

# 2003 Findings Report

## RPA Action 1

Description The Action Agencies, coordinating with NMFS and USFWS, shall annually develop 1- and 5-year plans to implement specific measures in hydro, habitat, hatcheries, harvest, research, monitoring, and evaluation needed to meet and evaluate the performance standards contained in this biological opinion.

Status Action Agencies completed draft 2002-2006 Five-Year IP, final 2002 Annual IP, and final 2001 Progress Report in 2001 and 2002. NOAA Fisheries issued Findings Report on the 2002 IP.

NMFS expectation Complete 2003 Implementation Plan, 2003-2007 Five-Year Plan, and 2002 Progress Report for 2003 Findings (and update, if necessary). Prepare final 2001-2003 Progress Report, 2004 Implementation Plan, and 2004-2008 Five-Year Plan by September 2003 for the first check-in.

AA implementation Annual and 5-year implementation plans were provided for 2002, 2002-2006, and 2003/2003-2007. An implementation plan for 2004/2004-2009 will be provided in the fall of 2003. The implementation plans include detailed and summarized information for the 1- and 5-year planning periods. The plans will continue to be coordinated with state, tribal and other regional entities.

NMFS finding **Implementation as expected**

NMFS comments

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## RPA Action 2

Description The Action Agencies shall coordinate development and implementation of the hydro portion of the 1- and 5-year implementation plans through the Regional Forum, chaired by NMFS.

Status 2002 and 2003 annual plans and draft 2002-2006 and 2003-2007 five-year plans were coordinated through the regional forum.

NMFS expectation Continue to coordinate the hydrosystem portion of the implementation plan through the NOAA Fisheries Regional Forum.

AA implementation Development of the hydrosystem portion of the implementation plan will continue to be coordinated through the NOAA Regional Forum.

NMFS finding **Implementation as expected**

NMFS comments

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RPA Action 3

Description The Action Agencies, coordinating through the Technical Management Team, shall develop and implement a 1- and 5-year water management plan and in-season action plans for the operation of the FCRPS.

Status Annual Water Management Plans (WMPs) were developed as expected in 2001 and 2002. An annual WMP was prepared for the 2003 season and made final on October 1, 2002. This plan was presented to the TMT for review and comment prior to making it final. A final Fall/Winter update was prepared by the Action Agencies and made final on December 6, 2002.

The 2004-2009 5-Year Water Management Plan, which was agreed upon by the Action Agencies, will improve the planning process by more fully identifying and anticipating longer term issues, such as potential operational opportunities provided by increased flexibility in the transmissions system, which are not necessarily a focus of the annual WMP.

NMFS expectation Update the 2003 annual WMP as necessary. Prepare and review an annual 2004 WMP and a 2004-2009 (five year) WMP.

AA implementation In the 2003/2003-07 Implementation Plan (IP) the Action Agencies proposed that referencing the Water Management Plans in the 5-year implementation plans would serve the purpose of the 5-Year WMP. During subsequent discussions with NOAA, the Action Agencies agreed to develop the 2004-2009 5-year Water Management Plan by September 2003. The Action Agencies will develop an outline of the 5-year plan before they begin preparation of the 2004-2009 Water Management Plan.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action 4

Description The Action Agencies, coordinating through the System Configuration Team, shall annually develop and implement a 1- and 5-year capital investment plan for the configuration of the FCRPS projects.

Status Action Agencies coordinated with the SCT to develop 2001, 2002, and 2003 capital investment plans.

NMFS expectation The System Configuration Team will review the Corps' proposed CRFM Program for FY04 and develop priorities for funding. Also, the SCT should review the 8 year plan and schedule priorities according to potential future annual appropriations to the CRFM Program. These priorities should be incorporated into the 2004 and 2004-2008 capital investment plans.

AA implementation The Action Agencies 1 and 5-Year implementation plans describe the system configuration priorities, capital investments, hydro system research and reliability improvements that are recommended by SCT. These efforts are ongoing and will continue. The primary funding source for system configuration projects is the Columbia River Fish Mitigation appropriation to the Corps.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action 5

Description The Action Agencies, coordinating through the Water Quality Team, shall annually develop a 1- and 5-year water quality plan for operation and configuration measures at FCRPS projects.

Status The Water Quality Plan discussed above by the AA's is primarily focused on the state water quality agencies reporting and planning requirements for spill program implementation. The water quality planning called for in RPA Action 5 includes identification of objectives, priorities, FCRPS facility and operational improvements related to a broader scope of water quality than just the spill program.

Guidance on the intended scope of the BiOp water quality planning was provided in RPA Action 5 and in Appendix B. A water quality planning group has been formed; has outlined a plan and developed guiding principles for their work. The initial effort discussed actions to avoid jeopardy but produced little of planning value. Some of this was due to the distraction of attention to the planning effort resulting from the redirection of work load to support the Power Council Mainstem Province Water Quality Summary.

In late CY 2002 NOAA Fisheries reconvened the Mainstem Water Quality Plan work group and began working on the plan again. In recent months the Corps has provided valuable assistance in organizing the BiOp water quality RPA Actions. Participants in the group represent the Action Agencies, Tribes, state water quality agencies, EPA, Mid-Columbia PUD's, USFWS, and NOAA Fisheries. The group developed a plan outline to be followed during the development and implementation of the plan. The Corps has provided early drafts of plan sections addressing total dissolved gas and water temperature.

NMFS expectation The 2000 BiOp provided the initial basis for the merging of ESA and Clean Water Act issues. The efforts of the Mainstem Water Quality Plan work group is developing the plan for implementation of water quality improvement actions. During 2003 an important water quality component of this planning will be the five mainstem Total Maximum Daily Load (TMDL) efforts currently underway by the states and EPA. With a concerted effort by the Action Agencies and other participants, it is possible for the group to produce a comprehensive water quality plan as foreseen in the BiOp by the end of 2003.

AA implementation The Action Agencies have developed the 1- and 5- year work plans as part of the implementation process. Each year the Corps develops a Water Quality Plan that describes operations that are planned to meet water quality TMDL's. This plan is issued in conjunction with the Fish Passage Plan in February. A summary of water quality measurements taken throughout the year and their compliance with for example the dissolved gas TMDL's is issued in the fall/winter each year. A review draft of the 5-year Water Quality Management Plan (described in Appendix B of the NMFS BiOp) will be released by the end of December 2003.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action 6

Description The Corps and BPA, through the annual planning process, shall develop and implement 1- and 5-year operations and maintenance (O&M) plans and budgets that enhance the capability to operate and maintain fish facilities at FCRPS projects for listed salmonid stocks.

Status 2001, 2002, and 2003 O&M Plans were prepared.

NMFS expectation The Corps should continue to coordinate the 2004 one- and five-year O & M plans and budgets through FPOM and determine funding priorities. Incorporate this information into the 2004 and 2004-2008 O&M Plans.

AA implementation The District Offices of the Corps each have developed 5-year O&M plans that describe routine and non-routine O&M projects planned at each of the dams within their District. These plans and the projects and maintenance actions they recommend are summarized in the 1 and 5-Year implementation plans. These efforts are ongoing and continue. BPA funds a portion of the Fish O&M Costs and thus participates in the development of O&M plans and budgets. These plans are coordinated with the Fish Passage O&M Coordination Group.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action 7

Description The Action Agencies, with assistance from NMFS and USFWS, shall annually develop 1- and 5-year plans for habitat measures that provide offsite mitigation.

Status Habitat measures were included in the 2002 and 2003 annual IPs and in the draft 2002-2006 and final 2003-2007 IPs.

NMFS expectation Include plan for implementing habitat measures in the 2004 annual IP and the 2004-2008 IP.

AA implementation The implementation plans are developed in coordination with NOAA and the USFWS and include habitat measures that provide offsite mitigation. These planning efforts are ongoing and continue. See also Section 5.2 of the 2003/2003-07 Implementation Plan.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action 8

Description The Action Agencies, with assistance from NMFS and USFWS, shall annually develop 1- and 5-year plans for hatchery and harvest measures that provide offsite mitigation.

Status Hatchery and harvest measures were included in the 2002 and 2003 annual IPs and in the draft 2002-2006 and final 2003-2007 IPs

NMFS expectation Include plan for implementing hatchery and harvest measures in the 2004 annual IP and the 2004-2008 IP.

AA implementation 1- and 5-Year work plans for hatchery and harvest measures are included in the 2003/2003-07 IP, the 2002 Annual IP, and the 2002-2006 5-Year IP.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action 9

Description The Action Agencies, with assistance from NMFS and USFWS, shall annually develop 1- and 5- year plans for research, monitoring, and evaluation to further develop and to determine the effectiveness of the suite of actions in this RPA.

Status RM&E measures were included in the 2002 and 2003 annual IPs and in the draft 2002-2006 and final 2003-2007 IPs

NMFS expectation Include plan for implementing RM&E measures in the 2004 annual IP and the 2004-2008 IP.

AA implementation 1- and 5-Year work plans for research, monitoring, and evaluation are included in the 2003/2003-07 IP, the 2002 Annual IP, and the 2002-2006 5-Year IP.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action **10**

Description The Action Agencies shall work with NMFS and others to promptly incorporate the results of recovery planning into annual Fish and Wildlife Program implementation funding, including support for incorporation of the results into the NWPPC's Fish and Wildlife Program.

Status Implemented as expected in 2002.

The IP should recognize the application of interim TRT products for incorporation into the subbasin plans and for use as review criteria on the effect of individual projects on BiOp objectives. At this time, NOAA Fisheries considers this a relatively minor concern because there is still time to implement this Action as subbasin plans are being developed.

NMFS expectation

(as addressed in section 4.3 in Imp. Plan) -- In addition to using the Interior Columbia TRT products, the Action Agencies need to also use products from Willamette/Lower Columbia TRT.

Where final TRT products are not available, the AAs should use interim targets for the 7 Interior Columbia ESUs and the draft population identifications and viability criteria for 5 WLC ESUs, this is particularly important for plans and actions affecting Lower Columbia Chinook, and Chum.

AA implementation

See Section 4.3 of the 2003/2003-07 IP.

NMFS finding **Implementation as expected**

NMFS comments The IP should recognize the application of interim TRT products for incorporation into the subbasin plans and for use as review criteria on the effect of individual projects on BiOp objectives.

RPA Action 11

Description By September 30, 2001, the Action Agencies shall develop procedures for carrying out actions that could not be anticipated in the planning process, but that are necessary or prudent to achieve the performance standards.

Status Procedures were not developed by 2002, but NOAA Fisheries considered this a modification that was not a concern. NOAA Fisheries considered the delay to have no effect because Action Agencies had been accommodating new or unplanned activities through informal means.

NMFS expectation Complete procedures for carrying out actions that could not be anticipated in the planning process.

AA implementation The Action Agencies, USFWS, and NOAA have established an expedited process for considering the implementation of activities that are new or were unanticipated during development of annual implementation plans or which do not fit into established funding processes. That process begins with the identification by NOAA, USFWS, or an Action Agency of an unanticipated action that must be implemented prior to the next implementation planning process. The activity or issue will be presented by the Action Agencies, USFWS, or NOAA through the appropriate regional implementation forum for review and coordination of relevant scientific information, budget requirements, and operations or implementation requirements. For operational and system configuration actions, the Regional Forum will be the appropriate coordination forum. Other actions, to the extent practicable, will be coordinated through the Northwest Power Planning Council's (Council) regional process which includes the Independent Scientific Review Panel, regional fish and wildlife managers and the public. This serves as the basis for coordination among Action Agency, USFWS, and NOAA staff regarding potential effects on listed species or their critical habitat, and on other FCRPS multiple uses. These processes also allow for policy and executive level involvement as warranted for high profile or sensitive issues. The coordination activities and decisions are documented in forum meeting minutes, the Council's records, and memos between the Action Agencies, USFWS, and NOAA. Examples of activities that have been addressed through this expedited process include the power/chum emergency Action Plan solicitations in 2001 and various special system and project-specific operations requirements or responses to unscheduled facility outages. The expedited process described above supplements the framework process established by the Corps and NOAA. This is described in a June 5, 2001, letter from Brian Brown to Brigadier General Carl Strock for coordinating implementation of required actions.

NMFS finding **Modification not a concern**

NMFS comments The modification in question is completion of the procedures in 2003, rather than in 2001. There was no effect of this delay because the Action Agencies have been accommodating new or unplanned activities through informal means.

RPA Action **12**

Description The Action Agencies shall coordinate with NMFS and USFWS in the review of the 1- and 5-year plans to facilitate timely review and approval as part of the annual decision process.

Status Action Agencies coordinated with NOAA Fisheries on review of 2002 and 2003 IPs. However, review was hindered in each case because information was not initially organized by RPA Actions.

NMFS expectation Present 2004 Annual IP and 2004-2008 Five-Year IP to NOAA Fisheries, organized by RPA Actions.

AA implementation The Action Agencies continue to coordinate preparation and finalization of the implementation plans with NOAA, USFWS, and others.

NMFS finding **Implementation as expected**

NMFS comments The "Action Agencies RPA Action Implementation Summary," which the Action Agencies submitted to NOAA Fisheries as a supplement to the 2003/2003-2007 IP, is a very useful tool. NOAA Fisheries encourages the Action Agencies to prepare similar tables when developing future Implementation Plans.

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RPA Action **13**

Description The Action Agencies shall issue annual reports to NMFS and USFWS on progress toward achieving the performance standards set out in this biological opinion, including comprehensive cumulative reviews in years 3, 5, and 8.

Status Action Agencies prepared a 2001 Progress Report in 2002.

NMFS expectation Completion of 2002 Progress Report by March 2003. Completion of cumulative progress report (2003 Check-In report) by September 2003.

AA implementation The Action Agencies released the 2001 Progress Report in May 2002. The 2002 Progress Report is scheduled for release in April 2003 and will be followed by a 2003 Check-in Report in September 2003. The 2003 Check-in Report will provide a programmatic evaluation of the Action Agencies BiOp implementation progress.

NMFS finding **Implementation as expected**

NMFS comments NOAA Fisheries has determined that the Implementation Plan and Findings Report should be prepared as close to the start of each fiscal year as possible. Experience in 2002 indicated that it is not possible to prepare a comprehensive Progress Report until the spring of the following calendar year. NOAA Fisheries therefore will issue a Findings Report on each annual IP near the start of the fiscal year, using the best available information on progress, and then update the Findings Report as necessary after the comprehensive Progress Report is submitted.



RPA Action **14**

Description The Action Agencies shall operate FCRPS dams and reservoirs with the intent of meeting the flow objectives (Table 9.6-1) on both a seasonal and weekly average basis for the benefit of migrating juvenile salmon.  
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Status Action Agencies operated the system in 2002 consistent with the intent of meeting the flow objectives in coordination with the TMT.  
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NMFS expectation Operate the FCRPS dams with the intent of meeting the flow objectives in compliance with the 2003 Water Management Plan in coordination with the TMT.  
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AA implementation The Action Agencies will operate the FCRPS projects to attempt to meet the flow objectives. Further details will be provided in the annual Water Management Plan.

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NMFS finding **Implementation as expected**  
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NMFS comments

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RPA Action **15**

Description The Action Agencies shall operate the FCRPS to provide flows to support chum salmon spawning in the Ives Island area below Bonneville Dam.  
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Status Operations in fall of 2001 and winter of 2002 were conducted consistent with NOAA Fisheries' expectation of this action. The initiation of chum spawning in the fall of 2001 was found to conflict with the planned Vernita Bar operation, so the regulation of the Bonneville tailwater to elevation 11.5 feet did not begin until after the final Vernita Bar redd count was conducted November 18.  
  
Operations in the fall of 2002 were conducted consistent with NOAA Fisheries' expectation of this action. Due to an early season forecast of a drier than average winter and a lack of local precipitation, the initiation of regulating the Bonneville tailwater to 11.1 feet to support chum spawning did not begin until November 5. This tailwater elevation was increased to a level of 11.5 feet on November 13, which coincided with an increase in fish observed in the area and precipitation in the basin.  
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NMFS expectation Conduct operations consistent with this Action in 2003.  
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AA implementation The Action Agencies will operate the FCRPS projects to provide flows to support chum salmon spawning in the Ives Island area below Bonneville Dam. Further details, including seasonal updates based upon water volume forecasts and chum spawning needs, will be coordinated through the TMT and provided in the annual Water Management Plan.

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NMFS finding **Implementation as expected**  
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NMFS comments

RPA Action 16

Description The Action Agencies shall operate the FCRPS to provide access for chum salmon spawning in Hamilton and Hardy creeks.

Status Access to Hamilton and Hardy Creeks occurred in the fall of 2001 due to the high volume of water flowing in these creeks. The regulation of flows from Bonneville Dam was of sufficient volume to provide access to these creeks beginning November 5, 2002. However, the flow from Hardy Creek was so low throughout the fall of 2002 that very limited spawning occurred. While flows were lower than average in Hamilton Creek, it did support a reasonable level of chum spawning.

NMFS expectation Provide access for chum spawning in Hamilton and Hardy creeks if there is insufficient storage to sustain spawning flows by maintaining an adequate tailwater elevation below Bonneville Dam throughout the 2002-2003 spawning season for chum. Continue to coordinate chum operations through the TMT.

AA implementation The Action Agencies shall operate the FCRPS projects to provide access for chum spawning in Hamilton and Hardy creeks. Further details will be provided in the annual Water Management Plan. The Water Management Plan describes the chum operation that is planned and seasonal updates based upon water volume forecasts and chum spawning needs are developed and operations are implemented in conjunction with the Technical Management Team (TMT).

NMFS finding Implementation as expected

NMFS comments

RPA Action 17

Description The Action Agencies shall coordinate with NMFS, USFWS, and the states and Tribes in preseason planning and in-season management of flow and spill operations. This coordination shall occur in the Technical Management Team process (see Section 9.4.2.2).

Status Coordination of flow and spill planning occurred in 2002 through the TMT plan development process as anticipated. Due to the lack of spill at Lower Monumental Dam (due to emergency repairs in the spilling basin) some offset measures were adopted by the TMT to make up for the decrease in survival that was anticipated at this project due to its lack of spill in the spring of 2002.

NMFS expectation Action Agencies should continue to coordinate during the 2003 passage season through the TMT with NOAA Fisheries, USFWS, and the states and Tribes on preseason planning and in-season management of flow and spill operations.

AA implementation TMT coordination will take place. The 1 and 5-Year implementation plans (general plan) through the Water Management Plan (detailed plan) describe flow and spill operations that are planned in the coming year. Seasonal updates to the spill and flow elements of the plan will continue to be coordinated with the TMT and based upon research objectives, the water volume forecast, and fish passage needs

NMFS finding Implementation as expected

NMFS comments

RPA Action 18

Description The Action Agencies shall operate the FCRPS during the fall and winter months in a manner that achieves refill to April 10 flood control elevations, while meeting project and system minimum flow and flood control constraints before April 10. During the spring, the Action Agencies shall operate the FCRPS to meet the flow objectives and refill the storage reservoirs (Albeni Falls, Dworshak, Grand Coulee, Hungry Horse, and Libby) by approximately June 30.

Status In spring 2002, Grand Coulee was operated to meet its April 10 flood control, but Reclamation would not allow a significant draft of the reservoir below its flood control draft level to meet weekly spring flow objectives. Due to a late seasonal runoff, it was apparent there would be sufficient runoff to increase flows and still meet June 30th refill. The effect of not allowing additional draft at this project reduced flow during the early spring migration, which contributed to missing flow objectives during this period. During the latter part of the spring migration, flow objectives were met, but lack of reservoir storage resulted in involuntary spill, which contributed to high dissolved gas levels.

NMFS expectation Operate the FCRPS projects to achieve refill to April 10th flood control elevations, to meet the flow objectives, and to refill the storage reservoirs. TMT recommendations concerning the water management to improve juvenile and adult fish survival should be addressed in that process by the Action Agencies through operations developed in the WMP.

AA implementation The Action Agencies will attempt to operate the FCRPS projects to achieve refill to April 10th flood control elevations, to meet the flow objectives, and to refill the storage reservoirs. Further details will be provided in the annual Water Management Plan.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action **19**

Description The Action Agencies shall operate specific FCRPS projects as follows:

Status Operations in 2002 reached flood control rule curve elevations and refill objectives at Albeni Falls, Dworshak, Grand Coulee, Hungry Horse, and Libby as specified in the Opinion.

The expected runoff volume in the Columbia River Basin will be below average if the low precipitation pattern which occurred through late 2002 continues into 2003. If this is the case, decisions as to when projects reach upper flood control curve, or adjustments in refill dates may have to be made.

NMFS expectation Operations will reach flood control rule curve elevations and refill objectives at Albeni Falls, Dworshak, Grand Coulee, Hungry Horse, and Libby as specified in the Opinion.

AA implementation The Action Agencies will operate the FCRPS projects as indicated in the RPA action. Further details will be provided in the annual Water Management Plan. The Action Agencies begin each year intending to implement the hydrosystem provisions of the BiOp. In coordination with TMT, in-season fish needs and runoff forecasts are used to make operational adjustments.

NMFS finding **Implementation as expected**

NMFS comments

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RPA Action **20**

Description The Corps shall operate the lower Snake River reservoirs within 1 foot of MOP from approximately April 3 until small numbers of juvenile migrants are present and shall operate the John Day pool within a 1½-foot range of the minimum level that provides irrigation pumping from April 10 to September 30.

Status During the past couple of years, the Corps has asserted that the lack of dredging, which was halted because of its potential affect on fish habitat and passage, affected the operation of the Lower Granite and Ice Harbor pools at MOP. Those pools were operated up to two feet higher than MOP to provide enough depth for navigation in those pools. A consultation and Biological Opinion was completed in July 2002 to address the effects of dredging on listed salmon and their habitat in the lower Snake River.

NMFS expectation Operate the lower Snake River reservoirs within 1 foot of MOP and operate the John Day pool within a 1-1/2 foot range of the minimum level that provides irrigation pumping during the fish passage season. The Corps should notify NMFS and regional parties of any changes in MOP operation in the in-season management (TMT) process.

AA implementation The Corps will operate the lower Snake River reservoirs with 1 foot of MOP and will operate John Day pool within a 1-1/2 foot range of the minimum level that provides irrigation pumping during the dates specified. Further details will be provided in the annual Water Management Plan.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action 21

Description The Corps shall routinely identify opportunities to shift system flood control evacuation volumes from Brownlee and Dworshak reservoirs to Lake Roosevelt and identify such opportunities for the Technical Management Team. The Corps shall implement flood control shifts as necessary to best protect listed fish, as called for by NMFS in coordination with the Technical Management Team, taking into account water quality issues and the concerns of all interested parties.

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Status During the 2001 fish passage season, because of the drought there was no opportunity to pursue a flood control shift because all projects were well below their flood control rule curves. However, during 2002 a flood control shift was pursued between Dworshak and Grand Coulee reservoirs. This operation greatly benefited Snake River flows during the months of April and May. As a result of this flood control shift, Snake River flows were more than 10 kcfs higher than they would have been absent this shift or delaying the refill of Dworshak Reservoir that year. This particular shift in system's operation was particularly important during 2002 because it was a low runoff year in the upper Snake River basin and flows were well below the 2000 BiOp objectives.

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NMFS expectation If feasible, implement flood control shifts from different reservoirs in the Columbia and Snake rivers as necessary to increase river flows in a manner that best protects listed salmon and steelhead.

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AA implementation The Corps will identify opportunities to shift system flood control and coordinate such opportunities with the TMT.

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NMFS finding **Implementation as expected**

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NMFS comments

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RPA Action 22

Description The Corps and BOR shall implement VARQ flood control operations, as defined by the Corps (1999d), at Libby by October 1, 2001, and at Hungry Horse by January 1, 2001. By February 1, 2001, the Corps shall develop a schedule to complete all disclosures, NEPA compliance, and Canadian coordination necessary to implement VARQ flood control at Libby.

Status The USBR initiated VARQ operation at Hungry Horse Dam on schedule, has implemented VARQ operations at this project during the 2001 and 2002 fish passage seasons, and anticipates no problems with future implementation.

Since the signing of 2000 BiOp, the Corps has delayed implementing VARQ operations at Libby Dam in order to achieve full NEPA compliance. Unusual flow conditions during the 2002 fish passage season in the upper Columbia basin caused by a late snowpack created a late runoff in 2002, which provided the necessary refill of Libby's reservoir in time for salmon flow operations at that project.

Since then, the Corps has agreed to interim VARQ flood control operations beginning in 2003 under an Environmental Assessment that will remain in affect until the EIS is completed in 2004.

NMFS expectation NOAA Fisheries expects Libby and Hungry Horse reservoirs to be operated to VARQ flood control elevations.

AA implementation The VARQ Flood Control Operation EIS was delayed by scope and content. The schedule change was clarified with NOAA as mentioned in the 2003/2003-07 IP. The Corps and USBR are currently implementing VARQ on an interim basis at Libby and Hungry Horse until the Final EIS, scheduled for completion in 2004, is completed.

NMFS finding **Modification not a concern**

NMFS comments The interim VARQ operations will allow implementation of the operation as called for in the 2000 BiOp until the completion of the EIS, which should occur in late 2004. The finding of "modification not a concern" is for 2003 and 2004 only. Subsequent findings will depend on the implementation of VARQ at both projects and the implementation of permanent VARQ operations after the NEPA process is completed. As stated in the 2002 Findings Report, if VARQ is not implemented at Libby beyond this interim period, NOAA Fisheries expects the Corps to identify other actions to compensate for the lost volume of water.

RPA Action **23**

Description BOR shall operate Banks Lake at an elevation 5 feet from full during August by reducing the volume of water pumped from Lake Roosevelt into Banks Lake by about 130 kaf during this time.

Status Specified operation was implemented in 2001 and 2002.

NMFS expectation Operate Banks Lake at an elevation 5 feet from full during August.

AA implementation Banks Lake will be operated such that pumping is reduced by about 130 kaf in August, allowing the lake elevation to draft to 1565 feet.

NMFS finding **Implementation as expected**

NMFS comments

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RPA Action **24**

Description BPA and the Corps shall continue to request and negotiate agreements to annually provide 1 Maf of Treaty storage from January through April 15, release the water during the migration season, and seek additional storage amounts.

Status 1 Maf was not stored in 2001 because of the power emergency, chum salmon operations, and drought. According to BPA, the 1 Maf was stored and released in 2002.

NMFS expectation NOAA Fisheries expects up to 1 Maf (current estimates are for slightly less than 1 Maf storage) to be stored during winter 2003 for release in spring and summer of 2003.

AA implementation BPA and the Corps have negotiated an agreement with the Canadian Section of the Operating Committee that stores water in Treaty space (provisional storage) for release by March 2003. Both the U.S. and Canadian Sections may elect to convert any portion of provisional storage remaining in their respective accounts to Treaty storage that would support U.S. flow augmentation during the migration season. The agreement also gives the U.S. Entity the option of provisionally drafting Arrow in February and March. In return, Arrow flows will be reduced in April to facilitate Canadian trout spawning. Any water stored above Arrow's Treaty Storage Regulation levels at the end of April will be available to support U.S. flow augmentation. The current estimate is that treaty storage for spring flow augmentation will be less than 1 MAF.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action **25**

Description BPA and the Corps shall continue to request, and negotiate with BC Hydro for storage of water in non-Treaty storage space during the spring for subsequent release in July and August for flow enhancement, as long as operations forecasts indicate that water stored in the spring can be released in July and August.

Status Implemented in 2002.

NMFS expectation NOAA Fisheries' expects the AA's to request, negotiate and implement the use of non-Treaty storage for 2003.

AA implementation The annual letter agreement under the Non-Treaty Storage Agreement to store water in May and June for release in July and August has not been concluded yet. Typically these agreements are not made until the February-March timeframe. With potential low flows during the spring period of 2003, we will soon schedule discussions with NMFS to verify the desirability of shifting flows from the spring to the summer period before we draft an agreement for 2003

NMFS finding **Implementation as expected**

NMFS comments



RPA Action **26**

Description BPA and the Corps shall continue to evaluate, request, and negotiate with BC Hydro the shaping and release of water behind Canadian Treaty storage projects in addition to the non-Treaty storage water previously discussed during July and August.

Status Long-range plans call for a fifth turbine at Revelstoke, but it will not occur in the near-term unless the economic conditions change substantially. Operational changes will be considered in conjunction with Canada's ongoing Water Use Planning Process.

NMFS expectation NOAA Fisheries expects the U.S. Entity Chairs, in conjunction with Canada's Water Use Planning process, to continue to evaluate, request, and negotiate with BC Hydro in 2003 for future shaping and release of additional Canadian water. As part of the evaluation in conjunction with Canada's Water Use Planning process, NOAA Fisheries urges the Operating Committee to consider the effectiveness in improving the probability of meeting U.S. summer flow targets at McNary, and the potential impacts on (a) whitefish spawning and trout spawning objectives downstream of Arrow, (b) recreational objectives at Mica and Arrow, (c) dissolved gasses downstream of Arrow and bio-productivity impacts on resident fish, and (d) the value of power generation, the need for new resources, including transmission infrastructure, and the operation of other reservoirs. At a minimum, the evaluation will include the 283 (10K) Alternative, described in the January 2002 Entity Report. When the evaluation is completed, it will be submitted to the Entity Chairs for consideration.

AA implementation The Columbia River Treaty Operating Committee (BPA, the Corps, and BC Hydro) prepared a preliminary report on feasibility on increasing discharges from Canadian storage in July and August. The Operating Committee submitted the report in March of 2002 for the consideration of the Entities. The primary focus of the study was on capital improvement options that would enable significant increases in summer flows. BPA recently checked with Canada regarding their desire to implement the recommendations in the report. They indicated that there are currently no firm plans to install additional units at Mica or Revelstoke, but that additional units at both projects remain as viable options for their long-range needs. It was agreed that both entities would like to leave the door open for consideration of these measures in the future. The Operating Committee will reconsider the feasibility of these measures periodically and will submit recommendations for consideration of the Entities when economic conditions are more favorable. The report also concluded that there are operational approaches that might provide slight increases in summer flows. These operations require additional evaluation of their environmental effects both in Canada and in the US as well as their economic effects. The Treaty Operating Committee will continue to evaluate operating alternatives that would increase Canadian storage discharges to increase summer flows, while providing a better overall operation for Canadian non-power objectives.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action **27**

Description Before entering into any agreement to commit currently uncontracted water or storage space in any of its reservoirs covered by this biological opinion to any other use than salmon flow augmentation, BOR shall consult with NMFS under ESA Section 7(a)(2). Such consultations shall identify the amount of discretionary storage or water being sought, the current probability of such storage or water being available for salmon flow augmentation, and any plan to replace the storage volume currently available to salmon flow augmentation that would be lost as a result of the proposed commitment. Also, BOR shall consult with NMFS before entering into any new contract or contract amendment to increase the authorized acreage served by any irrigation district receiving BOR-supplied water. NMFS' criterion in conducting such reviews is to ensure that there be zero net impact from any such BOR commitment on the ability to meet the seasonal flow objectives established in this biological opinion. Replacement supplies should have at least an equal probability of being available for salmon flow augmentation as the storage space or water that is being committed.

Status USBR has consulted on recent efforts to modify project boundaries and/or the classifications of certain lands within the project boundaries to bring the water delivery practices of some irrigation districts served by USBR projects into conformance with the contracts between the U.S. and the districts. In general, these efforts to conform district boundaries and land classifications with actual water use do not affect discretionary storage. USBR states that the storage volume available to an individual district is not affected by these land reclassifications and boundary adjustments.

NMFS expectation Continued implementation. Possible consultation on Lucky Peak contract renewals.

AA implementation USBR will consult with NOAA and USFWS on Lucky Peak (Boise Project) in 2004.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **28**

Description BOR shall pursue water conservation improvements at its projects and shall use all mechanisms available to it under state and Federal law to ensure that a reasonable portion of any water conserved will benefit listed species.

Status USBR has established programs to improve irrigation efficiency and intends to continue to pursue those programs. However, to date, USBR has not documented its efforts to "use all mechanisms available to it under state and Federal law to ensure that a reasonable portion of any water conserved will benefit listed species." Dedication of a portion of conserved water to instream flows is an important aspect of this RPA Action. Without such documentation, the benefit of water conservation to the affected streams is undefined.

NMFS expectation Written documentation that USBR is attempting to direct a portion of conserved water at its projects to instream flow maintenance.

AA implementation USBR will continue to implement water conservation projects through ongoing programs. Projects that provide benefits to listed species have a high priority.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **29**

Description Within 2 years from the date this opinion is signed, BOR shall provide NMFS with a detailed progress report addressing possible instances where BOR-supplied water within the Columbia River basin is being used without apparent BOR authorization to irrigate lands. In the report, BOR shall indicate how it shall proceed to identify and address instances of unauthorized use.

Status USBR has consulted on its efforts to correct several instances of unauthorized water use at its projects.

NMFS expectation Submission of a complete report by March 2003 and continued effort to correct instances of unauthorized water use.

AA implementation USBR will provide the requested report by March 2003, and will continue to investigate use issues on a case-by-case basis.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action 30

Description	For those BOR projects located in the Columbia River and its tributaries downstream from Chief Joseph Dam (Table 9.6-2), BOR shall, as appropriate, work with NMFS in a timely manner to complete supplemental, project-specific consultations. These supplemental consultations shall address effects on tributary habitat and tributary water quality, as well as direct effects on salmon survival (e.g., impingement, entrainment in diversions, false attraction to return flows, and others). These supplemental consultations shall address effects on mainstem flows only to the extent to which they reveal additional effects on the in-stream flow regime not considered in this biological opinion (e.g., flood control). .....
Status	As described in Action Agencies' description of proposed implementation (below) .....
NMFS expectation	USBR progress on these supplemental consultations in accordance with the time line proposed by USBR in the Action Agencies' 2003 proposed implementation Feb 27 version. .....
AA implementation	USBR seeks to clarify the role of its ESA consultations on USBR tributary projects with respect to the FCRPS RPA action. USBR will work toward resolution of this issue with NOAA Fisheries during FY 2003 and has included below a status/schedule of the on-going tributary project consultations. Chief Joseph Consultation completed in 2001 Okanogan Feasibility study – BPA-funded EIS in progress, schedule uncertain BA to NOAA/FWS – following feasibility study BiOp from NOAA/FWS – following feasibility study and BA Yakima BA to NOAA/FWS – August 2000 Draft BiOp from NOAA – August 2003 BiOp from NOAA/FWS – October 2003 Umatilla BA to NOAA/FWS – August 2001 Draft BiOp – April 2002 Supplemental BA – February 2003 BiOp from NOAA/FWS – August 2003 Crescent Lake is a non-USBR Project Crooked River, Deschutes, Wapinitia BA to NOAA/FWS – August 2003 BiOp from NOAA/FWS – January 2004 The Dalles Completed in 1992 Tualatin Received NOAA species listing – Jan 2001 (no FCRPS-impacted species present) BA to NOAA/FWS -- 2004 .....
NMFS finding	<b>Modification not a concern</b> .....
NMFS comments	The current proposed implementation schedule will extend completion of this action into 2004. This delay is not a concern at this time since the delay will not appreciably effect the long-term benefits to fish.

