to the Biological Assessment, “Description of the Proposed Reasonable and Prudent Alternative.”

The NOAA FCRPS BiOp RPA also takes into account May 2, 2008 Memoranda of Agreements reached among the Action Agencies and Indian tribes and states. The Memoranda of Agreement, or Columbia Basin Fish Accords, are the result of extensive collaboration among the signatory parties.

C. Chronology of Principal Documents Relevant to Decision

For easy reference, a chronological list of principal documents leading to this decision follows. The descriptions are those appearing on the federal Caucus’ Salmon Recovery website at <http://www.salmonrecovery.gov/index.cfm>. The federal Caucus is a group of eight agencies operating in the Columbia River Basin that have natural resource responsibilities related to the ESA.

2005, 2006, 2007, and 2008: Collaboration. Federal agencies, States, and Tribes meet to discuss and endeavor to resolve issues and provide input as the

Action Agencies develop their biological assessments and NOAA Fisheries develops its biological opinions.

September 6, 2007: Biological Assessments. The Action Agencies made available their August 31, 2008 Biological Assessments of proposed reasonable and prudent alternatives for operation and configuration of the federal Columbia River Power System and the Upper Snake projects, including a Comprehensive Analysis of the impacts of these actions proposed for listed Columbia River Basin salmon and steelhead.²

October 31, 2007: Draft Biological Opinions. NOAA Fisheries released draft Biological Opinions for the federal Columbia River Power System and the Upper Snake projects. In the NWF v. NMFS litigation, the Court set Jan. 4, 2008, as the deadline for close of comment to NOAA Fisheries on these draft BiOps.

April 2008: Action Agencies Submit Addenda to their Comprehensive Analysis. The Action Agencies submitted two supplements to their Comprehensive Analysis of the effects of FCRPS and Upper Snake Project actions. To address possible effects on additional listed species, one Addendum is an "Analysis of Effects on Listed Killer Whale and Green Sturgeon Distinct Population Segments." To address prospective conclusion of agreements with Columbia River tribes and two Pacific Northwest states, the other Addendum is an "Analysis of Effects on Listed Columbia River Basin Salmon and Steelhead Populations from Proposed Memorandum of Agreement Actions."

May 2, 2008: Columbia Basin Fish Accords. A ceremony celebrated the signing of the Columbia Basin Fish Accords, ending years of divisiveness on fish issues. The Action Agencies, four Northwest tribes and two States signed agreements for 10 years of projects that will deliver specific biological results for fish.³

May 5, 2008: Final Biological Opinions. NOAA Fisheries issued final biological opinions and a Supplemental Comprehensive Analysis for the federal Columbia River Power System and the Upper Snake projects and Columbia River harvest under U.S. v. Oregon. NOAA Fisheries finds that, with the actions in the FCRPS Reasonable and Prudent Alternative, salmon and steelhead are on a trend to recovery. The agency noted that these new BiOps have broader support among tribes and states than ever before.⁴ The documents at this site include an Executive Summary, an Issues Summary, and a May 2, 2008 Response to Comments on the Draft FCRPS BiOp. The Issues Summary and Response to

² They are available at http://www.salmonrecovery.gov/biological_opinions/fcrps/ba-ca/index.cfm and http://www.salmonrecovery.gov/Biological_Opinions/FCRPS/2008_biop/action.cfm.

³ The Accords are available at http://www.salmonrecovery.gov/Biological_Opinions/FCRPS/2008_biop/ColumbiaBasinFishAccords.cfm. See also the May 2, 2008, BPA Administrator's Record of Decision on these Accords, available at: <http://www.bpa.gov/corporate/pubs/RODS/2008/>.

⁴ These BiOps are available at <http://www.nwr.noaa.gov/Salmon-Hydropower/Columbia-Snake-Basin/final-BOs.cfm>.

Comments describe how the 2008 FCRPS BiOp took into account the comments filed by litigants on the draft BiOps.

III. Reasons for Decision

A. In their Biological Assessment and Comprehensive Analysis the Action Agencies Conclude the FCRPS Action Does Not Jeopardize Listed Species and Does Not Result in the Destruction or Adverse Modification of their Critical Habitat.

The Action Agencies' Comprehensive Analysis reviews two actions: operation of projects in the FCRPS by the Corps of Engineers, Bureau of Reclamation, and BPA, and operation and management of reclamation projects in the Upper Snake River by the Bureau of Reclamation. The combined analysis responds to direction by the district court to ensure a "comprehensive analysis" of the effects of both actions on listed species and their critical habitat. Comprehensive Analysis, p. 1-1.

The Action Agencies' Biological Assessment and Comprehensive Analysis (CA) uses a life-cycle, aggregate, analytical approach.

The analytical approach described in this chapter considers the biological requirements for survival and recovery of the listed species, and evaluates whether the species are likely to survive and be placed on a trend toward recovery after considering the effects of the federal Columbia River Power System (FCRPS) Proposed Reasonable and Prudent Alternative (RPA) and the Upper Snake River Proposed Actions (PA) aggregated with the environmental baseline and cumulative effects. As such, it is a lifecycle survival analysis that necessarily considers all mortality factors affecting the listed species, as well as all actions that have an impact on the species' survival, productivity, and population growth rates.

CA at 3-1. The analysis for each ESU takes into consideration the unique facts and status applicable to that ESU. Based upon this analysis, the CA concludes that the FCRPS action meets or exceeds the objectives of doing no harm and contributing to recovery. CA at 4-16. The CA also concludes that the primary constituent elements of listed species' designated critical habitat are expected to function adequately to serve their conservation role. CA at 1-3 – 1-4. Consequently, the Comprehensive Analysis shows that the RPA proposed by the Action Agencies avoids jeopardizing listed species and destroying or adversely modifying their critical habitat.

In addition to its aggregated lifecycle analysis, the CA also considers the Conceptual Framework developed during the FCRPS BiOp Remand's Collaboration Process among the sovereigns. The Framework approach attempted to estimate the relative magnitude of mortality factors affecting Interior

Columbia River Basin salmonid populations for which adequate data was available.⁵ The Conceptual Framework provides the Collaboration parties' view of the relative magnitude of mortality caused by past and continued FCRPS activities, and correspondingly an estimate of the appropriate contribution of the FCRPS and other actions toward long-term recovery of the listed ESUs.⁶ It provides another "metric" for use in considering the impacts of the Proposed RPA on a listed species' prospects for recovery. Id.

In the CA, the Action Agencies compare the expected effects of the proposed RPA to the level of effort needed to achieve the goals set by the Remand Collaboration in the Conceptual Framework. This comparison provides one means of assessing the degree to which the proposed RPA will advance a species' prospects for recovery. The CA concludes that the proposed RPA reaches or exceeds the Conceptual Framework's goals for the FCRPS for all Interior Columbia species for which adequate data is available to support the analysis.

As will be noted in the following section, NOAA's 2008 FCRPS BiOp recommends an RPA with some changes from the RPA proposed in the Action Agencies' Biological Assessment. The 2008 BiOp also updates biological information and modeling to use new and revised estimates of impacts on salmonid survival. These changes in the RPA provide additional benefits to listed fish, and the updates to biological information are consistent with the Action Agencies' own analysis. Consequently, because the Action Agencies' CA has continued validity and reaches its conclusion without taking into account these additional benefits, the CA provides support in addition to the 2008 BiOp for BPA's conclusion that NOAA's recommended RPA also avoids jeopardizing listed species and the destruction or adverse modification of critical habitat.

As is also noted in the following section, NOAA's final FCRPS BiOp takes into account comments filed by NWF v. NMFS litigants on the draft 2008 FCRPS BiOp. BPA has reviewed these comments and NOAA's responses. The comments do not undermine the CA as a basis for concluding that the RPA to be undertaken by the Action Agencies avoids jeopardizing listed species and the destruction or adverse modification of critical habitat. BPA continues to rely on the BA and CA as a basis for concluding that the RPA as recommended in the 2008 FCRPS BiOp avoids jeopardizing listed species and the destruction or adverse modification of their critical habitat.

⁵ The Interior Columbia River Basin species addressed by the Conceptual Framework are Snake River Fall Chinook Salmon, Snake River Spring and Summer Chinook Salmon, Upper Columbia River Spring Chinook Salmon, Upper Columbia River Steelhead, and Middle Columbia River Steelhead. The two Interior Columbia River Basin species for which adequate scientific data is not available are Snake River Sockeye and Snake River Steelhead. The Conceptual Framework did not address Lower Columbia River and Willamette River species.

⁶ Comprehensive Analysis, § 3.1.3.2, "Comparison to the Remand Collaboration's Conceptual Framework," pp. 3-9 – 3-10 and corresponding sections for each listed species, e.g. § 4.3.5, p 4 15, for Snake River Fall Chinook.

B. In its Supplemental Comprehensive Analysis and FCRPS BiOp, NOAA Concludes that the FCRPS Action Does Not Jeopardize Listed Species and Does Not Result in the Destruction or Adverse Modification of their Critical Habitat.

NOAA's 2008 Supplemental Comprehensive Analysis (SCA) assesses the effects of four proposed actions – operation and configuration of FCRPS projects, operation and configuration of Reclamation Upper Snake Projects, a permit to the Corps of Engineers to transport fish, and the United States v. Oregon Harvest Management Agreement (collectively described as the "Prospective Actions"). FCRPS BiOp, p. 1-10. Based on the SCA, NOAA issued BiOps on these actions. The FCRPS BiOp and SCA provide a comprehensive, reasoned consideration of why the FCRPS action does not jeopardize listed species and does not destroy or adversely modify critical habitat.

NOAA's Supplemental Comprehensive Analysis uses an analytic approach and methods like those in the Action Agencies' CA, updated information regarding species status, and new modeling estimates and analysis to inform the BiOp's conclusions. This aggregated lifecycle analysis incorporates and considers all sources of salmonid mortality and assesses the effects of the Prospective Actions with the environmental baseline and the anticipated future state and private actions, or cumulative effects, on the listed salmon and steelhead; and analyzes whether, with these aggregate effects, listed species have a sufficiently low risk of extinction and an adequate potential for recovery.

