Appendix

Endangered Species Act
2002 Progress Report for the
Federal Columbia River Power System

US Army Corps of Engineers ®
Northwestern Division

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

BONNEVILLE POWER ADMINISTRATION

May 2003

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

RPA 001 Develop 1- and 5-year plans to implement specific measures

No Projects for this RPA. Please see RPA Summary Table.

RPA 002 Implementation of the hydro portion of the 1- and 5-year implementation plans

No Projects for this RPA. Please see RPA Summary Table.

RPA 003 Develop and implement a 1- and 5-year water management plan

BPA **Project: 251 1991-051-00 Monitoring and Evaluation Statistical Support**

Deliverable

1.0 Provide seasonal monitoring support. 1.1 Provide real-time smolt run-timing predictions for ESA demes NMFS ESUs and runs-at-large for the Snake and Columbia Rivers. 1.2 Provide annual review of run-timing predictions. 1.3 Provide post-season outmigration summary that provides retrospective analysis of the success of the current year's outmigration and a comparison with historical years. 2.0 Perform statistical analyses of historical tagging data to extract extra-value information on salmonid population dynamics and their interactions with the environment. 2.1 Perform analysis of smolt-to-adult ratios CWT data from 1970s and PIT-tag to present and make available on Internet. 2.2 Develop and provide interactive, internet-based sample size software to facilitate the design of tag-release studies to estimate ocean and upriver adult survival. 3.0 Statistical support to region. 3.1 Provide statistical consultaion for review of research proposals, technical reports, and statistical guidance on the design and analysis of tagging studies to BPA and the fisheries community. 3.2 Continue statistical evaluation of Biological Opinion performance standards to improve decision analysis for assessing RPA compliance.

Accomplishment

Accomplishments to date for 2002 include: 1.0 Providing real-time run-timing predictions during the 2002 smolt outmigration season. 2.1 Ongoing-Compiling estimates and associated standard errors on smolt-to-adult ratios (SARs) using CWT recoveries for 90 Columbia Basin hatcheries from the 1970s to the present. Compiling inriver survival and travel time information using PIT-tag detections for 30 Columbia Basin hatcheries from the 1990s to the present. Results of the CWT and PIT-tag analyses will be available in DART for examination and analysis with ambient river data, power operations, and ocean conditions.

CORPS **Project: 2073 Water Management Plan**

Deliverable

1. Prepare Water Management Plan. 2. Coordinate Water Management Plan with TMT.

Accomplishment

1. Water Management Plan was prepared. 2.Water Management Plan was coordinated with TMT.

RPA 004 Develop and implement a 1- and 5-year capital investment plan

No Projects for this RPA. Please see RPA Summary Table.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

RPA 005 Annually develop a 1- and 5-year water quality plan

CORPS **Project: 6031 ESA Coordination--Chief Joseph Dam**

Deliverable Conduct coordination of RPA and RPM actions.

Accomplishment Coordination completed annually.

CORPS **Project: 2080 Water Quality Plan**

Deliverable Develop scope of work of WQP

Accomplishment Organization of interagency team. Development of goals and principles. Determination of plan components.

RPA 006 Develop and implement 1- and 5-year operations and maintenance (O&M) plans

CORPS **Project: 2036 CENWW Non-Routine Maintenance of Little Goose Lock and Dam Fish Passage Facilities**

Deliverable Rehab wicket gate assemblies on one fish pump turbine.

Accomplishment Rehabbed wicket gate assemblies on one fish pump turbine.

RPA 007 Develop 1- and 5-year plans for habitat measures

No Projects for this RPA. Please see RPA Summary Table.

RPA 008 Develop 1- and 5-year plans for hatchery and harvest measures

No Projects for this RPA. Please see RPA Summary Table.

RPA 009 Develop 1- and 5- year plans for research, monitoring, and evaluation

No Projects for this RPA. Please see RPA Summary Table.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

RPA 010 Incorporate the results of recovery planning into annual Fish and Wildlife Program implementation

No Projects for this RPA. Please see RPA Summary Table.

RPA 011 Develop procedures for carrying out actions that could not be anticipated in the planning process

No Projects for this RPA. Please see RPA Summary Table.

RPA 012 Coordinate with NMFS and USFWS in the review of the 1- and 5-year plans

No Projects for this RPA. Please see RPA Summary Table.

RPA 013 Issue annual reports to NMFS and USFWS on progress toward achieving the performance standards

No Projects for this RPA. Please see RPA Summary Table.

RPA 014 Operate FCRPS to meet BiOp Flow Objectives

CORPS **Project: 2004 Albeni Falls Operation**

Deliverable 1. Fill Albeni Falls to within 0.5 foot of the flood control rule on April 10. 2. Refill Albeni Falls by June 30

CORPS **Project: 2015 Dworshak Operations**

Deliverable 1. Fill Dworshak to within 0.5 foot of the flood control rule on April 10. 2. Refill Dworshak by June 30. 3. Release water from Dworshak to attempt to maintain water temperatures at the Lower Granite forebay at or below 68 F. 4. Draft Limit at Dworshak observed. 5. Limit Dworshak outflow to minimum flow after summer operations.

Accomplishment The April 10 flood control elevation was 1508.1 On April 10 the forebay elevation at Dworshak was 1507 ft. On June 30 the forebay elevation was 1599.3 ft. The project forebay elevation was 1599.8 ft June 22. (Full 1600).
Dworshak outflow was at minimum except at the following times: 2/1/02 – 3/15/02 for flood control 3/25/02 – 5/22/02 for flood control 5/23/02 –5/28/02 flood control 6/12/02 – 7/7/02 flood control 7/7/02 – 9/12/02 Releases for flow augmentation
On August 31 Dworshak was at elevation 1534. Project was not drafted to 1520 in order to provide augmentation water in the early part of September. Dworshak reached 1520 September 11.
Release of water at a specified temperature began 7/3/02 ended 9/9/02.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

CORPS **Project: 2021 Flow Objectives at Lower Granite**

Deliverable 1. Attempt to meet the spring flow objective at Lower Granite. 2. Attempt to meet the summer flow objective at Lower Granite

Accomplishment Based on an April final April-July runoff forecast of 19.2 maf the spring flow objective was 97 kcfs. From 4/3/02 – 6/20/02 the average outflow was 83.4 kcfs. On a daily basis the flow objective was met 25.32% of the time. On a weekly (Mon – Sun) the objective was met 3 out of 10 weeks. The 80% weekend flow was meet 17 out of 20 weekend days.
Based on a June final April – July runoff forecast of 18.1 maf the summer flow objective was 50.9 kcfs. From 6/21/02 –8/31/02 the average outflow was 41 kcfs. On a daily basis the flow objective was met 19.44% of the time. On a weekly (Mon – Sun) the objective was met 2 out of 10 weeks. The 80% weekend flow was meet 16 out of 18 weekend days.

CORPS **Project: 2020 Flow Objectives at McNary**

Deliverable 1. Attempt to meet the spring flow objective at McNary. 2. Attempt to meet the summer flow objective at McNary.

Accomplishment Based on an April final April - August forecast of 87.8 maf the spring flow objective was 246 kcfs. From 4/10/02 – 6/30/02 the average outflow was 269.3 kcfs. On a daily basis the flow objective was met 61% of the time. On a weekly (Mon – Sun) the objective was met 7 out of 11 weeks. The 80% weekend flow was meet 20 out of 22 weekend days.
From 7/1/02 – 8/31/02 the average outflow was 189.1 kcfs. On a daily basis the flow objective was met 37.1 % of the time. On a weekly (Mon – Sun) the objective was met 3 out of 8 weeks. The 80% weekend flow was meet 14 out of 16 weekend days.

CORPS **Project: 2032 Libby Operations Andromous**

Deliverable 1. Fill Libby to within 0.5 foot of the flood control rule by April 10. 2. Refill Libby by June 30. 3. Observed Draft Limit at Libby

Summer draft limit of 2439 feet

Reduction in a second peak operation can be achieved by implementation of a Canadian storage/Libby exchange of water. May not be achieved all years.

Accomplishment On August 31 Libby was at 2441.9 ft. Due to swap end of August target elevation was 2442.3 ft.

A Libby / Duncan swap was agreed to. 70 kcfd was agreed to be swapped. However the treaty storage regulation (TSR) which showed no water being swapped.

On April 10th Libby forebay elevation was 2370.8 ft. We were operating to meet the April 10th Flood control elevation.
On June 30 Libby forebay elevation was 2456.8 ft. At midnight July 15 Libby forebay elevation was 2458.6 ft. Full pool at Libby is 2459 ft.

CORPS **Project: 2065 Priest Rapids Flow Objective**

Deliverable Attempt to meet the spring flow objective at Priest Rapids

Accomplishment From 4/10/02 to 6/30/02 the average outflow was 180.6 kcfs. On a daily basis the flow objective was met 86.4% of the time. On a weekly (Mon – Sun) the objective was met 11 out of 11 weeks. The 80% weekend flow was meet 18 out of 22 weekend days.

USBR **Project:** **4077 Hy14.GCL.01.000.00 Grand Coulee Operations**

Deliverable (1) Fill Grand Coulee to within 0.5 feet of the April 10 flood control rule curve (2) Refill Grand Coulee to elevation 1290 feet by June 30. (3) Provide water for flow augmentation and observe summer draft limits. (4) Limit summer draft to 1280 when the July final forcast exceeds 92 Maf and 1278 when the forecast is less than 92 maf.

Accomplishment (1) Coulee is estimated to have meet 4/10 flood control. Due to swap it is difficult to pinpoint an elevation. (2) Coulee refilled to 1287 by June 30, due to flood control requirements it was not allowed to fill completely until July 9. (3) Drafted to elevation 1280 by August 31 to meet summer draft.

USBR **Project:** **4081 Hy14.HGH.01.00.00 Hungry Horse Operations**

Deliverable Fill Hungry Horse to within 0.5 foot of the flood control rule (VARQ) on April 10. 2. Refill Hungry Horse to elevation 3560 feet by June 30. 3. Provide water for flow augmentation and observe summer draft limit of 3540 feet. 4. Limit Hungry Horse outflow to minimum flow after August 31. 5. Interim implementation of VARQ while complete EIS. 6. Constrain Hungry Horse operations to minimize adverse effects of flow fluctuations on bull trout, including year-round min. flows and ramping rates and seasonal water management. 7. Reduce "double peak" below Hungry Horse

Accomplishment

VARQ Implemented, Voluntary EA prepared. 1. Hungry horse was below its April 10 elevation by about 15 feet due to minimum flow requirements at Columbia Falls. 2. Hungry Horse did not fill until July 14 as there was a late runoff and flood control space was required to prevent spill. 3. Horse drafted the full 20 feet by September 20. Water was not required in July, so to eliminate the double peak below Hungry Horse, the draft was spread out into the fall.

RPA 015 Provide flows to support chum salmon spawning at Ives Island

CORPS **Project:** **2009 Chum Flows Below Bonneville Dam**

Deliverable Provide Chum flows below Bonneville Dam

Accomplishment The Chum operation was provided for by the following tailwater restrictions: 11/20/01 hard 11 ft (min) tailwater soft 11 – 11.2 0600 – 1700, 11/28/01 hard 11,4 ft (min) tailwater soft 11.4 – 11.6 0600 – 1700,1/1/03 hard 11.4 (min) tailwater 11.5 (min) tailwater soft. Operation ended 5/12/02. The hard constraint was met 99.9% of the time.

RPA 016 Provide access for chum salmon spawning in Hamilton and Hardy creeks

CORPS **Project:** **2009 Chum Flows Below Bonneville Dam**

Deliverable Provide Chum flows below Bonneville Dam

Accomplishment The Chum operation was provided for by the following tailwater restrictions: 11/20/01 hard 11 ft (min) tailwater soft 11 – 11.2 0600 – 1700, 11/28/01 hard 11,4 ft (min) tailwater soft 11.4 – 11.6 0600 – 1700,1/1/03 hard 11.4 (min) tailwater 11.5 (min) tailwater soft. Operation ended 5/12/02. The hard constraint was met 99.9% of the time.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

RPA 017 Coordinate preseason planning and in-season management of flow and spill

BPA **Project: 251 1991-051-00 Monitoring and Evaluation Statistical Support**

Deliverable

1.0 Provide seasonal monitoring support. 1.1 Provide real-time smolt run-timing predictions for ESA demes NMFS ESUs and runs-at-large for the Snake and Columbia Rivers. 1.2 Provide annual review of run-timing predictions. 1.3 Provide post-season outmigration summary that provides retrospective analysis of the success of the current year's outmigration and a comparison with historical years. 2.0 Perform statistical analyses of historical tagging data to extract extra-value information on salmonid population dynamics and their interactions with the environment. 2.1 Perform analysis of smolt-to-adult ratios CWT data from 1970s and PIT-tag to present and make available on Internet. 2.2 Develop and provide interactive, internet-based sample size software to facilitate the design of tag-release studies to estimate ocean and upriver adult survival. 3.0 Statistical support to region. 3.1 Provide statistical consultaion for review of research proposals, technical reports, and statistical guidance on the design and analysis of tagging studies to BPA and the fisheries community. 3.2 Continue statistical evaluation of Biological Opinion performance standards to improve decision analysis for assessing RPA compliance.

Accomplishment

Accomplishments to date for 2002 include: 1.0 Providing real-time run-timing predictions during the 2002 smolt outmigration season. 2.1 Ongoing-Compiling estimates and associated standard errors on smolt-to-adult ratios (SARs) using CWT recoveries for 90 Columbia Basin hatcheries from the 1970s to the present. Compiling inriver survival and travel time information using PIT-tag detections for 30 Columbia Basin hatcheries from the 1990s to the present. Results of the CWT and PIT-tag analyses will be available in DART for examination and analysis with ambient river data, power operations, and ocean conditions.

CORPS **Project: 2010 Coordinate Water Management Decisions with TMT**

Deliverable

Coordinate Water Management decisions with TMT

Accomplishment

TMT coordination occurred. 46 TMT meetings or conference calls took place.

RPA 018 Meet the flow objectives and refill the storage reservoirs

CORPS **Project: 2004 Albeni Falls Operation**

Deliverable

1. Fill Albeni Falls to within 0.5 foot of the flood control rule on April 10. 2. Refill Albeni Falls by June 30

CORPS **Project: 2015 Dworshak Operations**

Deliverable

1. Fill Dworshak to within 0.5 foot of the flood control rule on April 10. 2. Refill Dworshak by June 30. 3. Release water from Dworshak to attempt to maintain water temperatures at the Lower Granite forebay at or below 68 F. 4. Draft Limit at Dworshak observed. 5. Limit Dworshak outflow to minimum flow after summer operations.

Accomplishment

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Release of water at a specified temperature began 7/3/02 ended 9/9/02.

CORPS **Project: 2032 Libby Operations Andromous**

Deliverable

Summer draft limit of 2439 feet

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Reduction in a second peak operation can be achieved by implementation of a Canadian storage/Libby exchange of water. May not be achieved all years.

Accomplishment

On April 10th Libby forebay elevation was 2370.8 ft. We were operating to meet the April 10th Flood control elevation.
On June 30 Libby forebay elevation was 2456.8 ft. At midnight July 15 Libby forebay elevation was 2458.6 ft. Full pool at Libby is 2459 ft.

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On August 31 Libby was at 2441.9 ft. Due to swap end of August target elevation was 2442.3 ft.

USBR **Project: 4077 Hy14.GCL.01.000.00 Grand Coulee Operations**

Deliverable

(1) Fill Grand Coulee to within 0.5 feet of the April 10 flood control rule curve (2) Refill Grand Coulee to elevation 1290 feet by June 30. (3) Provide water for flow augmentation and observe summer draft limits. (4) Limit summer draft to 1280 when the July final forcast exceeds 92 Maf and 1278 when the forecast is less than 92 maf.

Accomplishment

(1) Coulee is estimated to have meet 4/10 flood control. Due to swap it is difficult to pinpoint an elevation. (2) Coulee refilled to 1287 by June 30, due to flood control requirements it was not allowed to fill completely until July 9. (3) Drafted to elevation 1280 by August 31 to meet summer draft.

USBR **Project: 4081 Hy14.HGH.01.00.00 Hungry Horse Operations**

Deliverable

Fill Hungry Horse to within 0.5 foot of the flood control rule (VARQ) on April 10. 2. Refill Hungry Horse to elevation 3560 feet by June 30. 3. Provide water for flow augmentation and observe summer draft limit of 3540 feet. 4. Limit Hungry Horse outflow to minimum flow after August 31. 5. Interim implementation of VARQ while complete EIS. 6. Constrain Hungry Horse operations to minimize adverse effects of flow fluctuations on bull trout, including year-round min. flows and ramping rates and seasonal water management. 7. Reduce "double peak" below Hungry Horse

Accomplishment

VARQ Implemented, Voluntary EA prepared. 1. Hungry horse was below its April 10 elevation by about 15 feet due to minimum flow requirements at Columbia Falls. 2. Hungry Horse did not fill until July 14 as there was a late runoff and flood control space was required to prevent spill. 3. Horse drafted the full 20 feet by September 20. Water was not required in July, so to eliminate the double peak below Hungry Horse, the draft was spread out into the fall.

RPA 019 Operate specific FCRPS projects

CORPS **Project: 2139 Albeni Falls Operation**

Deliverable

1. Operate Albeni Falls to be with 5.ft of the April 10th flood control rule curve.
2. Refill Albeni Falls by June 30.

Accomplishment The Albeni Falls flood control rule curve has an upper rule curve elevation of 2056 ft. and a lower elevation of 2052 ft. on April 10th. On April 10th the Hope gage reading was 2052.8 ft. The Hope gage elevation June 30 was 2062.0 ft.

CORPS **Project: 2074 10.A.1.4; 11.A.1.4.a Draw down Albeni Falls for kokanee egg-to fry-study**

Deliverable Draw Albeni Falls down to 2051 feet

Accomplishment Drawdowns are accomplished per guidelines.

CORPS **Project: 2015 Dworshak Operations**

Deliverable 1. Fill Dworshak to within 0.5 foot of the flood control rule on April 10. 2. Refill Dworshak by June 30. 3. Release water from Dworshak to attempt to maintain water temperatures at the Lower Granite forebay at or below 68 F. 4. Draft Limit at Dworshak observed. 5. Limit Dworshak outflow to minimum flow after summer operations.

Accomplishment The April 10 flood control elevation was 1508.1 On April 10 the forebay elevation at Dworshak was 1507 ft. On June 30 the forebay elevation was 1599.3 ft. The project forebay elevation was 1599.8 ft June 22. (Full 1600).
Dworshak outflow was at minimum except at the following times: 2/1/02 – 3/15/02 for flood control 3/25/02 – 5/22/02 for flood control 5/23/02 –5/28/02 flood control 6/12/02 – 7/7/02 flood control 7/7/02 – 9/12/02 Releases for flow augmentation
On August 31 Dworshak was at elevation 1534. Project was not drafted to 1520 in order to provide augmentation water in the early part of September. Dworshak reached 1520 September 11.
Release of water at a specified temperature began 7/3/02 ended 9/9/02.

CORPS **Project: 2032 Libby Operations Andromous**

Deliverable Summer draft limit of 2439 feet

Reduction in a second peak operation can be achieved by implementation of a Canadian storage/Libby exchange of water. May not be achieved all years.

1. Fill Libby to within 0.5 foot of the flood control rule by April 10. 2. Refill Libby by June 30. 3. Observed Draft Limit at Libby

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On August 31 Libby was at 2441.9 ft. Due to swap end of August target elevation was 2442.3 ft.

USBR **Project: 4077 Hy14.GCL.01.000.00 Grand Coulee Operations**

Deliverable (1) Fill Grand Coulee to within 0.5 feet of the April 10 flood control rule curve (2) Refill Grand Coulee to elevation 1290 feet by June 30. (3) Provide water for flow augmentation and observe summer draft limits. (4) Limit summer draft to 1280 when the July final forcast exceeds 92 Maf and 1278 when the forecast is less than 92 maf.

Accomplishment (1) Coulee is estimated to have meet 4/10 flood control. Due to swap it is difficult to pinpoint an elevation. (2) Coulee refilled to 1287 by June 30, due to flood control requirements it was not allowed to fill completely until July 9. (3) Drafted to elevation 1280 by August 31 to meet summer draft.

USBR **Project: 4081 Hy14.HGH.01.00.00 Hungry Horse Operations**

Deliverable Fill Hungry Horse to within 0.5 foot of the flood control rule (VARQ) on April 10. 2. Refill Hungry Horse to elevation 3560 feet by June 30. 3. Provide water for flow augmentation and observe summer draft limit of 3540 feet. 4. Limit Hungry Horse outflow to minimum flow after August 31. 5. Interim implementation of VARQ while complete EIS. 6. Constrain Hungry Horse operations to minimize adverse effects of flow fluctuations on bull trout, including year-round min. flows and ramping rates and seasonal water management. 7. Reduce "double peak" below Hungry Horse

Accomplishment

VARQ Implemented, Voluntary EA prepared. 1. Hungry horse was below its April 10 elevation by about 15 feet due to minimum flow requirements at Columbia Falls. 2. Hungry Horse did not fill until July 14 as there was a late runoff and flood control space was required to prevent spill. 3. Horse drafted the full 20 feet by September 20. Water was not required in July, so to eliminate the double peak below Hungry Horse, the draft was spread out into the fall.

