

**U.S. ARMY CORPS OF ENGINEERS
NORTHWESTERN DIVISION**

**RECORD OF CONSULTATION AND STATEMENT
OF DECISION**

NOAA FISHERIES' MAY 5, 2008, BIOLOGICAL OPINION

**CONSULTATION ON REMAND 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**

**(Revised and reissued pursuant to court order, NWF v. NMFS, Civ. No.
CV 01-0640-RE (D. Oregon))**

August 1, 2008

INTRODUCTION

The U.S. Army Corps of Engineers (Corps) was authorized by Congress to construct, operate and maintain multiple use projects in the Columbia River Basin for such purposes as flood control, navigation, hydropower generation, recreation, fish and wildlife, water quality and municipal and industrial water supply, irrigation, and recreation.

These projects are operated in a coordinated manner with other Federal projects, the Federal Columbia River Power System (FCRPS). The FCRPS projects also operate in coordination with several public utility hydropower projects located along the mid-Columbia River and certain Canadian reservoir projects pursuant to the Columbia River Treaty between the United States and Canada. The FCRPS projects, located throughout the Pacific Northwest in the states of Idaho, Oregon, Montana and Washington, provide a wide array of benefits to the citizens of the northwest. Since their construction and operation over the course of years, the various uses of the projects have been adapted to provide for the authorized uses and to meet the needs of the region and the nation.

For purposes of the Endangered Species Act (ESA) Section 7 consultation and 2008 FCRPS Biological Opinion addressed in this decision document, the FCRPS comprises fourteen Federal multipurpose projects. Twelve of the fourteen are operated and maintained by the Corps; these are: Bonneville, The Dalles, John Day, McNary, Chief Joseph, Albeni Falls, Libby, Ice Harbor, Lower Monumental, Little Goose, Lower Granite, and Dworshak dams. The Bureau of Reclamation (Reclamation) operates and maintains two of the fourteen FCRPS projects: the 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. The Bonneville Power Administration (BPA) is responsible for marketing and transmitting hydropower generated at these FCRPS projects.

The operation and maintenance of the FCRPS projects affects species listed for protection under the Endangered Species Act (ESA). The ESA, Section 7(a)(2) requires that:

[e]ach federal agency shall, in consultation with and with the assistance of the Secretary, 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 habitat of such species...

16 U.S.C. § 1536(a)(2).

The FCRPS Action Agencies, the Corps, Reclamation and BPA, have engaged in several ESA consultations since the early 1990's with the National Marine Fisheries Service (NMFS or NOAA Fisheries) on actions concerning the operation and maintenance of the FCRPS projects that may affect listed anadromous species or adversely modify these species critical habitat. With the successful challenge of the adequacy of the 2000 NMFS Biological Opinion on the effects of the FCRPS, the U.S. District Court of Oregon remanded, resulting in a subsequent challenge of the 2004 FCRPS Biological Opinion,

and the 2005 Upper Snake River Biological Opinion. The Court remanded these biological opinions to NMFS to correct legal deficiencies.

After over 2 years of collaboration with regional sovereigns, on May 5, 2008, NMFS issued the current biological opinion – “*Consultation on Remand For Operations 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* (Revised and reissued pursuant to court order, *NWF v. NMFS*, Civ. No. CV 01-0640-RE (D. Oregon)).” (herein referred to as the 2008 FCRPS BiOp)

In accordance with ESA regulations “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 obligations and the Service’s biological opinion,” 50 CFR § 402.15(a), this Record of Consultation and Statement of Decision (ROCASOD) documents the Corps’ rationale and provides the basis for the decision to implement the 2008 FCRPS BiOp Reasonable and Prudent Alternative (RPA) and the terms and conditions of the Incidental Take Statement (ITS).

Further, this decision document confirms the Corps’ commitments to implement operations and actions identified in the Columbia Basin Fish Accords (Accords) and that these operations and actions comply with the ESA and other applicable statutes, regulations, and treaties. The Accords encapsulate the commitments of the signatory Tribes, States, and Action Agencies to implement actions addressing fish affected by the FCRPS projects, and are intended to provide additional benefits which work in concert with the 2008 FCRPS BiOp.

BACKGROUND

The Snake River sockeye salmon was the first anadromous fish species in the Columbia River Basin to be listed by NMFS (November 20, 1991). Since then, additional anadromous species have been listed and the Corps and the other FCRPS Action Agencies have initiated numerous ESA Section 7 consultations to address the effects of the operation and maintenance of the FCRPS projects on listed salmon and steelhead and their critical habitat.

The National Wildlife Federation (NWF) and others filed an ESA challenge to the 2000 NMFS FCRPS Biological Opinion (BiOp), which the District Court ruled was arbitrary and capricious because it relied on (1) federal mitigation actions that had not been subject to Section 7 consultation and (2) non-federal mitigation actions that had not been shown reasonably certain to occur. *NWF v. NMFS*, 254 F. Supp. 2d 1196, 1213 (D. Or. 2003). The court remanded to the agencies for a new BiOp to correct these deficiencies, leaving the 2000 BiOp in effect in the meantime.

In response to the remand, NMFS issued the November 30, 2004 BiOp on the operation of the FCRPS (2004 FCRPS BiOp). On December 30, 2004, NWF filed a Second Supplemental Complaint challenging the 2004 FCRPS BiOp. On May 26, 2005, the

District Court held the 2004 BiOp invalid followed by an October 7, 2005 Opinion and Order for NMFS to engage in remand proceedings in accordance with the following instructions:

- (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.

Further, the Court ordered NMFS and the FCRPS Action Agencies to collaborate with regional sovereign States and Tribes to develop items to be included in the FCRPS proposed action, clarify policy issues, and reach agreement or narrow the areas of disagreement on scientific and technical information. Finally, the Order directed NMFS to file periodic status reports with the Court, to provide preliminary information about the legal framework NMFS intended to use in its jeopardy analysis, and the nature and scope of the proposed action or the reasonable and prudent alternative for the FCRPS.

On January 3, 2006, the Federal Defendant's First Remand Report was filed in which the Federal agencies committed to the Court that they "will apply the ESA, its implementing regulations and this Court's ruling of May 7, 2003 and May 26, 2005." In accordance with the U.S. District Court of Oregon's remand order, 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. The PWG established technical workgroups and policy subgroups to develop information concerning the status of the species, various state, tribal and Federal actions, and the estimated effects of the various actions. There were more than 270 Policy Working Group 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.

This collaboration process identified actions for salmon recovery, and an analysis of their effects, that the FCRPS Action Agencies' could use in developing a Proposed RPA. This process also identified actions to be taken by sovereign parties in coordinating regional salmon recovery efforts. The collaboration assisted the Action Agencies' in the development of the FCRPS Biological Assessment (FCRPS BA) and the Comprehensive Analysis (CA).

A significant outcome of the collaboration process was the historic signing of the “*Columbia Basin Fish Accords*.” The Corps and other parties signed the Columbia Basin Accords (Accords) on May 2, 2008, which are discussed in more detail below.

The development of the Comprehensive Analysis responded to a ruling in *American Rivers v. NOAA Fisheries* concerning the 2005 Upper Snake BiOp, in which the District Court ruled that the analysis of effects in the 2004 FCRPS BiOp remand be integrated with the analysis of effects for the Upper Snake River BiOp remand, resulting in a “comprehensive analysis” of the effects of the two actions on the listed species and designated critical habitat.

To address the District Court’s concerns, the FCRPS Action Agencies and Reclamation embarked on this thorough lifecycle survival analysis which looks at the status of each of the listed stocks and the factors that have contributed to their decline, assesses the impact of the Federal agencies’ proposed actions and makes a determination of whether those actions and the actions of others will contribute to the recovery of these fish. The Action Agencies submitted the FCRPS BA and CA to NMFS on August 21, 2007, concluding this action does not jeopardize listed species or result in the destruction or adverse modification of their critical habitat.

NMFS prepared a draft BiOp with a Supplemental Comprehensive Analysis (SCA), which were released to the litigation parties, and was made available to the public on October 31, 2007. NMFS received detailed and specific comments on the draft BiOp. Responses to these are reflected in the final 2008 FCRPS Biological Opinion and Supplemental Comprehensive Analysis.

Related to this remand consultation process was the appeal of the U.S. District Court of Oregon’s Opinion in *NWF v. NMFS*, Civ. No. CV 01-0640-RE (D. Oregon), in which the 9th Circuit Court of Appeals upheld the lower court’s decision. (*see NWF v. NMFS*, 524 F.3d 917 (9th Cir. 2008)). In its analysis, the 9th Circuit examined what it means to “jeopardize the continued existence” of a listed species. Citing the ESA regulations, the Court found “jeopardize” means “reduce appreciably” the likelihood of survival and recovery of a listed species. 50 C.F.R. §402.02. Relying on the dictionary definition, the Court held that an “[a]gency action can only “jeopardize” a species’ existence if that agency action causes some deterioration in the species’ pre-action condition.” The Court further stated:

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 F.3d 917, 930 (9th Cir. 2008).

The 9th Circuit acknowledged that the existence of the dams must be included in the environmental baseline, while the operation of the dams is within the Federal agencies discretion and found that: “[t]he proper baseline analysis is not the proportional share of responsibility the Federal agency bears for the decline in the species, but what jeopardy might result from the agency’s proposed actions in the present and future human and natural contexts.” 524 F.3d at 930. The Court upheld the lower court’s conclusion “that the 2004 BiOp impermissibly failed to incorporate degraded baseline conditions into its jeopardy analysis.” 524 F.3d at 933. Further, the 9th Circuit found that 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.”

In May 2008, NMFS concurrently issued BiOps on the operations of FCRPS projects, operations of Upper Snake Projects, and the *U.S. v. Oregon Harvest Management Agreement* (collectively described as the “Prospective Actions”), and the Supplemental Comprehensive Analysis of the collective effects of these actions, concluding that the combination of these Prospective Actions avoids jeopardizing listed species and the destruction or adverse modification of their designated critical habitat.

NMFS’s Supplemental Comprehensive Analysis used the same analytic approach and methodology provided in the Federal Agencies’ CA, with updated information regarding species status as well as new modeling estimates and analysis to inform the 2008 BiOp’s conclusions. The aggregated lifecycle analysis incorporated and considered all sources of salmonid mortality and assessed 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 that are reasonably certain to occur; and, analyzed whether, with these aggregate effects, listed species have a sufficiently low risk of extinction and an adequate potential for recovery.

NMFS 2008 FCRPS BiOp recommended an RPA - with changes and additions from the action proposed by the FCRPS Action Agencies, concluding that the combination of the Prospective Actions (FCRPS, Upper Snake and Harvest) avoids jeopardizing listed species and the destruction or adverse modification of their designated critical habitat.

Subsequent to the issuance of the 2008 FCRPS BiOp, a Motion for Leave to File a Fourth Supplemental Complaint was filed by NWF. A 60 Day Notice of Intent to Sue (NOI), dated June 27, 2008, was sent to the Corps and other Federal Agencies from Earthjustice alleging violations of the ESA; and, another 60 Day NOI, dated June 27, 2008, was sent from Earthjustice to the Corps and other Federal agencies alleging violations of the Clean Water Act (CWA). On July 22, 2008, the State of Oregon, filed a Motion for Leave to File Supplemental Complaint-in-Intervention.

The Corps has reviewed these views presented in these various actions and have considered them making this decision. The Corps believes that the 2008 FCRPS BiOp RPA and supporting analyses also considered these views, and that NMFS and the

FCRPS Action Agencies' final actions and decisions were based on the best available scientific information and are reasonable.