The SCA concludes that the Prospective Actions provide sufficient benefits so that they will improve, not degrade, the status of listed species, so that, under the aggregate analysis, listed species are expected to survive with an adequate potential for recovery. Consequently, the Prospective Actions avoid jeopardizing the listed species. The SCA also concludes that the Prospective Actions will improve habitat so that critical habitat will retain its current ability for Primary Constituent Elements (PCEs) to become functionally established and to serve its conservation role for the species. Consequently, the Prospective Actions avoid destruction or adverse modification of designated critical habitat.

In its 2008 BiOp and SCA analysis NOAA uses the same conceptual approach it used in its 1995 and 2000 BiOps. But the 2008 analysis uses a much expanded set of data and a wider variety of metrics than the earlier BiOps. These metrics take advantage of the relative strengths of each to form a more complete picture of the present and future status of the listed species.

While the 2000 BiOp placed its primary emphasis on extinction risk estimates over a 100 year timeframe, the SCA and 2008 BiOp place their primary emphasis on risks over a 24 year timeframe. This was done in part because the precision of the risk estimate decreases with a longer time horizon. The available data for Columbia River basin salmonid populations is only sufficient to support reliable

risk estimates 5-10 years into the future. To illustrate this point, the 95% confidence intervals for a significant number of the 100 year risk estimates included in the 2008 BiOp are between 0% and 100%. Not only does this indicate the extreme unreliability of these long term estimates, it suggests that the 100 year modeling exercise itself is of limited value, since we do not need to conduct the modeling to know that the likelihood of extinction is between 0% and 100%. All such longer-term risk modeling – to the extent that it is based upon a paucity of data – suffers from the same shortcomings. See discussion in the SCA, Aggregate Analysis Appendix, Attachment 1, p. 9.

NOAA and the Action Agencies also chose to place their primary emphasis on 24 year risk estimates because “the main purpose of the metric is to inform our judgment regarding the ability of the species to survive while actions to promote recovery are implemented under the prospective Actions and other processes.” FCRPS BiOp at 7-18.

NOAA also considered listed species' potential for recovery:

An adequate potential for recovery is evident when the listed species is on a trend toward eventual recovery. The adequacy of the recovery potential is sensitive to the present obstacles for planning or achieving recovery, as well as to the extent of influence the agency's actions can have on recovery potential considering the action's duration and magnitude of adverse effects on the listed species. Thus, in some clearly articulated circumstances, a resulting recovery potential will be adequate where limiting factors are reduced or protective mechanisms are implemented, as with safety net hatcheries, to position the species for eventual progress to recovery.

FCRPS BiOp at 1-12 – 1-13.

The 2008 FCRPS BiOp recommends an RPA with modifications to but largely based upon the RPA proposed in the Action Agencies' Biological Assessment. 2008 FCRPS BiOp, “Reasonable and Prudent Alternative Table” Appendix.⁷ This is the action that BPA, with the other Action Agencies, will implement.

⁷ This RPA includes two measures added by a clarifying June 27, 2008, letter from Gregory K. Delwiche, Vice President, Environment, Fish and Wildlife, BPA, to Bruce Suzimoto, NOAA Fisheries. With regard to Action item 50 of the RPA, the letter states, “The implementation section of this RPA Action [No. 50] on page 69 of the RPA Table notes that ‘Specific projects for implementation in the 2007-2009 period are identified in the FCRPS BA Attachment B.2.6-1, Table 8.’ We would like to further note our mutual understanding that in addition to the projects identified in Table 8, Fish and Wildlife Program project 199902000-Analyze Persistence/Dynamics (limited to adult Chinook monitoring) and project 198902401-Evaluate Umatilla Juvenile Outmigration (limited to adult, SAR, and smolt production monitoring of steelhead) will be implemented as part of this RPA during this 2007 to 2009 period.”

NOAA completed its review only after extensive collaboration with Pacific Northwest states and tribes, meetings with all interested entities, and comments on draft BiOps. NOAA's analysis takes into account comments by NWF v. NMFS litigants. After NOAA issued draft BiOps in November 2007, pursuant to court order, litigants submitted comments by January 4, 2008. NOAA reviewed these comments in its May 2, 2008, memorandum entitled, "Comments on the 2007 Draft FCRPS Biological Opinion." In addition, contemporaneous with the 2008 BiOps, NOAA produced a document entitled, "Issue Summaries of the FCRPS 2008 Biological Opinion. These documents describe a reasoned consideration of diverse views and explain the approach taken in the BiOps.

Together and independently, the Action Agencies' CA and Biological Assessments and NOAA's FCRPS SCA and BiOps demonstrate that the FCRPS action avoids jeopardizing listed species and the destruction or adverse modification of their critical habitat. The FCRPS BiOp also provides an incidental take statement, with additional measures and terms and conditions to further minimize incidental take. BPA will comply with these measures, terms, and conditions.

C. The FCRPS Action and BiOp Use Guidance from and Address Concerns Expressed by the NWF v. NMFS District and Appellate Courts.

The Court of Appeals held that an action should not further deteriorate the status of a listed species.

To "jeopardize" — the action ESA prohibits — means to "expose to loss or injury" or to "imperil." Either of these implies causation, and thus some new risk of harm. Likewise, the suffix "-ize" in "jeopardize" indicates some active change of status: an agency may not "cause [a species] to be or to become" in a state of jeopardy or "subject [a species] to" jeopardy. American Heritage Dictionary of the English Language (4th ed.). Agency action can only "jeopardize" a species' existence if that agency action causes some deterioration in the species' pre-action condition.

Even under the so-called aggregation approach NMFS challenges, then, an agency only "jeopardize[s]" a species if it causes some new jeopardy. An agency may still take action that removes a species from jeopardy entirely, or that lessens the degree of jeopardy. However, an agency may not take action that will tip a species from a state of precarious survival into a state of likely extinction. Likewise, even where baseline conditions already jeopardize a species, an agency may not take action that deepens the jeopardy by causing additional harm.

NWF v. NMFS, 524 F3d 917, 930 (9th Cir. 2008). Similarly, the regulations issued by NOAA and the U.S. Fish and Wildlife Service define "jeopardize" to mean "reduce appreciably" the likelihoods of survival and recovery of a listed

species. 50 C.F.R. § 402.02. The Court of Appeals also wrote that agencies should evaluate the additional effects caused by FCRPS operations in the context of the existence of dams and other elements in the environmental baseline. 524 F.3d at 930-31.

With regard to assessing the effects caused by FCRPS operations and the significance of those effects, the district court specified revisions for NOAA, and implicitly the Action Agencies, to make in their analysis. In his May 26, 2005 Opinion, Federal District Court Judge Redden found fault with the 2004 FCRPS BiOp. In his October 7, 2005, Opinion and Order of Remand of the 2004 BiOp, Judge Redden directed NOAA to:

- (1) Correct its improper segregation of the elements of the proposed action NOAA Fisheries deems to be nondiscretionary;
- (2) Correct its improper comparison, rather than aggregation, of the effects of the proposed action on the listed salmon and steelhead;
- (3) Correct its flawed determinations as to whether the proposed action destroys or adversely modifies critical habitat;
- (4) Correct its failure to consider the effects of the proposed action on both recovery and survival of the listed species in determining whether the proposed action is likely to jeopardize the continued existence of listed salmon and steelhead; and
- (5) Correct its past reliance on mitigation measures that are not reasonably certain to occur and/or have not undergone Section 7 consultation.

Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv., No. CV 01-640-RE, 2005 WL 2488447, at *5, 35 Env'tl. L. Rep. (Env'tl. Law Inst.) 20,209 (D. Or. Oct. 7, 2005).

NWF v. NMFS (9th Cir.) affirmed the district court's rejection of the 2004 BiOp.

In sum, the district court correctly held that the 2004 BiOp's analysis was structurally flawed. It properly determined that the agency may not use a hypothetical "reference operation" in its jeopardy analysis to exclude from the proposed action's impacts the effects of related operations the agency deems "nondiscretionary." The district court also properly concluded that the 2004 BiOp impermissibly failed to incorporate degraded baseline conditions into its jeopardy analysis. Finally, the district court correctly determined that the 2004 BiOp was legally deficient because its jeopardy analysis did not adequately consider the proposed action's impacts on the listed species' chances of recovery.

524 F.3d at 933.

The jeopardy analyses used by BPA, as well as the other Action Agencies and NOAA Fisheries, respond to all points made by the appellate and district courts. They analyze the impact of all FCRPS operations and do not use a hypothetical operation or other approach that excludes “nondiscretionary” operations. They evaluate impacts caused by FCRPS operations in the context of degraded baseline conditions, including existence of the dams. They analyze the impacts of the proposed action on prospects for recovery. And, to the extent they rely upon actions by others, they rely only on other federal actions that have completed consultation and non-federal actions that are reasonably certain to occur.

With regard to impact on recovery, the appellate and district courts favorably view the 1995 and 2000 BiOps, which “plainly considered analysis of the listed species’ prospects for recovery as essential to the jeopardy analysis, and included repeated reference to, and measurement of, the relevant species’ chances to survive proposed operations ‘with an adequate potential for recovery.’” 524 F.3d at 932-33. The jeopardy analyses used by BPA, as well as the other Action Agencies and NOAA Fisheries, likewise analyze how the FCRPS action affects each listed species’ survival with an adequate potential for recovery. The analyses in the 2008 BiOp and Action Agency CA rely on widely used measures of population growth and productivity to reach their conclusions. One of those measures ($\lambda > 1.0$) is identical to one of the metrics used for the same purpose in the 2000 BiOp. The analyses reach conclusions respecting whether survival with an adequate potential for recovery exists.

The Court of Appeals also affirmed the district court’s criticism of the 2004 BiOp’s adverse modification analysis.

We agree with the district court that NMFS’s critical habitat determination was arbitrary and capricious because it (1) did not adequately consider the proposed action’s short-term negative effects in the context of the affected species’ life cycles and migration patterns, (2) relied on uncertain long-term improvements to critical habitat to offset certain short-term degradation, and (3) concluded that the species’ critical habitat was sufficient for recovery without adequate information to make that determination.

524 F.3d at 934. In response, the NOAA and action agency analyses consider short-term negative impacts, rely only on improvements they themselves can implement or other improvements reasonably certain to occur, and use the best available science.

