

**Findings Regarding Adequacy
of the FCRPS Action Agencies'
2002 Annual Implementation Plan**

**National Marine Fisheries Service
Northwest Region**

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Acronyms and Abbreviations

AFEP	Anadromous Fish Evaluation Program
AWS	auxiliary water system
BA	biological assessment
BGS	behavioral guidance structure
BLM	Bureau of Land Management
BOR	Bureau of Reclamation
BPA	Bonneville Power Administration
CBFWA	Columbia Basin Fish and Wildlife Authority
CFD	computational fluid dynamics
cfs	cubic feet per second
Corps	U.S. Army Corps of Engineers
Council	Northwest Power Planning Council
CR	Columbia River
CREP	Conservation Reserve Enhancement Program
CRFM	Columbia River Fish Mitigation
CRITFC	Columbia River Inter-Tribal Fish Commission
D	post-Bonneville transport: in-river survival ratio
DEIS	draft environmental impact statement
DGAS	Dissolved Gas Abatement Study
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
ERDC	Engineering Research and Development Center
ESA	Endangered Species Act
ESBS	extended submerged bar screens
ESU	evolutionarily significant unit
FCRPS	Federal Columbia River Power System
ft/s	feet per second
FGE	fish guidance efficiency
FHT	Federal Habitat Team
FMEP	fisheries management and evaluation plan
FPOM	Fish Passage Operations and Maintenance Coordination Team
GRR	general reevaluation report
HCP	Habitat Conservation Plan
HGMP	hatchery and genetic management plan
IP	Implementation Plan
IPC	Idaho Power Company
ISRP	Independent Scientific Review Panel
IT	Regional Forum Implementation Team
LCREP	Lower Columbia River Estuary Partnership
Maf	million acre-feet
MASS1,2	dissolved gas models

MGRs	minimum gap runners
MOA	Memorandum of Agreement
MOP	minimum operating pool
NAWQA	National Water Quality Assessment Program
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NRCS	Natural Resources Conservation Service
NWPA	Northwest Power Act
NWPPC	Northwest Power Planning Council
O&M	operations and maintenance
ODFW	Oregon Department of Fish and Wildlife
OPE	orifice passage efficiency
Oregon Plan	Oregon Plan for Salmon and Watersheds
PCSRP	Pacific Coastal Salmon Recovery Program
PFMC	Pacific Fishery Management Council
PIT	passive integrated transponder
PUD	Public Utility District
Reclamation	Bureau of Reclamation
RM&E	research, monitoring, and evaluation
RMP	Joint Resource Management Plan
RPA	Reasonable and Prudent Alternative
RSW	removable spillway weir
SAR	smolt-to-adult return rate
SCT	System Configuration Team
SNAPP	Safety Net Artificial Propagation Program
SR	Snake River
SRWG	Studies Review Work Group
SYSTDG	a dissolved gas model
TDG	total dissolved gas
TMDL	total maximum daily load
TMT	Technical Management Team
TRP	Tribal Restoration Plan for the Columbia River Basin
TRT	Technical Recovery Team
UCR	Upper Columbia River
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VARQ	variable (VAR) outflow (Q)
WDFW	Washington Department of Fish and Wildlife
WMP	Water Management Plan
WQT	Water Quality Team
WRI	Willamette Restoration Initiative

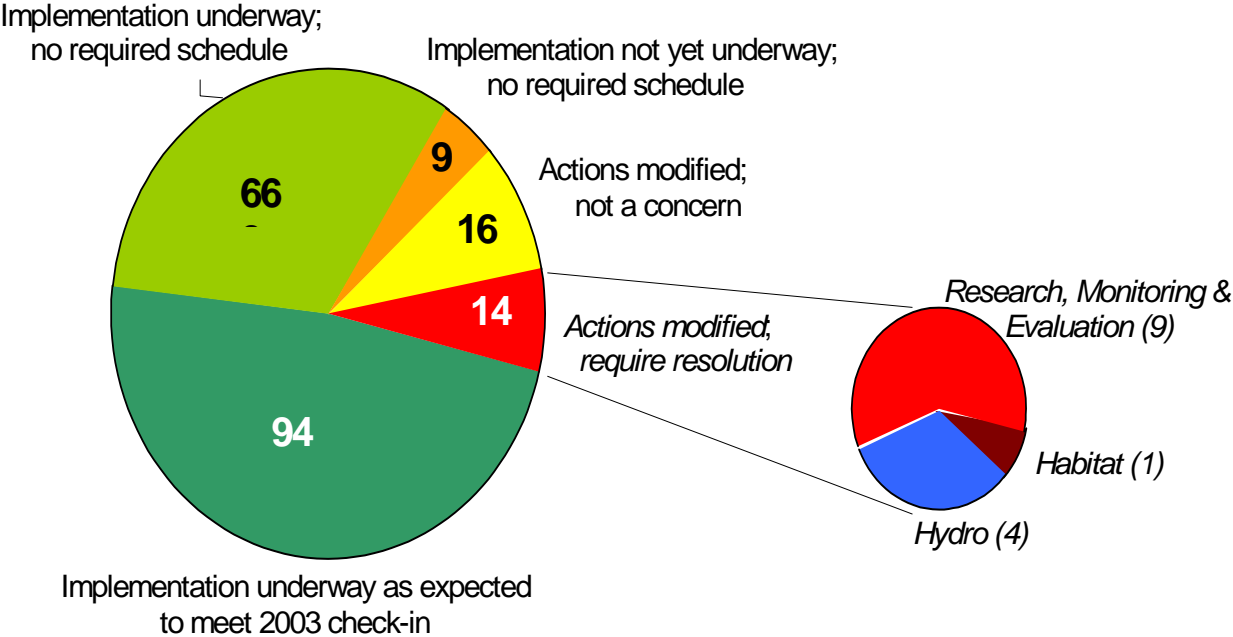
Executive Summary

The National Marine Fisheries Service (NMFS) issued a biological opinion addressing operation of the Federal Columbia River Power System (FCRPS) and 19 Bureau of Reclamation projects on December 21, 2000 (hereafter, “the Opinion”). The Opinion defines a reasonable and prudent alternative (RPA) consisting of 199 Actions, implemented both within the Federal hydrosystem and in other areas as “offsite mitigation.” The Opinion anticipated that many of the RPA Actions will need to be refined and adjusted as new study results and other relevant information become available. The FCRPS Action Agencies produce annual and five-year implementation plans (IP) that describe progress to date, lay out details of the short- and long-term plans for achieving performance standards, propose adjustments to the RPA Actions, and describe the rationale for those adjustments. NMFS is required to review each year’s annual IP and issue a findings letter to the FCRPS Action Agencies regarding the adequacy of the plan. NMFS reviewed the FCRPS Action Agencies’ 2002 IP in the context of progress implementing the Opinion and Basinwide Salmon Recovery Strategy (Federal Caucus 2000) in 2001, as well as a draft plan for strategic implementation in 2002-2006. The purpose of this document is to determine, consistent with Section 9.4.2.12 of the Opinion, that the proposed 2002 annual IP is adequate, as being consistent with the RPA.

Progress in 2001

The FCRPS Action Agencies made progress initiating the implementation of hydrosystem improvements and off-site mitigation measures in 2001. These are described in detail in the Action Agencies’ 2001 Progress Report. Additionally, other Federal agencies began implementing complementary activities anticipated by the Basinwide Salmon Recovery Strategy and states and Tribes have also taken measures to help recover stocks in a manner consistent with NMFS' expectations when it issued the Opinion in 2000. Though not a response to actions taken under this Opinion, adult returns in 2001 were among the highest in recent years. Prior improvements in the FCRPS, high ocean survival, and other aspects of the fish life cycle contributed to the high adult returns. There were, however, some problems encountered that influenced NMFS’ review of the 2002 IP. The drought, power emergency, and certain reliability issues that threatened Bonneville Power Administration’s (BPA) financial stability caused significant modifications in the implementation of hydro operational measures in 2001, particularly curtailment of the spill program. Juvenile survival through the FCRPS was as expected for some evolutionarily significant units (ESU) when transportation was considered, but was low for others, and low for all in-river migrants. Some of the more significant challenges in 2001 involved developing the infrastructure and identifying Federal agency responsibilities for implementation of habitat measures and research, monitoring, and evaluation (RM&E) measures. The Opinion requires significant planning efforts for each of these subject areas and those planning efforts, while getting underway, appear to be off to a slow start. NMFS intends to actively work with the Action Agencies to ensure that an adequate RM&E program is developed

Figure 1: Fish Recovery Findings
Based on Action Agencies' 2001 Progress and 2002 Plan



and implemented, combining the efforts of the Action Agencies, NMFS, and others in a comprehensive program.

Adequacy of 2002 Implementation Plan

NMFS finds that the 2002 IP, when viewed in the context of the 2001 Progress Report, the draft 2002-2006 IP, and reports of other Federal Agencies regarding implementation of the Basinwide Salmon Recovery Strategy, is generally consistent with the Opinion and adequate to implement the RPA during 2002. The 2002 IP is likely to meet the schedule and scope anticipated by the 2003 mid-point evaluation for the great majority of RPA Actions.

Of the 124 Actions that require definition, implementation, or completion by or before 2003, NMFS finds that 94 are being implemented as expected (**Category 1** of Section 1.2). The remaining 30 Actions with expectations for 2003 are being implemented according to a modified schedule or scope.

For 16 of these Actions, the modification is not a concern for meeting the Opinion's objectives for the 2003, 2005, and 2008 mid-point evaluations (**Category 2** of Section 1.2). This is because either: (1) the modification represents a minor change; or (2) an intermediate scheduling benchmark has been, or is likely to be, delayed but the Implementation Plan contains measures that will meet the full expectation by 2003.

The remaining 14 Actions have a modified schedule or scope that will require adjustments and resolution in order to meet the 2003 and future mid-point evaluations (**Category 3** of Section 1.2). Most of the Actions requiring resolution (nine) involve research, monitoring, and evaluation (RM&E) Actions that are necessary to evaluate biological performance standards in 2005 and 2008. Several of these have been delayed while NMFS, the Action Agencies, and other Federal agencies work together to identify their respective responsibilities; while plans are developed and coordinated with states, Tribes, and others; and to coincide timing with the 2002 Mainstem/System-wide solicitation and review process. Four hydrosystem Actions involve problems, including: (1) delay in installing dissolved gas control structures ("flip-lips") at Chief Joseph Dam; (2) delay implementing new flood control operations at Libby Dam to make more water available for juvenile migrations; (3) delay developing new Libby Dam forecasting methods and flood control studies to attempt to make more water available for juvenile migrations; and (4) problems managing Federal storage projects to support salmon flow objectives during the spring migration. The first of these resulted from a lack of appropriated funds. One habitat Action represents a delay in achieving sufficient long-term or permanent riparian easements. NMFS and the Action Agencies are developing project criteria and will continue to work on this issue.

For 75 Actions, the Opinion provides no schedule, other than completion by 2010. Of these 75 projects, 66 (88%) are currently underway or proposed for initiation in 2002 (**Category 4** of Section 1.2). The remaining 9 projects have not been scheduled to begin in 2002 by the Action Agencies (**Category 5** of Section 1.2). These projects can be initiated later and the Action Agencies will include a proposed schedule in the next five-year implementation plan.

1.0 Introduction

1.1 Background

The National Marine Fisheries Service (NMFS) issued a biological opinion addressing operation of the Federal Columbia River Power System (FCRPS) and 19 Bureau of Reclamation (Reclamation) projects on December 21, 2000 (hereafter, “the Opinion”). This consultation was conducted with the Corps of Engineers (Corps), Bonneville Power Administration (BPA), and Reclamation, collectively referred to as the FCRPS Action Agencies. The Opinion defines a reasonable and prudent alternative (RPA) consisting of 199 Actions, which are intended to improve survival and the likelihood of recovery for listed salmon and steelhead evolutionarily significant units (ESUs) in the Columbia River basin. The RPA consists of one suite of Actions that defines hydro improvements within the FCRPS. Another suite of Actions specifies offsite mitigation in the form of improvements to tributary, mainstem, and estuary habitat; improvements in operation of hatcheries and development of an artificial propagation safety-net program; development of more selective fishing techniques to reduce harvest impacts on listed ESUs and other harvest management improvements; and development of a research, monitoring, and evaluation (RM&E) program.