RPA 020 Operate the lower Snake River reservoirs within 1 foot of MOP

CORPS **Project: 2030 John Day Minimum Pool Operation**

Deliverable Operate John Day pool at minimum level that allows irrigation for dates specified.

Accomplishment The 1½-foot range of the minimum level that provides irrigation pumping was set to 262.5 – 264 4/10/02. The range was changed to 263 – 264.5 7/29/02. Forebay elevations were below the above ranges 1.60% of the time and were above the ranges given above .41% of the time.

CORPS **Project: 2052 Lower Snake projects Minimum Operating Pool operation**

Deliverable Operate Lower Snake projects at MOP during fish season

Accomplishment IHR was at MOP + 1 [438] to MOP +2[439] (due to navigation concerns) from 4/3/02 until 8/3/02 A deviation from MOP was in effect from 1100 8/21/02 until 0600 8/25/02 [438 – 440] (In order to use pools to allow 20 Kcfs minimum spill in effect during that time). Forebay elevations were below the above range 1.03% of the time and were above the range given above 1.40% of the time.
LMN was at MOP [537] to MOP +1[538] from 4/3/02 until 8/3/02. A deviation from MOP was in effect from 1100 8/21/02 until 0600 8/25/02 [537 – 539] (In order to use pools to allow 20 Kcfs minimum spill in effect during that time). Forebay elevations were below the above ranges 1.09% of the time and were above the ranges given above 1.26% of the time. On 4/15/02 the project went outside of MOP in an effort to avoid spill.
LGS was at MOP [633] to MOP +1[634] from 4/3/02 until 1200 5/9/02. The forebay range was changed to MOP+1 [634] to MOP +2[635] on 1200 5/9/02 due to navigate concerns. The forebay range was changed to MOP [633] to MOP +1[634] 2200 5/24/02. The forebay range was changed back to MOP+1 [634] to MOP +2[635] on 0800 6/11/02 again due to navigation concerns. LGS went back to normal pool operations 8/3/02. Forebay elevations were below the above ranges 2.52% of the time and were above the ranges given above 1.85% of the time.
LWG was at MOP+ 1[734] to MOP+2[735] from 4/3/02 until end of this time period. Project was authorized to go out of MOP 2100 4/30/02 (736 – 736.7) because of load rejection until 5/4/02 (approx). During ISO bus work 6/8/02 to 6/10/02 full pool operation 734-738 was allowed in order to avoid spill. During a unit outage 8/15/02 the pool was also allowed to go out of MOP+1 to MOP+2 operation. Forebay elevations were below the above ranges 2.44% of the time and were above the ranges given above .85% of the time.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

RPA 021 Identify opportunities to shift system flood control evacuation volumes

CORPS **Project: 2068 Shift Flood Control to Maximize Snake River Water Storage**

Deliverable Consider shifting flood control requirements from Brownlee and Dworshak to Grand Coulee

Accomplishment A flood control shift of 115 Kaf occurred between Dworshak and Grand Coulee.

RPA 022 Implement VARQ flood control operations

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination completed.

Coordination was done at TMT meetings.

CORPS **Project: 6004 8.3.c Kootenai River Valley Seepage Study for the Upper Columbia River Alternative Flood Control and Fisheries Operations EIS Preparation.**

Deliverable 1) USGS report covering all data USGS collected, water level data, aquifer test data, unsaturated zone studies, documentation from all of the USGS tasks relating to seepage related to high waters through the Kootenai River.

CORPS **Project: 6012 22; 137; 8.1.b; 8.2.a.1; 8.2.a.3; 8.2.a.4 Spill Test at Libby Dam on Total Dissolved Gas Impacts**

Accomplishment The spill test was accomplished in spring 2002 and confirmed that spilling over 800 cfs will violate the Sate of Montana's TDG limit of 110% immediately downstream of Libby Dam. Strict adherence to Montana water quality standards means that it is not feasible to routinely utilize the spillway to increase Libby flow capacity in incremental steps of 5000 cfs. The Corps is seeking final confirmation from the State that a variance to this water quality standard will not be granted.

USBR **Project: 4081 Hy14.HGH.01.00.00 Hungry Horse Operations**

Deliverable Fill Hungry Horse to within 0.5 foot of the flood control rule (VARQ) on April 10. 2. Refill Hungry Horse to elevation 3560 feet by June 30. 3. Provide water for flow augmentation and observe summer draft limit of 3540 feet. 4. Limit Hungry Horse outflow to minimum flow after August 31. 5. Interim implementation of VARQ while complete EIS. 6. Constrain Hungry Horse operations to minimize adverse effects of flow fluctuations on bull trout, including year-round min. flows and ramping rates and seasonal water management. 7. Reduce "double peak" below Hungry Horse

Accomplishment VARQ Implemented, Voluntary EA prepared. 1. Hungry horse was below its April 10 elevation by about 15 feet due to minimum flow requirements at Columbia Falls. 2. Hungry Horse did not fill until July 14 as there was a late runoff and flood control space was required to prevent spill. 3. Horse drafted the full 20 feet by September 20. Water was not required in July, so to eliminate the double peak below Hungry Horse, the draft was spread out into the fall.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

RPA 023 Operate Banks Lake at an elevation 5 feet from full during August

USBR **Project:** **4080 Hy23.BNK.01.000.00 Banks Lake Operations**

Deliverable Reduce pumping to Banks Lake in August allowing the Lake to sage to elevation 1565 feet.

Accomplishment Pumping was reduced in August and Banks Lake allowed to drop to elevation 1565 feet by August 31. Banks Lake was held at elevation 1565 through September 15, then refilled to elevaiton 1566.5 where it remained through Step. 30 per TMT agreement on operations at HGH. Due to late runoff HGH allowed to spread draft to Sept 30. In exchange Banks delayed refill until HGH draft completed.

RPA 024 Provide 1 Maf of Treaty storage from January through April 15

BPA **Project:** **192 Canadian Treaty Storage Agreement - Request/Negotiate Additional Storage**

Deliverable Request/Negotiate Additonal Storage

CORPS **Project:** **2122 Request/Negotiate 1 MAF of Treaty storage with BC Hydro**

Deliverable 1 MAF of Treaty storage has been requested and negotiated with BC Hydro

Accomplishment An agreement was reached with BC Hydro and 1 MAF of water ws stored in Arrow by end of March 2002

RPA 025 Storage of water in non-Treaty storage space during the spring

BPA **Project:** **193 Non-Treaty Storage Agreement with Canada-Request Additional Storage**

Deliverable Request/Negotiate Non-Treaty Storage

CORPS **Project:** **2123 Up to 3.5 MAF flow augmentation from Candian storagein July and Auugst**

Deliverable BC Hydro will evaluate future study subject to BC Water Use Planning Process

RPA 026 Shaping and release of water behind Canadian Treaty storage projects

BPA **Project:** **191 Report on use of Additional Canadian Storage To support mainstream flow objectives**

Deliverable Complete feasibility report, request & negotiate shaping/storage

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

RPA 027 Zero net impact from any BOR commitment on ability to meet flow objectives

USBR **Project: 4057 Hy27.PNW.01.000.00 Reclamation Water Contracts**

Deliverable None scheduled

Accomplishment Ongoing requirement of BIOP. USBR will consult as needed to meet the objectives of RPA 27.

RPA 028 Water conservation improvements

USBR **Project: 4058 Hy28.PNW.01.000.01 Pursue water conservation at USBR projects**

Deliverable Schedule and implement projects

Accomplishment Ongoing conservation considerations are incorporated in all project activities.

RPA 029 Report addressing water use without BOR authorization

USBR **Project: 4059 Hy29.PNW.01.100.02 Investigate Unauthorized Use of USBR Water**

Deliverable ongoing Case by Case.

Accomplishment Internal draft report on unathorized use was produced. Four on site district reviews were completed in 2002, they include A&B, Greater Wenatchee, Kennewick and Owyhee. Wenatchee does not require any work. Reclamation is currently working with the other three districts on possible resolutions of contract issues.

RPA 030 Supplemental, project-specific consultations

USBR **Project: 4061 Hy30.DES.01.000.00 Deschutes Project ESA Consultation with NMFS**

Deliverable Initiate Consultation

Accomplishment Consultation initiated

USBR **Project: 4110 Hy30.OKN.01.000.00 Okanogan Project ESA Consultation**

Deliverable Initiate Feasibility Study

USBR **Project: 4064 Hy30.UMA.01.000.00 Umatilla Project ESA Consultation with NMFS**

Deliverable Draft BA prepared submitt to NOAA/FWS

Deliverable Initiate Consultation

Accomplishment Draft BA provided to NMFS April 2002

Consultation initiated

USBR **Project: 4111 HY30.YKM.01.000.00 Yakima Project Consultation**

Deliverable Continue consultation

Accomplishment Consultation continued

RPA 031 Environmental effects of operating Banks Lake up to 10 feet down

No Projects for this RPA. Please see RPA Summary Table.

RPA 032 Acquire water for instream use from BOR's Upper Snake River basin projects

USBR **Project: 4067 Hy32.USN.01.100.00 Water Acquisition from Reclamation's Snake River Projects**

Deliverable Provide up to 427 kaf for flow augmentation.

Accomplishment Acquired 289,525 acre-feet.in 2002

RPA 033 Provide water supply temperatures for the Dworshak National Fish Hatchery

CORPS **Project: 2014 CENWW Modify Dworshak National Fish Hatchery System 1 Reuse System**

Deliverable Prepare contract for Phase 1 of hatchery modification - upgrading water supply heating sytem. Conduct engineering study for Phase 2 hatchery modification - concepts for modifying reuse system 1 fluidized sand filter system.

Award contract and begin construction of Phase 1 of hatchery modification - upgrading water supply heating system. Prepare, award contract, and begin construction of Phase 2 of hatchery modification - modifications to reuse system 1 fluidized sand filter system.

Accomplishment Contract awarded and construction initiated on Phase 1 of hatchery modifications - water supply electrical and heating upgrades.

Contract prepared, awarded, and construction initiated on modification to reuse system 1 fluidized sand filter system. System is being upgraded to a plastic media treatment system.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

RPA 034 Draft Dworshak Reservoir to elevation 1,500 feet in September

CORPS **Project: 2003 CENWW Adult Temperature Evaluation**

Accomplishment Development of CFD model for Lower Snake

Two years, plus piolt study of data collection completed. Including with a Dworshak drawdown in 2002.

RPA 035 Feasibility analysis of modifying current system flood control operations

CORPS **Project: 2117 Evaluate Flood Control Operations to Reduce River Ecosystem Effects**

Deliverable Flood Control Study proceeding

Accomplishment Seeking funding to prepare a Scope of Work

RPA 036 Revised storage reservation diagram for Libby Reservoir

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination was done at TMT meetings.

Coordination completed.

CORPS **Project: 2124 Revise Storage Diagrams for Libby**

Deliverable November through January water supply forecast for Libby using SOI input

Accomplishment Forecast proceudre has been developed for November through January. First report is expected Ausugt 31

RPA 037 Attraction of listed salmon and steelhead into wasteways and natural streams receiving wastewater

USBR **Project: 4068 Hy37.CBP.01.200.00 Columbia Basin Project Wasteway and Drain Investigation**

Deliverable Conduct field investigations. Issue draft report

Accomplishment Initial investigation identified two wasteways used by listed stocks. Surveys prior to FCRPS BiOp identified limited use of both sites by steelhead. Additional surveys in 2002 confirmed limited use of both sites but fish numbers are very low and habitat quality is very poor. Preliminary conslusion is that steelhead populations in the two wasteways are not self-sustaining.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

RPA 038 Install screens at the canal intakes to Burbank No. 2 and No. 3

USBR **Project: 4115 Hy38.CBP.01.001.00 Burbank #2&#3Pumps**

Deliverable Design fish screens on two pumps in Burbank Slough and Casey Pond off the Columbia River. Screen four small pumps owned by USFWS in Burbank Slough portion of the refuge

Accomplishment All the screens are in place and functioning. The designer's Operating Criteria were finalized in September 2002

RPA 039 Water quality characteristics of each point of surface return flows from the Columbia Basin Project

USBR **Project: 4113 Hy39.CBP.01.300.00 Columbia R. Return Flow WQ Monitoring Study**

Deliverable complete Project startup (acquisition and installation of equipment and site selection, initiation of grab sampling and continuous monitoring activities, training and coordination of cooperator activities, etc.)

Accomplishment Project startup was completed by 7/02, monitoring initiated.

RPA 040 Transport all non-research juvenile salmonids at Snake River projects

CORPS **Project: 2031 CENWW Corps of Engineers' Juvenile Fish TransportationProgram**

Deliverable Implement juvenile fish tranpsortation program in accordance with operating criteria and regional coordination.

Accomplishment Program implemented. All juvenile fish collected at Lower Granite, Little Goose, and Lower Monumental dams were transported according to operating criteria. Lower Monumental implemented special bypass operations during April and May as part of a coordinated agreement to offset not spiling during spring due to stilling basin erosion. McNary Dam bypassed spring fish according to criteria and began collection and transport of fish on July 11 when river conditions were determined to no longer be spring like. Barging of fish collected during the summer was extended through August 16 for Snake River projects and August 17 at McNary Dam.

CORPS **Project: 2132 Spill for Juvenile Fish Passage**

Deliverable 1. Provide Spill for juvenile fish passage as specified 2. Don't spill at Lower Snake Projects if flow projected to be below 85 kcfs.

Accomplishment BON – Spill for juvenile fish passage started 4/10/02 and ended 8/31/02. From 4/10 – 4/15 spill was limited to 50 or 75 kcfs in order to protect emerging chum salmon. Full spill started 4/15. Daytime spill alternated between the 75 kcfs fallback cap and the 120% gas cap.
TDA - Spill for juvenile fish passage started 4/10/02 and ended 8/31/02. Spill was stopped for a short period 6/18 in order to repair a fish release pipe.
JDA - Spill for juvenile fish passage started 4/10/02 and ended 8/31/02. Spill alternated between 60% night / 30% day and 30%night/ 30% day. Spill could be adjusted or stopped for short periods due to navigation concerns. Two days of the 30%night/ 30% day spill was changed to 30% night / 0% day as part of a spill swap to allow a tdg test at The Dalles.
MCN - Spill for juvenile fish passage started 4/10/02 and ended 6/20/02. Spill was reduced for juvenile fish barge loading if needed. Problems with the new flow deflectors at the end bays caused many adjustments in the spill patterns used.
IHR - Spill for juvenile fish passage started 4/10/02 and ended 8/31/02. Due to low flows on 8/21 the spill level was changed to a minimum spill of 20 kcfs for at least 4 hours. On 8/24 daytime spill was eliminated as part of a spill swap to allow a tdg test at The Dalles.
LMN – No spill for juvenile fish passage occurred this due to work in the tailrace.
LGS - Spill for juvenile fish passage started 4/5/02 and ended 6/20/02. From 4/5 – 4/30 spill was 24 hours a day in order to help mitigate for the lack of spill at Lower Monumental.
LWG - Spill for juvenile fish passage started 4/3/02 and ended 6/20/02. During most of the time spill alternated between 3 conditions, Spill to the gas cap during nighttime, RSW flow + 8 kcfs 24 hours a day, and RSW flow + 16 kcfs 24 hours a day. Spill was shut off for short periods of time 5/25 and 5/26 to allow access to the RSW

RPA 041 Bypass juvenile spring migrants collected at mcnary Dam

CORPS **Project: 2031 CENWW Corps of Engineers' Juvenile Fish TransportationProgram**

Deliverable Implement juvenile fish tranpsortation program in accordance with operating criteria and regional coordination.

Accomplishment Program implemented. All juvenile fish collected at Lower Granite, Little Goose, and Lower Monumental dams were transported according to operating criteria. Lower Monumental implemented special bypass operations during April and May as part of a coordinated agreement to offset not spiling during spring due to stilling basin erosion. McNary Dam bypassed spring fish according to criteria and began collection and transport of fish on July 11 when river conditions were determined to no longer be spring like. Barging of fish collected during the summer was extended through August 16 for Snake River projects and August 17 at McNary Dam.

RPA 042 Maximize collection and transportation during the summer migration

CORPS **Project: 2031 CENWW Corps of Engineers' Juvenile Fish TransportationProgram**

Deliverable Implement juvenile fish tranpsortation program in accordance with operating criteria and regional coordination.

Accomplishment Program implemented. All juvenile fish collected at Lower Granite, Little Goose, and Lower Monumental dams were transported according to operating criteria. Lower Monumental implemented special bypass operations during April and May as part of a coordinated agreement to offset not spiling during spring due to stilling basin erosion. McNary Dam bypassed spring fish according to criteria and began collection and transport of fish on July 11 when river conditions were determined to no longer be spring like. Barging of fish collected during the summer was extended through August 16 for Snake River projects and August 17 at McNary Dam.

CORPS **Project: 2132 Spill for Juvenile Fish Passage**

Deliverable 1. Provide Spill for juvenile fish passage as specified 2. Don't spill at Lower Snake Projects if flow projected to be below 85 kcfs.

Accomplishment BON – Spill for juvenile fish passage started 4/10/02 and ended 8/31/02. From 4/10 – 4/15 spill was limited to 50 or 75 kcfs in order to protect emerging chum salmon. Full spill started 4/15. Daytime spill alternated between the 75 kcfs fallback cap and the 120% gas cap.
TDA - Spill for juvenile fish passage started 4/10/02 and ended 8/31/02. Spill was stopped for a short period 6/18 in order to repair a fish release pipe.
JDA - Spill for juvenile fish passage started 4/10/02 and ended 8/31/02. Spill alternated between 60% night / 30% day and 30%night/ 30% day. Spill could be adjusted or stopped for short periods due to navigation concerns. Two days of the 30%night/ 30% day spill was changed to 30% night / 0% day as part of a spill swap to allow a tdg test at The Dalles.
MCN - Spill for juvenile fish passage started 4/10/02 and ended 6/20/02. Spill was reduced for juvenile fish barge loading if needed. Problems with the new flow deflectors at the end bays caused many adjustments in the spill patterns used.
IHR - Spill for juvenile fish passage started 4/10/02 and ended 8/31/02. Due to low flows on 8/21 the spill level was changed to a minimum spill of 20 kcfs for at least 4 hours. On 8/24 daytime spill was eliminated as part of a spill swap to allow a tdg test at The Dalles.
LMN – No spill for juvenile fish passage occurred this due to work in the tailrace.
LGS - Spill for juvenile fish passage started 4/5/02 and ended 6/20/02. From 4/5 – 4/30 spill was 24 hours a day in order to help mitigate for the lack of spill at Lower Monumental.
LWG - Spill for juvenile fish passage started 4/3/02 and ended 6/20/02. During most of the time spill alternated between 3 conditions, Spill to the gas cap during nighttime, RSW flow + 8 kcfs 24 hours a day, and RSW flow + 16 kcfs 24 hours a day. Spill was shut off for short periods of time 5/25 and 5/26 to allow access to the RSW

RPA 043 Transport subyearling fall chinook at mcnary when inriver conditions are deteriorating

CORPS **Project: 2031 CENWW Corps of Engineers' Juvenile Fish TransportationProgram**

Deliverable Implement juvenile fish tranpsortation program in accordance with operating criteria and regional coordination.

Accomplishment Program implemented. All juvenile fish collected at Lower Granite, Little Goose, and Lower Monumental dams were transported according to operating criteria. Lower Monumental implemented special bypass operations during April and May as part of a coordinated agreement to offset not spiling during spring due to stilling basin erosion. McNary Dam bypassed spring fish according to criteria and began collection and transport of fish on July 11 when river conditions were determined to no longer be spring like. Barging of fish collected during the summer was extended through August 16 for Snake River projects and August 17 at McNary Dam.

RPA 044 Extend barge transportation to further reduce reliance on trucking

CORPS **Project: 2031 CENWW Corps of Engineers' Juvenile Fish TransportationProgram**

Deliverable Implement juvenile fish tranpsortation program in accordance with operating criteria and regional coordination.

Accomplishment Program implemented. All juvenile fish collected at Lower Granite, Little Goose, and Lower Monumental dams were transported according to operating criteria. Lower Monumental implemented special bypass operations during April and May as part of a coordinated agreement to offset not spiling during spring due to stilling basin erosion. McNary Dam bypassed spring fish according to criteria and began collection and transport of fish on July 11 when river conditions were determined to no longer be spring like. Barging of fish collected during the summer was extended through August 16 for Snake River projects and August 17 at McNary Dam.

RPA 045 Mcnary Dam transportation evaluation study plan

BPA **Project: 131 2001-003-00 Installation of Adult PIT-tag Detection Systems**

Deliverable 1) Install adult PIT detection systems in all ladders at Ice Harbor, Lower Granite, and The Dalles. 2) Design adult PIT detection systems at John Day, Little Goose, and Lower Monumental.

Accomplishment In FY2002, we installed adult PIT detection systems in all ladders at Bonneville and McNary. We designed adult PIT detection systems for Ice Harbor, Lower Granite, and Priest Rapids.