RPA Action 31

Description BOR shall assess the likely environmental effects of operating Banks Lake up to 10 feet down from full pool during August. The assessment and NEPA compliance work shall be completed by June 2002 to determine future operations at this project by the summer of 2002.

Status The schedule to complete the NEPA analysis was modified in 2002. The schedule has been recently modified again and the analysis is expected to be completed in August.

NMFS expectation Complete the NEPA on a schedule such that any resulting management actions could be implemented in time for the 2003 fish passage season.

AA implementation The NEPA process is in progress for this Action and the schedule defined in the BiOp has been slightly delayed due to extensive public involvement and environmental analysis for Banks Lake operations. In February 2003 the comment period was extended a month to address concerns raised in the public meetings. A Record of Decision is scheduled to be signed by the end of August. However, no draft of the reservoir below 1565 feet is expected in 2003.

NMFS finding **Modification requires resolution**

NMFS comments USBR recently announced that it will not implement this RPA Action in time to affect summer flow operations during the 2003 fish passage season. Due to unanticipated delays in USBR's NEPA process related to this RPA Action, management decisions related to Banks Lake will be at least two years later than the date anticipated in the BiOp. NOAA Fisheries is unaware of any other actions that USBR could take to improve survival and meet 2003 performance standards. NOAA Fisheries encourages the Action Agencies to maintain their proposed schedule, complete the Banks Lake NEPA analysis, and decide as soon as possible regarding the feasibility of flow augmentation from Banks Lake.

RPA Action 32

Description The Action Agencies shall acquire water for instream use from BOR's Upper Snake River basin projects and Idaho Power Company's Hells Canyon Complex during the spring and summer flow augmentation periods to improve the likelihood of achieving spring and summer flow objectives at Lower Granite Dam.

Status In both 2001 and 2002 due to low water conditions and other issues, USBR was able to deliver only 90 kaf and 289 kaf respectively for flow augmentation and delivery of portions of that water was deferred to outside the primary juvenile salmon migration season. While the limits on the water available for flow augmentation due to low water conditions was recognized as a constraint on the delivery of the full 427 kaf prescribed by the RPA RPA Action, some constraints on USBR project operations were not.

NMFS expectation USBR will continue to attempt to acquire and deliver 427 kaf of water in a timely manner to augment flows in the Snake River.

AA implementation USBR will provide up to 427 kaf for flow augmentation.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **33**

Description The Corps, in coordination with USFWS, shall design and implement appropriate repairs and modifications to provide water supply temperatures for the Dworshak National Fish Hatchery that are conducive to fish health and growth, while allowing variable discharges of cold water from Dworshak Reservoir to mitigate adverse temperature effects on salmon downstream in the lower Snake River.

Status Project completed in 2002.

NMFS expectation None - project completed.

AA implementation Hatchery modifications were designed in FY01 and 02 with contracts awarded in FY02. Construction work is scheduled to be completed in December 2002. The status of the 3 parts of the Dworshak Hatchery construction project are: Boiler Replacement - This work is complete. The boilers have not been used yet because water temperatures have not been low enough but the hatchery anticipates firing them up this week or next. Waterline Extension - This work is complete. Reuse System 1 - This contract is still underway which is what was expected. Construction is scheduled to be completed by the end of January so the hatchery should be able to use the system 2 out of the 4 months that it's needed.

NMFS finding **Implementation as expected**

NMFS comments

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RPA Action **34**

Description The Action Agencies shall evaluate potential benefits to adult Snake River steelhead and fall chinook salmon passage by drafting Dworshak Reservoir to elevation 1,500 feet in September. An evaluation of the temperature effects and adult migration behavior should accompany a draft of Dworshak Reservoir substantially below elevation 1,520 feet.

Status The condition sought by drafting the reservoir to elevation 1500 feet was satisfied during 2002 even though the reservoir was drafted to 1520 feet. The objective of drafting the reservoir to elevation 1500 feet was to release approximately 200 kaf of water from the reservoir during the month of September. A large snow pack and late season runoff in the Clearwater Basin allowed TMT to manage water releases from Dworshak Reservoir in manner which allowed the release of 200 kaf of water during the month of September, which was the main objective of this action.

NMFS expectation Perform this operation again in 2003 if conditions support it. Coordinate through in-season management process in TMT.

AA implementation The field evaluations will continue through spring 2004 using temperature and depth-sensitive radio tags to evaluate adult salmon use of cooler waters during their migration upstream of Lower Granite. The Corps will also continue temperature monitoring in Lower Granite Reservoir and the Clearwater River and continue development of the Computational Fluid Dynamics model of the lower Snake and Clearwater rivers. Model runs to evaluate the impacts of cool water releases from Dworshak on temperatures profiles to and through Lower Granite and data analysis will continue through 2005 for the final report in 2006.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action **35**

Description The Corps shall develop and conduct a detailed feasibility analysis of modifying current system flood control operations to benefit the Columbia River ecosystem, including salmon. The Corps shall consult with all interested state, Federal, Tribal, and Canadian agencies in developing its analysis. Within 6 months after receiving funding, the Corps shall provide a feasibility analysis study plan for review to NMFS and all interested agencies, including a peer-review panel (at least three independent reviewers, acceptable to NMFS, with expertise in water management, flood control, or Columbia River basin anadromous salmonids). A final study plan shall be provided to NMFS and all interested agencies 4 months after submitting the draft plan for review. The Corps shall provide a draft feasibility analysis to all interested agencies, NMFS, and the peer-review panel by September 2005.

.....  
Status In November 2001, the Corps completed a Section 216 Initial Appraisal, Flood Control Review. It was a major accomplishment that this project received congressional funds to initiate a Reconnaissance level study in FY03.

.....  
NMFS expectation The USACE should initiate Phase 1 of this study (development of a detailed study plan). In its budget request, USACE should avail itself of existing law which allows full federal funding of Columbia basin fish and wildlife mitigation projects without matching funds from local sponsors. (Finding a local sponsor may prove difficult and fulfillment of this obligation should not be limited by third parties). Given the delay in fulfilling its obligations under this RPA item caused by the delay in funding, the Corps should work within existing flood control constraints to maximize potential operational benefits to fish.

.....  
AA implementation Congressional funds were made available in 2003 for a reconnaissance level study. The Corps will continue to seek appropriations to complete the flood control study.

.....  
NMFS finding **Modification not a concern**  
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NMFS comments At least 1 year delay because of failure to receive appropriations in 2002. The one-year delay in the Columbia River flood control study will have unknown, if any, effects. Although the Opinion stated that this study could benefit salmon by improving the likelihood of meeting flow targets, the outcome of the study cannot be determined in advance. Interim measures to mitigate for the delay should be considered in the annual and five year WMPs.

Description By October 1, 2002, the Corps shall develop and, if feasible, implement a revised storage reservation diagram for Libby Reservoir that replaces the existing fall draft to a fixed end-of-December elevation. One option is to evaluate variable drafts based on the El Niño Southern Oscillation Index (SOI) predictions or other forecast methodologies of runoff volume. To implement this change, the Corps shall complete successful coordination with Canada under the Columbia River Treaty.

Status Last year, the Corps indicated that it would not meet the schedule in the 2000 NOAA Fisheries BiOp but could meet the schedule in the USFWS BiOp. NOAA Fisheries is concerned about the possible effect of this delay in 2003 because it is likely to be a dry year. If Action #36 had been implemented as specified in the NOAA Fisheries' 2000 BiOp, there would be a greater probability of refill of Libby for provision of salmon water in 2003. In this regard, NOAA Fisheries requested a modification of the end-of-December draft to 2411 on 12/20/02. The Corps declined to modify the December 31, 2002 fixed flood control draft elevation to 2411 feet because it would deviate from the existing flood control requirement, resulting in a potential loss of 16.4 Ksf, ie., Libby could have been about one foot higher on December 31.

Recently the Corps completed the forecasting phase of this Action, which will be followed by a review phase and, if feasible, implement a revised storage reservation diagram for Libby by October 1, 2003. To implement this change for the 2004 migration season, the Corps will concurrently seek to reach necessary agreement with Canada under the Columbia River Treaty.

NMFS expectation By October 1, 2003, the Corps should develop and, if feasible, implement a revised storage reservation diagram for Libby Reservoir that replaces the existing fall draft to a fixed end-of-December elevation.

AA implementation By February 2003 the Corps will complete evaluation of El Nino Southern Oscillation Index (SOI) predictions or other forecast methodologies of runoff volume that is a necessary precursor to feasibility of modifying the storage reservation diagram. By October 1, 2003 the Corps will complete studies to develop and, if feasible, implement a revised storage reservation diagram for Libby reservoir that replaces the existing fall draft to a fixed end of December elevation. To implement this change, the Corps will seek to reach necessary agreement with Canada under the Columbia River Treaty.

NMFS finding **Modification requires resolution**

NMFS comments Under the flood control aspect of RPA Action #36, the Corps is to develop and, if feasible, implement a revised storage reservation diagram for Libby Reservoir. The new diagram would replace the current fixed draft end-of-December flood control elevation of 2,411 feet. Overall, the Action would use advanced forecasting methods to predict the amount of annual runoff earlier in the year and allow for extra storage that could be released later for fish passage purposes while still meeting local flood control criteria. Action #36 is divided into two phases: first, development of a new seasonal volume forecasting method, and second as mentioned above, development of a revised storage reservation diagram (based on the new forecasting techniques) that takes into account local and system flood control. The Action's second phase could potentially allow greater volumes of water to be stored in Libby Reservoir in dry to near normal years. The Corps was not able to complete this Action in time for the 2003 operating year. For this reason, the modification requires resolution. NOAA Fisheries encourages the Action Agencies to ensure that the current schedule for completing the Libby reservoir storage diagram study is met and a plan is developed to implement as soon as possible thereafter.

The schedule also had another three month delay in the implementation date noted in the USFWS 2000 BiOp and NOAA Fisheries' 2002 Findings. This delay is not a significant concern because this action can still be implemented in time to help the same age class of fish that would benefit from meeting the June 2003 schedule in the FWS' 2000 FCRPS BiOp.



RPA Action **37**

Description BOR shall investigate the attraction of listed salmon and steelhead into wasteways and natural streams receiving waste water from the Columbia Basin Project. If listed fish are found to be attracted into these channels, BOR shall work with NMFS to identify and implement structural or operational measures to avoid or minimize such use, as warranted.

Status Awaiting USBR submission of a final report to NOAA Fisheries.

NMFS expectation USBR will submit a final report to NOAA Fisheries.

AA implementation A final report will be issued in 2003 concerning the Columbia Basin Project Wasteway and Drain Investigation.

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **38**

Description By March 1, 2002, BOR shall install screens meeting NMFS' screen criteria at the canal intakes to the Burbank No. 2 and Burbank No. 3 pump plants. BOR shall connect the Burbank No. 3 intake canal to Burbank Slough to provide juvenile fish egress. BOR shall coordinate with NMFS on each of the actions identified above.

Status Construction was completed in 2002. Now that the screens are operational, the biological evaluation will have two primary goals: (1) ensure that small salmonids are not getting downstream of the screens, and (2) ensure that the brush-type screen cleaners are not removing small salmonids along with the debris.

NMFS expectation USBR will conduct biological evaluation during 2003 irrigation season.

AA implementation This was completed and operational in 2002. NOAA and USBR will coordinate effectiveness monitoring for 2003.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action 39

Description BOR shall evaluate the water quality characteristics of each point of surface return flows from the Columbia Basin Project to the Columbia River and estimate the effects these return flows may have on listed fish in the Columbia River and in the wasteways accessible to listed fish. By June 1, 2001, BOR shall provide NMFS with a detailed water quality monitoring plan, including a list of water quality parameters to be evaluated. If the water quality sampling reveals enough water quality degradation to adversely affect listed fish, BOR shall develop and initiate implementation of a wasteway water quality remediation plan within 12 months of the completion of the monitoring program.

Status A complete water quality monitoring plan was not completed in 2001. In early 2002 the USBR, USGS, and NOAA Fisheries developed a plan (documented by email, April 17 and letter, May 7, 2002) to determine if pollutant chemicals are present in Columbia Basin Project return flows at levels that may harm or adversely affect ESA listed salmon and steelhead species. The USGS and USBR began periodically sampling waters in Crab Creek near Beverly, San Hollow Creek, Lin Coulee, and Red Rock Coulee. Sampling dates coincide with other sampling by USGS. The samples were to be analyzed for several common pesticides and herbicides.

NMFS expectation It is expected that the initial 2002 results will yield general water quality information and identify particular pollutant classes of concern.

AA implementation USBR will continue to monitor return flows through 2006. In 2007 USBR will develop a remediation plan if it is necessary.

NMFS finding **Modification not a concern**

NMFS comments As mentioned in last year's findings, although completion of a water quality plan of adequate scope has been delayed, the delay will not have significant effects and continuing discussions indicate that the final monitoring plan will be sufficiently comprehensive.

RPA Action **40**

Description The Corps shall continue to transport all non-research juvenile salmonids collected at the Snake River collector projects. The Corps and BPA shall continue to implement voluntary spill at all three Snake River collector projects when seasonal average flows are projected to meet or exceed 85 kcfs.

Status Runoff volumes in 2002 exceeded the 85 kcfs threshold and transportation was implemented accordingly.

NMFS expectation TMT will review the runoff volume information during the season and make a fish transportation decision at TMT based on this information, consistent with the BiOp RPA Action and the annual Water Management Plan.

AA implementation The Corps will transport all non-research juvenile salmonids collected at the Snake River collector projects and shall continue to implement voluntary spill at all three Snake River collector projects when seasonal average flows are projected to meet or exceed 85 kcfs. Further details will be provided in the annual Water Management plan and annual Fish Passage Plan.

Planned operations at FCRPS are described in the Water Management Plan and summarized in the 1 and 5-year implementation plans. The Action Agencies begin each year intending to implement the hydrosystem provisions of the BiOp. In coordination with TMT, in-season fish needs and runoff forecasts are used to make operational adjustments.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action **41**

Description The Corps and BPA shall continue (pending results of the McNary Transport Evaluation) to bypass juvenile spring migrants collected at McNary Dam and shall provide the spring spill levels described for that project.

Status Operations at McNary dam were consistent with this action. A transportation evaluation program was initiated during 2002 which resulted in selected research fish being transported. However, all spring migrating fish which are not part of this research project were bypassed.

NMFS expectation Continue (pending results of the McNary Transport Evaluation) to bypass juvenile spring migrants collected at McNary Dam and provide the spring spill levels described for that project, which are described in the 2002 Water Management Plan.

AA implementation The Corps is continuing to bypass spring migrants at McNary Dam in coordination with NOAA and on going research plans at McNary. Spill is being provided at levels provided in the BiOp. Further details will be provided in the annual Water Management Plan and Fish Passage Plan

NMFS finding **Implementation as expected**

NMFS comments

RPA Action **42**

Description The Corps and BPA shall operate the collector projects to maximize collection and transportation during the summer migration (i.e., no voluntary spill except as NMFS deems necessary for approved research).

Status Transportation followed the protocol specified in Water Management and Fish Passage Plans during 2002.

NMFS expectation Operate the collector projects during the 2002 fish passage season to maximize collection and transportation during the summer migration (i.e., no voluntary spill except as NOAA Fisheries deems necessary for approved research).

AA implementation The Corps operates the collector projects to maximize collection and transportation during the summer migration. Further details will be provided in the annual Water Management Plan and Fish Passage Plan.

NMFS finding **Implementation as expected**

NMFS comments

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RPA Action **43**

Description The Corps shall not initiate collection of subyearling fall chinook for transportation at McNary Dam until inriver migratory conditions are deteriorating (i.e., no longer spring-like).

Status During 2002 late season runoff and cool temperatures maintained "spring like" conditions in the Columbia River until July 10. Prior to that date all fish collected were returned to the river. After that date all fish collected were transported with the exception of research fish. These decisions were coordinated through the TMT process.

NMFS expectation Initiate the collection of subyearling fall chinook for transportation at McNary Dam when inriver migratory conditions are deteriorating (i.e., no longer spring-like). Coordinate the decision to begin collection and transportation in the TMT process.

AA implementation The Corps will continue to implement the transport program at McNary in compliance with the BiOp and the transport Section 10 Permit.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action **44**

Description The Corps shall extend the period of barge transportation from the lower Snake River dams and McNary to further reduce reliance on trucking.

Status In 2002, the extension of barging to August 15 was consistent with the expectations of this action.

NMFS expectation Continue extended barge transport from Snake River projects and McNary Dam through at least August 15.

AA implementation In FY02 the Corps extended barge transport from Snake River projects and McNary Dam through August 15. The Corps intends to continue barging through this date during future years. This is an extension of the barge ending date from June 24 to August 15 for Snake River projects.

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **45**

Description By the end of 2001, the Corps shall develop, in coordination with NMFS and the other Federal, state, and Tribal salmon managers, a McNary Dam transportation evaluation study plan specifically focusing on the response of UCR spring chinook and steelhead to transportation. Approved research should begin by 2002, if feasible.

Status This study was initiated in 2002, during which juvenile spring chinook were tagged at hatcheries upriver from McNary Dam and transported when detected at McNary Dam. Tagging of steelhead was initiated in 2002. These fish will be released during 2003.

NMFS expectation Continue the McNary spring migrant transportation study in 2003.

AA implementation A research plan has been developed and research was started in 2002 to evaluate transport at McNary. Marked release groups from upstream Columbia River hatcheries comprised the majority of the test fish used in this evaluation. With the installation of the primary bypass detector at McNary, this work also evaluates the primary bypass system compared to transportation in an effort to determine the optimal operation at McNary. Additionally, delayed mortality will be estimated by evaluating an inriver release group. Passage, timing, and general migration of inriver and transported migrants will be monitored using the PIT tag trawler in the upper estuary. This work will continue through 2005 with adult return through 2008. The final report will be available in 2009.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action **46**

Description The Corps and BPA, in coordination with NMFS through the annual planning process, shall evaluate transport to inriver return ratios for wild SR yearling chinook salmon and steelhead. In addition, the Corps and BPA shall also evaluate the effects of transportation on summer-migrating subyearling SR chinook salmon.

Status Studies were conducted consistent with this RPA Action.

NMFS expectation Continue transportation studies and evaluation of adult returns in 2003.

AA implementation The transportation evaluation from Lower Granite will continue using wild yearling chinook, steelhead, and fall chinook. The baseline study to compare in river survival to transportation from Lower Granite will be complete in 2003. Adults will be monitored through 2006 and a final report will be available in 2007. Also in 2003, this study will evaluate experimental conditions to improve transportation. Monitoring estuary passage timing will continue in 2003 with the PIT tag trawler. Physiological monitoring of fish condition and post release behavior will continue in 2003 with final reports for each of these available in 2004.

NMFS finding **Implementation as expected**

NMFS comments

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RPA Action **47**

Description During all transport evaluations, the Corps and BPA, in coordination with NMFS through the annual planning process, shall include an evaluation of delayed mortality (D) of transported versus inriver migrating juvenile anadromous salmonids.

Status Studies were conducted consistent with this RPA Action.

NMFS expectation Continue evaluation of "D" in 2003.

AA implementation Baseline estimates for delayed mortality (D) have been incorporated into the study design for the Lower Granite and McNary transport evaluations by maintaining an inriver release group. The D estimates will be provided in the annual status reports and in the final reports (Lower Granite in 2007 and McNary in 2009).

NMFS finding **Implementation as expected**

NMFS comments

RPA Action **48**

Description The Corps and BPA shall evaluate the effects of prior transport as smolts on the homing of adults.

Status Action Agencies completed the installation of PIT detectors in the adult passage facilities during 2002, which is a key component required to gather the data necessary to implement this action.

NMFS expectation Begin analysis in 2003 to evaluate effects of transportation on adult homing.

AA implementation Adult PIT detection systems were installed at McNary and are scheduled for installation at Priest Rapids, Ice Harbor and Lower Granite this winter. Further installation needs will be considered for subsequent years.

Adult telemetry fieldwork will be complete in April 2004. Data analysis will continue through 2005 with a final report in 2006. Starting in spring of 2003 after the installation of the adult PIT tag detector at Lower Granite and Ice Harbor, PIT tag data will be monitored and analysis will be conducted annually.

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **49**

Description The Corps shall evaluate strategies to enhance post-release survival of transported fish; examples of such strategies include timing releases so that fish arrival at the estuary corresponds to minimal interactions with predators and maximum availability of forage and locating releases so as to decrease passage time through areas of high predation.

Status In 2002, Action Agencies initiated planning of studies which will address the intent of this action.

NMFS expectation Begin experimental transport studies in 2003.

AA implementation Experimental transport studies begin 2003. In 2003 through 2005 impacts of steelhead holding densities will be evaluated by assessing physiological changes during and following transportation and with SARs. In 2003, planning will begin to evaluate barge releases in the estuary. This study is proposed for 2004-2006 with adult returns through 2009 and a final report on adult returns in 2010.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **50**

Description BPA and the Corps shall install necessary adult PIT-tag detectors at appropriate FCRPS projects before the expected return of adult salmon from the 2001 juvenile outmigration.  
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Status The detectors installed at Bonneville and McNary are working reasonably well. Shortcomings of these installations have been considered in the new designs. The Adult PIT Tag Oversight Committee asked the Fish Passage Advisory Committee for installation priorities in 2001 and 2002. Ice Harbor and Lower Granite were chosen as the next sites for implementation in the FCRPS. Priest Rapids was also chosen as an important non-FCRPS site.  
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NMFS expectation Ice Harbor and Lower Granite detectors should be installed in the ladders as designed through the Walla Walla FFDRWG process. Cost share installation of detectors at Priest Rapids Dam.  
.....

AA implementation Adult Pit-tag detectors were installed at Bonneville and McNary in 2002 and are scheduled for installation at Ice Harbor and Lower Granite in 2003. The remaining projects will be scheduled for 2004 through 2006 based on need and regional funding priorities.

NMFS finding **Implementation as expected**  
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NMFS comments

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RPA Action **51**

Description If results of Snake River studies indicate that survival of juvenile salmon and steelhead collected and transported during any segment of the juvenile migration (i.e., before May 1) is no better than the survival of juvenile salmon that migrate inriver, the Corps and BPA, in coordination with NMFS through the annual planning process, shall identify and implement appropriate measures to optimize inriver passage at the collector dams during those periods.  
.....

Status Analysis of the data collected to date comparing the smolt to adult returns (SARs) of Snake River spring/summer chinook which were transported versus those which migrated in-river and were not detected at any downstream transportation project suggests little benefit from transportation early in the season (April). Data for steelhead is more limited, but suggests a benefit from April transport. The conclusion drawn from the data to date is there is a benefit to providing good in-river conditions during this migration period. Transportation studies were conducted during 2002 to provide additional information on this issue. A more thorough analysis of the data is necessary before drawing any further conclusions.  
.....

NMFS expectation A decision on transportation in 2003 will be made through the annual planning process.  
.....

AA implementation Activities will occur pending results of the transport evaluations.

NMFS finding **No schedule, implementation underway**  
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NMFS comments



RPA Action **52**

Description The Corps shall identify and implement improvements to the transportation program.

Status In addition to improvements described by Action Agencies, barging was extended to August 15th and transportation was delayed from selected projects in 2002.

NMFS expectation Continue to identify and implement facility improvements and operational changes for the transport program as they are identified and coordinated through FPOM and the Fish Passage Plan.

AA implementation The Corps will continue to implement facility improvements and operational changes for the transport program as they are identified and coordinated through FPOM and the Fish Passage Plan. Specific improvements to the fish facilities for research include the juvenile fish PIT tag detector/deflector sort by code systems at Lower Granite (2001), Little Goose (2002), and McNary (2002 – 2003). At Lower Monumental the juvenile fish facility is being modified to improve raceway releases and barge loading flumes in the winter 2002-2003.

NMFS finding **Implementation as expected**

NMFS comments

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RPA Action **53**

Description The Corps shall evaluate and implement structural and operational alternatives to improve juvenile transportation at the collector dams.

Status Identification that a problem existed with the loading flume at Lower Monumental Dam occurred in 2002. Plans to rectify this problem were prepared.

NMFS expectation Construct a new barge-loading flume at Lower Monumental in 2003. Continue to evaluate and juvenile collection facilities.

AA implementation A new barge-loading flume will be constructed at Lower Monumental in 2003. New fish release pipes were installed at McNary in 2002. Evaluation of all juvenile facilities and resultant improvements will be completed as funds are available. The Corps will continue to implement other facility improvements and operational changes for the transport program as they are identified and coordinated through FPOM and the Fish Passage Plan.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action **54**

Description The Corps and BPA shall implement an annual spill program, consistent with the spill volumes and TDG limits identified in Table 9.6-3, at all mainstem Snake and Columbia River FCRPS projects as part of the annual planning effort to achieve the juvenile salmon and steelhead performance standards.  
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Status Spill was not provided per the BiOp in 2001 due to the emergency declared by BPA. Spill occurred per the BiOp in 2002, with some days of spill lower than the TDG cap at Bonneville and The Dalles. This was due to the need to continually adjust spill levels in response to changing river flows, water temperature, and TDG levels in order not to exceed the 120% TDG cap, as required by the state TDG waivers.  
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NMFS expectation The Corps and BPA will implement an annual spill program as specified in the RPA.  
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AA implementation The Corps and BPA will implement an annual spill program as specified in the RPA. Further details will be provided in the annual Water Management Plan.

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NMFS finding **Implementation as expected**  
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NMFS comments

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RPA Action **55**

Description To improve the future flexibility of the transmission system, BPA's Transmission Business Line shall initiate planning and design necessary to construct a Schultz-Hanford 500-kV line or an equivalent project, with a planned schedule for implementation by 2004 or 2005.  
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Status BPA is on track to prepare and complete NEPA documentation, design and construction activities necessary to energize the Schultz-Wautoma 500-kv transmission line in October 2004.  
.....

NMFS expectation Transmission line design will be completed and land and material acquisition will continue in 2003. BPA is also expected to complete final EIS and Record of Decision for this new transmission project during 2003. The Schultz-Wautoma project will increase transmission capacity north of the Hanford reservation by 500-kv, thereby removing a constraint to full implementation of river operations recommended in the 2000 BiOp.  
.....

AA implementation Line design will be completed and land and material acquisition will continue in 2003. Line energization is scheduled for October 2004. The substation at which this line will terminate is called Wautoma and the line is not referred to as the Schultz-Wautoma 500-kV line.

.....  
NMFS finding **Implementation as expected**  
.....

NMFS comments

RPA Action **56**

Description BPA's Transmission Business Line shall continue efforts to evaluate, plan, design, and construct a joint transmission project to upgrade the west-of-Hatwai cutplane and improve the transfer limitations from Montana.

Status The transmission project BPA is pursuing to remove the west-of-Hatwai transfer limitation is called the Grand Coulee-Bell 500-kV transmission line. The proposed transmission line begins at the Grand Coulee Dam and extends in an easterly direction for about 83 miles to BPA's Bell Substation north of Spokane, Washington. The EIS and a Record of Decision are scheduled for completion in 2003, followed by construction of the transmission line and terminal facilities in 2004.

NMFS expectation The EIS and a Record of Decision for the Grand Coulee-Bell 500-kv transmission line are scheduled to be completed in 2003.

AA implementation The project that BPA is pursuing to solve this transfer limitation is called the Grand Coulee-Bell 500-kV transmission line. The EIS and a Record of Decision are scheduled for completion in 2003, followed by construction of the transmission line and terminal facilities in 2004.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action 57

Description BPA's Transmission Business Line shall continue to evaluate strategically located generation additions and other transmission system improvements and report progress to NMFS annually. BPA's Transmission Business Line shall also limit future reservations for transmission capacity, as needed, to enable additional spill to meet performance standards, while minimizing effects on transmission rights holders.

Status BPA's Transmission Business Line (TBL) continues to evaluate the integration of new generating facilities, including the Hungry Horse and Libby Transmission Stability Studies. Several new transmission line additions are proposed to integrate the output from a number of proposed combustion turbines. New 500-kV transmission lines from Lower Monumental to McNary and from McNary to John Day dams have been evaluated in EIS's. Their scheduled completion was delayed when the new generation projects were placed on hold.

BPA-TBL still has not indicated to NOAA Fisheries whether it has limited any future reservations for existing transmission capacity, or if any is needed to enable spill to meet performance standards.

NMFS expectation

Hungry Horse Transmission Stability Study ( BPA):  
BPA-TBL expected to conduct a system engineering study and recommend alternatives such as additional transmission lines or other technical or operational solutions to ensure both voltage stability in the Flathead Valley and enable the full range of Hungry Horse Dam operations in support of listed fish needs. The studies are to be conducted in 2002 and 2003. A study report including recommendations is expected to be completed in 2004.  
Libby Transmission Stability Study ( BPA):  
BPA-TBL expected to conduct a system engineering study and recommend alternatives such as additional transmission line or other technical or operational solutions to ensure both voltage stability and enable a full range of Libby and Hungry Horse Dam operations in support of listed fish needs. Variable Columbia Falls Aluminum Company operations have complicated these studies, which are scheduled for completion by December 2003. BPA has decided to construct the McNary-John Day new 500-kv transmission line, as indicated in the final EIS and Record of Decision dated Nov. 15, 2002. Since many of the new generation facilities are on hold, BPA is expected to initiate only preliminary construction activities for this new line in 2003.

AA implementation

BPA's Transmission Business Line continues to evaluate the integration of new generating facilities, including Hungry Horse Transmission Stability Study -and the Libby Transmission Stability Study. Several new transmission line additions were proposed to integrate the output from a number of proposed combustion turbines. New 500-kV transmission lines from Lower Monumental to McNary and from McNary to John Day have been evaluated in EIS's. Their scheduled completion was delayed when the generation projects were placed on hold.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **58**

Description The Corps and BPA, in coordination with the Fish Passage Operations and Maintenance Coordination Team (FPOM), shall operate all turbine units at FCRPS dams for optimum fish passage survival. Methods to achieve this objective shall include, but are not limited to, activities outlined in the following paragraphs. (See RPA)

Status The Corps is in the final phase of index testing of all the units in the System that pass fish. BPA and the Corps prepared a summary report detailing compliance with the 1% peak efficiency turbine operation guidelines for 2002 and 2001.

NMFS expectation We expect all Fish Passage Plan turbine operating tables to be updated and that these units will be operated within 1% peak efficiency. The load-shaping guidelines this year are expected in March or early April of 2003.

AA implementation Index Tests will have been conducted at all NWP Columbia River projects, including all families of turbines, by the end of 2003. Index testing will be completed at all NWW projects by the end of 2006. The new 1% turbine efficiency tables have been included in the annual Fish Passage Plan as soon as they were available. The remaining curves will be submitted to FPOM as soon as they are available for timely implementation. The Corps will operate all turbine units at the lower Snake and lower Columbia river FCRPS projects for optimum fish passage survival. Further details will be provided in the annual Water Management Plan and Fish Passage Plan. The Corps will also prepare an annual summary report detailing compliance with the 1% peak efficiency turbine operation guidelines included in Section 10.5.1.8 of the NOAA 2000 FCRPS BiOp.

NMFS finding **Implementation as expected**

NMFS comments Although the load-shaping guidelines in 2003 are expected a month or two later than the February date in RPA Action 58, it will still be received before the beginning of the fish passage season. This delay will not adversely affect the annual implementation of this action in 2003.

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RPA Action **59**

Description The Action Agencies, in coordination with the Regional Forum, shall determine the appropriate operating range of turbines equipped with minimum gap runners (MGRs) to increase survival of juvenile migrants passing through these new turbine designs.

Status Initial turbine survival testing completed.

NMFS expectation Final report of Turbine Survival Program (Phase I) expected in early 2003. Report should include Phase II study plan.

AA implementation Tests for best operating conditions have been accomplished at Bonneville and McNary Dams. Hydraulic modeling work is planned for 2003. Schedules for additional efforts, including field tests, will be determined through development of the Turbine Survival Program Phase II study plan in 2003 and implemented according to future funding priorities for the program

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **60**

Description The Corps and BPA shall evaluate adult fallback and juvenile fish passage under daytime spill to the gas cap at Bonneville Dam in 2002 and 2003, after deflector optimization improvements allow for increased spill above current levels. Research results will be considered, in consultation with NMFS through the annual planning process, to determine implementation of additional changes in spill to further improve fish survival.

Status Adult and juvenile studies were conducted in 2002.

Adult fallback dropped to low levels in 2002, in part due to Bonneville 2nd Powerhouse operating priority. Affirmation studies to occur in 2003.

Juvenile spill passage efficiency was higher with spill to the cap than at 75 kcfs during the day, even though spill cap varied.

NMFS expectation Adult and juvenile passage studies expected to be repeated in 2003.

AA implementation Adult fallback evaluations will continue in 2003 and may be completed depending on the data obtained from field studies. This data will be used to assess operational and configuration alternatives (See also RPA action 113).

NMFS finding **Implementation as expected**

NMFS comments

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RPA Action **61**

Description The Corps shall complete the ongoing prototype powerhouse system surface collection evaluations at Bonneville First Powerhouse in 2000. The Corps shall compare the prototype with screened bypass systems and, if warranted, design and construct permanent facilities after full consideration and resolution of biological and engineering uncertainties, especially high-flow outfall investigations.

Status Prototype work on a deep slot type collector has been completed. Evaluation of existing ice and trash sluiceway as a surface bypass route was begun in 2002.

Further testing and implementation of a deep slot type surface collector is on hold pending outcome of the Bonneville Decision Process. Additional evaluation of surface bypass through the existing sluiceway is necessary to finish the decision process.

NMFS expectation Continue evaluation of existing First Powerhouse ice and trash sluiceway as a surface bypass.