The RPA defines programmatic and biological performance standards for both the hydro and offsite mitigation RPA Actions. These performance standards will be evaluated through comprehensive 2003, 2005, and 2008 reviews. The 2003 evaluation is based on a programmatic performance standard: RPA Actions with products or activities that must be completed by certain dates, as summarized in Appendix F of the Opinion, or as modified by NMFS after evaluation of the Implementation Plan, should be underway and on schedule by September 2003. The 2005 and 2008 evaluations are based on a combination of biological and programmatic performance standards. Some of the RPA Actions that will be evaluated programmatically in 2003 are planning and monitoring activities that need to be in place by 2003 if progress towards meeting biological performance standards is to be evaluated in 2005.

The Opinion anticipated that many of the RPA Actions will need to be refined and adjusted as new study results and other relevant information become available. The RPA defined a rolling annual and five-year planning process to implement the RPA. The FCRPS Action Agencies produce annual and five-year implementation plans (IP) that describe progress to date, lay out details of the short- and long-term plans for achieving performance standards, propose adjustments to the RPA Actions, and describe the rationale for those adjustments. The Opinion (section 9.4.2) defines 13 major elements of the IPs, which include a hydrosystem plan, water management plan, offsite mitigation plan, and an annual progress report.

The NMFS is required to review each year’s annual IP. Within 45 days of receipt of each annual plan, NMFS must issue a findings letter to the FCRPS Action Agencies regarding the adequacy of the plan. The letter will address the consistency of the proposed annual plan with the RPA and, if appropriate, recommend needed changes. If NMFS finds the plan to be inadequate, the

FCRPS Action Agencies may proceed with those elements of the plan not identified by NMFS as at issue, while discussions continue regarding how to align the plan with the Opinion. To the extent that the annual and five-year IPs propose changes in the schedule or scope of RPA Actions, NMFS must explicitly define and approve all such amendments in its written findings.

On July 31, 2001, the FCRPS Action Agencies released a public draft of the 2002-06 Five-Year IP. The FCRPS Action Agencies completed a final 2002 Annual IP and transmitted it to NMFS on November 13, 2001. The transmittal letter stated that a 2002 Water Management Plan (WMP), to accompany the 2002 IP, would be produced shortly. The WMP, which is a multi-agency work product, was completed and posted to the Technical Management Team's (TMT) web site on May 22, 2002.

In a January 4, 2002, letter to the FCRPS Action Agencies, NMFS acknowledged receipt of the final 2002 IP and the draft 2002-06 IP. NMFS stated that three pieces of information were needed before the findings letter could be produced: the 2002 IP, the 2002-06 IP, and the 2001 Progress Report. NMFS' rationale was that evaluation of the activities planned for 2002 is dependent upon knowing the success of activities implemented to date and, to the extent that some are deferred for future implementation, the long-term plan for their implementation. Additionally, the Opinion specifically calls for preparation of all three documents as part of the annual planning process. NMFS stated that the findings letter would be produced within 45 days of receipt of the 2001 Progress Report. NMFS acknowledged that, "while we had hoped to have the final five-year plan at the same time, we understand the significant amount of time that has been required to develop this first five-year plan and coordinate it with state and Tribal co-managers. Because the five-year plan is still under review, we will use our findings letter to recommend that any ... RPA Actions [with products due or activities to be completed by 2003] that are not proposed for implementation in FY 2002 are explicitly addressed in the final five-year plan." The 2001 Progress Report was received by NMFS on May 10, 2002.

This Findings report has been produced to evaluate the 2002 IP in the context of the Action Agencies' progress to date in implementing the RPA, as described in the 2001 Progress Report, and additional implementation activities anticipated in 2003 and beyond, as described in the draft 2002-06 IP. In some cases, NMFS elicited information from project operators and others that was additional to the information reported in the above documents, in order to better determine the status and plans for implementation of particular RPA Actions. NMFS also views these activities in the context of progress made by other Federal agencies in implementing the strategies defined in the Federal Caucus' 2000 Basinwide Salmon Recovery Strategy and the overall status of the relevant listed anadromous fish stocks and their habitat.

1.2 Approach to Determining Adequacy

The Opinion included 124 RPA Actions, of 199 total RPA Actions, that require definition, implementation, or completion by or before 2003 (Biological Opinion Appendix F, “Category 2” actions¹). The annual IP, in the context of the five-year IP, must demonstrate that these RPA Actions are being implemented on a schedule consistent with that in the Opinion; or the annual IP, in the context of the five-year IP, must describe alternative actions or schedules and explain why they will accomplish the same goals.

The Opinion also included 75 RPA Actions that did not require definition, initiation, or completion within a specific time period (e.g., Biological Opinion Appendix F, “Category 3” actions¹). Essentially, NMFS determined that these Actions could be implemented according to the Action Agencies’ implementation schedule, so long as that schedule results in meeting performance standards. Therefore, for this first annual Findings, NMFS looked at these actions only to determine if a significant proportion were underway or planned to start in 2002.

NMFS considered the status of each Action to fall into one of five categories, based on current status and plans for implementation in 2002:

Category 1: RPA Actions with specific expectations by 2003 that NMFS finds have been completed, are being implemented as expected, or have been changed to improve implementation.

Category 2: RPA Actions with specific expectations by 2003 that have modified schedule or scope, which are not a concern for meeting the Opinion’s objectives for the 2003, 2005, and 2008 mid-point evaluations.

Category 3: RPA Actions with specific expectations by 2003 that have modified schedule or scope, which require resolution to meet the Opinion’s objectives for the 2003, 2005, and 2008 mid-point evaluations. Category 3 takes into account delays in survival improvements anticipated in the Opinion, delays in monitoring and evaluation needs related to performance standards, and other delays or changes in scope that could affect substantive implementation.

Category 4: RPA Actions without a defined schedule in the Opinion, which are already underway or proposed for implementation in 2002.

Category 5: RPA Actions without a defined schedule in the Opinion, which are not yet underway or proposed for implementation in 2002.

¹ Appendix Table A of this Findings report corrects a few designations in the Opinion’s Appendix F (Actions 99, 130, and 133).

2. Review of Annual Progress Report and Associated Information

2.1 Review of Species Status

Adult Returns in 2001

Adult returns influence the Opinion's three "ESU Status" performance standards based on population trend and the one standard based on population abundance, each of which will be evaluated in 2005 and 2008 (pages 9-10 and 9-11 of the Opinion).

The 2001 Progress Report Section 2.1 reviews the 2001 adult returns past mainstem dams in detail. Total (hatchery + wild) 2001 adult returns at Snake and Columbia River dams were among the highest on record. The 2001 dam counts exceeded the highest counts since 1980, the beginning of the time period considered in the Opinion's risk assessment, for most species.

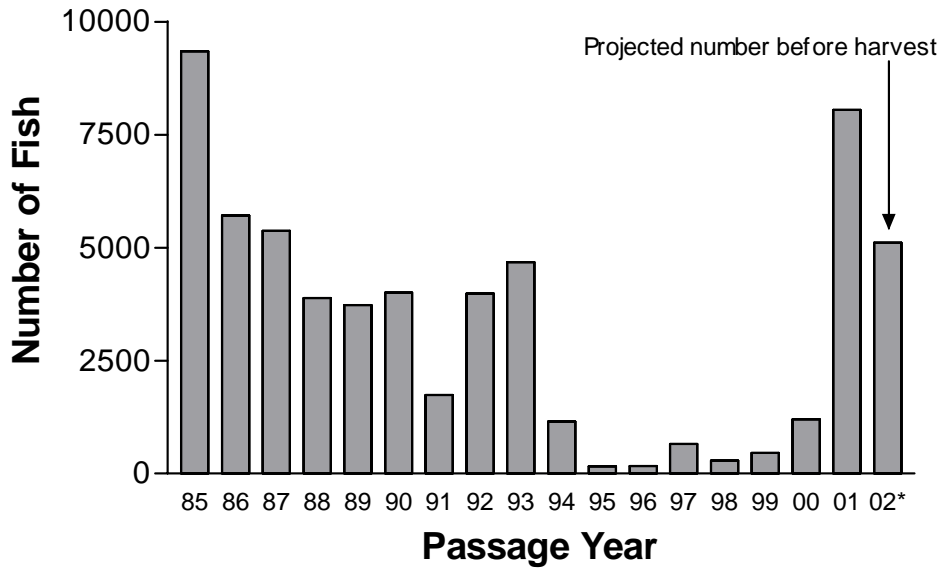
The Oregon Department of Fish and Wildlife (ODFW) and Washington Department of Fish and Wildlife (WDFW) have made preliminary estimates of the wild component of the spring and summer chinook and steelhead runs that passed major dams in 2001 (Joint Columbia River Management Staff 2002). These estimates indicate that 2001 was a very high return year for the wild component of each run (Figure 1), even though the majority of fish passing each dam were of hatchery origin. Wild steelhead counts at Lower Granite were similar to adult returns in the 1980s and early 1990s, and were a marked improvement over wild steelhead returns between 1994 and 2000.

Final estimates of 2001 wild adult returns to spawning grounds are currently unavailable for most areas. However, it is likely that high dam counts translated into high returns to natural spawning areas. As examples, this inference is supported by Upper Columbia River spring chinook spawning ground surveys in the Wenatchee River (Mosey and Murphy 2002), preliminary Snake River (SR) fall chinook redd counts (Maslen 2002), and preliminary SR spring/summer chinook spawning ground surveys in Oregon and Idaho index areas (Maslen 2002). Figure 2 displays this information for Wenatchee River spring chinook and indicates that 2001 redd counts in Wenatchee River index areas, minus the Icicle Creek hatchery-dominated index area, are the highest of the period beginning in 1980. These redds were produced by both wild- and hatchery-origin spawners.

Projected Adult Returns for 2002

ODFW and WDFW have projected returning adults in 2002 for some spring-migrating ESUs (Joint Columbia River Management Staff 2002; Figure 1). Wild SR spring/summer chinook salmon are expected to return to Lower Granite Dam at a high rate similar to 2001. Wild Upper Columbia spring chinook are expected to return to Priest Rapids Dam at lower

**Fig. 1 A. Wild Spring Chinook Adults at Priest Rapids Dam
(Joint Columbia River Management Staff, 2002)**



**Fig. 1B. Wild Spring and Summer Chinook and Wild Steelhead Adults at Lower Granite Dam
(Joint Columbia River Management Staff, 2002)**