CORPS **Project: 2120 CENWW Juvenile salmon transportation evaluations**

Deliverable

Evaluation of Physiological Changes in Transported juvenile salmonids and effects on survival - (ICFWRU - Congleton)
Annual Report

Lower Snake Fall Chinook Transport Marking and Evaluation
Annual Report - (NMFS - Marsh)

Evaluation of Mid-Columbia Juvenile Salmonid Transportation from McNary Dam (NMFS - Marsh) - Steelhead - Sp Chinook - Fall Chinook
Annual Report

Evaluation of migration and survival of steelhead and fall chinook following transportation - (OCFWRU - Schreck)
Annual Report

Lower Granite Transport Evaluation, Wild spring chinook and steelhead - finish marking, adult returns through 2006 - (NMFS - Marsh)
Annual Report

Accomplishment

Completed Marking for LGR transport study - (NMFS - Marsh)
Draft Report

Completed Marking for Fall Chinook Transport Study (NMFS - Marsh)
Draft Report

Completed Marking for Mid - C Spring Chinook
Draft Report

Evaluated migration and survival of juvenile steelhead and fall chinook
Draft Report

Evaluated Physiological Changes in Transported juvenile salmonids and effects on survival - (ICFWRU - Congleton)
Draft Report

RPA 046 Transport to in-river return ratios for wild SR yearling chinook salmon and steelhead

CORPS **Project: 2120 CENWW Juvenile salmon transportation evaluations**

Deliverable

Evaluation of migration and survival of steelhead and fall chinook following transportation - (OCFWRU - Schreck)
Annual Report

Evaluation of Mid-Columbia Juvenile Salmonid Transportation from McNary Dam (NMFS - Marsh) - Steelhead - Sp Chinook - Fall Chinook
Annual Report

Deliverable Evaluation of Physiological Changes in Transported juvenile salmonids and effects on survival - (ICFWRU - Congleton)
Annual Report

Lower Snake Fall Chinook Transport Marking and Evaluation
Annual Report - (NMFS - Marsh)

Lower Granite Transport Evaluation, Wild spring chinook and steelhead - finish marking, adult returns through 2006 - (NMFS - Marsh)
Annual Report

Accomplishment Completed Marking for Fall Chinook Transport Study (NMFS - Marsh)
Draft Report

Evaluated Physiological Changes in Transported juvenile salmonids and effects on survival - (ICFWRU - Congleton)
Draft Report

Evaluated migration and survival of juvenile steelhead and fall chinook
Draft Report

Completed Marking for Mid - C Spring Chinook
Draft Report

Completed Marking for LGR transport study - (NMFS - Marsh)
Draft Report

CORPS **Project: 2029 CENWP Operation and Maintenance of John Day Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

RPA 047 Evaluation of delayed mortality (D)

BPA **Project: 131 2001-003-00 Installation of Adult PIT-tag Detection Systems**

Deliverable 1) Install adult PIT detection systems in all ladders at Ice Harbor, Lower Granite, and The Dalles. 2) Design adult PIT detection systems at John Day, Little Goose, and Lower Monumental.

Accomplishment In FY2002, we installed adult PIT detection systems in all ladders at Bonneville and McNary. We designed adult PIT detection systems for Ice Harbor, Lower Granite, and Priest Rapids.

CORPS **Project: 2012 CENWW Delayed Mortality of Juvenile Salmonids**

Deliverable Conduct Rearing Study for Fish for Differential Delayed Mortality "D" (NMFS - Gilbreath-Strom-Arkoosh)
Presentation at Annual Review
Annual Report

Conduct Evaluation of Differential Delayed Mortality "D" for juvenile salmonids after barge release (OCFWRU - Schreck)
Presentation at Annual Review
Annual Report

Accomplishment Conduct Rearing Study (NMFS - Gilbreath-Strom-Arkoosh)
Annual Review Presentation

Accomplishment Conducted Evaluation of Differential Delayed Mortality "D" for juvenile salmonids after barge release (OCFWRU - Schreck)
Presentation at Annual Review

CORPS **Project: 2118 CENWW Evaluation of Transportation Strategies**

Accomplishment Began late season evaluation

CORPS **Project: 2120 CENWW Juvenile salmon transportation evaluations**

Deliverable Evaluation of migration and survival of steelhead and fall chinook following transportation - (OCFWRU - Schreck)
Annual Report

Lower Granite Transport Evaluation, Wild spring chinook and steelhead - finish marking, adult returns through 2006 - (NMFS - Marsh)
Annual Report

Evaluation of Mid-Columbia Juvenile Salmonid Transportation from McNary Dam (NMFS - Marsh) - Steelhead - Sp Chinook - Fall Chinook
Annual Report

Evaluation of Physiological Changes in Transported juvenile salmonids and effects on survival - (ICFWRU - Congleton)
Annual Report

Lower Snake Fall Chinook Transport Marking and Evaluation
Annual Report - (NMFS - Marsh)

Accomplishment Completed Marking for Fall Chinook Transport Study (NMFS - Marsh)
Draft Report

Evaluated Physiological Changes in Transported juvenile salmonids and effects on survival - (ICFWRU - Congleton)
Draft Report

Completed Marking for LGR transport study - (NMFS - Marsh)
Draft Report

Completed Marking for Mid - C Spring Chinook
Draft Report

Evaluated migration and survival of juvenile steelhead and fall chinook
Draft Report

RPA 048 Effects of prior transport as smolts on the homing of adults

BPA **Project: 131 2001-003-00 Installation of Adult PIT-tag Detection Systems**

Deliverable 1) Install adult PIT detection systems in all ladders at Ice Harbor, Lower Granite, and The Dalles. 2) Design adult PIT detection systems at John Day, Little Goose, and Lower Monumental.

Accomplishment In FY2002, we installed adult PIT detection systems in all ladders at Bonneville and McNary. We designed adult PIT detection systems for Ice Harbor, Lower Granite, and Priest Rapids.

CORPS **Project: 2078 AFEP; Kelt Research, Unaccounted Adult Loss and Straying and Marine Mammal Monitoring**

Deliverable Fund Kelt, Marine Mammal, and Adult General Migration

Accomplishment completed 2nd year of kelt study, first year of 2-year marine mammal study, and ongoing adult migration studies

RPA 049 Strategies to enhance post-release survival of transported fish

CORPS **Project: 2118 CENWW Evaluation of Transportation Strategies**

Accomplishment Began late season evaluation

CORPS **Project: 2120 CENWW Juvenile salmon transportation evaluations**

Deliverable

Lower Snake Fall Chinook Transport Marking and Evaluation
Annual Report - (NMFS - Marsh)

Evaluation of Physiological Changes in Transported juvenile salmonids and effects on survival - (ICFWRU - Congleton)
Annual Report

Evaluation of Mid-Columbia Juvenile Salmonid Transportation from McNary Dam (NMFS - Marsh) - Steelhead - Sp Chinook - Fall Chinook
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Annual Report

Lower Granite Transport Evaluation, Wild spring chinook and steelhead - finish marking, adult returns through 2006 - (NMFS - Marsh)
Annual Report

Accomplishment

Completed Marking for Mid - C Spring Chinook
Draft Report

Evaluated migration and survival of juvenile steelhead and fall chinook
Draft Report

Completed Marking for LGR transport study - (NMFS - Marsh)
Draft Report

Evaluated Physiological Changes in Transported juvenile salmonids and effects on survival - (ICFWRU - Congleton)
Draft Report

Completed Marking for Fall Chinook Transport Study (NMFS - Marsh)
Draft Report

RPA 050 Install necessary adult PIT-tag detectors

BPA **Project: 131 2001-003-00 Installation of Adult PIT-tag Detection Systems**

Deliverable 1) Install adult PIT detection systems in all ladders at Ice Harbor, Lower Granite, and The Dalles. 2) Design adult PIT detection systems at John Day, Little Goose, and Lower Monumental.

Accomplishment In FY2002, we installed adult PIT detection systems in all ladders at Bonneville and McNary. We designed adult PIT detection systems for Ice Harbor, Lower Granite, and Priest Rapids.

CORPS **Project: 2102 Adult PIT tag program (Bonn, The dalles, John Day)**

Deliverable complete installation at Bonneville ladders

Accomplishment completed installation at Bonneville, initiated evaluation of system

CORPS **Project: 2078 AFEP; Kelt Research, Unaccounted Adult Loss and Straying and Marine Mammal Monitoring**

Deliverable Fund Kelt, Marine Mammal, and Adult General Migration

Accomplishment completed 2nd year of kelt study, first year of 2-year marine mammal study, and ongoing adult migration studies

CORPS **Project: 2022 CENWW Ice Harbor Adult Pit**

Deliverable Design window detection system.

CORPS **Project: 2001 1989-107-00 Statistical Support for Salmonid Survival Studies**

Deliverable 1.0 Maintainence of statistical software and Internet access. 1.1 Maintain SURPH.2 software. 1.2 Maintain USER.2 (User Specified Estimation Routine) software. 1.3 Respond to user requests. 1.4 Adapt software to changing computing environment. 2.0 Improvements to statistical software. 2.1 Expand USER.1 capabilities. 2.2 Expand data input capabilities. 2.3 Expand SURPH.2 capabilities to include paired release-recapture modeling. 2.4 Expand SURPH.2 capabilities to incorporate time-varying covariates. 3.0 Provide adult survival study guidance. 3.1 Adult PIT PIT-tag capabilities. 3.2 Adult radiotelemetry investigations. 4.0 Provide technology transfer through preparation of technical reports, publications in the professional literature, and statistical consulting to the fisheries community on tagging and fish tracking studies.

Accomplishment Accomplishments to date for 2002 include: 1) Developed of new statistical methods for estimating transport/inriver ratios to account for the bias associated with low recovery rates of adults. {Application RPA 185} 2) Release of a new version of USER.2 that provides profile likelihood confidence intervals for parameters and functions of parameters.

RPA 051 Identify and implement measures to optimize inriver passage at collector dams

No Projects for this RPA. Please see RPA Summary Table.

RPA 052 Identify and implement improvements to the transportation program

CORPS **Project: 2031 CENWW Corps of Engineers' Juvenile Fish TransportationProgram**

Deliverable Implement juvenile fish tranpsortation program in accordance with operating criteria and regional coordination.

Accomplishment Program implemented. All juvenile fish collected at Lower Granite, Little Goose, and Lower Monumental dams were transported according to operating criteria. Lower Monumental implemented special bypass operations during April and May as part of a coordinated agreement to offset not spiling during spring due to stilling basin erosion. McNary Dam bypassed spring fish according to criteria and began collection and transport of fish on July 11 when river conditions were determined to no longer be spring like. Barging of fish collected during the summer was extended through August 16 for Snake River projects and August 17 at McNary Dam.

CORPS **Project: 2118 CENWW Evaluation of Transportation Strategies**

Accomplishment Began late season evaluation

CORPS **Project: 2120 CENWW Juvenile salmon transportation evaluations**

Deliverable Evaluation of migration and survival of steelhead and fall chinook following transportation - (OCFWRU - Schreck)
Annual Report

Evaluation of Mid-Columbia Juvenile Salmonid Transportation from McNary Dam (NMFS - Marsh) - Steelhead - Sp Chinook - Fall Chinook
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Lower Snake Fall Chinook Transport Marking and Evaluation
Annual Report - (NMFS - Marsh)

Lower Granite Transport Evaluation, Wild spring chinook and steelhead - finish marking, adult returns through 2006 - (NMFS - Marsh)
Annual Report

Evaluation of Physiological Changes in Transported juvenile salmonids and effects on survival - (ICFWRU - Congleton)
Annual Report

Accomplishment Evaluated migration and survival of juvenile steelhead and fall chinook
Draft Report

Completed Marking for LGR transport study - (NMFS - Marsh)
Draft Report

Completed Marking for Mid - C Spring Chinook
Draft Report

Evaluated Physiological Changes in Transported juvenile salmonids and effects on survival - (ICFWRU - Congleton)
Draft Report

Completed Marking for Fall Chinook Transport Study (NMFS - Marsh)
Draft Report

CORPS **Project: 2132 Spill for Juvenile Fish Passage**

Deliverable 1. Provide Spill for juvenile fish passage as specified 2. Don't spill at Lower Snake Projects if flow projected to be below 85 kcfs.

Accomplishment BON – Spill for juvenile fish passage started 4/10/02 and ended 8/31/02. From 4/10 – 4/15 spill was limited to 50 or 75 kcfs in order to protect emerging chum salmon. Full spill started 4/15. Daytime spill alternated between the 75 kcfs fallback cap and the 120% gas cap.
TDA - Spill for juvenile fish passage started 4/10/02 and ended 8/31/02. Spill was stopped for a short period 6/18 in order to repair a fish release pipe.
JDA - Spill for juvenile fish passage started 4/10/02 and ended 8/31/02. Spill alternated between 60% night / 30% day and 30%night/ 30% day. Spill could be adjusted or stopped for short periods due to navigation concerns. Two days of the 30%night/ 30% day spill was changed to 30% night / 0% day as part of a spill swap to allow a tdg test at The Dalles.
MCN - Spill for juvenile fish passage started 4/10/02 and ended 6/20/02. Spill was reduced for juvenile fish barge loading if needed. Problems with the new flow deflectors at the end bays caused many adjustments in the spill patterns used.
IHR - Spill for juvenile fish passage started 4/10/02 and ended 8/31/02. Due to low flows on 8/21 the spill level was changed to a minimum spill of 20 kcfs for at least 4 hours. On 8/24 daytime spill was eliminated as part of a spill swap to allow a tdg test at The Dalles.
LMN – No spill for juvenile fish passage occurred this due to work in the tailrace.
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LWG - Spill for juvenile fish passage started 4/3/02 and ended 6/20/02. During most of the time spill alternated between 3 conditions, Spill to the gas cap during nighttime, RSW flow + 8 kcfs 24 hours a day, and RSW flow + 16 kcfs 24 hours a day. Spill was shut off for short periods of time 5/25 and 5/26 to allow access to the RSW

RPA 053 Structural and operational alternatives to improve juvenile transportation

CORPS **Project: 2031 CENWW Corps of Engineers' Juvenile Fish TransportationProgram**

Deliverable Implement juvenile fish tranpsortation program in accordance with operating criteria and regional coordination.

Accomplishment Program implemented. All juvenile fish collected at Lower Granite, Little Goose, and Lower Monumental dams were transported according to operating criteria. Lower Monumental implemented special bypass operations during April and May as part of a coordinated agreement to offset not spiling during spring due to stilling basin erosion. McNary Dam bypassed spring fish according to criteria and began collection and transport of fish on July 11 when river conditions were determined to no longer be spring like. Barging of fish collected during the summer was extended through August 16 for Snake River projects and August 17 at McNary Dam.

RPA 054 Implement an annual spill program

CORPS **Project: 2132 Spill for Juvenile Fish Passage**

Deliverable 1. Provide Spill for juvenile fish passage as specified 2. Don't spill at Lower Snake Projects if flow projected to be below 85 kcfs.

Accomplishment BON – Spill for juvenile fish passage started 4/10/02 and ended 8/31/02. From 4/10 – 4/15 spill was limited to 50 or 75 kcfs in order to protect emerging chum salmon. Full spill started 4/15. Daytime spill alternated between the 75 kcfs fallback cap and the 120% gas cap.
TDA - Spill for juvenile fish passage started 4/10/02 and ended 8/31/02. Spill was stopped for a short period 6/18 in order to repair a fish release pipe.
JDA - Spill for juvenile fish passage started 4/10/02 and ended 8/31/02. Spill alternated between 60% night / 30% day and 30%night/ 30% day. Spill could be adjusted or stopped for short periods due to navigation concerns. Two days of the 30%night/ 30% day spill was changed to 30% night / 0% day as part of a spill swap to allow a tdg test at The Dalles.
MCN - Spill for juvenile fish passage started 4/10/02 and ended 6/20/02. Spill was reduced for juvenile fish barge loading if needed. Problems with the new flow deflectors at the end bays caused many adjustments in the spill patterns used.
IHR - Spill for juvenile fish passage started 4/10/02 and ended 8/31/02. Due to low flows on 8/21 the spill level was changed to a minimum spill of 20 kcfs for at least 4 hours. On 8/24 daytime spill was eliminated as part of a spill swap to allow a tdg test at The Dalles.
LMN – No spill for juvenile fish passage occurred this due to work in the tailrace.
LGS - Spill for juvenile fish passage started 4/5/02 and ended 6/20/02. From 4/5 – 4/30 spill was 24 hours a day in order to help mitigate for the lack of spill at Lower Monumental.
LWG - Spill for juvenile fish passage started 4/3/02 and ended 6/20/02. During most of the time spill alternated between 3 conditions, Spill to the gas cap during nighttime, RSW flow + 8 kcfs 24 hours a day, and RSW flow + 16 kcfs 24 hours a day. Spill was shut off for short periods of time 5/25 and 5/26 to allow access to the RSW

RPA 055 initiate planning and design necessary to construct a Schultz- Hanford 500-kV line

BPA **Project: 312 Schultz-Wautoma 500-kV Transmission Line**

Deliverable Complete Draft EIS

Accomplishment Draft EIS released February 2002. Continued work on Final EIS.

RPA 056 joint transmission project to upgrade the west-of-Hatwai cutplane

BPA **Project: 308 Grand Coulee Bell 500-kV Transmission Line**

Deliverable Complete Draft EIS

Accomplishment Draft EIS released August 2002. Continued work for Final EIS.

RPA 057 evaluate strategically located generation additions and other transmission system improvements

BPA **Project: 309 Hungry Horse Transmission Stability Study**

Deliverable Conduct System Engineering Studies

BPA **Project: 310 Libby Transmission Stability Study**

Deliverable Conduct System Engineering Studies

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

BPA **Project: 311 Report on New Generation Resources and Associated Transmission Improvements**

Deliverable Report in FY02 Progress Report

RPA 058 Operate all turbine units for optimum fish passage survival

CORPS **Project: 2064 Operate Turbine units at 1% efficiency range**

Deliverable Operate Turbine units at 1% efficiency range during time specified

Accomplishment Units were operated at the 1% effciency except LWG, LGS, and LMN were authorized to operate outside of 1% peak efficiency from 10/1/02 until 10/23/02 due to low flows if needed. MCN – Unit 9 was operated outside of 1% peak efficiency for part of the time during the turbine survival test 4/3/02 – 4/22/02 and 5/6/02 – 6/14/02.

RPA 059 Determine appropriate operating range of minimum gap runner turbines

BPA **Project: 251 1991-051-00 Monitoring and Evaluation Statistical Support**

Deliverable 1.0 Provide seasonal monitoring support. 1.1 Provide real-time smolt run-timing predictions for ESA demes NMFS ESUs and runs-at-large for the Snake and Columbia Rivers. 1.2 Provide annual review of run-timing predictions. 1.3 Provide post-season outmigration summary that provides retrospective analysis of the success of the current year's outmigration and a comparison with historical years. 2.0 Perform statistical analyses of historical tagging data to extract extra-value information on salmonid population dynamics and their interactions with the environment. 2.1 Perform analysis of smolt-to-adult ratios CWT data from 1970s and PIT-tag to present and make available on Internet. 2.2 Develop and provide interactive, internet-based sample size software to facilitate the design of tag-release studies to estimate ocean and upriver adult survival. 3.0 Statistical support to region. 3.1 Provide statistical consultaion for review of research proposals, technical reports, and statistical guidance on the design and analysis of tagging studies to BPA and the fisheries community. 3.2 Continue statistical evaluation of Biological Opinion performance standards to improve decision analysis for assessing RPA compliance.

Accomplishment Accomplishments to date for 2002 include: 1.0 Providing real-time run-timing predictions during the 2002 smolt outmigration season. 2.1 Ongoing-Compiling estimates and associated standard errors on smolt-to-adult ratios (SARs) using CWT recoveries for 90 Columbia Basin hatcheries from the 1970s to the present. Compiling inriver survival and travel time information using PIT-tag detections for 30 Columbia Basin hatcheries from the 1990s to the present. Results of the CWT and PIT-tag analyses will be available in DART for examination and analysis with ambient river data, power operations, and ocean conditions.

CORPS **Project: 2100 Turbine passage studies**

Deliverable complete second McNary test, draft Phase 1 report

Accomplishment Conducted McNary test. Draft Phase 1 report underway, will be completed early FY03

RPA 060 **Evaluate adult fallback and juvenile passage under daytime spill to the gas cap at BON**

CORPS **Project: 2101 Adult migration studies**

Deliverable continue adult passage telemetry studies, initiate headburn studies and bioenergetic field work

Accomplishment completed season's field studies, including first of two year headburn evaluation

CORPS **Project: 2088 Bonneville juvenile fish studies**

Deliverable research report

Accomplishment Completed 2001 research report. Conducted 2002 passage and survival studies.