The Corps has also engaged in ESA consultation with the U.S. Fish and Wildlife Service (USFWS) on the effects of the FCRPS projects on listed bull trout and Kootenai River white sturgeon and will continue to implement actions in the USFWS 2000 FCRPS Biological Opinion and the USFWS 2006 Libby Dam Biological Opinion. The Corps does not anticipate conflicts in the operations called for in USFWS BiOps and the 2008 FCRPS BiOp.

During the pendency of the 2004 BiOp remand period, annual operations at Corps FCRPS projects for the fish migration seasons in 2005 through August 2008, were under court order.

RECORD OF CONSULTATION

The Corps, jointly with the other FCRPS Action Agencies, BPA and Reclamation, submitted the FCRPS Biological Assessment and Comprehensive Analysis to NMFS on August 21, 2007. The FCRPS BA and CA analyzed the effects of the Proposed RPA for the operation of the FCRPS and the Proposed Action for the Upper Snake on 13 ESUs. Subsequent addendums to the FCRPS BA were provided to NMFS on 2 more ESA listed species - the Southern Distinct Population Segment of the killer whale (orcas) and the Southern Distinct Population of the green sturgeon (green sturgeon).

The additions to the FCRPS BA and CA included the:

- 1) Addendum to the "Comprehensive Analysis of the Federal Columbia River Power System and Mainstem Effects of Upper Snake and other Tributary Actions." Analysis of Effects on Listed Killer Whale and Green Sturgeon Distinct Population Segments. April 2008.
- 2) Revised Addendum to the "Biological Assessments and Comprehensive Analysis of the Federal Columbia River Power System and Mainstem Effects of Upper Snake and Other Tributary Actions." Analysis of Effects on Listed Columbia River Basin Salmon and Steelhead Populations from Proposed Memorandum of Agreement Actions. May 2008.

Together these documents assess the status of the 15 ESA listed species, describe the action the Action Agencies proposed to undertake, identify the extent of the action area, discuss the process the Action Agencies applied in analyzing the effects of the action, and present a package of specific mitigation actions. The action proposed in the BA/CA spanned the 10-year time period from 2007 through 2017. Through the consultation, this was later adjusted in the 2008 FCRPS BiOp to extend from 2008 to 2018.

Summary of the Proposed RPA

The action proposed by the Action Agencies in the FCRPS BA consists of multiple, separate actions that address the effects of:

- 1) The operation and maintenance of the 14 Federal dam and reservoir projects that are operated by the Corps and Reclamation as an integrated system for flood control, navigation, power generation, fish and wildlife, recreation, irrigation, and water quality and quantity.
- 2) The operation of other Reclamation irrigation projects, to the extent of their hydrologic effects on flows in the mainstems of the Columbia and Snake rivers. The operation and maintenance of Reclamation's projects are described in the FCRPS Biological Assessment, Appendix B.1.

The Proposed RPA included a variety of actions to address limiting factors throughout the anadromous species' lifecycles. The Proposed RPA actions were not limited to hydro-system improvements, but also improvements in habitat (tributary and estuary), hatcheries, harvest, predation management, and research, monitoring, and evaluation that are directly interrelated with the operation and maintenance of the FCRPS.

Hydropower actions include water management operations; juvenile and adult dam passage modifications; operation improvements for spill and transport of juvenile fish; and operational and maintenance activities aimed towards improving juvenile passage survival and adult returns.

The *tributary and estuarine habitat* strategy is to protect and improve habitat based on biological needs and prioritized actions that address limiting factors identified for each salmon ESU or steelhead DPS. The primary focus of this program is on populations with the greatest biological need and where habitat potential exists.

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.

Predation management actions to reduce mortality of ESA-listed juvenile and adult anadromous fish from predators such as piscivorous fish (fish that prey on other fish), avian (bird) species, and marine mammals, will continue.

Research, Monitoring and Evaluation (RM&E) actions will be undertaken to provide information needed to support planning and adaptive management and demonstrate accountability related to the implementation of FCRPS ESA hydropower and offsite actions for all ESUs.

Adaptive management allows for tracking the effectiveness of actions, and to make adjustments as needed. The Action Agencies have identified performance *measures* (metrics) that will be monitored and evaluated relative to performance *standards*

(benchmarks) and performance *targets* (longer-term goals) to assess progress of actions and inform future decisions.

Summary of the Action Agencies' Comprehensive Analysis

The Action Agencies' CA reviews the effects of two actions: the operation and maintenance of the FCRPS projects with actions to mitigate for these effects; and, the operation and management of Reclamation projects in the Upper Snake River. This 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. The following is a summary of the approach the Action Agencies used for the CA, with a thorough discussion of the approach contained in the Action Agencies Comprehensive Analysis.

The CA uses a life-cycle, aggregate approach, which considers the biological requirements for survival and recovery of the listed species. It evaluates whether the species are likely to survive and be placed on a trend toward recovery after considering the effects of the FCRPS Proposed RPA and the Upper Snake River PA aggregated with the environmental baseline and cumulative effects. As such, this lifecycle survival analysis 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. The CA takes into consideration the status and other information applicable to each 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. 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.

Subsequent to the submittal of the FCRPS BA/CA, NMFS received comments on the draft 2007 FCRPS BiOp and draft 2007 Upper Snake River BiOp. After review of these comments, NMFS requested that the Action Agencies consider whether their actions may affect either the Southern Resident distinct population segment (DPS) of killer whales (orcas), or the Southern DPS of green sturgeon, in addition to the listed anadromous salmonids.

In response, the Action Agencies submitted an Addendum to the CA and determined that the Proposed Actions may affect, but are not likely to adversely affect, the Southern Resident DPS of killer whales, and that the FCRPS and Upper Snake dam operations, and operations of the Select Area Fisheries Evaluation (SAFE) net rearing project may affect, but are not likely to adversely affect, the Southern DPS of green sturgeon.

Relationship to the Conceptual Framework

In addition to its aggregated lifecycle analysis, the CA also considers the Conceptual Framework developed during the FCRPS BiOp Remand 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.¹ As noted in the CA, the Conceptual Framework “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 § 3.1.3.2, p. 3-10.

The Framework approach provides another “metric” for use in considering the impacts of the Proposed RPA on a listed species’ prospects for recovery. 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 PWG 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.

The Conceptual Framework was intended to provide a link to recovery efforts 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.” Action Agencies’ Comprehensive Analysis, § 3.1.3.2, p. 3-10.

Columbia Basin Fish Accords

Judge Redden’s Order directed the Federal agencies to collaborate with regional sovereign States and Tribes to reach agreement or narrow areas of disagreement on scientific and technical information in the formulation of an RPA that complies with the ESA. After many months of concerted efforts to accomplish this objective for the ESA consultation, the Action Agencies also entered into agreements with four Tribes and two States to improve fish survival and habitat, and to advance fish recovery in the Columbia River Basin. The *Columbia River Fish Accords* (Accords) address fish affected by the operation of the FCRPS projects, with a focus on salmon and steelhead fish listed under the ESA.

These Accords are a commitment that will result in hundreds of new projects and dedicated funding for certain on-going projects throughout the Columbia River Basin for the next 10 years. These Accords also signal to the region the recognition by the signatories that a collaborative partnership is necessary to successfully meet the needs of the region’s fish.

¹ 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.

Specifically, the Columbia Basin Fish Accords are:

- An agreement between the Action Agencies and the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes of the Warm Springs Reservation, the Confederated Tribes and Bands of the Yakama Nation, and the Columbia River Inter-Tribal Fish Commission. These Tribes and the Columbia River Inter-Tribal Fish Commission are collectively referred to as the “Three Treaty Tribes.”
- An agreement between the Action Agencies and the Confederated Tribes of the Colville Indian Reservation (Colville Tribe)
- An agreement between the State of Idaho and the Action Agencies
- An agreement between the State of Montana and the Action Agencies

Under the terms of the Accords, the Action Agencies committed to implementation of hydro-system actions - both structural and operational improvements to the FCRPS projects. Additionally, the Action Agencies and the signatory Tribes and States are committing to implementing non-hydro projects, funded primarily by BPA, for the benefit of fish affected by the FCRPS.

The Columbia Basin Fish Accords also provide for actions to help other fish, including non-ocean-going (resident) stocks in Montana such as bull trout, as well as for non-listed anadromous and resident species in the Basin, including Pacific lamprey. The actions committed to in the Accords were developed to work in concert with the 2008 FCRPS BiOp and the Upper Snake BiOp.

Specific Commitments in the Columbia Basin Fish Accords

- ***Forecasting Improvements:*** In the 2008 FCRPS Biological Opinion, the Action Agencies commit to holding annual forecast performance reviews to look at in-place tools for seasonal volume forecasts, and to report on the effectiveness of experimental, developing, or emerging technologies and procedures. In the agreement between the Three Treaty Tribes and the Action Agencies, the parties negotiated additional actions to improve forecasting methods, including convening a forecast and data committee to include technical representatives from these Tribes.
- ***Lamprey Actions:*** The Pacific lamprey, though not a listed species, are of considerable importance to the Three Treaty Tribes, who use the fish for food and medicine. The parties agreed upon a suite of actions to address concerns about the decline in lamprey populations both to address the tribal interests and to help avoid future listing of this species.
 - The Corps committed to continue improving adult lamprey migratory conditions at mainstem FCRPS hydropower projects. This includes investigating and identifying potential problem areas and implementing both physical and operational changes to adult ladders. Implementation of changes will be followed

by evaluations of passage behavior, likely using PIT, and/or active-telemetry to determine the overall effectiveness of the changes.

- The Corps will continue to monitor the passage of juvenile lamprey collected at projects with juvenile fish bypass facilities. When turbine intake bar screens are in need of replacement, the Corps will replace the existing material with bar screens that have smaller gaps between the bars, as warranted to further protect migrating juvenile lamprey.
- Other specific measures for implementation are identified in the Accords with the Three Treaty Tribes and CRITFC. Lamprey passage improvements will be implemented in consultation with NMFS and these signatories to consider the effects to both listed salmon and steelhead, and lamprey.
- *Dry Year Strategy*: The Confederated Tribes of the Colville Reservation have a particular concern about how dry year (low water year) operations of the FCRPS will be conducted. In the agreement between the Colville Tribe and the Action Agencies, the parties provided additional details as to how summer drafting and other dry year operations studies will be carried out, and provided expressly for the inclusion of the Colville Tribes in those analyses.
- *Performance*: Clarification of performance standards and metrics, including the use of the 96%/93% performance standards for spill/bypass operations and the consideration of delay and spill passage efficiency as part of performance.
- *Science Based Changes in Juvenile Transportation Operations*: Revised transportation operations to increase survival benefits for Snake River steelhead compared to the BA, as modified by the draft BiOp, subject to continued performance review.
- *Summer Spill Cessation*: A more conservative trigger for cessation and re-initiation of summer spill during August at lower Snake River Projects. The revised trigger for spill cessation was reduced from 1000 fish to 300 fish. For re-initiating spill, the trigger is 500 fish rather than 1000 fish, as proposed by the FCRPS Action Agencies in the BA.
- *Contingency Actions*: Identification of the operation of John Day Dam at minimum operating pool or MOP, as a potential contingency action if performance is not on track as part of the 2016 comprehensive review.
- *Canadian Storage Negotiations*: The Corps and BPA will coordinate with parties on Treaty storage; and, for non-Treaty storage operations, BPA will be responsible for coordination with parties. This coordination will address Treaty and non-Treaty operations that occurred during the preceding fish passage season, and to seek tribal input and information on planned operations for the next fish passage season.

- *Operations for Non-Listed Fish*: reasonable operations to benefit non-listed fish, with priority for ESA-listed fish in case of conflicts.
- *John Day and The Dalles Dam Mitigation*: The Corps will work with *U.S. v. Oregon* parties on proposals regarding mitigation for the losses to anadromous fish caused by the construction of these dams and appurtenant hatchery production facilities, and in particular, the appropriate split between upriver and downriver stocks of Chinook in the hatchery production.