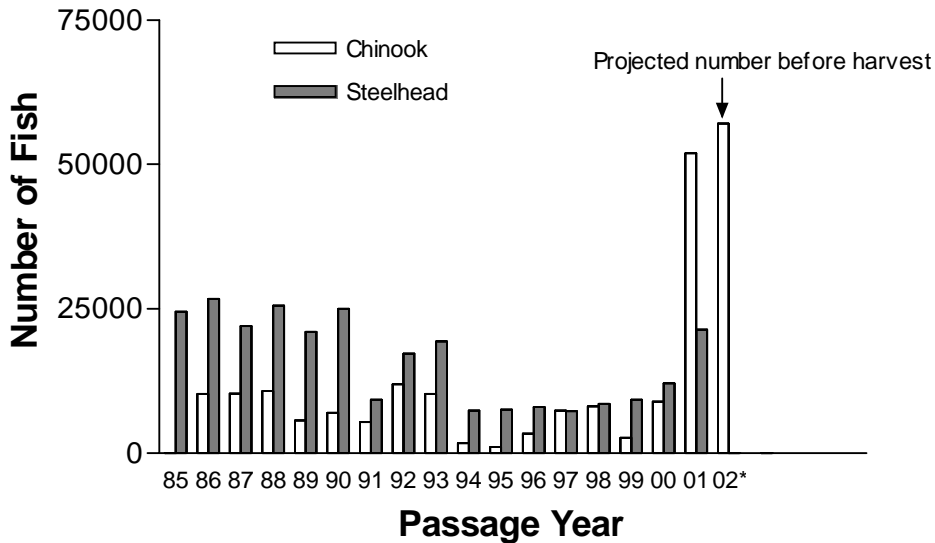
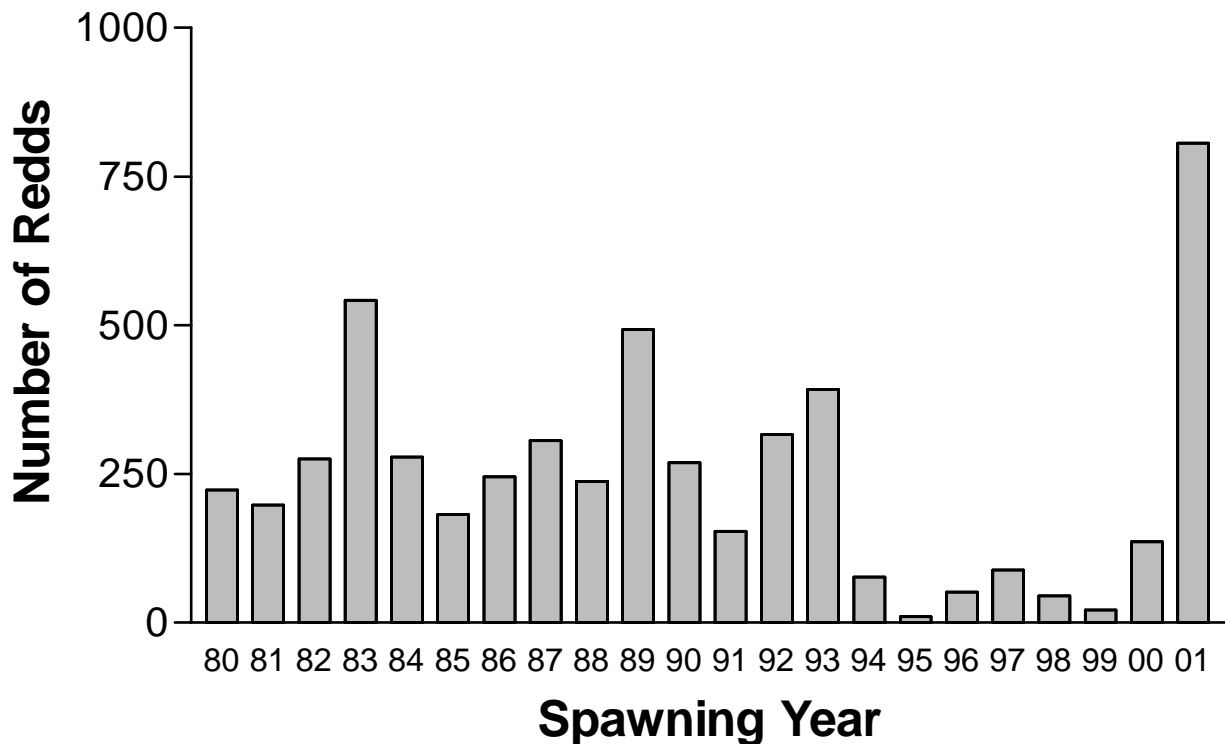


Fig 2. Redd counts in the Wenatchee River basin, 1980-2001 (Mosey and Murphy 2002).



numbers than in 2001, but the returns are still expected to be among the highest in recent years. Estimates of wild steelhead returns have only been projected at Bonneville Dam, not at upstream dams. These returns are expected to be comparable to returns in 2001.

The Pacific Fishery Management Council (PFMC) has projected returns of fall chinook to the Columbia River in 2002 (Salmon Technical Team 2002). The PFMC’s projection for Upriver Brights, which include the SR fall chinook ESU, is for a larger return than in 2001. The projected return would be the largest since 1988 and the fourth largest since 1964.

Adult Survival Through the FCRPS in 2001

Average post-2000 adult survival past FCRPS dams will be evaluated against 1994-1999 average adult survival and the expected RPA adult survival performance standards (Table 9.2-3 of the Opinion) in 2005 and 2008.

The adult performance standards in the Opinion are based on radio-telemetry studies, which NMFS determined to be more reliable than other methods of estimating adult survival available at that time, including passive integrated transponder (PIT-tag) detections. Results of radio-telemetry studies in 2001 are not currently available. The 2001 Progress Report (section 3.1.1.1) describes preliminary estimates of adult SR spring/summer chinook survival from Bonneville Dam to Lower Granite Dam based on an alternative method, using PIT-tag detections at each dam for fish that were originally tagged as juveniles above Lower Granite Dam. After accounting for an estimate of the average in-river harvest rate on spring and summer chinook, the 2001 Progress Report concludes that the resulting survival rate is approximately 99% per project, a rate that would exceed the performance standard for this ESU if the PIT-tag method were equivalent to the radio-telemetry method. PIT-tags do provide an alternative method for estimation of adult conversion rates. However, at this time it is not known if the two methods are equivalent. The 2001 Progress Report did not estimate adult survival of other ESUs.

NMFS also has conducted a preliminary analysis of 2001 conversion rates using PIT-tag information for adult SR wild spring chinook. NMFS' analysis of adult PIT-tag information confirms the Action Agencies' system survival rate of approximately 99% per project for this ESU. Complete adult radio-telemetry data for 2001 SR spring chinook are unavailable at this time to corroborate this survival estimate. NMFS has also conducted a preliminary analysis, again using PIT-tag information, of 2001 conversion rates for adult SR hatchery and wild (combined) fall chinook. The analysis of adult PIT-tag information indicates a system survival rate of approximately 99% per project for this ESU. Complete adult radio-telemetry data for 2001 SR fall chinook are unavailable at this time to confirm this survival estimate.

Juvenile Passage Survival in 2001

Average post-2000 juvenile survival past FCRPS dams will be evaluated against 1994-1999 average juvenile in-river and system survival and the expected RPA in-river and system survival performance standards (Table 9.2-3 of the Opinion) in 2005 and 2008. Estimates of juvenile smolt survival in 2001 also provide preliminary information regarding possible adult returns in 2003-2005.

The 2001 Progress Report (section 3.1.1.2) describes 2001 juvenile in-river survival estimates. As a result of drought conditions and modified spill and flow augmentation resulting from BPA's declared power emergency, in-river survival through the FCRPS was the lowest estimated since the droughts of 1973 and 1977. Estimated in-river survival in 2001 is shown in comparison to 1994-1999 and 2000 in-river survival in Figure 3. These low in-river survival rates affected a relatively small proportion of the population because the majority of fish were transported, as described below.

The 2001 Progress Report (section 3.1.1.2) also describes total system survival (combined in-river migrants and transported fish) to below Bonneville Dam. Under low flow conditions, the

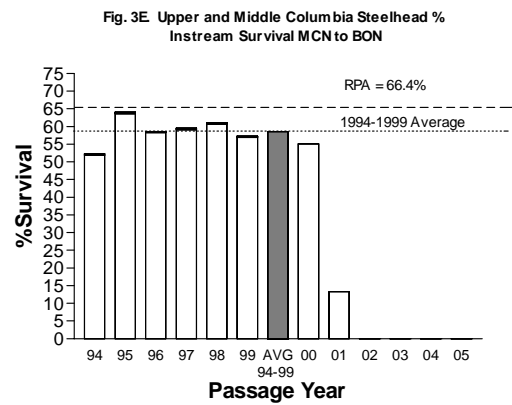
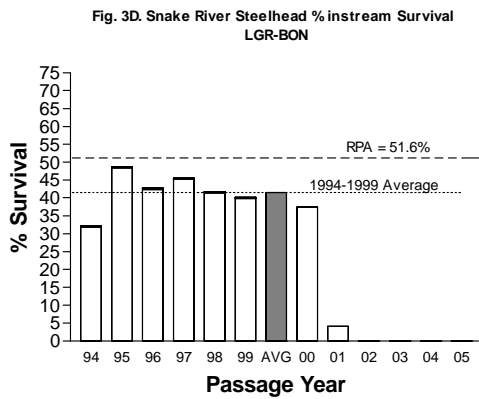
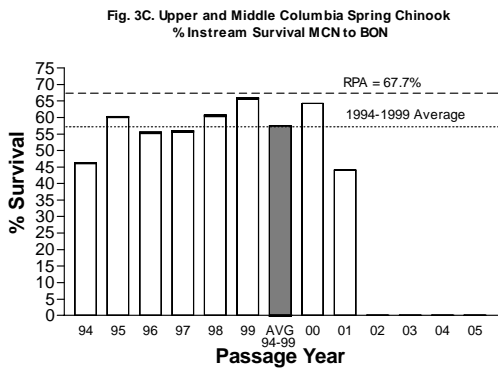
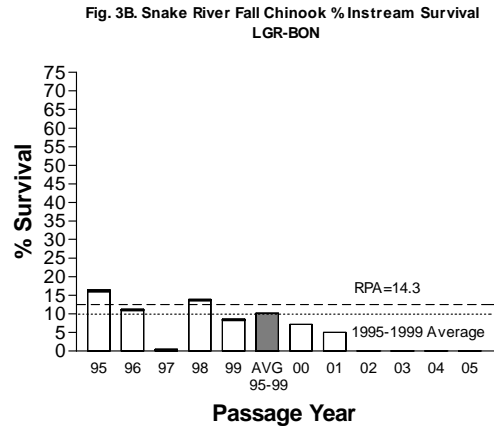
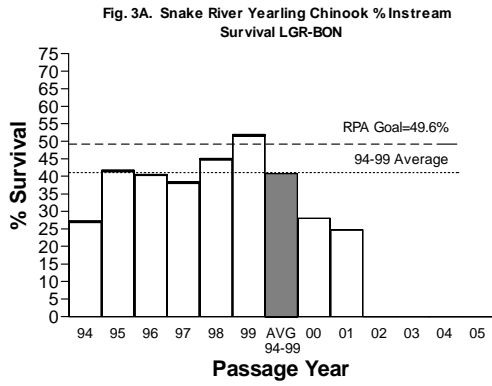


Fig. 4A. Snake River Spring Chinook System survival (without "D")

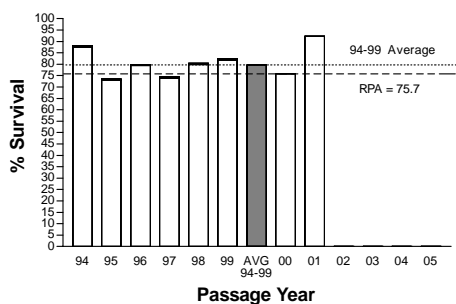


Fig. 4B. Snake River Fall Chinook System survival without "D"

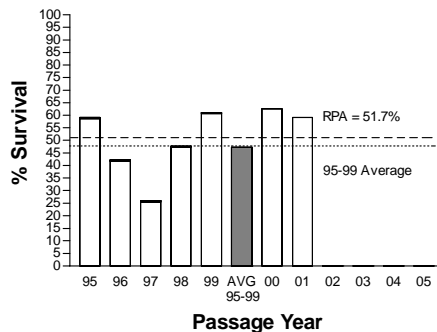


Fig. 4C. Upper and Middle Columbia Spring Chinook System Survival MCN to BON Without "D"

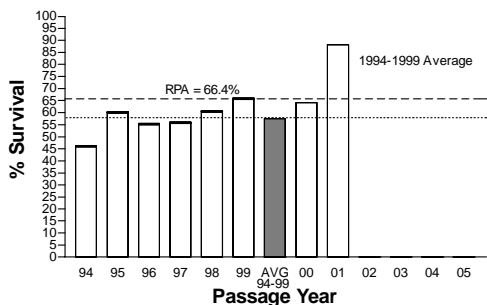


Fig. 4D. Snake River Steelhead System Survival (without "D")

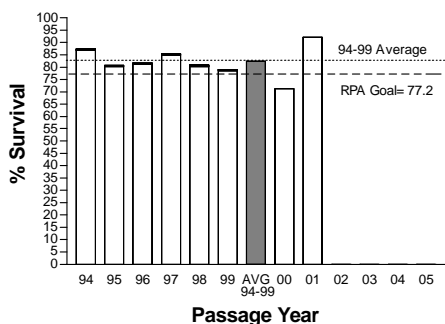
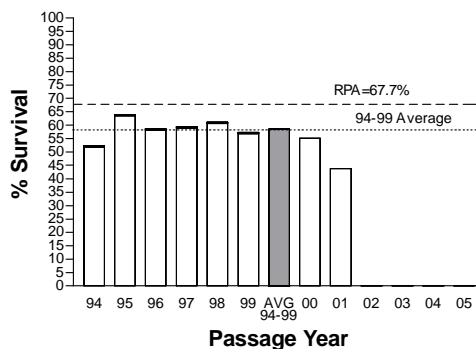