AA implementation The prototype tests have been completed. Test facility removal was deferred in 2003 due to other higher funding priorities. The configuration decision process will continue with additional tests for lower cost surface bypass alternatives planned in 2003 and in 2004 after prototype removal. (See also RPA action 97)

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **62**

Description The Corps shall complete Bonneville First Powerhouse prototype evaluations of extended submerged intake and gatewell vertical barrier screens, including an assessment of fry passage.

Status Initial bypass system design and biological testing have been completed. VBS design may need to be revisited for mesh size changes and debris handling capabilities.

This system is on hold pending final outcome of the Bonneville decision process.

NMFS expectation Maintain existing ESBS, no other expectation for 2003.

AA implementation FGE tests were completed in 2000. Additional testing may be necessary to include evaluation with new screen mesh size if a decision is made to move forward with implementation of a new juvenile bypass system (JBS) system.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **63**

Description The Corps shall complete the design of debris removal facilities for the Bonneville First Powerhouse forebay.

Status Design is completed.

Implementation is on hold pending decision on configuration of Bonneville Dam fish passage facilities.

NMFS expectation No expectation for 2003.

AA implementation Debris removal (log boom) has been designed in conjunction with the JBS outfall relocation improvements. Implementation of JBS improvements is pending completion of the configuration decision process (see RPA action 97) and funding prioritization.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **64**

Description The Corps shall continue the investigation of minimum gap runners at the Bonneville First Powerhouse.

Status Additional MGR testing subject to regional prioritization and funding.

NMFS expectation Final report of Turbine Survival Program (Phase I) expected in early 2003. Report should include Phase II study plan.

AA implementation A second year of survival studies for the MGRs will be scheduled in the Phase II Turbine Survival Program study plan. (See RPA action 59)

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **65**

Description The Corps shall complete Bonneville Second Powerhouse post-construction evaluation of the new juvenile fish bypass outfall and address design and operational refinements as warranted.

Status Approximately 90% of the post construction items have been completed.

Recent observations of high injury and mortality rates in the bypass may be due to construction or design deficiencies. Evaluation of potentially adverse gatewell orifice hydraulic conditions should be added to this post construction evaluation.

NMFS expectation Continued implementation of remaining checklist items (3-way diverter gate redesign, screen cleaner, etc.). Monitor ovality of the main bypass pipe. Add need for assessment and modification of potential poor gatewell orifice hydraulic conditions.

AA implementation Post-construction biological evaluations have been completed. Follow-on refinements will continue through 2003 and beyond as warranted when/if problems are identified.

NMFS finding **No schedule, implementation underway**

NMFS comments



RPA Action **66**

Description The Corps shall continue design development and construction of a Bonneville Second Powerhouse permanent corner collector at the existing sluice chute, pending results of high-flow outfall investigations. The Corps shall construct new facilities if, and as soon as, evaluations confirm the optimum design configuration and survival benefits.  
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Status Initial fish passage efficiency work indicated that a corner collector had the potential to pass 50% of the juveniles in the second powerhouse forebay. After extensive design work, construction began in late 2002.  
.....

NMFS expectation Continue construction of corner collector. Keep on schedule for operation at the beginning of the 2004 fish passage season.  
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AA implementation Corner collector construction began in 2002. The facility is expected to be operational for the 2004 passage season. Evaluations are scheduled for 2004 and 2005.  
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NMFS finding **No schedule, implementation underway**  
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NMFS comments

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RPA Action **67**

Description The Corps shall continue Bonneville Second Powerhouse investigations of measures to improve intake screen fish guidance efficiency and safe passage through the gateway environment. This work shall include an assessment of fry passage.  
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Status Construction of prototype features on unit 15 was completed in April 2001 for a prototype test. The test evaluated guidance and fish passage through the gap above the screen and below the intake ceiling with and without the gap closure device. Unit 17 was modified in 2002, and both units 15 and 17 were scheduled for testing in 2002. Unit 17 test concerns the effectiveness of the modifications with the cross flow that occurs at the ends of the powerhouse. Fyke net testing in 2001 in unit 15 showed guidance in the 70% range. However, hydroacoustic monitoring of the powerhouse showed high guidance at all units in the low flow 2001 year.  
.....

NMFS expectation Identify and rectify gap loss and VBS design and debris handling issues. Develop implementation strategy.  
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AA implementation Evaluations will continue in 2003 and 2004. It is anticipated that an implementation decision will be made following 2004 tests, with improvements potentially operational by 2006.  
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NMFS finding **No schedule, implementation underway**  
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NMFS comments

RPA Action **68**

Description The Corps and BPA shall continue spill and passage survival studies at The Dalles Dam in 2001. Research results shall be considered, in consultation with NMFS through the annual planning process, to assess the need for additional changes in spill to further improve fish survival by 2002, if possible, but no later than 2005.

Status Conducted spill passage survival studies at The Dalles in 2001 and 2002.

NMFS expectation Continue investigation for causes of poor spillway survival. Finalize design and begin implementation of structural and operational improvements to the spillway and stilling basin.

AA implementation Spillway evaluations and alternative operations and configuration improvements to reduce spill passage mortality and reduce gas entrainment will continue in 2003, and will likely continue for several additional years. Also see RPA actions 134 and 135.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action **69**

Description The Corps shall continue design development and 2001 prototype testing of upper turbine intake occlusion devices at The Dalles, with a goal of increased non-turbine passage rates through either the sluiceway or the spillway. The Corps shall install occlusion devices across the entire powerhouse, as warranted.

Status Comprehensive 2002 evaluations showed inadequate performance to sustain funding in 2003.

NMFS expectation Initiate configuration alternatives decision document for The Dalles.

AA implementation After testing in 2002, the future of blocked trashracks is in doubt. No tests are planned for 2003, except evaluating juvenile fish behavior in the forebay. Alternative configuration options for The Dalles will be developed in 2003 to provide direction and schedule for further evaluations leading to final configuration and operation decisions in future years.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **70**

Description The Corps shall continue biological and engineering investigations and design of a composite ice and trash sluiceway outfall relocation and adult ladder auxiliary water system at The Dalles Dam and shall construct such devices as warranted.

Status An extensive amount of design work has occurred over the past few years on this RPA Action. This work was put on hold in 2001 because of the lack of a suitable sluiceway outfall location and the unknown effect spillway survival modifications may have on potential outfall locations.

Work on this RPA Action is on hold pending the outcome of The Dalles Dam configuration process. This process will determine whether continued work on outfall relocation is warranted based on how the ice and trash sluiceway fits in the future fish passage alternatives at this project. Ongoing adult fishway improvement work will reduce urgency of developing an emergency AWS water source for the east fishway.

NMFS expectation Continue with The Dalles Dam configuration alternatives process.

AA implementation Continued work on outfall relocation options and initiation of design are deferred in 2003 pending clearer direction on options for configuration of the project for juvenile passage. (See RPA action 69)

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **71**

Description The Corps and BPA shall continue investigation of 24-hour spill at John Day Dam in 2001. Research results will be considered, in consultation with NMFS through the annual planning process, to determine implementation of daytime spill to further improve juvenile fish survival as needed for its contribution to the performance standard.

Status Studies of 24 hour spill to date have indicated little passage or survival benefit in the spring and a possible passage benefit in the summer. Operational inconsistencies have caused problems with the study design, particularly in the summer, resulting in poor survival estimate precision. The summer work should be repeated before decisions on implementation can be made.

NMFS expectation Continue studies in 2003 of spillway survival and the effects of spill levels on bypass survival.

AA implementation Studies will continue in 2003 to and be completed in 2004. Spillway operations will be established in conjunction with configuration decisions for John Day project. (See RPA action 98)

NMFS finding **Implementation as expected**

NMFS comments

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RPA Action **72**

Description The Corps shall continue design development of a prototype RSW and extended deflector for testing at John Day in 2002. The Corps should synthesize evaluation results, determine the fish survival benefits of one or more RSWs or a skeleton bay surface bypass, and install the units as warranted.

Status A prototype removable spillway weir (RSW) test at John Day was delayed from 2002 until at least 2003. Of note, however, the 7 kcfs RSW tested at Lower Granite in 2002 performed very well. It has been recommended that a similar device be investigated at a different spill bay (than bay #20) at John Day, and be considered in the context of 20-30% spill. This step has not been initiated to date, but is needed to assess whether additional funding for implementation is appropriate.

NMFS expectation RSW tailrace egress studies were not prioritized for 2003, and are not expected to be undertaken. Investigations of potential revised-scope RSW usage at John Day (more consistent with the 2002 Lower Granite RSW prototype) expected to be initiated in 2003, as well as a John Day configuration analysis. Conduct an investigation and prepare a report on feasibility of a smaller RSW, in conjunction with 20-30% training spill. Decide whether to retain this option for further development in 2004, or whether this option should be dropped from further consideration.

AA implementation The NOAA Findings Letter (July 2002) acknowledges that the prototype RSW test at John Day will be delayed from 2002 until at least 2003 pending results of tests at Lower Granite, evaluation of tailrace egress issues, and assessing configuration alternatives for this project. A schedule for future development, if warranted, will be established when additional information becomes available.

NMFS finding **Implementation as expected**

NMFS comments NOAA Fisheries concluded this delay, as noted in the 2002 findings, was a beneficial effect because: (1) there are risks associated with deployment in a skeleton bay that were not fully anticipated in the Opinion, and (2) new information from recent hydraulic modeling indicates that the planned RSW at John Day Dam would increase the collection of juvenile migrants and improve water quality, but would also create dangerous eddies and stagnant zones in the project's tailrace.

The 18 kcfs RSW at spill bay 20, which was envisioned in Action 72, is no longer being considered. The reason for this decision is that the 18 kcfs RSW at spill bay 20 promised to collect many juveniles from forebay, but hydraulic model studies showed that tailrace juvenile egress would be a problem, due to the need for excessive training spill (from adjacent spill bays) required to move fish downstream without creation of harmful eddies or stagnation zones known to hold aquatic predators.

RPA Action **73**

Description The Corps shall continue John Day prototype development and investigations of extended submerged intake screens, gatewell vertical barrier screens, and, if necessary, orifices to optimize guidance and safe passage through the system, including a gatewell debris cleaning plan. This work shall include an assessment of fry passage. The Corps shall design and construct new screen systems for safe passage of juvenile salmonids, as warranted. Juvenile bypass outfall survival investigations shall also be conducted.

Status Early studies indicated ESBS's would provide significant improvements in FGE but gatewell survival suffered. New VBS design has resolved this. ESBS and VBS structural/mechanical integrity, debris handling and overall bypass survival issues remain.

Full implementation will depend on results of ongoing studies and the results of ongoing John Day fish passage facility configuration discussions.

NMFS expectation Continue investigation of VBS structural issues and debris handling methods and continue bypass survival evaluations.

AA implementation Extended-length screen development is proceeding with replacement prototypes and testing of VBSs in 2003. Implementation decisions for partial or full permanent implementation may be made after this years' tests but will be dependent on configuration decisions for this project. (See RPA action 98)

NMFS finding **Implementation as expected**

NMFS comments

RPA Action **74**

Description The Corps shall continue evaluations to assess the need for improvements of the existing intake screens, gatewell vertical barrier screen cleaning system, and bypass facilities (including debris containment and removal systems, separation, sampling, loading, and outfall facilities) at McNary to determine where improvements are necessary to reduce problems experienced during the 1996 flood, increase fish survival, and resolve holding and loading facility problems, including raceway jumping by juvenile salmon and steelhead and debris plugging of bypass lines. Additionally, the Corps shall evaluate whether the existing juvenile bypass system outfall should be relocated.

Status Conducted studies to evaluate bypass systems, screen designs, and debris handling at McNary in 2001 and 2002.

NMFS expectation Continued investigation of gatewell debris handling methods and evaluation of project survival including an evaluation of the bypass outfall.

AA implementation Intake screen and gatewell barrier screen work has been moved to the McNary modernization program. A technical report addressing the juvenile fish outfall and a powerhouse spillway divider wall is being prepared as part of the McNary Gas Fast-Track (deflectors) project. This technical report will examine the existing juvenile outfall location for adequacy and will present costs and benefits of installing a powerhouse/spillway divider wall. If the outfall location is determined to be inadequate, then the report will make recommendations for relocation and present an estimated cost for relocation.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **75**

Description The Corps shall investigate a surface bypass RSW at McNary Dam, based on prototype results at other locations, and shall install the unit in multiple spillway bays, as warranted.

Status RSW prototype research at Lower Granite only. Nothing done to date regarding RSW at McNary.

1. Continued turbine upgrade work makes the need for enhanced fish mitigation options, such as RSW, (above 2000 BIOP levels) probable.
2. RSW is an option for reducing dissolved gas mass due to 12-hour spill at a very high gas cap level at McNary (expected to be at 190 kcfs as of 2003), without compromising spillway passage efficiency.
3. A decision to implement RSW at McNary is at least several years away.
4. Finding in 2002 that implementation was underway was in error.

NMFS expectation RSW research and development at other sites is expected to continue in 2003. Applicability of RSW at McNary will not be determined in 2003. A Lower Snake River and McNary Action Plan is expected to be developed in 2003 to identify future configuration options priorities. Research of spillway passage, and other options, is expected to continue at McNary. RSW is one of the options that will be evaluated.

AA implementation The Corps will complete a draft decision analysis for the Lower Snake River Projects and McNary in the spring 2003. This analysis will identify project priorities for application of RSW technology. The analysis will also include other juvenile bypass features.

NMFS finding **No schedule, implementation not underway**

NMFS comments

RPA Action **76**

Description The Corps shall investigate, design, and construct, as warranted, a new juvenile bypass outfall at Lower Monumental Dam. Investigations shall be conducted in conjunction with spillway deflector and spill pattern optimization studies.

Status McNary and Lower Snake River projects draft decision analysis has been initiated.

It is expected that the existing outfall will continue to be a problem due to its poor location relative to tailrace predation. Although past research has shown existing outfall site is not a survival problem, this research is discounted due to not fully factoring past appreciable tailrace hydraulic variability (day vs. night) into account. New end-bay deflectors and spill schedule (including spill percentage limit for juvenile egress) will require new evaluation.

NMFS expectation McNary and Lower Snake River Action Plan is to be completed for configuration options at Lower Monumental and other Corps Walla Walla District sites.

AA implementation The Corps plans to use a decision analysis for McNary and Lower Snake projects similar to that used for Bonneville 1 Powerhouse that would include the RPA actions related to Lower Monumental (76, 77, 78, and 99). ESBS design and testing has not started due to other high priority work and recent discussions regarding poor performance related to the juvenile facility support. The Corps is delaying any significant improvements to the powerhouse collection system until spill survival results are available. The spill studies are scheduled to start in 2003 pending funding and regional prioritization. The studies will include consideration of spill survival, RSW benefits, transport vs in-river, etc. and call for a decision analysis to be completed by 2005. Corps and NOAA technical staff will work with the region to develop a comprehensive plan. Work in FY03 will also include hydraulic model studies to evaluate alternative outfall locations for analysis in the decision document.

NMFS finding **No schedule, implementation underway**

NMFS comments



RPA Action **77**

Description The Corps shall investigate surface bypass (e.g., RSW) at Lower Monumental Dam, based on prototype results at other locations, and install in multiple spillway bays, as warranted.

Status RSW is under consideration at Lower Monumental (and has been preliminarily studied by the Corps) in the context of possible spill reduction (as per request by BPA to accelerate Lower Monumental RSW.)

Studies are preliminary; site specific investigations of RSW have only been considered in very preliminary numerical modeling exercises relating to reduced spill investigations - requested by BPA in October 2002.

NMFS expectation McNary and Lower Snake River Action Plan is to be completed for configuration options at Lower Monumental and other Corps Walla Walla District sites.

AA implementation Same as 76

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **78**

Description The Corps shall initiate design development and testing of extended submerged intake screens and vertical barrier screens at Lower Monumental Dam and construct units as warranted.

Status Not underway. The Corps plans to use a decision analysis for McNary and Lower Snake projects similar to that used for Bonneville 1 Powerhouse that would include the RPA actions related to Lower Monumental (76, 77, 78, and 99).

NMFS expectation No actions are expected in 2003.

AA implementation Same as 76

NMFS finding **No schedule, implementation not underway**

NMFS comments Contrary to 2002 findings, the Action Agencies did not initiate evaluation of ESBS at Lower Monumental in 2002.

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RPA Action **79**

Description The Corps shall conduct a post-construction evaluation of the new debris containment boom at Little Goose to monitor populations and behavior of aquatic predators when debris accumulates at the log boom.

Status Completed post-construction predator monitoring evaluation in 2002.

NMFS expectation Complete final report in 2003.

AA implementation The post-construction predator monitoring evaluation is complete and the final report is due in 2003.

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **80**

Description The Corps shall continue the design development, fabrication/deployment, and testing of a prototype RSW at Lower Granite, in conjunction with the existing prototype powerhouse occlusion devices, including the forebay behavioral guidance structure (BGS) and upper turbine intake occlusion devices. As warranted by prototype test results, the Corps shall install one or more permanent RSWs and occlusion devices at appropriate lower Snake hydro projects, in coordination with the annual planning process.

Status First year of RSW testing completed in 2002. 2002 RSW performance was in excess of expectations. Affirmation of performance and survival studies scheduled for 2003. Applicability of RSW as a replacement for high spill at Lower Granite and elsewhere is evolving, based on excellent performance in 2002.

NMFS expectation Fish passage effectiveness and efficiency of the RSW plus training spill expected to be evaluated for the second year in 2003. Also, survival through the RSW will be evaluated.

AA implementation 2002 RSW performance exceeded expectations. A second year of testing is scheduled for spring 2003. The existing SBC and BGS will be removed to provide stand-alone test conditions. See RPA action 75 for discussion of installing RSWs at other projects.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action **81**

Description The Corps shall complete design for new juvenile bypass facilities at Lower Granite Dam, including enlarged orifices and bypass gallery, open-channel flow bypass, improved separator for juvenile separation by size, and improved fish distribution flumes and barge-loading facilities and shall proceed to construction, as warranted.

Status This activity was not rated as a high priority by SCT in 2002, and there was no action in 2002. This activity was not rated as a high priority by SCT, and may not be funded in 2003. Funding more likely in 2004. A five year plan includes a schedule

NMFS expectation Pending funding, revision of design documents will occur in 2003. However, it is more probable that this will occur in 2004

AA implementation The Corps Walla Walla District will resume design in 2004. It will take two construction work windows and completion of new facility will be in 2007.

NMFS finding **No schedule, implementation not underway**

NMFS comments

RPA Action **82**

Description The Action Agencies, in coordination with NMFS through the annual planning process, shall investigate the spillway passage survival of juvenile salmonids at appropriate FCRPS dams. These investigations shall assess the effect of spill patterns and per-bay spill volumes on fish survival, across a range of flow conditions. The Action Agencies shall develop a phased approach (including costs and schedules) and set priorities, in consultation with NMFS in the annual planning process, to continue spillway passage survival studies in 2001 and future years.

Status Spill survival was evaluated at Bonneville, The Dalles, John Day McNary and Ice Harbor dams in 2002.

NMFS expectation Spill survival investigations are expected to continue for Bonneville, The Dalles, John Day, McNary, Ice Harbor dams and to start for Lower Monumental Dam in 2003. Additional spillway work is expected to occur at Lower Granite in conjunction with the RSW evaluations.

AA implementation Bonneville: Spill and project survival studies will continue in 2003 and are anticipated to be completed by 2005.  
The Dalles: Spill and project survival studies will continue in 2003. It is anticipated that tests may need to continue through the 2006 passage season, but that is highly dependent on the results obtained.  
John Day: It is anticipated that, with adequate test conditions this year, the spill survival program will be completed in 2004. Test data will be used to determine 12 vs 24 spill and configuration options for this project. (See also RPA action 98)  
McNary Dam: Spill survival studies started in 2002 and will continue in 2003-2004 with a final report in 2005.  
Ice Harbor: Based on lower fish survival observed in 2000 and 2002, the spill levels are being evaluated at Ice Harbor for spring and summer conditions in 2003 with an optimization evaluation in 2004. A final report will be available in 2005.  
Lower Monumental: Baseline spill survival, effectiveness, and efficiency studies are scheduled in 2003-2005 with optimization in 2006.  
Little Goose: Following installation of the endbay deflectors, spill evaluation will begin in 2005 and continue through 2008.  
Lower Granite: Spill evaluation to optimize system survival will begin following completion of the RSW prototype evaluations.  
Project survival studies that include determination of baseline spill survival, spill efficiencies, and effectiveness are scheduled for all projects.  
Evaluation of adult monitoring will be incorporated into the study design where appropriate, as identified by the adult sub-group of the SRWG.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **83**

Description The Action Agencies, in coordination with NMFS through the annual planning process, shall evaluate the effect of spill duration and volume on spillway effectiveness (percent of total project passage via spill), spill efficiency (fish per unit flow), forebay residence time, and total project and system survival of juvenile steelhead and salmon passing FCRPS dams. Studies shall include both collector and non-collector projects. Adult passage considerations and potential adult fallback shall also be considered in study designs. Little Goose and Lower Granite dams shall be specifically considered for daytime spill studies. An overall phased study approach for spill evaluations will be determined in the 1- and 5-year implementation plans.  
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Status Spill efficiency work was conducted at Bonneville, The Dalles, John Day, Ice Harbor and Lower Granite dams in 2002.  
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NMFS expectation Spill passage efficiency work should continue at The Dalles, John Day, Ice Harbor and Lower Granite dams in 2003 and new work should begin at Lower Monumental and McNary dams.  
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AA implementation See RPA action 82

NMFS finding **No schedule, implementation underway**  
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NMFS comments

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RPA Action **84**

Description The Corps shall continue high-flow outfall investigations to determine whether it is appropriate to modify bypass outfall criteria in the context of high-discharge bypass discharges.  
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Status This issue was evaluated through laboratory studies and the resulting criteria were implemented in the design of the Bonneville Dam Second Powerhouse corner collector.  
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NMFS expectation No further action until the Bonneville Dam corner collector is completed, at which time (2004) post-construction evaluations will assess fish survival through this high flow outfall.  
.....

AA implementation Evaluations were completed and the results were incorporated into the outfall design for the Bonneville Powerhouse 2 corner collector. Post-construction testing of the corner collector is scheduled for 2004 and 2005 at which time outfall performance will be monitored.

NMFS finding **No schedule, implementation underway**  
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NMFS comments

RPA Action **85**

Description The Corps shall continue to develop and evaluate improved fish-tracking technologies and computational fluid dynamics (numerical modeling). The ability to integrate these technologies and fluid dynamics shall be assessed as a potentially improved means of determining fish responses to forebay hydraulic conditions.

Status 2002 integration of acoustic tracking and CFD outputs for RSW assessment at Lower Granite is the primary integration effort for this passage season. CFD outputs have yet to reach the acoustic tracking entity, and integration will occur at that time.

NMFS expectation We expect the future application of CFD integration with acoustic tag tracking to be dependent on the 2002 Lower Granite RSW integration outcomes - which should be ready for review early in calendar year 2003

AA implementation These activities will continue in 2003 and beyond as needed. CFD models are being developed and/or verified for several projects in 2003.

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **86**

Description The Corps shall continue to investigate a way to increase entry rates of fish approaching surface bypass/collector entrances.

Status This was a research objective at RSW at Lower Granite in 2002.

NMFS expectation Two studies that include an evaluation of several projects with an acoustic camera and a flume study proposed to better assess fish responses to hydraulic stimuli under controlled conditions are planned for this year.

AA implementation This is an ongoing effort to test fish entry with various entrance geometry and flow conditions at projects where surface bypass is being tested (see specific RPA actions at various projects). Two studies are planned in 2003 to better evaluate entry conditions. These include an evaluation of several projects with an acoustic camera and a flume study proposed to better assess fish responses to hydraulic stimuli under controlled conditions.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **87**

Description The Corps and BPA shall assess less-intrusive, PIT-tag interrogation methods at FCRPS juvenile bypass systems with interrogation sites, including McNary, John Day, and Bonneville dams. The Corps and BPA shall also assess providing a similar detection capability for the Ice Harbor juvenile bypass system.

Status Less-intrusive PIT detectors were installed at McNary, and performed at a high level. Ice Harbor less-intrusive PIT detectors will be installed early in FY 2004, with design and procurement in 2003. Installation at Lower Monumental prior to 2004 is also probable. Efforts to implement prior to 2003 passage season were unsuccessful, due to late request.

NMFS expectation Prepare for installation at Ice Harbor and Lower Monumental early in 2004.

AA implementation Primary bypass PIT detectors (less-intrusive) were installed at the McNary juvenile fish facility in 2003. Evaluation of primary bypass vs transport is being conducted in 2003-2009 at McNary. Design will occur in 2003 for installation at Ice Harbor (2004), possibly Lower Monumental (2004), and John Day (2005). The need for primary PIT tag detectors at Little Goose and Lower Granite will be determined by 2006.

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **88**

Description The Corps and BPA, in coordination with the Fish Facility Design Review Work Group and the Fish Passage Improvement Through Turbines Technical Work Group, shall continue the program to improve turbine survival of juvenile and adult salmonids.

Status Continuing

NMFS expectation Final report of Turbine Survival Program (Phase I) expected in early 2003. Report should include Phase II study plan.

AA implementation Program continues. (See RPA action 89)

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **89**

Description The Action Agencies shall investigate hydraulic and behavioral aspects of turbine passage by juvenile steelhead and salmon through turbines to develop biologically based turbine design and operating criteria. The Corps shall submit a report to NMFS stating the findings of the first phase of the Turbine Passage Survival Program by October 2001. Annual progress reports will be provided after this date.

Status Hydraulic modeling conducted at ERDC and biological testing conducted at McNary in 2002.

NMFS expectation Phase 1 report is expected to be completed in early 2003.

AA implementation The Phase 1 report will be completed in 2003 with a plan of study for Phase II. Phase II will be a multi-year program to address a number of turbine passage issues identified in the BIOP.

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **90**

Description The Action Agencies shall examine the effects of draft tubes and powerhouse tailraces on the survival of fish passing through turbines.

Status Field study conducted at McNary dam. Hydraulic model study conducted at ERDC.

NMFS expectation Draft Turbine Survival Program Phase I report completed in Dec 2002. Awaiting final copy summarizing results. Radio telemetry report should be released in early 2003.

AA implementation Evaluation of draft tubes was initiated in 2002 at McNary as part of the turbine survival program. Additional evaluation needs will be identified in the turbine survival program Phase II.

Radio telemetry study to partition tailrace (roller) impacts from turbine mortality also started in 2002. Future work will depend on regional discussions.

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **91**

Description The Action Agencies shall remove all unnecessary obstructions in the higher velocity areas of the intake-to-draft tube sections of the turbine units.

Status The Corps is currently inspecting and removing any projections in the turbines and draft tubes as the units become available for inspection. Just under half the units at The Dalles have been completed. The program for inspection and removal of all unnecessary projections in waterways of the turbine and draft tube at the Dalles Dam has been expanded to include John Day and Bonneville Dams.

NMFS expectation A status report will be submitted to NOAA Fisheries detailing the progress to date as well as the projected completion date.

AA implementation All Corps Portland District Columbia River turbine-to-draft tube sections are being inspected during scheduled turbine dewaterings. All obstructions are being identified with any unnecessary items being removed during each turbine units' 6-year overhaul. A status report is being produced and will be submitted to FPOM in 2003.

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **92**

Description The Action Agencies shall consider all state-of-the-art turbine design technology to decrease fish injury and mortality before the implementation of any future turbine rehabilitation program (including any major repair programs, the ongoing rehabilitation program at The Dalles Dam, and any future program at Ice Harbor Dam). The Action Agencies shall coordinate within the annual planning process before making decisions that would preclude the use of fish-friendly technologies and to minimize any adverse effects of project downtime.

Status Biological testing of fish survival at the Dalles Dam through existing turbine units conducted in 2002 as part of project survival evaluation.

NMFS expectation Discussion on the future configuration of fish passage at The Dalles Dam was initiated in late 2002. Discussion in regional technical forums on state-of-the-art turbine design should continue into 2003.

AA implementation Tests of a painted turbine will continue at The Dalles in 2003. Consideration of further fish-friendlier technologies will be discussed in the region following results. Fish Benefits from the TSP are being incorporated into evaluation plans to determine final prototypes for McNary Modernization and Ice Harbor unit 2 repair. This work is being coordinated through the FFDRWG, the special TSP, and the PDT for these two programs.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **93**

Description The Action Agencies shall determine the number of adults passed through turbines, then, if warranted, investigate the survival of adult salmonid passage through turbines (including steelhead kelts).

Status The Corps has conducted initial studies to determine the percentage of adult steelhead passing projects through various routes of passage. The Corps also conducted a pilot study to determine if existing balloon tag technology can be used to determine the mortality rate associated with adult steelhead passage through turbines.

NMFS expectation The Corps will complete a draft report on pilot study of adult steelhead survival through turbines, as well as draft report on routes of passage past projects. The Corps will continue study of route of passage of steelhead kelts in 2003.

AA implementation Adult passage through turbines is being evaluated as part of the adult studies program. The initial evaluation began in 2002 and should be completed in 2004. Future work will depend on regional discussion.

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **94**

Description The Corps shall continue to evaluate the need for improvements of the existing intake screens, gatewell vertical barrier screens' cleaning system, and bypass facilities (including debris containment and removal systems, separation, sampling, loading, and outfall facilities) at the four lower Snake River hydropower projects.

Status Contrary to the 2002 finding's expectation, implementation of this action did not begin that year.

NMFS expectation The Corps will complete a draft decision analysis for the Lower Snake River Projects and McNary in the spring 2003. This analysis will identify project priorities, which include juvenile bypass features.

AA implementation See RPA action 75.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **95**

Description The Corps shall complete investigations of improved wet separator designs in 2002. The Corps shall design and construct a new wet separator at McNary, Lower Monumental, and Little Goose dams, as warranted.

Status Final report on separator evaluation test was received in December 2002.

NMFS expectation The Corps is expected to conduct FFDRWG meeting in early 2003 to select preferred alternatives for each Project. The Corps is expected to complete density tests and finalize report.

AA implementation The final report was complete in 2002 and conceptual designs will be complete in 2003. However, based on regional review of the separator study findings, additional work has been recommended to evaluate impacts of fish densities on separation efficiency before considering installation at Lower Granite. The new study will be conducted in 2003 with a final report due in 2004.

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **96**

Description The Corps shall complete the extended submerged intake screen systemwide letter report and implement recommended improvements.

Status Ongoing

NMFS expectation Complete the recommended improvements

AA implementation The report was completed in 2002 and identified improvements will be completed at various projects by 2003.

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **97**

Description By January 2002, the Action Agencies shall develop an analysis that compares the relative passage survival benefits of an extended-length, intake screen bypass system, a surface-collection bypass system, and hybrid alternatives at Bonneville First Powerhouse. Through the annual planning process, the Corps shall determine which of these configurations to implement.  
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Status A decision on implementation of the First Powerhouse bypass was put on hold for several years through the Bonneville Dam configuration decision process.  
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NMFS expectation Continue with Bonneville First Powerhouse bypass, sluiceway and spill survival evaluations and construction of the Powerhouse 2 corner collector.  
.....

AA implementation The NOAA Findings Letter (July 2002) acknowledged that the comparative analysis should be delayed. The delay is consistent with the SCT's determination that additional information is needed before a prudent final decision can be made regarding juvenile passage alternatives for the first Powerhouse. The analysis will be indefinitely delayed depending on corner collector information needs and ISRP review.

The overall decision document for Bonneville project was completed in 2002 establishing B2 priority for operations among other recommendations. With B2 priority and recognition that additional information is needed before a B1 configuration can be determined, the decision will be deferred until at least 2005.

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NMFS finding **Modification not a concern**  
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NMFS comments The delay is not concern because additional information was needed on passage success of other routes of passage at Bonneville including the existing First Powerhouse bypass, the under-construction corner collector and the spillway.

In the 2002 Findings Report, NOAA Fisheries agreed that this postponement was in the best interest of listed stock survival. The alternative choices at this project could result in a questionable increase in survival at a significant cost, which would commit a major portion of the funding of the Columbia River Fish Mitigation (CRFM) project. Because funding for the CRFM is limited, a delay in funding this project allows for the expedited funding of other priority CRFM activities.

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RPA Action **98**

Description By January 2003, the Action Agencies shall develop an analysis that compares the relative passage survival benefits of replacing existing standard-length intake screens with extended-length screens at the John Day Dam powerhouse to surface collection at one or more skeleton or spillway bays. Through the annual planning process, the Action Agencies shall then determine the need for, and the implementation priority of, these configuration alternatives.

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Status Modeling investigations in 2001 indicated potential tailrace egress problems with large flow skeleton bay or RSW type bypass options at John Day Dam. Further design and implementation was put on hold pending review of ongoing studies regarding spill and screened bypass efficiency and survival.

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NMFS expectation Preliminary assessment of RSW's at John Day through the John Day Dam configuration alternatives process in SCT.

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AA implementation Configuration decisions at John Day will be indefinitely delayed pending a decision to test RSW at this project and funding priorities.

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NMFS finding **Implementation as expected**

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NMFS comments This study is sequentially dependent upon the implementation of an RSW in RPA Action 72, which is no longer being considered. The rationale for no longer proceeding with the RSW test, coupled with the need to implement these Actions sequentially, indicates that this, like Action 72, it is a beneficial change.

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RPA Action **99**

Description By January, 2003, the Action Agencies shall develop an analysis that compares the relative passage survival benefits of replacing existing standard-length intake screens with extended-length screens at the Lower Monumental Dam powerhouse turbine intakes to a removable RSW surface bypass system.

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Status The Corps has initiated a regional planning process through FFDRWG to analyze the juvenile passage configuration alternatives at Lower Monumental Dam. The alternatives will include consideration of 24 hour spill, extended screens and an RSW.

After 24-hour spill evaluations in 2003, decision regarding development of RSW and ESBS's will be made.

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NMFS expectation 24 hour spill for juvenile passage will commence in 2003 and be evaluated.

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AA implementation See RPA action 76

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NMFS finding **Modification not a concern**

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NMFS comments The required comprehensive analysis will not be completed in January 2003, as specified in the RPA. However, in 2002 NOAA Fisheries determined that a delay until at least 2004 was not a concern because it would not affect implementing survival improvements at Lower Monumental Dam within the 2008 comprehensive review schedule of the opinion.