RPA 061 **Prototype powerhouse system surface collection evaluations at Bonneville PH 1**

CORPS **Project: 2104 Bonneville 1st PH Surface Bypass**

Deliverable general model repair, investigate low cost alterrnatives

Accomplishment repairs completed, test program to evaluate potential alternatives identified

RPA 062 **Bonneville PH 1 evaluations of intake and gatewell screens**

CORPS **Project: 2103 Bonneville 1st PH FGE**

Deliverable complete new porisity plate P&S

Accomplishment completed designs for new porosity plate for folow-on testing

RPA 063 **Design of debris removal facilities for Bonneville PH 1 forebay**

CORPS **Project: 2103 Bonneville 1st PH FGE**

Deliverable complete new porisity plate P&S

Accomplishment completed designs for new porosity plate for folow-on testing

CORPS **Project: 2105 Bonneville 1st PH JBS improvements**

Deliverable complete explorations

Accomplishment explorations completed, project designs on hold due to funding priorities and further field tests related to alternative passage options

RPA 064 Investigation of minimum gap runners at Bonneville PH 1

CORPS **Project: 2100 Turbine passage studies**

Deliverable complete second McNary test, draft Phase 1 report

Accomplishment Conducted McNary test. Draft Phase 1 report underway, will be completed early FY03

RPA 065 Bonneville PH 2 post-construction evaluation of juvenile fish bypass outfall

CORPS **Project: 2106 Bonneville 2nd PH JBS improvements**

Deliverable continue follow-on improvemets

Accomplishment completed scheduled 2002 follow-on actions

RPA 066 Bonneville Second Powerhouse permanent corner collector

CORPS **Project: 2082 Bonneville 2nd PH surface bypass (corner collector)**

Deliverable complete P&S, initiate construction

Accomplishment Contract awarded and construction underway

RPA 067 Bonneville PH 2 investigations to improve intake screen FGE

CORPS **Project: 2084 Bonneville 2nd PH FGE improvements**

Deliverable complete prototype improvements testing

Accomplishment Tests accomplished. Discovered structural problem with VBS screens aas well as significant passage of juvenile fish back into intakes. Redesign and retesting required.

RPA 068 Spill and passage survival studies at The Dalles Dam

CORPS **Project: 2104 Bonneville 1st PH Surface Bypass**

Deliverable general model repair, investigate low cost alterrnatives

Accomplishment repairs completed, test program to evaluate potential alternatives identified

CORPS **Project: 2099 The Dalles project survival study**

Deliverable research report

Accomplishment completed season's field studies, report in early 03

CORPS **Project: 2107 The Dalles spillway survival improvement study**

Deliverable continue alternatives analysis, P&S for prototype spillwall(s)

Accomplishment continued alternatives analysis, initiated P&S for spillwall

RPA 069 Prototype testing of upper turbine intake occlusion devices at The Dalles

CORPS **Project: 2109 The Dalles surface bypass**

Deliverable continue prototype tests, complete design report

Accomplishment Prototype test conducted, design report completed. Preliminary analysis seem to indicate the prototype blocks did not reduce turbine entrainment significantly. Final analysis and decision whether to proceed with addional studies will be made in 2003.

RPA 070 Sluiceway outfall relocation and adult ladder auxiliary water system at The Dalles

CORPS **Project: 2098 The Dalles sluiceway outfall relocation and emergency AWS**

Deliverable reanalysis of alternative outfall site

Accomplishment Deferred alternative site analysis due to funding priorities and to await results of spillway improvement study

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

RPA 071 Investigation of 24-hour spill at John Day Dam

CORPS **Project: 2096 John Day survival and passage efficiency studies**

Deliverable complete 12/24 spill evaluations

RPA 072 Fish survival benefits of rsws or a skeleton bay surface bypass

CORPS **Project: 2094 John Day surface bypassspillway improvements**

Deliverable conceptual egress test (at Lower Granite)

Accomplishment Lower Granite test accomplished, report will be available in early 2003.

RPA 073 John Day extended submerged intake screens, gatewell vertical barrier screens

CORPS **Project: 2095 John Day Screens**

Deliverable unit 7 gatewell mortality tests

Accomplishment Completed summer tests, did not observe gatewell mortality . Encoutered structiural problem with VBS screen. Will need repair for additional testing.

RPA 074 Improvements of screens, screen cleaning system, and bypass facilities at mcnary

CORPS **Project: 2011 CENWW Cylindrical Dewatering Evaluation**

Deliverable Second year debris and biological tests

RPA 075 Surface bypass RSW at mcnary Dam

No Projects for this RPA. Please see RPA Summary Table.

RPA 076 Juvenile bypass outfall at Lower Monumental Dam

No Projects for this RPA. Please see RPA Summary Table.

RPA 077 Surface bypass (e.g., rsw) at lower monumental dam

No Projects for this RPA. Please see RPA Summary Table.

RPA 078 Extended submerged intake screens and vertical barrier screens at Lower Monumental Dam

CORPS **Project: 2047 Lower Monumental Extended Submerged Bar Screens**

Deliverable Complete Letter Report

RPA 079 Evaluation of the new debris containment boom at Little Goose

CORPS **Project: 2038 CENWW Little Goose Trash Boom**

Deliverable Complete Low Flow Sampling
Complete Final Report

Accomplishment Complete Low Flow Sampling
Completed Draft Report

RPA 080 Prototype RSW at Lower Granite

CORPS **Project: 2045 CENWW Lower Granite Surface Bypass and Collection**

Deliverable 1st Year RSW Test

Accomplishment Conducted first year biological test of the RSW bypass system.

RPA 081 New juvenile bypass facilities at Lower Granite Dam

No Projects for this RPA. Please see RPA Summary Table.

RPA 082 Spillway passage survival of juvenile salmonids at appropriate FCRPS dams

CORPS **Project: 2088 Bonneville juvenile fish studies**

Deliverable research report

Accomplishment Completed 2001 research report. Conducted 2002 passage and survival studies.

CORPS **Project:** **2026 CENWW Ice Harbor Survival Studies**

Deliverable Evaluate spillway survival for SP/Su and Fall chinook

Accomplishment Conducted spillway survival study - NMFS, Pasco

CORPS **Project:** **2096 John Day survival and passage efficiency studies**

Deliverable complete 12/24 spill evaluations

CORPS **Project:** **2061 CENWW McNary Juvenile Survival**

Deliverable Study, Data Analysis Report

Accomplishment Study Accomplished

CORPS **Project:** **2099 The Dalles project survival study**

Deliverable research report

Accomplishment completed season's field studies, report in early 03

CORPS **Project:** **2107 The Dalles spillway survival improvement study**

Deliverable continue alternatives analysis, P&S for prototype spillwall(s)

Accomplishment continued alternatives analysis, initiated P&S for spillwall

RPA 083 Effect of spill duration and volume on spillway effectiveness

CORPS **Project:** **2088 Bonneville juvenile fish studies**

Deliverable research report

Accomplishment Completed 2001 research report. Conducted 2002 passage and survival studies.

CORPS **Project:** **2026 CENWW Ice Harbor Survival Studies**

Deliverable Evaluate spillway survival for SP/Su and Fall chinook

Accomplishment Conducted spillway survival study - NMFS, Pasco

CORPS **Project:** **2096 John Day survival and passage efficiency studies**

Deliverable complete 12/24 spill evaluations

CORPS **Project:** **2061 CENWW McNary Juvenile Survival**

Deliverable Study, Data Analysis Report

Accomplishment Study Accomplished

CORPS **Project:** **2099 The Dalles project survival study**

Deliverable research report

Accomplishment completed season's field studies, report in early 03

CORPS **Project:** **2107 The Dalles spillway survival improvement study**

Deliverable continue alternatives analysis, P&S for prototype spillwall(s)

Accomplishment continued alternatives analysis, initiated P&S for spillwall

RPA 084 High-flow outfall investigations

CORPS **Project:** **2082 Bonneville 2nd PH surface bypass (corner collector)**

Deliverable complete P&S, initiate construction

Accomplishment Contract awarded and construction underway

RPA 085 Improved fish-tracking technologies and computational fluid dynamics

CORPS **Project:** **2045 CENWW Lower Granite Surface Bypass and Collection**

Deliverable 1st Year RSW Test

Accomplishment Conducted first year biological test of the RSW bypass system.

RPA 086 **Increase entry rates of fish approaching surface bypass/collector entrances.**

BPA **Project: 132 2001-010-00 Using Induced Turbulence to Assist Juvenile Migrating Salmon**

Deliverable Reproduce natural turbulence in a laboratory flume. Evaluate juvenile travel relative to the natural turbulence characterists.

CORPS **Project: 2082 Bonneville 2nd PH surface bypass (corner collector)**

Deliverable complete P&S, initiate construction

Accomplishment Contract awarded and construction underway

CORPS **Project: 2094 John Day surface bypassspillway improvements**

Deliverable conceptual egress test (at Lower Granite)

Accomplishment Lower Granite test accomplished, report will be available in early 2003.

CORPS **Project: 2045 CENWW Lower Granite Surface Bypass and Collection**

Deliverable 1st Year RSW Test

Accomplishment Conducted first year biological test of the RSW bypass system.

CORPS **Project: 2099 The Dalles project survival study**

Deliverable research report

Accomplishment completed season's field studies, report in early 03

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

RPA 087 Assess less-intrusive, PIT-tag interrogation methods at FCRPS juvenile bypass systems

CORPS **Project: 2001 1989-107-00 Statistical Support for Salmonid Survival Studies**

Deliverable 1.0 Maintainence of statistical software and Internet access. 1.1 Maintain SURPH.2 software. 1.2 Maintain USER.2 (User Specified Estimation Routine) software. 1.3 Respond to user requests. 1.4 Adapt software to changing computing environment. 2.0 Improvements to statistical software. 2.1 Expand USER.1 capabilities. 2.2 Expand data input capabilities. 2.3 Expand SURPH.2 capabilities to include paired release-recapture modeling. 2.4 Expand SURPH.2 capabilities to incorporate time-varying covariates. 3.0 Provide adult survival study guidance. 3.1 Adult PIT PIT-tag capabilities. 3.2 Adult radiotelemetry investigations. 4.0 Provide technology transfer through preparation of technical reports, publications in the professional literature, and statistical consulting to the fisheries community on tagging and fish tracking studies.

Accomplishment Accomplishments to date for 2002 include: 1) Developed of new statistical methods for estimating transport/inriver ratios to account for the bias associated with low recovery rates of adults. {Application RPA 185} 2) Release of a new version of USER.2 that provides profile likelihood confidence intervals for parameters and functions of parameters.

RPA 088 Improve turbine survival of juvenile and adult salmonids

CORPS **Project: 2100 Turbine passage studies**

Deliverable complete second McNary test, draft Phase 1 report

Accomplishment Conducted McNary test. Draft Phase 1 report underway, will be completed early FY03

RPA 089 Develop biologically based turbine design and operating criteria

CORPS **Project: 2100 Turbine passage studies**

Deliverable complete second McNary test, draft Phase 1 report

Accomplishment Conducted McNary test. Draft Phase 1 report underway, will be completed early FY03

RPA 090 Effects of draft tubes and tailraces on survival of fish passing through turbines

CORPS **Project: 2100 Turbine passage studies**

Deliverable complete second McNary test, draft Phase 1 report

Accomplishment Conducted McNary test. Draft Phase 1 report underway, will be completed early FY03

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

RPA 091 Remove obstructions in the turbine units

CORPS **Project: 2066 Remove Obstructions from Turbine Environments**

Deliverable Inspect turbine units areas during annual maintenance activitiees. Remove obstructions when found and make necessary modifications for maintenance activities.

Accomplishment Continued work to remove obstructions form turbine units at all mainstem Columbia and Snake River projects when turbine units were unwatered for maintenance.

CORPS **Project: 2100 Turbine passage studies**

Deliverable complete second McNary test, draft Phase 1 report

Accomplishment Conducted McNary test. Draft Phase 1 report underway, will be completed early FY03

RPA 092 Consider all state-of-the-art turbine design technology

No Projects for this RPA. Please see RPA Summary Table.

RPA 093 Investigate the survival of adult salmonid passage through turbines

CORPS **Project: 2100 Turbine passage studies**

Deliverable complete second McNary test, draft Phase 1 report

Accomplishment Conducted McNary test. Draft Phase 1 report underway, will be completed early FY03

RPA 094 Improvements of screens, screen cleaning system, and bypass facilities at LSRP

No Projects for this RPA. Please see RPA Summary Table.

RPA 095 Improved wet separator designs

CORPS **Project: 2067 Separator Evaluation**

Deliverable Complete Final Report

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

RPA 096 Extended submerged intake screen systemwide letter report

CORPS **Project: 2034 CENWW Little Goose Extended Submerged Bar Screens**

Deliverable Procurement of Parts.

CORPS **Project: 2040 Lower Granite Extended Submerged Bar Screens**

Deliverable Initiate ESBS Improvements by Project Personnel

CORPS **Project: 2054 McNary Extended Submerged Bar Screens**

Deliverable Complete Construction of replacement ESBS

RPA 097 Compare survival benefits of alternatives at Bonneville First Powerhouse

CORPS **Project: 2103 Bonneville 1st PH FGE**

Deliverable complete new porisity plate P&S

Accomplishment completed designs for new porosity plate for folow-on testing

CORPS **Project: 2105 Bonneville 1st PH JBS improvements**

Deliverable complete explorations

Accomplishment explorations completed, project designs on hold due to funding priorities and further field tests related to alternative passage options

CORPS **Project: 2104 Bonneville 1st PH Surface Bypass**

Deliverable general model repair, investigate low cost alterrnatives

Accomplishment repairs completed, test program to evaluate potential alternatives identified

CORPS **Project: 2082 Bonneville 2nd PH surface bypass (corner collector)**

Deliverable complete P&S, initiate construction

Accomplishment Contract awarded and construction underway

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

RPA 098 Survival benefits of rextended-length screens at JDA to surface collection

CORPS **Project: 2095 John Day Screens**

Deliverable unit 7 gatewell mortality tests

Accomplishment Completed summer tests, did not observe gatewell mortality . Encoutered structiural problem with VBS screen. Will need repair for additional testing.

CORPS **Project: 2094 John Day surface bypassspillway improvements**

Deliverable conceptual egress test (at Lower Granite)

Accomplishment Lower Granite test accomplished, report will be available in early 2003.

RPA 099 Survival benefits of rextended-length screens at LMN to RSW

CORPS **Project: 2047 Lower Monumental Extended Submerged Bar Screens**

Deliverable Complete Letter Report

RPA 100 Reduce the loss of juvenile salmonids to predacious fishes

BPA **Project: 322 1990-077-00 Northern Pikeminnow Management Program**

Deliverable 1. Decrease predation on juvenile salmonids in the Columbia River basin by implementing a public sport-reward fishery for northern Pikeminnow in the lower Columbia and Snake rivers. 2. Decrease predation on juvenile salmonids in the Columbia River basin by implementing angling for northern Pikeminnow at lower Columbia and Snake river dams, and by implementing site-specific removal at other areas where they concentrate. 3. Estimate percent reduction in predation

RPA 101 Effective means of discouraging avian predation

CORPS **Project: 2006 CENWW Avian Predation Measures at Mainstem Columbia and Snake River Projects**

Deliverable Implement measures in FPP, and contract with USDA to discourage avian predation at projects.

Accomplishment Program implemented as coordinated through FPOM. Draft environmental assessment for program prepared by USDA Wildlife Services.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

RPA 102 Evaluate avian predation of juvenile salmonids in the FCRPS reservoirs

BPA **Project:** **134 1997-024-00 Avian Predation on Juvenile Salmonids**

Deliverable 1. Survey of managed Caspian tern colonies in the Columbia River estuary and along the WA coast; 2. Food habits, energy requirements, and smolt consumption rates of Caspian terns nesting in the estuary; 3. Foraging distribution and range, and habitat use of Caspian terns in the estuary and along the WA coast; 4. Survey of double-crested cormorants and glauscous-winged/western gulls nesting colonies on the mainstem above John Day Dam; 5. Food habits, energy requirements, and smolt consumption rates of double-crested cormorants.

Accomplishment Relocation of Caspian terns from Rice Island to East Sand Island resulted in a sharp drop in consumption of juvenile salmonids. In 2002, all terns in the Columbia River Estuary nested on East Sand Island. Total smolt consumption in 2002 estimated at approximately 6.5 million; this represents a 48% reduction in smolt consumption compared to 1998. Approximately 580 breeding paris of terns nested on Crescent Island in 2002. Juvenile salmonids comprised approximately 67% of diet.

RPA 103 Quantify predation by white pelicans on juvenile salmon at MCN

BPA **Project:** **134 1997-024-00 Avian Predation on Juvenile Salmonids**

Deliverable 1. Survey of managed Caspian tern colonies in the Columbia River estuary and along the WA coast; 2. Food habits, energy requirements, and smolt consumption rates of Caspian terns nesting in the estuary; 3. Foraging distribution and range, and habitat use of Caspian terns in the estuary and along the WA coast; 4. Survey of double-crested cormorants and glauscous-winged/western gulls nesting colonies on the mainstem above John Day Dam; 5. Food habits, energy requirements, and smolt consumption rates of double-crested cormorants.

Accomplishment Relocation of Caspian terns from Rice Island to East Sand Island resulted in a sharp drop in consumption of juvenile salmonids. In 2002, all terns in the Columbia River Estuary nested on East Sand Island. Total smolt consumption in 2002 estimated at approximately 6.5 million; this represents a 48% reduction in smolt consumption compared to 1998. Approximately 580 breeding paris of terns nested on Crescent Island in 2002. Juvenile salmonids comprised approximately 67% of diet.

RPA 104 Recover PIT-tag information from predacious bird colonies

No Projects for this RPA. Please see RPA Summary Table.

RPA 105 Assess enhancing function of ecological communities to reduce predation losses

No Projects for this RPA. Please see RPA Summary Table.

RPA 106 Investigate marine mammal predation in the tailrace of BON

CORPS **Project:** **2078 AFEP; Kelt Research, Unaccounted Adult Loss and Straying and Marine Mammal Monitoring**

Deliverable Fund Kelt, Marine Mammal, and Adult General Migration

Accomplishment completed 2nd year of kelt study, first year of 2-year marine mammal study, and ongoing adult migration studies

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RPA 107 **Assess survival of adult salmonids migrating upstream**

BPA **Project: 131 2001-003-00 Installation of Adult PIT-tag Detection Systems**

Deliverable 1) Install adult PIT detection systems in all ladders at Ice Harbor, Lower Granite, and The Dalles. 2) Design adult PIT detection systems at John Day, Little Goose, and Lower Monumental.

Accomplishment In FY2002, we installed adult PIT detection systems in all ladders at Bonneville and McNary. We designed adult PIT detection systems for Ice Harbor, Lower Granite, and Priest Rapids.

BPA **Project: 307 2001-058-00 Removal of Ghost Fishing Nets - Feasibility**

Deliverable 1. Develop expertise to locate and mark lost fishing nets using side-scan sonar technology. 2. Develop salvage methods for located nets. Survey and map locations of lost nets. 3. Conduct salvage operation if deemed appropriate.

Accomplishment 1. Confirmed feasibility to detect gear webbing using sonar technology. 2. Identified that should use a trawl-type boat to conduct recovery. 3. Field activites somewhat hampered due to equipment problems.

BPA **Project: 53 1998-010-03 Spawning Distribution of Fall Chinook Salmon Released as Yearlings above Lower Granite Dam**

Deliverable 1. Provide researchers and managers with accurate counts of fall chinook salmon redds upriver of Lower Granite Dam 2. Determine whether or not the current use of three acclimation-and-release facilities distributes spawners throughout the habitat normally used by Snake River fall chinook salmon.

Accomplishment Received draft journal manuscript entitled “Movement and Fidelity of Hatchery Fall Chinook Salmon Adults Acclimated as Yearling Juveniles at Three Locations in the Snake River Basin.”

BPA **Project: 247 1989-107-00 Statistical Support for Salmonid Survival Studies**

Deliverable 1.0 Maintainence of statistical software and Internet access. 1.1 Maintain SURPH.2 software. 1.2 Maintain USER.2 (User Specified Estimation Routine) software. 1.3 Respond to user requests. 1.4 Adapt software to changing computing environment. 2.0 Improvements to statistical software. 2.1 Expand USER.1 capabilities. 2.2 Expand data input capabilities. 2.3 Expand SURPH.2 capabilities to include paired release-recapture modeling. 2.4 Expand SURPH.2 capabilities to incorporate time-varying covariates. 3.0 Provide adult survival study guidance. 3.1 Adult PIT PIT-tag capabilities. 3.2 Adult radiotelemetry investigations. 4.0 Provide technology transfer through preparation of technical reports, publications in the professional literature, and statistical consulting to the fisheries community on tagging and fish tracking studies.

Accomplishment Accomplishments to date for 2002 include: 1) Developed of new statistical methods for estimating transport/inriver ratios to account for the bias associated with low recovery rates of adults. {Application RPA 185} 2) Release of a new version of USER.2 that provides profile likelihood confidence intervals for parameters and functions of parameters.