The District Court has provided directions in addition to those addressed by the Court of Appeals. In American Rivers, Inc. v. NOAA Fisheries, No. CV-04-0061-RE, 2006 WL 1455629, at *11, 63 Env't Rep. Cas. (BNA) 1009 (D. Or. May 23, 2006), the court reasoned that the Action Agencies needed to conduct a comprehensive analysis of both the action involving operation the FCRPS and operation of Reclamation's Upper Snake projects. In response, both the Action Agencies' BA and CA, and NOAA's 2008 BiOps and SCA conduct a comprehensive analysis of both actions, and do so in the context of the environmental baseline and cumulative effects.

In its October 7 Order, the District Court directed NOAA, the Bureau of Reclamation and Army Corps of Engineers to collaborate with the sovereign entities who are parties to this litigation to achieve develop items for the proposed actions, and to reach agreement or narrow disagreement on scientific and technical information. Serious collaboration among the sovereign entities produced a significant result: the proposed RPA, Biological Assessment and Comprehensive Analysis as well as the Columbia Basin Accords among the Action Agencies, four Indian Tribes and two States. The Accords reflect mutual agreement on many issues and measures and provide additional benefits for fish. See section III.D of this document.

The Court's October 7, 2005, Order also directed NOAA to correct flaws identified in the Court's Opinions and Orders issued on May 7, 2003 and May 26, 2005. The May 2005 Opinion and Order is the one affirmed by the Court of Appeals and addressed above in this section of BPA's ROD. The Court's May 2003 Opinion and Order ruled that the action area should include not only the area impacted by FCRPS operations but locations where the Action Agencies would conduct offsite mitigation habitat, harvest, and hatchery actions. In response, the action area includes these areas. The May 2003 Opinion also criticized the 2000 BiOp for relying in part on other federal actions that had not undergone consultation and non-federal mitigation actions that were not reasonably certain to occur. In response, the Action Agencies rely on actions that they themselves have power to undertake, other federal actions that have completed consultation, and non-federal actions that are reasonably certain to occur.

D. The Columbia Basin Fish Accords among the Action Agencies and Tribes and States Result from Collaboration Encouraged by the District Court and Provide Additional Benefits to Fish that the Action Agencies' and NOAA's Analyses Take into Account.

The BPA Administrator's Record of Decision on the 2008 Columbia Basin Fish Accords describes the process leading to these agreements. In its May 2005 opinion finding fault with the 2004 BiOp, the District Court ordered NOAA and the Action Agencies (Corps of Engineers, Bureau of Reclamation) to collaborate with sovereign states and tribes to develop items to include in the FCRPS proposed

action, clarify policy issues, and reach agreement or narrow the areas of disagreement on scientific and technical information.

The Fish Accords ROD describes the process leading to the agreements.

Beginning in 2006 several of the sovereign parties began to explore the potential for resolving their mutual issues through negotiations. The parties recognized that years of litigation focused attention in the courtroom and directed attention away from the mutual work on the ground for the benefit of fish that all are engaged in. In addition, the litigation has been a tremendous drain on parties and their staffs, taking up time and resources that might be better spent working together.

By the middle of 2007, negotiations were underway in earnest. The parties sought to resolve outstanding issues, to resolve litigation matters, and to set forth long-term mutual commitments between them for the benefit of fish and wildlife in the region. The parties sought to keep discussions confidential in order to be as candid as possible and to produce the best outcome.

Columbia Basin Fish Accords ROD, p. 3.

In May 2008 the Action Agencies (Corps of Engineers, Bureau of Reclamation, and BPA) reached agreements on fish measures with the following sovereigns.

- Confederated Tribes of the Umatilla Indian Reservation,
- Confederated Tribes of the Warm Springs Reservation,
- Confederated Tribes and Bands of the Yakama Nation,
(as well as the Columbia River Inter-Tribal Fish Commission (CRITFC))
- the Confederated Tribes of the Colville Indian Reservation,
- the State of Idaho, and
- the State of Montana.

The BPA Administrator's Record of Decision describes the significant achievement of these agreements.

Under the terms of the Accords, the parties are committing to implement projects for the benefit of fish affected by the FCRPS, to be funded primarily by BPA. The focal point of the agreements is to provide actions to help ocean-going (anadromous) fish listed under the Endangered Species Act. The agreements also provide actions to help other fish in the Basin, including non-ocean-going (resident) stocks in Montana such as the listed bull trout, as well as for non-listed anadromous and resident species in the Basin, such as Pacific Lamprey. The agreements are intended to work in concert with draft Biological Opinions for the FCRPS

Agencies' Biological Assessment and new 2008 BiOps. The 2008 FCRPS BiOp provides the following summary.

Judge Redden's Order of October 2005 directed the Federal Agencies to collaborate with the sovereign entities to achieve the following goals:
(1) developing items to be included in the proposed actions; and
(2) clarifying policy issues and reaching agreement or narrowing the areas of disagreement on scientific or technical information.

In response to this ruling, the Federal, State and Tribal entities outlined a collaborative process and formed a Policy Working Group (PWG), made up of one representative from each of the sovereign entities. (Members included representatives from Oregon, Washington, Idaho, Montana, the Nez Perce Tribe, the Confederated Tribes of Warm Springs, the Confederated Tribes of the Yakama Nation, the Confederated Tribes of the Umatilla Reservation, the Kootenai Tribe of Idaho, the Spokane Tribe; and the Confederated Tribes of the Colville Reservation, as well as from the FCRPS Action Agencies and NOAA Fisheries.)

The PWG established technical workgroups and policy subgroups according to the steps of the "Collaboration Framework" approach. Technical working groups were also open to non-sovereign parties to the litigation as observers. As of April 2007, (the most recent date for which the statistics have been compiled) there have been 272 PWG and Technical Workgroup meetings involving more than 150 participants from 26 organizations. The PWG also provided ten briefings and discussions with other parties to the litigation at key milestones to keep them informed and to seek their input. In order to readily share materials and information, the PWG created a collaborative website, which served as a resource to over 320 users.

One key goal of the Collaboration was to identify priority actions to guide the identification of hydro, habitat, hatchery, and harvest actions for the FCRPS Action Agencies Biological Assessment. In addition, the collaboration has contributed to improved understanding among the sovereigns of positions on technical and policy issues, and the tools available to address them. It has added to the breadth of scientific data and knowledge available to understand the condition of the fish and the actions that will be most beneficial for their recovery.

2008 FCRPS BiOp at 1-7 – 1-8. Collaboration, therefore enabled development of the Action Agencies' Biological Assessment and, subsequently, the 2008 BiOps.

The Action Agencies' Biological Assessment recognizes the collaboration as well. The Action Agencies, through the Remand Collaboration Process,

developed a draft proposed action that was shared with the parties to the litigation and the Court on May 21, 2007. 2007 FCRPS Biological Assessment at 1-5 – 1-6. In this BA, the agencies have generally returned to the approach used in the 2000 BiOp, paying particular attention to opinions by the courts.

The excerpt from the 2008 FCRPS BiOp notes that 272 PWG and Technical Workgroup meetings took place as of April 2007, a date prior to the August 2007 Biological Assessments. Since April 2007, the Federal Agencies have had many additional meetings with tribes and states. Collaboration also led to the Columbia Basin Accords, as noted above.

2. 2008 FCRPS BiOp Framework for Continued Collaboration

The 2008 FCRPS BiOp provides a framework for this dialogue to continue. In-season water management of flow augmentation water and exchange of data and research is done through the Regional Forum of Federal Agencies, states, and tribes. 2008 FCRPS BiOp, Appendix at 8 - 9 (RPA No. 6, "In-season Water Management"); 2008 FCRPS Biological Assessment, Appendix B at B.2.1-13. Participants have experience with the Regional Forum, as it has been part of prior BiOps since 1995. The 2007 FCRPS Biological Assessment provides the following description.

Prioritization of the use of flow augmentation water is done through in-season management. Each fall, the Action Agencies prepare an annual WMP [Water Management Plan] and seasonal updates that describe planned hydrosystem fish operations for the upcoming fall and winter, and for the spring and summer passage seasons. The annual WMP strives to achieve the best possible mainstem passage conditions, recognizing the priorities established in this document and the need to balance the limited water and storage resources available in the region. . .

The WMP and seasonal updates are reviewed by the Regional Forum Technical Management Team (TMT). . . .

The Regional Forum TMT considers in-season changes to FCRPS operations, which include changes formally proposed as an SOR [System Operations Request]. If the TMT cannot reach consensus on an SOR, the proposed operational change may be elevated to the Implementation Team (IT), which includes policy representatives from the same Federal Agencies, States and Tribes. The TMT also serves as a forum for the exchange of data and research findings, which assures that the FCRPS is managed according to the most up-to-date information available.

FCRPS Biological Assessment, Appendix B, p. B.2.1-13.

In addition, the 2008 FCRPS BiOp's RPA includes adaptive management actions. 2008 FCRPS BiOp, Appendix, RPA Nos. 1-3, pp. 1-3. The Action Agencies will submit to NOAA Action Implementation Plans by December 2009, 2013, and 2016; Annual Progress Reports in all years except 2013 and 2016; and Comprehensive RPA Evaluations in June 2013 and 2016. NOAA will use these documents to determine whether revisions to implementation plans or the RPA are needed.

The Action Agencies' Biological Assessment further describes the adaptive management process they expect to implement, which could result in changes to the RPA based on the best available science. FCRPS Biological Assessment, § 2.1, pp. 2-1 et seq. It adds the following description to the evaluation process.

Comprehensive Evaluations are a tool to ensure that the Action Agencies and regional parties step back and take a comprehensive and cumulative check on implementation of FCRPS actions. This allows the opportunity to both build on successes and make mid-course corrections where necessary. Comprehensive Evaluations are also a juncture to examine the broader context of recovery, looking at the status of listed fish, actions by others across the salmon lifecycle, and environmental or other changes.

* * *

The results of the evaluations will be used to guide adaptive management of the Proposed RPA and to ensure that Action Agencies are making adequate progress on achieving the strategies and performance standards, as well as to inform the 2012 to 2015 implementation plan. If it is determined that course changes are necessary in order to achieve expected performance, the Action Agencies will discuss those changes with NMFS and the Collaboration parties prior to implementation.

FCRPS Biological Assessment at 2-12. The Action Agencies also committed to explore contingencies in the event that actions, even after adaptive management are not as successful as needed. FCRPS Biological Assessment at 2-14 – 2-15.