RPA Action **100**

Description The Action Agencies shall continue to implement and study methods to reduce the loss of juvenile salmonids to predacious fishes in the lower Columbia and lower Snake rivers. This effort will include continuation and improvement of the ongoing Northern Pikeminnow Management Program and evaluation of methods to control predation by non-indigenous predacious fishes, including smallmouth bass, walleye, and channel catfish.  
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Status This program was implemented system-wide in 1991. Since then removal rates of Northern Pikeminnow have met the necessary exploitation rates and the Northern Pikeminnow population structure has been modified consistent with that required to improve smolt passage survival.  
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NMFS expectation Continuation of the harvest and monitoring components of the Pikeminnow Management Program.  
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AA implementation BPA will continue to annually monitor catch and harvest rates of Northern Pikeminnow. BPA will collect information on population dynamics and the diet of Northern Pikeminnow, small mouth bass, and walleye every 3 – 5 years.

NMFS finding **Implementation as expected**  
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NMFS comments

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RPA Action **101**

Description The Corps, in coordination with the NMFS Regional Forum process, shall implement and maintain effective means of discouraging avian predation (e.g., water spray, avian predator lines) at all forebay, tailrace, and bypass outfall locations where avian predator activity has been observed at FCRPS dams. These controls shall remain in effect from April through August, unless otherwise coordinated through the Regional Forum process. This effort shall also include removal of the old net frames attached to the two submerged outfall bypasses at Bonneville Dam. The Corps shall work with NMFS, FPOM, USDA Wildlife Services, and USFWS on recommendations for any additional measures and implementation schedules and report progress in the annual facility operating reports to NMFS. Following consultation with NMFS, corrective measures shall be implemented as soon as possible.  
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Status Avian predator deterrents have been used successfully at all mainstem dams for many years. These methods have been improved steadily the past few years through implementation of improved avian wires, water cannons and active deterrent measures at outfalls, spillways and tailraces.  
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NMFS expectation Implement avian deterrent measures at all mainstem dams as approved by the Fish Passage Operations and Maintenance Coordination Team.  
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AA implementation Avian deterrent actions are being implemented annually with continual improvements being integrated. This program will continue to be coordinated with FPOM and be included in the annual Fish Passage Plan. The two net frames in the Bonneville powerhouses' tailraces will be removed during the ongoing winter maintenance season (December 1, 2002 – February 28, 2003).

NMFS finding **No schedule, implementation underway**  
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NMFS comments

RPA Action **102**

Description The Action Agencies, in coordination with the Caspian Tern Working Group, shall continue to conduct studies (including migrational behavior) to evaluate avian predation of juvenile salmonids in the FCRPS reservoirs above Bonneville Dam. If warranted and after consultation with NMFS and USFWS, the Action Agencies shall develop and implement methods of control that may include reducing the populations of these predators.

Status Recovery of pit and radio tags at several Columbia River islands, particularly Crescent Island near the mouth of the Snake, have helped quantify the magnitude of avian predation on listed salmonids.

NMFS expectation Continue tag recovery and studies of avian consumption rates of salmonids.

AA implementation Avian predation monitoring will continue in 2003-2009 under the estuary monitoring program. Monitoring at Crescent Island (McNary) has started and will continue through the project survival studies. Based on preliminary information, predation is estimated to be significant at this site. Future management discussion will begin following collection of additional data. The project titled "Avian Predation on Juvenile Salmonids" will (1) identify those piscivorous waterbird populations (i.e., terns, cormorants, and gulls) that pose the greatest risk to smolt survival, (2) test the feasibility of different management initiatives to reduce avian predation on smolts, (3) monitor and evaluate the effectiveness of those initiatives once fully implemented, and (4) recommend changes to existing management plans to maximize benefits to juvenile salmonids, while maintaining or enhancing the status of managed bird populations.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action **103**

Description The Action Agencies shall quantify the extent of predation by white pelicans on juvenile salmon in the McNary pool and tailrace. A study plan shall be submitted to NMFS by September 30, 2001, detailing the study objectives, methods, and schedule. Based on study findings, and in consultation with USFWS and NMFS, the Action Agencies shall develop recommendations and, if appropriate, an implementation plan.

Status A pilot study was conducted in 2002 which began the assessment of the number of white pelicans feeding in the immediate vicinity of McNary Dam.

NMFS expectation Work in 2003 should determine how many pelicans are feeding at McNary Dam, their total salmonid consumption and potential remedial management actions.

AA implementation The evaluation started in 2002 and will continue in 2003.  
  
A final report will be available in 2004. The project titled "Avian Predation on Juvenile Salmonids" will (1) identify those piscivorous waterbird populations (i.e., terns, cormorants, and gulls) that pose the greatest risk to smolt survival, (2) test the feasibility of different management initiatives to reduce avian predation on smolts, (3) monitor and evaluate the effectiveness of those initiatives once fully implemented, and (4) recommend changes to existing management plans to maximize benefits to juvenile salmonids, while maintaining or enhancing the status of managed bird populations.

NMFS finding **Implementation as expected**

NMFS comments

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RPA Action **104**

Description The Action Agencies shall recover PIT-tag information from predacious bird colonies and evaluate trends, including hatchery-to-hatchery and hatchery-to-wild depredation ratios.

Status This work has been ongoing since 1998.

NMFS expectation Continue tag recovery and data reporting.

AA implementation Evaluation of avian predation will continue as part of the monitoring efforts. (See RPA action 102)

NMFS finding **No schedule, implementation underway**

NMFS comments



RPA Action **105**

Description The Action Agencies shall develop a pilot study to assess the feasibility of enhancing the function of ecological communities to reduce predation losses and increase survival in reservoirs and the estuary.

Status A pilot study was begun in late 2002 in the Snake River above Lower Granite Dam to evaluate the effects of water temperature changes on the development of eggs in fall chinook redds. The idea is to develop an operational method of returning egg development to something closer to historical development rate and thereby adjust smolt outmigration timing to a more favorable time of the year with cooler water and lower predation rates.

NMFS expectation Continue the study and provide an annual report of findings.

AA implementation Rest/rearing habitat that will help to reduce predation in the Lower Granite Reservoir is being constructed at river mile 116 (SR) under the Snake River Dredge Management Program. Installation is scheduled to be complete in winter 2003. Future improvements may be conducted depending on need. Monitoring of the physical and biological effects will occur in 2003 through 2004. Future woody riparian improvements (plans under development) on the Snake River will be coordinated with juvenile salmon habitat improvements.

BPA funded the Council project 1997-026, and additional work continues to be funded as part of project 1998-014. The project assesses feeding habits of predatory fishes during the spring salmonid smolt migration period. Also assessed are the indirect effects on the changing pelagic fish community associated with different oceanographic regimes on juvenile salmonids.

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **106**

Description The Action Agencies, in coordination with NMFS, shall investigate marine mammal predation in the tailrace of Bonneville Dam. A study plan shall be submitted to NMFS by June 30, 2001, detailing the study objectives, methods, and schedule.

Status Evaluation began in 2002. The effort indicated that nearly 1850 adult salmon were taken by marine mammals (sea lions) in the tailrace of the dam.

NMFS expectation Continue with Bonneville Tailrace marine mammal evaluation through 2003. The study should provide total consumption rates of pinnepeds in the tailrace, numbers of pinnepeds involved and suggest remedial management options.

AA implementation Investigations were initiated in 2001 and will continue through 2003. The information will be provided to NOAA for further action.

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **107**

Description The Action Agencies shall conduct a comprehensive evaluation to assess survival of adult salmonids migrating upstream and factors contributing to unaccounted losses.

Status Studies were implemented in 2001 and 2002.

NMFS expectation NOAA Fisheries expects the adult studies program and radio telemetry monitoring to continue in 2003.

AA implementation This action is being evaluated in the adult studies program and radio telemetry monitoring to assess unaccounted loss will continue through April 2004. Data analysis will be conducted through 2005 and a final report will be available in 2006. As a result of adult PIT tag detector installation in 2003 additional information will be available for PIT tag database and for further monitoring and analysis.

Adult PIT detection systems were installed at McNary and are scheduled for installation at Priest Rapids, Ice Harbor and Lower Granite this winter. Further installation needs will be considered for subsequent years.

NMFS finding **Implementation as expected**

NMFS comments

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RPA Action **108**

Description The Corps and BPA shall conduct a comprehensive evaluation to investigate the causes of headburn in adult salmonids and shall implement corrective measures, as warranted.

Status Studies started in 2002 show promise.

NMFS expectation Continue work, better define headburn and it's potential causes.

AA implementation Studies will continue through 2004 with a final report in 2005. Corrective measures will be determined based on results and regional discussions.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **109**

Description The Corps shall initiate an adult steelhead downstream migrant (kelt) assessment program to determine the magnitude of passage, the contribution to population diversity and growth, and potential actions to provide safe passage.

Status This ongoing study since 2000 has provided the first reliable means of kelt identification, abundance data and passage route data.

NMFS expectation Continue studies and provide annual reports agreed on in the AFEP study review process. Annual reports are expected.

AA implementation This study was initiated in 2000 for both the Snake and lower Columbia rivers. Evaluation of kelt abundance and survival through various routes of passage (including transportation) shall continue in 2003 and 2004. Monitoring of return spawning shall continue through 2007 and the final report is due in 2008.

NMFS finding **Implementation as expected**

NMFS comments

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RPA Action **110**

Description The Corps shall use information from previous and ongoing investigations regarding the problem of adult steelhead holding and jumping in the fish ladders at John Day Dam, develop a proposed course of action, and implement it, as warranted.

Status Design of a new ladder exit section was finished in 2002.

NMFS expectation Complete implementation of new exit section and begin post construction evaluation.

AA implementation Ladder weir modifications were initiated in 2002 to be completed for 2003 adult migration season. An evaluation is scheduled to be completed in 2003.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **111**

Description The Corps shall investigate and enumerate fallback of upstream migrant salmonids through turbine intakes at all lower Snake and lower Columbia River dams. The Corps shall implement corrective measures to reduce turbine mortality, as warranted.

Status Ongoing. Field studies being conducted.

NMFS expectation Continued reporting of field studies.

AA implementation Radio telemetry monitoring of fallback is ongoing and will continue through April 2004. Data analysis will be conducted through 2005 and a final report will be available in 2006. Actions for remediation will be assessed at that time.

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **112**

Description The Corps shall investigate ways to provide egress to adult fish that have fallen back into juvenile collection galleries and primary dewatering facilities at Ice Harbor and McNary dams. The Corps shall either install structural, or implement operational, remedies to minimize delay and injury of fish that fall back, as warranted.

Status Awaiting final report. Initial report shows that significant numbers of adults fall back. NOAA Fisheries is still reviewing the initial Corps conclusion.

NMFS expectation Corps is expected to complete final report and conduct FFDRWG meeting to select recommended alternatives in early 2003.

AA implementation The field evaluation is complete and a final report is due in 2003. Although a final decision to modify the collection channel depends on the results in the final report, preliminary results do not appear to support collection channel modifications. Results and recommendations will be coordinated through the FFDRWG.

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **113**

Description The Corps shall investigate measures to reduce adult steelhead and salmon fallback and mortality through the Bonneville Dam spillway. A final report shall be submitted to NMFS stating the findings of these investigations and recommending corrective measures. Potential remedies shall be included in the annual planning process.

Status Flow-specific fallback has been studied for two years (2000 and 2002). Results have indicated low levels of fallback between the 75 kcfs and gas cap spill levels. Unusually low fallback rates and long project passage times in 2002 prompted need for an additional year of study.

NMFS expectation Continue work on the evaluation and recommendations for operational modifications.

AA implementation Fallback studies will continue in 2003 (see RPA action 60). A determination will be made on remedies based upon the results of the field studies and in conjunction with configuration and operational decisions for the project (see RPA action 97).

NMFS finding **Modification not a concern**

NMFS comments Continuing the fallback studies through 2003 and having a final report in 2004 is a year later than indicated in Appendix F for this action. There was no evaluation in 2001 because of the power emergency and drought. The extra year of fallback studies will provide more data and the opportunity to prepare a better report, which was anticipated when the Appendix F schedule was developed.

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RPA Action **114**

Description The Corps shall examine existing fish-ladder water temperature and adult radio-telemetry data to determine whether observed temperature differences in fishways adversely affect fish passage time and holding behavior. If non-uniform temperatures are found to cause delay, means for supplying cooler water to identified areas of warmer temperatures should be developed and implemented in coordination with the annual planning process.

Status Studies and a report were completed for lower Columbia River dams. A similar report for Snake River projects is in preparation. Need for synthesis of hourly temperature trends in (and adjacent to) Lower Snake River ladders and actual fish count and radio-telemetry movements has not yet been initiated.

NMFS expectation Review 2002 report and collectively determine whether there was a delay problem in 2002, Corps to collect temperature data in 2003, and prepare a 2003 report if there are available funds.

AA implementation NWP monitored ladder water temperatures for four years at Bonneville, The Dalles and John Day dams. The John Day ladder systems were the only ones where non-uniform temperatures large enough to be detected by fish were noted. No passage delays (radio tracking data) were apparent that could be associated with those temperature differences. NWW is currently working on a similar report.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **115**

Description The Corps and BPA shall conduct a comprehensive depth and temperature investigation to characterize direct mortality sources at an FCRPS project considered to have high unaccountable adult losses (either from counts and/or previous adult evaluations).

Status Research was conducted in 2001 and 2002.

NMFS expectation Continue evaluation of temperature impacts on adult delays, homing, straying, and survival.

AA implementation Evaluation of temperature impacts on adult delays, homing, straying, and survival will continue using radio telemetry through April 2004. Data analysis will be conducted through 2005 and a final report will be available in 2006.

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **116**

Description The Corps shall investigate adult fish delay and fallback at ladder junction pools and implement remedies to reduce this problem, as warranted.

Status Awaiting final report of Lower Granite studies and recommendations.

NMFS expectation NOAA Fisheries evaluate final report. Corps conduct FFDRWG process to decide to pursue the Lower Granite modifications at Lower Granite and other similar Projects.

AA implementation Field evaluation of fish passage improvements will be complete in December 2002 and the final report will be available in 2003. Design for changes will occur in 2004 for implementation in 2005 at Lower Granite. A schedule for implementation at additional projects (2003-2004) will be developed and prioritized through FFDRWG.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **117**

Description The Corps shall evaluate adult count station facilities and rehabilitate where necessary at all projects to either minimize delay of adults or minimize counting difficulties that reduce count accuracy.

Status The Corps evaluated all count stations. Reports have not yet been distributed.

NMFS expectation Complete reports regarding evaluation of adult count station facilities and rehabilitate where necessary at all projects to either minimize delay of adults or minimize counting difficulties that reduce count accuracy.

AA implementation NWP evaluated all count stations and reports will be submitted to FPOM in 2003. Funding for corrective actions will be prioritized by FPOM in the O&M budget process for future implementation. Telemetry evaluation of impacts of count windows will continue through spring 2004.

NMFS finding **Implementation as expected**

NMFS comments

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RPA Action **118**

Description The Corps shall develop and implement a program to better assess and enumerate indirect prespawning mortality of adult upstream-migrating fish. Such mortality may be due to, or exacerbated by, passage through the FCRPS hydro projects. If measures are identified which will reduce the unaccountable adult loss rate and/or the prespawning mortality rate, the Corps shall implement these measures as warranted. The program should also enhance efforts to enumerate unaccountable losses associated with tributary turnoff, harvest, or other factors in FCRPS mainstem reservoirs and upstream of FCRPS projects.

Status Initiated preliminary evaluation of unaccounted losses and prespawning mortality of radio-tagged salmon.

NMFS expectation The Corps is expected to continue and expand adult telemetry evaluation in 2003, which will include monitoring tagged fish in selected spawning areas in the Upper Snake tributaries. The passage history of these adults will be known by their detection during passage through the hydro system. The study will evaluate whether there are any relationships between particular events during passage and spawning success. To reduce unaccounted loss of adults, detection locations in the mainstem and tributaries is expected to increase.

AA implementation Adult telemetry evaluation to help identify factors that contribute to successful spawning or unaccounted loss will be continues through spring 2004. Data analysis is scheduled through 2005 and the final report will be available in 2006.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action **119**

Description The Corps shall ensure that alterations to fish ladders and adult passage facilities to accommodate Pacific lamprey passage do not adversely affect salmonid passage timing and success.

Status Studies conducted in 2002 to evaluate improvements in lamprey passage.

NMFS expectation Additional passage studies expected in 2003.

AA implementation Adult lamprey prototype studies will continue and potentially be completed in 2003. A design report could be initiated in late-2003. Implementation of ladder modifications could be initiated by 2005 at one or more projects subject to regional funding priorities.

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **120**

Description The Corps shall develop improved operations for adult fishway main entrances at FCRPS dams so that the best possible attraction conditions are provided for adult migrants, both at the four Columbia River hydro projects and the four lower Snake hydro projects (where reservoir elevations are held near MOP). The Corps shall report the findings of fishway entrance flow-balancing investigations in a report to NMFS by the end of 2001 and shall continue to work through FPOM to evaluate and implement, as warranted, structural changes to satisfy fish passage plan fishway entrance criteria.

Status Unknown

NMFS expectation Report expected in 2003

AA implementation Hydraulic evaluation reports for various projects were prepared and submitted to FPOM prior to 2000. An in-depth analysis of some of the reports showed the consultant did not evaluate the systems as they were being operated. More thorough and accurate hydraulic evaluations are being conducted by Corps Portland and Walla Walla Districts and will be completed and submitted in 2003 and 2004 to FPOM. By the end of calendar year 2003, the Corps will report to NOAA the findings of fishway entrance flow-balancing investigations. This delay is needed to allow the Corps to complete the work informing the report. Corrective actions will be implemented as warranted and when funding becomes available (if additional funding is necessary).

NMFS finding **No schedule, implementation underway**

NMFS comments



RPA Action **121**

Description The Corps shall develop and maintain an auxiliary water-supply, emergency-parts inventory for all adult fishways where determined necessary, in coordination with NMFS.

Status The RPA is being addressed, but NOAA Fisheries has no specific information regarding progress being made in identifying the parts inventory, or the purchase of those parts.

NMFS expectation The Corps should demonstrate that they are on track to meet the schedule shown in the implementation plan. Expect a report to be completed by the end of 2003.

AA implementation The Corps Portland and Walla Walla Districts determined which spare parts need to be available on project. Funding was made available to the respective projects for procurement of the identified spare parts. A report will be submitted to FPOM by the end of in 2003. Funding for additional spare parts or high cost items will be prioritized by FPOM in the O&M budget process for future implementation.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **122**

Description The Corps shall continue design development and, subsequently, construct an emergency auxiliary water supply system at The Dalles Dam's east ladder.

Status The 2002 finding was "no schedule - implementation underway" because of modeling that occurred in 2001, but further action has been deferred pending configuration discussions. Project configuration discussions began in 2002.

NMFS expectation Continued discussion on project configuration alternatives.

AA implementation Work has been deferred in 2003. See RPA action 70.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **123**

Description The Corps shall continue to investigate alternatives to dewater adult auxiliary water system floor diffusers for inspection at The Dalles adult fishway powerhouse collection channel. The Corps shall implement design and construction of needed changes, as warranted.

Status Construction initiated in 2002

NMFS expectation Continue construction in 2003

AA implementation Construction was initiated in 2002 and the system will be operational in late 2003 or early 2004.

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **124**

Description The Corps shall investigate methods to provide additional emergency auxiliary water to The Dalles Dam north fishway when the normal auxiliary water supply is interrupted.

Status Deferred

NMFS expectation None.

AA implementation This activity was deferred in 2003 due to funding priorities. The Corps will initiate in 2004 if funding is available.

NMFS finding **No schedule, implementation not underway**

NMFS comments NOAA Fisheries interprets the Action Agencies' implementation comments in the 2003 IP to mean that they plan to initiate this action in 2004.

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RPA Action **125**

Description The Corps shall develop and implement an automated monitoring and alarm system at appropriate FCRPS projects, as determined in the NMFS Regional Forum, to monitor changes in head differential remotely between the primary auxiliary water supply conduits/channels and the adult collection channels and to minimize diffuser damage due to excessive differentials. The Corps shall ensure that diffuser gratings for all auxiliary water supply systems are securely fastened. The Corps shall work through FPOM to develop a monitoring program for inspecting diffuser gratings and grating fasteners.

Status Periodic physical monitoring has occurred.

NMFS expectation Report to be provided by the Corps in 2003

AA implementation Portland and Walla Walla District projects have ensured all diffusion water gratings are secured in place. Methods have been demonstrated to FPOM. The Walla Walla District has conducted an engineering study to determine the feasibility of successfully and economically constructing an automated monitoring and alarm system on an AWS system the size of those on Walla Walla District and Portland District projects. A report will be provided to FPOM in 2003.

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **126**

Description The Corps shall initiate an investigation and prepare a report on the Bonneville First Powerhouse Bradford Island and Cascade Island adult fishway auxiliary water system by the end of 2001. In the report, the Corps shall identify measures that will improve or replace aging components, thereby enhancing current and long-term performance and reliability.

Status Annual rehab is underway. The Corps is in the process of reviewing the original design and is developing a hydraulic model of this fishway system. This work will help develop rehab recommendations.

NMFS expectation Complete engineering study and findings report.

AA implementation The Bonneville Project has replaced and repaired major aging components of the subject fishways in the last three years, averaging \$284,000.00 per year. In 2003, an engineering study will be completed to evaluate all components of these fishways, including their expected life. The report will include recommendations for corrective actions. These will be prioritized by FPOM in the O&M budget process for future implementation.

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **127**

Description The Corps shall continue its investigation of the Bonneville Second Powerhouse adult fishway auxiliary water system and shall identify measures to satisfactorily address emergency backup auxiliary water needs.

Status Modifications to AWS underway. Modification consists of modifying existing floating orifice gates to allow for rapid emergency closure.

NMFS expectation Complete AWS modifications in 2003

AA implementation Modifications are underway and will be completed in 2003.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **128**

Description The Corps shall initiate an engineering study to evaluate existing limitations relating to its inability to satisfy fish passage plan operating criteria at the John Day Dam north shore ladder.

Status Evaluation report provided in early 2002 - completed numerical modeling.

NMFS expectation Complete alternatives investigation.

AA implementation Potential corrective measures will be identified and a recommendation made in 2003. Implementation of improvements at that time.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **129**

Description The Corps shall complete adult fishway auxiliary water supply evaluations at each lower Snake River hydro project and implement corrective measures as warranted.

Status The following are underway:  
Ice Harbor AWS North and South shore rehabs  
Lower Granite gear reducer and electrical mods

NMFS expectation Corps should refine the schedule of events in meeting this RPA. Provide progress reports on field program and numerical modeling efforts.

AA implementation Construction related to auxiliary water supply systems at Lower Granite and Ice Harbor will be completed in 2003. Decisions on necessary improvements to Lower Monumental and Little Goose will be made in 2003.

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **130**

Description The Corps shall complete its DGAS by April 2001. The results of this study will be used to guide future studies and decisions about implementation of some long-term structural measures to reduce TDG.

Status Study completed in 2001. No further action taken in 2002.

NMFS expectation None.

AA implementation The DGAS study was completed in 2002 and the TDG production equations have been used to develop the SYSTDG spreadsheet model. SYSTDG model results have been used to evaluate operational alternatives related to annual spill cap management.

NMFS finding **Implementation as expected**

NMFS comments No subsequent actions as a direct byproduct of DGAS study have been initiated. However, gas fast-track deflector work (proposed by NOAA Fisheries in 1998) is ongoing.

RPA Action **131**

Description The Action Agencies shall monitor the effects of TDG. This annual program shall include physical and biological monitoring and shall be developed and implemented in consultation with the Water Quality Team and the Mid-Columbia PUDs' monitoring programs.

Status Each year since the 2000 BiOp the physical and biological monitoring associated with implementation of the BiOp has been conducted and reported according to agreements with the state water quality agencies. The QA/QC components of the program have been coordinated with the Water Quality Team as prescribed by RPA Action # 131.

The Corps presented suggested modifications to RPA 131 to the Water Quality Team (WQT) at the March 12, 2002 meeting. The suggested modifications included a vigorous QA/QC program as an alternative to the need for redundant monitoring systems at the Fixed Monitoring Stations associated with the FCRPS projects. The Data Quality Criteria procedures are characterized in three parts: calibration protocols, data review and corrections, and completeness of data. The WQT agreed with the suggested modifications.

Although the final form and documentation of the annual spill waiver/approval process and any associated reporting is still developing, it is anticipated that it will be coordinated and merged with other reporting requirements of the BiOp.

The state and EPA Total Maximum Daily Load (TMDL) activities are closely related to the BiOp spill program. If the Action Agencies are unable to meet the 110% TDG required by the existing Lower Columbia River and the draft Snake River TDG TMDLs the pursuit of Use Attainable Assessments (UAA) may become necessary. The declaration of a UAA would be based on sound and comprehensive science regarding the effects of TDG on salmonids and resident species. Presently, portions of this information are unavailable and will require additional investigations. Considering the timetable required for the initiation of most new research the prudent approach at this time would be to identify the information critical to a UAA declaration and begin the planning process to fulfill that research.

NMFS expectation

The Corps has been working with the state water quality agencies, i.e., WDOE and ODEQ, to define a long-term agreement for implementation of the BiOp spill program without the annual requirement of waiver or spill approval application. This package has included physical/biological monitoring reports from the preceding year, gas abatement reports and gas abatement implementation plans. It is anticipated that the long-term waiver process being developed by the state water quality agencies and the Corps is likely to have reporting and planning documents requiring peer review. It is expected that the NOAA Fisheries Water Quality Team will continue to provide this service as it has since the beginning of the BiOp Spill Program.

AA implementation

The Corps has prepared a report of the annual physical monitoring program for TDG since 2000, and has coordinated the annual reporting of biological monitoring by the Fish Passage Center. The reports are sent annually to the Oregon DEQ and Washington DOE.

Rather than requiring "redundant and backup monitors at as many locations as the Water Quality Team determines necessary" the program will include a quality assurance/quality control program coordinated with the Water Quality Team. This would be effective, efficient, and less costly. The team would provide input to determine the locations of fixed monitoring stations, spot-checking monitoring equipment needs, and interpretation of environmental influences on monitoring accuracy. The QA/QC program would cover laboratory calibration, field instrumentation post-calibration, field performance checks, and general criteria as described by the Water Quality Team.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action 132

Description The Action Agencies shall develop a plan to conduct a systematic review and evaluation of the TDG fixed monitoring stations in the forebays of all the mainstem Columbia and Snake river dams (including the Camas/Washougal monitor). The evaluation plan shall be developed by February 2001 and included as part of the first annual water quality improvement plan. The Action Agencies shall conduct the evaluation and make changes in the location of fixed monitoring sites, as warranted, and in coordination with the Water Quality Team. It should be possible to make some modifications by the start of the 2001 spill season.

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Status An evaluation plan was not completed in 2001. NOAA Fisheries determined that a delay until 2002 was not a concern because little or no spill occurred in 2001. In 2002, a subgroup of the WQT was formed to work with the Action Agencies on RPA 132. The emphasis in 2002 was to develop a study plan for the TDG fixed monitoring system of the lower Columbia River, in particular. The final plan was approved by the WQT in February 2002. Last year spill tests at Bonneville were closely monitored and the effects of environmental factors on TDG measurements were investigated with the intention of improving future management of spill.

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NMFS expectation The WQT subgroup recently finished a plan for the 2003 spill season, which will continue the efforts pursued in the lower Columbia River to improve the physical monitoring of TDG, especially with regard to the influences of environmental factors of temperature, solar input, wind, and barometric pressure. Additionally, these efforts are expected to expand to include the Walla Walla District projects in the lower Snake River in 2003. The subgroup of the WQT will continue to monitor the performance of the FMS during the 2003 spill season

.....  
AA implementation The Action Agencies have worked with a Water Quality Team subcommittee in 2001 and 2002 on a systematic review of the forebay fixed monitoring sites. The 2001 efforts focused on the lower Columbia River. In 2002, lower Columbia River and lower Snake River sites were evaluated. Changes at some sites have been implemented and studies are ongoing for 2003 at other sites.

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NMFS finding **Modification not a concern**

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NMFS comments

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RPA Action 133

Description As part of DGAS, the Corps shall complete development of a TDG model to be used as a river operations management tool by spring 2001. Once a model is developed, the applications and results shall be coordinated through the Water Quality Team. The Corps shall coordinate the systemwide management applications of gas abatement model studies with the annual planning process, the Transboundary Gas Group, the Mid-Columbia Public Utilities, and other interested parties.

Status The SYSTDG model exists and has been updated. The model has been used by the Corps in some investigations, eg, studies of the spill deflectors at Bonneville. Associated Corps studies have demonstrated a significant influence of environmental factors (water temperature, solar input, wind, and barometric pressure) on the ability to accurately measure and model TDG. These factors must be added to the model to fulfill the TDG predictive capability continued refinement aspect of the RPA.

NMFS expectation The Corps will provide NOAA Fisheries with additional training on the updated SYSTDG dissolved gas model and on the use of environmental nomographs in conjunction with SYSTDG. The purpose of these efforts will be to provide NOAA Fisheries and the region with the river operations management tool intended by the RPA. The Corps has demonstrated the influence of environmental factors (water temperature, solar input, wind, and barometric pressure) on the ability to accurately measure and model TDG. Currently, the Corps uses a nomogram based, manual correction to TDG measurements in daily and hourly decision-making during the spill season. These environmental factors must be refined and added to the SYSTDG model during FY 2003. The model has been significantly updated and refined since the 2001 training session conducted for representatives of the regional federal and state agencies, tribes, and utilities. With the recent modification and following the addition of the environmental factors to the SYSTDG model, a follow-up briefing or training session needs to be planned. These dynamic characteristics of a TDG model were foreseen by the RPA language.

AA implementation The Corps advanced the development of the SYSTDG spreadsheet model and two MASS numerical models for use as river operations models. The SYSTDG model was used for guidance in 2000 and the MASS 1 model was used for water temperature guidance during the 2001 drought year spill season. The SYSTDG model was shared with the region in 2001 by providing regional training sessions.

NMFS finding **Implementation as expected**

NMFS comments



RPA Action **134**

Description The Corps shall continue the spillway deflector optimization program at each FCRPS project and implement it, as warranted. The Corps and BPA shall conduct physical and biological evaluations to ensure optimum gas abatement and fish passage conditions. Implementation decisions will be based on the effect of spill duration and volume on TDG, spillway effectiveness, spill efficiency, forebay residence time, and total project and system survival of juvenile salmon and steelhead passing FCRPS dams.

Status Additional Bonneville deflectors constructed in 2001-02, and no further structural deflector work is anticipated. At The Dalles, deflector and other spillway survival improvement work compose options considered to date. Lower Monumental end-bay deflector construction underway. Little Goose end-bay deflector design development has not yet occurred.

NMFS expectation Consideration of Bonneville spill schedule refinement (with new deflectors) will occur in 2003. NOAA Fisheries has recommended that additional deflector investigations at The Dalles be discontinued to pursue survival improvement options. McNary spill schedule refinements, and deflector installation follow-up work will occur in 2003. Complete Lower Monumental end bay deflectors prior to the 2003 passage season. Develop spill schedule for Lower Monumental prior to 2003 season. Funding for additional Little Goose deflector implementation work has been deferred to 2004.

AA implementation Additional deflectors were installed at Bonneville in 2002. A report will be available in 2003 on whether existing deflectors should be modified. For The Dalles, deflectors are being considered among other configuration and operational alternatives to reduce spillway mortality and TDG. Evaluations and prototype testing are expected to continue onto 2006 or beyond. (see RPA actions 68 and 135)

Deflector construction will be completed at Lower Monumental in 2003. Depending on regional support, construction at Little Goose could occur as early as 2005. No work has started or is scheduled for Lower Granite. Post-construction biological evaluation of deflectors and tailrace environment will continue at Ice Harbor, McNary and Lower Monumental Dams in 2003 through 2005. Evaluation of the Little Goose end bay deflectors is scheduled to start in 2005 and continue through 2008.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **135**

Description The Corps shall include evaluations of divider walls at each FCRPS project in the spillway deflector optimization program. Design development and construction of divider walls would begin only after coordination within the annual planning process, and only if warranted.

Status There is no formal divider wall program at this time. The issue has been addressed within the Gas Fast-Track program at each individual hydro site.

Due to increasing concern about need for positive tailrace juvenile egress at Walla Walla District hydro sites, a spill percentage limit may be considered. This may reduce adverse gas effects such as lateral flow from powerhouse into spillway stilling basin. Exception is at Little Goose, where end-bay deflectors and divider wall extension may be combined.

Discussion of combining end-bay deflectors and divider wall into one package at LGO has occurred in 2003, in advance of design development resumption in 2004. Spill percentage limit would be expected to negate the need for divider walls at all hydro sites except for LGO.

The spill wall at TDA is for the purpose of improving survival rather than abating gas. However, the principles of how tailrace hydraulics are modified are similar.

NMFS expectation A prototype spill wall will be designed for The Dalles. Construction will be initiated in 2003.

AA implementation A prototype spill wall will be designed for The Dalles. Construction will be initiated in 2003, with completion and initial testing anticipated for the 2004 passage season. Decisions on installation of a divider wall at Lower Monumental are under evaluation in 2003. Installation is dependent on findings of the hydraulic model work at WES and evaluation of tailrace conditions. Consideration of a divider wall at McNary has been shelved due to lack of regional and NOAA support.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action 136

Description The Corps shall continue to develop and construct spillway deflectors at Chief Joseph Dam by 2004 to minimize TDG levels associated with system spill.

Status Design and construction have been delayed by a lack of funding for "new starts" for projects in FY 2002 and 2003. It was a major accomplishment that this project received Congressional funding to initiate design in FY03 of the flow deflectors.

NMFS expectation Initiate design and construction activities as soon as possible under the 2004 appropriations. Identify other actions, if any, to improve survival and meet performance standards because of the delay, which includes recommendations of the WQTon joint operations of power generation at Grand Coulee and spill at Chief Joseph Dams to improve TDG levels in the upper Columbia River.