CORPS **Project: 2101 Adult migration studies**

Deliverable continue adult passage telemetry studies, initiate headburn studies and bioenergetic field work

Accomplishment completed season's field studies, including first of two year headburn evaluation

CORPS **Project: 2078 AFEP; Kelt Research, Unaccounted Adult Loss and Straying and Marine Mammal Monitoring**

Deliverable Fund Kelt, Marine Mammal, and Adult General Migration

Accomplishment completed 2nd year of kelt study, first year of 2-year marine mammal study, and ongoing adult migration studies

RPA 108 Investigate the causes of headburn in adult salmonids

CORPS **Project: 2078 AFEP; Kelt Research, Unaccounted Adult Loss and Straying and Marine Mammal Monitoring**

Deliverable Fund Kelt, Marine Mammal, and Adult General Migration

Accomplishment completed 2nd year of kelt study, first year of 2-year marine mammal study, and ongoing adult migration studies

RPA 109 Adult steelhead downstream migrant (kelt) assessment program

BPA **Project: 127 2000-017-00 Kelt Reconditioning Research**

Deliverable 1. Benefit/risk assessment for kelt reconditioning. 2. Proposal for Mainstem/Systemwide provincial review. (2002 work statement is still in negotiation, although project operations proceeded under no-cost extension.

Accomplishment The benefit/risk assessment was submitted with the 2001 draft annual report in 10/02. A proposal for 2003-2005 was submitted in the Mainstem/Systemwide provincial review process. In spring, 2002, 938 kelts at Chandler Juvenile Collection Facility, of which 339 survivors were subsequently released for short-term reconditioning test and 142 survivors for long-term reconditioning test (0.51 aggregate survival).

CORPS **Project: 2101 Adult migration studies**

Deliverable continue adult passage telemetry studies, initiate headburn studies and bioenergetic field work

Accomplishment completed season's field studies, including first of two year headburn evaluation

CORPS **Project: 2078 AFEP; Kelt Research, Unaccounted Adult Loss and Straying and Marine Mammal Monitoring**

Deliverable Fund Kelt, Marine Mammal, and Adult General Migration

Accomplishment completed 2nd year of kelt study, first year of 2-year marine mammal study, and ongoing adult migration studies

RPA 110 Adult steelhead holding and jumping in the fish ladders at John Day Dam

CORPS **Project: 2091 John Day salmon holding and jumping**

Deliverable complete modeling and design report, initiate P&S

Accomplishment Plans and specs completed and contract advertised for award and construction in early FY03

RPA 111 Fallback of upstream migrant salmonids through turbine intakes

CORPS **Project: 2100 Turbine passage studies**

Deliverable complete second McNary test, draft Phase 1 report

Accomplishment Conducted McNary test. Draft Phase 1 report underway, will be completed early FY03

RPA 112 Provide egress to adult fish that have fallen back into juvenile collection galleries

No Projects for this RPA. Please see RPA Summary Table.

RPA 113 Reduce adult fallback and mortality through the Bonneville spillway

CORPS **Project: 2086 Bonneville adult fallback**

Deliverable Complete alternatives study. Continue telemetry studies under adult migration study activity, no design work scheduled until completion of studies in 2003.

Accomplishment Completed alternatives evaluation. Monitored results of telemetry studies.

RPA 114 Temperature differences in fishways

CORPS **Project: 2003 CENWW Adult Temperature Evaluation**

Accomplishment Development of CFD model for Lower Snake

Two years, plus piolt study of data collection completed. Including with a Dworshak drawdown in 2002.

CORPS **Project: 2017 CENWW Fish Ladder Temperature Evaluation**

Deliverable Data Analysis Report Water Years 2000 and 2001

Accomplishment Data compiled and analyzed for water years 2000 and 2001. A temperature probe data QA/QC process completed and implemented. Initial draft report prepared but not finalized due to lack of funding.

CORPS **Project: 2092 John Day Ladder Temperature**

Deliverable complete letter report on conditions and passage effects

Accomplishment Draft letter report completed. Final report in early FY03

RPA 115 Comprehensive depth and temperature investigation to characterize direct mortality

CORPS **Project: 2101 Adult migration studies**

Deliverable continue adult passage telemetry studies, initiate headburn studies and bioenergetic field work

Accomplishment completed season's field studies, including first of two year headburn evaluation

CORPS **Project: 2003 CENWW Adult Temperature Evaluation**

Accomplishment Two years, plus piolt study of data collection completed. Including with a Dworshak drawdown in 2002.

Development of CFD model for Lower Snake

RPA 116 Adult fish delay and fallback at ladder junction pools

CORPS **Project: 2003 CENWW Adult Temperature Evaluation**

Accomplishment Two years, plus piolt study of data collection completed. Including with a Dworshak drawdown in 2002.

Development of CFD model for Lower Snake

CORPS **Project: 2018 Fish Ladder Transition Pool Evaluation**

Deliverable Complete Engineering/Biological Test

CORPS **Project: 2091 John Day salmon holding and jumping**

Deliverable complete modeling and design report, initiate P&S

Accomplishment Plans and specs completed and contract advertised for award and construction in early FY03

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

RPA 117 Evaluate adult count station facilities

CORPS **Project: 2007_CENWP_Non-Routine Maintenance of Bonneville Lock and Dam Fish Passage Facilities**

Deliverable Rehabilitation of the Bradford Island and Cascades Island aging fishways. Use the new mechanized STS/VBS inspection system for timely inspections. Refurbish aging STS in the Bonneville second powerhouse. Dredge Bradford Island fish ladder exit area. Report on recommended improvements to the adult fish count stations.

Accomplishment Continued rehabilitation of Bradford Island and Cascades Island fish ladders.

Dredged exit to the Bradford Island fish ladder to improve exit conditions for adult salmon.

Continued refurbishment of second powerhouse STSs.

CORPS **Project: 2028_CENWP_Non-Routine Maintenance of John Day Lock and Dam Fish Passage Facilities**

Deliverable Procure parts to rebuild Powerhouse AWS Fish Water Pumps. Report on recommended improvements to the adult fish count stations.

Accomplishment Prepared plans and specifications for rehabilitating adult fish pump turbines.

Procured parts for rehabilitating adult fish pump turbines.

Began work on report on improvements for adult fish count stations.

CORPS **Project: 2070_CENWP_Non-Routine Maintenance of The Dalles Lock and Dam Fish Passage Facilities**

Deliverable Design new window cleaning brushes for both fish ladder count station windows. Construct new cable design and extensions for main entrance gates. Report on recommended improvements to the adult fish count stations.

Accomplishment Constructed one piece weirs for improving dewatering of the adult fishway.

Designed new window cleaning brushed for counting staiton windows.

Developed new cable design for main adulg fishway entrances.

Began work on report on improvements for adult fish counting stations.

Procured new gratings for north shore fish ladder diffusers.

RPA 118 Indirect prespawning mortality of adult upstream-migrating fish

BPA **Project: 303_2000-058-00_Effects of Gas on the Reproductive Success of Adult Salmonids**

Deliverable Project Complete

Accomplishment Final Report submitted 12/1/2001

BPA **Project:** **247 1989-107-00 Statistical Support for Salmonid Survival Studies**

Deliverable 1.0 Maintainence of statistical software and Internet access. 1.1 Maintain SURPH.2 software. 1.2 Maintain USER.2 (User Specified Estimation Routine) software. 1.3 Respond to user requests. 1.4 Adapt software to changing computing environment. 2.0 Improvements to statistical software. 2.1 Expand USER.1 capabilities. 2.2 Expand data input capabilities. 2.3 Expand SURPH.2 capabilities to include paired release-recapture modeling. 2.4 Expand SURPH.2 capabilities to incorporate time-varying covariates. 3.0 Provide adult survival study guidance. 3.1 Adult PIT PIT-tag capabilities. 3.2 Adult radiotelemetry investigations. 4.0 Provide technology transfer through preparation of technical reports, publications in the professional literature, and statistical consulting to the fisheries community on tagging and fish tracking studies.

Accomplishment Accomplishments to date for 2002 include: 1) Developed of new statistical methods for estimating transport/inriver ratios to account for the bias associated with low recovery rates of adults. {Application RPA 185} 2) Release of a new version of USER.2 that provides profile likelihood confidence intervals for parameters and functions of parameters.

CORPS **Project:** **2101 Adult migration studies**

Deliverable continue adult passage telemetry studies, initiate headburn studies and bioenergetic field work

Accomplishment completed season's field studies, including first of two year headburn evaluation

CORPS **Project:** **2078 AFEP; Kelt Research, Unaccounted Adult Loss and Straying and Marine Mammal Monitoring**

Deliverable Fund Kelt, Marine Mammal, and Adult General Migration

Accomplishment completed 2nd year of kelt study, first year of 2-year marine mammal study, and ongoing adult migration studies

RPA 119 Accommodate Pacific lamprey passage

CORPS **Project:** **2097 Adult Lamprey Passage**

Deliverable complete season's test program

Accomplishment completed season's field tests

RPA 120 Improved operations for adult fishway main entrances at FCRPS dams

CORPS **Project:** **2072 CENWW Improve Operations of Adult Fishway Main Entrances**

Deliverable Complete hydraulic evaluations of adult fishways at all four lower Snake River projects. Prepare final report on Snake River evaluations and fishway operational improvements and recommendations. Begin updating and ground truthing Portland District hydraulic models.

Accomplishment Continued hydraulic evaluations of adult fishways at all four Snake River projects.

Initated hydraulic evaluation of Bonneville Dam first powerhouse adult fishway.

RPA 121 Auxiliary water-supply, emergency-parts inventory for all adult fishways

CORPS **Project: 2069 Spare Parts for Fish Passage Facilities**

Deliverable Procure spare parts as required. Prepare and award contract for procurement of spare winding for McNary Dam adult fish pumps.

Accomplishment Continued procurement of spare parts as required at all mainstem projects..

Contracted for procurement of spare windings for McNary Dam adult fish pumps.

RPA 122 Emergency auxiliary water supply system at The Dalles Dam's east ladder

CORPS **Project: 2098 The Dalles sluiceway outfall relocation and emergency AWS**

Deliverable reanalysis of alternative outfall site

Accomplishment Deferred alternative site analysis due to funding priorities and to await results of spillway improvement study

RPA 123 Dewater adult auxiliary water system floor diffusers for inspection at The Dalles

CORPS **Project: 2108 The Dalles adult entrance channel dewatering mods**

Deliverable complete P&S, initiate construction

Accomplishment completed plans and construction initiated

RPA 124 Emergency auxiliary water to The Dalles Dam north fishway

No Projects for this RPA. Please see RPA Summary Table.

RPA 125 Automated monitoring and alarm system at appropriate FCRPS projects

CORPS **Project: 2013 CENWW Automated Alarm System for Adult Collection Channel Diffuser Systems**

Deliverable Determine feasibility of a monitoring and alarm system to detect diffuser problems. Design prototype system if determined feasible. Continue inspection of diffuser gratings as routine adult fishway maintenance. Correct any diffuser grating problems when found.

Accomplishment Initiated evaluation to determine feasibility of installing a monitoring and alarm system on diffuser systems.

Inspected diffuser gratings as part of routine fish facility maintenance. Corrected any grating problems were found.

RPA 126 Bonneville PH 1 adult fishway auxiliary water system

CORPS **Project: 2007 CENWP Non-Routine Maintenance of Bonneville Lock and Dam Fish Passage Facilities**

Deliverable Rehabilitation of the Bradford Island and Cascades Island aging fishways. Use the new mechanized STS/VBS inspection system for timely inspections. Refurbish aging STS in the Bonneville second powerhouse. Dredge Bradford Island fish ladder exit area. Report on recommended improvements to the adult fish count stations.

Accomplishment Continued rehabilitation of Bradford Island and Cascades Island fish ladders.

Dredged exit to the Bradford Island fish ladder to improve exit conditions for adult salmon.

Continued refurbishment of second powerhouse STSs.

RPA 127 Bonneville PH 2 adult fishway auxiliary water system

CORPS **Project: 2085 Bonneville 2nd PH emergency AWS**

Deliverable complete P&S, award contract

Accomplishment completed P&S, contract awarded September 02

RPA 128 Operating criteria at the John Day Dam north shore ladder

CORPS **Project: 2093 John Day N. Shore AWS**

Deliverable complete problem evaluation and alternatives letter report

Accomplishment Problem evaluations completed. Alternative solutions for further study identified

RPA 129 Fishway auxiliary water supply evaluations at LSRP

CORPS **Project: 2023 CENWW Ice Harbor Emergency Auxiliary Water Supply**

Deliverable Complete Phase 1 Construction - South Shore Electrical System.

CORPS **Project: 2033 CENWW Little Goose Auxiliary Water Supply**

Deliverable Initiate Design and EDC

CORPS **Project: 2039 Lower Granite Emergency Auxiliary Water Supply**

Deliverable Phase I Construction, Electrical, ATS, Starter Modifications

CORPS **Project: 2046 Lower Monumental Auxiliary Water Supply**

Deliverable Final Report - Designs of proposed operational and/or structural modifications

RPA 130 Complete DGAS

No Projects for this RPA. Please see RPA Summary Table.

RPA 131 Monitor the physical and biological effects of TDG

BPA **Project: 303 2000-058-00 Effects of Gas on the Reproductive Success of Adult Salmonids**

Deliverable Project Complete

Accomplishment Final Report submitted 12/1/2001

BPA **Project: 133 1996-021-00 Gas Bubble Disease Research and Monitoring of Juvenile Salmonids**

Deliverable Provide training and QA/QC for gas bubble disease monitoring component of the Smolt Monitoring Program: (1) Clean and adjust dissecting microscopes prior to field season;(2) Provide training to SMP personnel on basic causes and physiological effects of GBD, how to evaluate severity of GBD signs, and recording of data; (3) Conduct in-season, on-site (at least once/site during season) QA/QC to observe technique of on-site biologist and examine fish after the on-site biologist and compare results.

Accomplishment Dissecting microscopes used by the Smolt Monitoring Program were cleaned and adjusted and personnel trained for monitoring signs of gas bubble disease at dams. Also performed periodic on-site QA/QC.

BPA **Project: 245 1987-127-00 Smolt Monitoring by Federal and Non-Federal Agencies**

Deliverable 1) Conduct annual Smolt Monitoring Program (SMP) at seven mainstem Snake and Columbia River dams, Lewiston Snake River trap, Lower Grande Ronde trap, and White Bird trap on the Salmon River. (Note: Imnaha River trap is another SMP site operated by the Nez Perce Tribe (NPT) under Project 1997-015-01). 2) Perform PIT tagging of ~25,500 juvenile fish at five hatcheries and upload data files to PSMFC databsase (USFWS tagging support component). 3) Transmit daily juvenile fish passage, sampling, marking, and other biological and hydrological data to online databases at Fish Passage Center (FPC) and Pacific States Marine Fisheries Commission (PSMFC) for distribution region wide. 4) Comply with ESA Section 10 sampling and reporting requirements at all monitiring sites. 5) Participating agencies and organizations prepare and submit annual reports to PSMFC summarizing SMP activities and data collected at each monitoring site for use in compiling FPC annaul report.

Accomplishment 1) Recorded observations of bull trout caught incidentally at Snake River traps and at smolt collection facilities at mainstem dams on the lower Snake and Columbia rivers.

CORPS **Project: 6031 ESA Coordination--Chief Joseph Dam**

Deliverable Conduct coordination of RPA and RPM actions.

Accomplishment Coordination completed annually.

CORPS **Project: 6014 131 Fixed TDG Monitoring Stations, Chief Joseph Dam**

Deliverable Maintain fixed stations annually. Install stations by April 1 of each year and take down stations after September 15 of each year.

Accomplishment Stations maintained in 2001 and 2002.

CORPS **Project: 2126 CENWW Redundant TDG Monitors - Dworshak to McNary Dam**

Deliverable Ongoing QA/QC and Maintenance

Procurement of additional TDG instruments/ Physical Infrastructure modifications

Accomplishment Additional instruments procured.

QA/QC process implemented

CORPS **Project: 6015 131 Total Dissolved Gas Monitors, Chief Joseph Dam**

Deliverable Annually install TDG monitors at forebay and tailwater of Chief Joeseph Dam. Install by April 1 of each year and maintain until September 15 of each year. Provide backup TDG monitors and calibrate every two weeks during spill season.

Annual TDG report and QA/QC data review.

Accomplishment Finished TDG report and QA/QC data review in 2001 and 2002.

Install and maintain TDG equipment in forebay and tailwaters during 2001 and 2002.

RPA 132 Review and evaluation of the TDG fixed monitoring stations

CORPS **Project: 6031 ESA Coordination--Chief Joseph Dam**

Deliverable Conduct coordination of RPA and RPM actions.

Accomplishment Coordination completed annually.

CORPS **Project: 6017_132_Review TDG Monitoring Stations, Chief Joseph Dam**

Deliverable Install temperature loggers in Chief Joseph Reservoir between Grand Coulee and Chief Joseph.

Evaluate temperature and TDG data at the fixed monitoring stations at Chief Joseph Dam.

Accomplishment 2002: Temperature loggers installed between August and November at three stations between Grand Coulee and Chief Joseph. Loggers record temperature every hour at various depths between the surface and bottom.

2003:

RPA 133 TDG model to be used as a river operations management tool

CORPS **Project: 6031_ESA Coordination--Chief Joseph Dam**

Deliverable Conduct coordination of RPA and RPM actions.

Accomplishment Coordination completed annually.

CORPS **Project: 6020_133_System TDG Model Development Coordination, Chief Joseph Dam**

Deliverable Attend TDG model meetings, provide technical support and data.

Accomplishment Provided technical support in 2002.

RPA 134 Continue the spillway deflector optimization program at each FCRPS project

CORPS **Project: 2081_Bonneville Spillway Flow Deflectors**

Deliverable complete installation at bays 1,2,3,16,17,18

Accomplishment 1st phase of flow deflector installation completed. Evaluations underway.

CORPS **Project: 6031_ESA Coordination--Chief Joseph Dam**

Deliverable Conduct coordination of RPA and RPM actions.

Accomplishment Coordination completed annually.

CORPS **Project: 2026_CENWW_Ice Harbor Survival Studies**

Deliverable Evaluate spillway survival for SP/Su and Fall chinook

Accomplishment Conducted spillway survival study - NMFS, Pasco

CORPS **Project: 2094 John Day surface bypassspillway improvements**

Deliverable conceptual egress test (at Lower Granite)

Accomplishment Lower Granite test accomplished, report will be available in early 2003.

CORPS **Project: 2035 CENWW Little Goose Flow Deflectors and Divider Wall Evaluations**

Deliverable General Model Construction.
General Model Testing.

Accomplishment General Model construction 100% complete
General model testing 85% complete

CORPS **Project: 2055 CENWW McNary Flow Deflectors and Divider Wall Evaluations**

Deliverable End Bay Deflectors.

Accomplishment Deflector Construction completed.

CORPS **Project: 2061 CENWW McNary Juvenile Survival**

Deliverable Study, Data Analysis Report

Accomplishment Study Accomplished

RPA 135 Divider walls at each FCRPS project in the spillway deflector optimization program

CORPS **Project: 2094 John Day surface bypassspillway improvements**

Deliverable conceptual egress test (at Lower Granite)

Accomplishment Lower Granite test accomplished, report will be available in early 2003.

CORPS **Project: 2035 CENWW Little Goose Flow Deflectors and Divider Wall Evaluations**

Deliverable General Model Construction.
General Model Testing.

Accomplishment General Model construction 100% complete
General model testing 85% complete

CORPS **Project:** **2055 CENWW McNary Flow Deflectors and Divider Wall Evaluations**

Deliverable End Bay Deflectors.

Accomplishment Deflector Construction completed.

RPA 136 Spillway deflectors at Chief Joseph Dam

No Projects for this RPA. Please see RPA Summary Table.

RPA 137 TDG abatement options at Libby Dam

CORPS **Project:** **6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination completed.

Coordination was done at TMT meetings.

CORPS **Project:** **6012 22; 137; 8.1.b; 8.2.a.1; 8.2.a.3; 8.2.a.4 Spill Test at Libby Dam on Total Dissolved Gas Impacts**

Accomplishment The spill test was accomplished in spring 2002 and confirmed that spilling over 800 cfs will violate the Sate of Montana's TDG limit of 110% immediately downstream of Libby Dam. Strict adherence to Montana water quality standards means that it is not feasible to routinely utilize the spillway to increase Libby flow capacity in incremental steps of 5000 cfs. The Corps is seeking final confirmation from the State that a variance to this water quality standard will not be granted.

RPA 138 Investigate rsws as a means of optimizing safe spillway passage

CORPS **Project:** **2094 John Day surface bypassspillway improvements**

Deliverable conceptual egress test (at Lower Granite)

Accomplishment Lower Granite test accomplished, report will be available in early 2003.

CORPS **Project:** **2045 CENWW Lower Granite Surface Bypass and Collection**

Deliverable 1st Year RSW Test

Accomplishment Conducted first year biological test of the RSW bypass system.

RPA 139 TDG abatement options at Dworshak Dam

No Projects for this RPA. Please see RPA Summary Table.

RPA 140 Spillway Number 1 (end bay) deflector at John Day Dam

No Projects for this RPA. Please see RPA Summary Table.

RPA 141 Evaluate juvenile fish condition due to disease in relation to high temperature impacts

BPA **Project:** **139 2002-027-00 Lower Snake Hydrodynamics and Water Quality**

Deliverable WQ/bathymetry/met data; CFD 3-D model validation; Annual Rept.