The Biological Assessment also states that the Federal Agencies, States, and Tribes want to continue to collaborate during implementation of the BiOp and actions. To serve this purpose, the Action Agencies will support a recovery implementation coordination group to enable continued dialogue among the regional sovereigns and to engage in adaptive management. FCRPS Biological Assessment at 2-15 – 2-16. The Biological Opinion calls for the Action Agencies to implement this collaboration. FCRPS Biological opinion RPA Table Adaptive Management Actions. The parties to Columbia Basin Fish Accords support the adaptive management process described in the Biological Opinion. Columbia Basin Fish Accords Record of Decision at 5. The Accords themselves also use

adaptive management: parties agreed to adapt the Accords on a broader scale based on new information or changed circumstances. *Id.* at 14.

3. Plaintiffs' Motions for Leave to File Fourth Supplemental Complaint and Notice of Intent to Sue

During the time taken by BPA to prepare this ROD, some parties to the NWF v. NMFS litigation filed Supplemental Complaints regarding analyses underlying NOAA's 2008 BiOps. Some parties have also sent to the Action Agencies a Sixty-Day Notice of Intent to Sue (NOI) for violations of the ESA. NOAA and the Action Agencies considered prospective plaintiffs' views and have made reasoned decisions to implement the 2008 FCRPS BiOp RPA, based upon the best available scientific information. In this section of the ROD, BPA addresses the principal allegations in plaintiffs' documents.

BPA considered the views of NWF, State of Oregon and other individuals and entities at many points during the course of the remand and collaboration process. But the Action Agencies and NOAA have not adopted all of the recommendations made by these parties. In many cases other sovereign states and tribes made different recommendations. Throughout the remand and collaboration leading to the 2008 BiOps, NOAA and the Action Agencies have considered multiple points of view. Especially in a subject as complex as the life cycles of salmon and steelhead and other species throughout the Basin, and how the many activities and natural conditions within their range affect them, points of view and analyses can, and should be expected to, differ. NOAA and the Action Agencies have considered the best available scientific information and have made reasonable and supported decisions based on that information.

In the Supplemental Complaint, the NWF plaintiffs refer to many human activities as causes for the declines in Columbia basin salmon and steelhead populations. While BPA does not disagree with the contention that human activities – including the construction and operation of hydropower facilities – have played a significant role in the decline of salmonid species, natural conditions, particularly longer term cycles in ocean and climate conditions are causes as well.

Regardless of the causes of decline, the fact that these species are listed as threatened or endangered species under the ESA shows that they are not currently in a condition needed for recovery and delisting. This status requires great sensitivity to the effects of particular actions on the listed species. But the status by itself does not mean that a proposed action will jeopardize a listed species. As expressed by the appellate court in NWF v. NMFS, each actor must be careful that its proposed action does not cause additional material harm and thereby jeopardize these species. 524 F.3d at 929-30.

NWF states in its Supplemental Complaint that the listed fish have “collapsed” and presents a graph showing a downward trend in salmon returns since 1962.

Supplemental Complaint, pp. 15, 19 (¶¶ 27, 32). But a careful inspection of this chart shows a contrast for the period covered by FCRPS BiOps. The graph shows an upward trend since the early 1990s, a time period beginning soon after the first listing of Pacific Northwest salmonids (Snake River sockeye in 1992) and encompassing the 1995, 2000, 2004 and now the 2008 FCRPS BiOps. This observation is consistent with the quantitative trend analysis by the Action Agencies and NOAA. These analyses show trends of increasing abundance of listed salmonid species in the Interior Columbia basin since 1990. See, for example, the ESU abundance and trends discussion for Snake River spring/summer chinook salmon in the Comprehensive Analysis at 4-6.

In addition, incoming reports of returns to date in 2008 suggest maintenance of improved returns. But, given the extremely high inter-annual variability in present and historic Columbia River basin salmonid abundance, one should not draw any conclusion from adult returns in any given year. Comprehensive scientific analysis of salmonid population dynamics focuses on longer term averages and trends, rather than point estimates for one year or another. The CA and SCA use metrics indicative of longer term trends and averages, such as the Biological Recovery Team abundance trend estimates, average recruit-per-spawner productivity estimates and lambda, a measure of median annual population growth rates.

NWF states in its Supplemental Complaint and NOI that the RPA in the 2008 BiOp has few changes compared to prior BiOps. Supplemental Complaint at ¶¶ 66; Notice of Intent to Sue, p. 7. But, as expressed in this ROD and the federal agencies' analyses, NOAA and the Action Agencies describe a package of measures that represent real improvements targeted at specific biological performance and that reflects substantive changes resulting from extensive collaboration among the sovereigns (federal agencies, states, and tribes). For example, hydro passage improvements are now targeted at a dam survival performance standard of 96% for spring migrants and 93% for summer migrants. And, contrary to plaintiffs' assertions, the habitat program to be implemented roughly doubles the Action Agencies' past ESA efforts, while also improving them, by targeting the populations most in need of habitat actions. The Action Agencies' Biological Assessment describes the RPA in detail, and NOAA's 2008 FCRPS BiOp Appendix entitled "Reasonable and Prudent Alternative Table" further enhances this description. In their analyses, NOAA and the Action Agencies provide reasoning for the measures they have chosen. See 2008 FCRPS Biological Opinion, NOAA's Supplemental Comprehensive Analysis, the Action Agencies' Biological Assessment, and the Action Agencies Comprehensive Analysis.

In its Supplemental Complaint, NWF states that NOAA did not consider the "Conceptual Framework for the Remand Process Including the Jeopardy Analysis. Supplemental Complaint at ¶¶ 54 - 56. But the Action Agencies describe expressly how they considered the Conceptual Framework in their

Comprehensive Analysis. It was intended to provide a link to longer term recovery efforts and ultimate delisting and “can be understood to represent the Collaboration parties’ view of the appropriate contribution of the FCRPS toward long-term recovery of the listed ESUs in the Interior Columbia River Basin.” CA at 3-10. It provided a metric for considering impacts of the proposed FCRPS action on recovery and delisting. Id. In its chapters for listed species in the Interior Columbia River Basin, the Comprehensive Analysis considers the “gaps” needed for recovery. NOAA’s Supplemental Comprehensive Analysis incorporates this information. Supplemental Comprehensive Analysis, Aggregate Analysis Appendix, pp. 1-2. The Conceptual Framework therefore informed the Action Agencies and NOAA’s analyses, which focused on whether particular actions were jeopardizing the listed species.

The Supplemental Complaint, beginning at ¶78, contends that the viability standards and associated survival gaps calculated by the Interior Columbia River Basin Technical Recovery Team (ICTRT) are the standards that should be used in NOAA’s jeopardy analysis. The Conceptual Framework, however, allocated percentage shares of the ICTRT’s gaps to various sources of human-caused mortality, of which the FCRPS is only one. This was deemed to be the FCRPS share in the long term effort to achieve recovery, and is necessarily a lower hurdle to surmount than closing the full ICTRT gaps.

Fundamentally, the ICTRT’s viability standards represent a biological condition that is indistinguishable from full recovery of the species. This is because the Technical Recovery Teams (TRTs), including the ICTRT, were established by NOAA to make recommendations regarding the “objective, measurable criteria for determining when delisting is warranted” under the ESA.^{9, 10} As NOAA noted in its responses to comments on the draft FCRPS BiOp: “Viability criteria were developed by the ICTRT to serve as the biological requirements for long-term recovery, or delisting. ... Delisting occurs according to the standards of ESA § 4 whereas the jeopardy standard is set by ESA §7(a)(2), a different ESA provision. Thus the ICTRT viability criteria are different than the jeopardy standard.” NOAA Response to Comments on the Draft FCRPS BiOp, May 2, 2008, Response 1-A. While avoiding causing jeopardy entails avoiding causing additional material harm to listed species, delisting goes further to entail achievement of recovery.

Nevertheless, both the 2008 BiOp and CA analyses relied heavily upon the ICTRT’s work. Both analyses used the ICTRT spawner-recruit datasets. Both analyses used the ICTRT metrics, such as average recruit-per-spawner productivity – that were derived from the underlying datasets. Both analyses carefully considered the ICTRT’s status assessments and assessments of Viable Salmonid Population factors other than abundance and productivity. Both

⁹ NMFS 2000 Memorandum, *Recovery Planning Guidance for Technical Recovery Teams*

¹⁰ “These biological viability criteria are intended to inform long-term regional recovery planning efforts, including the establishment of delisting criteria.” *Viability Criteria for Application to Interior Columbia Basin Salmonid ESUs*, Interior Columbia Basin Technical Recovery Team, March 2007.

analyses relied upon the ICTRT's recommendations for ESU-level viability in determining whether an ESU as a whole avoided jeopardy, based upon a consideration of status of individual populations within that ESU. In this manner, the CA and BiOp relied upon the best available scientific information in reaching their respective conclusions.

In its Supplemental Complaint and NOI NWF makes numerous other specific criticisms of NOAA's jeopardy analysis. Supplemental Complaint at ¶¶ 82-83; NOI at 7-11. But, in their extensive Biological Assessment and Comprehensive Analysis and the 2008 BiOp and Supplemental Comprehensive Analysis, the Action Agencies and NOAA have thoroughly addressed the following considerations, as well as others not noted here:

- effects on recovery by considering, among other factors, whether individual populations and the ESUs of which they are parts are likely to increase in abundance and productivity during the term of the BiOp;
- the risks of extinction over a reasonable period of time and under a range of modeling assumptions;
- the possible future effects of global climate change (which hydroelectric projects help avoid by minimizing production of greenhouse gases such as carbon dioxide, which alternative sources of generation would produce in large quantities), as well as a set of strategies to mitigate those effects;
- the effects of hatchery programs on listed fish and a set of hatchery actions and principles intended to guide the Action Agencies' future hatchery funding decisions in a manner that will not jeopardize listed fish¹¹;
- the biological benefits of specific measures to improve fish habitat and fish survival.

BPA is satisfied that the analytical methods employed in the BiOp and other related documents are consistent with ESA directives, the best available data and that full consideration was given to all of the issues raised by the plaintiffs.