To ensure the actions committed to in the Accords were consistent with the Action Agencies' ESA responsibilities, the Action Agencies submitted to NMFS, the Revised Addendum to the "Biological Assessments and Comprehensive Analysis of the Federal Columbia River Power System and Mainstem Effects of Upper Snake and Other Tributary Actions," Analysis of Effects on Listed Columbia River Basin Salmon and Steelhead Populations from Proposed Memorandum of Agreement Actions, dated May 2008. To the extent certain future actions require ESA consultation, the Corps will timely consult with NMFS or the USFWS as appropriate.

Summary of the 2008 FCRPS BiOp

In the preparation of the final 2008 FCRPS BiOp, NMFS analyzed the information submitted in the Action Agencies' BA/CA, the Addendums noted above, as well as other scientific information and comments received on the draft BiOp. In so doing, notable changes to the draft BiOp RPA were made, including the following:

- Actions to improve survival of Snake River B-run steelhead populations.
- The Snake River Steelhead Kelt Management Plan to improve the productivity of interior basin B-run steelhead populations.
- More conservative summer spill cessation triggers
- Forecasting improvements for flow augmentation and climate change
- Transport operations to increase survival benefits for Snake River steelhead as compared to the BA and as modified by the BiOp - subject to continued performance review.
- Chum spawning flows

Summary of the Supplemental Comprehensive Analysis

The 2008 FCRPS BiOp RPA (as modified from the draft BiOp) is supported by the analysis in NMFS' Supplemental Comprehensive Analysis (SCA). While the SCA is consistent with the Action Agencies' CA, it includes updated biological information and modeling, using new and revised estimates of impacts on salmonid survival – thus providing additional assurance that NMFS' recommended RPA avoids jeopardizing listed species and the destruction or adverse modification of critical habitat.

The SCA aggregated lifecycle analysis incorporates and considers all sources of salmonid mortality, and assesses the effects of the Prospective Actions with the environmental

baseline and anticipated future state and private actions that are reasonably certain to occur (cumulative effects), on 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.

NMFS analytic methodology considered not only survival, but also the listed species' potential for recovery. The analytic approach used in the SCA is conceptually similar to that employed in the 2000 BiOp, but has been refined to reflect the continuing accumulation of new data and scientific analysis. For example, the BiOp and SCA benefit from a much expanded set of data compared to the 2000 BiOp's analysis. The more recent analyses avail themselves of a variety of metrics, taking advantage of the relative strengths and weaknesses of each to form a more complete picture of the present and future status particularly for the interior listed ESU (DPS) where adequate information is available. In this manner, NMFS developed its methodology using the best science available, and also addressed the court rulings interpreting the ESA, including *NWF v. NMFS*, 524 F.3d 917 (9th Cir. 2008).

The SCA concludes that the Prospective Actions provide sufficient benefits in that they will improve, not degrade, the status of listed species, and that the aggregate analysis indicates the listed salmon and steelhead are expected to survive with an adequate potential for recovery. 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 serve its conservation role for the species. Consequently, the Prospective Actions avoid jeopardizing the listed species, and the destruction or adverse modification of designated critical habitat.

NMFS' completed the biological opinion after extensive collaboration with Pacific Northwest States and Tribes, meetings with all interested entities, and thorough consideration of comments received on the draft BiOp – including those submitted by parties to the *NWF v. NMFS* litigation. NMFS addressed comments in its May 2, 2008, memorandum entitled, “*Comments on the 2007 Draft FCRPS Biological Opinion.*” Contemporaneous with the 2008 BiOps, NMFS produced “*Issue Summaries of the FCRPS 2008 Biological Opinion,*” presenting a reasoned consideration of diverse views and explains the approach taken in the BiOps.

Some commentators have criticized the methodology used by NMFS in its SCA, and contrast it to the approach used in the 2000 BiOp. For instance, in both the 2000 and 2008 BiOps, NMFS considered the listed species' risk for extinction with estimates for 24 year and 100 year timeframes. The 2000 BiOp placed its primary emphasis on extinction risk estimates over a 100 year timeframe, whereas, the 2008 FCRPS BiOp SCA and the CA placed emphasis on risks over a 24 year timeframe. This was done in part because the precision of the risk estimate decreases over a longer time horizon. This is especially true in the case of Columbia River basin salmon populations, since the available data only supports reliable risk estimates 5-10 years into the future. (See

discussion in the Supplemental Comprehensive Analysis, Aggregate Analysis Appendix at page 9.)

Contrary to some commentators assertions that the Interior Columbia River Basin Technical Recovery Team (ICTRT) information was not used in the 2008 BiOp SCA, NMFS 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 (VSP) factors other than abundance and productivity. Both 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. Again, the SCA and the CA relied upon the best available scientific information in reaching their respective conclusions.

Commentators raised contrary views concerning the conclusions in the 2008 FCRPS BiOp on Snake River sockeye. The Action Agencies believe that NMFS's RPA proposes appropriate and timely steps to continue to the process of improving the current status of these imperiled fish.

In addition to effects associated with hydroelectric development, the Snake River sockeye have suffered from a variety of influences, including a state-sponsored program in the 1950s and 1960s aimed at eradicating sockeye from lakes in the Stanley Lakes basin. BiOp at 8.4-3 and CA at 6.1. By the time of ESA listing, this ESU had been reduced to a small remnant population that some considered functionally extirpated. An experimental captive brood stock program was initiated in an attempt to save the species from extinction.

The sockeye captive brood stock 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 and “[t]he 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.” 2008 FCRPS BiOp at p. 8.4-9.

The Corps believes that the 2008 FCRPS BiOp 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.

The commentators have also suggested that NMFS did not consider other factors on the FCRPS operations effects on Southern Resident Killer Whales such as reduced numbers of adult fish, and compressed adult run timing of hatchery fish, and suggested hatchery Chinook have lower nutritional value than wild fish.

The Action Agencies April 2008 *Analysis of Effects on Listed Killer Whale and Green Sturgeon Distinct Population Segments*, showed a trend of increasing abundance since 1980 of Chinook salmon (believed to be a preferred food source for orcas) returning to the mouth of the Columbia River. This analysis looked at the total number of listed and non-listed fish produced from the Columbia, both hatchery and wild, and demonstrated that Chinook salmon returns to Bonneville Dam, while showing significant variation between years, has overall remained fairly constant since 1938. This analysis shows that neither the existence nor the operation of the FCRPS have had a significant effect on that portion of the orcas' prey base that originates in the Columbia River basin. NMFS 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.

Concerning the compressed run timing of hatchery-origin adults raised by the commentators, the Corps recently reviewed an additional statistical analysis conducted by Hinrichsen, "*Detecting a Shift in the Arrival Distribution of Adult Chinook Salmon at Bonneville Dam Fish Ladders*," to determine whether the distribution of arrival times for Chinook salmon has changed since adult salmon counts began at Bonneville Dam in 1938. This analysis suggests only slight changes in the distribution of arrival times since adult counts began. The fall Chinook run has actually become slightly more extended (by 4 days) over recent years than was the case from 1939-1955, thus increasing the period of time during which these fish are available to orcas feeding off of the mouth of the Columbia River. The Corps does not believe the changes in adult run timing for Chinook are biologically significant from the standpoint of a prey source for orcas.

Finally, concerning the potential nutritional value differences between hatchery and wild fish, commentators cite a report "*State of Washington Status Report for the Killer Whale*" (2004), which notes that overall salmon size has decreased "during the past few decades." The report notes several factors that may play a role in this reduction, such as the major and prolonged shift in North Pacific ocean and climate conditions that occurred in the mid-1970s, reduced ocean productivity, intense harvest pressures, genetic changes and even hatchery practices. Having considered the provisional nature of the information contained in this report, and the review of this information and the reliance on the best available scientific information contained in the 2008 FCRPS BiOp, the Corps believes NMFS's conclusions concerning the effects of the operation of the FCRPS on orcas is reasonable.

In the 2008 FCRPS BiOp, NMFS addressed the action area in this consultation as defined in the joint implementing regulations, "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." 50 CFR § 402.02. The BiOp states that "[t]he action area is not delineated by the migratory range of the species affected by the project unless that area is also directly or indirectly affected by the proposed action." 2008 FCRPS BiOp at p. 4-3. In a May 2003 decision, Judge Redden 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.

The FCRPS Action Agencies and NMFS 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.” 2008 FCRPS BiOp at p. 4-4.

The 2008 FCRPS BiOp and SCA provide a comprehensive, reasoned analysis of the Prospective Actions, including the FCRPS RPA. The Corps has considered the perspectives provided in comments on the draft BiOp and the responses provided by NMFS, as well as those identified in the Notices of Intent to Sue and the recently filed Supplemental Complaints. In addition, the Corps has independently reviewed the FCRPS RPA and the analytic approach used in the SCA, and believes this methodology is reasonable, based on the best available science, and supports NMFS’ conclusions that the FCRPS RPA meets the mandates of the ESA. Further, the Corps is confident that the collaboratively developed Proposed RPA and Comprehensive Analysis, as well as the updated information and analysis relied on by NMFS as a basis for its conclusions in the 2008 FCRPS BiOp and the recommended RPA are reasonable. The Corps believes that the analysis of the collective effects of the operations of the FCRPS, the Upper Snake Projects, and the *U.S. v. Oregon* Harvest Management Agreement (collectively described as the “Prospective Actions”), supports NMFS’s conclusion that the Prospective Actions are not likely to jeopardize the continued existence of the 15 ESA listed species or adversely modify designated critical habitat.

Summary of the 2008 FCRPS BiOp Reasonable and Prudent Alternative

The Reasonable and Prudent Alternative (RPA) identifies 73 actions in seven broad categories: adaptive management, hydropower, habitat, hatcheries, harvest, predation management, and research, monitoring and evaluation. The Corps will work with the BPA and Reclamation to implement all 73 actions consistent with the adaptive management process and regional coordination. The following describes how the Corps intends to implement those actions in the RPA for which the Corps has authority.

Adaptive Management

The Corps will implement the RPA under an adaptive management approach. Specific to the adaptive management approach are transparent and regular examinations of the actions and progress towards meeting performance standards under the new FCRPS BiOp, using implementation plans, annual progress reports, and comprehensive evaluations (**RPA Actions 1, 2 and 3**).

In 2009, 2013 and 2016, the Action Agencies will provide NOAA with implementation plans that will detail any changes in hydro, predation management, hatchery, or RM&E RPA actions from the actions described in previous time period, and describe the tributary and estuary habitat actions that will be funded during the next three year cycle.

The annual Progress Reports will describe the status of implementing all RPA actions as of the end of the previous calendar year. In addition, the Annual Progress Reports will describe the status of physical or biological metrics monitoring. The results of the progress reports will inform adjustments in future year actions through adaptive management.

Comprehensive evaluations will be conducted in 2013 and 2016. The comprehensive evaluations will describe the status of the physical and biological factors identified in the RPA, and compare these with the expectations in the survival improvements identified in the Comprehensive Analysis or Supplemental Comprehensive Analysis. Physical and biological factors will include new information on climate change and its effects on listed salmon and steelhead. The Comprehensive Evaluation will include a discussion of the Action Agencies' plan to address any shortcomings of current estimated survival improvements as compared to the original survival estimates identified in the Comprehensive Analysis or the Supplemental Comprehensive Analysis.

The Action Agencies will continue collaboration with the sovereigns initiated with the convening of the PWG in order to discuss issues related to operation of the 2008 FCRPS BiOp and the Accords. This group is initially being called the Regional Implementation Oversight Group (RIOG) and has begun meeting to establish its procedures and discuss how it will interact with the Regional Forum.