AA implementation The Corps received an additional \$500,000 of congressional funds to initiate design in FY03 of the "flow deflectors" selected during the General Reevaluation Report process as well as complete the design of some pre-construction projects necessary for dam preparation prior to the construction of the flow deflectors. In the interim, the Corps, NMFS, and USBR will continue efforts of the task force investigating alternative means to reduce total dissolved gas saturation in the Columbia River below Chief Joseph and Grand Coulee Dams by shifting additional power generation to Grand Coulee Dam. The Task Force prepared a draft report and expects to make recommendations soon. Because most potential benefits would be expected in higher flow years and the current runoff volume forecast for 2003 is well below average, we do not expect that there will be an opportunity to apply these operational recommendations this year. However, the Corps and USBR will continue to coordinate with NOAA to identify specific operations that might occur in higher flow years. The Corps will continue to seek appropriations to develop and construct the spillway deflectors

NMFS finding **Modification requires resolution**

NMFS comments Continued funding in 2004, 2005, and, possibly, beyond to complete the construction of the flow deflectors without any further delays is an important priority. Because the construction of the deflectors is already a couple of years behind schedule, the Corps should continue to identify other actions to improve survival and meet performance standards during this interim period. For example, one operational measure that could mitigate for the lack of flow deflectors has recently been developed by the Water Quality Team.

Until spillway deflectors are installed at Chief Joseph Dam, the Water Quality Team has recommended joint operation of Grand Coulee and Chief Joseph to reduce the average total dissolved gas (TDG) concentrations in the Columbia River above and below Chief Joseph by taking advantage of the larger generation flow capacity of Grand Coulee and the lower average TDG loading below Chief Joseph spillways (absent deflectors). When Lake Roosevelt is below 1260' elevation, the WQT recommends that spill from the outlet tubes be avoided by shifting all spill to Chief Joseph for spill discharges up to 70 kcfs. If Lake Roosevelt is above 1260' elevation, spill over the drum gates at Grand Coulee may be beneficial to the system due to potential degassing of reservoir waters. The continuation of monitoring practices and additional investigations of these operational measures on TDG exchange are recommended by the WQT to further establish efficient and effective joint operations at Grand Coulee and Chief Joseph dams.

RPA Action 137

Description The Corps shall investigate TDG abatement options at Libby Dam, including the installation of spillway deflectors and/or additional turbine units. The Corps shall construct gas abatement improvements at Libby on the Kootenai River, as warranted, to reduce TDG levels below the project.

Status The water quality results of the spill test conducted in 2002 revealed the highest TDG saturation of 134.2 % during a spillway discharge of 13.6 kcfs. TDG levels within a couple percent of the maximum saturation were observed for all spill discharges greater than 10 kcfs. This result is likely a function of the water depth below the spillway. A investigation of the gassing effects of a natural falls located down river from Libby Dam was also conducted during the study period. Kootenai Falls generated higher average TDG pressures in the Kootenai River than was measured in the well mixed river below the spillway operations of Libby Dam during June and July of 2002.

NMFS expectation It is clear that any spill in excess of 10 kcfs at Libby will generate excess TDG. The initiation of gas abatement feasibility studies focusing on spillway deflectors is expected to begin early in FY 2003. The Corps has expressed concerns for physical limitations at the Libby project to support deflectors. Other investigations expected during 2003 will involve additional generation capability. As noted in the AA's proposal, a limitation to this strategy is the existing transmission capability. It is expected that a variety of options will be explored.

AA implementation The Corps is discussing the results of the 2002 spill test with the State of Montana for potential future spill options, including a potential TDG variance. The Corps will investigate in FY 03 the feasibility of installing flow deflectors in the spillway. The Corps has already investigated installation of additional turbines (in FY 02) and found that the installation of generating units at Libby is technically feasible using a generating unit major rehab construction protocol. Most of the major parts for two units are present and in relatively good condition. However, it is not currently possible to transmit the power generated from even one more unit at Libby. Current transmission lines operate at capacity. BPA Transmission Business Line, BPATBL, or another regional transmission line owner or subscriber must provide additional transmission capacity prior to addition of any generating capacity at Libby. If the projects were funded, environmental coordination, planning, and other requirements would take several years to complete before construction of a new transmission line could be undertaken. Under an optimistic schedule, the soonest that new turbines could be in place would be 2007 or 2008.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **138**

Description The Corps shall continue to investigate RSWs, in conjunction with extended spillway deflectors, as a means of optimizing safe spillway passage of adult steelhead kelts and juvenile migrants.

Status The RSW at Lower Granite is under evaluation. Extended deflectors were only referenced in the context of John Day High-Flow (18 kcfs) RSW at John Day. This is no longer being considered at bay #20 at John Day, due to tailrace egress concerns. Therefore, extended deflectors are no longer being considered at any Corps project. RSW with same hydraulic capacity at Lower Granite do not require extended deflectors.

NMFS expectation Continue to evaluate the RSW at Lower Granite in 2003. Planning should proceed as to the best way to determine kelt passage through the RSW.

AA implementation RSW evaluations will continue in 2003 at Lower Granite. Future work is under development through the FFDRWG. The juvenile salmon survival evaluation will begin in 2003 and a final report will be available in 2004. Evaluation of kelt passage survival is under discussion through the SRWG sub-group on surface bypass. Difficulties associated with this type of evaluation may delay this action.

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **139**

Description The Corps shall investigate TDG abatement options at Dworshak Dam and implement options, as warranted, in coordination with the annual planning process.

Status No action occurred in 2002

NMFS expectation Commence preliminary investigations in 2003

AA implementation Hydraulic analysis, field analysis, and physical modeling is scheduled to begin in late 2003. A technical report summarizing results and options for construction will be completed in 2005. Actual construction requirements will be identified at that time.

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **140**

Description The Corps shall design the spillway Number 1 (end bay) deflector at John Day Dam, and implement as warranted, in coordination with the annual planning process.

Status The design is finished. Implementation is dependent on funding priorities. Construction of this spillbay deflector is effectively on hold pending decisions on final spill configuration at this project and decisions relative to the RSW. The present spill pattern does not include the use of spill bay 1 for fish protection reasons that do not include the presence of the deflector.

NMFS expectation Bay 1 spill deflector should be included in ongoing discussions regarding John Day fish passage configuration alternatives.

AA implementation Spill bay 1 deflector construction is deferred for construction efficiency reasons pending decisions on spillbay 20 construction plans relative to RSW testing at this project and for determination of regional funding priorities

NMFS finding **No schedule, implementation underway**

NMFS comments

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RPA Action **141**

Description The Action Agencies shall evaluate juvenile fish condition due to disease in relation to high temperature impacts during critical migration periods. This evaluation should include monitoring summer migrants at lower Columbia and lower Snake river dams to clarify the possible link between temperature and fish disease and mortality. This information will be used to assess the long-term impacts of water temperature on juvenile fish survival.

Status The studies conducted at McNary demonstrated that fish may be exposed to thermal stress depending on environmental conditions and operations at McNary Dam. For example, operating Unit #1 draws heated surface waters to the depths of the gatewells and exposes fish to elevated temperatures.

NMFS expectation Several significant questions regarding the management applications of the biological investigations ongoing or proposed have been posed in the region. The Corps anticipates addressing these questions at regional meetings scheduled for early CY 2003. Answers to these questions are required as guidance to future investigations.

AA implementation Temperature monitoring and physiological monitoring will continue at McNary in 2003 with the final report available in 2004. The SRWG sub-group on juvenile fish temperature impacts will develop an action plan and schedule by 2004.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **142**

Description The Corps shall work through the regional forum process to identify and implement measures to address juvenile fish mortality associated with high summer temperatures at McNary Dam. As a starting point, the Corps shall assemble and analyze the temperature data that have been recorded in the McNary forebay, collection channel, and juvenile facilities. The Corps shall examine relationships among juvenile mortality, temperatures, river flow rates, and unit operations in detail. The Corps shall investigate the feasibility of developing a hydrothermal computational fluid dynamics model of the McNary forebay to evaluate the potential to determine optimal powerhouse operations or structural modifications for minimizing thermal stress of juvenile salmon collected in the summer and to conduct a modeling program, if warranted.

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Status There has not been a formal progress report on this effort to date. Discussions of progress have been conducted in the FFDRWG process. Discussions with Corps personnel indicate the CFD model is 30% completed.

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NMFS expectation Corps provide updated progress report on synthesis of field data and preparation of thermal CFD model. The COE anticipates proceeding with the development of the CFD model to support structural and operational modifications and associated decisions. The Corps anticipates completion of the CFD model this year. By the end of the year the model may be expanded from the current capability of projecting single operating unit to the full forebay. The COE also projects the ability to run trial applications of the model to structural and operational management alternatives.

.....  
AA implementation Temperature monitoring has been conducted at McNary. A temperature model of the McNary forebay is scheduled to be complete by 2004. Physiological monitoring will continue in 2003 at McNary and a final report is due in 2004.

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NMFS finding **No schedule, implementation underway**  
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NMFS comments

RPA Action **143**

Description By June 30, 2001, the Action Agencies shall develop and coordinate with NMFS and EPA on a plan to model the water temperature effects of alternative Snake River operations. The modeling plan shall include a temperature data collection strategy developed in consultation with EPA, NMFS, and state and Tribal water quality agencies. The data collection strategy shall be sufficient to develop and operate the model and to document the effects of project operations.

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Status The Water Quality Team RPA Action 143 Subgroup completed a review of Snake River water temperature monitoring, developed a matrix of key questions to guide the review and selection of candidate models and the future monitoring strategy, and has selected the model (CE-QUAL-W2) to be proposed to the region for future Snake River thermal management decisions. The subgroup also has developed an outline for a report and recommendations.

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NMFS expectation The RPA Action 143 Subgroup will produce a final report with recommendations responsive to the specifics of the RPA Action. The report will identify the temperature model selected, explain the justification, and provide guidance on monitoring needs for the Lower Snake River. Early in CY 2003 the Corps will issue a small contract to develop a concise review of salmonid biology pertinent to the model application in the Snake River. It is expected that the results of the review will be included in the report.

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AA implementation The Action Agencies have been working with an ongoing Water Quality Team subcommittee since 2001 to develop a plan to model water temperature effects of alternative Snake River operations. The 2001 and 2002 subcommittee work efforts have determined the goals of water temperature modeling, have investigated and evaluated multi-agency existing data, determined what questions can be answered without modeling, recommended and started additional data collection, recommended numerical models to be considered, and are currently in the process of identifying a recommended numerical model to be used.

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NMFS finding **Implementation as expected**  
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NMFS comments



RPA Action **144**

Description The Corps, in coordination with the Regional Forum, shall maintain juvenile and adult fish facilities within identified criteria and operate FCRPS projects within operational guidelines contained in the Corps' Fish Passage Plan. The Corps shall coordinate with NMFS on the development of these criteria and operational guidelines before the start of each fish passage season (generally February 1).

Status The annual Fish Passage Plan has been updated through a collaborative process each year.

NMFS expectation Complete the annual draft review process, reconcile NOAA Fisheries comments and implement the plan by the beginning of the 2003 fish passage season.

AA implementation The Corps has worked annually with NOAA and the Region through FPOM to develop the Fish Passage Plan. Typically this coordination has been completed by March 1 each year with the FPP in place for the fish passage season.

NMFS finding **Implementation as expected**

NMFS comments

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RPA Action **145**

Description The Corps shall develop and implement preventative maintenance programs for fish passage facilities that ensure long-term reliability, thereby minimizing repair costs.

Status Ongoing

NMFS expectation Continue to meet current schedule identified by the Action Agencies and coordinated work through FPOM.

AA implementation NWP and NWW Projects are developing, budgeting for, and implementing preventative maintenance programs for their fishways. These plans will be coordinated with FPOM in 2003. The Bonneville Project is installing new windings on AWS fish water turbine F1 during this winter maintenance season. The John Day Project purchased all the necessary parts to re-habilitate the three powerhouse fish water turbine pumps, one pump per year for the next three years, during the winter maintenance seasons. The actions at Bonneville and John Day dams will greatly improve the reliability of the AWS systems.

Rehabilitation of pumps for the Lower Monumental AWS began in FY 02 and will continue through FY 04. Rehabilitation of pumps systems for the Ice Harbor south shore AWS begin in FY 03 and will continue through FY07. Additional work included in the program will be coordinated through FPOM.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action 146

Description The Corps shall address debris-handling needs and continue to assess more efficient and effective debris-handling techniques to ensure that the performance of both new and old fish passage facilities will not be compromised.

Status Protocols for handling debris are followed at each project.

NMFS expectation Portland and Walla Walla Districts of COE should perform reconnaissance-level analysis of the need to install debris shear booms at the Districts' dams. COE should present results of review at a FFDRWG meeting.

AA implementation

General: As a normal course of O&M of the projects, debris is constantly monitored throughout the facilities and appropriate removal action initiated as required. This has been and will continue to be addressed in the Fish Passage Plan. Specific problem areas that come up are presented and discussed at FPOM, where courses of action are developed and then followed-up on by the Corps. The Corps believes fish passage effects are adequately addressed and are the critical concern in establishing protocols and correcting problem areas. A system-wide assessment was not called for in the subject RPA, nor is one necessary at this time. At the end of this summary is a chronology of evaluations and actions completed for the Snake River and McNary projects that the Corps believes have fully addressed the issue at those projects and in conjunction with ongoing efforts as will be described below meet the intent of this RPA.

The Corps also questions the value for a reconnaissance-level analysis for debris booms at the dams and believes they are beyond that at the projects. Again, see the specific actions and the chronology below. Immediately following is a listing of the status and plans for specific debris-related issues for FY 03 and beyond at the projects. In these the Corps references the other RPA actions items associated with these activities. Several of these actions are only a part of other larger measures and as such may not have been highlighted in the RPA implementation summaries. Much of this information should be available in the FY03 work plans provided to the SCT, and used as the basis for implementation plan summaries. Bonneville: Also, reference RPA Action 63. At 1st PH, analysis of debris handling has been addressed in association with the JBS improvement/outfall relocation project. A debris boom is recommended and has been designed for installation when and if that project is implemented. No action is planned until that decision is made.

At B2 (no specific RPA reference) an ongoing prototype study of a gatewell debris removal system is underway, but has not been funded recently, nor in 2003, due to funding priorities. Also, action is being deferred pending completion of the corner collector and evaluation of the effect of its operation on B2 debris issues.

Under the B2 FGE improvement study (RPA 67), evaluation of problems with failure of VBS screens due to increased slot flows, tighter mesh criteria, and debris will continue. New VBS screen frame designs will be tested in 2003 and a new screen cleaner prototype is under design and is planned for testing in 2004.

Also at B2, under the follow-on work for bypass improvements (RPA 65) a new air burst cleaning system is under development due to problems with the mechanical cleaning system for the DSM dewatering screens. We are also planning for an automated trash rake for the fish units in 2004.

The Dalles: No specific actions are anticipated at this time

John Day: Reference RPA Action 73. Debris issues will continue to be addressed in association with the extended screen evaluations. No specific debris-related work is planned for 2003, but would be continued as the screen program moves forward. The schedule will depend on future funding priorities and decisions on future configuration of this project.

McNary: Reference RPA Action 74. Ongoing efforts continue as required. Annual contracts for debris removal continue and the new debris removal craft is scheduled to be purchased in 2004, subject to funding priorities. Corrections to the debris plugging problems in the 10-inch fish transport lines were completed in 2002 and no further action is anticipated. Testing of the cylindrical dewatering prototype was concluded in 2002, final reports will be completed in 2003 and the test facility is scheduled to be removed in 2004.

We are continuing a major modeling effort at WES to try to identify and resolve gatewell debris issues, particularly at McNary. That effort continues, under the McNary Modernization Project to look at options to resolve periodic VBS and gatewell debris issues at McNary.

Snake River projects (system evaluation): Reference RPA 94. The Lower Snake and Columbia Rivers Extended-Length Submerged Bar Screen System-Wide Letter Report was completed in 2002 to assess JBS system performance at each of the Lower Snake projects to include debris control and cleaning systems.

Ice Harbor: No specific actions for debris planned as a result of the system evaluation.

Lower Monumental: No specific actions for debris planned as a result of the system evaluation. New debris issues may need to be evaluated in conjunction with ongoing ESBS development initiated in 2002 for this project (RPA 78).

Little Goose: Reference RPA 79. Completed post-construction predator studies of the new containment boom to verify or modify debris removal criteria in 2002. No further action required.

Lower Granite: No specific actions for debris are planned based on above evaluations and until re-initiation of the Lower Granite juvenile bypass facility improvement measure (RPA action 81).

Lower Snake and McNary debris issues chronology

November 1996 - The Lower Snake and Columbia Rivers Debris Control Study Phase I Report was completed. That report identified various short-term actions that could be implemented to mitigate the effects of debris at the projects. The report also looked at potential long-term solutions.

1997 – Lower Snake and Columbia River Debris Control Phase II was completed. Short-term actions identified in the Phase I report were implemented.

July 1998 – The Lower Snake and Columbia Rivers Debris Control Study Phase III Report was completed. This report recommended long-term actions and measures to be installed as permanent systems. This report recommended installation of a debris boom at Little Goose, which was subsequently installed in 2000 and recommended not to install a debris boom at McNary. The report also made other recommendations specific to the Collection Systems at McNary and Lower Granite.

March 2000 – The McNary Dam Debris Boom Analysis & Alternatives report was completed. This report reinforced the conclusions of the Phase III report that a debris boom was not a feasible alternative and that the recommended course of action was to procure a Debris Removal Craft. Purchase of that craft is scheduled for FY04, subject to regional coordination and SCT prioritization.

August 2002 – The Lower Snake and Columbia Rivers Extended Length Submerged Bar Screen System-Wide Letter Report was completed. Section 4 of that report dealt extensively with Forebay Debris, Collection System Debris and Holding & Loading Debris as applicable at all projects.

Current Status: Forebay Debris Booms exist at Lower Granite and Little Goose Projects. Similar booms are not needed at Lower Monumental or Ice Harbor due to minimal debris accumulation and 24 hr spill.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action 147

Description As a contingency plan, the Corps (in cooperation with other Federal agencies) shall develop a project management plan to reevaluate more intensive hydropower-related actions (including breaching) for the four lower Snake River dams. The project management plan will identify the scope, schedule, costs, tasks, products, and responsibilities for the reevaluation study. The study should assess all significant changed conditions to the Lower Snake River Feasibility Report and Environmental Impact Statement (Corps 1999c). The project management plan should be consistent with direction from Congress, Corps authorities, and other legal requirements. The completed project management plan should be coordinated with the appropriate regional interests. The project management plan should include, but not be limited to, plans to mitigate disproportionate impacts to communities, industries, and Tribes, detailed water and air quality effects, implementation plans, and a complete public involvement program. The decision to start the reevaluation study should result from the NMFS check-in process in Section 9.5. The Corps will request funding or reprogramming to complete the project management plan within 1 year after NMFS' issuance of a check-in report indicating the need to seek additional authority. The study should result in a general reevaluation report and supplemental environmental impact statement, which would be used to seek authorization and/or appropriations to implement, recommended action(s), if needed. The general reevaluation report/ supplemental environmental impact statement will require approximately 2 years to complete.

Status No activity to date.

NMFS expectation No specific expectations for 2003.

AA implementation Further action on this item will follow the 2005 check-in.

NMFS finding **No schedule, implementation not underway**

NMFS comments This activity will not commence until after the 2005 mid-point evaluation, and only then if it is determined that the Corps needs to seek additional authority.

RPA Action **148**

Description The Corps shall conduct detailed engineering and design work for improvements recommended in the general reevaluation report and supplemental environmental impact statement described in the preceding action. The Corps shall seek funding to allow initiation of the engineering and design work to occur immediately upon completion of the final general reevaluation report. The engineering and design work shall include only those activities on (or near) the implementation schedule critical path for the recommended actions, up to the award of the first construction contract. For a dam breach recommendation, the critical path activities shall include turbine physical modeling (for use as low level outlets), rock source explorations for embankment erosion protection (riprap), and hydraulic (physical) modeling for the embankment removal and channelization. Tentative milestones for the general reevaluation report/EIS and engineering and design work are as follows, based on the check-in process identified in Section 9.5. (see RPA for list)

Status No activity to date.

NMFS expectation No specific expectations for 2003.

AA implementation Further action on this item will follow the 2005 check-in.

NMFS finding **No schedule, implementation not underway**

NMFS comments This activity will not commence until after the 2005 mid-point evaluation, and only then if it is determined that the Corps needs to seek additional authority.

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RPA Action 149

Description BOR shall initiate programs in three priority subbasins (identified in the Conceptual Recovery Plan) per year over 5 years, in coordination with NMFS, FWS, the states and others, to address all flow, passage, and screening problems in each subbasin over 10 years. The Corps shall implement demonstration projects to improve habitat in subbasins where water-diversion-related problems could cause take of listed species. Under the NWPPC program, BPA addresses passage, screening, and flow problems, where they are not the responsibility of others. BPA expects to expand on these measures in coordination with the NWPPC process to complement BOR actions described in the action above.

Status Most parts of this RPA Action are proceeding as expected, but NOAA Fisheries determined in its 2002 Findings that one is of concern. The USBR's ability to sufficiently initiate programs in three priority subbasins per year to address all flow, passage, and screening problems has been delayed due to a lack of Congressional authority for activities such as modifying screens and retrofitting passage barriers. NOAA Fisheries found that this was a relatively minor modification at this point in the implementation process, because work on this Action was in the early stages and progressing at least to some extent in four subbasins in 2002. NOAA Fisheries recommended that the USBR continue to seek authority for additional activities, continue to partner with other agencies to fund necessary projects in these subbasins, and identify alternative actions to assist in meeting performance measures, to the extent that somewhat delayed implementation and reduced scope of this Action will affect the Action Agencies' ability to meet those standards in 2003, 2005, and 2008. The set of subbasins prioritized in the All-H Strategy to achieve basin-wide objectives include some which are not within the range of the eight ESUs that are the subject of the Opinion's RPA. NOAA Fisheries recommended that USBR work with NOAA Fisheries to identify replacement subbasins within these species' ranges for inclusion in the 2003-2007 Implementation Plan.

NMFS expectation USBR is expected to continue to seek the necessary construction authority to directly address screen and passage issues. USBR is expected to work with NOAA Fisheries and the other Action Agencies to refine the list of priority subbasins to be entered after considering additional information from subbasin plans and assessments and Technical Recovery Team input. USBR is expected to have 9 subbasins under implementation in 2003. USBR is expected to work with NOAA Fisheries to resolve the issue of the number of subbasins USBR is responsible for through Action 149 by April 2003.

AA implementation USBR is continuing to seek construction authority to implement this Action. In October 2002, the Administration provided a draft bill for that purpose to the Congress and USBR is working with interested members from the Northwest State's delegations to introduce the legislation. In addition, USBR is working with NOAA Fisheries to resolve the identity and number of priority subbasins to be addressed under Action 149 and is moving forward to have this issue resolved by April 2003.

The 2003-07 IP identifies over 100 projects, programs, and studies to fulfill this RPA action. In FY03, BPA will fund projects in at least 2 subbasins or aggregates of subbasins, the Corps will undertake projects in 4 subbasins, and USBR will pursue projects or programs in 9 subbasins. BPA and USBR will continue to seek clarification of the respective federal agency roles and responsibilities under this Action. BPA will continue to select projects under this action through NPPC processes.

Identification of projects for implementation in future years will depend on the project selection processes used by the three Action Agencies. The Action Agencies project selection will be prioritized based on NPPC subbasin planning recommendations. Increments of change attributable to the implementation of these programs in each subbasin will not be possible until a baseline of problem conditions is available, presumably with completion of the Council's subbasin assessments and plans. The actions are summarized, by subbasin, as follows with a cross reference to the appropriate BiOp ID number if more information is needed:

Entiat: Two USBR projects: (1) Initiation of a diversion barrier/screen and flow program in the subbasin during FY 2003 (ID # 424), and (2) initiation of IFIM studies in partnership with the Entiat Water Planning Unit (ID # 389) which will be integrated into an EDT analysis. (Note: to avoid double counting, disregard ID # 587 because it is a repeat of # 389).

Grays: One Corps section 206 project to restore a large portion of 7.6 miles of stream and 15 acres of wetlands through culvert replacement, installation of fishways and ladders, and wetland enhancement (ID # 559).

Upper John Day: Five USBR projects affect this subbasin: (1) continuation of the program in the subbasin to implement action 149 including completion of programmatic NEPA assessments (ID #431), (2) installation of a siphon, screen and passage structure at the Panama Ditch/Beech Creek crossing (ID #420), (3) installing a siphon, screen, and passage structure at Strawberry Creek (ID # 421), (4) installing temporary gauging stations for flow data collection (ID # 422), and (5) initiating IFIM studies to ascertain fish flow needs (ID # 423).

Middle Fork John Day: Three USBR projects affect this subbasin: (1) continuation of the program in the subbasin to implement action 149 including completion of programmatic NEPA assessments (ID #429), (2) installing temporary gaging stations for flow data collection (ID # 413), and (3) initiating IFIM studies to ascertain fish flow needs (ID # 414).

North Fork John Day: Two USBR projects affect this subbasin: USBR will initiate a program in this subbasin during FY 2003 and will complete a

programmatic NEPA assessment for all three of the upper John Day subbasins (ID # 430) and will initiate IFIM studies in the subbasin to ascertain fish flow needs (ID # 418) if the subbasin is confirmed as a priority.

Methow: Fifteen USBR projects are planned or underway in the Methow subbasin. USBR projects are (1) water acquisition opportunities in Beaver Creek (ID # 383), (2) replace pushup dams at the Batie and Red Shirt diversions in Beaver Creek with facilities to provide fish passage (ID # 384), (3) provide fish screens, water measurement, and passage barrier improvements at Chewuch Diversion on the Chewuch River (ID # 387), (4) develop a pump exchange system at the Fort-Thurlow diversion dam to eliminate fish passage problems and open 10 miles of Beaver Creek (ID # 390), (5) improve fish passage at the Fulton Diversion on the Chewuch River (ID # 391), (6) provide fish passage facilities and screens at Gold Creek Diversion Dam (ID # 392), (7) replace the Marracci Diversion on upper Beaver Creek with a structure that incorporates fish passage (ID # 408), (8) assist the USGS with hydrologic model upgrades to evaluation ground-water effects (ID # 409), (9) assist with a screen replacement owned by Methow Valley Irrigation District (ID # 410 and also see BPA ID # 108 for other work at this facility), (10) assist with screen replacements at the Methow Valley Irrigation District Twisp River diversion (ID #411 and also see BPA ID # 108), (11) a pump exchange project at the Methow Valley Irrigation District Twisp River Diversion (ID # 412 and also see BPA ID # 108 for this location), (12) replacement of the Methow Valley Irrigation District Methow River diversion to provide fish passage (ID #416), (13) design and construction of a diversion and headgate to replace a pushup dam related to the Methow Valley Irrigation District Twisp River Diversion (ID # 417), (14) participate in a USGS and Okanogan county/Methow Basin Water Planning Unit study to model hydrologic effects of water management options (ID #419), and (15) continuation of the USBR Methow subbasin program to liaison with local groups and landowners and support outreach programs.

Salmon River: Twenty-six programs and projects are included in the Salmon River drainage including 3 by BPA, 1 by the Corps, and 22 by USBR. Several of these projects are joint ventures by the action agencies and project sponsors, and a cross reference is noted below where appropriate. BPA has two projects that apply to the entire Salmon River drainage and the remainder can be allocated into subbasins.

Entire Salmon River: BPA projects are: (1) a program for consolidation and elimination of irrigation diversions and screen intakes and canals (ID #82), (2) a model watershed habitat improvement project through development of alternative management plans and reestablishment of riparian protection (ID #83) and (3) a multi-year project in the Upper Salmon River to reduce the number of irrigation diversions, enhance in-stream flows through water conservation measures, reduce juvenile delay and entrapment, and construct NMFS approved fish screens (ID #85). USBR is providing technical assistance to sponsors under this project.

Lemhi: USBR has 21 projects or programs in the Lemhi. USBR projects in the Lemhi are: (1) L-13 diversion, headgate, and screen replacement projects (ID # 393, 394, and 395), (2) L-18 headgate replacement for control of water delivery (ID #396), (3) L-20 headgate replacement for control of water delivery (ID # 397), (4) L-3 diversion and headgate replacement to provide fish passage and control water delivery (ID # 398 and 404, see also BPA ID # 105), (5) L-35A diversion, headgate, and screen replacement projects (ID #399, 400, and 401), (6) L-3A diversion replacement to provide fish passage (ID #402, see also BPA ID #105), (7) L-3A0 diversion replacement (ID # 403), (8) L-6/S-14 water exchange project to address instream flows in the lower Lemhi (ID # 405 and also see BPA #107), (9) L-9 diversion and headgate replacements to provide fish passage and to control water delivery (ID# 406 and 407), (10) Williams Creek diversion replacements, headgate replacements and screen replacement which address two gravel push-up dams, two headgates, and three screens (ID # 434, 435, and 436), (11) subbasin IFIM studies to ascertain fish flow needs (ID # 588), and (12) continued management of USBR's Lemhi subbasin program including program outreach and completion of programmatic NEPA compliance.

Upper Salmon Subbasin: BPA has 2 projects in the Upper Salmon, the Corps has 1 project, and USBR has 1 project. BPA projects are: (1) addressing effectiveness assessments, migration barriers, fine sediments, geomorphic structure, and riparian vegetation in Custer County (ID # 81), (2) an upper Salmon diversion consolidation, fish screen and irrigation water conservation program (ID # 82). The Corps has initiated a project to restore habitat quality in the lower 12 miles of the upper Salmon River through a channel restoration feasibility study (ID # 555). The USBR is initiating its program in the upper Salmon by installing a subbasin liaison, implementing a public outreach program, and completing programmatic NEPA compliance (ID #432).

Walla Walla subbasin: the Corps is supporting one study in the Walla Walla. The Corps has a 3-year feasibility study to identify alternatives for increased instream flow, headwater dams for instream flows, water exchanges with the Columbia River, increased irrigation efficiency, and purchase of water rights (ID # 561).

Wenatchee subbasin: USBR has 4 projects identified in the Wenatchee: (1) established a subbasin liaison program for outreach and project coordination (ID # 433), (2) initiation of IFIM studies in partnership with the Cleland County Watershed Planning Group (ID #385), (3) address replacement of small diversion facilities on Chumstick Creek that affect fish passage (ID #388), and (4) replace several small diversions on Mission Creek that affect fish passage (ID # 415).

Yakima River: The Yakima is not a high priority subbasin, but BPA is implementing 2 projects that meet the intent of this action. Other projects not listed in this summary also contribute to the basic intent of action 149, but are not located in a high priority subbasin. The 2 projects are part of the Yakama Nation Yakima/Klickitat Fisheries Project and exemplify projects that contribute to the basic intent of action 149. They are: (1) a project to protect and restore off-channel rearing habitats associated with the Yakima and Naches mainstems, (ID #13) and (2) a project to reestablish access into Yakima tributaries through fencing, revegetation, easement and/or property purchases, consolidation of diversions and modernization of

irrigation systems (ID # 16).

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NMFS finding **Modification not a concern**  
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NMFS comments USBR is still seeking the construction authority necessary to directly address screen and passage issues in the priority subbasins. Although USBR is currently providing technical and design assistance on proposed construction projects, until those authorities are obtained there is no certainty that all proposed USBR designed projects will be funded and implemented. Absence of these authorities is a modification in implementation of this action which impedes progress under 149 in priority subbasins where the BiOp anticipated significant and immediate benefits to anadromous salmonids. NOAA Fisheries finds that this is a relatively minor modification at this point in the implementation process, because work on this Action is in the early stages, is progressing at least to some extent in eight subbasins, and the Corps of Engineers and BPA are funding and implementing some projects under this action.

Although the IP proposes to initiate programs in the priority subbasins by 2003, which is the requirement for the 2003 check-in, a broader effort will be required to meet performance standards in 2005. NOAA Fisheries encourages Action Agencies to coordinate activities and leverage their collective resources to ensure that projects are distributed among ESUs and subbasins in a manner that will maximize the likelihood of meeting survival improvement performance standards by the 2005 check-in.

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RPA Action **150**

Description In subbasins with listed salmon and steelhead, BPA shall fund protection of currently productive non-Federal habitat, especially if at risk of being degraded, in accordance with criteria and priorities BPA and NMFS will develop by June 1, 2001.  
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Status Criteria for land acquisition were finalized in March 2003. NOAA Fisheries determined in its 2002 Findings that impacts of the delay were minimal since land acquisitions were proceeding, even without the criteria, through the Council review process. NOAA Fisheries recommended completion of criteria for land acquisition in 2002.  
.....

NMFS expectation Implement Action 150 using the finalized criteria and priorities in 2003.  
.....

AA implementation BPA and NOAA developed criteria and priorities that BPA is using for funding decisions. In FY03, BPA will implement the 3 projects listed in the Critical Elements list under this Action. Those projects include (1) a habitat project to preserve and restore Columbia River estuary islands (proposal # 30011), (2) development of a Watershed Management Plan to achieve and maintain naturally self-sustaining native habitat on Pine Creek Ranch (1998-022-00), and (3) enhance and protect productive habitat on the Oxbow Ranch by removing historic mine tailings and constructing headgates to improve instream flows (2000-015-00). The 5 projects listed under this Action in the 2003-07 IP but not included in the Critical Elements list (1996-042-00, 1997-051-00, 1998-034-00, 2001-040-00, 2002-018-00) were not considered essential for implementation prior to the 2003 or 2005 Check-in evaluations.

.....  
NMFS finding **Modification not a concern**  
.....

NMFS comments Criteria for land acquisition were to be completed in 2001 but were not completed until March 2003. NOAA Fisheries determined in its 2002 Findings that the impact of the delay was minimal since land acquisitions were proceeding, even without the criteria, through the Council review process. BPA identifies two projects to be implemented under 150 as identified in the Critical Elements for BiOps table (February 12, 2003, letter from S. McNary and B. Brown to D. Marker). Additional projects identified in the Implementation Plan may be funded through the Council's Provincial Review process.



RPA Action 151

Description BPA shall, in coordination with NMFS, experiment with innovative ways to increase tributary flows by, for example, establishing a water brokerage. BPA will begin these experiments as soon as possible and submit a report evaluating their efficacy at the end of 5 years. In 2001, BPA will fund development of a methodology acceptable to NMFS for ascertaining instream flows that meet ESA requirements.

Status In 2001, BPA was to fund development of a methodology acceptable to NOAA Fisheries for ascertaining instream flows that meet ESA requirements. The 2002 Implementation Plan did not propose to fund development of the methodology in 2002. NOAA Fisheries determined in its 2002 Findings that this was a relatively minor modification because, at the time, the delay in this procedural step would not delay the subsequent substantive actions of purchasing quantities of water that will be necessary for achieving biological goals. NOAA Fisheries recommended that BPA continue discussion with NOAA Fisheries regarding funding for completion of an instream flow protocol in 2002. BPA plans to establish regional and local water entities in coordination with a related initiative in the Council's amended 2000 Fish and Wildlife Program.