Fig. 4E. Upper and Mid Columbia Steelhead System Survival MCN-BON without "D"



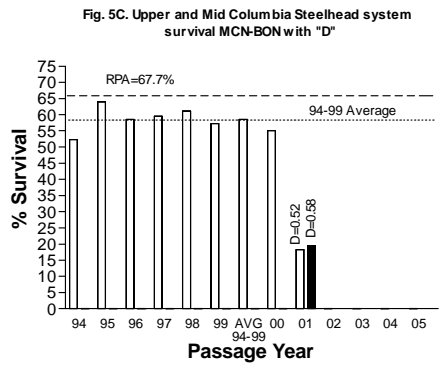
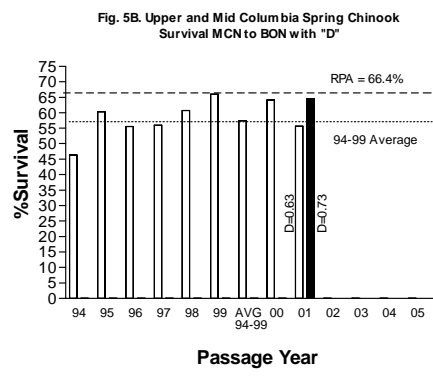
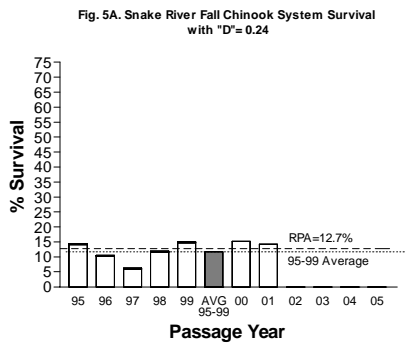


Fig. 5D. Snake River Spring Chinook System Survival with "D"=0.63

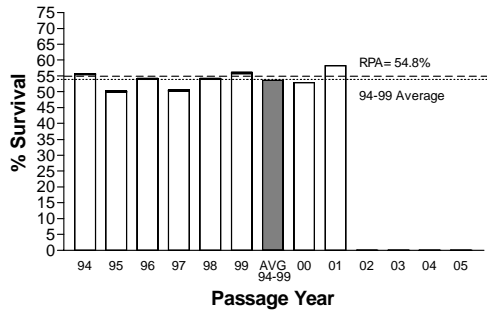


Fig. 5E. Snake River Spring Chinook System Survival with "D"=0.73

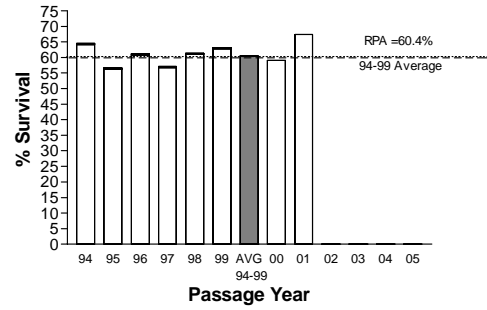


Fig. 5F. Snake River Steelhead System Survival with "D"=0.52

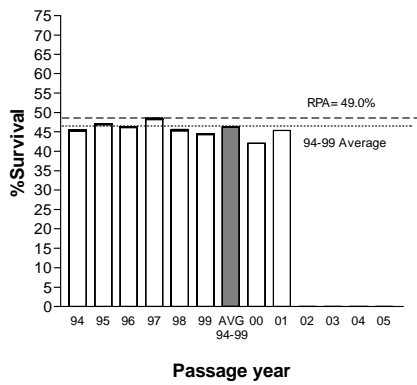
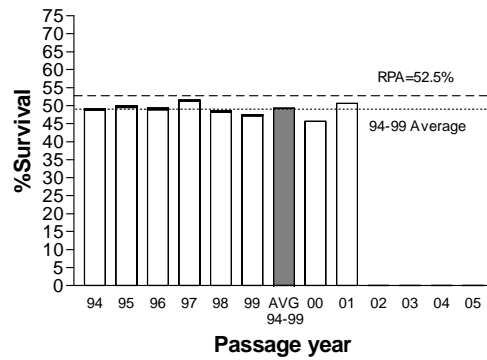


Fig. 5G. Snake River Steelhead System Survival with "D"=0.56



Opinion specifies that spring spill will be reduced at SR collector projects in an effort to transport as many fish as possible. Additionally, NMFS supported an emergency plan to collect and transport approximately half of the spring migrants passing McNary Dam during 2001 due to the low flow conditions and lack of full RPA spill measures at the three lower Columbia projects. These actions resulted in transportation of a higher percentage of spring chinook and steelhead migrants in 2001 than in average-flow years. Because direct survival on barges is very high, a direct system survival to below Bonneville Dam was also high, in spite of the low in-river survival rate (Figure 4).

The Opinion reviewed evidence regarding the relative post-Bonneville survival of transported fish, compared to that of in-river fish, and judged, based upon the available evidence, that transported SR chinook and steelhead experienced higher post-Bonneville mortality than did non-transported fish. NMFS also inferred that the same situation may be true for other transported ESUs. By applying the post-Bonneville transport:in-river survival ratios (“D”) estimated in the Opinion to the proportion of surviving fish below Bonneville that were transported, the high “direct” system survival estimates are reduced (Figure 5). Snake River ESUs and Upper Columbia spring chinook still had system survival rates similar to the 1994-1999 average, but Upper Columbia steelhead had much lower survival rates.

Projected Juvenile Out-Migration in 2002

Schiewe (2002) has estimated numbers of listed and non-listed juvenile salmon and steelhead likely to be migrating through the Snake and Columbia rivers in 2002. For example, this report estimates that approximately 1.2 million wild and 10.8 million hatchery spring/summer chinook smolts will reach Lower Granite Dam in 2002. This is the highest projection since the 1995 out-migration.

2.2 Review of New Research Results and RM&E Related To Critical Uncertainties, Including Effectiveness of Actions

Hydro

Appendix A of the 2001 Progress Report discusses many examples of hydrosystem research results relevant to implementing the RPA. A few examples from the Progress Report and other sources include:

- The Corps completed a pilot study at The Dalles Dam concerning spill evaluations in 2001, which confirmed that elevated retention time in the spillway stilling basin and mechanical injury rates (caused by turbulence, shear, etc) result in elevated mortality for juvenile migrants. The pilot study’s conclusion increases the importance of addressing the problem through structural measures.

- Adult returns through 2000 were summarized for the McNary summer transport studies conducted in 1995 and 1996 (Schiewe 2001). Preliminary results are considerably different from transport study results from the late 1970s and 1980s. The new studies indicate that there was no apparent benefit to transporting subyearling chinook from McNary Dam during 1995 and 1996. Further study is necessary to understand if these results reflect: improved survival of in-river migrants due to improved in-river conditions; an anomalous condition due to ocean conditions unique to those years; or possible mechanical problems in the juvenile fish facility which was reconstructed in the early 1990s.
- The WDFW observed that, when support flows for chum salmon ended on March 16, 2001, the discharge from Hamilton and Hardy creeks, localized ground water, and FCRPS power peaking provided enough water to keep those redds located in the Ives Island area below the creeks viable.
- The Corps evaluated the Bonneville Second Powerhouse gatewell flow modifications, which indicated a high potential for increased fish guidance efficiency (FGE) with full implementation of the intake modifications. Further evaluation of this issue in other gatewells will be necessary before full implementation.
- The Corps used forebay guidance mixers to see if they reduce temperatures in localized areas where fish hold in the McNary forebay. Further study is anticipated.
- The Corps evaluated the effects of limited spill, low flow conditions, and higher summer temperatures on passage and survival of juvenile and adult migrants through the hydrosystem. The information gained from last year's unique environmental and operational conditions may provide answers to the effectiveness of certain operations, especially in future years when in-river conditions are poor.
- The Corps estimated their numbers and monitored downstream passage success of steelhead kelts through the hydrosystem for a second year and initiated a preliminary transport evaluation for kelts. Noted that an unexpectedly high proportion of the kelts handled at Lower Granite Dam were of wild origin.
- New transport study results, based on adult returns from 1998 and 1999 out-migrations, indicate seasonal differences in survival and post-transport release behavior that suggest a possible need to change the location and timing of barge transport to improve spring chinook survival. Behavioral studies in 2001 suggest that tidal conditions are important determinants of migration speed though the estuary.

- Studies of a new separator design at McNary Dam suggest that it is possible to achieve greater efficiency in separating chinook from steelhead before transport. Transport separation should reduce chinook stress.

Habitat

Section 4.3 of the 2002 Progress Report includes several examples of new habitat-related study results. These include:

- Relocating terns from Rice Island to East Sand Island corresponded to a reduction in bird predation from an estimated 7.3 million juvenile salmon and steelhead in 2000 to approximately 4.4 million smolts in 2001.
- A study of mortality above Lower Granite Dam and Reservoir indicates that mortality is high in this reach, suggesting that this is an area in which mainstem habitat improvements may enhance survival.
- Raising the reward for northern pikeminnow catches in 2001 directly translated into increased catch and reduced numbers of this predatory fish.

Hatchery

The 2001 Progress Report states that alternative approaches for studying hatchery critical uncertainties were developed in 2001 and research should begin in 2002. Effectiveness studies got underway in 2001, but significant results are not expected until at least 2002.

Harvest

The 2001 Progress Report states that preliminary results of selective fishery studies in 2001 indicate that small-mesh tooth-tangle nets coupled with revival tanks provided reasonable catch rates of non-listed fish and minimal release mortality of listed salmon and steelhead. Early evaluation of larger mesh gillnets in tribal fisheries also show significant benefits to steelhead under certain conditions.

2.3 Review of New Results From Recovery Planning

In 2001, NMFS refined its structure for the recovery planning process. The Willamette Basin/Lower Columbia River Technical Recovery Team (TRT) completed the first product associated with de-listing goals: identification and delineation of the populations that comprise the evolutionarily significant units in its area. This TRT also began work on viability criteria in 2001. That task will be completed in 2002. An Interior Columbia Basin TRT was also formed late in 2001. Initial products of this group will be completed in 2003.

2.4 General Review of Progress Implementing the RPA During 2001

The 2001 Progress Report and accompanying spreadsheets provide a review of successes and challenges in implementing the RPA in 2001. The following sections briefly review the main issues by subject area.

2.4.1 Hydrosystem Actions in RPA

The historic 2001 drought in the Pacific Northwest was compounded by unprecedented power shortages, volatile power market prices, and emergency power conditions in California and the Pacific Northwest. The combination of these conditions threatened BPA's financial reserves and power system reliability in the operation of the system last year. Very low flow conditions reduced the survival of in-river migrating juvenile salmonids, especially steelhead. Early on, the Federal agencies (NMFS, BPA, Corps, Reclamation, U.S. Fish and Wildlife Service (USFWS), and U.S. Environmental Protection Agency (EPA)) recognized that operations of the system would not be business as usual. They acknowledged that some of the Opinion's operational measures, particularly spill for fish passage, would have to be modified to meet emergency energy needs and low reservoir storage conditions. These changes were discussed with states and Tribes through the Regional Executives group and the NMFS Regional Forum. In March 2001, the Federal agencies jointly established emergency operating principals for that year. On April 3, 2001, a power system emergency was declared that lasted for six months. This declaration, coupled with the drought, eventually resulted in the following spring and summer operations: (1) maintained incubation flows for chum salmon though mid-March; (2) maintained flows through emergence for the unlisted but culturally and commercially significant Hanford Reach population of chinook salmon; (3) limited spill for fish at mainstem FCRPS dams; and (4) maximized fish transport throughout the spring and summer fish passage season.