(1) Collect bathymetric data in Lower Granite Reservoir (LGR) of sufficient resolution and detail to develop a grid for the 3-D CFD model.
(2) Collect water temperature data in LGR using vertical strings of temperature loggers placed at several locations based on CFD model results and on use of biological data from BPA Project 1991-029-00.
(3) Use ADCP surveys to gather water velocity data in LGR of suitable quantity and quality to calibrate the CFD model. Capture water circulation patterns before and during strong stratification periods. Use drogues to track water parcels.
(4) Install Class A meteorological station (probably AgriMet) for LGR and collect additional wind speed and direction data throughout the reservoir.
(5) Generate a revised model computational grid for LGR based on bathymetric data collected under Task 1.
(6) Validate the 3-D CFD model of LGR against observed water velocity and temperature data.
(7) Apply CFD models of Little Goose, Lower Monumental and Ice Harbor pools for the project data collection period using field data from other sources and using existing one-, two- or three-dimensional models based on quantity & quality of data collected.
(8) Submit monthly progress reports to BPA. Provide BPA with draft and final Annual reports (PDF format) with field data on CD-ROM as an appendix. Annual report will be accessible via BPA F&W Web site.

Accomplishment

(1) Completed bathymetric data collection.
(2) To validate the 3-D CFD model, PNNL installed over 70 temperature loggers at 11 locations and checked results against DOE Multispectral Thermal Imager satellite. At request of Corps, 4 logger strings left in LGR to collect critical fall and winter data.
(3) ADCP velocity and WQ data collected.
(4) BOR installed Class A AgriMet station for this project at Silcott Island (SILW). It provides data consistent with the other 7 AgriMet stations installed for the AAs along the Columbia - Snake Rivers.
(5) PNNL developed revised computational grid for 3-D model of LGR.
(6) PNNL presented results of preliminary field data and 3-D modeling to NMFS WQ Team RPA 143 subgroup. Results indicate complex 3-D, thermally stratified waterbody below confluence of Snake and Clearwater R., with temperature differences in excess of 10 deg C in summer months. Results are biolologically significant to migrating salmon.

RPA 142 Juvenile fish mortality associated with high summer temperatures at mcnary Dam

CORPS **Project: 2056 CENWW McNary Forebay Temperature Improvements**

Deliverable

CFD Model development

RPA 143 Model the water temperature effects of alternative Snake River operations

BPA **Project: 139 2002-027-00 Lower Snake Hydrodynamics and Water Quality**

Deliverable

WQ/bathymetry/met data; CFD 3-D model validation; Annual Rept.

(1) Collect bathymetric data in Lower Granite Reservoir (LGR) of sufficient resolution and detail to develop a grid for the 3-D CFD model.
(2) Collect water temperature data in LGR using vertical strings of temperature loggers placed at several locations based on CFD model results and on use of biological data from BPA Project 1991-029-00.
(3) Use ADCP surveys to gather water velocity data in LGR of suitable quantity and quality to calibrate the CFD model. Capture water circulation patterns before and during strong stratification periods. Use drogues to track water parcels.
(4) Install Class A meteorological station (probably AgriMet) for LGR and collect additional wind speed and direction data throughout the reservoir.
(5) Generate a revised model computational grid for LGR based on bathymetric data collected under Task 1.
(6) Validate the 3-D CFD model of LGR against observed water velocity and temperature data.
(7) Apply CFD models of Little Goose, Lower Monumental and Ice Harbor pools for the project data collection period using field data from other sources and using existing one-, two- or three-dimensional models based on quantity & quality of data collected.
(8) Submit monthly progress reports to BPA. Provide BPA with draft and final Annual reports (PDF format) with field data on CD-ROM as an appendix. Annual report will be accessible via BPA F&W Web site.

Accomplishment (1) Completed bathymetric data collection.
(2) To validate the 3-D CFD model, PNNL installed over 70 temperature loggers at 11 locations and checked results against DOE Multispectral Thermal Imager satellite. At request of Corps, 4 logger strings left in LGR to collect critical fall and winter data.
(3) ADCP velocity and WQ data collected.
(4) BOR installed Class A AgriMet station for this project at Silcott Island (SILW). It provides data consistent with the other 7 AgriMet stations installed for the AAs along the Columbia - Snake Rivers.
(5) PNNL developed revised computational grid for 3-D model of LGR.
(6) PNNL presented results of preliminary field data and 3-D modeling to NMFS WQ Team RPA 143 subgroup. Results indicate complex 3-D, thermally stratified waterbody below confluence of Snake and Clearwater R., with temperature differences in excess of 10 deg C in summer months. Results are biolologically significant to migrating salmon.

CORPS **Project: 6031 ESA Coordination--Chief Joseph Dam**

Deliverable Conduct coordination of RPA and RPM actions.

Accomplishment Coordination completed annually.

CORPS **Project: 6019 143 System Water Temperature Modeling, Chief Joseph Dam**

Deliverable Attend meetings, provide technical support, provide water temperture data.

Accomplishment The Seattle District has attended meetings, provided requested water temperature data and provided technical support.

CORPS **Project: 2129 CENWW Temperature Modeling Plan Alternative Snake River Operations**

Deliverable Phase 1 - Plan Development - Interim Progress Report

Accomplishment Screening field data set collected and analyzed

Progress report submitted to regional water quality team

RPA 144 Maintain juvenile and adult fish facilities within identified criteria

BPA **Project: 253 1994-033-00 Fish Passage Center**

Deliverable 1) Provide design, oversight, and data analysis of information collected through the conduct of the annual Smolt Monitoring Program (SMP). 2) Perform Section 10 ESA permit application and reporting requirements for SMP and CSS studies. 2) Perform daily operation and maintenance of FPC web site and long term data base of annual fish migration and river environment information for distribution of data region wide. 3) Perform data analysis and prepare Annual Status Report for Comparative Survival Study (CSS) as directed by the CSS Oversight Committee of the fisheries management agencies and tribes. 4) Prepare FPC Annual Report summarizing fish migration, fish passage operations, and river environment information collected through the SMP.

Accomplishment Continued oversight and implementation of SMP. Continued daily operation, maintenance, and update of FPC Website information and historical data base.

CORPS **Project: 2019 CENWW Fish Passage Plan Development and Implementation**

Deliverable Annual update and implemention of Fish Passage Plan.

Accomplishment Fish Passage Plan was updated and implemented as coordinated through FPOM.

CORPS **Project: 2024 CENWW Non-Routine Maintenance of Ice Harbor Lock and Dam Fish Passage Facilities**

Deliverable Finalize preparation of multiple contracts for rehabbing south shore adult fish pumps and related equipment. Award 2 year contract for replacing fish pump hydraulic systems. Contractor fabricate and deliver new adult fishway entrance gates. Project personnel install during winter maintenance period. Prepare contract for replacement of adult entrance hoists.

Accomplishment Prepared and awarded contract for rehabilitation of adult fish pump hydraulic systems. Contractor procured and delivered new components for hydraulic systems.

Continued preparation of contracts for rehabbing south shore adult fish pumps.

Contractor fabricated, delivered, and project personnel installed new adult fishway entrance gates.

Prepared contract for replacement of adult fishway entrance hoists.

CORPS **Project: 2036 CENWW Non-Routine Maintenance of Little Goose Lock and Dam Fish Passage Facilities**

Deliverable Rehab wicket gate assemblies on one fish pump turbine.

Accomplishment Rehabbed wicket gate assemblies on one fish pump turbine.

CORPS **Project: 2043 CENWW Non-Routine Maintenance of Lower Granite Lock and Dam Fish Passage Facilities**

Deliverable Begin preparation of contract for painting interior holds of 8000-series fish barges.

Accomplishment Begin preparation of contract for painting barges.

Repaired eroded shoreline along juvenile fish facility barge loading dock..

Paved access road to barge moorage faciltiy to provide crane service during winter for barge maintenance.

CORPS **Project: 2050 CENWW Non-Routine Maintenance of Lower Monumental Lock and Dam Fish Passage Facilities**

Deliverable Construct additonal juvenile fish facility access platforms and stairways. Award 3 year contract for fish pump rehab, rehabbing one fish pump per year.

Accomplishment Contractor constructed juvenile fish facility access platforms and stairways.

Awarded contract for fish pump rehab and contractor rehabbed one fish pump as planned.

Installed handrails along part of the fish ladders to improve assess for inspections and maintenance.

CORPS **Project: 2059 CENWW Non-Routine Maintenance of McNary Lock and Dam Fish Passage Facilities**

Deliverable Finish preparing contract for replacing adult fish ladder tilting weir control systems.

Prepare and award contract for spare generator coils for adult fish pump motors.

Accomplishment Finished and advertised contract for new adult fish ladder tilting weir control systems.

Prepared and awarded contract for procurement of spare set of generator coils for adult fish pump motors.

CORPS **Project: 2111 CENWP Operation and Maintenance of Bonneville Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

CORPS **Project: 2025 CENWW Operation and Maintenance of Ice Harbor Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

Accomplishment Fish passage facilities operated and maintained according to the annual Fish Passage Plan. All scheduled routine maintenance completed.

CORPS **Project: 2029 CENWP Operation and Maintenance of John Day Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

CORPS **Project: 2037 CENWW Operation and Maintenance of Little Goose Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

Accomplishment Fish passage facilities operated and maintained according to the annual Fish Passage Plan. All scheduled routine maintenance completed.

CORPS **Project: 2044 CENWW Operation and Maintenance of Lower Granite Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

Accomplishment Fish passage facilities operated and maintained according to the annual Fish Passage Plan. All scheduled routine maintenance completed.

CORPS **Project: 2051 CENWW Operation and Maintenance of Lower Monumental Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

Accomplishment Fish passage facilities operated and maintained according to the annual Fish Passage Plan. All scheduled routine maintenance completed.

CORPS **Project:** **2060 CENWW Operation and Maintenance of McNary Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

Accomplishment Fish passage facilities operated and maintained according to the annual Fish Passage Plan. All scheduled routine maintenance completed.

CORPS **Project:** **2071 CENWP Operation and Maintenance of The Dalles Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

CORPS **Project:** **2069 Spare Parts for Fish Passage Facilities**

Deliverable Procure spare parts as required. Prepare and award contract for procurement of spare winding for McNary Dam adult fish pumps.

Accomplishment Continued procurement of spare parts as required at all mainstem projects..

Contracted for procurement of spare windings for McNary Dam adult fish pumps.

RPA 145 Preventative maintenance programs for fish passage facilities

CORPS **Project:** **2007 CENWP Non-Routine Maintenance of Bonneville Lock and Dam Fish Passage Facilities**

Deliverable Rehabilitation of the Bradford Island and Cascades Island aging fishways. Use the new mechanized STS/VBS inspection system for timely inspections. Refurbish aging STS in the Bonneville second powerhouse. Dredge Bradford Island fish ladder exit area. Report on recommended improvements to the adult fish count stations.

Accomplishment Continued rehabilitation of Bradford Island and Cascades Island fish ladders.

Dredged exit to the Bradford Island fish ladder to improve exit conditions for adult salmon.

Continued refurbishment of second powerhouse STSs.

CORPS **Project:** **2024 CENWW Non-Routine Maintenance of Ice Harbor Lock and Dam Fish Passage Facilities**

Deliverable Finalize preparation of multiple contracts for rehabbing south shore adult fish pumps and related equipment. Award 2 year contract for replacing fish pump hydraulic systems. Contractor fabricate and deliver new adult fishway entrance gates. Project personnel install during winter maintenance period. Prepare contract for replacement of adult entrance hoists.

Accomplishment Prepared and awarded contract for rehabilitation of adult fish pump hydraulic systems. Contractor procured and delivered new components for hydraulic systems.

Continued preparation of contracts for rehabbing south shore adult fish pumps.

Contractor fabricated, delivered, and project personnel installed new adult fishway entrance gates.

Prepared contract for replacement of adult fishway entrance hoists.

CORPS **Project: 2028 CENWP Non-Routine Maintenance of John Day Lock and Dam Fish Passage Facilities**

Deliverable Procure parts to rebuild Powerhouse AWS Fish Water Pumps. Report on recommended improvements to the adult fish count stations.

Accomplishment Prepared plans and specifications for rehabilitating adult fish pump turbines.

Procured parts for rehabilitating adult fish pump turbines.

Began work on report on improvements for adult fish count stations.

CORPS **Project: 2036 CENWW Non-Routine Maintenance of Little Goose Lock and Dam Fish Passage Facilities**

Deliverable Rehab wicket gate assemblies on one fish pump turbine.

Accomplishment Rehabbed wicket gate assemblies on one fish pump turbine.

CORPS **Project: 2043 CENWW Non-Routine Maintenance of Lower Granite Lock and Dam Fish Passage Facilities**

Deliverable Begin preparation of contract for painting interior holds of 8000-series fish barges.

Accomplishment Begin preparation of contract for painting barges.

Repaired eroded shoreline along juvenile fish facility barge loading dock..

Paved access road to barge moorage faciltiy to provide crane service during winter for barge maintenance.

CORPS **Project: 2050 CENWW Non-Routine Maintenance of Lower Monumental Lock and Dam Fish Passage Facilities**

Deliverable Construct additonal juvenile fish facility access platforms and stairways. Award 3 year contract for fish pump rehab, rehabbing one fish pump per year.

Accomplishment Contractor constructed juvenile fish facility access platforms and stairways.

Awarded contract for fish pump rehab and contractor rehabbed one fish pump as planned.

Installed handrails along part of the fish ladders to improve assess for inspections and maintenance.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

CORPS **Project: 2059 CENWW Non-Routine Maintenance of McNary Lock and Dam Fish Passage Facilities**

Deliverable Finish preparing contract for replacing adult fish ladder tilting weir control systems.

Prepare and award contract for spare generator coils for adult fish pump motors.

Accomplishment Finished and advertised contract for new adult fish ladder tilting weir control systems.

Prepared and awarded contract for procurement of spare set of generator coils for adult fish pump motors.

CORPS **Project: 2070 CENWP Non-Routine Maintenance of The Dalles Lock and Dam Fish Passage Facilities**

Deliverable Design new window cleaning brushes for both fish ladder count station windows. Construct new cable design and extensions for main entrance gates. Report on recommended improvements to the adult fish count stations.

Accomplishment Constructed one piece weirs for improving dewatering of the adult fishway.

Designed new window cleaning brushed for counting staiton windows.

Developed new cable design for main adulg fishway entrances.

Began work on report on improvements for adult fish counting stations.

Procured new gratings for north shore fish ladder diffusers.

CORPS **Project: 2111 CENWP Operation and Maintenance of Bonneville Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

CORPS **Project: 2025 CENWW Operation and Maintenance of Ice Harbor Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

Accomplishment Fish passage facilities operated and maintained according to the annual Fish Passage Plan. All scheduled routine maintenance completed.

CORPS **Project: 2029 CENWP Operation and Maintenance of John Day Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

CORPS **Project: 2037 CENWW Operation and Maintenance of Little Goose Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

Accomplishment Fish passage facilities operated and maintained according to the annual Fish Passage Plan. All scheduled routine maintenance completed.

CORPS **Project: 2044 CENWW Operation and Maintenance of Lower Granite Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

Accomplishment Fish passage facilities operated and maintained according to the annual Fish Passage Plan. All scheduled routine maintenance completed.

CORPS **Project: 2051 CENWW Operation and Maintenance of Lower Monumental Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

Accomplishment Fish passage facilities operated and maintained according to the annual Fish Passage Plan. All scheduled routine maintenance completed.

CORPS **Project: 2060 CENWW Operation and Maintenance of McNary Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

Accomplishment Fish passage facilities operated and maintained according to the annual Fish Passage Plan. All scheduled routine maintenance completed.

CORPS **Project: 2071 CENWP Operation and Maintenance of The Dalles Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

CORPS **Project: 2069 Spare Parts for Fish Passage Facilities**

Deliverable Procure spare parts as required. Prepare and award contract for procurement of spare winding for McNary Dam adult fish pumps.

Accomplishment Continued procurement of spare parts as required at all mainstem projects..

Contracted for procurement of spare windings for McNary Dam adult fish pumps.

RPA 146 Address debris-handling needs

CORPS **Project: 2083 Bonneville 2nd PH fish unit trash rake**

Deliverable Complete P&S, award contract

Accomplishment Construction contract delayed due to funding priorities. Rescheduled for next FY

CORPS **Project: 2089 Bonneville 2nd PH gatewell debris removal**

Deliverable none

Accomplishment Work deferred for funding priorities

CORPS **Project:** **2095 John Day Screens**

Deliverable unit 7 gatewell mortality tests

Accomplishment Completed summer tests, did not observe gatewell mortality . Encoutered structiural problem with VBS screen. Will need repair for additional testing.

CORPS **Project:** **2111 CENWP Operation and Maintenance of Bonneville Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

CORPS **Project:** **2025 CENWW Operation and Maintenance of Ice Harbor Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

Accomplishment Fish passage facilities operated and maintained according to the annual Fish Passage Plan. All scheduled routine maintenance completed.

CORPS **Project:** **2037 CENWW Operation and Maintenance of Little Goose Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

Accomplishment Fish passage facilities operated and maintained according to the annual Fish Passage Plan. All scheduled routine maintenance completed.

CORPS **Project:** **2044 CENWW Operation and Maintenance of Lower Granite Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

Accomplishment Fish passage facilities operated and maintained according to the annual Fish Passage Plan. All scheduled routine maintenance completed.

CORPS **Project:** **2051 CENWW Operation and Maintenance of Lower Monumental Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

Accomplishment Fish passage facilities operated and maintained according to the annual Fish Passage Plan. All scheduled routine maintenance completed.

CORPS **Project:** **2060 CENWW Operation and Maintenance of McNary Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

Accomplishment Fish passage facilities operated and maintained according to the annual Fish Passage Plan. All scheduled routine maintenance completed.

RPA 147 Project management plan to reevaluate more intensive hydropower related action

No Projects for this RPA. Please see RPA Summary Table.

RPA 148 Detailed engineering and design work for improvements

No Projects for this RPA. Please see RPA Summary Table.

RPA 149 Initiate programs in three priority subbasins

BPA **Project: 121 2001-023-00 15 Mile Water Rights Acquisition**

Deliverable 1) Public outreach, stream prioritization, and data base management 2) monitoring new and existing water rights 3) acquisition of new water rights

Accomplishment Continued public outreach, stream prioritization, data base management and) monitoring new and existing water rights. Acquired 1.827 cfs of instream water rights.

BPA **Project: 17 1999-013-00 Ahtanum Creek Wastershed Assessment**

Deliverable Maintain and protect existing high quality habitat areas (and the native populations inhabiting those areas). Restore degraded areas, and return natural ecosystem functions to the subbasin. Increase the information and knowledge needed to restore and manage fish, wildlife and their habitat. Finalize and deep update the habitat assessment plan. Prepare quarterly and annual report.

Accomplishment Installed 5 staff gages in Ahtanum Creek; data repository YN database.

BPA **Project: 100 2000-001-00 Anadromous Fish Habitat & Passage in Omak Creek**

Deliverable Continue on-going work SOW being developed

Accomplishment Improved passage at 2 sites - Timbermill and Mission Falls to open 21.0 miles of stream habitat.

BPA **Project: 223 1997-078-00 Catherine Creek Irrigation Stabilization**

Deliverable Project Completed

Accomplishment Project Completed - 1)Construct a removable metal rack for the concrete wall fartherst upstream on the fish ladder; 2)Construct two rock vortex weirs below the ladder

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

BPA **Project: 125 1999-008-00 Columbia Plateau Water Rights Acquisition**

Deliverable 1)Public outreach, stream prioritizatio and data base 2) monitoring existing and new water rights 3) acquisition of new2 water rights

Accomplishment Public outreach, stream prioritization and data base management , monitoring water rights, acquired water rights for 17.17 cfs of instream flow.

BPA **Project: 68 1993-062-00 Custer Soil & Water Conservation District Salmon River Fish Passage Enhancement**

Deliverable 1. This project has been restructured consistent with a geographic approach for project selection, planning, implementation. 2. Minimize losses and migratory delays or blockages of salmonids that are associated with irrigation diversion structures and water withdrawels along streams on non-federal lands. 3. Improve critical habitats for salmonids on non-federal lands by improving riparian conditions and reducing streambed sedimentation and water temprature.

Accomplishment Improved fish passage on Pahsimeroi (Circle Pie and Robins) - opened approximately 7 miles of stream.

BPA **Project: 114 1998-017-00 Eliminate Gravel Push-up Dams in Lower North Fork John Day**

Deliverable Construct 3 alternative irrigation systems eliminating the need for push up dams in the North Fork John Day River

Accomplishment No progress in 2002.

BPA **Project: 187 2001-054-00 Emergency Flow Augmentation for Buck Hollow**

Deliverable 1. Project coordination / management. 2. Augment stream flow in Buck Hollow Creek.3. Monitor and evaluate stream flow and other environmental conditions

Accomplishment Completed Buck Hollow Proj. Phase 7a: Accomplishments to date include: 50.5 miles fence, 1255 ac. range seeding, 137400 ft. terraces, 152 sediment basins, 1240 ac. brush control, 5 livestock wells, 13 spring developments, 12490 ft. pipeline, and much more. 1.5 cfs of water was supplied to the upper reaches of the creek during the summer months of 2002. Flow at the confluence was about 0.9 cfs greater in late summer 2002 than in a similar drought year in the 1970's.

BPA **Project: 280 2002-020-00 Fabricate and Install New Huntsville Mill Fish Screen**

Deliverable 1) Design screen. 2) Build screen.