NMFS expectation BPA is expected to conclude discussions with NOAA Fisheries regarding options for completion of the draft methodology and funding its implementation. BPA is expected to document continued funding of regional and local entities to cost-effectively implement innovative strategies to increase tributary flows at levels commensurate with BiOp recommendations.

AA implementation The Water Entity project (2002-013-01) included in the Critical Elements list has been added to the 2003-07 IP.

BPA Projects –

- Explore innovative types of water transactions - A regional water entity has been established to facilitate tributary water transactions basinwide. After a Request for Qualifications process, BPA selected the National Fish and Wildlife Foundation (NFWF) to serve as the regional entity and qualified ten local entities (QLEs) to begin the Columbia Basin Water Transactions Program (CBWTP). NFWF will administer this program to implement Action 151. This regional entity will work through qualified local entities to identify and develop opportunities for providing cost-effective in-stream flows. NFWF will submit a report evaluating its efforts annually and at the end of five years. One major focus of the regional entity's efforts is to support local entity efforts to test the effectiveness of various transactional strategies for increasing tributary flows to improve habitat throughout the Columbia Basin.
- Additional information about the regional entity and the Columbia Basin Water Transactions Program (CBWTP) is available at <http://www.nfwf.org/watertransactionsprogram/index.htm>. The website currently provides background information on the program, the upcoming implementation timeline, a description of the ten current QLEs, criteria and information for submitting proposals, maps of the basin, and contact information. NFWF has already begun receiving proposals from QLEs for implementation in 2002-2003. The regional entity has organized a September 19-20 meeting at Portland State University on water transaction strategies and a roundtable working session with representatives of the ten QLEs to further implement the program. The QLEs will be implementing innovative transactional approaches in 2003 and in subsequent years. BPA expects to continue supporting this program to cost-effectively implement innovative strategies to increase tributary flows. BPA intends to utilize the regional entity structure and the CBWTP in order to test transactional strategies in each of the Columbia Basin states and apply the effective strategies in the field to make progress toward meeting performance standards.
- Build a regional structure for flow improvements – The regional water entity described above will also pursue:
  1.  Coordination of water transactions and associated habitat projects.
  2.  Development of a competitive process to supply water to increase flows.
  3.  Development of water solicitations and selection of the most promising transaction proposals.
  4.  Development of a regional clearinghouse and public information site for water transactions.
- Develop criteria and priorities — BPA has worked with NOAA, Council staff and other interested parties to develop criteria and priorities for the regional water entity to use in the selection of water transactions and transfers. The Action Agencies will also work with NOAA, USFWS and others to develop a methodology for evaluating the biological effectiveness of documented increases in quantity of in-stream water.
  1.  Acquire/improve flows at diversions – BPA will field at least nine projects that increase tributary flows through water acquisitions and improvements at diversions in the following five subbasins.
- Identify additional in-stream flow improvements – The regional water entity is structured to identify and facilitate additional promising water transactions for the purposes of increasing in-stream flows.

2004-07 Work Plan

In addition to the continuing activities described above, the Action Agencies plan to:

- Develop stream flow protocol methodologies/studies and water acquisition processes or incorporate the protocols provided by NOAA. BPA is coordinating with USBR to use the results of six current IFIM studies to enhance water acquisition strategies. NOAA has also assumed responsibility

to provide BPA with an IFIM methodology capable of ascertaining instream flows that meet ESA requirements.

- Enable the regional entity, the National Fish and Wildlife Foundation, to qualify additional local entities, pursue cost-sharing agreements, and further implement the Columbia Basin Water Transactions Program over the next five years.
- Coordinate with the Oregon Water Resources Department (OWRD), Washington Department of Ecology (WDOE), Idaho Department of Water Resources (IDWR), and the Montana Fish Wildlife and Parks (FWP) to improve water transaction efficacy and ensure transactional strategies are consistent with state water law.
- Complete a report evaluating the efficacy of the regional water entity and the CBWTP, including a decision on whether to continue the program.

.....  
NMFS finding **Modification not a concern**  
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NMFS comments In 2001, BPA was to fund development of a methodology acceptable to NOAA Fisheries for ascertaining instream flows that meet ESA requirements. In 2002 NOAA Fisheries committed to providing BPA a preliminary methodology for ascertaining instream flows that meet ESA requirements and to providing a final draft of the preliminary methodology acceptable for internal distribution by August 2003. BPA committed to entering into discussions with NOAA Fisheries regarding options for completion and implementation of the methodology. The Implementation Plan does not address completion of the draft protocol or funding implementation of the methodology in 2003. NOAA Fisheries considers this a relatively minor modification because, at this time, the delay in this procedural step will not delay the subsequent substantive actions of purchasing quantities of water that will be necessary for achieving biological goals.

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RPA Action **152**

Description The Action Agencies shall coordinate their efforts and support offsite habitat enhancement measures undertaken by other Federal agencies, states, Tribes, and local governments by the following: (See RPA)

Status In 2002, the Action Agencies proposed to share technical expertise and training with other entities and leverage funds through cooperative projects and agreements. The Action Agencies proposed to participate as appropriate in TMDL coordination and consultation meetings and to coordinate with the states in the Subbasin Plans. NOAA Fisheries determined in its 2002 Findings that this Action was underway.

NMFS expectation In addition to continued funding of coordinated off-site habitat enhancement measures to improve water quality, the Action Agencies are expected to provide explicit documentation describing their participation and resulting accomplishments that support the states, tribes and watershed councils in the TMDL process and in subbasin planning. Specifically, BPA is expected to document status and completion of the six elements proposed in the Tributary Habitat Substrategy 1.2 (Water Quality) 2003 Work Plan included in Section 5.2.1 of the 2003/2003-07 Implementation Plan.

AA implementation BPA's Critical Elements list does not include any projects for implementation in FY03 under this Action. The projects listed under this Action in the 2003-07 IP may contribute to this action but are not considered essential for implementation in FY03 to meet the 3- or 5-year Check-in evaluations.

NMFS finding **No schedule, implementation underway**

NMFS comments No projects are identified for funding under this action in the Critical Elements for the BiOps table (February 12, 2003, letter from S. McNary and B. Brown to D. Marker) although some projects identified in the 2003 Work Plan list could be funded through the Council's Program.

NOAA Fisheries considers that implementation is underway based on the November 2002 Implementation Plan which states that projects were underway or started in FY2002. Although we conclude that it is underway, it appears that some of these projects may not be continued in FY2003 based on the Critical Elements list. NOAA Fisheries encourages Action Agencies to coordinate activities and leverage their collective resources to ensure that projects implemented under this action are distributed among ESUs and subbasins in a manner that will maximize the likelihood of meeting survival improvement performance standards by the 2005 check-in.

RPA Action **153**

Description BPA shall, working with agricultural incentive programs such as the Conservation Reserve Enhancement Program, negotiate and fund long-term protection for 100 miles of riparian buffers per year in accordance with criteria BPA and NMFS will develop by June 1, 2001.

Status This Action requires 100 miles per year of long-term/permanent easements. The Action Agencies reported in 2002 that 17 projects funded in 2001 and 2002 would protect over 100 miles of riparian habitat. However, NOAA Fisheries had previously commented in "gaps" letters that, although these projects make progress towards implementing this Action, virtually none provide long-term or permanent protection. Additionally, the combined mileage for 2001 and 2002 should be at least 200 miles. NOAA Fisheries determined in its 2002 Findings that this Action required resolution.

NMFS expectation The Action agencies are expected to provide NOAA Fisheries with a review of the 17 projects implemented under this action in 2001 and 2002. For Tier 1 projects, BPA is expected to document how funded projects achieve benefits beyond what would be expected through the basic CREP administered by the Farm Services Administration (FSA) or how these projects are necessary for the establishment of a the multiagency program which will secure long-term or permanent CREP easements. In order to meet Tier 2 objectives of 100 mile per year of long term or permanent CREP easements, BPA, working with NOAA Fisheries, FSA, NRCS, the States, and others, is expected to complete and implement a multi-agency program to strengthen the CREP in areas within the range of listed fish species. The AAs are expected to document 300 miles enrolled under long-term CREP easements by September.

AA implementation Under this action, BPA will implement the 20 projects identified in the Critical Elements list. The other projects listed in the 2003-07 IP that are not included on the Critical Elements list may contribute to this action, but are not considered essential for implementation in FY03 to meet the 3- or 5-year Check-in evaluations. It is expected that a two-tier approach will initially be necessary to leverage agricultural incentive programs to fund long-term protection for riparian buffers. Tier 1 will be a continued effort to develop and implement a program for establishing long-term protection for lands enrolled in these programs. Tier 2 consists of continued support of CREP implementation and other similar federal programs as needed to develop, refine, implement and support the long-term protection program. To this end, BPA, working with NOAA, FSA, NRCS, the States, and others, will collaboratively develop and implement a multi-agency program to strengthen the CREP in areas within the range of listed fish species. The objective of this multi-agency program is to ultimately achieve long-term or permanent protection of 100 miles of riparian habitat per year. NOAA and BPA will annually evaluate the implementation of the multi-agency program and conclude whether and how the program could be adjusted for more effective implementation. The goal of this action is 300 miles enrolled in long term or permanent CREP easements. See also the Tributary Habitat Substrategy 1.5 (Watershed Health) included in Section 5.2.1 of the 2003/2003-07 Implementation Plan.

NMFS finding **Modification not a concern**

NMFS comments BPA is funding implementation of programmatic and individual actions under the CREP program that in many cases enhance or accelerate the CREP program beyond what can be accomplished by FSA and the states alone. Despite these efforts 100 miles of long-term and permanent riparian buffers have not been enrolled per year. BPA will not meet the 2003 check-in criteria of 100 miles of long-term or permanent Conservation Reserve Enhancement Program contracts, which constitutes a modification in implementation of this action. However, it is likely that BPA will have facilitated 300 miles of short-term (10-15 years) riparian contracts by 2003. NOAA recognizes the institutional and programmatic difficulties which must be overcome in order to achieve the annual easement objective. NOAA believes that continued implementation of BPA's current multiagency strategy for this action is likely to ultimately align annual and cumulative progress with the criteria of this action. Consequently, NOAA does not believe that this modification will appreciably impact the benefit of this action to anadromous fish over the long term.

RPA Action 154

Description BPA shall work with the NWPPC to ensure development and updating of subbasin assessments and plans; match state and local funding for coordinated development of watershed assessments and plans; and help fund technical support for subbasin and watershed plan implementation from 2001 to 2006. Planning for priority subbasins should be completed by the 2003 check-in. The action agencies will work with other Federal agencies to ensure that subbasin and watershed assessments and plans are coordinated across non-Federal and Federal land ownerships and programs.

Status In 2002, the Action Agencies proposed to continue to work with the Council to ensure that subbasin plans are completed by 2006. The Action Agencies proposed to continue to provide a share of support for subbasin assessments and plans. NOAA Fisheries determined in its 2002 Findings that this Action was being implemented as expected, but NOAA Fisheries also recommended that BPA firm up the Council's proposed schedule in order to complete Subbasin Plans in priority subbasins by 2003.

NMFS expectation Subbasin plans for priority subbasins should be completed in FY2003 and a clear plan should be developed to ensure completion of all subbasin plans by 2006. The Action Agencies are expected to ensure completion of subbasin assessments and finer scale analyses at a level of detail sufficient for NOAA Fisheries to evaluate and ensure the effectiveness of the actions defined in the IPs.

The Action Agencies are expected to develop a plan and schedule, in consultation with NOAA Fisheries and other federal agencies, for ensuring that subbasin and watershed assessments and plans are coordinated across non-federal and federal land ownerships and programs. At a minimum, the Action Agencies are expected to ensure an integration with statewide planning, in particular that being implemented by Washington's Recovery Boards and by the Oregon Watershed Enhancement Board. (2003 Work Plan only addresses coordination with tribal recovery plan).

RPA 154 should be utilized not just for habitat actions as stated in habitat substrategy 1.4 of the Implementation Plan. It also needs to provide context for HGMP/production decisions.

The Action Agencies need to determine how to continue support for statewide subbasin planning and subbasin lead planners. It is crucial that these entities continue to work together. Subbasin planning and provincial reviews need to be implemented in an ongoing, iterative and coordinated fashion. The Action Agencies need to determine how to maintain the coordination infrastructure that has been established and that it continues when subbasin plans are complete.

The Corps and USBR are expected to document the extent of their efforts to support subbasin and watershed plans.

AA implementation BPA is implementing this action through state, provincial, and tribal Subbasin Planning contracts (2002-051-00). The other BPA projects listed under this Action in the 2003-07 IP may contribute to this action but were not considered essential for implementation in FY03 to meet the 3- or 5-year Check-in evaluations.

Until subbasin plans are completed, the Action Agencies are using subbasin assessments, BiOp criteria, and ISRP reviews to inform Provincial Review project selections. In 2002 BPA entered into contracts with the Council to develop subbasin plans for the entire Columbia River Basin and anticipates plan completion for all 62 subbasins by the end of 2004. NOAA and the Action Agencies are collaborating to finalize identification by NOAA of priority subbasins, which will allow BPA to especially focus attention on ensuring completion of those plans. Although delayed, developing the subbasin plans in close coordination with NOAA and the USFWS will ensure the integration and prioritization of ESA-focused project activities in the Council's Fish and Wildlife Program. The Action Agencies expect subbasin plans to adhere to the current completion schedule.

NMFS finding **Modification requires resolution**

NMFS comments NOAA Fisheries is concerned about the status of this action given that the Opinion places significant weight on the capacity of subbasin and watershed assessments and plans to benefit anadromous salmonids.

Subbasin assessments and plans are the cornerstone of improved offsite mitigation and their completion for priority subbasins represents a key expectation for the Opinion's 2003 midpoint evaluation. While the Action Agencies and Council have worked hard to implement this Action, this has been

a difficult task and the schedule has slipped from completion in 2003 to initial submission in May 2004 as a result of a longer than expected regional coordination processes. The subbasin plans that will be submitted in May 2004 will require further review by the Independent Scientific Review Panel and approval by the Council - a process that will take several months following submission. This schedule change has implications because assessments and development of the resulting information into more specific offsite mitigation plans are critical to the identification of actions needed to meet the performance standards. More immediately, they are also needed to inform the next round of provincial reviews, which identify Fish and Wildlife Program projects that will be funded for a three-year period. Provincial reviews begin in June 2004 for provinces that include priority subbasins, which leaves little time for incorporating the results of the initial subbasin plan submissions into the decision process and leaves little room for further slippage in the schedule.

The IP does not clearly consider the importance of watershed assessments and plans in linking subbasin plans to specific projects on the ground. Watershed assessments and plans are critical steps necessary to step down from subbasin plans developed at large geographic scales to the identification and implementation of appropriate individual actions intended to address critical factors limiting salmon productivity.

NOAA Fisheries has four recommendations to the Action Agencies to potentially reduce the impacts of the schedule change and to ensure that the current schedule does not slip further:

1. NOAA Fisheries encourages the Action Agencies to maintain the current schedule and to continue support for subbasin planning and subbasin lead planners.
  2. NOAA Fisheries recommends that the Action Agencies ensure that, at a minimum, the more detailed subbasin assessments being prepared as part of subbasin planning be completed in subbasins with anadromous salmonids prior to the next funding cycle of the Council's Fish and Wildlife Program. Subbasin assessments which incorporate Technical Recovery Team products and identify, spatially, limiting factors and potential capacities to increase anadromous salmonid survival would significantly enhance project selection in the absence of completed subbasin plans.
  3. NOAA Fisheries recommends specific focus on the importance of quality control for the completion of subbasin plans, in keeping with the Council's Technical Guide for Subbasin Planning and the agencies and tribes' Subbasin Assessment Template.
  4. NOAA supports BPA's recognition that the effectiveness of Action 154 depends in part on continued coordination with states and on contributions to ensure that watershed assessments and plans are prioritized and funded.
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RPA Action **155**

Description BPA, working with BOR, the Corps, EPA, and USGS, shall develop a program to 1) identify mainstem habitat sampling reaches, survey conditions, describe cause-and-effect relationships, and identify research needs; 2) develop improvement plans for all mainstem reaches; and 3) initiate improvements in three mainstem reaches. Results shall be reported annually.

Status A program to develop a systematic assessment of habitat modification from dam construction was not initiated in 2002 and results were not reported. BPA proposes to fund project proposal #35007 to evaluate restoration potential of Snake River Fall Chinook Salmon spawning habitat. Key personnel on this project were previously involved in an assessment of the impacts of development and operation of the Columbia River hydroelectric system on mainstem riverine process and salmon habitats that was prepared for BPA in June 2000, which is a similar concern in this RPA Action.

NMFS expectation Expeditiously develop a project to provide the survey information and improvement plans for all mainstem reaches. A significant portion of the work under tasks 1) and 2) of the RPA Action should be completed in 2003. Results for 2003 will be report.

AA implementation In FY03, BPA will implement this action with the 3 existing projects and one proposal included in the Critical Elements list. The three existing projects include evaluation of fall Chinook and chum salmon spawning, restoration of the Sandy River delta, and the evaluation of factors limiting Columbia River Gorge chum salmon populations. BPA will also proceed with proposal 35007 to evaluate the restoration potential of Snake River fall Chinook salmon spawning habitat. See also the Mainstem Habitat Substrategy 2.1 (Watershed Health) included in Section 5.2.2 of the 2003/2003-07 Implementation Plan.

NMFS finding **Modification not a concern**

NMFS comments BPA has agreed to expeditiously work with the sponsors of 35007, which is a Mainstem/Systemwide project to evaluate restoration potential of Snake River fall chinook salmon spawning habitat, so that it can provide the systematic basis for implementing RPA Action 155.

The finding is a modification because there have been no annual reports as called for in the RPA Action. Nevertheless, with the prompt implementation and reporting of this Action this year, it is possible to meet the 2003 checkin expectations.

RPA Action **156**

Description The Action Agencies and NMFS shall study the feasibility (including both biological benefits and ecological risks) of habitat modification to improve spawning conditions for chum salmon in the Ives Island area.

Status Studies and programs are being developed.

NMFS expectation NOAA expects that the feasibility report will be completed by September 2003.

AA implementation The Corps is funding a feasibility report on actions to restore and/or protect chum spawning areas. The team developing the report is working closely with Regional salmon managers actively involved in chum salmon management. The report should be completed and available to NOAA and the Region in 2003. BPA also plans to implement the 3 projects identified in the Critical Elements list (1999-003-01, 2000-012-00, and 2001-053-00).

NMFS finding **Implementation as expected**

NMFS comments

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RPA Action **157**

Description BPA shall fund actions to improve and restore tributary and mainstem habitat for CR chum salmon in the reach between The Dalles Dam and the mouth of the Columbia River.

Status Studies and programs are underway (e.g., Duncan Creek restoration project).

NMFS expectation AAs complete and begin implementation of an effective habitat improvement plan.

AA implementation The above feasibility report includes options apart from Corps projects. Funding alternatives for those options will be outlined in the report. BPA plans to implement 3 projects identified in the Critical Elements list (1999-003-01, 1999-025-00, and 2001-053-00) that apply to this Action. Project number 2001-012-00 was identified under this Action in the 2003-07 IP, though it not considered essential for implementation in FY03 to meet the 3- or 5-year Check-in evaluations. BPA still plans to implement this project, but has identified it under Action 156.

NMFS finding **Implementation as expected**

NMFS comments The IP proposes to initiate projects addressing this action by 2003, which is the requirement for the 2003 check-in. However, a broader effort will be required to meet performance standards in 2005. NOAA Fisheries encourages Action Agencies to coordinate activities and leverage their collective resources to ensure that project numbers and distribution will maximize the likelihood of meeting survival improvement performance standards by the 2005 check-in.



RPA Action **158**

Description During 2001, the Corps and BPA shall seek funding and develop an action plan to rapidly inventory estuarine habitat, model physical and biological features of the historical lower river and estuary, identify limiting biological and physical factors in the estuary, identify impacts of the FCRPS system on habitat and listed salmon in the estuary relative to other factors, and develop criteria for estuarine habitat restoration.  
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Status The Corps and BPA were required to develop an action plan to rapidly inventory estuarine habitat, etc., in 2001. The plan has not yet been completed.  
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NMFS expectation Complete the action plan in FY2003, per the Action Agencies' January 28, 2003, resolution document (committed to on February 3, 2003) and the supplementary summary document with time line, scope, and general outline (i.e., Contents of the Plan 158 TJ March 11.doc).  
.....

AA implementation The Corps and BPA committed on February 3, 2003 to complete the action plan, in coordination with NOAA-Fisheries. On-going Federal activity in the estuary including research by NOAA, LCREP, and others that is supported by BPA and the Corps, mapping, and habitat restoration activities will continue while the action plan is developed and will be integrated into the plan. The Action Agencies will adhere to the following timelines:

3/19/03 - Outline and submission to NMFS for review  
3/24/03 - Review from NMFS of outline  
4/30/03 - 30% draft plan submitted to NMFS for review  
5/15/03 - Review due by Action Agencies and NMFS  
6/15/03 - 60% draft plan submitted to NMFS for review  
6/30/03 - Review due by Action Agencies and NMFS  
7/30/03 - 95% draft plan submitted to NMFS for review  
8/30/03 - Review due by Action Agencies, NMFS, LCREP Science workgroup, and other organizations as appropriate (i.e., ISRP)  
9/30/03 - Completed Action Plan sent to NMFS

Under this Action, BPA plans to implement the 2 proposals (30001, 30002) and 2 projects (1998-014-00 and 2002-012-00) identified in the Critical Elements list.

.....  
NMFS finding **Modification not a concern**  
.....

NMFS comments Action 158 calls for the development of an action plan that will serve as the Action Agencies' estuarine habitat program. This document is supposed to describe and integrate the research, restoration, monitoring, and evaluation components to be conducted in the estuary. The action plan for rapidly inventorying estuary habitat was not completed in 2001. This delay is not a concern because elements of this plan are being developed and criteria for habitat restoration have been implemented.

NOAA Fisheries recommends that the Action Agencies review the Corps' GI study (see Table 3, Report 1 of the 2003/2003-2007 Implementation Plan for the Federal Columbia River Power System) to ensure that it will effectively augment/integrate with the development of the plan for Action 158.

RPA Action **159**

Description BPA and the Corps, working with LCREP and NMFS, shall develop a plan addressing the habitat needs of salmon and steelhead in the estuary.

Status The Action Agencies are in the process of completing a draft of the plan for Action 159.

The 50% draft of the Action 159 plan was reviewed by NOAA Fisheries with comments submitted to the Plan 159 development group on March 4, 2003. This plan will be submitted for review to NOAA Fisheries before its completion for the September 2003, check-in.

NMFS expectation Complete the landscape scale restoration plan for the Lower Columbia River and estuary in 2003, per the Action Agencies' January 28, 2003, resolution document [committed to on February 3, 2003].

AA implementation BPA is working with the Corps, LCREP and the Columbia River Estuary Study Taskforce (CREST) to develop this plan. This project, initiated in FY 2002, will provide the foundational plan for habitat restoration activities in the estuary. The study will eventually be coordinated with the more comprehensive GI study. It was noted that the scope of the plan being prepared under this contract is greater than RPA 159 calls for, offsetting the fact that it will be completed later than NOAA Fisheries desired. The Action Agencies will adhere to the following timelines:

- 4/30/03 - 90% draft plan submitted to NMFS for review
- 7/01/03 - Draft final plan submitted to NMFS for review
- 8/15/03 - Completed Plan sent to NMFS

In addition, the Corps, BPA, and LCREP are developing a long-range plan for protection and restoration of the estuary that is broader in scope than the needs of NOAA BiOp implementation. This General Investigation (GI) study for ecosystem restoration in the Columbia River estuary (covering from the river mouth to river mile 145) is expected to continue from 2003 to 2007, but results will inform actions for the estuary along the way. The Action Agencies plan to address the habitat needs of salmon and steelhead in the estuary in coordination with the GI feasibility study to avoid duplication of effort

NMFS finding **Implementation as expected**

NMFS comments NOAA Fisheries recommends that the plan for Action 159 describe and clarify how the GI study will utilize/incorporate the findings of the plan into a long-term assessment of habitat needs for salmon and steelhead in the estuary.

RPA Action 160

Description The Corps and BPA, working with LCREP, shall develop and implement an estuary restoration program with a goal of protecting and enhancing 10,000 acres of tidal wetlands and other key habitats over 10 years, beginning in 2001, to rebuild productivity for listed populations in the lower 46 river miles of the Columbia River. The Corps shall seek funds for the Federal share of the program, and BPA shall provide funding for the non-Federal share. The Action Agencies shall provide planning and engineering expertise to implement the non-Federal share of on-the-ground habitat improvement efforts identified in LCREP, Action 2.

Status In 2002, the Corps proposed to continue a General Investigation Study of the estuary to inform implementation of this Action, but the Corps and BPA did not provide NOAA Fisheries with a "master plan" that described how they intend to accomplish this. Nor did they present NOAA Fisheries with any formalized criteria for choosing projects, or how their existing authorities would be fully utilized or redirected to complete this work. NOAA Fisheries determined in its 2002 Findings that this modification was not a concern because there was still time to complete this Action on schedule if efforts were further directed towards planning in 2002. NOAA Fisheries recommended that BPA prepare and provide NOAA Fisheries with a detailed work plan and schedule for completion of this Action. This plan should explain how the Corp's General Investigation Study connects to this work.

NMFS expectation Complete this action, per the Action Agencies' January 28, 2003, resolution document [committed to on February 3, 2003]. NOAA Fisheries expects the Corps and BPA to develop a joint list of projects via the LCREP Science workgroup based on scientifically based restoration criteria targeted to geographic areas in the estuary (using plans developed to meet Actions 158 and 159) that have ecological significance to ESA-listed anadromous fish.

AA implementation The Corps and BPA are working on a cost share agreement that will allow the Corps to use existing and new authorities to protect and enhance 5,000 acres of estuary habitat during the next 5 years (2003-2007). Congress provided a new authority (Section 536) and appropriated funds to the Corps in 2003 for habitat work in the estuary. This authority requires cost sharing which may be provided by the States, local governments, LCREP or BPA through the Council's Provincial Review and subbasin planning processes. Under this authority, the Corps plans to implement ecosystem restoration projects to protect, monitor and restore fish and wildlife habitat in close coordination with LCREP. This program is expected to generate a mosaic of restoration projects that will address RPA action 160 and augment the comprehensive master plan generated by the GI study. The Action Agencies will adhere to the following timelines:

- 4/30/03 - List of potential estuary restoration projects for FY 03-05 to be submitted to NMFS and LCREP Science Workgroup for review
- 5/30/03 - List finalized and restoration projects initiated for FY 03 field season

The Corps will also continue to seek and pursue opportunities for habitat restoration or enhancement projects in the estuary under available authorities such as the Section 1135 and 206 restoration authorities. These authorities may be used to accomplish work in 2003 if funding is not appropriated under Section 536.

BPA identified 4 proposals/projects under this action in their Critical Elements list and plans to implement them in cooperation with the Corps, LCREP, and other. The 4 projects are Blind Slough Restoration (proposal 30004), Effectiveness Monitoring of the Chinook River Estuary Restoration (proposal 30006), Implement Habitat Restoration Program for the Columbia Estuary and Lower Columbia River (proposal 30016), and Preserve and Restore Columbia River Estuary Islands to Enhance Juvenile Salmonids and Columbian White-tailed Deer Habitat (proposal 30011).

NMFS finding **Modification not a concern**

NMFS comments This Action requires the Corps and BPA to develop and implement an estuary restoration program that will protect and enhance 10,000 acres over 10 years beginning in 2001. Appendix F states NOAA Fisheries' expectation that restoration efforts will be identified, funded, and underway by 2003. The estuary restoration program did not begin in 2001 which constitutes a modification of this action. However, both the Corps and BPA have proposed individual restoration projects to implement Action 160 in FY2003. NOAA believes that this delay in implementing this estuary restoration program will not appreciably impact the benefit of this program to salmon in the long-term.

Proposal 30011 (BPA funded through the NWPPC process) , Preserve and Restore Columbia River Estuary Islands to Enhance Juvenile Salmonids and Columbian White-tailed Deer Habitat, is currently identified under Action 150 in the BPA critical projects list, but is listed in the Action Agencies' RPAxRPA

Table (dated 3/10/03) under 160. After a review of project benefits, NOAA Fisheries agrees that Proposal 30011 should be credited to Action 160 because the project proposes to restore tidal emergent marsh and connects subtidal channels to the mainstem Columbia. These habitats are known to be historic habitat (resting/rearing/feeding) for sub-yearling, ocean-type salmon and are likely to benefit ESA-listed chum and chinook (i.e., Lower Columbia River Chinook, Upper Willamette River Chinook, and Snake River Fall Chinook).

For the projects currently identified in the IP (dated November 6, 2002), the Corps identified five restoration projects that they intend to implement for Action 160. Two projects from the IP are included in the BPA critical projects list. The Brownsmead (i.e., Blind Slough) directly matches the BPA critical projects list. The Chinook River Project (i.e., culvert replacement, etc.) appears to be a complementary action to that of the BPA Chinook River project.

The Skipanon Slough project is within the geographic boundary of Action 160. NOAA Fisheries expects that the Corps, in coordination with LCREP and BPA, will implement this project by the September, 2003 check-in.

The other two projects are either outside of the geographic range of Action 160 or, in the case of the West Sand Island project, is not directly related to salmon habitat restoration. The Rooster Rock project, while supporting salmon habitat restoration, is outside of the geographic range of Action 160. The Rooster Rock project can be credited to Action 150. In order to be credited to Action 160, the Action Agencies will need to submit a document for NOAA Fisheries approval (prior to the September, 2003, check-in) explaining why the geographic scope of Action 160 should be expanded to include this project.

NOAA Fisheries encourages Action Agencies to coordinate activities and leverage their collective resources to ensure that sufficient projects are distributed among ESUs in a manner that will maximize the likelihood of meeting survival improvement performance standards by the 2005 check-in.

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RPA Action **161**

Description Between 2001 and 2010, the Corps and BPA shall fund a monitoring and research program acceptable to NMFS and closely coordinated with the LCREP monitoring and research efforts (Management Plan Action 28) to address the estuary objectives of this biological opinion.

Status The AAs indicate that this substrategy will be implemented in the Columbia Rive Estuary Province as an ongoing coordinated estuary, plume, and near-shore ocean research and monitoring project. NOAA Fisheries determined in its 2002 Findings that this Action was being implemented as expected, but recommended that BPA prepare and provide NOAA Fisheries with a detailed work plan and schedule for implementing this Action in nine areas during 2002.

NMFS expectation Complete and fund an estuary monitoring and research program acceptable to NOAA Fisheries in FY2003, per the Action Agencies' January 28, 2003, resolution document [committed to on February 3, 2003].

AA implementation Research will continue in the estuary, guided by the RM&E Estuary/Ocean Work Group, with input from NOAA and LCREP, and by regional review processes including the Corps Anadromous Fish Evaluation Program (AFEP) and the Council's Provincial Review and subbasin planning processes. The RM&E Estuary/Ocean Work Group has concluded an analysis of on-going and proposed RM&E efforts to determine what is being done and identify any gaps that need to be addressed. The Work Group is currently developing an RM&E plan for the estuary and ocean (plume) requirements in the BiOp in 2003.

The Action Agencies support implementation of the timetable and tasks identified in the draft RM&E Framework (12/20/02) for the estuary/ocean to implement the actions related to development of the RM&E Plan. Integration of estuary research in the overall RM&E plan is covered in more detail under the RM&E section of this document. In accordance with the Action Agencies January 28, 2003 resolution, they commit to further develop and implement the research and monitoring program by September 2003. The Action Agencies will adhere to the following timelines:

- 4/30/03 - 30% draft plan submitted to NMFS for review
- 6/15/03 - 60% draft plan submitted to NMFS for review
- 8/15/03 - 95% draft final plan submitted to NMFS for review
- 9/30/03 - Completed Action Plan sent to NMFS

BPA plans to implement 3 proposals/projects under this action and has included them in the Critical Elements list. Those projects are Optimization of FCRPS Impacts on Juvenile Salmonids (proposal 30002), Lower Columbia River and Columbia River Estuary Ecosystem Monitoring and Data Management (proposal 30015), and Estuary/Ocean RME Support (project 2002-077-00).

NMFS finding **Implementation as expected**

NMFS comments Between 2001 and 2010, the Corps and BPA are required to fund a monitoring and research program acceptable to NOAA Fisheries that is coordinated with the LCREP monitoring and research efforts (Management Plan Action 28) in order to address the estuary objectives of this biological opinion.

Currently, the Corps and BPA have been funding individual research projects. While these research projects appropriately support Action 161 in the short-term, the Action Agencies have yet to develop coordinated, long-term research strategy that can be built into the estuary/ocean RM&E plan. The proposed completion of the plans for 158 and 159 will support this research framework by providing important background information and ecological context.

RPA Action **162**

Description During 2000, BPA, working with NMFS, shall continue to develop a conceptual model of the relationship between estuarine conditions and salmon population structure and resilience. The model will highlight the relationship among hydropower, water management, estuarine conditions, and fish response. The work will enable the agencies to identify information gaps that have to be addressed to develop recommendations for FCRPS management and operations.

Status The Corps and BPA were required to develop a conceptual model of the relation between estuarine conditions and salmon population structure and resilience in 2000. This was not completed in 2000 or 2001. NOAA Fisheries determined in its 2002 Findings that this modification was not a concern because the model could be produced in 2002 and this delay shouldn't affect the ability to evaluate 2005 and 2008 check-in criteria or delay anticipated survival improvements. However, this model also was not produced in 2002.

NMFS expectation Complete the conceptual model of the relation between estuarine conditions and salmon population structure and resilience, per the Action Agencies' January 28, 2003, resolution document [committed to on February 3, 2003].