In short, 2001 in-river survival of spring migrants was relatively poor, with in-river survival through the FCRPS being the lowest recorded in recent years for listed SR chinook salmon and steelhead (see details in Section 2.1). This low in-river survival was due to a combination of factors including low flows, reduced spill, poor tributary conditions, prolonged travel time, poor water quality, and predation. However, between 90-95% of the SR spring migrants and 65-80% of the Upper Columbia River spring migrants were transported to below Bonneville Dam in 2001. When transportation is considered, total system survival to below Bonneville Dam met NMFS' expectations for some ESUs. Nevertheless, future smolt-to-adult return rate (SAR) estimates will provide the best assessment of how 2001 drought and power emergency conditions affected listed ESUs. Ironically, even with poor in-river passage conditions for juvenile fish, 2001 was a banner year for many species of returning adult salmon and preliminary estimates indicate that adult survival through the FCRPS was above expected levels (Section 2.1).

Even with a delay in some of the planned research due to the poor river conditions caused by the drought and power emergency, there were significant developments in both studies and implementation of new fish passage technologies. Perhaps one of the most important pieces of

hardware to be added for juvenile passage was the installation of a removable spillway weir (RSW) at Lower Granite Dam. It is anticipated that the RSW could increase the spill efficiency at dams and boost in-river juvenile survival. At Bonneville Dam, the Corps installed an adult PIT- tag detection system, continued a comparative analysis of long-term fish passage improvement options, and designed the second powerhouse corner collector. The Corps also initiated in 2001 and completed in 2002 construction of six new end bay deflectors at Bonneville Dam. At McNary Dam, four new end bay flow deflectors were installed to reduce dissolved gases and to increase voluntary spill. The water supply system for Dworshak National Hatchery was modified to enable the release of cold water from Dworshak Dam without affecting the hatchery operation. Resulting cold water releases will help improve temperature conditions in the Clearwater River that impact fall chinook migration and spawning. However, the low flows and emergency power conditions precluded conducting research designed to evaluate the following: spillway survival studies for juvenile migrants at Bonneville, John Day, and Ice Harbor dams; the effects of day time spill levels on adult fallback passage at Bonneville Dam; and transportation studies in the Snake River.

2.4.2 Offsite Mitigation Actions in RPA

2.4.2.1 Habitat

The Action Agencies funded numerous habitat improvement efforts in the tributaries, mainstem and estuary throughout 14 subbasins. These included purchasing water rights, riparian habitat, improving fish passage at municipal, industrial and agricultural water diversions, and funding irrigation improvements and physical habitat restoration. Some of these actions were the result of special project proposal solicitations made by BPA for rapid implementation projects to provide immediate benefits to listed salmon and steelhead (“High Priority” solicitation) and projects to benefit fish impacted by the declaration of a power emergency (“Action Plan” solicitation). Action Agencies undertook initial steps in developing programs to address water related issues in four priority subbasins and are developing plans for a similar process in two more in the coming year. The Federal Habitat Team (FHT) began coordinating conservation efforts across Federal agencies. For example, the FHT began to identify and propose solutions to overcoming institutional and technical impediments to implementing the Basinwide Salmon Recovery Strategy. FHT agencies worked within the FHT and externally with the Northwest Power Planning Council (Council) to develop subbasin and watershed assessments and plans that provide sufficient context to maximize the benefit of Basinwide Salmon Recovery Strategy programs and actions in conserving Columbia River Basin salmon.

For the Lower Columbia River, the Action Agencies (Corps and BPA) have collaborated with NMFS, the Lower Columbia River Estuary Partnership (LCREP), and a number of other state, Federal, and local organizations to implement RPA Actions that pertain to the estuary. The Action Agencies are participating in the LCREP Science workgroup and collaborated with them and a number of organizations to develop a set of criteria for habitat restoration that LCREP and other have used to identify sites for restoration in the estuary. The Action Agencies have also

provided funding to support on-going research, development of mapping products, and have just started funding the development of a land-scape level plan for identifying places to best develop restoration projects.

Experience during 2001 indicates that, while the Action Agencies have made substantial progress in a manner that is consistent with reasonable expectations for the first year of Opinion implementation, a number of challenges for habitat implementation lie ahead.

Authority: Restoration efforts in priority subbasins, while not significantly affected to date, could be hampered in the future by Reclamation's lack of authority to directly fund screen and passage projects.

Collaboration: Collaboration with state and tribal governments and integration of their programs into RPA-derived initiatives is recognized as extremely beneficial but difficult to fully achieve. A more focused effort to involve and collaborate with non-federal entities is an important area for continued emphasis, using the Council and other regional processes.

Funding: Given resource limitations, having adequate funding to complete all critical tasks will remain a challenge.

Priorities: It is critical that regional prioritization processes match critical tasks with available funding to meet this challenge.

Integration of Endangered Species Act (ESA) and Northwest Power Act (NWP) Objectives: Integrating ESA and NWP objectives is a challenge. To date, much effort has gone into the Council's provincial review process. However, many of the RPA actions rely on broad program-level initiatives to meet ESA objectives. When the current provincial review cycle is completed, the Action Agencies, working with NMFS, the other FHT agencies, and the Council, may identify gaps in implementation that need to be addressed.

2.4.2.2 Harvest

The Action Agencies funded a project by the states of Washington and Oregon to test selective fishing gear (tangle nets; traps) in commercial fisheries in the lower river per Action 164. The results were promising, and suggested that an expansion of the test project should occur in 2002. They also continued implementation and monitoring of a gill net exchange program designed to reduce the impact of fall season tribal chinook fisheries on listed steelhead. This project was initiated the previous year.

No specific projects were undertaken per Action 165 (effects of selective fisheries on fishery management systems) and 166 (catch sampling and data recovery programs), but the Action Agencies developed plans and strategies designed to identify needed projects and solicit proposals in the upcoming Systemwide provincial review.

The Action Agencies funded a project to determine the existence and estimated impacts of lost fishing nets in Zone 6 per Action 167 (estimate and reduce incidental mortalities). They also developed plans and strategies designed to identify additional needed projects and solicit proposals in the upcoming Systemwide provincial review.

2.4.2.3 Hatchery

The Action Agencies funded initial development of draft Hatchery and Genetic Management Plans (HGMP) for certain Federal hatcheries (Leavenworth, Entiat, and Winthrop) per Action 169. Additionally, NMFS and the Action Agencies began a collaborative process with other co-managers in the initial planning and development of a broader process designed to produce HGMPs for all artificial production programs in the Basin. Progress on Actions 170-173 (implementation of reforms) awaits completion of the HGMP process, as anticipated in the Opinion.

The Action Agencies provided funds for the marking of previously-unmarked spring chinook at the Leavenworth Hatchery per Action 174 (marking and marking planning). Additionally, working with NMFS and other co-managers, they funded the initiation of a process designed to produce a Basin-wide marking strategy. The process involves an oversight group comprised of Basin co-managers to define the tasks, and consultants to develop the technical aspects of the strategy. The process got started too late to be completed by the end of 2001 as prescribed in the Opinion, but is expected to be finished by the end of 2002.

A Safety Net Artificial Propagation Program (SNAPP) was initiated with BPA funds in 2001 per Action 175 (develop safety net artificial production contingency plans). A SNAPP Coordinator was engaged by BPA to work with the state, Tribal and Federal agencies to develop the program. Unexpectedly, several SNAPP project proposals surfaced in response to the Mountain Snake provincial solicitation. The Coordinator worked with the sponsors of those proposals to consolidate the overall effort; this was reflected in a revised SNAPP “umbrella” proposal submitted for funding beginning in 2002. Implementation of the RPA is approximately one year behind schedule, but the impact of this delay is mitigated by the fact that the consolidated process is expected to produce a better plan, and by the fact that a large number of fish returned in 2001, at least temporarily arresting the decline of many at-risk populations.

Draft HGMPs for the Tucannon and Grande Ronde safety net projects have been completed and await further refinement and review per Action 176. The Action Agencies continued to fund several pre-existing safety-net type projects per Action 177 (provide funding for approved safety net projects and ones that may be needed quickly), including those for Salmon River, Grande Ronde, and Tucannon River spring/summer chinook, and Redfish Lake sockeye. Any new safety net projects depend on the results of the SNAPP planning process prescribed in RPA 175.

2.4.2.4 Research, Monitoring, and Evaluation (RM&E)

The Action Agencies made considerable progress in 2001 toward implementing RM&E projects aimed at RPA Actions that address specific issues in the hydropower system. A variety of studies, already initiated, seek to characterize survival rates associated with dam passage, indirect mortality associated with transportation/barging and a variety of other hydropower issues, including effectiveness and critical uncertainties. Another positive step towards completing RM&E Actions was formation of a Federal technical work group to review RM&E requirements. In 2001, this group began developing solicitations for the 2002 System-wide/Mainstem province that would outline needed studies to determine hatchery fish reproductive success, indirect mortality potentially attributable to the hydropower system, and specific projects to determine the efficacy of habitat restoration actions. This group also began developing technical guidelines for off-site mitigation action monitoring, draft status monitoring guidelines, and an outline of an overall RM&E plan to address requirements of the Opinion.

While there was progress in 2001 on several RM&E Actions, additional work is needed to put the comprehensive hierarchical monitoring program in place. There are several challenges that need to be overcome to implement Actions 180-183, in particular, by 2003. The most pressing need is to initiate pilot monitoring programs as soon as possible and to design a comprehensive monitoring program in cooperation with states, Tribes, and other Federal agencies. To accomplish this, specific roles and responsibilities of all the Federal agencies, not just the Action Agencies, must be identified. This is a major policy decision that requires cooperation from NMFS, USFWS, BPA, Corps, Reclamation, U.S. Forest Service (USFS), and others. It will also be a challenge to coordinate further development of the technical work products with other regional entities (e.g., states and Tribes) and translate the technical recommendations into actions that will meet the schedules for RM&E Actions, such as 180-184.

In summary, it is critical that the Action Agencies and NMFS, in cooperation with other regional entities, set a clear course for implementing the RM&E Actions described in the Opinion. There are significant impediments to implementing these Actions within the time frame described in the Opinion, as described above. An RM&E program that is adequate to assess biological performance measures must be in place so that data can be collected in advance of the 2005 mid-point evaluation and biological performance standards can be evaluated. NMFS identifies this as the most critical issue that needs to be addressed in 2002 and will play a leadership role in helping formulate and implement the comprehensive RM&E program.

2.5 Summary of Progress Implementing the Basinwide Salmon Recovery Strategy

The 2000 Basinwide Salmon Recovery Strategy anticipated conservation measures by Federal agencies other than BPA, the Corps, and Reclamation. The offsite mitigation program of the FCRPS Action Agencies occurs within the context of salmon conservation efforts of non-FCRPS Federal agencies.

Non-FCRPS Federal agencies made progress on implementation of tributary habitat improvements during 2001. The Bureau of Land Management (BLM) and USFS implemented both immediate actions to improve public and private lands in several watersheds and conducted planning and coordination for long-term improvements (Letter from E. Zielinsky [BLM] to R. Lohn [NMFS], May 15, 2002; letter from H. Forsgren [USFS] to D.R. Lohn [NMFS], May 15, 2002). As examples of the former, the BLM implemented 21 new salmon restoration projects and maintained 32 previous projects in the Salmon basin. The USFS is implementing restoration projects targeting core populations and completed work including 12 miles of instream habitat improvements on the Wind River. The BLM recently purchased, or is in the process of purchasing, land or completed land exchanges to protect high quality aquatic habitat in the John Day, Grande Ronde, lower Snake, Entiat and other subbasins. The USFS also recently purchased, or is in the process of purchasing, key parcels in the Upper Columbia and elsewhere. Both the BLM and USFS replaced culverts and otherwise improved blocked habitat in several watersheds. Planning and coordination activities of both agencies included development of monitoring programs and data management systems that can be shared among agencies; collaborate on watershed plans (e.g., Grande Ronde model watershed, Blue Mountain demonstration project, etc.); and development of comprehensive plans for land under each agency's management.

Other habitat-related activities supporting the Basinwide Salmon Recovery Strategy were conducted by other Federal agencies that are not land managers, including the EPA (Letter from L. J. Iani [EPA] to D. R. Lohn [NMFS], June 11, 2002), Natural Resources Conservation Service (NRCS; Letter from B. Graham [NRCS] to B. Brown [NMFS], April 30, 2002), the Fish and Wildlife Service (USFWS; Letter from B. Shake [USFWS] to R. Lohn [NMFS], May 13, 2002); and NMFS (Memorandum from B. Brown [NMFS] to D.R. Lohn [NMFS], May 10, 2002). Activities of these agencies in 2001 ranged from conservation easements; land purchases; riparian and wetland restoration activities; cooperative measures to improve water quality and quantity; tributary screening activities and development of standards; and planning and research activities.