The Corps will also continue to utilize established regional coordination teams, or their successors, subject to future adaptive process modifications, which include the Technical Management Team (TMT), System Configuration Team (SCT), Fish Facility Design and Review Workgroup (FDRWG), the Fish Passage O&M Coordination Team (FPOM), and Studies Review Workgroup (SRWG). The Corps is committed to soliciting regional input through these or other forums for the planning, design, construction, and operation of fish facilities as well as the research, monitoring and evaluation of such facilities.

Hydropower

The Corps will implement the RPA hydropower actions that includes water management operations; juvenile and adult dam passage modifications; operation improvements for spill and transport of juvenile fish; and operational and maintenance activities aimed towards improving juvenile passage survival and adult returns. Other actions associated with multipurpose operations of the FCPRS (that are also part of the RPA) are as described in Section B.1 of the FCRPS BA and its associated attachments. Attachment A provides detailed information about authorized project purposes.

Water Management

Water management actions for listed species recognize that available storage—water that actually can be managed—is limited relative to total annual runoff in the Columbia River Basin. The Corps will operate its storage projects (Libby, Chief Joseph, Albeni Falls, and

Dworshak projects) for flow management and the FCRPS run-of-river mainstem lower Columbia River and Snake River projects (Bonneville, The Dalles, John Day, McNary, Ice Harbor, Lower Monumental, Little Goose and Lower Granite projects) to minimize water travel time through the lower Columbia and Snake rivers to aid in juvenile fish passage. Unless the Corps determines that alternative operations should be implemented, the Corps will operate these twelve Corps projects subject of the 2008 FCRPS BiOp in accordance with the multiple authorized uses and the RPA. A more detailed description of the operation to improve juvenile passage survival and adult returns is found in **RPA Actions 4 and 5**.

RPA Action 17 addresses chum spawning flows added after the submittal of the FCRPS BA. This annual FCRPS operation has been considered in NMFS' analysis of hydropower operations, and the Corps agrees to implement this as part of the RPA.

Coordinated system operations for multi-purpose projects are complex, vary year to year under different water conditions, and require detail specification to address multiple considerations. The Corps will use the Annual Water Management Plan (WMP) prepared by the Corps and the other Action Agencies (**RPA Action 6**), in coordination with the region, as the guiding document to describe the specific water management operations to achieve the best possible mainstem passage conditions, recognizing the authorized project purposes and the limited water and storage resources available in the basin. Flow objectives are used to help develop annual plans, but achieving these flow objectives is not possible in all water years because annual runoff varies and there is limited water reservoir storage available in the FCRPS.

The Corps' in-season decisions during the migration and fish passage season are made after considering recommendations of the TMT and other input. The TMT meets throughout the year to monitor, evaluate, and make recommendations on shaping of available water based on real time flow and biological information during the fish passage season, and to make recommendations on other system operations affecting fish such as spill, fish transportation and run-of-river operations.

The Corps considers many factors in making operational decisions for flood damage reduction, navigation, fish and wildlife, power generation, and recreation, in concert with recommended operations in the 2008 FCRPS BiOp, the 2006 USFWS Libby Dam BiOp and the 2000 USFWS FCRPS BiOp, as well as actions that affect water quality.

In coordination with NMFS and USFWS, the Corps may adopt an alternative operation to address flood damage reduction, emergency situations, navigation safety concerns, research needs, or to meet other requirements or operations for other project uses, such as power system stability. Considering the complexities involved in operating these multiple use projects, such alternative operations may include spill that results in exceeding the TDG standard of 110%. In such circumstances, the Corps will make good faith efforts to minimize duration and extent of generation of TDG in coordination with the other FCRPS Action Agencies.

This may include spill that exceeds the state water quality TDG levels of 110%. The RPA specifically addresses operational emergencies (**RPA Action 8**) and fish emergencies (**RPA Action 9**). Unforeseen project emergencies, drought, power reliability, navigation, dam safety, floods or other natural disasters, or other emergencies can occur and may require modifications or temporary curtailment in operations, including spill, flow objectives, reservoir fill or draft goals, and other actions, at Corps projects. The Corps will utilize TMT emergency protocols in the annual WMP, Fish Passage Plan (FPP) and other appropriate emergency procedures to guide actions to address emergency situations. All reasonable steps to limit the duration of any emergency impacting fish will be taken.

Similarly, the Corps manages operations for fish passage and protection at FCRPS facilities. These fish operations may be modified for brief periods of time due to unexpected equipment failures or other conditions. Where there are significant biological effects of more than short duration resulting from emergencies impacting fish, the Corps and the other Action Agencies will develop, in coordination with the Regional Forum, and implement appropriate adaptive management actions to address the situation. The Corps will take all reasonable steps to limit the duration of any fish emergency.

Two other regional forums are used to assist in making recommendations regarding Dworshak Dam and Libby Dam operations. Pursuant to the "*Agreement Between the United States of America and the Nez Perce Tribe for Water Use in the Dworshak Reservoir*," (Nez Perce Water Agreement) there is a process for the Nez Perce Tribe to make recommendations regarding the operations of Dworshak Dam from elevation 1535 to elevation 1520 in the fall (September of each year) for the purpose of temperature and flow augmentation releases. At Libby Dam, there are technical and policy groups which make recommendations on Libby Dam operations to implement the 2006 USFWS Libby BiOp for Kootenai River white sturgeon.

The hydropower actions also include forecasting and climate change, coordination with Canada on Treaty and non-Treaty storage, dry water year operations, and operations and actions to address water quality. The following describes the Corps commitments under these RPA actions.

- A provision to address forecasting and climate change (**RPA Action 7**) was added in response to comments on the draft BiOp and the Accords. The Corps commits to hold annual forecast performance reviews to look at in-place tools for seasonal volume forecasts, and to report on the effectiveness of experimental, developing, or emerging technologies and procedures. As part of this process, the Corps will convene a forecast and data committee to include technical representatives from the Tribes. Developing and utilizing appropriate forecasting models will also assist in investigating the impacts of possible climate change scenarios to the Pacific Northwest on listed salmon and steelhead.
- The Corps along with BPA will pursue negotiations with Canada of annual agreements to provide 1 MAF of storage in Columbia River Treaty space by April 15 consistent with the conditions identified in **RPA Action 10**. The Corps and

BPA will coordinate with Federal agencies, states and Tribes on Treaty operating plans.

- The Corps will assist BPA and Reclamation to evaluate and implement strategies for dry water years (**RPA Action 14**). The Confederated Tribes of the Colville Reservation have a particular concern about how dry year (low water year) operations of the FCRPS will be conducted. In the Accords between the Colville Tribe and the Action Agencies, the parties provided additional details as to how summer drafting and other dry year operations studies will be carried out, and provided expressly for the inclusion of the Colville Tribes in those analyses.
- The Corps will continue to update the *Water Quality Plan for Total Dissolved Gas and Water Temperature in the Mainstem Columbia and Snake Rivers* to document actions being taken to reduce (Total Dissolved Gas) TDG levels and affect mainstem water temperatures. The Corps utilizes this WQP in coordinating with the States of Washington and Oregon on spill for juvenile fish passage that exceeds state standards for TDG. Since the WQP addresses measures that meet both the ESA and the Clean Water Action responsibilities, **RPA Action 15** specifically outlines those measures intended to meet the ESA requirements.

Juvenile and Adult Dam Passage Modifications

The Corps will continue to evaluate, design and implement operational and configuration modifications at Corps' dams to improve fish passage survival and to meet performance standards, in coordination with the region. Performance standards for juvenile survival are 96% average relative dam survival for spring migrating fish and 93% average relative dam survival for summer migrating fish, with averaging/tradeoffs allowed between dams. Any survival averaging or tradeoffs between dams may occur among the Snake River dams or among the lower Columbia River dams, but not between Snake and Columbia River dams.

The Corps will continue to prepare and use the Configuration and Operational Plans (COPs) (**RPA Actions 18-25**) for each lower Snake and Columbia project to identify and document how these performance standards will be achieved. The COPs will also address turbine operations (**RPA Action 27**) and adult passage improvements (**RPA Action 28**).

The Corps will work with the other Action Agencies and NMFS to measure juvenile in-river and system survival performance and compare with COMPASS model estimates. The relative survival performance measures will be used as the biological performance target as the basis for performance tracking.

The Action Agencies will monitor adult performance and confirm that the relatively high levels of adult survival currently observed are maintained or increased.

The Corps will also work with BPA and the region to initiate a Kelt Management Plan as recommended in **RPA Action 33**, and identify dam specific actions in the respective COPs. The Snake River Steelhead Kelt Management Plan was added to improve the productivity of interior basin B-run steelhead populations.

The Corps is on schedule to complete the flow deflectors at Chief Joseph Dam (**RPA Action 26**).

Structural modifications and improvements, will be accomplished primarily through annual congressional appropriations through the Corps' Columbia River Fish Mitigation project (CRFM). The Corps will work through the SCT and other regional forums such as the FDRWG for implementation of studies and system improvements subject to congressional appropriations. The Corps' RM&E program will continue to improve our understanding of the impacts of the hydro system to inform future actions and will help to verify performance goals are being met.

Spill and Transport of Juvenile Fish

In the BA, the Action Agencies proposed certain spill and transport operations to benefit listed species based on the analysis presented in the CA. During the consultation process, NMFS conducted further analysis and refined the assumptions concerning the effects of the proposed spill and transport operations. Specifically, for the Group B steelhead population of the listed Snake River steelhead DPS, the following key assumptions and analysis were updated: (1) *U.S. v. Oregon* harvest rates; (2) COMPASS model recalibration using the 2007 PIT tag data; and, (3) the HYDSIM model to incorporate a 70 year water record (previously a 50 year record).

Several transport and spill alternatives were developed and evaluated in the COMPASS model to improve Snake River steelhead survival while maintaining the life cycle survival for Snake River spring/summer Chinook. Based on the analysis, the final FCRPS BiOp set an initial transport and spill schedule.

The Corps will spill for juvenile fish passage at Lower Granite, Little Goose, Lower Monumental, Ice Harbor, McNary, John Day, The Dalles and Bonneville projects consistent with the initial spill levels identified in **RPA Action 29**. This spill program involves voluntary spill to improve juvenile fish passage to achieve juvenile performance standards while avoiding high TDG supersaturation levels or adult fallback problems. Annual spill volumes may be adjusted or interrupted due to emergencies, adult passage, navigation, research activities, flood damage reduction, other requirements and unanticipated events. The Corps will continue to coordinate with the States of Oregon and Washington on voluntary spill for fish passage. Future spill operations may be modified through the implementation planning process and adaptive management. The Corps will continue to evaluate and optimize spill to meet the hydro-system dam passage performance standards.

The Corps notes that the States of Washington and Oregon through their respective water quality agencies are reviewing the current Oregon water quality waiver and the Washington special standards up to 120% at the tailrace and 115% at the next downstream forebay. The Corps' decision on the amount of spill will be based on results of spill studies, biological evaluations and the relationship to achieving performance

standards. The Corps will document the amount of spill in the ongoing update to the COPs. This amount of spill may be less than the TDG levels coordinated with the Washington or Oregon.

The Corps will continue to collect and transport juvenile salmonids at the three lower Snake River hydropower projects with collector facilities (Lower Granite, Little Goose, and Lower Monumental), and at McNary Dam in accordance with **RPA Action 30** and consistent with the ESA Section 10 Permit - 1237). The initial start date for transport under different flow conditions is identified in Tables 3 and 4 under RPA Action 30 in the 2008 BiOp. These dates are used as firm planning dates, but may be revised based on new information from RM&E, or in-season information in coordination with the region.