AA implementation Work began in 1998 and continues under project 1998-014-00, which is included in the Critical Elements list. The conceptual model is being further calibrated and validated and will be completed by September 2003. The conceptual model will be used to help identify information gaps and develop recommendations for FCRPS management and operations. The effort includes exploratory development of physically based metrics for plume habitat opportunity; observation of physical parameters at an OGI monitoring site, and limited forecasts of plume dynamics to support cruise planning and sampling strategies. Calibration and validation effort will continue through 2003, and will culminate in an extensive field-based demonstration in 2004. Through separate funding, developed habitat opportunity maps for juvenile salmon in the estuary, for contrasting modern and pre-development conditions (Bottom et al. 2001). The process entailed developing an extensive simulation database of estuarine circulation, and interrogating that database using criteria describing physical conditions presumed favorable to juvenile salmon. There are currently three possible models available or under development (Dr. Thom's model developed for the Columbia River Channel Improvement Project, NOAA Fisheries' Salmon at Rivers End report, and Dr. Simenstad's work on food web interactions and nutrient cycling in the estuary). BPA and the Corps are working collaboratively with the authors of these models to combine their findings into one complete conceptual model capable of evaluating hydrosystem impacts on the estuary. This evaluation with recommendations will be submitted to NOAA Fisheries for final review by September 2003 for inclusion in the RM&E plan and portion of the RPA 159 plan that discusses conceptual models. The Action Agencies will adhere to the following timelines:

- 4/30/03 - 30% draft plan submitted to NMFS for review
- 5/15/03 - 60% draft plan submitted to NMFS for review
- 8/31/03 - Draft final plan submitted to NMFS for review
- 9/30/03 - Final revised version submitted to NMFS

NMFS finding **Modification not a concern**

NMFS comments The Corps and BPA were required to develop a conceptual model of the relationship between estuarine conditions and salmon population structure and resilience in 2000. This was not completed in 2000, 2001, or 2002. The Action Agencies are now in the process of completing the model. The delay in its development should not appreciably impact the long-term survival improvements of this action.

RPA Action **163**

Description The Action Agencies and NMFS, in conjunction with the Habitat Coordination Team, will develop a compliance monitoring program for inclusion in the first 1- and 5-year plans.

Status This Action requires Action Agencies to develop a compliance monitoring plan for inclusion in the first 1- and 5-year implementation plans. This is not included in the 2003 Plan, so is delayed at least another year. However, compliance reporting has begun through Action Agencies' 2001 Progress Report and a data base system at BPA is being used to help in this effort. BPA is currently working to develop a reporting procedure for their oversight work that will meet NOAA Fisheries's need for project tracking information. Therefore, NOAA Fisheries determined in its 2002 Findings that the impact of this delay would be minimal.

NMFS expectation Complete and implement the compliance monitoring program by September, 2003.

AA implementation The Action Agencies are using an Access database for project level BiOp implementation planning and progress reporting. This provides the initial effort towards development of a compliance monitoring program. The Action Agencies will continue to work with other parties to develop a compliance monitoring program.

NMFS finding **Modification not a concern**

NMFS comments This Action requires the Action Agencies to develop a compliance monitoring plan for inclusion in the first 1- and 5-year implementation plans. Even though this plan has not been completed, compliance reporting has begun through Action Agencies' Annual Progress Reports. The Action Agencies are currently working to develop a reporting procedure for their oversight work that will meet NOAA Fisheries's need for project tracking information. This tracking procedure is being tested in FY2003. Therefore, NOAA Fisheries anticipates that if this pilot is successful and fully implemented the impact of this delay will be minimal.

RPA Action **164**

Description The Action Agencies shall work with NMFS, USFWS, and Tribal and state fishery management agencies in a multiyear program to develop, test, and deploy selective fishing methods and gear that enable fisheries to target nonlisted fish while holding incidental impacts on listed fish within NMFS-defined limits. The design of this program and initial implementation (i.e., at least the testing of new gear types and methods) shall begin in FY 2001. Studies and/or pilot projects shall be under way and/or methods deployed by the 3-year check-in.

Status Tests of tangle nets in 2002 in the Lower Columbia commercial chinook fishery confirmed ability of tangle nets to non-lethally capture chinook and steelhead, the first step in determining efficacy, but also demonstrated the sensitivity of incidental steelhead bycatch to mesh size. Information on short term catch and release mortality was obtained. Report on results of large mesh gill nets in Zone 6 was provided.

NMFS expectation Continue tangle net efficacy studies in 2003, modified as appropriate in light of previous results, especially including the high incidental catch of steelhead in 2002, with the objectives of reducing handling of non-target species and improving estimates of pre-spawning mortality of released fish, including steelhead. Use of large mesh nets in Zone 6 should continue to be monitored/evaluated. Opportunities to test other gear and/or methods such as weed lines, particularly in Zone 6 fisheries, should be identified and pursued.

AA implementation BPA will continue to estimate and compare the long term survival of adult spring Chinook captured and released from tooth tangle nets through project 2001-007-00 (included on the Critical Elements list). Program objectives will be reviewed and refined based on results from 2002. Through the Select Area Fishery Evaluation Project (BiOp Project Id 292), BPA plans to scope the suitability of expanding sites for rearing and release of salmon, continue to collect and analyze homing and straying information, and evaluate the suitability of the use of Willamette and Cowlitz stock of spring Chinook for optimal use in select fishing areas. This project contributes to this Action, but is not considered essential for implementation in FY03 to meet the 3- or 5-year Check-in evaluations.

NMFS finding **Implementation as expected**

NMFS comments



RPA Action **165**

Description The Action Agencies shall work with NMFS, USFWS, Tribal and state fishery managers, and the relevant Pacific Salmon Commission and Pacific Fishery Management Council (PFMC) technical committees to develop and implement methods and analytical procedures (including revising and/or replacing current fishery management and stock assessment models based on these methods and procedures) to estimate fishery and stock-specific management parameters (e.g., harvest rates). The Action Agencies shall place particular emphasis on current methods and procedures affected by the transition to mass marking of Columbia River basin hatchery produced fish and/or deployment of selective fishery regimes in the Columbia River basin, addressing these concerns within a time frame necessary to make the new selective fishing regimes feasible. Specifically, the Action Agencies shall facilitate the development of models, methods, and analytical procedures by the 3-year check-in.

Status No fundable proposals specific to implementation of this item appeared in the Mainstem/Systemwide solicitation, nor was any specific project implemented by the Action Agencies in 2002. However, an effort responsive to the purpose of this RPA (to update the chinook harvest management model used by the Pacific Salmon Commission's Chinook Technical Committee) funded by NOAA Fisheries and initiated in 2002.

NMFS expectation Opportunities for additional refinements to harvest management and stock assessment models should continue to be monitored and implemented by the Action Agencies when appropriate, particularly including those that may be identified through the Pacific Salmon Committee's Selective Fishery Evaluation Committee, USvOR Technical Advisory Committee, or as a result of revisions to existing marking, tagging, or sampling protocols per plans developed under RPA Item 174.

AA implementation See the Harvest Substrategy 2.2 (Alternative Modeling Systems that Work in the context of Selective Fisheries) 5-Year Outcomes and 2003 Work Plan included in Section 5.4.2 of the 2003/2003-07 IP.

NMFS finding **Modification not a concern**

NMFS comments Progress toward the intended purpose of this RPA has occurred as a result of an action funded by NOAA Fisheries rather than the Action Agencies. This modification (i.e., funding by NOAA Fisheries rather than the Action Agencies) improved implementation efficiencies, should result in earlier completion of a revised model, and will increase the likelihood that changes to the model will be accepted by co-managers.

RPA Action **166**

Description The Action Agencies shall work with NMFS, USFWS, the Pacific States Marine Fisheries Commission, and Tribal and state fishery management agencies to implement and/or enable changes in catch sampling programs and data recovery systems, including any required changes in current databases (e.g., reformatting) and associated data retrieval systems, pursuant to the time frame necessary to implement and monitor mass marking programs and/or selective fishery regimes in the Columbia River basin. Specifically, the Action Agencies shall facilitate the revision of programs and systems, as needed, by the 3-year check-in.

.....  
Status The Action Agencies continued funding support for the PSMFC's CWT and catch data bases which include enhancements to the data bases necessitated by changes to CWT tagging procedures and reporting protocols (e.g., double index tagging; format revisions recommended by PSC's Data Sharing Committee).

.....  
NMFS expectation Continue AA's funding of PSMFC's tagging and recovery programs and associated data base maintenance as modified (reformatted) to reflect updated procedures and protocols, and provide an appropriate share of any incremental costs of changes in those programs and data bases that may be necessitated, for example, by mark selective fisheries.

.....  
AA implementation See the Harvest Substrategy 2.1 (Improved Escapement Assessments and Other Critical Population-specific Data to Support Conservation Based Harvest Methods) included in Section 5.4.2 of the 2003/2003-07 IP.

.....  
NMFS finding **Implementation as expected**

.....  
NMFS comments The need may be identified for additional modifications to tagging and/or sampling programs and data systems as a result of ongoing refinements of fishery and stock assessment programs and related procedures, and/or as a result of completion of a comprehensive marking plan per RPA 174.

RPA Action 167

Description The Action Agencies shall work with NMFS, USFWS, and Tribal and state fishery management agencies to develop improved methods for estimating incidental mortalities in fisheries, with particular emphasis on selective fisheries in the Columbia River basin, doing so within the time frame necessary to make new marking and selective fishery regimes feasible. The Action Agencies shall initiate studies and/or develop methods by the 3-year check-in.

Status Action Agencies supported an applied study of encounter rates and incidental mortalities associated with tooth tangle nets in Lower Columbia commercial fisheries. They also funded a study to estimate the potential impacts of lost nets in Zone 6 and to determine the feasibility of locating and recovering those nets.

NMFS expectation The Action Agencies are expected to continue their support of studies, modified in light of results to date, to ascertain prespawning mortality of salmon and steelhead released from tooth tangle nets in the Lower Columbia. Results of lost net recovery feasibility study (e.g., estimated incidental mortalities) expected to be reported and appropriate follow-up steps taken to refine such estimates and/or remove lost nets should feasibility and effectiveness at reducing incidental mortality be demonstrated. Opportunities to improve estimates of incidental mortalities in other fisheries (e.g., recreational steelhead fisheries) are expected to be identified, prioritized, and implemented in coordination with relevant fishery managers.

AA implementation BPA is continuing its projects with WDFW and ODFW to Evaluate Live Capture Selective Harvest Methods (Project 2001-007-00, included on the Critical Elements list). In 2003 BPA will estimate and compare the long term survival of adult spring Chinook captured and released from tooth-tangle nets. The program objectives will be reviewed and refined based on results from 2002. Project 2001-058-00 to Study the Feasibility of Ghost Fishing Net Removal was completed on December 31, 2002..

NMFS finding **Implementation as expected**

NMFS comments Study of incidental mortality of salmon and steelhead released from tangle nets must be expanded, as proposed, beyond the short term mortality estimation to studies over a longer period of time to encompass all the effects of gear encounters on spawning success.

RPA Action **168**

Description The Action Agencies shall work with NMFS, USFWS, and Tribal and state fishery management agencies to develop methods for crediting harvest reforms, and the survival benefits they produce, toward FCRPS offsite mitigation responsibilities. A crediting approach shall be agreed upon by the 3-year check-in.

Status Action Agency/NOAA Fisheries discussion has occurred relative to preparation of a white paper, but little or no substantive progress has occurred to date.

NMFS expectation The Action Agencies should develop a white paper discussing options for crediting new harvest reforms senabled by the Action Agencies and present the options to the region's fishery managers in 2003, prior to the time new reforms are ready to be applied to existing fisheries, with the goal of engendering comanager support in 2003 for their implementation as soon as feasible.

AA implementation The Action Agencies and NOAA are working on a white paper to address crediting approaches for harvest-related reforms.

NMFS finding **Implementation as expected**

NMFS comments Knowing how survival benefits of harvest reforms will be allocated between the fisheries and escapement will encourage more active participation in the development and implementation of harvest reforms; thus this item must remain on schedule. Because an agreement among the affected parties will require discussion and negotiation, options must be forthcoming early in the year in order to be completed in 2003.

RPA Action **169**

Description The Action Agencies shall fund the development of NMFS-approved HGMPs for implementation, including plans for monitoring and revising them as necessary as new information becomes available. HGMPs have to be completed first for the facilities and programs affecting the most at-risk species (Upper Columbia and Snake River ESUs), followed by those affecting mid-Columbia, and then the Lower Columbia ESUs. HGMPs for all the Columbia basin hatchery programs and facilities should be completed (and approved by NMFS) by the 3-year check-in.

Status Substantial progress was made to develop a coordinated approach to developing HGMPs, and much of Phase I of the 3-step process has been completed for many facilities. Relationship of the HGMP process to concurrent Basin-wide processes (e.g., subbasin planning; USvOR, and TRT effort) was clarified.

NMFS expectation As Phase I HGMPs are completed for facilities/programs, Phases II and III must begin promptly and proceed on a schedule designed to ensure completion of NOAA Fisheries-approvable plans in 2003.

AA implementation NOAA and the Action Agencies have developed a 3-phased process for producing NOAA-approvable HGMPs. Phase I will be integrated with and contracted under APRE. Using this approach has expedited contracting, reduced inefficiencies and accommodated regionally coordinated efforts. Phases II and III will be accomplished by states and tribes through new direct contracts or modification of existing subcontracts (e.e. under LSRCP with USFWS). The Corps has funded HGMP development for Spring Creek and Bonneville fish hatcheries. These have been completed and should be through the NOAA approval process prior to September 2003. Through the NPPC, BPA is funding project 2003-005-00 to Develop HGMPs See also the Hatchery Substrategy 2.1 (Develop HGMPs) included in Section 5.3.2 of the 2003/2003-07 Implementation Plan.

NMFS finding **Implementation as expected**

NMFS comments This process, and its timely completion, is crucial to identification and eventual implementation of hatchery reforms that will affect survival of listed fish, and specifically to implementation of RPAs 170-173.

RPA Action **170**

Description Using new authorizations and appropriations and/or BPA funds as necessary and appropriate, the Corps, working with USFWS, shall oversee the design and construction of capital modifications identified as necessary in the HGMP planning process for Lower Snake River Compensation Plan anadromous fish hatchery programs. These improvements shall begin immediately after the relevant HGMPs are completed and approved by NMFS, and shall be completed as expeditiously as is feasible. BPA shall provide for the operations and maintenance costs of these reforms and shall reimburse the Federal Treasury for an appropriate share of the capital costs. The Corps shall have begun to implement reforms for programs affecting the most at-risk species by the 3-year check-in.

Status No work has occurred yet, since this Action is dependent upon completion of HGMPs.

NMFS expectation Working with USFWS, the Corps is expected to begin design and construction plans and complete them as expeditiously as possible to implement the reforms identified in HGMPs immediately after completion and approval of the relevant HGMPs.

AA implementation As the HGMPs are completed and approved, the Corps, USFWS, and NOAA will coordinate implementation schedules and funding mechanisms to expedite recommended construction modifications and operations and maintenance reforms. No new processes are required to secure BPA funding. Prompt review (Council's 3-step Hatchery Review process) and implementation (through mid-year reallocations) can be used. Non-BPA avenues of funding (authorizations and appropriations) will require more agency lead time. It is likely that some reforms will not be subject to the 3-step process, which is designed primarily for new hatchery production or significant changes to existing hatchery programs. See also the Hatchery Substrategy 2.1 (Develop HGMPs) included in Section 5.3.2 of the 2003/2003-07 Implementation Plan.

NMFS finding **Implementation as expected**

NMFS comments Dependent upon completion of HGMPs per Action 169.

RPA Action **171**

Description BOR shall implement the reforms identified in the HGMP planning process for the Grand Coulee mitigation anadromous fish hatchery programs, beginning immediately following completion of the relevant (NMFS approved) HGMPs and completing the work as expeditiously as feasible. BPA shall fund the operations and maintenance costs of the reforms and shall reimburse the Federal Treasury for an appropriate share of the capital costs. BOR shall have begun to implement reforms for programs affecting the most at-risk species by the 3-year check-in

Status No work has occurred yet, since this Action is dependent upon completion of HGMPs.

NMFS expectation The USBR is expected to begin implementation of the reforms identified in HGMPs immediately after completion and approval of the relevant HGMPs, completing them as expeditiously as possible.

AA implementation HGMPs for Leavenworth, Entiat and Winthrop National Fish Hatcheries will be completed and submitted to NOAA in FY2003 for review and approval. Approval of HGMPs should occur either in late FY2003 or early FY2004. Planning for and implementation of reforms will begin as soon as practical after receiving NOAA approval.

NMFS finding **Implementation as expected**

NMFS comments Dependent upon completion of HGMPs per Action 169.

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RPA Action **172**

Description The Corps shall implement the reforms identified in the HGMP planning process for the Corp's Columbia River basin mitigation anadromous fish hatchery programs, beginning immediately after the relevant HGMPs are completed and are approved by NMFS. The work shall be completed as expeditiously as feasible. BPA shall fund the operations and maintenance costs of the reforms and shall reimburse the Federal Treasury for an appropriate share of the capital costs. The Corps shall have begun to implement reforms for the programs affecting the most at-risk species by the 3-year check-in.

Status No work has occurred yet, since this Action is dependent upon completion of HGMPs.

NMFS expectation The Corps is expected to begin implementation of the reforms identified in HGMPs immediately after completion and approval of the relevant HGMPs, completing them as expeditiously as possible.

AA implementation The Corps will work with each hatchery operating agency to ensure prompt implementation of recommended HGMP reforms. Reforms requiring additional funding will be submitted in the first available budget request. Dependent upon the relative priority of the reform action compared to other ongoing fish activities, funds may be supplied sooner if available. The Corps will implement the HGMP reforms as the HGMPs are completed. See also the Hatchery Substrategy 2.1 (Develop HGMPs) included in Section 5.3.2 of the 2003/2003-07 Implementation Plan.

NMFS finding **Implementation as expected**

NMFS comments Dependent upon completion of HGMPs per Action 169.

RPA Action **173**

Description BPA shall implement the reforms identified in the HGMP planning process for Federal and Federally funded hatcheries, beginning immediately after the relevant HGMPs are completed and approved by NMFS. The work shall be completed as expeditiously as possible. BPA shall have begun to implement reforms for the programs affecting the most at-risk species by the 3-year check-in.

Status No work has occurred yet, since this Action is dependent upon completion of HGMPs.

NMFS expectation BPA is expected to begin implementation of the reforms identified in HGMPs immediately after completion and approval of the relevant HGMPs, completing them as expeditiously as possible.

AA implementation BPA will implement the HGMP reforms as the HGMPs are completed. BPA and NOAA will work with hatchery operators to coordinate implementation schedules and funding mechanisms to expedite recommended construction modifications and operations and maintenance reforms. No new processes are required to secure BPA funding. Prompt review (Council 3-step Hatchery Review process) and implementation (through mid-year reallocations) can be used. It is likely that some reforms will not be subject to 3-step process, which is designed primarily for new hatchery production or significant changes to existing hatchery programs. See also the Hatchery Substrategy 2.1 (Develop HGMPs) included in Section 5.3.2 of the 2003/2003-07 Implementation Plan.

NMFS finding **Implementation as expected**

NMFS comments Dependent upon completion of HGMPs per Action 169.



RPA Action 174

Description 1. Develop a comprehensive marking strategy for all salmon and steelhead artificial production programs in the Columbia River basin by the end of 2001. 2. Provide funding by March 1, 2001, to begin marking all spring chinook salmon that are currently released unmarked from Federal or Federally funded hatcheries. 3. Provide funding, beginning in FY 2002, to implement the Action Agencies' share of the comprehensive marking plan for production not addressed in (2) above. 4. Obtain funding contributions as appropriate for additional sampling efforts and specific experiments to determine relative distribution and timing of hatchery and natural spawners.

Status The comprehensive marking plan was not completed in 2001. NOAA Fisheries determined in its 2002 Findings that this modification was not a concern because the plan was expected to be completed in 2002, the delay only affected one year's hatchery production, and would allow regional interests time needed to work through policy and technical issues. In 2002, efforts continued toward refining expectations and clarifying deliverables associated with the comprehensive marking plan, and an outline of the plan was developed, but the plan was not completed as expected, substantially due to delays in subcontracted work products. The Action Agencies continued to fund the CWT marking programs as in the past, plus the additional program to mark spring chinook at Federal hatcheries begun in 2001 in response to this RPA Action.

NMFS expectation Until a comprehensive plan is completed, Action Agencies should continue to fund marking at Federal facilities begun in 2001 in addition to any preexisting marking commitments. NOAA Fisheries expects completion of the plan in 2003, which must include an analyses of whether existing tagging and sampling rates are adequate to their intended purposes.

AA implementation The development of the comprehensive marking strategy is delayed to allow regional interests to work through policy and technical issues. Consequently, the Action Agencies will develop the strategy for all salmon and steelhead artificial production programs in the Columbia River basin by the end of calendar year 2002. The subsequent steps will follow. BPA will continue the Coded-wire Tag Program. At least 1 group of smolts from each hatchery will be coded-wire tagged and information will be used to estimate survival of tagged groups, develop preliminary catch, escapement and distribution data for all Columbia River hatcheries and evaluate alternative marking techniques. No changes in the Action Agencies' current support of marking are anticipated pending completion of the marking plan. See also the Hatchery Strategy 3 (Contribute to the Development and Implementation of a Comprehensive Marking Plan) included in Section 5.3.3 of the 2003/2003-07 Implementation Plan.

NMFS finding **Modification requires resolution**

NMFS comments Completion of the comprehensive marking plan did not occur in 2002; progress now needs to be accelerated to get back on schedule. It is particularly important to determine whether existing double index tagging rates and fishery sampling rates are adequate for their intended purposes in light of current survival conditions, tagging and recovery rates, and fishery patterns, and that populations being tagged, and the tagging and sampling methods utilized, are the right ones.

RPA Action **175**

Description BPA shall, in coordination with NMFS, USFWS, and the relevant state and Tribal comanagers, fund the four-step planning process described above as quickly as possible and, if so determined by that process, implement safety-net projects as quickly as possible at least for the following salmon and steelhead populations: 1) A-run steelhead populations in the Lemhi River, main Salmon River tributaries, East Fork Salmon River, and Lower Salmon River; 2) B-run steelhead populations in the Upper Lochsa River and South Fork Salmon River; and 3) spring/summer chinook populations in the Lemhi, East Fork, and Yankee Fork Salmon rivers, and Valley Creek.

.....  
Status The Action Agencies continued to support the SNAPP Coordinator, and the approach to SNAPP implementation was refined in response to concerns raised by the ISRP, to better coordinate with the work of the TRT, and to obtain NWPPC support. The SNAPP Coordinator continues to work with the cooperating partners to undertake the required data and information gathering and analysis steps.

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NMFS expectation Complete SNAPP products, (i.e., draft contingency action plans for potential artificial production interventions) in 2003 for the modified initial set of populations.

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AA implementation The NOAA Findings Letter (July 2002) acknowledged that the planning process was delayed by up to one year to allow co-managers to better define and coordinate the components of the program. The planning process was expanded to include analysis of 38 populations instead of the original 10 populations specified in Action 175. Planning was delayed for approximately six months while the consolidated Safety-Net Artificial Propagation Program (SNAPP) proposal was undergoing review and approval through the Provincial Review process. As a result of this review, the SNAPP planning process was more closely aligned and coordinated with the efforts of the Interior Columbia Technical Recovery Team, making the SNAPP schedule somewhat dependent on the TRT's completion of its work products. Because of all of these changes to the SNAPP program, the end of 2003 is now a realistic target date for completion of the initial products from SNAPP, the NOAA-approved HGMPs for contingency safety-net projects. See also the Hatchery Strategy 1 (Implement a Safety-net Program as an Interim Measure to Avoid Extinction) included in Section 5.3.1 of the 2003/2003-07 Implementation Plan.

.....  
NMFS finding **Implementation as expected**

.....  
NMFS comments

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RPA Action **176**

Description BPA shall, in coordination with NMFS, USFWS, and the relevant state and Tribal comanagers, fund the development of HGMPs for the Grande Ronde and Tucannon spring/summer chinook safety-net programs.

Status Biop schedule calls for completion of these HGMPs in 2001 to accommodate facility development in 2002. Though not yet completed, progress on completion of these HGMPs continued in 2002.

NMFS expectation Complete HGMPs and begin to initiate any procedural, methodological, and/or capital improvements called for in the HGMPs.

AA implementation Completion of these safety-net action items will be delayed until 2003, accommodating plans for facility development in late 2003 or the beginning of 2004. Because the Tucannon spring Chinook salmon has a fixed, 5-brood year lifespan, no additional major capital modifications are anticipated. See also the Hatchery Strategy 1 (Implement a Safety-net Program as an Interim Measure to Avoid Extinction) included in Section 5.3.1 of the 2003/2003-07 Implementation Plan.

NMFS finding **Modification not a concern**

NMFS comments Although delayed, progress continues on HGMP development and these safety net projects are being satisfactorily sustained. Need to complete the HGMPs in 2003 and define a specific schedule for implementation of any needed changes in facilities and/or operations.

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RPA Action **177**

Description In 2002, BPA shall begin to implement and sustain NMFS-approved, safety-net projects.

Status Funding was provided to sustain existing Safety Net projects.

NMFS expectation Continue supporting existing Safety Net projects and begin the process of implementing any new Safety Net projects that may emerge from SNAPP in accordance with their respective NOAA Fisheries-approved HGMPs.

AA implementation Existing safety-net projects (Snake River spring/summer chinook and Snake River sockeye captive brood programs) are being sustained when required. (The Tucannon program has a planned phase-out date). Any new safety-net projects that may result from SNAPP will be implemented and sustained in compliance with respective HGMPs. See also the Hatchery Strategy 1 (Implement a Safety-net Program as an Interim Measure to Avoid Extinction) included in Section 5.3.1 of the 2003/2003-07 Implementation Plan.

NMFS finding **Implementation as expected**

NMFS comments The products of SNAPP are contingency plans triggered by pre-defined condition (status) of specific populations. Thus, implementation of SNAPP plans will occur only if those conditions are met.

RPA Action **178**

Description BPA shall commit to a process whereby funds can be made quickly available for funding the planning and implementation of additional safety-net projects for high-risk salmon and steelhead populations NMFS identified during the term of this biological opinion.

Status In 2002, the Action Agencies stated their commitment to fund, using existing processes (which may include the NWPPC's 3-step process, targeted solicitations, and/or mid-year reallocations), any new Safety-Net project that may be determined by the SNAPP process as necessary and approved by NOAA Fisheries. The need for additional safety net projects has not been established.

NMFS expectation No specific expectations in 2003.

AA implementation BPA and NOAA will work within existing processes (e.g., Council's 3-step Hatchery Review Process, mid-year reallocations, targeted solicitations) to fund planning and implementation of additional safety-net projects as expeditiously as possible. See also the Hatchery Strategy 1 (Implement a Safety-net Program as an Interim Measure to Avoid Extinction) included in Section 5.3.1 of the 2003/2003-07 Implementation Plan.

NMFS finding **Implementation as expected**

NMFS comments The efficacy of the AA's commitment will not be tested until/unless the need arises to quickly fund a new safety net project.

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RPA Action **179**

Description The Action Agencies and NMFS shall work with affected parties to establish regional priorities within the congressional appropriations processes to set and provide the appropriate level of FCRPS funding to develop recovery goals for listed salmon ESUs in the Columbia River basin. Tasks shall include defining populations based on biological criteria and evaluating population viability in accordance with NMFS' viable salmonid population approach. These tasks shall be completed by 2003.

Status In 2002, the Willamette/Lower Columbia TRT produced a draft definition of populations in relevant ESUs as well as preliminary guidelines for determining viability of these populations. The Interior Columbia TRT made progress developing similar products. NOAA Fisheries produced interim abundance and productivity targets for Interior Columbia ESUs, to be used as planning targets until Interior TRT work products are available.

NMFS expectation Complete definition of populations and evaluation of population viability for all Columbia basin ESUs.

AA implementation The Action Agencies will cost-share with NOAA Fisheries to produce TRT recovery planning products for Columbia Basin ESUs. BPA will fund project 2002-075-00 to directly support this Action. The tasks include defining populations based on biological criteria and evaluating population viability in accordance with NOAA Fisheries' viable salmonid population approach.

See also RM&E Substrategy 1.1 (System Monitoring) 2003 and 2004-07 Work Plans included in Section 5.6.1 of the 2003/2003-07 Implementation Plan.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action 180

Description The Action Agencies and NMFS shall work within regional prioritization and congressional appropriation processes to establish and provide the level of FCRPS funding to develop and implement a basinwide hierarchical monitoring program. This program shall be developed collaboratively with appropriate regional agencies and shall determine population and environmental status (including assessment of performance measures and standards) and allow ground-truthing of regional databases. A draft program including protocols for specific data to be collected, frequency of samples, and sampling sites shall be developed by September 2001. Implementation should begin no later than the spring of 2002 and will be fully implemented no later than 2003.

Status NOAA Fisheries determined in its 2002 Findings that this Action had been modified and required resolution because a status monitoring protocol was not developed in 2001 and implementation of a status monitoring program was not proposed for 2002. NOAA Fisheries recommended that a status monitoring plan be developed by the fall of 2002, pilot projects in at least three subbasins be initiated by spring 2003, and the full monitoring program be implemented by spring 2004. A draft status monitoring plan was prepared in 2002 by the Action Agencies and NOAA Fisheries. That plan is currently being reviewed by other Federal and non-Federal agencies. Proposals were developed for pilot status monitoring projects in three subbasins.

NMFS expectation Finalize status monitoring plan, after review and input from other Federal and non-Federal entities. Establish comprehensive and coordinated pilot monitoring programs in at least three representative subbasins by spring 2003. Establish a coordination process with non-Federal entities to update the status monitoring plan as necessary and to ensure that the plan is implemented basin-wide. This should include detailed plans for expanding status monitoring outside of the three pilot study basins in 2004.

AA implementation NOAA Fisheries and the Action Agencies have developed a detailed plan for this Action item, including pilot scale projects. Ongoing RM&E consistent with the plan continues and is being augmented by the Action Agencies and NOAA Fisheries. We are working toward implementation of all aspects of the plan. In 2003, this will include a ramp up of RM&E projects, including funding pilot status monitoring studies in at least one subbasin each for the Lower Columbia (John Day); the Upper Columbia (Wenatchee); and the Snake (Grand Ronde or a Snake River site located in Idaho).

The Action Agencies will (1) develop a monitoring coordination process that is mutually acceptable to the relevant entities in 2003, (2) work with NOAA Fisheries and other entities to develop a more detailed status monitoring schedule and plan for extending the monitoring program beyond the 3 pilot subbasins by spring 2004, and (3) coordinate the development of the status monitoring program with that of the action effectiveness research program through the implementation of a data management program.

USBR assigned a half-time monitoring coordinator for the Salmon River Basin in Idaho beginning FY2003. This person will also oversee the Methow diversion dam removal studies (see RPA 183).

See also RM&E Substrategy 1.1 (System Monitoring) and 1.2 (System Monitoring and Tributary Monitoring) included in Section 5.6.1 of the 2003/2003-07 Implementation Plan.

NMFS finding **Modification not a concern**

NMFS comments Although this schedule lags a year behind that specified in the biological opinion, it is expected to result in status monitoring that will support the 2005 and 2008 check-ins. This modified schedule is similar to that proposed by state and tribal entities (through the Columbia Basin Fish and Wildlife Authority) to allow full coordination on a basin-wide monitoring plan. Other aspects of the hierarchical monitoring program are addressed under RPA Actions 181-183.

This finding is contingent upon provision of database support for the pilot status monitoring program. See RPA Action 198.

RPA Action 181

Description The Action Agencies and NMFS shall work within regional prioritization and congressional appropriations processes to establish and provide the appropriate level of FCRPS funding for a program to acquire and digitize aerial or satellite imagery of the entire Columbia River basin once every 3 to 5 years.

Status Appendix F states that NOAA Fisheries expects a coordinated program to be defined and underway by 2003. The 2002 IP did not support this schedule and NOAA Fisheries determined in its 2002 Findings that this Action had been modified and required resolution. NOAA Fisheries recommended completion of a plan for implementing this Action by 2003 and collection of at least one cycle of images prior to 2005. A draft status monitoring plan that includes Action 181 requirements was prepared in 2002 by the Action Agencies and NOAA Fisheries. That plan is currently being reviewed by other Federal and non-Federal agencies. Also, in 2002 Reclamation purchased aerial imagery for a significant portion of the Columbia River Basin.

NMFS expectation Finalize status monitoring plan (including aspects related to Action 181) after review and input from other Federal and non-Federal entities. Conduct a comprehensive review of existing and proposed aerial and satellite imagery, including the analytical use of the imagery, for the anadromous portion of the Columbia River Basin. Conduct two pilot studies in 2003 to test the use of analytical tools associated with aerial or satellite imagery.

AA implementation The Action Agencies will conduct a comprehensive review of existing and proposed aerial and satellite imagery, including the analytical use of the imagery, for the anadromous portion of the Columbia River Basin. The Action Agencies will contract the review for completion by September 2003. NOAA Fisheries and the Action Agencies will evaluate analytical tools for landscape analyses and initiate landscape level studies. Future acquisitions will be guided by the 2003 research.

USBR purchased LANDSAT aerial imagery in FY2002 for a significant portion of the Columbia River Basin. In 2003 USBR will contract with the University of Washington under the Cooperative Ecosystems Studies Unit to perform a landscape change analysis for the period 1984-1999.

USBR is developing a land use/land cover classification in the Upper Salmon River to compare the value of medium and high resolution satellite imagery. This pilot project will compare/contrast the classification accuracy and utility as a function of the spatial resolution of the imagery.

NOAA Fisheries and USBR will outline and USBR will fund a review of GIS work in the pilot study basins.

USBR will fund a GIS watershed mapping program for the John Day Basin.

USBR will fund in FY2003 a water use database for the John Day Basin pilot study.

BPA plans to fund proposal 35016, A Pilot Study to Test Links Between Land Use/Land Cover Tier 1 Monitoring Data and Tier 2 and 3 Monitoring Data.

See also RM&E Substrategy 1.1 (System Monitoring) included in Section 5.6.1 of the 2003/2003-07 Implementation Plan.

USBR purchased aerial imagery in FY2002 for a significant portion of the Columbia River Basin. In 2003 NOAA and the Action Agencies will evaluate analytical tools for landscape analyses and initiate landscape level studies. Future acquisitions will be guided by the 2003 research. USBR is developing a land use/land cover classification in the Upper Salmon River specific to both medium and high resolution satellite imagery. This pilot project will compare/contrast the classification accuracy and utility as a function of the spatial resolution of the imagery. BPA also plans to fund proposal 35016, A Pilot Study to Test Links Between Land Use/Land Cover Tier 1 Monitoring Data and Tier 2 and 3 Monitoring Data. The Action Agencies will conduct a comprehensive review of existing and proposed aerial and satellite imagery, including the analytical use of the imagery, for the anadromous portion of the Columbia River Basin. The Action Agencies will contract the review for completion by September 2003. See also RM&E Substrategy 1.1 (System Monitoring) included in Section 5.6.1 of the 2003/2003-07 Implementation Plan.