Accomplishment Design and fabrication delayed until FY 2003.

BPA **Project: 4 1991-057-00 Fabricate and Install Yakima Basin Phase II Fish Sreens**

Deliverable Fabricate and install fish screening devices that meet State and Federal fish protection criteria.

Accomplishment Installed left bank diversion screen on Naches River (Chapman Nelson) and open 2.6 miles upstream habitat.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

BPA **Project:** **106 2002-029-00 Fish Passage on WDFW Lands in Yakima**

Deliverable 1. Survey fish passage structures and produce report identifying prioritized list of structures for correction. 2. Design/engineer corrective actions and complete NEPA/Permits.

Accomplishment Project was not recommended for funding.

BPA **Project:** **123 2001-041-00 Forrest Ranch Acquisition**

Deliverable 1) Close the sale of the property. 2)Complete HEP. 3 Complete Hankin and Reeves Survey. 4) Complete property management plan. 5) River restoration of 2 mile reach of Middle Fork John Day

Accomplishment Acquisition of 4,323 acres and 25.2 cfs of water rights. Continued to protect 4.7 river miles of productive fish habitat at risk of being degraded.

BPA **Project:** **276 2001-038-00 Gourlay Creek Dam Fish Ladder**

Deliverable 3) Construction

Accomplishment Fish passage improved at 2 locations to benefit cutthroat/coho and steelhead.

BPA **Project:** **210 1992-026-01 Grande Ronde Model Watershed - Little Sheep Creek Large Wood Placement and Culvert Replacement**

Deliverable 1)reestablish fish passage at two impassable culverts; 2)improve habitat and in-stream structure through the addition of large wood

BPA **Project:** **103 2001-065-00 Hancock Springs Passage and Habitat Restoration Improvements**

Deliverable Complete NEPA Watershed Checklist, Prepare Biological Assessment, Engineering survey of the culvert replacment site. Coordinate with NMFS on the BO. Remove existing culvert. Install arched/box culvert. Conduct final Inspection. Install K-weir and pump screen, Install off-channel rock watering sites for livestock, conduct streamside planings, conduct fencing around spring sources.

Accomplishment Contracts in place. NEPA & ESA and permitting nearly complete. Installation of culvert scheduled between July 1 and August 15, 2002.

BPA **Project:** **162 Holistic Restoration of Critical Habitat on Non-federal Lands in the Lemhi Watershed, Idaho**

Deliverable Characterize existing conditions and trends within the watershed, and identify data gaps. Minimize losses and migratory delays or blockages of salmonids that are associated with irrigation diversion structures and water withdrawals along streams on non-federal lands. Improve critical habitats and survival rates for salmonids on non-federal lands by improving riparian conditions and reducing streambed sedimentation and water temperatures. Implement the monitoring program.

Accomplishment BPA recommended this project for funding under the 2002 Mountain Snake Provincial Review process, but it was not considered critical for BiOp implementation.

BPA **Project:** **161 Holistic Restoration of Critical Habitat on Non-federal Lands in the Pahsimeroi Watershed, Idaho**

Deliverable Minimize losses and migratory delays or blockages of salmonids that are associated with irrigation diversion structures and water withdrawals along streams on non-federal lands. Improve critical habitats and survival rates for salmonids on non-federal lands by improving riparian conditions and reducing streambed sedimentation and water temperatures. Implement the monitoring program.

Accomplishment BPA recommended this project for funding under the 2002 Mountain Snake Provincial Review process, but it was not considered critical for BiOp implementation.

BPA **Project: 163 Holistic Restoration of Critical Habitat on Non-federal Lands, East Fork Salmon Watershed, Idaho**

Deliverable Characterize existing conditions and trends within the watershed, and identify data gaps. Minimize losses and migratory delays or blockages of salmonids that are associated with irrigation diversion structures and water withdrawals along streams on non-federal lands. Improve critical habitats and survival rates for salmonids on non-federal lands by improving riparian conditions and reducing streambed sedimentation and water temperatures. Implement the monitoring program.

Accomplishment BPA recommended this project for funding under the 2002 Mountain Snake Provincial Review process, but it was not considered critical for BiOp implementation.

BPA **Project: 165 Holistic Restoration of Critical Habitat on Non-federal Lands, Upper Salmon Watershed, Idaho**

Deliverable Characterize existing conditions and trends within the watershed, and identify data gaps. Minimize losses and migratory delays or blockages of salmonids that are associated with irrigation diversion structures and water withdrawals along streams on non-federal lands. Improve critical habitats and survival rates for salmonids on non-federal lands by improving riparian conditions and reducing streambed sedimentation and water temperatures. Implement the monitoring program.

Accomplishment BPA recommended this project for funding under the 2002 Mountain Snake Provincial Review process, but it was not considered critical for BiOp implementation.

BPA **Project: 164 Holistic Restoration of Habitat on Non-federal Lands, Middle Salmon-Panther Watershed, Idaho**

Deliverable Characterize existing conditions and trends within the watershed, and identify data gaps. Minimize losses and migratory delays or blockages of salmonids that are associated with irrigation diversion structures and water withdrawals along streams on non-federal lands. Improve critical habitats and survival rates for salmonids on non-federal lands by improving riparian conditions and reducing streambed sedimentation and water temperatures. Implement the monitoring program.

Accomplishment BPA recommended this project for funding under the 2002 Mountain Snake Provincial Review process, but it was not considered critical for BiOp implementation.

BPA **Project: 183 1998-021-00 Hood River Fish Habitat Project**

Deliverable Plan, coordinate and implement a wide array of habitat improvement actions for anaadromous fish including, replacement screens, riparian buffers, and alternative irrigation water delivery systems. Participate in watershed assessments actions and database development.

Accomplishment Two 5-year (2002 to 2007) protection agreements (non-agricultural incentive program) signed for productive private lands at risk of being degraded. Agreements protect 0.4 miles and 3.6 acres of riparian habitat. Installed 1 fish screen - opened 110 miles of upstream habitat. Engineering and design completed for 1 fish screen that would open 35 miles of upstream habitat.

BPA **Project: 69 1994-015-00 Idaho Fish Screen Improvement**

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable 1. Complete surveys, designs, of Idaho's Anadromous fish corridors. 2. Reduce the number of gravel push-up diversion dams by consolidation and elimination of irrigation ditches. 3. Maximize any rearing habitat in appropriate irrigation canals. 4. Reconnect streams to anadromous fish corridors. 5. Install and evaluate alternative fish screens. 6. Construction & installation of all unscreened gravity and pump intakes in Idaho's anadromous fish corridors.

Accomplishment 13 passage barriers removed; 51 screens installed or improved, enhanced instream flow by 33.2 cfs.

BPA **Project:** **270 1994-018-06 Implement Tucannon River Model Watershed Plan to Restore Salmonid Habitat (Work contracted under 1999-001-00, 1999-057-00)**

Deliverable 1) Upland Best management Implementation to reduce soil erosion (e.g., grass waterways, sediment basins, critical area plantings): a) direct seeding 3 continued, 0 new. 2) Riparian re-vegetation and enhancement: a) develop off-stream watering sites: b) fence 1,000 ft of riparian, c) plant 20,000 stems. 3) Monitoring and Evaluation - a) Pre- versus Post- implementation habitat quality surveys, b) Water Quality sampling, c) Six-year milesone (resurvey previous habitat units after habitat improvements). 4) Install instream habitat structures - a) Camp Wooten Phase 2. 5) Coordinate wateshed council activities on private and public lands including. 6) Coordinate watershed project identification, selection, design, development, prioritization and acceptance (including NRCS). 7) Direct and assist the planning and implementation of conservation management systems for producers in the model waershed area. 8) Develop list of potential projects for FY 2003. 9) Monitor/Evaluate all projects for effectiveness in meeting Plan goal and objectives. 10) Coordinate Information and Education program. 11) Tucannon River Model Watershed Administration. 12) Subbasin Planning Coordination. 13) Water savings, Irrigation efficiency, Update screens, Install water meters. 14) Annual Report

BPA **Project:** **279 2001-064-00 Improve Stream Flow and Passage for Simcoe Creek Steelhead**

Deliverable 1) Screen diversion. Provide juvenile and adult steelhead passage at Hoptowit and Hubbard diversions. a) subcontract for passage facility design, b) subcontract for passage construction. c) monitor effectiveness in preventing fish from entering canals. 2) Drill wells to decrease reliance on 4 diversions for stock watering a) Establish well drill sites that will be used to reduce diversion volumes (thus increasing flows in river), b) subcontract for well drilling, c) Purchase and install pumps, valves stock tanks, electrical wiring (and where applicable, solar panels), d) monitor wells to ensure that they are meeting water needs, e) monitor canals to ensure that during low flow periods that diversion is either ceased (2 canals) or being reduced (2 canals).

Accomplishment Project started late, no accomplishments for 2002.

BPA **Project:** **44 2001-075-00 Increase Instream Flows to Dewatered Stream Reaches in the Walla Walla Basin**

Deliverable Ditch pipelining: 1) Ramp flumes installed in 3 ditches; 2) Measurements taken - ditch losses quantified; 3) Design of ditch piping systems for 3 ditches; 4) Ditch pipe improvemeents installed on 3 ditches; 5) Monitoring system in place. CREP leases and buffers: 1) Water rights appraised for 350 acres; 2) CREP contracts signed and buffers installed for 350 acres; 3) Monitoring program in place.

Accomplishment Ditch pipelining: 1) Ramp flumes installed in 3 ditches; 2) Measurements taken - ditch losses quantified; 3) Design of ditch piping systems for 3 ditches; 4) Ditch pipe improvemeents installed on 3 ditches; 5) Monitoring system in place. CREP leases and buffers: 1) water rights appraised for 350 acres; 2) CREP contracts signed and buffers installed for 350 acres; 3) Monitoring program in place. Acquired 1.4 cfs of instream flow (Gardena Farms Pipeline).

BPA **Project:** **4001 1998-018-00 John Day Watershed Restoration Program**

Deliverable 1) construct 3 off site watering systems 2) Install 8 permanent irrigation diversions 3) remove 500 acres of Junipers to increase trib flows and decrease erosion 4) construct 2 miles of riparian fencing 5) complete one return flow cooling system

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Accomplishment Water quality improvements at 303(d) listed sites - Dans Creek, Indian Creek and Franks Creek. Improvements for Emmel return flow cooling, Lower Island ditch, Ricco ditch, Rice ditch, Holliday return flow cooling and Clausen pump station. Eight partial barriers (diversion dams) removed or improved.

BPA **Project:** **35 1996-011-00 Juvenile Screens and Smolt Traps at Walla Walla River**

Deliverable 1) Construct GC/L2 screens/ladder; 2) Provide O&M for Burlingame, Little Walla Walla, Nursery Bridge, and GC/L2 projects; 3) Pre-order long lead time equipment for Milton Ditch pipeline project; 4) Replace defective rubber dam at Little WW.

Accomplishment Nursery Bridge ladder installed - opened 14.3 miles stream habitat. Screening at Little Walla Walla River headworks in Milton-Freewater - 5.3 miles upstream habitat.

BPA **Project:** **78 1999-014-00 Little Canyon Creek Subwatershed-Steelhead Trout Habitat Improvement Project**

Deliverable 1. Conservation Tillage. 2. sediment basins. 3. water and sediment control basins. 4. Culvert outlets. 5. Grade stabilizations. 5. Grassed waterways. 6. Permanent vegetation. 7. riparian habitat improvement

Accomplishment Continued enhanced level of conservation on the watershed acreage.

BPA **Project:** **102 2001-063-00 Methow River Basin Screening**

Deliverable (1) Rockview with new information WDFW elected to cancel the construction of the new Rockview fish screening facility and pursue installation of one or several groundwater wells. Current funding will only cover well installation. New work is to secure water rights.

Accomplishment Replaced Foghorn screen on the Methow River to open 8 miles of upstream habitat.

BPA **Project:** **94 1996-034-01 Methow Valley Irrigation District Rehabilitation**

Deliverable Initiate ESA consultation to determine flows under new project. Initiate NEPA work including any additional engineering needs. Complete lateral replacement project.

Accomplishment Acquired 25.0 cfs of instream flow at 2 locations from May to October from- MVID diversion on Methow River and on Twisp River. Installed approximately 23 flow meters to measure water savings. Saved water to be dedicated to state trust water right. The Methow and Twisp Rivers are 303(d) listed with parameters of concern to fish.

BPA **Project:** **228 1999-061-00 Mill Creek Fish Passage/Grande Ronde/Union County SWCD Channel Road**

Deliverable Project completed

Accomplishment Project completed - 1)Construct concrete footers for fish ladder support and installation; 2)install 9' steel fishway; 3)construct one rock vortex weir to create pool; 4)repair leaking headgete

BPA **Project:** **113 1993-066-00 NE Oregon Pump Screening**

Deliverable 1) Design and construct 21 fish screening sites

Accomplishment Installed 24 fish screening projects; opened a total of 378 miles of stream habitat.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

BPA **Project: 1 1985-062-00 Passage Improvement Evaluation - Phase II Screens**

Deliverable Task I-A, Field Evaluations of fish screens. Task I-B, Problem identification protocol task

Accomplishment Continue to monitor project.

BPA **Project: 25 1995-068-00 Preliminary Design for Passage & Habitat Improvement**

Deliverable Complete engineering design noted above for Lyle Falls. Initiate Master Plan

Accomplishment Prelim. design continues for Lyle Falls. Form technical co-management team for master plan development. Improved passage at 3 sites - Castile Falls 10/11 and 4/5 fishway tunnels and Lyle Falls #5 fishway.

BPA **Project: 87 2000-036-00 Protect & Restore Mill Creek**

Deliverable 1. Restore meadow and riparian plant communities to enhance fish and wildlife habitat. 2. Return passage to inaccessible tributary habitat and alleviate sediment sources associated with culverts.

Accomplishment Continued protection of meadow and riparian communities; stabilized stream banks and improved water quality.

BPA **Project: 80 1999-016-00 Protect and Restore Big Canyon Creek Watershed**

Deliverable 1. Provide fish access at all road crossings in all historical habitats by replacing 3 fish barrier culverts/year: 2. Increase summer low flows and decrease high flow events by protecting identified critical wetland areas for passive restoration. a. Build 2 miles of fence.

Accomplishment Cost share with CWA 319 Program, Continuous Reserve Program. Coordinated the TMDL process with Nez Perce Tribal Water Resources Dept. and Idaho DEQ. Contracted for road crossing surveys and prioritization of barriers replacements. Culvert replacements and fence construction to begin in FY 2003 pending funding allocation.

BPA **Project: 81 1999-017-00 Protect and Restore Lapwai Creek Watershed**

Deliverable 1. Return and protect stream, riparian, and watershed health by contributing in finishing 6 and developing 10 new Conservation Land Management Plans on private landowner property. 2.Fence 2 miles of riparian area. 3.Plant 5 acres of vegetation on private landowner property. 4. Increase summer low flows and decrease high flow events by protecting identified critical wetland areas for passive restoration. Build 2 miles of fence.

Accomplishment Contracted for road crossing surveys and prioritization of barrier replacements. Habitat protected through CCRP, CWA Section 319 and PL566 requirements and Nez Perce Tribal Action. Riparian fence construction planned for summer of 2003 that will protect 2.0 river miles and 52 acres of productive fish habitat at risk of degradation. Coordinating TMDL process with Nez Perce Tribe Water Resources Department and Idaho DEQ.

BPA **Project: 73 1996-077-02 Protect and Restore Lolo Creek Watershed**

Deliverable 1. Restore and enhance critical riparian and in-stream habitat to reduce sedimentation and stream temperatures. 2. Restore hydrologic connectivity and fish passage within the Lolo Creek watershed. 3. Alleviate sediment input to the stream and reduce risk from sediment related mass wasting and surface erosion related to road sources.

Accomplishment Continued restoration and enhancement of critical riparian and in-stream habitat, reduction of sedimentation and stream temperatures.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

BPA **Project:** **74_1996-077-03_Protecting and Restoring the Waw'aatamnima (Fishing)(Squaw) Creek to 'Imnaamatnoon (Legendary Bear)(Papoose) Creek Watersheds Analysis Area**

Deliverable 1. Obliterate approximately 35 miles of road per year. 2.Return 20 miles of fisheries habitat for all fish life history stages (spawning, rearing, migration, and over-wintering) to target anadromous and resident fish species by replacing 10 culverts (3 per year) in cooperation with the CNF.

BPA **Project:** **90_2001-051-00_Reconnect Little Morgan Creek to the Main-stem Pahsimeroi River**

Deliverable Provide stream flows in the de-watered portion of Little Morgan Creek by saving water through the modification of existing and construction of new irrigation delivery systems. Reconstruct and realign portions of the lower creek channel so water can flow unobstructed to the mainstem Pahsimeroi and Salmon rivers. Determine pre-project fisheries and riparian status in repeatable locations to establish quantifiable baseline information for monitoring and evaluation purposes.

Accomplishment No passage, screening or flow work accomplished this year.

BPA **Project:** **138_2002-021-00_Reduce Water Temperatures in Teanaway**

Deliverable Increase irrigation efficiency on agricultural lands in lower Teanaway Basin. Restore riparian vegetation in Teanaway Basin. Monitor effectiveness of actions taken under this project. Monitor water quality (sediment & temperature) in Teanaway Basin. Reporting, project management and data input.

Accomplishment With guidance from Ecology, KCCD installed 7 data loggers at various locations on the Teanaway, including the forks. One site is shared with USFS for data quality assurance purposes since USFS is conducting similar monitoring on its land in the basin. Logger data retrieved successfully in August and October. Development has begun on a Quality Assurance Project Plan (QAPP) for Ecology's approval. Analyzed Ecology's FLIR data using GIS. Ecology / KCCD submitted 2 Quarterly reports covering May through September to BPA.

BPA **Project:** **86_2000-035-00_Rehabilitate Newsome Creek Watershed - South Fork Clearwater River**

Deliverable 1. Alleviate sediment input and potential from road sources. 2.Design rehabilitation for the upper channel reaches of Newsome Creek affected by past dredge mining. 3.Improve Fish Passage and alleviate potential culvert problems.

Accomplishment Continued to alleviate sediment input from road sources.

BPA **Project:** **101_2000-002-00_Remove Barriers/Restore Instream Habitat on Chumstick Creek**

Deliverable Complete Watershed Assessment. Develop a restoration plan for the project site. Implement the restoration plan. Develop and implement a monitoring plan. Information transfer and Education

Accomplishment Replaced seven culverts with bridges; replaced 1 culvert with bottomless arch culvert. Opened approximately 2.5 miles of stream habitat.

BPA **Project:** **91_2001-052-00_Restoration of Anadromous Fish Access to Hawley Creek**

Deliverable Increase instream flow in Hawley Creek. Reconnect Hawley Creek with Lemhi River. Prevent fish from entering irrigation system.

Accomplishment no activity in 2001-2002, no accomplishments to date.

BPA **Project:** **96_1996-042-00_Restore and Enhance Anadromous Fish Populations and Habitat in Salmon Creek**

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable Provide instream flows through on-farm water conservaton and water leasing. Design a river pump station and an upgrade to the Salmon Lake Feeder Canal. Enhance channel habitat. Desgin channel restoration. Undertake NEPA. Raise funds for all the above.

Accomplishment Implemented third year of water leasing program with OID to provide passage for steelhead adults, juvenile outmigration and overwintering and rearing. Approximately 585 acres (3 ac. ft./acre) acquired on Salmon Creek and 2610 ac/ft (63 act/ft dry year; 4060 ac/ft wet yr) conserved through the Okanogan Irrigation District. Purchased protection for 0.75 river miles and 60 acres of productive fish habitat at risk of being degraded (Ruby townsite/Salmon Creek).

BPA Project: 75 1996-077-05 Restore McComas Meadows/Meadow Creek Watershed

Deliverable 1. Restore hydrologic connectivity within the Meadow Creek area of McComas Meadows. 2. Restore fish passage. 3. Restore meadow and riparian plant communities to enhance fish and wildlife habitat. 4. Alleviate sediment input to the stream and reduce risk from sediment related mass wasting and surface erosion related to road sources.

Accomplishment Continued to protect and restore critical riparian/stream habitat in Meadow Creek thru streambank stabilization, riparian re-vegetation, road decommissioning, culvert repalcement/repair, and native plant restoration.

BPA Project: 92 2001-067-00 Restore Passage Lower Lemhi / Salmon Rivers

Deliverable Reconfigure culvert & fish passage barrier at Kinnikinic Creek. Reconfigure culvert & fish passage barrier. Improve fish passage at L3 and L3A Diversions. Construct and install fish ladders. Reconfigure culvert and fish passage barrier at Kinnikinic Creek. Reconfigure culvert and fish passage barrier.

Accomplishment Improved fish passage (4.8 miles of stream habitat opened), instream flow enhancement of 0.5 cfs - partial ditch lining to reduce seepage loss and bank failure. Installed headgate and removed wasteway channel.