Further, in its May 2, 2008 document entitled, "Comments on the 2007 Draft FCRPS Biological Opinion," NOAA summarized and responded to comments on 29 different scientific issues encompassing jeopardy approaches and analyses, reasonable and prudent alternatives, hydrosystem operations and effects, cumulative effects, the action area, climate change, habitat analysis, hatchery reform, harvest, particular species (Snake River Fall chinook and sockeye), breaching dams, adaptive management, and water quality. NOAA also wrote an

¹¹ For *hatcheries*, the Action Agencies specific objective is to fund the FCRPS Mitigation Hatchery Program in a way that ensures they do not impede recovery and, where appropriate, reduce extinction risk and promote recovery. The Action Agencies also will reform FCRPS hatchery operations to reduce negative ecological effects on ESA listed salmon and steelhead. In addition, the Action Agencies will implement safety net and conservation actions to preserve and build genetic resources to reduce short-term extinction risk and assist in promoting recovery.

Issues Summary addressing hydrosystem actions, hydrosystem effects, tributary effects, and climate change. In general, BPA concurs in NOAA's responses.

Both NWF plaintiffs, Supplemental Complaint at ¶ 83, and the State of Oregon, Supplemental Complaint at ¶ 31, disagree with NOAA's no jeopardy determination in the case of Snake River sockeye. The Action Agencies believe that NOAA's RPA proposes appropriate and timely steps to continue the process of bringing these fish back from virtual extinction.

Snake River sockeye have suffered from a variety of impacts in addition to hydroelectric development, including a state-sponsored program in the 1950s and 1960s aimed at eradicating sockeye from lakes in the Stanley Lakes basin. FCRPS BiOp at 8.4-3 and CA at 6-1. By the time of listing, the ESU had been reduced to a small remnant population that some considered functionally extirpated. An experimental captive broodstock program was initiated coincident with listing in an attempt to save the species from extinction.

The program is coordinated through the Stanley Basin Sockeye Technical Oversight Committee (SBSTOC). Members of the SBSTOC have concluded that the program has succeeded in its original goal of preventing extinction. The BiOp further notes: "The SBTOC has determined that the next step toward meeting the goal of re-establishing and amplifying the wild population is to increase the number of smolts released." FCRPS BiOp at 8.4-9. This is precisely what the Action Agencies propose to do. In addition, the Action Agencies will be funding a radio-tracking study to identify location(s) and potentially the source(s) of the relatively high sockeye smolt mortality between the Stanley Basin of Idaho and Lower Granite Dam. Results of these studies will inform adaptive management to improve conditions for Sockeye.

The Action Agencies conclude that the RPA is likely to significantly increase the numbers of returning adult sockeye by significantly expanding the number of smolts produced and released from the captive broodstock program, improving in-river survival for Snake River juvenile and (potentially) adult sockeye, and by improving long term understanding of the factors negatively affecting survival of these fish.

In its Supplemental Complaint and NOI, NWF makes additional claims respecting how NOAA should have considered the impact of FCRPS operations on Southern Resident Killer Whales. Supplemental Complaint at ¶¶ 85-89; NOI at 10. The "State of Washington Status Report for the Killer Whale" (2004) cited by plaintiffs speculates on many factors that "may" have an affect, but does not document or support the claims made in the Supplemental Complaint. While plaintiffs may support different weightings of speculative effects, NOAA and the Action Agency have considered all views submitted and made estimates based on the best available scientific information.

Using a method of statistical analysis also applied to populations of listed salmon in the CA and BiOp, the Action Agencies April 2008 supplement to their Comprehensive Analysis, entitled "Analysis of Effects on Listed Killer Whale and Green Sturgeon Distinct Population Segments," showed a trend of increasing abundance since 1980 of chinook salmon (viewed as a preferred food source for killer whales) returning to the mouth of the Columbia River. This analysis involves looking at the *total number of fish* produced from the Columbia, both listed and non-listed, and both hatchery- and natural-origin fish. Chinook salmon returns to Bonneville Dam, while showing significant variation between years, has overall remained remarkably constant since 1938, when most of the FCRPS did not exist (of course the fraction of these returns composed of hatchery-origin fish has grown considerably in recent decades). This analysis shows that neither the existence nor the operation of the FCRPS has had a significant effect on that portion of the killer whales' prey base that originates in the Columbia River basin. NOAA also presented an analysis showing that FCRPS-funded hatchery production in the Columbia River basin more than compensates for the estimated effects of the FCRPS on salmon abundance.

In its Supplemental Complaint NWF also raises a concern that hatchery-origin adults may return in a much more compressed timeframe than wild fish, thus reducing the period during which these fish are available as a food source for killer whales. BPA has recently completed additional statistical analysis of adult Chinook salmon returns to Bonneville Dam to determine whether the distribution of arrival times for Chinook salmon has changed since adult salmon counts began at Bonneville Dam in the late-1930s. Our analysis shows that there have been only slight changes in the distribution of arrival times since adult counts began. Specifically, spring chinook arrived slightly earlier on average during the 1988-2007 period than was the case from 1939-1955 (by about 5 days), though there has been no statistically significant compression of run timing, as the supplemental complaint supposes. The fall chinook run has actually become slightly more extended (by 4 days) during the recent period than was the case from 1939-1955, thus increasing the period of time during which these fish are hypothetically available to killer whales feeding off of the mouth of the Columbia River. These changes are not biologically significant from the standpoint of killer whales.

NWF also cites the Washington State report for their suggestion that hatchery salmon size and nutritional value is inferior to that of wild fish. The cited report does indeed note that overall salmon size has decreased "during the past few decades" (although the cited research apparently does not distinguish between wild and hatchery fish). The report goes on to note the obvious correlation between decreased salmon size during the past few decades and the major and prolonged shift in North Pacific ocean and climate conditions that occurred in the mid-1970s. This shift in the Pacific Decadal Oscillation rendered the ocean far less hospitable to Columbia basin and Puget Sound salmon than had been the

case from about the mid-1940s to the mid-1970s.¹² The Washington State report also notes that in addition to reduced ocean productivity (which could more than account for observed size reductions), other factors including intense harvest pressures, genetic changes and even hatchery practices may have also played a part. The report also suggests that hatchery fish may have lower body fat content and therefore may be less nutritious than wild fish. The only support offered for this claim is a personal communication from B. Sanford. No published, peer reviewed studies are cited. The report also suggests that hatchery fish may have less nutritional value than their wild counterparts. None of these claims appear to be well supported in the cited document. Considering the rigorous consideration that the 2008 FCRPS BiOp gives to the possible effects that the operation and existence of the FCRPS may have on killer whales, and the generally speculative nature of the hatchery-related considerations presented in the Washington State status report and cited by plaintiffs, BPA is satisfied that NOAA's conclusions in the BiOp with respect to killer whales are sound.

In its Supplemental Complaint NWF recommends that the action area include watersheds that include harmful projects by federal, state, or private actors. But NOAA has already defined the action area to include “[a]ll additional spawning areas above Bonneville Dam that are accessible to listed adult salmon or steelhead that are affected by the FCRPS RPA,” as “[t]he hydrosystem could have an indirect effect on the amount of marine derived nutrients returning to spawning and rearing areas due to a reduction in the number of adult fish returning to spawn and die.” FCRPS BiOp at 4-4. Consequently, the action area already includes all watersheds reached by listed salmon and steelhead.

In its Supplemental Complaint NWF recommends that NOAA’s description of cumulative effects (effects of non-federal actions reasonably certain to occur) be more specific and include negative effects of non-federal actions. But, as plaintiffs recognize, as part of the collaborative process NOAA and the Action Agencies requested and received input from states and tribes about recovery actions. SCA at 6-3; CA at 17-1. The Action Agencies’ CA lists the state actions in detail. See the many pages of tables attached to the CA, Ch. 17. NOAA and the Action Agencies’ consideration of cumulative effects went beyond just beneficial actions. NOAA and the Action Agencies recognized that types of human activities with adverse impacts on listed fish are reasonably certain to occur, including human population growth, water withdrawals, land use practices, fisheries, resource extraction, and state, tribal, and local government actions and policies. SCA at 6-3 – 6-4; CA at 17-3. NOAA finds the cumulative effects of these activities will likely have adverse effects commensurate with those of similar past activities, but future effects are not quantifiable. SCA at 6-3 – 6-4. The Action Agencies’ CA states, “As the population of the Pacific Northwest

¹² See, for instance, Mantua et al., 1997, showing that salmon abundance in the North Pacific Ocean is strongly correlated with the Pacific Decadal Oscillation.

continues to increase, the quantity and magnitude of these effects will likely continue to increase as well." CA at 17-3.

The State of Oregon also filed a supplemental complaint-in-intervention for declaratory and injunctive relief (supplemental complaint) in NWF v. NMFS. Most, if not all, of the issues raised by Oregon in its filing were also raised in Oregon's comments on the draft FCRPS BiOp. Those comments were fully considered by NOAA and explicit responses to (and disagreements with) many of Oregon's concerns were included in the final BiOp. Oregon also raised many of the same issues in the court-ordered collaboration among the sovereigns, which the federal agencies considered.

In the following paragraphs, we summarize our views on two issues raised in Oregon's complaint.

First, at ¶14 of its complaint, Oregon states: "...the 2008 BiOp's 'potential for recovery' analysis bears no logical or analytical connection to any scientifically-based recovery criteria." In the same paragraph, Oregon notes: "Because NOAA fails to first determine the point at which survival and recovery are placed at risk, it cannot demonstrate that the likelihood of achieving both will not be appreciably reduced."

With regard to recovery, the Federal agencies' CA uses widely accepted measures of population growth and productivity to inform its conclusions. For example: "A population with an average long-term population growth rate >1.0 is, by definition, a population whose size is increasing, not decreasing. A population that persists with an average growth rate >1.0 over an extended period of time will eventually recover. It is, in short, on a trend towards recovery." CA at 3.1.2.4. Of course, this statement is true only if recovery criteria are not set at an unrealistically high level. If the level of abundance deemed to be needed for recovery is beyond the maximum capacity of the available habitat, for instance, the population is unlikely to ever maintain itself at those levels. But that is more a function of analytic error in the setting of recovery levels than one of basic population dynamics.

For populations at historically low levels of abundance, the CA's conclusion holds. The point at which a population's growth rate changes from one of decline (mean $R/S < 1.0$, for instance) to increase (mean $R/S \geq 1.0$) is a significant threshold when considering both the likelihood of survival and the potential for recovery of that population.

NOAA's BiOps and Supplemental Comprehensive Analysis, too, consider impacts on recovery. For each listed species, the SCA considers the species' potential for recovery.