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NMFS finding **Implementation as expected**

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NMFS comments

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RPA Action **182**

Description The Action Agencies and NMFS shall work within regional priorities and congressional appropriations processes to establish and provide the appropriate level of FCRPS funding for studies to determine the reproductive success of hatchery fish relative to wild fish. At a minimum, two to four studies shall be conducted in each ESU. The Action Agencies shall work with the Technical Recovery Teams to identify the most appropriate populations or stocks for these studies no later than 2002. Studies will begin no later than 2003.

Status NOAA Fisheries determined in its 2002 Findings that this Action had been modified in a manner that required resolution. Specifically, the scope of proposed solicitations was unlikely to meet the requirements of this Action to conduct 2-4 studies per ESU by 2003. The Action Agencies and NOAA Fisheries collaborated in 2002 through the RME Hatchery/Harvest Workgroup to clarify the needs associated with this Action, develop solicitation guidance, and encourage responsive proposals through the Mainstem/Systemwide solicitation. Submitted proposals were reviewed and comments provided to project sponsors concurrent with the ISRP review. In a limited number of cases, the Workgroup interacted directly with project sponsors to improve responsiveness to this item.

NMFS expectation Initiate sufficient studies, as described in the Opinion and clarified by the RME Hatchery/Harvest Workgroup, no later than 2003 to resolve the critical uncertainty of the relative reproductive success of hatchery fish spawning in the wild.

AA implementation The Action Agencies and NOAA reviewed Technical Recovery Team products and consulted with the TRTs to identify populations potentially affected by hatchery fish by December 2002. The Action Agencies and NOAA, working with the RM&E Work Group, established priorities for studies determining the relative effectiveness of hatchery fish spawners, taking into account information needs across ESUs. The Action Agencies issued targeted solicitations for these needed projects on March 14, 2003. A study will not be required for sockeye.

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NMFS finding **Implementation as expected**

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NMFS comments Proposals were submitted in response to the MS/SW solicitation and evaluated by the Federal RM&E Workgroup. Some were directly responsive to BiOp needs but, in total, were found not to fully meet the needs of this item. Reproductive success studies are needed but still lacking for several ESUs covered in the RPA (e.g., UCR and MCR steelhead; ocean-type fall chinook). The Workgroup developed, and the Action Agencies issued, a Request For Studies to address this gap, with the intention that additional needed projects will be identified and initiated in 2003. The finding of "Implementation as expected" is contingent on the expectation that responsive proposals will be submitted, selected, funded and initiated in 2003; or, if responsive proposals are not presented, that an alternative approach will be identified and implemented beginning in 2003.

RPA Action 183

Description Initiate at least three tier 3 studies (each necessarily comprising several sites) within each ESU (a single action may affect more than one ESU). In addition, at least two studies focusing on each major management action must take place within the Columbia River basin. The Action Agencies shall work with NMFS and the Technical Recovery Teams to identify key studies in the 1-year plan. Those studies will be implemented no later than 2003.

Status NOAA Fisheries determined in its 2002 Findings that this Action had been modified in a manner that required resolution. No specific studies were identified in the 2002 Plan and no studies fully meeting the intent of this Action had been funded through mid-2002. NOAA Fisheries recommended that the Action Agencies ensure that the full complement of Action 183 projects be underway by 2003. NOAA Fisheries recommended a first step as completion in 2002 of a fully developed plan for coordinating the funding of province-level Actions with the 183 monitoring program. A draft monitoring plan that includes Action 183 requirements was prepared in 2002 by the Action Agencies and NOAA Fisheries. That plan is currently being reviewed by other Federal and non-Federal agencies.

NMFS expectation Finalize effectiveness monitoring plan (including aspects related to Action 183) after review and input from other Federal and non-Federal entities. Initiate a sufficient number and range of Tier 3 studies in 2003 to implement the effectiveness monitoring plan. Establish a coordination process with non-Federal entities to update the status monitoring plan as necessary and to identify additional projects that are needed.

AA implementation Implementation of effectiveness monitoring projects under this Action will be coordinated with the implementation of the status monitoring program under Action 180 and the data management program under Action 198. USBR will implement research on push-up dam replacement in 2003 and will continue research on flow augmentation. BPA worked with NOAA Fisheries to develop proposals identified by the RM&E Work Group as critical to implementing this Action. However, the Council's ISRP provided technical and policy level comments in opposition to proceeding with bottom-up effectiveness studies and therefore, implementation of this action will now be limited to top-down action effectiveness studies in the John Day, Wenatchee, and Upper Salmon. BPA is working with the Council and NOAA Fisheries on options to address the ISRP issues with bottom-up effectiveness studies and to proceed with funding this work, but at this time it appears unlikely that these issues will be resolved in a manner that allows the bottom-up effectiveness studies to proceed in 2003.

In FY 2003 USBR will:

- implement research on push-up dam replacement in the John Day Basin;
- research instream flow salmon survival study methods in FY2003, and,
- research salmon survival relative to the barrier removal in the Methow River.

BPA will solicit proposals for the number and range of Tier 3 monitoring studies that are consistent with the effectiveness monitoring plan. USBR will implement research on push-up dam replacement in 2003 and will continue research on flow augmentation. The Action Agencies expect to have new representative projects under way in 2003, including those submitted projects identified by the RM&E Work Group as critical to implementing this RPA Action. Implementation of effectiveness monitoring projects will be coordinated with the implementation of the status monitoring program and the data management program. See also RM&E Substrategy 2.1 (Hydrosystem Monitoring) included in Section 5.6.2 of the 2003/2003-07 Implementation Plan.

NMFS finding **Modification requires resolution**

NMFS comments Information regarding effectiveness of the offsite mitigation program is critical to the 2005 and 2008 evaluations. The Opinion anticipated that significant research would be underway by 2003 so that results could be applied to the 2005 evaluation. The Federal RM&E Work Group proposed implementing two complementary approaches to tributary habitat effectiveness monitoring ("top-down" and "bottom-up"), which were both planned as pilot projects in 2003. Because the ISRP did not consider submitted proposals for the "bottom-up" (project-based) approach to be fundable, only the "top-down" (watershed-based) approach will be initiated in 2003. NOAA Fisheries considers a combination of both approaches important to implementing Action 183. NOAA Fisheries is also concerned that implementation of only the "top-down" pilot study could prove unsuccessful because there is currently no database support for this project (see RPA Action 198).



Action effectiveness studies take two or more years to yield results, so this delay in implementing the full scope of pilot action effectiveness studies is likely to significantly limit the information that will be available at the 2005 check-in. This will limit the ability to demonstrate "that proposed actions can increase life stage survivals" (see Opinion section 9.5.3.2.4), as well as NOAA Fisheries' ability to use this information to project the "expected population growth rates, abundance, distribution and resulting extinction risks" for the check-ins in 2005 and 2008 (see Opinion section 9.5.3.3).

NOAA Fisheries has four recommendations to the Action Agencies to potentially reduce the impacts of the schedule change:

Continue to work with the ISRP to resolve their concerns about the technical merits of proposals to monitor effectiveness of specific classes of habitat improvements ("bottom-up" approach). Initiate relevant projects as soon as possible.

Ensure that suites of actions ("top-down" approach) are monitored for their effectiveness in three pilot subbasins in 2003 and that preliminary results are available for the 2005 evaluation. Expand the top-down approach to include additional basins in 2004 and 2005, to include additional monitoring for more mechanistic, detailed relationships that were the target of the "bottom-up" approach studies.

Continue to evaluate existing literature and monitoring information from ongoing or completed habitat improvements to generate information that will be useful for the 2005 evaluation.

Ensure that some form of database support is available for the 2003 pilot "top-down" effectiveness monitoring programs.

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RPA Action **184**

Description The Action Agencies and NMFS shall work within regional prioritization and congressional appropriation processes to establish and provide the appropriate level of FCRPS funding for a hatchery research, monitoring, and evaluation program consisting of studies to determine whether hatchery reforms reduce the risk of extinction for Columbia River basin salmonids and whether conservation hatcheries contribute to recovery.

Status NOAA Fisheries determined in its 2002 Findings that this Action had been modified in a manner that required resolution based on the AA's 2002 IP, which contained no affirmative approach to implementation, and instead relied on an adventitious approach to the identification and funding of potentially relevant studies. NOAA Fisheries recommended that the Action Agencies develop a more comprehensive hatchery RM&E plan, one that includes a method for determining how the efficacy of individual conservation hatcheries and hatchery reforms will be evaluated. NOAA Fisheries also recommended formation of a hatchery technical workgroup within the Federal RM&E Implementation Planning workgroup to deal with this issue; this step occurred in 2002.

The AAs and NOAA Fisheries collaborated in 2002 through the RME Hatchery/Harvest Workgroup to clarify the needs associated with this RPA Action, develop solicitation guidance, and encourage responsive proposals through the Mainstem/Systemwide solicitation. Submitted proposals were reviewed and, in comments provided to project sponsors concurrent with the ISRP review.

NMFS expectation Sufficient studies as described in the BiOp and clarified by the RME Hatchery/Harvest Workgroup must be initiated no later than 2003 to evaluate the effectiveness of hatchery reforms and conservation hatchery activities consistent with this RPA item.

AA implementation The RM&E Plan was written and includes an evaluation of RM&E needs relating to hatchery reforms. A number of pertinent projects appeared as a result of the Mainstem/Systemwide Provincial Review and the work group identified their relative priority for implementing this RPA Action. The work group has also identified the need for additional projects that were not proposed in any of the provincial solicitations. The Action Agencies issued targeted solicitations for these needed projects on March 14, 2003.

NMFS finding **Implementation as expected**

NMFS comments Proposals were submitted in response to the MS/SW solicitation and evaluated by the Federal RM&E Workgroup. Some were directly responsive to BiOp needs but, in total, were found not to fully meet the needs of this item. The Workgroup developed, and the Action Agencies issued, a Request For Studies to address this gap, with the intention that additional needed projects will be identified and initiated in 2003. The finding of "Implementation as expected" is contingent on the expectation that responsive proposals will be submitted, selected, funded and initiated in 2003; or, if responsive proposals are not presented, that an alternative approach will be identified and implemented beginning in 2003.

RPA Action **185**

Description The Action Agencies shall continue to fund and expand, as appropriate, fish marking and recapturing programs aimed at defining juvenile migrant survival for both transported and nontransported migrants and adult returns for both groups. These studies shall also compare the SARs of transported and nontransported fish to calculate the differential delayed mortality (D), if any, of transported fish.

Status Studies directly addressing this Action have been conducted through 2002.

NMFS expectation Continue studies.

AA implementation

This work is being conduct from the Lower Granite and McNary Dams. At Lower Granite field marking for the transport evaluation of wild yearling chinook, steelhead and fall chinook will be complete in 2003. This baseline study compares inriver survival to transportation from Lower Granite, including an estimate of "D". Adult returns will be monitored through 2006 and a final report will be available in 2007. In 2003 this study will include evaluating experimental conditions to improve transportation. Research began in 2002 to evaluate transport at McNary. Marked release groups from upstream Columbia River hatcheries comprise the majority of the test fish used in this evaluation. With the installation of the primary bypass detector at McNary, this work also evaluates the primary bypass system compared to transportation in an effort to determine the optimal operation at McNary. Additionally, estimates of delayed mortality will be determined using an in river release group. Passage, timing, and general migration of in river and transported migrants will be monitored using the PIT tag trawler in the upper estuary. This work will continue through 2005 with adult returns through 2008. The final report will be available in 2009. A Hydro RME Plan will include an analysis of the precision of estimates in ongoing studies and an analysis fo the adequacy of stock coverage and applicability of metrics based on hatchery fish to wild fish.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action **186**

Description The Action Agencies and NMFS shall work within the annual planning and congressional appropriation processes to establish and provide the appropriate level of FCRPS funding for comparative evaluations of the behavior and survival of transported and downstream migrants to determine whether causes of D can be identified for the reach between Bonneville Dam and the mouth of the Columbia River.

Status Studies directly addressing this Action have been conducted through 2002.

NMFS expectation Continue studies.

AA implementation Ongoing studies will be continued in 2003 to compare survival of radio tagged run-of-river and transported fish to partition delayed mortality downstream of Bonneville (also to evaluate transportation) and to compare survival of acoustically tagged transported and run-of-river smolts through the saltwater interface and Columbia River Plume. Final reports will be available in 2004. Evaluation of losses will be conducted in the Bonneville and Columbia river estuary after experimental transportation from Lower Granite has been started (estimated started 2004). A Hydro RME Plan will include an analysis of the precision of estimates in ongoing studies and an analysis fo the adequacy of stock coverage and applicability of metrics based on hatchery fish to wild fish.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action **187**

Description The Action Agencies and NMFS shall work within the annual planning and congressional appropriation processes to establish and provide the appropriate level of FCRPS funding for studies and analyses to evaluate relationships between ocean entry timing and SARs for transported and downstream migrants.

Status NOAA Fisheries determined in its 2002 Findings that this Action had been modified in a manner that required resolution because studies were not proposed to evaluate explanatory factors for the relationship between ocean entry timing and SAR. NOAA Fisheries recommended that the Action Agencies work cooperatively with NOAA Fisheries through the RM&E Hydro technical workgroup to develop a research plan that specifically addresses explanatory factors by September, 2002.

NMFS expectation Continue existing studies, including analysis of explanatory factors.

AA implementation The Corps study EST-02-03 Evaluation of ;the Relationship Among Time of Ocean Entry, Physical, and Biological Characteristics of the Estuary and Plume Environment and Adult Return Rates is directly addressing this RPA Action. PIT tag trawler monitoring and development of an ocean entry sited trawler will continue in 2003 through 2006 for the transport studies. Additionally, the evaluation of ocean entry timing using a surrogate stock continues in 2003 through 2004 with a final report scheduled to be available in 2006. The Action Agencies and NOAA Fisheries continue to provide precise, up-to-date measurements of survival of juvenile salmon as they pass through dams and reservoirs in the Snake and Columbia Rivers and relate to adult returns. PIT tagging continues of yearling chinook salmon and steelhead at Lower Granite and McNary Dams, and hatchery subyearling fall chinook salmon for release above Lower Granite Dam to estimate their survival through the lower Columbia River. NOAA will explore the relationships among survival, travel time, environmental variables, and dam operations using the expanding data base. Included are timing of ocean entry and conditions in the estuary, plume, and near shore ocean conditions into the Gulf of Alaska. In addition, adult and juvenile PIT tag recovery data are analyzed to compare survival estimates for transported fish of known origin, downriver stocks, wild and hatchery transported fish and fish handled and not handled at dams. A Hydro RME Plan will include an analysis of the precision of estimates in ongoing studies and an analysis fo the adequacy of stock coverage and applicability of metrics based on hatchery fish to wild fish.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action **188**

Description The Action Agencies and NMFS shall work within the annual planning and congressional appropriation processes to establish and provide the appropriate level of FCRPS funding for studies of PIT-tagged wild stocks from the lower river streams. The studies shall be used to contrast stock productivity and hydrosystem effects.

Status NOAA Fisheries determined in its 2002 Findings that this Action was being implemented as expected, contingent upon the success of BPA's 2002 solicitation for a study to address this Action.

NMFS expectation PIT-tag stocks in lower river streams in order to conduct stock contrast studies.

AA implementation PIT-tags are used in monitoring status and trends in abundance of spawning adult, rearing juvenile, and outmigrant steelhead/O. mykiss and some habitat attributes in the John Day subbasin and potentially other Oregon subbasins in the Columbia Plateau Province. Improved monitoring and evaluation capabilities by developing better measurement tools and study designs to estimate juvenile and adult salmonid survival and survival relationships. Provided statistical guidance to investigators in the Columbia Basin. Adult and juvenile PIT tag recovery data are analyzed to compare survival estimates for transported fish of known origin, downriver stocks, wild and hatchery transported fish and fish handled and not handled at dams. A Hydro RME Plan will include an analysis of the precision of estimates in ongoing studies and an analysis for the adequacy of stock coverage and applicability of metrics based on hatchery fish to wild fish.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action **189**

Description The Action Agencies and NMFS shall work within the annual planning and congressional appropriation processes to establish and provide the appropriate level of FCRPS funding for studies to investigate the causes of discrepancies in adult return rates for juvenile salmonids that have different passage histories through the hydrosystem.

Status Some studies underway.

NMFS expectation Continue existing studies and begin additional studies prior to 2003 check-in.

AA implementation The rearing study to evaluate differences in survival of fish with different routes of passage will continue through fall 2004 and a final report will be available in spring 2006. Physiology evaluations will continue in 2003 and a final report will be available in 2004. Adult and juvenile PIT tag recovery data are analyzed to compare survival estimates for transported fish of known origin, downriver stocks, wild and hatchery transported fish and fish handled and not handled at dams. Installed adult PIT detection systems in all ladders at Bonneville and McNary; and installed an innovative, less-expensive, alternative, adult PIT detection system in McNary Oregon-shore ladder. The focus is on determining the absolute and comparative adult return rates of smolts transported from Lower Granite and McNary to smolts that complete their outmigration within the river. Lower Granite transport evaluation, spring chinook and steelhead completed.

NMFS finding **Implementation as expected**

NMFS comments

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RPA Action **190**

Description The Action Agencies shall continue to fund studies that monitor survival, growth, and other early life history attributes of Snake River wild juvenile fall chinook.

Status Multiple studies underway. BPA 199302900 (NOAA Fisheries) and BPA 199102900 (USFWS), as well as parts of the Snake River fall chinook transportation work, satisfy much of the intent of this RPA. Ongoing work focuses heavily on hatchery fish, potentially limiting the applicability of the findings to wild Snake River fall chinook.

NMFS expectation Continue existing studies and begin additional studies prior to 2003 check-in.

AA implementation Provided precise measurements of survival of juvenile salmon as they pass through dams and reservoirs in the Snake and Columbia Rivers. This work is closely related to RPA 187. Exploring holdover behavior of fall chinook salmon in Lower Granite Reservoir and refining existing methods of scale pattern analysis for determining age and DNA analysis for determining genetic lineage of holdover fish. Using radio telemetry to determine where fish hold over in Lower Granite Reservoir and document passage timing past Lower Granite Dam.

NMFS finding **No schedule, implementation underway**

NMFS comments

RPA Action **191**

Description The Action Agencies shall continue to implement adult salmonid counting programs at FCRPS dams, but shall improve the reporting of these counts.

Status Adult salmonid counting programs have been implemented each year.

NMFS expectation Continue ongoing counting programs, and continue to improve counting procedures.

AA implementation The Corps will continue to implement its annual adult fish counting program at mainstem Columbia and Snake river projects and will continue routine operation of fish passage facilities, including monitoring adult fallback. Beginning in 2003 the adult counting schedule was changed at the request of NMFS to expand the counting periods at The Dalles, John Day, McNary, and Ice Harbor to gather additional data for scheduling facility maintenance activities and night counting was reduced at Bonneville, Ice Harbor and Lower Granite. These changes were coordinated with NMFS staff and the FPOM.

NMFS finding **Implementation as expected**

NMFS comments

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RPA Action **192**

Description As set out in Action 50 (Section 9.6.1.3.4), BPA and the Corps shall install necessary adult PIT-tag detectors at appropriate FCRPS projects before the expected return of adult salmon from the 2001 juvenile outmigration. These adult PIT-tag detectors shall be used as needed for calculating transport benefits, conversion rates, and SARs for listed salmon and steelhead.

Status The detectors installed at BON and MCN are working reasonably well. Shortcomings of these installations have been considered in the new designs. The Adult PIT Tag Oversight Committee asked FPAC for installation priorities in 2001 and 2002. Ice Harbor and Lower Granite were chosen as the next sites for implementation in the FCRPS. Priest Rapids was also chosen as an important non-FCRPS site.

NMFS expectation Ice Harbor and Lower Granite detectors should be installed in the ladders as designed through the Walla Walla FFDRWG process. Cost share installation of detectors at Priest Rapids Dam.

AA implementation Provided basic infrastructure for all PIT tag related projects in Columbia River Basin. Operates and maintains long-term data repository for PIT tag information, permanent PIT tag interrogation sites, and supports other PIT tag research. Adult PIT tag interrogation systems have been installed in all four of the adult fish ladders at the Bonneville project for use beginning in 2002. Also, the two fish ladders and one of the counting stations at McNary project have been equipped. Significant problems with shields leaking and fall chinook using the overflow weirs has caused the implementation team to re-evaluate future deployments. Installation is complete at the Bonneville ladders.

NMFS finding **Implementation as expected**

NMFS comments



RPA Action **193**

Description The Action Agencies shall investigate state-of-the-art, novel fish detection and tagging techniques for use, if warranted, in long-term research, monitoring, and evaluation efforts.

Status Some projects underway.

NMFS expectation Continue existing projects and initiate new projects that specifically address the issues of discriminating between hatchery and wild fish, differentiating populations of origin, and use of different estuary and nearshore environments.

AA implementation Developed, installed, and evaluated a prototype adult PIT detection system in Bonneville WA-shore ladder. 2) Continued development of the flat-plate PIT detection system in the Bonneville 1st powerhouse sluiceway. 3) Continued development of small-stream PIT detection systems. 4) Designed adult PIT detection systems for all ladders at Bonneville and McNary under project number 2001-003-00. Assessing the feasibility/validity of remote monitoring approaches to quantify adult steelhead escapement in select tributaries of the Imnaha River subbasin. Completed feasibility project to evaluate new acoustic tracking technology to verify its capabilities and designed an acoustic monitoring network to track movement of salmon smolts into the ocean and along the continental shelf to areas of ocean residency.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action **194**

Description The Action Agencies and NMFS shall work within the annual planning and congressional appropriation processes to establish and provide the appropriate level of FCRPS funding for studies to develop a physical model of the lower Columbia River and plume. This model will characterize potential changes to estuarine habitat associated with modified hydrosystem flows and the effects of altered flows where they meet the California Current to form the Columbia River plume.

Status Development of the CORIE model is ongoing. Other physical models are under review. Work to physically characterize and model the plume is ongoing.

NMFS expectation Continue ongoing work. Complete and implement study plan before September 2003.

AA implementation The RM&E Estuary/Ocean Work Group will incorporate into their workplan an evaluation of the available physical models and to consider their applicability to evaluating hydrosystem impacts on the estuary. From this evaluation the group will recommend the appropriate model(s) to characterize changes to the estuarine environment due to FCRPS operations. The models being considered include the CORIE model, which continues to be funded and developed for this application, and other physical models, which were developed by the Corps for other specific purposes but may be useful in identifying potential changes in the estuary. See RPA 162, these two RPA's are addressed by the OGI work under project 1998-014 (BiOp Project ID 247 & 248)..Work continues to physically characterize and model the Columbia River plume in the nearshore ocean environment, providing estimates of growth of juvenile chinook and coho salmon inside and outside the Columbia River plume, and document the impact of changing ocean productivity on survival and growth rates of juvenile salmonids in the Pacific Northwest and on their prey field.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action **195**

Description The Action Agencies shall investigate and partition the causes of mortality below Bonneville Dam after juvenile salmonid passage through the FCRPS.

Status Several projects to address this Action are ongoing.

NMFS expectation Continue existing studies and begin additional studies prior to 2003 check-in.

AA implementation Work began in 1998 under project 1998-014-00. A major component is the Canadian Shelf monitoring project that samples salmonids from Canadian waters up into Alaskan waters. Additional work has been completed under project 2000-08 to develop an innovative sonic tag tracking system to monitor fish movement from the estuary through the near shore waters of the continental shelf. NOAA is developing a smaller sonic tag and the Corps has conducted sonic tagging in the estuary. Over time these projects will address the causes and partition mortality below Bonneville Dam. The Action Agencies agree to fund additional studies through the mainstem/systemwide Provincial Review process and through targeted solicitations that specifically meet needs and requirements identified by the Action Agency/NMFW Hydro RM&E Technical Work Groups work plan.

NMFS finding **Implementation as expected**

NMFS comments

RPA Action 196

Description The Action Agencies and NMFS shall work within the annual planning and congressional appropriation processes to establish and provide the appropriate level of FCRPS funding for studies to develop an understanding of juvenile and adult salmon use of the Columbia River estuary. These studies support the actions to develop criteria for estuarine restoration (Action 158), restoration planning (Action 159), and implementation (Action 160) in Section 9.6.2.2.

Status NOAA Fisheries determined in its 2002 Findings that, while the juvenile studies were underway as expected, the adult studies had not been initiated and were not proposed for 2002. NOAA Fisheries determined that this Action required resolution and recommended that the Action Agencies and NOAA Fisheries solicit projects to specifically address the adult component of this Action prior to 2003. Juvenile studies continued in 2002 but adult studies were not initiated. The AAs were working with NOAA Fisheries to develop a study plan that identified the needed studies by December 15, 2002 but were unable to complete the effort.

NMFS expectation Continue juvenile studies. Per the Action Agencies' January 28, 2003, resolution document, NOAA Fisheries completed their internal discussions regarding adult studies and submitted a draft one-pager to the Action Agencies. NOAA Fisheries and the Action Agencies now need to meet by April 30, 2003, to discuss the one-pager and identify the next steps to develop a study plan that identified the needed studies and establishes the priority, scope, and time line for adult use studies.

AA implementation Studies of juvenile salmonid use of the estuary, including a study to estimate survival through the estuary, another to evaluate current and historical use and linkages, and one evaluating the relationship between time of ocean entry, physical and biological characteristics of the estuary and adult returns are continuing under the AFEP program. Studies of adult use of the Columbia River estuary were given a low priority at the Scientific Review Working Group (SRWG) and no proposals were received. The Action Agencies recognize the requirement for adult studies and are working with NOAA, in accord with the Action Agencies January 28, 2003 resolution document, to develop a study plan that identifies the needed studies and establish the priority, scope, and time line for adult use studies. The Action Agencies will adhere to the timelines that are to be agreed upon for the NOAA Fisheries 2003 Findings Letter. The Action Agencies are working with NOAA to establish the scope, including identifying components and responsibilities for those components for Columbia River estuary research. The appropriate funding levels will be established through this process and the Action Agencies will use their available funding sources, such as CRFM, O&M, GI for the Corps, to meet their requirements. The Action Agencies plan to meet by April 30, 2003 to complete the study plan for adults and determine next steps for inclusion in the FY 2004 research program.

NMFS finding **Modification not a concern**

NMFS comments This Action requires the Action Agencies and NOAA Fisheries to work within the annual planning and congressional appropriation processes to provide the appropriate level of FCRPS funding for studies to understand juvenile and adult use of the Columbia River estuary. Appendix F of this biological opinion indicates that NOAA Fisheries expects studies to be underway by 2003. Juvenile studies are currently underway and proposed for continuation in the 2003 IP (dated November 6, 2002).

At this time, adult studies are not underway, pending identification of need, scope, and timeline for activities. At this time NOAA believes that the delay in implementation of adult studies is not likely to appreciably impact the long-term benefit to salmonids because adult studies have not been identified as a high priority in research reviews to date. However, the full scope of this Action may be necessary to consider progress towards biological performance standards in 2005 and 2008.

RPA Action 197

Description The Action Agencies and NMFS shall work within the annual planning and congressional appropriation processes to establish and provide the appropriate level of FCRPS funding for studies to develop an understanding of juvenile and adult salmon use of the Columbia River plume.

Status NOAA Fisheries determined in its 2002 Findings that, while the juvenile studies were underway as expected, the adult studies had not been initiated and were not proposed for 2002. NOAA Fisheries determined that this Action required resolution and recommended that the Action Agencies and NOAA Fisheries solicit projects to specifically address the adult component of this Action prior to 2003. Juvenile studies continued in 2002 but adult studies were not initiated. The AAs were working with NOAA Fisheries to develop a study plan that identified the needed studies by December 15, 2002 but were unable to complete the effort.

NMFS expectation Continue juvenile studies. Per the Action Agencies' January 28, 2003, resolution document, NOAA Fisheries completed their internal discussions regarding adult studies and submitted a draft one-pager to the Action Agencies. NOAA Fisheries and the Action Agencies now need to meet by April 30, 2003, to discuss the one-pager and identify the next steps to develop a study plan that identified the needed studies and establishes the priority, scope, and time line for adult use studies.

AA implementation Studies of adult use of the Columbia River plume were given a low priority at the Scientific Review Working Group (SRWG) and no proposals were received. The Action Agencies recognize the requirement for adult studies and are working with NOAA, in accord with the Action Agencies January 28, 2003 resolution document, to develop a study plan that identifies the needed studies and establish the priority, scope, and time line for adult use studies. The Action Agencies are working with NOAA to establish the scope, including identifying components and responsibilities for those components for Columbia River plume research. The appropriate funding levels will be established through this process and the Action Agencies will use their available funding sources, such as CRFM, O&M, GI for the Corps, to meet their requirements. See comment under RPA 196.

The Action Agencies plan to meet by April 30, 2003 to complete the study plan for adults and determine next steps for inclusion in the FY 2004 research program. The Action Agencies will adhere to the timelines that are to be agreed upon for the NOAA Fisheries 2003 Findings Letter.

NMFS finding **Modification not a concern**

NMFS comments This Action requires the Action Agencies and NOAA Fisheries to work within the annual planning and congressional appropriation processes to provide the appropriate level of FCRPS funding for studies to understand juvenile and adult use of the Columbia River estuary. Appendix F indicates that NOAA Fisheries expects studies to be underway by 2003. Juvenile studies are currently underway and proposed for continuation in the 2003 IP (dated November 6, 2002).

At this time, adult studies are not underway, pending identification of need, scope, and timeline for activities. At this time NOAA believes that the delay in implementation of adult studies is not likely to appreciably impact the long-term benefit to salmonids because adult studies have not been identified as a high priority in research reviews to date. However, the full scope of this Action may be necessary to consider progress towards biological performance standards in 2005 and 2008.

RPA Action 198

Description The Action Agencies, in coordination with NMFS, USFWS, and other Federal agencies, NWPPC, states, and Tribes, shall develop a common data management system for fish populations, water quality, and habitat data.

Status NOAA Fisheries determined in its 2002 Findings that this Action had been modified and required resolution because it was unlikely that the full scope of this Action would be implemented by 2003. NOAA Fisheries recommended that the Action Agencies continue to work cooperatively with the Council and the agencies named in the FCRPS Opinion (including NOAA Fisheries) to develop a plan that addresses the critical aspects of this Action (including allocation of funding responsibility) by October, 2002. The full plan development should be complete no later than April of 2003 and the plan should be fully implemented no later than the spring of 2005.

The Council and NOAA Fisheries entered into a Memorandum of Agreement to proceed with a program for development of a cooperative regional information system. In 2002, BPA funded a needs assessment and development of recommendations on steps necessary to build a cooperative regional information system. That initial assessment was not completed in 2002.

NMFS expectation Implement pilot data management systems for data collected in three subbasins for the pilot status monitoring program proposed in 2003 for Actions 180, 181, and 183. Complete development of a comprehensive data management plan in 2003, including schedule and details for implementing the plan in 2004.

AA implementation The development of a regional data management system will serve the Action Agency information needs for BiOp implementation and assessment, including monitoring and evaluation data required for development and assessments of BiOp implementation, performance standards and check-in evaluation criteria. The Action Agencies plan to (1) develop a comprehensive database management system for FCRPS data in 2004, and (2) develop an explicit schedule and funding plan to ensure implementation in 2004. The Action Agencies worked with NOAA Fisheries to develop a proposal to establish pilot data management systems in 3 subbasins during 2003 as part of this work. However, the pilot work proposed to start in 2003 will not be implemented this year, unless technical and policy level comments made by the Council's ISRP to not fund these studies are resolved. BPA is working with the Council and NOAA Fisheries on options to fund this work, but at this time it appears unlikely that these issues will be resolved in a manner that allows work to proceed in 2003.

NMFS finding **Modification requires resolution**

NMFS comments Implementation of this measure is necessary to obtain and organize data needed for conducting check-in tests in 2005 and 2008. The Action Agencies, in cooperation with the Council and NOAA Fisheries, are proceeding with a needs assessment and with a process for developing regional consensus on a coordinated database system (Columbia River Basin Cooperative Information System [CBCIS] initiative). This system-wide data management task is important but is not expected to yield results until 2004 at the earliest. The RM&E Work Group identified an immediate need to develop a prototype data management program to coordinate habitat information management in three pilot subbasins corresponding to the status and effectiveness monitoring pilot studies described in RPA Actions 180 and 183. NOAA Fisheries' expectation for Action 198 being "under implementation" in 2003, per the Opinion's Appendix F, was predicated on development of the data management prototype in 2003. Because the ISRP did not consider submitted proposals for the prototype database project to be fundable, only the longer-term regional database planning activities will occur in 2003. This delay also affects activities expected in 2003 for Actions 180 and 183.

NOAA Fisheries has three recommendations to the Action Agencies to potentially reduce the impacts of the schedule change:

Continue to work with the ISRP to resolve their concerns about the technical merits of proposals to implement a prototype habitat data management system. Initiate relevant projects as soon as possible.

Ensure that effective and functional database support is available for the 2003 pilot status monitoring program (Action 180) and the pilot "top-down" effectiveness monitoring program (Action 183).

Continue to work on development and regional coordination and development of a basin-wide data management system (including consideration of the

CBCIS proposal), to be created in time to meet the 2004 goal and support the 2005 check-in analyses.

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RPA Action **199**

Description The Action Agencies shall implement the specific research/monitoring actions outlined in Appendix H.

Status Projects described in Appendix H of the Opinion have been implemented each year. Annual reporting has been submitted to NOAA Fisheries for some of the 19 projects, but does not appear to have been submitted for others.

NMFS expectation Continue those projects described in Appendix H of the Opinion that have not already been completed. Submit all required reports (on 2000-2002 activities) to NOAA Fisheries prior to September 2003.

AA implementation The Action Agencies are working within AFEP and the Regional process (including NOAA) to ensure that the elements of App. H are integrated with the broader R, M&E framework. Action Agency contractors will submit all required reports to NMFS, including any that are overdue.

NMFS finding **Implementation as expected**

NMFS comments