The Corps in coordination with NMFS and consistent with the Three Tribe Accords will review transportation protocols taking into account new information concerning adult returns, in-river and transportation SARS, and model results. If new information indicates a modified transportation protocol is warranted, adaptive management will be used to make appropriate adjustments in timing and triggers for transportation

Beginning August 1, curtailment of summer spill at each of the four lower Snake River projects may occur if subyearling Chinook collection counts fall below 300 fish per day for 3 consecutive days on a per project basis. Using the 300 fish criterion, the curtailed spill would start at Lower Granite Dam and then progress downstream with each successive dam on the Snake River. Spill would be curtailed at Ice Harbor no earlier than 2 days after Lower Monumental, without use of the 300 fish criterion. If after cessation of spill at any one of the Snake River projects on or after August 1, subyearling Chinook collection counts again exceed 500 fish per day for two consecutive days, spill will resume at that project only. Thereafter, fish collection count numbers will be reevaluated daily to determine if spill should continue using the criteria above until August 31.

The Corps will use the annual FPP as the operative document to identify the spill levels and juvenile transportation plan in any given year.

The Corps will prepare a Configuration and Operations Plan Transportation Strategy (**RPA Action 31**) in coordination with the region to identify opportunities for improvement. Improvements to increase adult salmon returns through the juvenile fish transportation program are being evaluated. These improvements include additional barges, a new juvenile fish facility at Lower Granite and improvements to the juvenile fish facilities at Little Goose, Lower Monumental and McNary dams

Operation and Maintenance Activities

The Corps will continue to prepare an annual Fish Passage Plan (**RPA Action 32**), and operate and maintain facilities at the mainstem projects to continue to provide for safe passage conditions.

Habitat

Tributary and estuarine habitat in the Columbia River Basin is a major component of the lifecycle of salmonids. Therefore, the objective of the Action Agencies' overall habitat strategy is to protect and improve habitat based on biological needs and prioritized actions that address limiting factors identified for each salmon ESU or steelhead DPS. For the Corps, the primary focus is on estuary actions (**RPA Actions 36, 37 & 38**) targeted to populations with the greatest biological need and where habitat potential exists.

The Corps will continue to work with BPA and local interests on our program to protect, restore and enhance habitat for salmon and steelhead in the Columbia River estuary. The projects identified for implementation in the RPA will be completed over the next few years, with the last scheduled for completion by 2010. These projects include Julia Butler Hansen, Ramsey Lake, Dairy Creek, Sandy River and Vancouver Water Resource Center. The Corps will also continue to work with BPA and Lower Columbia River Estuary Program (LCREP) to identify pile dikes and pilings that have a low value to navigation channel maintenance and can be removed.

Vancouver Lake and Chinook River restoration identified in the BA are currently being reevaluated for implementation. Additional restoration work is being pursued in the lower Sandy River that could help replace the benefits these projects would have provided.

The Corps, in cooperation with BPA, will work with the region, including the LCREP Science workgroup, to identify additional projects to benefit listed salmon and steelhead in the estuary for the period from 2010 to 2018 as described in the RPA. This same process will be used to identify replacement projects if any of the proposed projects in the BA are not able to be constructed for any reason, such as lack of willing property owners or sponsors.

The Corps and BPA will also work with a regional technical group to determine the survival benefits expected from any new projects, including any replacement projects if needed, that are proposed over the duration of the 2008 BiOp using the methodology developed through the collaboration process, or as modified based on new information.

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. For the Corps' Mitigation Hatchery Programs (John Day, Dworshak), the Corps will adopt programmatic criteria for funding hatcheries that incorporate best management practices (RPA 39) and fund reforms that meet mitigation requirements while eliminating or reducing their impact on listed populations (**RPA Action 40**).

The Corps and the *U.S. v. Oregon* parties are in discussions concerning mitigation for the fish losses caused by construction of The Dalles and John Day dams, however, at this time, no specific plan has been proposed. The Corps has committed to working with the Tribes through the *U.S. v. Oregon* policy committee, as well as with the Colville Tribe and other interested parties to reach a mutually acceptable solution.

Harvest

The overall harvest objective for all ESUs is to improve adult life-stage survival. Harvest of ESA-listed fish species in the Columbia River Basin is primarily managed through States, Tribes and Federal agencies other than the Action Agencies. Although the Action Agencies are not proposing any specific Harvest Actions in the RPA at this time, the Corps will support the identification and implementation of approaches or conservation measures to reduce the effects of harvest on ESA-listed fish.

Predation Management

The Action Agencies are committed to providing actions that will reduce mortality from predators of ESA-listed juvenile and adult anadromous fish. The Corps has developed and will continue to implement predation management strategies and actions involving avian (bird) species (**RPA Actions 45, 46, 47 and 48**), and marine mammals (**RPA Action 49**).

The Corps will continue with Caspian tern management actions to effect redistribution of terns from the Columbia River estuary consistent with the selected alternative in the Caspian Tern Record of Decision signed November 22, 2006. Habitat improvements to attract terns have already been completed at Fern Ridge Lake and Crump Lake in Oregon and terns are using the Crump Lake site (including terns banded in the Columbia River estuary). The Corps is continuing to work on the other alternate nesting sites and will begin reducing the available nesting habitat on East Sand Island in 2008 consistent with the Caspian Tern ROD.

The Corps, in concert with other appropriate Federal agencies, will continue research efforts to understand the impacts of predation on juvenile salmon and steelhead by double crested cormorants in the Columbia River estuary and work with the region on development and future implementation of management actions to reduce the impacts of this cormorant population. The objective will be to facilitate a future reduction and redistribution of the Columbia River estuary population of double-crested cormorants, thereby reducing their predation on juvenile salmonids.

Research will continue to evaluate the impacts of the Caspian tern colony at Crescent Island in Lake Wallula behind McNary Dam and other inland avian predators. The Corps will work with the region to develop and implement a management plan for inland avian predators to reduce their predation on juvenile salmonids, if warranted. Management opportunities will be considered in coordination with the region based on the results of these research efforts.

The Corps will continue to monitor marine mammal predator abundance, distribution and feeding activity and estimate predation rates immediately below Bonneville Dam and will also monitor the effectiveness of deterrent actions including sea lion exclusion gates in the fish ladders and various harassment techniques. The Corps, in cooperation with BPA, will also support management efforts by the States and other Federal agencies on Corps project lands to the extent possible under its authorities.

Research, Monitoring and Evaluation (RM&E)

The Corps will work with the other Action Agencies and within the NMFS Regional Forum to conduct a comprehensive monitoring program to determine the effectiveness of actions taken to ensure performance standards are being met. Research, monitoring and evaluation will continue to improve our understanding of fish survival and effectiveness of hydropower operations, structural modifications, predator control activities, and habitat improvements. This information may be used to modify actions or identify new actions when necessary to meet performance standards.

Incidental Take Statement

The ESA provides that the NMFS will provide an Action Agency with a “written statement” that specifies the impact, i.e. the amount or extent of incidental taking on the species, specifies those reasonable and prudent measures necessary or appropriate to minimize those impacts, and sets forth terms and conditions that must be complied with to implement those measures.

NMFS outlined the incidental take allocation for the adult and juvenile salmon and steelhead due to hydropower; habitat, hatchery, harvest, predator control measures, and research, monitoring, and evaluation actions. The reasonable and prudent measures require minimizing take by (1) monitoring the take associated with different research, monitoring, and evaluation actions and the status of the ESA-listed species; and, (2) implementing additional measures outlined in the terms and conditions.

The Corps has considered the terms and conditions of the Incidental Take Statement (ITS) and intends to implement the terms and conditions, i.e. monitoring, improving juvenile and adult passage, and minimizing take resulting from research, monitoring, and evaluation, and will coordinate these measures through the Regional Forum and RIOG as appropriate. If implementation of the terms and conditions is delayed, the Corps and the other Action Agencies will determine if further consultation is required.

NMFS identifies and addresses the amount of incidental take anticipated as a result of FCRPS operations and hydropower actions and for the RM&E actions. NMFS recognizes in the ITS that short-term adverse effects and incidental take is reasonably certain to occur as a result of habitat restoration projects. For those estuary habitat projects being implemented by the Corps, future ESA consultation will likely be required. NMFS committed to working with the Action Agencies to develop programmatic biological opinions to address these projects and their associated take, and the Corps will work with

NMFS to accomplish this. (Corps projects do not fall within the provisions of a programmatic consultation for habitat projects undertaken by BPA (HIP II)).

NOAA concluded that no take is expected to occur as a result from the avian predator control measures. They also concluded that some unspecified, but likely very small, take of listed ESUs will occur as result of measures to deter marine mammal predation.

When applicable an ITS for other listed species or at other locations will be included in separate ESA consultations for those components. For instance, proposed Caspian tern redistribution locations that are outside of the Columbia River basin will require ESA consultations and likely incidental take coverage.

Conservation Recommendations

In the 2008 FCRPS BiOp, NMFS identifies several conservation measures covering a variety of issues including:

- Investigation and implementation of water conservation measures
- Zebra mussel rapid response plan
- Investigation of reducing dry year draft
- Mainstem project reporting
- Bonneville Dam adult trap modifications
- Investigation of adjusting powerhouse flows
- Investigation of the use of nutrient supplementation

The Corps will consider these conservation measures as we implement the FCRPS RPA. Implementation of the conservation measures will take into account regional prioritization and be subject to adequate appropriations and authorities.

CONSIDERATIONS UNDERTAKEN IN RENDERING DECISION

Operating and maintaining the Corps' FCRPS projects is a complex undertaking and the Corps is responsible for ensuring consistency with a number of statutes, regulations, and treaties, as well as consideration of a multitude of other factors in its decision-making. The decision to implement the actions in the 2008 BiOp RPA includes an examination of these other responsibilities. The Corps has evaluated the hydropower operations and other actions described in the RPA, as well as the commitments made in the Accords; and, has considered the effects of those actions with regard to any standards or requirements set forth in applicable laws and regulations in making the decisions addressed in this 2008 ROCASOD. There may be occasions in which these other responsibilities may affect the schedule and/or the scope of actions being implemented pursuant to the 2008 FCRPS BiOp. The Corps anticipates such modifications will be accommodated through adaptive management, or alternatively, if modifications are beyond the scope of analysis reflected in the 2008 FCRPS BiOp, the Corps will reinitiate

consultation. The following discussion addresses factors considered in this decision in more detail.

Authorities

In reviewing the 2008 FCRPS BiOp RPA, the Corps has determined it has existing authority for actions it is responsible for executing. There may be future actions that arise through adaptive management pursuant to the 2008 FCRPS BiOp that are consistent with the intended purpose of the action, but may not be authorized. In such cases, the Corps will seek congressional authority, which may include preparation of authorizing documents, requests for appropriations, notification to congressional committees, preparation of NEPA documents or other actions.

Funding

For the most part, the Corps' programs are funded through congressional appropriations. The Corps prepares a budget request annually - approximately 2 years in advance of receiving an appropriation from Congress. The preparation of the annual budget request includes coordination with the region on implementation priorities, followed by a review the priority actions by the Corps consistent with annual budgetary guidance. Once appropriated funds are identified, the Corps coordinates with NMFS, the other FCRPS Action Agencies, state agencies and Tribes to prioritize the work for that fiscal year. Congress has consistently appropriated funds annually to the Columbia River Fish Mitigation Project (CRFM) for fish passage improvements at Corps projects since initiated in Fiscal Year 1991. Through 2008, over \$1.2 billion has been appropriated to CRFM, and during the last 5 years, annual appropriations have averaged over \$75 million. CRFM remains a national priority for the Corps and has been consistently supported by Congress.

Additionally, the Corps receives direct funding from BPA for power facilities and power allocated share of "joint" costs for operation and maintenance; for example operation of fish passage facilities. The Corps will continue to work with BPA for budgeting the necessary power share of funding for operation and maintenance of fish facilities.