Second, both Oregon and NWF plaintiffs incorrectly contend that NOAA does not rely upon its quantitative analysis in determining whether the RPA jeopardizes listed species. Oregon states, "...NOAA ultimately does not rely on its quantitative analysis in determining whether the RPA satisfies the survival prong of the jeopardy analysis. Instead, due to 'considerable uncertainty' involved in the quantitative assessment of short-term extinction risks, see, e.g., 2008 BiOp at 8.3-32, 34, NOAA ultimately depends on qualitative factors to make its no jeopardy finding...". Oregon Supplemental Complaint at ¶19.

A jeopardy determination must ultimately rely both upon quantitative analysis and a host of considerations that are largely qualitative. This is the case for many reasons, including uncertainty in the quantitative estimates used in the analysis. Other reasons include, but are not limited to, the fact that for many listed ESUs, insufficient information exists to support a quantitative analysis, so conclusions are almost entirely based upon qualitative considerations. Also, even for those ESUs for which sufficient information is available, the quantitative portion of the analysis is done at the level of individual populations within an ESU. Evaluating the status of an ESU based upon estimates of the status of individual populations within that ESU requires the exercise of qualitative judgment. Finally, the use of multiple metrics, while providing a more complete basis for reaching conclusions respecting survival and potential for recovery, necessitates a qualitative consideration of the metrics themselves, since each metric has its own particular strengths and weaknesses. More discussion on this point can be found in Chapter 3 of the CA.

Past biological opinions have necessarily taken a qualitative approach to section 7(a)(2) determinations. The 2000 FCRPS BiOp had this to say: "...NMFS relies on this [quantitative] analysis primarily to provide a standardized measure of risk against which to judge the significance of the action to the continued existence of the ESU. In the end, however, NMFS' determination of consistency with ESA Section 7(a)(2) is qualitative, informed to the extent possible by standardized quantitative analysis." 2000 BiOp at 1.3.1.1. Likewise, the 2008 BiOp clearly describes a qualitative approach to a jeopardy determination. FCRPS BiOp at 1-10 et seq. We conclude that NOAAF has appropriately relied upon both quantitative analysis and qualitative (i.e., best professional) judgment in reaching its conclusions.

In summary, BPA and the other federal agencies have considered diverse views, including plaintiffs' views, and made responsible evaluations. Using not only the 2008 BiOp, its underlying analyses, but also the Action Agencies' Biological Assessments and their underlying analyses, and taking plaintiffs' views into account, BPA continues to believe that the RPA does not jeopardize listed species and does not destroy or adversely modify their critical habitat.

Prospectively, the federal agencies will continue to consider plaintiffs' and others' views during the 2008 FCRPS BiOp RPA's adaptive management process.

Since the District Court's remand of the 2004 BiOp, the federal agencies have engaged in regular communications with non-sovereign as well as sovereign parties, and collaboration with sovereign parties. BPA expects that these communications will continue.

F. The FCRPS Action Is Consistent with Other Federal Laws and Responsibilities.

1. Essential Fish Habitat Recommendations under the Magnuson-Stevens Act

Under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), § 305, NOAA makes conservation recommendations to mitigate adverse effects on essential fish habitat (EFH) of species regulated under federal fishery management plans. As part of the 2008 FCRPS BiOp, NOAA considers EFH designated by the Pacific Fisheries Management Council (PFMC) for Chinook and coho salmon, groundfish, and coastal pelagic species. FCRPS BiOp at 15-4. As its MSA conservation recommendation for FCRPS operations, NOAA recommends that the Action Agencies implement the 2008 FCRPS BiOp RPA. FCRPS BiOp at 15-8. NOAA notes that the RPA will:

- Manage water to benefit salmon and steelhead survival, reduce water temperatures during juvenile and adult fish migration,
- Use spill and fish transportation programs to reduce juvenile passage mortality,
- Undertake modifications at FCRPS projects to improve passage survival, primarily installation of surface bypass systems,
- Tributary and estuary habitat improvements,
- Support for hatcheries, including conservation and safety-net objectives,
- Predator control, and
- Research, monitoring and evaluation.

As stated in this decision document, BPA will, as one of the Action Agencies, implement the 2008 BiOp's recommended RPA, and thereby also implement NOAA's MSA conservation recommendation.

2. Tribal Treaty and Trust Responsibilities

The relationship between the federal government and the tribes of the Columbia River Basin are governed by a series of treaties, statutes, regulations, executive orders, and judicial decisions. Many tribes in the Basin reserved rights to hunt, fish, and gather traditional foods and medicines, not only on the lands now within their established reservations but also on lands that they ceded yet remain open and unclaimed. In addition, tribes in several treaties (the "Stevens treaties") reserved the right to take fish at usual and accustomed grounds in recognition of

the primacy of salmon in their lives. Treaties are federal laws that BPA is bound to observe and to uphold.

In addition to the recognition of treaty and other reserved rights, the federal government also has a trust responsibility to Indian tribes. A specific enforceable trust responsibility may arise when a federal agency receives statutory direction to manage tribal resources. Absent a specific responsibility, agencies have a general responsibility influenced by the treaties and internal policies and guidance, such as BPA's Tribal Policy (1996), and Executive Orders such as Executive Order 13175 (2000) regarding consultation and coordination with Indian tribal governments.

BPA fulfills its treaty and trust responsibilities with tribes by meeting the statutory obligations prescribed in general statutes applicable to all Federal Agencies, such as the National Environmental Policy Act, and in statutes tailored specifically to BPA's activities, such as section 4(h)(10)(A) of the Northwest Power Act. BPA seeks to give special consideration to tribal views and concerns pursuant to BPA's Tribal Policy,¹³ through government-to-government consultation and careful review of tribal concerns when making decisions that could affect tribal resources.¹⁴

BPA and other Federal Agencies have seriously taken tribal views into account. They met frequently with tribal representatives to help develop the methodology and measures in the new 2008 BiOps. Section III.C, "The FCRPS Action and BiOp Result from and Offer Opportunities for Continued Dialogue and Collaboration," of this document highlights the dialogue leading to the 2008 BiOps.

These meetings resulted in agreements with four tribes and two states. Section III.D, "The Columbia Basin Fish Accords among the Action Agencies and Tribes Result from Collaboration Encouraged by the District Court and Provide Additional Benefits that the Action Agencies' and NOAA's Analyses Take into Account," of this Decision Document describes these agreements.

The Columbia Basin Fish Accords will benefit not only fish but also improve the parties' working relationships with each other. The Record of Decision for these agreements makes the following statement.

The Columbia Basin Fish Accords represent a watershed event in BPA's relationship with the participating tribes, and demonstrate BPA's commitments to supporting tribal treaty interests and the government's

¹³ http://www.bpa.gov/corporate/About_BPA/tribes/link.

¹⁴ For a detailed discussion of BPA's trust responsibility, see section 2.8 of the Administrators Record of Decision for the 2003 Safety-Net Cost Recovery Adjustment Clause Final Proposal; see also the NEPA Record of Decision for BPA's Fish & Wildlife Implementation Plan Final EIS, http://www.efw.bpa.gov/environmental_services/nepadocs.aspx.

general trust responsibility to tribes. In general, BPA's commitment to these agreements supports tribal resources and tribal communities. BPA's implementation decision includes a wide variety of hatchery, habitat, research, monitoring, and evaluation, and coordination proposals that help protect and restore anadromous and other stocks that support tribal subsistence, ceremonial, and commercial harvest. BPA is also committing to continue its collaborative relationship with the tribes developed over the course of negotiations, involving the tribes in the monitoring and evaluation of our mutual implementation efforts. In addition, BPA's financial and technical support of tribal resource management expertise promotes tribal participation in mitigation activities which in turn provides economic opportunities and support to tribal sovereignty. While the agreements do not resolve treaty issues, the parties recognize that the mutual commitments are consistent with the tribes' treaty or reserved rights and the United States' trust obligation.¹⁵

Administrator's Record of Decision: Columbia Basin Fish Accords at 44.

BPA's commitment to implement the RPA in the 2008 FCRPS BiOp, too, provides further action consistent with tribal treaty and trust responsibilities. The RPA meets ESA responsibilities to avoid jeopardy to listed fish and the destruction or adverse modification of their critical habitat. It took into account the many discussions and dialogue with tribes during the remand collaboration.

In addition, implementation of the BiOp's RPA will continue to take tribal views into account. As described in section III.E, "The FCRPS Action and BiOp Result from and Offer Opportunities for Continued Dialogue and Collaboration," of this document, continued use of the Regional Forum provides a continuing vehicle for discussions.

3. National Environmental Policy Act (NEPA)

BPA's environmental analysis of the effects of implementing its activities described in the 2008 FCRPS BiOp, plus the terms and conditions of the BiOp's Incidental Take Statement, is provided by several existing BPA programmatic NEPA analyses. The System Operation Review Environmental Impact Statement (SOR EIS) (1995) (DOE/EIS-0170) evaluates a range of system operating strategies of the multiple uses of the FCRPS. The SOR Record of Decision (SOR ROD) (1997) selected a system operating strategy to support the recovery of ESA listed fish species by storing water during the fall and winter to meet spring and summer flow targets; protect other resources by managing detrimental effects caused by operations for ESA species by establishing minimum summer reservoir levels; provide public safety through flood protection and other actions; and provide for reasonable power generation.

¹⁵ Three Treaty Tribes MOA at V.D; Colville MOA at III.E.

The programmatic Wildlife Mitigation Program EIS (1997) (DOE/EIS-0246) provided a comprehensive analysis of different program alternatives for addressing BPA's wildlife mitigation projects, including land acquisitions and management, habitat restoration and improvements, installation of watering devices and riparian fencing, and other conservation actions. In the Wildlife Mitigation Program ROD (1997), BPA decided to implement a program to support this wide range of potential wildlife mitigation actions.

The programmatic Watershed Management Program EIS (1997) (DOE/EIS-0265) provided a comprehensive analysis of different program alternatives for addressing BPA's watershed management projects, including riparian restoration and other vegetation management techniques, in-channel modifications and fish habitat improvement structures, various land management techniques, and other watershed conservation and rehabilitation actions. In the Watershed Management Program ROD (1997), BPA decided to implement a program to support this wide range of potential actions intended to benefit fisheries, fish habitat, and aquatic ecosystems in the region.