NMFS and the USFWS also implemented activities related to hatcheries, harvest, and hydro improvements. These activities included implementing harvest rates in accordance with the Basinwide Salmon Recovery Strategy; helping to develop selective fisheries experiments, defining the process and helping prepare proposals for HGMP development; helping to develop new, and running some of the ongoing, safety net artificial propagation projects; using Federal

Power Act and ESA authority to improve survival past non-Federal hydropower projects; planning and coordination activities; and research and monitoring programs.

One of the key assumptions in the Basinwide Salmon Recovery Strategy and in the Opinion's analysis of effects of the RPA was that average harvest rates in 2000 and beyond will be no higher than the recent average harvest rates described in the Opinion (Appendix A). In 2001, as a participant in the U.S. v Oregon forum, NMFS advocated harvest management reforms to limit the impact of fisheries on ESA-listed fish consistent with the Basinwide Salmon Recovery Strategy. In the spring of 2001, the U.S. v Oregon parties reached agreement on a five-year, abundance-based harvest plan that controls harvest rates on listed salmon during the spring and summer season tribal and non-tribal fisheries. NMFS issued an Opinion determining that this plan would not jeopardize listed species. Relative to the previous plan, the new agreement allows somewhat higher harvest rates in years of high abundance in consideration of harvest rate reductions in years of lower abundance, which should maintain the average rates anticipated in the 2000 FCRPS Opinion, given a similar range of abundance levels. It also incorporates specific provisions linked to the abundance of listed natural fish rather than basing harvest management solely on the aggregate abundance, which is dominated by hatchery fish. It encourages increased testing and deployment of selective fisheries gear and methods to target surplus salmon returning to hatcheries on the Columbia and Snake rivers. Management of the fall season in-river fishery was consistent with the existing harvest rate constraints on listed SR fall chinook and steelhead as established in previous NMFS biological opinions and assumed in the 2000 FCRPS Opinion. Participating on the PFMC, NMFS advocated harvest plans for 2001 that were consistent with applicable provisions of the 1999 Agreement under the Pacific Salmon Treaty, the Sustainable Fisheries Act of 1996, and U.S. v Oregon and U.S. v Washington, as applicable, for commercial and recreational ocean and freshwater salmon fisheries. In all cases, the adopted fishery plans were driven by the abundance and status of affected natural stocks and complied with applicable biological opinions issued by NMFS and therefore the assumptions included in the 2000 FCRPS Opinion.

Another key assumption in the Basinwide Salmon Recovery Strategy and in the Opinion's analysis of effects of the RPA was that the Mid-Columbia Habitat Conservation Plan (HCP) would be implemented within 2-5 years (2002-2005) and the expected survival improvements would be attained by then. This HCP is for three hydropower projects covering more than 100 river-miles on the main stem of the mid-Columbia River: Douglas County Public Utility District's (PUD) Wells Hydroelectric Project and Chelan County PUD's Rocky Reach and Rock Island dams. The Draft Environmental Impact Statement (DEIS) was released in December 2000 and the comment period closed in March 2001. Negotiations between the parties broke off for several months over significant operational issues and others issues identified in the National Environmental Policy Act (NEPA) process. In August 2001, the PUDs, NMFS, and the other parties formerly involved in the negotiation resumed discussion, which is ongoing, of the unresolved issues identified in the NEPA process related to the HCPs. By the end of 2001 the process was on track for completion in 2002. In the interim, the PUDs are implementing actions to increase the likelihood of meeting the HCP requirements. At least one of the projects, Wells

Dam, appeared to be achieving the HCP performance standards during 2001. Additional activities that have occurred in 2002 include signing a new proposed anadromous fish agreement and HCP for the three projects in April 2002 and publishing a Federal Register notice of completion of the application in June 2002.

The Basinwide Salmon Recovery Strategy and the Opinion's analysis of effects of the RPA assumed that the two Grant County PUD projects (Priest Rapids and Wanapum dams) would also meet the HCP performance standards within this time frame, whether those projects were formally included in the HCP or not. In 2001, Grant County PUD implemented a July, 2000, Memorandum of Agreement (MOA) with NMFS that set forth spring and summer spill levels at both dams with the goal of achieving 95% survival (or 80% fish passage efficiency) of downstream migrants at each dam. The MOA was intended to be an interim measure until a long-term agreement could be reached. NMFS' biological opinion for interim operations of Grant County PUD's projects was put on hold to focus on completing the HCPs. NMFS expected that the MOA spill levels, along with other measures (predator control and improvements to adult fishways) would improve passage conditions until a long-term agreement was reached. In early 2001, the Yakama Indian Nation formed a limited liability corporation with Pacificorp to compete for Grant County PUD's Federal license, which expires in 2005. Grant County PUD determined that in order to protect its interests, it halted all negotiations with NMFS and other agencies. However, by the end of 2001, the license competition effort had ceased. The PUD has restarted negotiations for a long-term agreement. In the mean time, NMFS will complete a biological opinion by summer of 2002 for interim operations.

While progress implementing the Basinwide Salmon Recovery Strategy has been made by non-FCRPS Federal agencies, significant impediments to full implementation remain. Problems encountered in 2001 that partially set the context for NMFS' evaluation of the 2002 IP include: (1) the lack of an explicit allocation of responsibilities to the FCRPS Action Agencies and the other Federal agencies that are parties to the Basinwide Salmon Recovery Strategy; (2) few new restoration initiatives of the USFS and BLM in support of the Basinwide Salmon Recovery Strategy; and (3) delay of NMFS-funded RM&E initiatives until at least the FY2003 budget. Federal Agencies need to continue to work together to resolve the allocation issue.

To the extent that activities of non-FCRPS Federal agencies are not proceeding as aggressively as anticipated in the Basinwide Salmon Recovery Strategy, achievement of the population-level performance standards set out in the Opinion could be affected. Failure to achieve the population performance standards could trigger a number of options for the FCRPS, and potentially for others, including reconsultation.

2.6 Review of New Plans or Input From State and Tribal Co-managers and Other Planning Entities

The Opinion (p. 9-25) states that the 1- and 5-year plans and their priorities should consider several factors, including state and Tribal plans and input from state and Tribal co-managers. In addition to this important information, the results of state and Tribal restoration programs are important to consider when evaluating the 2002 IP. Like the activities of non-FCRPS Federal agencies, the activities of the states and Tribes provide context for the 2002 IP because assumptions about continued progress by these entities was implicitly and explicitly included in the Basinwide Salmon Recovery Strategy. A brief review of relevant information follows. As a result of the broad geographic scope of the State documents reporting restoration efforts, the following review is not necessarily restricted to the Columbia River Basin. However, program descriptions and implementation reports qualitatively characterize the types of projects and funding commitments for habitat restoration in FY2001. Generally, these indicate that non-Federal activities affecting the status and habitat of the relevant listed stocks are consistent with, or exceed, NMFS' expectations, as described in the Cumulative Effects section of the Opinion.

2.6.1 Oregon

The Oregon Plan for Salmon and Watersheds (Oregon Plan) is the primary state framework for implementing and reporting state activities which benefit the listed ESUs within the Oregon portion of the Columbia River Basin. The Oregon Plan includes commitments by state agencies to conduct management programs in a manner that contributes to watershed health and salmon recovery. Although summaries of annual progress lag current actions, the summaries provide an indication of the scope and type of programs and actions being implemented (Oregon Plan 2002). Highlights from the FY01 Oregon plan progress include continued progress on developing statewide Total Maximum Daily Loads (TMDLs) for 50 subbasins by 2003, increased salmon access resulting from Oregon Department of Transportation's culvert work, continued Oregon Department of Agriculture efforts to address Agricultural Water Quality Management Plans for 41 basins by 2003, improved monitoring programs to assess management implementation and effectiveness by the ODFW, increases in allocations of water uses through water right transfers and allocations of conserved water by the Oregon Water Resources Department, and continued funding of local and private habitat initiatives (OWEB 2002).

Continued implementation of the foregoing, and similar, programs may improve habitat features considered important for the listed species. In 2001, courts overturned a voter approved broad constitutional amendment requiring payment to private property owners for diminution in property values resulting from regulations. If that court decision stands it will reduce uncertainty surrounding all Oregon regulatory initiatives. The Oregon Plan also identifies private and public cooperative programs for improving the environment for listed species. The success and effects of such programs will depend on the continued interest and cooperation of the parties. One such cooperative program, the Willamette Restoration Initiative (WRI), has been charged with developing the Willamette basin section of the Oregon Plan (WRI 2001). In 2001, the WRI

received continued funding through this biennium. The future of the WRI beyond that point will be subject to discussion among the WRI board, the Oregon governor's office, and the Oregon legislature in the 2003 legislative session.

2.6.2 Washington

The state of Washington has various strategies and programs designed to improve the habitat of listed species and assist in recovery planning. Washington's 1998 Salmon Recovery Planning Act provided the framework for developing watershed restoration projects and established a funding mechanism for local habitat restoration projects. It also created the Governor's Salmon Recovery Office to coordinate and assist in the development of salmon recovery plans. Washington's "Statewide Strategy to Recover Salmon" is the umbrella strategy under which programs operate to improve watersheds.

The 2001-2003 biennial budget for the State of Washington includes \$270 million in salmon-related expenditures (Nichols 2002). This represents a combination of new money and redirection of existing funds. The Federal government has so far contributed about \$61 million during the current biennium and the Federal contribution is expected to total \$90.7 million throughout the two-year period.

More than half of the state and Federal dollars is passed on to local communities through grants. The Salmon Recovery Funding Board has financed 517 local salmon recovery projects to date, including fish barrier removal, habitat restoration, and purchase of important salmon habitat (SRFB 2000; Nichols 2002). Additional salmon-related funds go toward local and regional salmon recovery efforts through state technical assistance (WGO 2002). WDFW provides funds to local salmon groups for infrastructure support - primarily staffing (Nichols 2002). Additionally, the Department of Ecology has provided watershed planning grants under the terms of the Watershed Planning Act passed by the Legislature in 1998.

The budget includes state and Federal funds to implement the Forest and Fish rules, which guides forest practices within Washington. This recent upgrade of state forest practices was negotiated by large and small forest landowners; and Federal, state, tribal, and county governments. The substance of the multi-party negotiations was incorporated into the Washington Forest Practice Rules, revised July 2001.

The Washington budget also includes state, Federal, and local funding to address inadequate fish passage and improper screens on irrigation diversions and funding for development of a comprehensive strategy for assessing pesticide impact on listed ESUs in Washington and an expanded monitoring program (WGO 2002).

New policies and legislation in Washington include adoption of initial reforms during the 2001 legislative session, aimed at making Washington's water laws more flexible. Also created was a Joint Executive-Legislative Water Policy Group to develop a proposal for the current 2002

legislature. Water legislation has been introduced addressing instream flows for fish policy. To facilitate implementation and tracking of Washington's conservation and recovery efforts, the 2001 Legislature mandated development, by the end of 2002, of a comprehensive monitoring strategy and action plan for watershed health with a focus on salmon recovery (WGO 2002). Realized benefits to listed ESUs within the FCRPS action area can not be determined until programs stemming from these policies and legislation are implemented. However, it is likely that these actions will contribute to recovery planning efforts.

Washington initiated a program to lease or buy water rights for instream flow purposes in 2000 and is in the preliminary stages of public information and identification of potential acquisitions. These water programs, if carried out over the long term, should improve water quantity and quality in the state. In 2001, Washington secured water to offset continued irrigation along the mainstem Columbia River during the drought and purchased/leased water in salmon-critical basins. New consumptive water rights in over-appropriated basins are required to provide mitigation to offset the effect on the river. The state is mostly focusing on water right changes and has denied many new water right applications. Governor Locke's Columbia Regional Initiative seeks to develop a water management program for the mainstem.