Compliance with Other Laws and Regulations

In making the decision to implement the 2008 RPA and the ITS terms and conditions, the Corps reviewed its compliance with all applicable laws. These include, but are not limited to:

- Marine Mammal Protection Act of 1972
- Archaeological Resources Protection Act
- Native American Graves Protection and Repatriation Act
- Clean Air Act
- Fish and Wildlife Coordination Act
- Migratory Bird Treaty Act

Coastal Zone Management Act
Safe Water Drinking Water Act
Flood Control Act of 1944
Wild and Scenic Rivers Act
Marine Protection, Research, and Sanctuaries Act
Rivers and Harbors Acts
Executive Orders and CEQ Guidelines and Memorandum
Other Federal, State and Local Plans and Laws

The following addresses Corps responsibilities and obligations pursuant to specific statutes, regulation, and treaties.

Endangered Species Act

There may be individual actions in the RPA that require additional consultation. For instance, the effects of habitat actions in the estuary will be assessed, and if there are adverse short term effects to the species addressed in the 2008 BiOp, the Corps will consult with NMFS to supplement the 2008 BiOp to address additional incidental take. Future implementation activities may arise that may effect listed salmon or steelhead species or other listed species, or implementation will occur at an alternate location. In such cases, the Corps will make an assessment of effects and consult as appropriate.

Section 4(f) of the ESA directs NMFS to develop and implement recovery plans for the ESUs addressed in this Opinion. The Corps agrees with NMFS that recovery plans will have a greater likelihood of success if developed in partnership with other stakeholders, including those that have the responsibility and authority to implement recovery actions. Many of the habitat actions in the RPA were developed with input from regional parties involved in recovery planning through the collaborative process. Current efforts that will provide a strong foundation for ESA recovery plans in the Columbia River Basin include: the Accords signed between the Action Agencies and several tribes and states; the Northwest Power and Conservation Council's subbasin plans; and, the State of Washington's regional recovery plans. The Corps intends to work with NMFS and the other Action Agencies to assist in furthering these efforts as they develop assessments, strategies, and actions.

The Corps will continue to implement actions in the USFWS 2000 FCRPS Biological Opinion and the USFWS 2006 Libby Dam Biological Opinion for listed bull trout and Kootenai River white sturgeon. The Corps does not anticipate there will be conflicts in the operations called for in USFWS BiOps and the 2008 FCRPS BiOp, and will continue working with both agencies to ensure coordinated operations in the future.

Tribal Treaty and Trust Responsibility

The United States government recognizes the sovereign status of Native American Tribes. Treaties between the U.S. and some Columbia Basin Tribes document agreements reached between the Federal government and the Tribes. In exchange for

ceding most of their ancestral land, the government established reservation lands and guaranteed that the government would respect the treaty rights - including fishing and hunting rights. The treaties provide, in part, the exclusive right of taking fish in the streams running through and bordering the reservations and at all other usual and accustomed stations in common with citizens of the U.S. The Federal government has a trust responsibility to protect the tribal rights under these treaties.

The government's trust responsibility is an obligation under which Federal officials consult with Tribes on management and use of resources, such as preserving and maintaining the trust asset. In carrying out its fiduciary duty, it is the Corps' responsibility to ensure that Indian treaty rights are given full effect.

Presidential executive orders were used to reserve lands for other Columbia River Basin Tribes, and the Federal government has extended rights to hunt and fish to the executive order Tribes as well.

The Corps will comply with the Executive Order on Consultation and Coordination with Indian Tribal Governments. In formulating and implementing activities that have Tribal implications, the Corps will consult with the affected Tribes.

The Corps, along with the other Action Agencies, entered into the Accords with three lower river Treaty Tribes and the Columbia River Intertribal Fish Commission, and the Colville Tribe during the consultation period. These Accords are consistent with the Corps' trust responsibilities and with the BiOp.

Columbia River Treaty

The Corps, a member of the U.S. Entity along with BPA, and others coordinate the planning and operation of the FCRPS with Canada through a variety of arrangements. Examples include development of assured operating plans and detailed operating plans under the Columbia River Treaty, and arrangements with Canada for mutually beneficial non-power uses agreements. To the extent possible, the Corps utilizes these mechanisms to coordinate operations identified in the BiOps. However, in agreeing to implement the BiOps, the Corps is not relying on specific operations of projects in Canada.

Pursuant to the Treaty, an agreement was developed to address operational changes at Libby Dam for listed species. The Libby Coordination Agreement (LCA), signed by the United States Entity and the Canadian Entity in 1999 to resolve an existing difference between the Entities regarding Libby coordination and operations for non-power requirements. The LCA sets forth the implementing procedures for the Entities continuing cooperation on coordination of the operation of Libby Dam for listed species with the operation of hydroelectric plants on the Kootenay River in Canada. The U.S. Entity will continue to provide annual updates to the Canadian Entity on the expected operation of Libby Dam including power, flood damage reduction, and other non-power requirements.

Federal Water Pollution Control Act (Clean Water Act or CWA)

In developing the BA and Comprehensive Analysis, the Corps considered respective ecological objectives of the ESA and the CWA. In so doing, the Corps harmonized operations to comply, with both the ESA and the applicable state and tribal water quality standards, to the extent practicable.

The Proposed RPA in the BA included implementation of actions for the conservation of ESA listed species that will also move toward attainment of water quality standards by reducing TDG and moderating river temperature. However, the Proposed RPA also included actions to provide voluntary spill for fish passage at the four lower Snake River projects, located in Washington, and the four lower Columbia River projects, located in Oregon and Washington. Given that spill contributes to increased TDG levels, the level of voluntary spill for fish passage is limited such that TDG does not exceed 120% as measured in the project tailrace and 115% as measured in the project forebay. These actions were incorporated into the 2008 FCRPS BiOp RPA.

Both Oregon and Washington's water quality standard for TDG is 110% in all waterbodies. Consequently, providing voluntary spill in support of fish passage as called for in the 2008 BiOp RPA is in conflict with the TDG standards for both Oregon and Washington. The Corps coordinates with these states on a multi-year basis to obtain a standard modification or criteria adjustment to accomplish both the 2008 FCRPS BiOp RPA objectives for survival and recovery of listed species by providing voluntary spill for fish passage, and the CWA water quality goals for the waterbodies of Oregon and Washington.

In June 2007, the Oregon Environmental Quality Commission issued a multi-year modification to the TDG standard for fish passage spill through August 2009. Also, in February 2008, the Washington Department of Ecology reviewed the Corps' gas abatement plan which provides for TDG levels above 110% for fish passage spill - this is in effect through February 2010.

It is the intent of the Corps to reconcile the ESA objectives and the CWA objectives to the greatest degree possible, even though in some instances those objectives are at odds, in coordination with appropriate Federal, state, and tribal agencies. The Corps will continue collaboration on the Water Quality Plan (RPA Action 15) and will continue to implement structural modifications and operational adjustments to further the objectives of both the ESA and the CWA. For instance, the Corps has installed surface bypass facilities, such as Removable Spillway Weirs (RSWs) and Temporary Spillway Weirs (TSWs), which were developed with the intent of improving fish passage while also reducing TDG levels. Over the course of the last several years, surface passage facilities have been installed at several Corps projects, with additional projects slated for Little Goose Dam in 2009, and the Bonneville first powerhouse (PH1) surface collector will be initiated in 2009.

The Corps will continue to coordinate with the states and Tribes to ensure that the ESA actions for fish passage spill carry forward and are consistent with the states' and tribes water quality standards for protection of the waterbody, to the extent that is practicable. The Corps will also explore all practicable steps, subject to congressional appropriations and directives, to lower and hopefully eliminate, any resulting exceedances of TDG, consistent with the Corps' ESA responsibilities and authorized project purposes, should state and Tribal variances not be issued.

To moderate water temperatures in the lower Snake River, the 2008 BiOp RPA identifies releases from the Corps' Dworshak project to augment downstream flows, including spill up to the State of Idaho's TDG standard of 110%. This operation is closely coordinated with the Nez Perce Tribe, pursuant to the Nez Perce Water Agreement between the Nez Perce Tribe and the Corps. The Corps also operates projects in the lower Snake River at minimum operating pool, which reduces the water surface area that is exposed to solar heat.

The RPA also includes installation of flow deflectors at Chief Joseph Dam located in Washington. The purpose of this action is to shift TDG generating System involuntary spill from other projects, in particular Grand Coulee, to Chief Joseph because this project could effectively be retro-fitted with flow deflectors. Once completed in 2009, the Corps will continue coordination with the State of Washington, the Colville Tribe and other regional sovereign entities on the recommended involuntary spill operations.

The RPA states that voluntary spill at Libby Dam, a storage project in Montana, will be limited when feasible, to avoid exceeding the State of Montana's TDG standard of 110%. Consistent with the USFWS 2006 BiOp, discussions with Montana are ongoing to identify a process to test whether spill above powerhouse capacity, which will likely exceed the state TDG standard, will benefit ESA listed Kootenai River white sturgeon. The 2008 BiOp RPA does not call for an operation that would result in exceeding the Montana TDG standard.

The Corps completed a comprehensive Water Quality Plan for Total Dissolved Gas and Water Temperature in the Mainstem Columbia and Snake Rivers in December 2003 (WQP). The WQP was updated in November 2006 as part of the TDG variance processes for the states of Washington and Oregon. The Corps intends to periodically update the WQP, next planned for December 2008, working through an adaptive management process and regional coordination.

The Corps believes that a critical component for achieving water quality standards is the establishment of clear, implementable TMDLs for all users of the Columbia River and Snake River system who contribute to the non-attainment of those limits. The Corps is working with the U.S. Environmental Protection Agency (EPA) and the states on their Total Maximum Daily Load (TMDL) processes. The Corps will also work with Tribal governments for this purpose.

The states have established TMDLs for TDG for the lower Columbia River, the lower Snake River and the mid-Columbia River reaches. The Corps provided information on TDG and actions being taken to reduce reliance on voluntary fish passage spill up to 120%/115% at its dam and reservoir projects in order to assist the states, Tribes, and EPA in their TMDL process.

The Corps will continue to assist the states and EPA in the development of the Columbia and Snake River TMDL for water temperature. As the states and EPA develop additional information, including TMDLs for the Columbia River Basin, the Corps will determine actions it may take consistent with those water quality parameters, authorized project purposes, and congressional appropriations and directives.

Ultimately, in the proper exercise of its discretion, if there is a truly irresolvable conflict between an action the Corps believes that it must take to comply with the ESA on the one hand, and a state or tribal water quality standard on the other, and the Corps does not receive a variance from the appropriate state or tribal water quality agency, the Corps believes that the requirements imposed by the ESA override the water quality goals of the CWA. Should such a conflict exist, the Corps may decide to operate its reservoir projects in a manner inconsistent with state and tribal water quality standards and administrative process. We believe this is consistent with congressional intent as interpreted by the Supreme Court in the TVA v. Hill (437 U.S. 153; 98 S. Ct. 2279; 57 L. Ed. 2d 117; 1978). There, the Supreme Court indicated that Congress intended that preservation of endangered species be given the highest priority. In effect, Federal agencies must do all they can within their authorities, to conserve endangered species when undertaking authorized programs and activities.

As evidenced by this discussion, the Corps continues its good faith efforts to meet its legal responsibilities under the CWA. Recently, the Corps received a Notice of Intent to Sue asserting that the Corps and other Federal agencies allegedly are required to obtain state water quality certifications from the states of Montana, Idaho, Washington, and Oregon pursuant to §401 of the CWA prior to receiving an ITS from NMFS. The Corps does not believe that the ITS is a Federal license or permit as contemplated by the §401 of the CWA.