BPA's Fish and Wildlife Implementation Plan EIS (FWIP EIS) (2003) (DOE/EIS-0312) and ROD (2003) is a cumulative effects analysis of the policy choices available to BPA for managing its fish and wildlife responsibilities in the Pacific Northwest region, including its fish and wildlife mitigation and recovery efforts. Under the FWIP EIS and ROD, BPA adopted the Preferred Alternative 2002 (PA 2002) as its policy direction for funding and implementing its fish and wildlife obligations. PA 2002 focuses policy direction on enhancing fish and wildlife habitat, modifying hydroelectric power operations and structures, and reforming hatcheries to both increase populations of listed fish stocks and provide long-term harvest opportunities. PA 2002 is a blend of the Weak-Stock and Sustainable-Use Alternative Policy Directions that were identified in the FWIP EIS. These alternatives protect weak stocks of fish and achieve performance standards and biological objectives—including those set forth in NOAA's biological opinions and the Integrated Program—while sustaining overall populations of fish and wildlife.

In February 2007, BPA prepared a NEPA ROD tiered to the FWIP EIS and ROD for its Fiscal Year 2007-2009 Fish and Wildlife Project Implementation Decision (07-09 F&W Decision). This tiered ROD addressed BPA's decision to implement certain new and ongoing fish and wildlife projects for fiscal years 2007 through 2009. The projects included in the 07-09 F&W Decision were designed to help meet BPA's responsibilities to protect, mitigate and enhance fish and wildlife affected by the development and operation of the Columbia River Basin hydroelectric dams from which BPA markets power. In the tiered NEPA ROD, BPA found that the majority of the projects included in the 07-09 F&W Decision were routine actions requiring no further NEPA documentation, but that would be subject to a "validation" process. Through this process, BPA committed to reviewing each project to ensure all applicable tribal, local, state, and federal

laws and regulations in addition to NEPA have been addressed prior to implementation. For non-routine projects (e.g., new artificial production projects) included in the 07-09 F&W Decision, BPA intends to prepare additional NEPA documentation as appropriate.

BPA also has prepared a NEPA ROD tiered to the FWIP EIS and ROD for its 2008 Columbia Basin Fish Accords (Accords). This tiered ROD, which was included in the May 2008 Administrator's ROD for the Accords, addressed BPA's decision to implement, for a ten-year time period, both ongoing and new fish and wildlife projects in the Columbia River Basin. The projects in the Accords are primarily intended to improve fish survival and habitat, and to advance fish recovery in the Columbia River Basin, for fish affected by FCRPS dams, with a focus on salmon and steelhead fish listed under the ESA. Similar to the 07-09 F&W Decision NEPA ROD, BPA committed in the NEPA ROD for the Accords to reviewing each Accord project to ensure all applicable tribal, local, state, and federal laws and regulations in addition to NEPA have been addressed prior to implementation. BPA also committed to preparing additional NEPA documentation as appropriate for non-routine projects.

BPA will rely on these existing NEPA analyses to implement its activities described in the 2008 FCRPS BiOp, plus the terms and conditions of the BiOp's Incidental Take Statement. For BiOp actions that are within the scope of these existing NEPA documents, BPA will determine whether the environmental effects of the actions are adequately covered by the existing NEPA documents and no further NEPA documentation is necessary, or whether it will prepare additional NEPA documentation such as a tiered ROD or Supplement Analysis. To the extent that the BiOp proposes actions that are not covered by BPA's existing NEPA analyses, BPA will conduct additional environmental analyses, including any necessary NEPA documentation, as appropriate. In preparing our NEPA analyses, BPA also integrates other applicable environmental laws.

4. Pacific Northwest Electric Power Planning and Conservation Act

- a. Protect, mitigate, and enhance fish and wildlife consistent with the Council's Power Plan and Fish and Wildlife Program.

The Northwest Power Act directs BPA to use its Bonneville Fund and authorities to protect, mitigate, and enhance fish and wildlife affected by the development and operation of the FCRPS, in a manner consistent with the Council's Power Plan and Fish and Wildlife Program, and while providing an adequate, efficient, economical, and reliable power supply. BPA believes the phrase "in a manner consistent with" is a programmatic provision that applies to BPA's overall efforts, not to every program element or project. Nonetheless, BPA generally seeks to fulfill its ESA obligations through projects reviewed and recommended by the Council. In addition, the foundational elements in the Action Agencies' Biological Assessment, the Accords, and the final Biological Opinion—the flow, spill,

transportation, configuration, habitat improvement, hatchery, and RM&E actions—either originated with the Council’s Program or build on program measures addressing the same issues. BPA thus continues integrating its ESA activities with the Council’s program and processes and taking the Program into consideration at each relevant decision point (such as this).

b. Equitable treatment

In addition, the Northwest Power Act requires that Bonneville exercise its responsibilities for hydropower operations consistent with the purposes of the Act “in a manner that provides equitable treatment for . . . fish and wildlife with the other purposes for which such system and facilities are managed and operated.”¹⁶ The Council describes equitable treatment as “meet[ing] the needs of salmon with a level of certainty comparable to that accorded the other operational purposes.”¹⁷ Historically, BPA has provided equitable treatment on a system-wide basis primarily by implementing the Council’s integrated fish and wildlife program and relevant Biological Opinions related to FCRPS operations.¹⁸ Implementation of the 2008 FCRPS BiOp’s RPA continues this approach. It continues and expands upon BPA’s commitments to benefit fish and wildlife. Implementation of the BiOp furthers BPA’s contribution to manage the FCRPS equitably for both fish and power.

c. In Lieu Provision

Under section 4(h)(10)(A) of the Northwest Power Act, Congress expressly limited BPA’s authority to provide protection, mitigation, and enhancement in the in-lieu provision, which states:

Expenditures of the Administrator pursuant to this paragraph shall be in addition to, not in lieu of, other expenditures authorized or required from other entities under other agreements or provisions of law.¹⁹

As explained by the House of Representative’s Interior Committee, “other fisheries efforts outside this Act . . . are expected to continue and to be funded separately.”²⁰

¹⁶ 16 U.S.C. § 839b(h)(11)(A)(i).

¹⁷ Council Program 1992, Vol. II. p. 9.

¹⁸ See, e.g., BPA, System Operation Review Environmental Impact Statement Record of Decision, page 14 (Feb. 21, 1997) (selecting an FCRPS operating strategy in which “[c]onflicts between power and fish are resolved in favor of the fish, providing equitable treatment of fish and wildlife with the other purposes for which the FCRPS is operated”); BPA, Fish and Wildlife Implementation Plan Environmental Impact Statement, pages 2-33 to 2-36 (Apr. 2003) (summarizing how BPA provides equitable treatment in FCRPS management); FCRPS Action Agencies, Biological Assessment for Effects of FCRPS and Mainstem Effects of Other Tributary Actions on Anadromous Salmonid Species Listed under the ESA, pages 1-9 to 1-15 (Aug. 2007) (describing the FCRPS’ overhaul—structural and operations changes for fish since 1994).

¹⁹ 16 U.S.C. § 839b(h)(10)(A).

Thus, if another entity is authorized or required under other agreements or provisions of law to undertake an activity, BPA cannot fund the activity under the authority of section 4(h)(10)(A) unless BPA's funding is in addition to, not in lieu of that other entity's funding. The in-lieu provision helps ensure that BPA's funding for fish and wildlife protection, mitigation and enhancement under section 4(h)(10)(A) is additive to on-going and future mitigation conducted by others, and is not simply supplanting other efforts outside of the Northwest Power Act. As it implements measures in the 2008 BiOp RPA, BPA will act consistent with the in-lieu provision.

As an example, the 2008 BiOp RPA includes RPA No. 50 (RM&E Strategy 1) regarding fish population status monitoring. The RPA notes that specific projects for implementation in the 2007-2009 period are identified in the FCRPS BA Attachment B.2.6-1-24, Table 8. In that Table 8, BPA noted that while BPA currently provides support for obtaining this regional fish population status data, all of these Table 8 projects are under review for efficiencies and prioritization of RM&E efforts, and their scope of work and/or funding levels are subject to change in FY 2008 and FY 2009.

BPA has determined it will continue these projects through the FY 2009 period at the budget levels BPA identified in its FY 2009 start of year budget planning letter.²¹ Funding for these projects in FY 2010 and beyond will depend on this additional review, including consideration of in lieu issues. BPA also notes that, in addition to the projects noted in Table 8 of the BA, BPA will implement two other projects during the 2007-2009 period (not mentioned in Table 8)²² subject to these same review principles, including in lieu limitations.

d. Adequate, Efficient, Economical, and Reliable Power Supply

The Action Agencies' and NOAA's data and analysis supporting the BiOp and RPA show that implementing the RPA will provide measurable benefits for fish and marine species. The RPA represents significant changes. The Action Agencies' Biological Assessment describes how these changes represent a

²⁰ H.R. Rep. No. 976, 96th Cong., 2d Sess., pt. 2, at 45. See also 126 Cong. Rec. H9846 (daily ed. Sept. 29, 1980) (Rep. Lujan: section 4(h)(10)(A) would "insure that the program will not call for measures already bring implemented to protect, mitigate, and enhance fish and wildlife").