In 1991, Washington temporarily halted issuance of new water rights from the Columbia River mainstem due to ESA concerns. This temporary closure was lifted in 1997 and was replaced by a state rule requiring formal consultation with fisheries agencies and other governments on individual applications for new water rights. Based on consultations to date, the state has proposed to issue new consumptive water rights that require water users to cease use when the river does not meet the Opinion's target flows, or to secure water from another existing source to offset the effect of their use on the river. However, local irrigators opposed to the proposed flow conditions have blocked issuance of these new rights by securing a preliminary injunction from a county superior court. The litigation in this case is ongoing, with a trial scheduled for November 2002.

As with Oregon's state initiatives, Washington's programs are likely to benefit listed species if they are implemented and sustained.

2.6.3 Idaho

The state of Idaho has created an Office of Species Conservation to work on subbasin planning and to coordinate the efforts of all state offices addressing natural resource issues. The Office of Species Conservation has worked within the Council's subbasin planning process. Subbasin summaries have been developed for the Clearwater, Salmon and the Snake Hells Canyon subbasins. A draft subbasin assessment has been drafted on the Clearwater and a local group has begun developing the subbasin plan. Idaho is still organizing the effort to begin work on the Salmon subbasin later this year. Idaho has attempted to integrate its planning processes into the Council's subbasin planning process. It has attempted to coordinate, although not integrate, state and Federal planning processes through the Idaho Natural Resources Committee (Allan 2002).

The Idaho Department of Environmental Quality continues to establish court-required TMDLs in the Snake River basin, a program regarded as having positive water quality effects. TMDLs were completed in 2001 in the following subbasins: South Fork Clearwater River, Mid-Salmon Panther (completed and approved), Mid-Salmon Chamberlain (approval pending), and South Fork Salmon (approval pending).

Idaho is continuing its diversion screening efforts in cooperation with BPA and Reclamation. The Idaho Screen Shop in Salmon, Idaho, is very active in screening diversions throughout the Salmon River basin. The screen shop is run by Idaho Department of Fish and Game, with funding from BPA and NMFS under the Mitchell Act. Reclamation continues to provide technical assistance in design.

Demands for Idaho's groundwater resources have caused groundwater levels to drop and reduced flow in springs for which there are senior water rights. The Idaho Department of Water Resources is continuing studies and has promulgated rules that address water right conflicts and demands on a limited resource. The studies have identified aquifer recharge as a mitigation measure with the potential to affect the quantity of water in certain streams, particularly those essential to listed species. Idaho continues to address the potential to improve flow augmentation for fish passage through state programs. Idaho water law has been changed to allow water rentals and the retention of instream flows for fish in the Lemhi. Idaho and local irrigators have negotiated short term agreements to ensure minimum instream flows through 2003 and have committed to developing a long-term habitat conservation plan with NMFS for the Lemhi. However, Idaho has not yet improved flow augmentation to any significant extent in subbasins other than the Lemhi. Efforts to recover listed salmon are likely to be impeded until Idaho begins to explore opportunities to address the limitations of state water law to increase flows in other subbasins.

In 2001, Idaho's legislature extended for one year Reclamation's authority to rent water from Idaho's water rental pools for delivery to Reclamation's flow augmentation program. In recent years, Reclamation had rented up to about 250,000 acre-feet from these rental pools of the total 427,000 acre-feet delivered for salmon flow augmentation. While this legislation allowed such rentals to continue during 2001, 2001 was a severe drought and very little water was available for rental.

As with Oregon's and Washington's state initiatives, Idaho's programs are likely to benefit listed species if they are implemented and sustained. The magnitude of benefit can not be estimated at this time.

2.6.4 Tribal Restoration Activities

The Confederated Tribes and Bands of the Yakima Nation, the Confederated Tribes of the Warm Springs Reservation of Oregon, the Confederated Tribes of the Umatilla Indian Reservation, and the Nez Perce Tribe, as coordinated by and through the Columbia River Inter-Tribal Fish

Commission (CRITFC), are participants in the coastwide Pacific Coastal Salmon Recovery Program (PCSRP), first funded by Congress under Section 623(d)(3) of Public Law 106-113.

Each of these four Tribes reserved, under treaties with the United States of America, sovereign rights and authorities to themselves, including the use of, and management authority and responsibilities for, the fisheries originating in or passing through their original lands and territories and traditional use areas. The four Tribes formed CRITFC by resolution in 1977 to provide coordination and technical assistance to ensure that the resolution of outstanding treaty fishing rights issues guaranteed the continuation and restoration of tribal fisheries. The Tribes' participation in the PCSRP is directed to provide fisheries benefits for their members now and into the future, as well for benefit of the citizens of the United States of America (CRITFC 2002a).

In early 2000, CRITFC's staff solicited proposals from Tribal staff for projects to be funded under the PCSRP. Submitted proposals were directed to be consistent with the Wy-Kan-Ush-Mi Wa-Kish-Wit (Tribal Restoration Plan for the Columbia River Basin- TRP) or Spirit of the Salmon (CRITFC 2002b) and the following programmatic areas identified by the PCSRP:

- salmon-related habitat restoration projects,
- salmon watershed restoration and coordination projects,
- salmon stock enhancement projects, and
- projects related to implementation of the 1999 Pacific Salmon Treaty Agreement and related agreements.

In March 2000, CRITFC allocated \$250,000 of PCSRP funds to projects to be undertaken by CRITFC staff in support of Tribal projects, including aid in annual project evaluation and monitoring, review of the NMFS's Evolutionary Significant Unit (ESU) and Artificial Propagation Policy, and aid in development of Hatchery Genetic Management Plans (HGMPs) where agreed to by the Tribes. The remainder of the funds was allocated equally among the four Tribes. Project proposals developed by Tribal staff were consistent with the goals and objectives outlined in the TRP, with a focus on addressing factors limiting stock production and productivity. Critical technical recommendations guiding project development and review are outlined in the Spirit of the Salmon (www.critfc.org).

CRITFC applied for PCSRP funding in August, 2001. Funding in the amount of \$1.4 million was awarded to CRITFC for distribution to the four treaty Tribes in October 2001. An additional \$439,000 was made available to CRITFC soon afterward. The Commission allocated \$257,700 of PCSRP funds for projects to be undertaken by Commission staff in support of Tribal projects, including coordination of the PCSRP funding, limiting factors analysis, and continued research on artificial production genetics and fish life history. The Commission distributed the remainder of the funds equally to the four tribes. Project proposals were developed and reviewed based on the criteria identified in FY2000 (CRITFC 2002a).

As a means to effectively implement projects, funding received for FY2000 and 2001 was extended through December 2003 (CRITFC 2002a). Because of the recent implementation of this program, PCSRP benefits can not be assessed at this time. Staff at each Tribe prepare an annual report on the projects that are implemented under this program, identifying progress towards program objectives. Evaluation of program benefits to salmonids and their habitats is expected to be facilitated by this developing tracking and reporting system.

2.6.5 State and Tribal Hatchery Initiatives

State and tribal initiatives intended to achieve the biological objectives of the ESA, which also complement the Opinion, include measures designed to improve the operation of hatchery programs and harvest management. Hatchery programs in the Columbia Basin are operated in conformity with draft and finalized biological opinions issued by NMFS pursuant to section 7 of the ESA and or permits issued pursuant to section 10. These opinions and permits have resulted in numerous modifications to these programs designed to reduce the deleterious effects of hatcheries and contribute to conservation of listed species. Similarly, a number of changes in harvest management within the Basin have been mandated by ESA to meet biological requirements of listed species.

A more recent initiative involves the development and implementation of Joint Resource Management Plans (RMPs), HGMPs, and Fisheries Management and Evaluation Plans (FMEPs) under section 4(d) of the ESA. Once approved and implemented, these plans will contribute to the survival and recovery of threatened species throughout the Northwest, including those in the Columbia Basin. Since the issuance of the Opinion, several plans applicable to the Columbia Basin have been developed by the states and/or Tribes and submitted to NMFS for approval.

The primary goal of HGMPs is to devise biologically-based artificial propagation management strategies that ensure the conservation and recovery of listed species. A number of draft HGMPs have been completed, but as yet none in the Columbia Basin has been approved under section 4(d).

FMEPs are designed to conserve listed ESUs while allowing sport angling and other state management programs to continue. They include measures for the selective harvest of hatchery fish and non-native warm water fish so that competition with wild fish is reduced, and gear, handling, and other restrictions to ensure that threatened and endangered fish are not harmed.

To date, two FMEPs submitted by ODFW have been approved by NMFS, one covering sport fisheries in the upper Willamette River, and another covering spring chinook in the Willamette River and Lower Columbia River mainstem. Several others have been completed by ODFW and are under consideration. They include FMEPs for Lower Columbia River chum and chinook; for sport fisheries on steelhead, trout, warmwater fish, and sturgeon in the Snake, Grande Ronde, and Imnaha Rivers; for summer steelhead, trout, and salmon fisheries in Fifteenmile, Mill, and Chenowith Creeks (Columbia Plateau province); Hood River steelhead, trout, and salmon

fisheries; steelhead, trout, and warmwater fisheries in the Umatilla and John Day Rivers; steelhead, trout, sturgeon, and warmwater fisheries in the Lower Columbia mainstem tributaries, the Lower Willamette River tributaries, the Clackamas River, and the Sandy River; and summer steelhead and trout fisheries in the Walla Walla River

(<http://www.nwr.noaa.gov/1fmep/fmepsbmt.htm>). As yet, NMFS has not issued final Federal Register notices approving these plans.

2.6.6 Northwest Power Planning Council

Council activities to coordinate and promote salmon recovery in the Columbia River basin are described in their 2001 Annual Report (Council 2001). The Council prepared analyses and recommendations concerning 2001 hydrosystem operations. This included a recommendation that BPA establish a mitigation fund from a portion of the revenues resulting from decreased spill during the power emergency. The Council also recommended that BPA seek and obtain from willing sellers available instream water rights to provide needed flows.

In 2001, the Council prepared recommendations for a mainstem plan for the Columbia and Snake rivers, to be adopted as an amendment to the Council's 2000 Columbia River Basin Fish and Wildlife Program. Following public comment, the Council began preparing draft amendments to the fish and wildlife program based on the recommendations, on documents and information supporting the recommendations, and on the comments, views and information obtained through public comment and consultations with various agencies, Tribes and others in the region. The Council expects to adopt final program amendments in August 2002.

The Council also proceeded with initial steps in the subbasin planning process during 2001. Subbasin summaries, which are precursors to subbasin plans, were developed through the Council's subbasin review process. Council staff also developed guidance material to assist subbasin planners, provided technical assistance through Ecosystem Diagnosis and Treatment modeling, and developed a schedule for completing subbasin planning.

The Council also reviewed and recommended funding for projects to mitigate the effects of the FCRPS on fish and wildlife resources. 2001 was the second year of the Council's transition from an annual review of all projects to a rolling, three-year process that includes 3-4 of the 11 ecological provinces each year. The Council provided scientific review of proposals through its Independent Scientific Review Panel and considered comments and review from regional fish and wildlife managers and other entities in making its funding recommendations to BPA. These projects were a significant component of the Action Agency accomplishments described in Section 2.4.

2.7 ESU-By-ESU Progress in 2001

Neither the 2001 Progress Report or the preceding summary describes activities and progress on an ESU-by-ESU basis. This is primarily the result of difficulties getting a comprehensive tracking program in place during the first year of implementation. Although it is not possible to report progress by ESU at this time, it is important to keep in mind that success at the mid-point evaluations, especially in 2005 and 2008, is dependent upon achievement of performance standards for each of the eight ESUs addressed by the RPA. The Action Agencies are developing a comprehensive tracking program that would allow reporting progress by RPA Action and by ESU in the future. For 2001, we note that most new projects were initiated in the Gorge and Plateau provinces and primarily were targeted to mid-Columbia steelhead. Some new projects were targeted to other ESUs. In keeping with the Council's provincial review process, new projects are expected to be initiated in remaining provinces during 2002 to benefit other ESUs addressed by the RPA.

2.8 Summary of Progress in 2001 and Implications For 2002 Annual Plan

Although high adult returns in 2001 indicate the abundance of several ESUs may be improving in the short term and 2001 total system survival met NMFS' expectations for some ESUs, there is uncertainty about the future abundance of species, especially in light of poor 2001 in-river survival of some ESUs. Projections for 2002 suggest that we will again have above-average returns of spring chinook and steelhead, but that we should not expect abundance to reach the exceptional levels observed in 2001. The main implication of this general review of the species' status is that we must continue to be vigilant in proceeding with the scope and schedule of implementation defined in the Opinion, unless the IP proposes modifications that will result in the same or greater benefits.