A review of the CWA legislative history demonstrates that in 1970 Congress contemplated application of §401 only for certain Federal licenses and permits. Two were identified - Federal Energy Regulatory Commission (FERC) licenses, and Rivers and Harbors Act of 1899 §10 permits, neither of which are applicable to this decision. In the 1972 Amendments to the CWA, Congress included additional permit requirements in §§402 and 404, neither of which pertain to releases of water from Corps' dams. Since 1972, the Corps is not aware that Congress, by statute, has created any other type of Federal license or permit that would apply to releases of water from Corps dams and thereby trigger a requirement for a state §401 water quality certification. However, it is clear that Congress has not identified an ESA ITS as a Federal license or permit as contemplated under §401 of the CWA. In addition, the 1972 Amendments express the intent of Congress that the CWA not hamper the Corps' activities for maintaining navigation: "shall not be construed as ...affecting or impairing the authority of the Secretary of the Army...to maintain navigation..." CWA §511 (a)(2).

Pacific Northwest Electric Power Planning and Conservation Act

Under the Pacific Northwest Electric Power Planning and Conservation Act (Northwest Power Act), the Corps is to exercise its responsibilities for operating the FCRPS in a manner that provides equitable treatment for fish and wildlife with other purposes for which the Corps facilities are operated and managed, and to take into consideration in its decision making the Northwest Power and Conservation Council's (Council) Fish and Wildlife Program to the fullest extent practicable.

The Corps considered the Council's Amendments to the Fish and Wildlife Program in the preparation of the Corps' operations and mitigation actions included in the FCRPS BA Proposed RPA. The 2008 FCRPS BiOp RPA includes these operations and the Corps plans to move forward with implementation as provided for in this ROCASOD.

These operations include actions that not only provide benefits to listed anadromous species, but also assist in meeting the needs of other fish species including: ESA listed resident fish species, such as bull trout and Kootenai River white sturgeon; and, non-listed resident and anadromous species.

Further, as addressed in the discussion above, the Corps' commitments in the Accords include implementation of lamprey actions, another species addressed in the Council's Fish and Wildlife Program and Amendments. Specific actions taken to benefit lamprey in the future will undergo ESA consultation if it is determined that these actions may affect listed species.

The Corps believes the actions adopted by this ROCASOD provide for the equitable treatment of fish and wildlife with the other purposes for which the Corps facilities are operated and managed.

National Environmental Policy Act

The Corps has evaluated the effects of the actions to be implemented pursuant to the 2008 FCRPS BiOp relying on existing NEPA documents. Various NEPA documents have been prepared for individual projects, including three environmental impact statements prepared in 1990's which analyzed operation of Federal projects, primarily to benefit salmon species listed under the Endangered Species Act. The NEPA documents relevant to this decision include individual project EISs, the 1992 Columbia River Salmon Flow Improvement Measures Options Analysis Environmental Impact Statement (OA/EIS), and its 1993 Supplement, which analyzed alternatives to benefit salmon species listed under the Endangered Species Act; and, the System Operation Review (SOR EIS) concluded in 1997. Other NEPA documents that have been considered in making this decision include the Lower Snake River Juvenile Salmon Migration Feasibility Report/EIS (Lower Snake EIS) completed with the issuance of a ROD in September 2002, and the Upper Columbia Alternative Flood Control and Fish Operations EIS (VARQ EIS) completed with the issuance of a ROD in June 2008.

In addition to the Corps' NEPA documents addressed above, the Corps has reviewed and considered the *Bonneville Power Administration Administrator's Record of Decision 2008 Columbia Basin Fish Accords*, dated May 2, 2008.

The Corps has reviewed the biological requirements of the listed species and the operations described in this ROCASOD. The Corps believes that the effects are within the range of the analyses conducted in the NEPA documents noted above. These effects include improved survival of listed salmonids, bull trout and Kootenai River white sturgeon; reduction in hydropower generation; decrease in recreational opportunities; resident fish and wildlife impacts; effects on water quality including TDG levels and water temperatures; and, additional exposure of cultural resources at certain projects. For studies of certain future structural modifications and operations, or other actions, such as future estuary habitat actions, hatchery reform actions, and elements of the strategy to reduce avian predation, the Corps will rely on separate NEPA analysis.

National Historic Preservation Act

The Corps, BPA and Reclamation are developing a final draft of a "*Systemwide Programmatic Agreement for the Management of Historic Properties Affected by the Multi-Purpose Operations of Fourteen Projects of the Federal Columbia River Power System for Compliance with Section 106 of the National Historic Preservation Act.*" (Systemwide PA). This draft PA will satisfy the three lead agencies responsibilities under Section 106 NHPA for the effects caused by all authorized purposes of the Projects, as well as operation and maintenance activities required for current and future operations of the FCRPS.

Ten regional Tribes, four State Historic Preservation Offices, the Advisory Council on Historic Preservation, and other affected Federal land managing agencies have either been consulted with or have been provided the opportunity to consult during the development of this draft PA. The terms of the draft Systemwide PA have been considered in implementation of the action items stipulated in this ROCASOD.

Oil Pollution Act and Related Statutes

Each Corps project is responsible for preparing site-specific documents to ensure that projects are maintained to prevent oil or hazardous substance spills, monitoring mechanisms are in place to detect problems, a response plan is in place to rectify oil spills when they do occur, and training programs are conducted for project personnel. For instance, each project has Oil Spill Standard Operating Procedures (SOPs), which include maintenance and inspection schedules with record keeping and reporting requirements. Other procedures to address prevention and response to oil or hazardous substance spills developed at the projects are Spill Prevention Control and Countermeasures Plans (SPCC Plans) and Oil Spill Engineering Assessments. SPCC plans are required by 40 CFR 112 and are developed to ensure the projects provide for secondary containment or spill response plans for oil sources. Oil Spill Engineering Assessments used to seek major

scale solutions to prevent oil spills. These assessments result in plans to develop new oil water separator equipment.

The Corps' FCRPS projects each have a Spill Response Plan that provides an orderly procedure for safe and effective response to oil or hazardous substance spill emergencies. The Spill Response Plan provides a single consolidated document to meet multiple spill response planning requirements as identified under OSHA's HAZWOPER Standard, RCRA's Contingency Plan, SARA Title III's Emergency Planning and Right to Know Act, the Oil Pollution Act, the Clean Water Act, and the State area, Regional, and National Contingency Plans for spill response. Corps Operations Project Managers, Incident Commanders, and First Responders use the project Spill Response Plan as their primary guidance for responding to oil and hazardous substance spill emergencies. In addition to procedures for oil and hazardous substance spill response, the Plan provides detailed notification lists, safety information, spill response equipment locations, and detailed boom deployment strategies for use by responders.

Magnuson Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance essential fish habitat (EFH) for those species regulated under a Federal fisheries management plan.

NMFS concluded that the BA would adversely affect EFH for Columbia Basin Chinook and coho salmon, and effects to designated EFH for coastal pelagic and groundfish (English sole, starry flounder, the northern anchovy, and the Pacific sardine) may also be adverse. Pursuant to the § 305(b)(4)(A) of the MSA, NMFS is required to provide EFH conservation recommendations to Federal agencies, including itself, regarding actions that would adversely affect EFH. NMFS recommends the Action Agencies implement the final RPA actions to avoid, minimize, mitigate, or otherwise offset potential adverse effects of operating the FCRPS.

Pursuant to the MSA (§ 305(b) (4) (B)) and 50 C.F.R. § 600.920(j), in issuing this ROCASOD, the Corps is providing NMFS of their intent to implement the EFH conservation recommendations.

STATEMENT OF DECISION

I have taken into consideration the environmental consequences, the economic costs and the biological information and data supporting the operations of Corps projects, proposed estuary improvement projects and hatchery reforms, predation management actions, and associated research and monitoring, and other actions addressed in the 2008 FCRPS BiOp, the NMFS Supplemental CA, the FCRPS 2007 BA and CA, and additional supporting information provided to the NMFS during the course of the consultation.

The *Columbia River Fish Accords* with four Tribes and two States advance a regional collaborative partnership to effectively and successfully meet the needs of the fish in the

Columbia River Basin. The Corps' commitments in the Accords work in concert with the 2008 FCRPS BiOp and provide additional assurance that the actions will benefit listed fish. This decision document confirms my commitment to implement operations and actions identified in the Accords and that these operations and actions comply with the ESA and other applicable statutes, regulations, and treaties.

Corps project operations will be implemented consistent with the Corps' legal obligations under the CWA to the extent practicable. The States of Idaho, Oregon, Montana and Washington's water quality standards have been taken into consideration, and the Corps has determined that actions called for in the RPA that result in exceeding state water quality standards will be coordinated with the appropriate State. The Corps' strives to operate the FCRPS projects in a manner that harmonizes compliance with both the ESA and applicable provisions of the CWA and state water quality standards, while also fulfilling its responsibilities to provide for congressionally authorized project purposes.

I have determined that the Corps has adequate authority, NEPA documentation, and reasoned biological rationale to implement the FCRPS operations and actions contained in the 2008 FCRPS BiOp RPA including structural modifications, water management actions, spill and transport operations, and operation of fish facilities at Corps projects.

Adequate authority exists to implement juvenile and adult dam passage modifications and consistent congressional appropriations have been provided to support these efforts. The Corps will continue to appropriately budget for and construct improvements for fish passage as identified in the 2008 FCRPS BiOp RPA and as modified through the regional adaptive management processes.

The Corps has existing authority to restore and enhance habitat in the Columbia River estuary and will budget for improvements identified in the 2008 FCRPS BiOp RPA. The Corps will coordinate these estuary actions with other actions being implemented by BPA. NEPA documentation for site-specific estuary habitat actions will be completed when appropriate.

The Corps commits to work with Tribes, *U.S. v. Oregon* parties, and other agencies to reach mutually acceptable solutions to modifying FCRPS mitigation hatchery practices consistent with Corps requirements and the 2008 FCRPS BiOp RPA.

The Corps will implement the predation management actions within its authorities, and when applicable, complete NEPA documentation.

In making this decision, as an agency representing the U.S. Government, I have considered the Northwest Treaty Tribes' fishing rights, the United States' trust responsibility to Native American Indian Tribes, and the United States' responsibility to act in a manner consistent with this trust responsibility. The Corps believes this ROCASOD is consistent with these responsibilities. The actions the Corps will implement pursuant to this ROCASOD are designed to increase survival and recovery of

listed salmon and steelhead, and will provide benefits to tribal fisheries, including lamprey.

I have considered the NPCC's Fish and Wildlife Program and Mainstem Amendments in making this decision. The Corps believes the implementation of the 2008 FCRPS BiOp RPA and the Corps actions in the Accords provides for the equitable treatment of fish and wildlife with the other purposes for which the FCRPS is operated and managed.

Pursuant to the Columbia River Treaty, the Corps will continue to fulfill its obligations in coordination with the Canadian Entity on the operation of FCRPS.

I find that the determinations made in this ROCASOD taken together with actions being undertaken by Reclamation and BPA, are sufficient to support my decision to implement the FCRPS RPA and the Incidental Take Statement provided in the 2008 FCRPS BiOp. This complement of actions include FCRPS operations, estuary improvement actions, hatchery reforms, predation management and research, monitoring and evaluation to better understanding the species needs, and adaptive management to shape future actions. Additionally, I find that implementation of these actions is consistent with the Corps' implementation of actions recommended in the 2000 USFWS BiOp and 2001 ROCASOD, as well as the 2006 USFWS Libby BiOp and 2006 ROCASOD.