²¹ Letter from William Maslen, BPA to Tony Grover, Northwest Power and Conservation Council, July 8, 2008, available at <http://www.efw.bpa.gov/IntegratedFWP/policyframework.aspx>

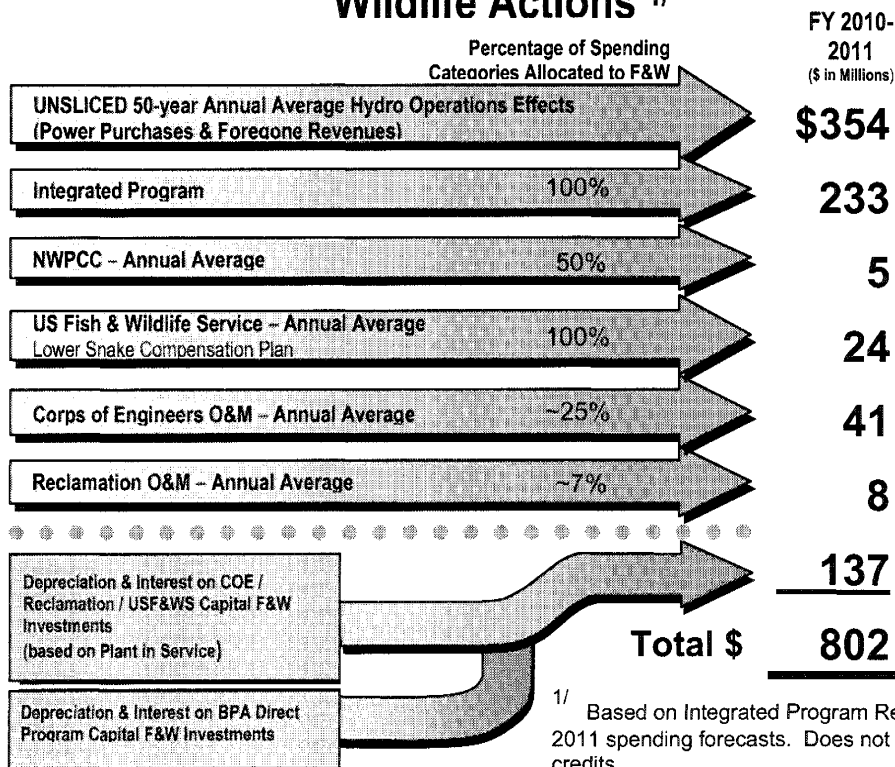
²² BPA Project No. 199902000—Analyze Persistence/Dynamics (limited to adult Chinook monitoring) and BPA Project No. 198902401—Evaluation Umatilla Juvenile Outmigration (limited to adult, SAR, and smolt production monitoring of steelhead). See letter from Greg Delwiche, BPA to Bruce Suzumoto, NOAA Fisheries, June 27, 2008.

major overhaul to federal hydroelectric projects. Biological Assessment at 1-8 – 1-9, and Appendix A, Overhaul of the System.

Implementation of the 2008 BiOp and RPA brings significant challenges to BPA’s ability to meet its responsibilities under the Northwest Power Act to protect, mitigate, and enhance fish and wildlife while also maintaining an adequate, efficient, economical, and reliable power supply. These challenges are described below.

The RPA does entail significant costs and requires limits on the generation of power. Since the beginning of the Northwest Power Act in 1980, BPA’s annual funding for fish and wildlife has increased significantly. The combined cost of BPA’s funding for fish and wildlife is expected to rise to almost \$800 million annually, of which about \$100 million annually is the incremental direct fish and wildlife program and hydro operations costs associated with the 2008 BiOp RPA’s and the Fish Accords. The 4(h)(10)(C) credits, which are applied to the annual payment BPA makes to the U.S. Treasury, will reduce this incremental cost to BPA ratepayers by approximately \$30 million. See the Total Annual Average Cost of BPA Fish and Wildlife Actions Table below.

Total Annual Average Cost of BPA Fish and Wildlife Actions ^{1/}



^{1/} Based on Integrated Program Review for FY 2010-2011 spending forecasts. Does not reflect 4(h)(10)(C) credits.

After the initial ramp-in period, the new work in the RPA is expected to result in an estimated 3 percent increase in BPA's costs. Together the Fish Accords and the RPA's are expected to result in about a 4 percent increase in BPA's costs.

BPA analysis indicates that, under operations to benefit fish, the Federal hydro system produces over 900 annual average megawatts less electricity than operations without changes to benefit fish. This difference is equivalent to 90 percent of the average annual electric energy use of the city of Seattle. The estimated hydro operations costs (foregone revenues and power purchases needed during fish operations) associated with anticipated operations under the RPA have increased by about \$11 million annually compared to those under the 2004 FCRPS Biological Opinion – from \$343 million to \$354 million. These are average annual estimates, and the year-to-year variability around the \$354 million estimate ranges from \$19 to \$814 million due primarily to natural variations in water supply. It should be noted that the RPA commits BPA to biological performance standards for fish survival through the dams. If ongoing research and testing show that different operations are needed to meet the standards, these costs could decrease or increase. After the initial ramp-up period, BPA's Direct Fish and Wildlife Program costs to accomplish required habitat and hatchery actions and research, monitoring and evaluation activities called for in the RPAs are expected to increase from \$143 million in 2008 to \$235 million in FY 2010 and 2011. Cost associated with the construction of fish improvements and related maintenance and operation costs are also increasing.

While the impacts of climate change on ESA listed fish are examined in the Action agencies' PA and CA and NOAA's biological opinion, there is an element of climate change that deserves further exploration. The electricity production of the federal hydrosystem is essentially carbon free. As the electricity output of the federal hydrosystem declines for measures such as spill, electricity usage remains unaltered. Even the most aggressive efforts to develop cost effective conservation and renewable resources will be seriously challenged to meet even modest goals for emissions reduction. It is very unlikely there would be extra conservation and renewables available to offset the loss of clean hydro output. Moreover, limits on federal hydroelectric production are immediate and do not await new resource development. Therefore, the replacement of electricity production produced in the Pacific Northwest based on existing resources will almost always increase the use of fossil fired units. Consequently, the replacement of the federal hydro system electricity reduction will, on average, increase greenhouse gas emissions. The Northwest Power and Conservation Council has described this effect in their September 13, 2007 report (Council Document 2007-15). This means actions taken to enhance salmon restoration that reduce federal hydrosystem output will lead to increases in greenhouse gas emissions.

In addition, there are substantial amounts of intermittent renewable resources, particularly wind power, that are being added in the Columbia River Basin to meet load growth. These resources are carbon free but due to a lack of output

predictability common to more traditional generating resources they present a particular challenge for electric power system operators. As noted in the Pacific Northwest Wind Integration Action Plan, a report developed by utilities, wind developers, environmental advocates and utility regulators, "Wind energy is a renewable, clean energy resource that will lower the fuel consumption and environmental emissions of other resources. But wind energy cannot provide reliable electric service on its own." (p. 9). Large amounts of wind have been developed in the Pacific Northwest in recent years and integrated with the existing power system, primarily relying on the federal hydropower system, to compensate for the vagaries of wind production to assure reliability. The ability of the hydrosystem to support wind power development is limited by constraints to the flexible operation of that system including hourly spill requirements with small error bands, tight requirements for flow levels, reservoir elevation requirements and tailwater constraints. In order to assure reliability, existing and future development of wind power will be more costly or may be physically constrained based on the limitations placed on federal hydrosystem operational flexibility. In addition, the non-hydro resources available to provide the flexibility necessary to assure reliability are likely to be fossil fuel fired leading to further greenhouse gas emissions at least until there are substantial improvements in technology.

BPA is also cognizant of the impacts of its costs on Pacific Northwest residents. In a declaration in 2005, Paul Norman, Senior Vice President of the Power Business Line at the Bonneville Power Administration wrote the following:

While it is true that the Northwest has historically had some of the lowest retail rates in the nation, retail rates have been rising. Relatively lower retail rates do not necessarily mean that the regional economy can easily sustain additional incremental costs, because low rates are a foundation of the regional economy. Furthermore, the effects of BPA's rate increases are not necessarily felt evenly across the region. Roughly speaking, about 70 percent of the revenues collected by BPA's requirement power rates come from the central and eastern parts of Oregon and Washington, as well as the portions of Idaho and Montana that BPA serves. These areas tend to have weaker economies dominated by agriculture and ranching and tend to have a difficult time absorbing any rate increase from BPA.

Declaration of Paul E. Norman, National Wildlife Federation v. National Marine Fisheries Service. On appeal to the U.S. Court of Appeals for the Ninth Circuit from the United States District Court for the District of Oregon Nos. CV 01-00640-RE; CV 05-23 (July 14, 2005), at ¶ 10.

5. Water Quality, Clean Water Act

In developing the proposed RPA the Action Agencies have collaborated extensively with the four Columbia Basin states and various Columbian Basin

Tribes throughout the consultation, and considered their comments during the development of the proposed RPA. The action agencies considered the respective ecological objectives of the ESA and the Clean Water Act (CWA). The Action Agencies harmonize federal dam operations to comply with both the ESA requirements, determined by the NMFS and FWS, and the state and tribal water quality standards. In many instances, actions implemented to attain water quality standards (e.g., reducing Total Dissolved Gas (TDG) and improving water temperature) will also benefit ESA-listed species. The Action agencies will continue to update the annual water quality plan as part of the RPA implementation, and to provide information on water quality at its dam and reservoir projects to assist the four Northwest states, tribes and EPA in their TMDL and other CWA processes.

BPA complies with the Clean Water Act when it implements its habitat improvement projects. For example, the Habitat Improvement Programmatic Biological Opinion (HIP), originally issued in 2003, will be followed when implementing offsite habitat improvement actions proposed in the RPA. The list of authorized activities include: stream channel, floodplain, and instream monitoring devices; acquisition of water rights; stream bank protection actions; riparian and wetland creation and restoration actions; livestock impact reductions to waterways; soil erosion control projects; irrigation and water delivery management projects; and bridge, road, and culvert replacement or improvement projects.

IV. Decision

My decision requires a significant commitment of resources from the region's ratepayers, including replacement power and opportunity costs for spill and flow augmentation, repayment to the Treasury for configuration improvements, extensive support for research, monitoring, and evaluation of the system and off-site measures, and new actions within our already extensive off-site mitigation program. I make my decision recognizing concern that implementation of the 2008 BiOp and RPA increases significant challenges to BPA's ability to meet its responsibilities under the Northwest Power Act to assure the Pacific Northwest of an adequate, efficient, economical, and reliable power supply, as described in section III.F.4.d, above. I also recognize that operations under this biological opinion may increase the challenges of reducing green house gas emissions from the Pacific Northwest electric power system

Based on the Action Agencies' 2007 FCRPS and Upper Snake Project Biological Assessments and Comprehensive Analysis; the Addenda to the Biological Assessments; NOAA's 2008 BiOps and Supplemental Comprehensive Analysis; the Columbia Basin Accords among Federal Agencies, tribes, and states; the extensive collaboration and discussions with states, tribes and other interested persons and entities, and related documents; and public, state, and tribal comments received on the these documents, it is my decision that BPA, in

cooperation with the other Action Agencies, will implement the 2008 BiOps' RPA and measures, terms, and conditions in the 2008 BiOp Incidental Take Statement.

Issued in Portland, Oregon, this 12th day of August, 2008.

/s/ Stephen J. Wright

Stephen J. Wright
Administrator and Chief Executive Officer