As described above, progress was made in initiating the implementation of hydrosystem improvements and off-site mitigation measures in 2001. These are described in detail in the Action Agencies' 2001 Progress Report and summarized above. Additionally, other Federal agencies began implementing complementary activities anticipated in the Basinwide Salmon Recovery Strategy. There were, however, some problems encountered that bear on NMFS' review of the 2002 IP. The drought, power emergency, and certain reliability issues that threatened BPA's financial stability caused major modifications in the implementation of hydro operational measures in 2001, particularly curtailment of the spill program. The WMP, or other appropriate plan, and other parts of the IP should anticipate means of avoiding similar circumstances in future dry years and years of economic volatility. As described in Section 2.5.2, some of the more significant challenges in 2001 involved developing the infrastructure and funding mechanisms for implementation of habitat measures and RM&E measures. The Opinion requires significant planning efforts for each of these subject areas and those planning efforts appear to be off to a slow start. The IP, in the context of the 5-year plan and activities of other Federal agencies in implementing the Basinwide Salmon Recovery Strategy, should address how those measures that appeared to lag in 2001 will be moved forward in future years. To the extent

that insurmountable impediments have cropped up relative to some Actions, and to the extent that those impediments detract from the ability to meet performance standards at the mid-point evaluations, the Implementation Plan should identify alternative measures that will accomplish the same goals.

3. Review of 2002 Annual Plan Measures

NMFS reviewed the 2002 IP's proposed activities with respect to the requirements of the Opinion's RPA. Results are displayed in Appendix Table A. Each RPA Action was determined to be in one of the five categories described in Section 1.2. To the extent that NMFS found potential problems with implementation of some of the RPA Actions, recommendations to the Action Agencies were included in Appendix Table A, as prescribed on page 9-34 of the Opinion.

NMFS finds that the Action Agencies' 2002 IP is likely to meet the schedule and scope anticipated by the 2003 mid-point evaluation for the great majority of RPA Actions (Figure 6).

3.1 Actions That Require Definition, Implementation, or Completion by 2003

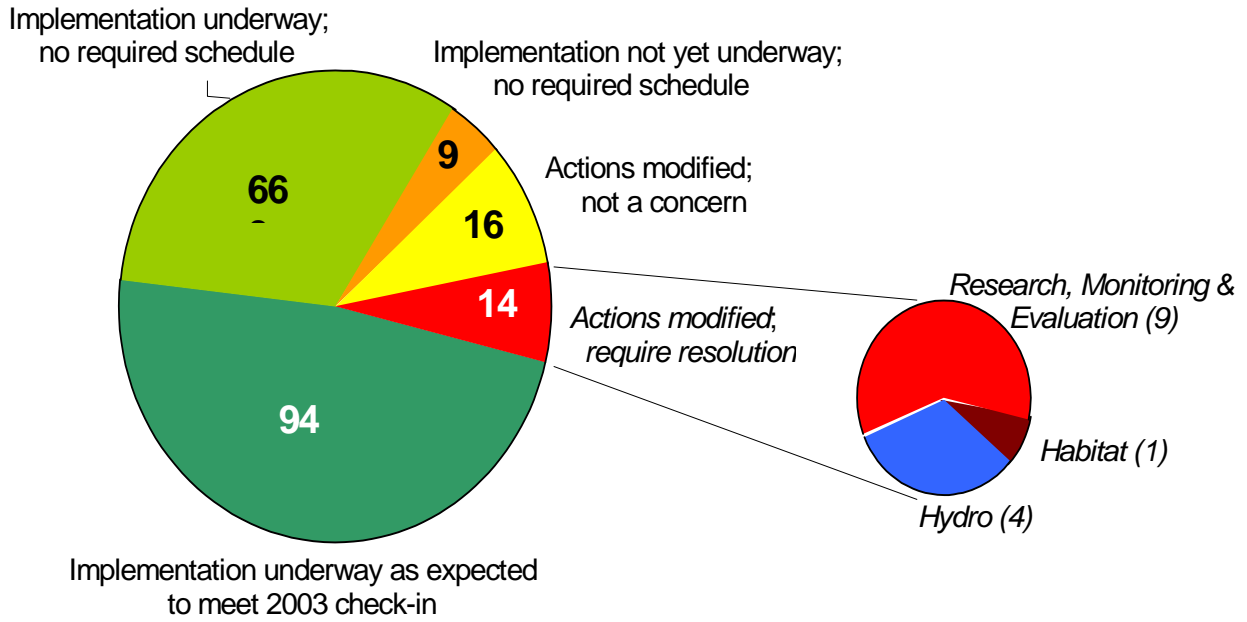
Of the 124 Actions that require definition, implementation, or completion by or before 2003, NMFS finds that 94 are being implemented as expected (**Category 1** of Section 1.2). The remaining 30 Actions with expectations for 2003 are being implemented according to a modified schedule or scope.

For 16 of these Actions, the modification is not a concern for meeting the Opinion's objectives for the 2003, 2005, and 2008 mid-point evaluations (**Category 2** of Section 1.2). This is because either: (1) the modification represents a minor change; or (2) an intermediate scheduling benchmark has been, or is likely to be, delayed but the IP contains measures that will meet the full expectation by 2003.

The remaining 14 Actions have a modified schedule or scope that will require adjustments and resolution in order to meet the 2003 and future mid-point evaluations (**Category 3** of Section 1.2). Most of the Actions requiring resolution (nine) involve research, monitoring, and evaluation (RM&E) Actions that are necessary to evaluate biological performance standards in 2005 and 2008. Several of these have been delayed while NMFS, the Action Agencies, and other Federal agencies work together to identify their respective responsibilities; while plans are developed and coordinated with states, Tribes, and others; and to coincide timing with the 2002 Mainstem/System-wide solicitation and review process. Four hydrosystem Actions involve problems, including: (1) delay in installing dissolved gas control structures ("flip-lips") at Chief Joseph Dam; (2) delay implementing new flood control operations at Libby Dam to make more water available for juvenile migrations; (3) delay developing new Libby Dam forecasting methods and flood control studies to attempt to make more water available for juvenile migrations; and (4) problems managing Federal storage projects to support salmon flow objectives during the spring migration. The first of these resulted from a lack of appropriated funds. One habitat Action represents a delay in achieving sufficient long-term or permanent riparian easements. NMFS and the Action Agencies are developing project criteria and will continue to work on this issue.

Figure 6. Summary of NMFS' findings for RPA Actions.

Figure 1: Fish Recovery Findings
Based on Action Agencies' 2001 Progress and 2002 Plan



3.2 Actions Without A Defined Schedule

For 75 Actions, the Opinion provides no schedule, other than completion by 2010. Of these 75 actions, 66 are currently underway or proposed for initiation in 2002 (**Category 4** of Section 1.2). The remaining 9 projects have not been scheduled to begin in 2002 by the Action Agencies. These projects can be initiated later and the Action Agencies will include a proposed schedule in the next 5-year IP. NMFS considers 88% (66 of 75) of the unscheduled Actions underway to be a significant percentage per the review criteria described in Section 1.2.

3.3 Tribal Coordination on Hydro and Offsite Mitigation Actions

The Opinion states that the Action Agencies, in keeping with their Federal trust responsibilities, will coordinate with and seek input of appropriate Tribes during their development of the 1- and 5-year IPs.

The Action Agencies coordinated with Columbia basin Tribes in several ways. In February 2001, an outline of the 2002-2006 IP was discussed in detail with the NMFS Regional Forum Implementation Team (IT), which encourages Tribal and other regional participation. To share the initial approach with key regional players and potential partners, the outline was also mailed to Tribes and states and posted on the www.salmonrecovery.gov web site. Informal discussions with Tribes and others continued throughout the spring of 2001. In May, the Action Agencies shared a revised structure and approach, as well as an initial draft of the performance standards chapter, with the IT and others.

The draft 5-Year Plan, *Endangered Species Act Implementation Plan for the Federal Columbia River Power System (2002-2006)*, was published in July 2001 and circulated to Tribes and states for review and comment. Advance copies were e-mailed to Tribes and states on July 20, followed by a hard copy mailing on July 27 and a public posting on the salmon recovery web site on July 31. A formal Tribal and state comment period was extended from September 7 to September 28. Regional Federal executives then met with their Tribal and state counterparts on August 1 to discuss the 5-Year IP. From that meeting a state, Tribal, and Federal “steering committee” was formed. The steering committee was tasked to identify policy-level issues and prepare agendas for future regional executive meetings, which occurred on October 19 and December 6. The regional executives expect to continue their policy-level discussions in this forum.

The 1-Year Plan, *Endangered Species Act 2002 Implementation Plan for the Federal Columbia River Power System*, was released in November 2001. Advance electronic copies of the document were e-mailed to Tribes and states on Nov. 6; hard copies were mailed the next week. Final copies were posted on the salmon recovery web site for public viewing on Nov. 15.

In addition to discussing the draft 1- and 5-Year IPs with IT, and the 2002 WMP with the TMT, the Action Agencies coordinated with the NMFS Regional Forum teams throughout the power emergencies in the winter, spring, and summer of 2001, including:

- sharing draft principles and analyses directly with IT;
- executive meetings with Tribes and states;
- formal comment periods seeking comments and input from states, Tribes and other regional stakeholders.

Extensive coordination with Tribal, state, and local entities occurred through the Council's provincial reviews and solicitation processes. These processes were the basis for developing off-site mitigation measures for BPA implementation in the 2002 IP. LCREP, which includes Tribal representation on its Board of Directors, provided coordination of estuary activities.

3.4 Recovery Planning

The Opinion states that: "As portions of recovery plans become final, NMFS and the other Action Agencies will incorporate applicable elements into the progress reviews and 1- and 5-year plans." [p. 9-32] No Columbia basin recovery planning products became final prior to development of the 2002 IP. See section 2.3 for additional information regarding the status of recovery planning.

4. Conclusions

NMFS finds that the 2002 Implementation Plan, when viewed in the context of the 2001 Progress Report, the draft 2002-2006 IP, reports of other Federal Agencies regarding implementation of the Basinwide Salmon Recovery Strategy, and the current status of the relevant listed ESUs and their habitat, is generally consistent with the Opinion and adequate to implement the RPA during 2002.

Although implementation is generally proceeding as expected, NMFS has identified several areas in which further resolution and adjustments are necessary to ensure meeting criteria at the 2003 mid-point evaluation. NMFS will continue to work with the Action Agencies during 2002 to attempt to resolve the issues that are impeding full implementation of the Opinion and to support continued implementation of the vast majority of measures, which appear to be successfully implementing the Opinion.

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Appendix Table A

NMFS' Findings For Each Action In the Reasonable and Prudent Alternative

Key to "Findings" Column:

Implementation As Expected =	Category 1 of Section 1.2. RPA Actions with specific expectations by 2003 that NMFS finds have been completed, are being implemented as expected, or have been changed to improve implementation.
Modification Not A Concern =	Category 2 of Section 1.2. RPA Actions with specific expectations by 2003 that have modified schedule or scope, which are not a concern for meeting the Opinion's objectives for the 2003, 2005, and 2008 mid-point evaluations.
Modification Requires Resolution =	Category 3 of Section 1.2. RPA Actions with specific expectations by 2003 that have modified schedule or scope, which require resolution to meet the Opinion's objectives for the 2003, 2005, and 2008 mid-point evaluations. Category 3 takes into account delays in survival improvements anticipated in the Opinion, delays in monitoring and evaluation needs related to performance standards, and other delays or changes in scope that could affect substantive implementation.
No Schedule, Implementation Underway =	Category 4 of Section 1.2. RPA Actions without a defined schedule in the Opinion, which are already underway or proposed for implementation in 2002.
No Schedule, Implementation Not Underway =	Category 5 of Section 1.2. RPA Actions without a defined schedule in the Opinion, which are not yet underway or proposed for implementation in 2002.

*See table of **Acronyms and Abbreviations** in narrative report for explanation of acronyms and abbreviations included in this Appendix.*