The Corps concurs with NMFS's conclusion that the operation of the FCRPS by the three Action Agencies, in a manner consistent with the 2008 FCRPS BiOp, supported by the Supplemental Comprehensive Analysis of the collective effects of the operations of the FCRPS, the Upper Snake Projects, and the *U.S. v. Oregon* Harvest Management Agreement, will meet the Corps' responsibilities under the ESA to ensure that the operation of the FCRPS is not likely to jeopardize the continued existence of the 15 ESA listed species addressed in this decision, or adversely modify designated critical habitat.

Issued in Portland, Oregon on August 1, 2008.



William E. Rapp
Brigadier General, US Army
Division Commander

ATTACHMENT A

PROJECT USES

Corps' dam and reservoir projects in the Columbia River Basin are authorized for construction, operation and maintenance in accordance with specific legislation (see Table A-1). Each authorization is accompanied by a Report of the Chief of Engineers outlining recommendations and the general plans for each project. The operation of each project or for their coordinated operation within the total system was left to the discretion of the Chief of Engineers. The Corps is responsible for deciding how to operate and maintain their projects based on principles of multiple-use operation, operating experience, public concerns, available water, public health and safety, available funding, international agreements and the needs of the Pacific Northwest and the Nation.

Flood Control

The primary flood control season in the Columbia River System is May through July. Rain-induced floods also occur in the winter in the southern and western parts of the drainage. Because the ability to forecast the source of most flooding (snowmelt) in the study area has improved over time, the amount of flood control storage can be determined several months in advance. Consequently, flood control storage space in Columbia River reservoirs is maintained only during those months with high flood risk, and the amount of space needed can be predicted by the amount of runoff expected. This situation makes it possible to use the reservoir space to store water for other uses (e.g., hydropower, irrigation, recreation, and fish flows), when there is reduced flood risk, and for joint uses during the flood season. In conjunction with reservoir operations in Canada under the Columbia River Treaty and several non-federal dams in the basin, the FCRPS is operated to minimize flood damages in the lower Columbia River and individual projects for local flood control protection. The primary Corps projects with flood control space are Dworshak, Albeni Falls, Libby and John Day.

Navigation

The Columbia-Snake Inland Waterway from the Pacific Ocean to Lewiston, Idaho consists of two segments. The first is the 43-foot-deep, open-river channel for ocean-going vessels that extends 106 miles from the ocean to Portland, Oregon and Vancouver, Washington. The second is the shallow-draft barge channel that extends 359 miles from Vancouver to Lewiston, Idaho.

Navigation between Bonneville Dam and Lewiston is possible because each dam has a system of locks, and the projects maintain sufficient water at minimum operating pool (MOP) to pass vessels in the authorized 14-foot channel depth. This navigation channel connects the agricultural interior basin with the deep-water ports on the lower Columbia River.

Power Generation

Falling water provides the energy to turn power-generating turbines at the dams. Hydropower supplies approximately 75 percent of the electricity in the Pacific Northwest. When in surplus, it is also an export product for the region. The remainder of the region's electricity comes from thermal resources, mainly nuclear and coal-fired plants.

Power production on the Columbia River System involves three primary objectives that system managers try to meet, within a variety of system constraints:

- Meeting the region's firm energy commitments
- Optimizing future energy production through refill
- Maximizing non-firm energy production to keep regional power rates as low as possible

As plans are formulated to draft reservoirs to meet firm power needs and generate non-firm energy, non-power uses including flood control and water for fish migration are put into the planning and then the power capability is estimated. Plans include enough water retained in storage to provide flows necessary for spring fish migration and to ensure a high likelihood of reservoir refill by summer to fulfill flow augmentation for fish, recreational needs, and provide water for next year's non-power needs.

Non-firm generation is power in excess of that needed to meet firm power requirements. In most water years, stream flows are high enough to produce at least some non-firm generation. This is particularly true after January 1, when initial runoff forecasts make it possible to estimate how much water will be available from snowpack runoff. In an average year, non-firm generation may add 25 percent or more to the hydro system's generating output. Non-firm power is generally sold with no guarantee of continuous availability and with the ability to terminate delivery on very short notice. Non-firm energy is purchased from BPA by Northwest utilities, California utilities, and some large industries that contract directly with BPA for power. Customers in the Northwest have priority to purchase non-firm power.

Irrigation

Irrigation is an authorized use at several Corps projects. Irrigation water is withdrawn from the projects by pumping stations at the reservoir margins. None of the projects on the lower Columbia or Snake rivers have storage allocated to irrigation. The projects are normally at pool elevations high enough to permit the existing pumps to operate. The irrigation season generally extends from about April through September, but can continue into October or November.

Fish

A variety of fish facilities and programs have been developed at the affected projects. Adult fish passage facilities were built into all eight of the mainstem Columbia and Snake River dams. In the early 1950s, the Corps began an intensive program, in cooperation with regional fish agencies and other experts, to improve adult fish passage and develop methods of safe juvenile fish passage at each of the mainstem dams. These research efforts led to the development of submersible traveling screens to divert juvenile fish away from turbine intakes and into special conduits for subsequent bypass around the dam or collection for transport downstream by truck and barge. Recently, surface bypass facilities like Removable Spillway Weirs and Bonneville corner collector have been installed to improve juvenile passage survival.

In addition to physical facilities, other adaptations in water management are implemented on an annual basis to provide for fish and wildlife. The upstream storage projects have been operated in an attempt to meet year-round flow objectives and spill at mainstem projects has been provided for juvenile fish passage.

A more complete discussion of the improvements for fish passage at Corps facilities can be found in Appendix A, Overhaul of the System, in the 2007 FCRPS BA.

Rivers and reservoirs are also home to fish that do not migrate to the sea. These fish, such as trout and burbot, are referred to as resident fish. System operators monitor water levels to protect the migrations, and spawning and rearing habitat of resident fish in the reservoirs and below the projects as much as possible.

Wildlife

Although the focus of most mitigation and enhancement actions of Federal projects in the Columbia River System has been on fish, wildlife protection is also a consideration and the subject of ESA consultation for example, the bald eagle. Much of the land within and adjacent to Federal project boundaries is designated and managed as wildlife habitat. Several national wildlife refuges are located on project lands, and a large number of other parcels are operated as habitat management units. Wildlife considerations also affect project operations and water management. In addition, special operating requirements are put into effect at certain projects in the early spring, when geese are selecting their nesting sites, to keep geese away from areas that may later be inundated with water.

Recreation

Recreational facilities are provided at all of the projects. Facilities are provided by the project operators or a variety of Federal, State, local, and tribal agencies. Key activities include fishing, swimming, waterskiing, picnicking, camping, hunting, boating, windsurfing, and sightseeing. Use of the reservoirs occurs mostly from late spring through early fall. Normal operation of the projects for flood control, power generation, and other purposes sometimes conflicts with optimum conditions for recreational use.

Water Quality

Water quality within the river system is considered by the Corps in the design and operation of the projects. Minimum outflow requirements, which generally vary by season, are specified for each project to help maintain desired downstream conditions.

Water Supply

The Corps projects store water utilized by some cities and industries by diversion or pumping, but these diversions are small. Some municipal water supply facilities are designed to operate within the operating range of the Corps' mainstem run-of-river projects.

Table A-1. List of Project uses and Authorizing Laws

PROJECT NAME:	OPERATING PURPOSES/USES:	AUTHORIZED PURPOSES/USES:	AUTHORIZING LAWS:
ALBENI FALLS DAM Pend Oreille River Bonner County, ID	Recreation Navigation Hydroelectric Power Flood Control Fish/Wildlife	Recreation Navigation Hydroelectric Power Flood Control Fish/Wildlife	PL 78-534 PL 81-516 PL 81-516 PL 81-516 PL 85-624, PL 96-501
BONNEVILLE LOCK AND DAM Columbia River, Multnomah County, OR Skamania County, WA	Hydroelectric Power Recreation Navigation Water Quality Fish/Wildlife	Hydroelectric power Recreation Navigation Water Quality Fish/Wildlife	PL 75-329 PL 78-329 PL 75-329 PL 92-500 PL 85-624, PL 98-396, PL-96-501
CHIEF JOSEPH DAM – RUFUS WOODS LAKE Columbia River., Douglas and Okanogan Counties, WA	Hydroelectric Power Recreation Fish/Wildlife Add'l units authorized by PL 94-587 & PL 95-26	Hydroelectric Power Recreation Fish/Wildlife	PL 79-525 PL 78-534 PL 85-624, PL 96-501
THE DALLES LOCK AND DAM – LAKE CELILO Columbia River, Wasco County, OR and Klickitat County, WA	Irrigation Navigation Recreation Fish/Wildlife Water Quality Hydroelectric Power	Irrigation Navigation Recreation Fish/Wildlife Water Quality Hydroelectric Power	PL 81-516 PL 81-516 PL 78-534 PL 85-624, PL 98-396, PL 96-501 PL 81-516, PL 92-500 PL 81-516
DWORSHAK DAM AND RESERVOIR North Fork of the Clearwater River. Clearwater County, ID	Fish/Wildlife Hydroelectric Power Navigation Recreation Flood Control	Fish/Wildlife Hydroelectric Power Navigation Recreation Flood Control	PL 87-874, PL 85-624, PL 96-501 PL 87-874 PL 87-874 PL 78-534 PL 85-500, PL 87-874
ICE HARBOR LOCK AND DAM – LAKE SACAJAWEA Snake River. Walla Walla and Franklin Counties, WA	Navigation Irrigation Recreation Hydroelectric Power Fish/Wildlife	Navigation Irrigation Recreation Hydroelectric Power Fish/Wildlife	PL 79-14 PL 79-14 PL 78-534 PL 79-14 PL 85-624, PL 96-501
JOHN DAY LOCK AND DAM – LAKE UMATILLA Columbia River. Sherman County, OR. Klickitat County, WA.	Flood Control Irrigation Navigation Recreation Fish/Wildlife Water Quality Hydroelectric Power	Flood Control Irrigation Navigation Recreation Fish/Wildlife Water Quality Hydroelectric Power	PL 81-516 PL 81-516 PL 81-516 PL 78-534 PL 81-516, PL 96-501 PL 81-516, PL 92-500 PL 81-516
LIBBY DAM – LAKE KOOCANUSA Kootenai River. Lincoln County, MT	Recreation Hydroelectric Power Flood Control Fish/Wildlife	Recreation Hydroelectric Power Flood Control Fish/Wildlife	PL 78-534 PL 81-516 PL 81-516 PL 85-624, PL 96-501
LITTLE GOOSE LOCK AND DAM – LAKE BRYAN Snake River. Whitman and Columbia Counties, WA	Fish/Wildlife Irrigation Navigation Hydroelectric Power Recreation	Fish/Wildlife Irrigation Navigation Hydroelectric Power Recreation	PL 85-624, PL 96-501 PL 79-14 PL 79-14 PL 79-14 PL 78-534
LOWER GRANITE LOCK AND DAM Snake River. Whitman and Garfield Counties, WA	Navigation Hydroelectric Power Recreation Fish/Wildlife Irrigation	Navigation Hydroelectric Power Recreation Fish/Wildlife Irrigation	PL 79-14 PL 79-14 PL 78-534 PL 85-624, PL 96-501 PL 79-14
LOWER MONUMENTAL LOCK AND DAM Snake River. Walla Walla and Franklin Counties, WA	Navigation Hydroelectric Power Recreation Fish/Wildlife Irrigation	Navigation Hydroelectric Power Recreation Fish/Wildlife Irrigation	PL 79-14 PL 79-14 PL 78-534 PL 85-624, PL 96-501 PL 79-14
MCNARY LOCK AND DAM LAKE WALLULA Columbia River. Umatilla County OR Benton County WA	Hydroelectric Power Navigation Irrigation Recreation Fish/Wildlife	Hydroelectric Power Navigation Irrigation Recreation Fish/Wildlife	PL 79-14, PL 99-662 PL 79-14 PL 79-14 PL 78-534 PL 85-624