BPA Project: 97 1998-025-00 Restore Steelhead and Chinook habitat in Early Winters Creek

Deliverable This project was delayed by almost two years due to delays in receiving a biological opinion from NMFS. The project work includes terracing the eroding bank along the north side of the Early Winters campground with an excavator and restabilize the bank using native vegetation; removing two non-functioning bridge abutments from the Early Winters Creek floodplain; placing ten to twenty large boulders (2.5-4 ft. diameter) in the active stream channel to enable potential spawning and rearing habitat complexity; enhance natural high flow side channel complexity and refugia habitat by creating 5-10 step pool sequences excavated in the dry floodplain; placing large wood on a gravel bar near Early Winters ditch headgate to create additional refugia during high flow and augment a natural logjam at the downstream end of the project by placing LWD.

Accomplishment Continued pulling invasive weeds and installed temperature recording devices in project area. Complete habitat assessment.

BPA Project: 14 1997-053-00 Toppenish-Simcoe Instream Flow Restoration and Assessment

Deliverable Adaptively update project management plan. Implement Management Plan. Operations and Maintenance. Monitoring and Evaluation. Quarterly and Annual Reports

Accomplishment Obtained 7 year (2002 to 2000) lease to protect 1.5 river miles and 80 acres of important spawning/rearing habitat at risk of being degraded. Passage improved at Toppenish Cr. Durham ditch barrier and Simcoe Narrows diversion improvement to open 88.8 miles of stream habitat. Acquired 2.5 cfs instream flow at Agency Creek; installed 2 gauges in Toppenish Creek and provided to YN database.

BPA Project: 278 2001-061-00 Touchet River Flow Acquisition

Deliverable 2) Closure of sale agreement. 3) Monitoring of non-use.

Accomplishment Completed land transaction. Monitored to confirm lack of irrigation - l discontinued irrigation for instream flow enhancement of 1.04 cfs.

BPA Project: 93 2001-068-00 Transfer Lemhi Water Users (L-6 to Salmon River (S-14)

Deliverable Conserve 13 cfs of flow in critical reach of Lemhi River for adult and juvenile chinook salmon migration by changing the source of irrigation water for affected properties from the Lemhi River at L-6 diversion to the Salmon River at S-14 diversion

Accomplishment No passage, screening or flow work was accomplished this year.

BPA Project: 184 1998-028-00 Trout Creek Watershed Improvement Project

Deliverable 1. Increase natural summer steelhead smolt production in the Trout Creek Basin to an annual average of 100,000 outmigrants by increasing rearing capacity with targeted instream and riparian habitat restoration projects. 2. Complete watershed assessment and long-range plan. 3. Construct infiltration galleries to remove fish barriers and improve irrigation efficiency. 4. Construct off-site solar watering systems to manage livestock away from creek. 5. Construct and improve culverts where necessary. 6. Upland range improvements. Juniper removal, 200 acres per year with native vegetation reseeding.

Accomplishment Continued watershed assessment work. TMDL scheduled for 2006-2013 on Trout Creek.

BPA Project: 343 1994-018-06 Tucannon Stream and Riparian Restoration

Accomplishment Prepared assessments for screens, flow and irrigation efficiences, and gauges, but no implementation yet.

BPA Project: 29 1983-436-00 Umatilla Passage O&M

Deliverable 1.) Operate and maintain adult trapping and passage facilities;
2.) operate and maintain juvenile trapping and passage facilities

Accomplishment 1.) Operate and maintain adult trapping and passage facilities; 2.) operate and maintain juvenile trapping and passage facilities

BPA Project: 30 1988-022-00 Umatilla River Fish Passage Operations

Deliverable 1.) Operate and monitor juveniles screen sites, juvenile bypasses, and adult ladders to ensure adequate passage conditions;
2.) Operate adult trapping facilities and provided return data;
3.) collect and transport broodstock for Umatilla hatchery programs;
4.) annual report.

Accomplishment Continued (1) operation and monitoring of juveniles screen sites, juvenile bypasses, and adult ladders to ensure adequate passage conditions exist; (2) Operation of adult trapping facilities and provided return data; (3) collection and transport of broodstock for Umatilla hatchery programs; (4) preparation of annual report. Improved passage 3 Mile dam, Dillion, Westland, Feed canal, and Stanfield to open 112.5 stream miles.

BPA Project: 72 1996-007-00 Upper Salmon River Diversion Consolidation Program

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable 1. This project has been restructured consistent with a geographic approach for project selection, planning, implementation. 2. Minimize losses and migratory delays or blockages of salmonids that are associated with irrigation diversion structures and water withdrawels along streams on non-federal lands. 3. Improve critical habitats for salmonids on non-federal lands by improving riparian conditions and reducing streambed sedimentation and water temprature.

Accomplishment Diversions consolidated on Upper Salmon River which eliminated need to construct push up dams and reduced sedimentation. Work occurred on 303(d) listed stream segment with parameters of concern to fish. TMDLs planned by 2005 - Idaho DEQ has TMDL authority.

BPA **Project: 43 2001-039-00 Walla Walla Basin Screening**

Deliverable 1) Water rights verified (100 %); 2) Design of 130 phase 1 screens; 3) Landowner agreements and permits for 130 phase 1 screens; 4) Installed screens 130 phase 1 screens; 5) Project construction evaluated.

Accomplishment 1) Water rights verified (100 %); 2) Design of 130 phase 1 screens; 3) Landowner agreements and permits for 130 phase 1 screens; 4) Installed screens 130 phase 1 screens; 5) Project construction evaluated.

BPA **Project: 41 2000-033-00 Walla Walla River Fish Passage Operations**

Deliverable 1) Operate and monitor juveniles screen sites, juvenile bypasses, and adult ladders to ensure adequate passage conditions; 2) Operate adult trapping facilities and provided return data; 3) Annual report.

Accomplishment Continued operation and monitoring.

BPA **Project: 45 2002-036-00 Walla Walla River Flow Restoration**

Deliverable 1) Identify farms, confirm water rights landowner agreements signed; 2) Map showing acres to have improved irrigation efficiency; 3) Irrigation systems to improve efficiency purchased and installed; 4) Applications submitted to enroll conserved water w/OWRD; 5) Eastside ditch pipe and Lydell/Pleasantview improvements installed; 6) Headgates, flow meters, measuring devices to manage water rights in place.

Accomplishment 1) Identify farms, confirm water rights landowner agreements signed; 2) Map showing acres to have improved irrigation efficiency; 3) Irrigation systems to improve efficiency purchased and installed; 4) Applications submitted to enroll conserved water w/OWRD; 5) Eastside ditch pipe and Lydell/Pleasantview improvements installed; 6) Headgates, flow meters, measuring devices to manage water rights in place. Acquired 3.1 cfs instream flow.

BPA **Project: 231 1999-072-00 Wildcat Creek Culvert Replacement**

Deliverable Complete project.

Accomplishment Project complete. Replaced two 72" diameter Culverts with a single 14' diameter bottomless arch culvert. Opened 10 miles of stream habitat.

BPA **Project: 7 1992-062-00 Yakama Nation - Riparian/Wetlands Restoration**

Deliverable Secure lands for habitat enhancement. Monitor and evalualte habitat land condition. Prepare site specific enhancement and management plans. Perform maintenance of secured lands consistent with enhancement plans. Prepare and submit quarterly and annual reports.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Accomplishment About 2,500 acres of habitat proposed to be secured this year. M&E activities are occuring on 18,312 acres. Estimate 3 plans will be prepared in 2002. On-going. Quarterly and and annual report expected. Fish passage improved at 8 sites to open up more than 38 miles of stream habitat. Flow enhanced at 3 locations for a total of 12.7 cfs. Acquisition protects 2.1 river miles and 175 acres of productive fish habitat (Tillman, Bailey, and J.Lawrence).

BPA **Project: 5 1991-075-00 Yakima Phase II Screens - Construction**

Deliverable Provide engineering designs, schedules, budgets, and construction management for individual screens - develop conceptual plans/gain landowner agreement with design; prepare designs and specifications; obtain permits and coordinate for NEPA and ESA clearances; award and supervise administration of construction contract. Construct screens by contract.

Accomplishment Left bank screen diversion installed at river mile 123.9 Selah Moxee, Yakima River to open 4.8 miles upstream habitat.

BPA **Project: 21 2002-025-00 Yakima Tributary Access and Habitat Program (Objective 1: Early Actions)**

Deliverable Complete Strategic Plan for project. Meet and coordinate with are landowners and irrigators to coordinate on actions. Identify prioritized sites through surveys. Organize tributary teams and work plans to address passage problems. Prepare design plans for screens. Prepare construction plans, implement contracts in coordination with landowners. Install new screens on irrigation diversions.

Accomplishment 1 passage barrier removed/improved, 6 diversion screens installed.

BPA **Project: 19 2002-022-00 YKFP Big Creek Passage & Screening**

Deliverable Project design -final design for passage; final design for screens; construct and install weirs and screens; negotiate and design alternative water supply options for irrigators; monitor and evaluate effectivness of project.

Accomplishment Finalized project design. Construction began 10/24/2002.

CORPS **Project: 2135 Trout Creek Section 206**

Deliverable planning and design, EA

Accomplishment Project canceled. Sponsor expressed no interest in pursuing.

CORPS **Project: 2136 Walla Walla GI Feasibility Study**

Deliverable Sign Feasibility Cost Sharing Agreement to begin feasibility study

USBR **Project: 4127 Ha149.UJD.02.100.00 John Day River Basin Habitat Restoration Warm Springs Tribe**

Deliverable Assist in acquiring funding and technical assistance needed

Coordinate activites in John Day River Basin

Deliverable Attend meetings as necessary

Provide Engineering design and construction management services

Provide guidance and assistance in preparing reports, work plans, budgets, schedules,monitoring plans and other documentation

Accomplishment Provided engineering design and construction management serviices

Provided guidance and assistance

Provided Funding

Attended meetings as necessary

Coordinated activities

assisted in acquiring funding and technical assistance needed

USBR **Project: 4085_Ha149.UJD.02.400.00_Bear Creek Diversion Replacement**

Deliverable Complete project

Accomplishment Project completed

USBR **Project: 4003_Ha149.MET.02.400.02_Campbell Diversion Reconstructions**

Deliverable Project initiated and site survey

Accomplishment Project was initiated with field work completed and preliminary date obtained.

USBR **Project: 4103_Ha149.USA.03.300.11a_East Fork Salmon-10 Screen**

Deliverable Construct project

Provide preliminary and final engineering designs.

Accomplishment Engineering designs and specifications provided to IDFG

Project constructed

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

USBR **Project: 4106 Ha149.USA.03.300.11b East Fork Salmon-11 Screen**

Deliverable Prepare preliminary and final engineering designs and specifications

Construct project

Accomplishment Engineering designs and specifications provided to IDFG

USBR **Project: 4107 n/a East Fork Salmon-4 Screen**

Deliverable Prepare preliminary and final engineering designs and specifications.

Construct project

Accomplishment Project constructed using BPA funds

Engineering designs and specifications provided to IDFG

USBR **Project: 4007 Ha149.Ent.02.120.01 Entiat IFIM Study**

Deliverable Initiate project funding

Accomplishment Project initiated and funding provided by Reclamation to Chelan County Conservation District

USBR **Project: 4008 n/a Fort-Thurlow Pump Exchange**

Deliverable Initiate project

Accomplishment Preliminary design completed and turned over to landowner for further action No funding for construction or O&M

USBR **Project: 4009 Ha149.MET.03.400.08 Fulton Diversion Structure**

Accomplishment Project initiated

USBR **Project: 4102 n/a Herd Creek-3 Screen**

Deliverable Construct project

Provide preliminary and final engineering designs and specifications.

Accomplishment Engineering designs and specifications completed.

Project constructed

USBR **Project:** **4091_Ha149.JDB.01.110.00_John Day River Basin Programmatic Environmental Assessment**

Deliverable Hold public scoping meetings

Accomplishment Public scoping meetings were held in March 2002

Issued contract for PEA

USBR **Project:** **4011_n/a_L-13 Diversion Replacement**

Deliverable Initiate project

Accomplishment Project initiated

USBR **Project:** **4012_n/a_L-13 Headgate**

Deliverable Initiate project by contacting landowner.

Accomplishment Project initiated

USBR **Project:** **4013_Ha149.LEM.02.300.01_L-13 Screen Replacement**

Deliverable Initiate project

Accomplishment Project initiated

USBR **Project:** **4014_L-18 Headgate**

Deliverable Initiate project by contacting landowner.

USBR **Project:** **4016_Ha149.LEM.01.400.02a_L-3 Diversion Replacement**

Deliverable Complete Preliminary Design.
Complete NEPA and Sec. 7 consultations

USBR **Project:** **4022_Ha149.LEM.01.200.02b_L-3 Headgate**

Deliverable Initiate project by contacting landowner.

USBR **Project: 4017_Ha149.LEM.01.400.04a_L-35A Diversion Replacement**

Deliverable
Initiate project
Develop conceptual designs

Accomplishment
Project initiated
Conceptual designs completed

USBR **Project: 4018_Ha149.LEM.02.200.04b_L-35A Headgate**

Deliverable Initiate project by contacting landowner.

Accomplishment
Project initiated
Conceptual designs completed

USBR **Project: 4019_Ha149.LEM.02.300.04c_L-35A Screen Replacement**

Deliverable
Initiate project
Complete field survey
Complete preliminary designs

Accomplishment
Project initiated
Field survey completed
Conceptual designs completed

USBR **Project: 4020_Ha149.LEM.01.400.03a_L-3A Diversion Replacement**

Deliverable Complete Preliminary Design. Complete NEPA and Sec. 7 consultations

Accomplishment
Formal project intiation by completing agreements.
Preliminary design completed.
Design issues under negotiation with NMFS, landowner, FWS, BPA

USBR **Project: 4100_Ha149.LEM.01.200.03b_L3A Headgate Replacement**

Accomplishment Project initated and preliminary and final engineering designs were completed

USBR **Project: 4021_Ha149.LEM.02.400.01_L-3A0 Diversion Replacement**

Deliverable
Initiate project
Perform topographic survey

Accomplishment
Project initiated
Field topographic survey completed

USBR **Project: 4097 Ha149.LEM.02.120.00 L5 Streamflow Gaging Station**

Deliverable Create funding agreement with Idaho Department of Water Resources to maintain gaging station.

Accomplishment Funding agreement completed with IDWR

USBR **Project: 4023 Ha149.LEM.01.200.01 L-6/S14 Water Exchange**

Deliverable Initiate project. Complete survey, Preliminary Designs, landowner agreements, NEPA and Sec. 7 compliance

Accomplishment Project initiated with discussion with landowners, survey work

USBR **Project: 4025 L-9 Headgate**

Deliverable Initiate project by contacting landowner.

USBR **Project: 4098 Ha149.LEM.02.120.02 Lemhi River Flow Characterization Study**

Deliverable Initiate study

Accomplishment Study initiated

USBR **Project: 4101 Ha149.Lem.02.120.01 Lemhi Water Budget Model**

Deliverable Negotiate contract with Idaho Department of Water Resources

Accomplishment Contract issued to Idaho Department of Water Resources

USBR **Project: 4108 n/a Lemhi Water Rental**

Deliverable Lease water through water bank

Accomplishment Water leased

USBR **Project: 4094 Ha149.MET.02.400.03 Lower Beaver Creek Diversions**

Deliverable Initiate project

USBR **Project: 4120 Hal49.MET.02.400.03 Lower Beaver Diversions**

Deliverable Preliminary revised design

Survey site

Accomplishment preliminary revised designs completed

Construction funds available

Completed survey

USBR **Project: 4026 Ha149.MET.02.400.01 Marracci/Washington Department of Fish and Wildlife Diversion Reconstruction**

Deliverable Site survey

Accomplishment Survey completed

Grant funding application was submitted to the State Salmon Recovery Board by the Okanogan County Conservation District. Currently construction funds not available.

USBR **Project: 4086 n/a Meredith Irrigation Reorganization**

Deliverable Site visits

Accomplishment Site visits

USBR **Project: 4034 Ha149.MET.02.400.04 Methow Valley Irrigation District East Canal Diversion**

Deliverable Initiate project

Accomplishment Project initiated

USBR **Project: 4095 Ha149.MET.02.300.02 Methow Valley Irrigation District East Canal Fish Screens**

Deliverable Initiate project

Accomplishment Project initiated

USBR **Project: 4035 Ha149.MET.02.400.05 Methow Valley Irrigation District West Canal Diversion**

Deliverable Initiate project

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Accomplishment Project Initiated

USBR **Project: 4093 Ha149.MET.02.300.01 Methow Valley Irrigation District West Canal Fish Screens**

Accomplishment Project initiated with landowner

USBR **Project: 4089 Ha149.MJD.02.120.01 Middle Fork John Day Habitat Implementation Activities- Grant Soil and Water Conservation District**

Deliverable Initiate negotiations with GSWCD for planning and design assistance

USBR **Project: 4117 Hal49.MJD.02.400.01 Oxbow Ranch Sites #3 & #4**

Deliverable Initiate project with CTWSRO

Accomplishment Iniated project

USBR **Project: 4088 Ha149.MJD.02.400.01 Oxbow Ranch, Ruby Creek and Butte Creek**

Deliverable complete surveys

Accomplishment survey work completed

USBR **Project: 4087 Ha149.MJD.02.400.00 Oxbow Ranch--Beaver Creek**

Deliverable Surveys, pre-design memorandum and construction specifications

Accomplishment Completed surveys, pre-design memo, and construction specification in June 2002

USBR **Project: 4105 n/a S11-S12 Consolidation Headgate**

Deliverable Construct project with BPA funding

Provide preliminary and final engineering designs
Complete environmental compliance
Provide construction inspection

Accomplishment Completing engineering designs and specifications
Completed environmental compliance

USBR **Project: 4104 n/a S11-S12 Diversion Consolidation and Screen**

Deliverable Provide preliminary and final engineering designs and specifications
Complete environmental compliance
Construct project

Accomplishment Engineering designs and specifications completed
Environmental compliance completed
Construction inspection services provided

USBR **Project:** **4096 Ha149.MET.02.400.06 Twisp Valley Power and Irrigation Diversion**

Deliverable Initiate project
Complete preliminary design
Site survey

USBR **Project:** **4116 Ha149.UJD.02.120.01 Upper John Day Habiitat Implementation Activities - Grant County Soil and Water Conservation District**

Deliverable Initiate negotiations with GSWCD for planning and design assistance

USBR **Project:** **4099 Ha149.USA.02.120.01 Upper Salmon Basin Flow Characterization Study**

Deliverable Initiate study

Accomplishment Study initiated

USBR **Project:** **4042 Ha149.ENT.02.100.00 USBR Entiat Subbasin Program Management**

Deliverable Initiate program and establish coordination and compliance procedures

Accomplishment Program initiated and work started

USBR **Project:** **4043 Ha149.LEM.01.100.00 USBR Lemhi program management**

Deliverable Continued program management.

Accomplishment NEPA scoping meetings accomplished; initiated discussions with FWS and NMFS for programmatic Sec. 7 compliance.

USBR **Project:** **4045 Ha149.MET.01.100.00 USBR Methow Subbasin Program Management**

Deliverable Program management, identify and fund specific projects.

Accomplishment Established subbasin liaison office. Continued coordination with local entities.

USBR **Project:** **4129 Ha149.MJD.01.100.00 USBR Middle John Day Action 149 Program Management**

Deliverable Ongoing program management

Accomplishment Established subbasin liaison office. Continued coordination with local entities.

USBR **Project:** **4109 Ha149.USN.01.100.00 USBR Programmatic Environmental Assessment to Implement Action 149 Construction Program**

Deliverable Hold public scoping meetings

Accomplishment Scoping meetings were held in the spring 2002

USBR **Project:** **4047 Ha149.UJD.01.100.00 USBR Upper John Day Action 149 program management**

Deliverable Program management.

Accomplishment Established subbasin liaison office. Continued coordination with local entities.

USBR **Project:** **4050 Ha149.USA.03.100.00 USBR Upper Salmon program management**

Deliverable Initiate program and establish coordination and compliance procedures

Accomplishment Programmatic NEPA contract initiated, scoping meeting accomplished, initiated discussions with FWS and NMFS for programmatic Sec. 7 compliance.

Liiaison office established. Providing program coordination and management with watershed groups, tribes, state and federal entities.

USBR **Project:** **4051 Ha149.WEN.02.100.00 USBR Wenatchee Subbasin Program Management**

Deliverable Initiate program and establish coordination and compliance procedures

Accomplishment Program initiated and liaison office established in Wenatchee WA

USBR **Project:** **4027 Ha149.MET.02.120.01 USGS Hydrologic Model Upgrades**

Deliverable Assist USGS funding

Accomplishment Funded data collection and analysis

RPA 150 Protection of currently productive non-Federal habitat

BPA **Project: 402 2001-043-00 Acquire 27,000 Camp Creek Ranch at Zumwalt Prairie**

Deliverable Acquire to protect the 27,000 acres of productive fish habitat at Camp Creek Ranch, Zumwalt Prairie.

Accomplishment Acquired and protected 27,000 acres and 12 river miles of productive fish habitat at Camp Creek Ranch, Zumwalt Prairie..

BPA **Project: 399 1999-006-00 Bakeoven Riparian Assessment**

Deliverable Facilitate CREP agreement for Lindley Tract 37 and E. Hagen Tract 631.

Accomplishment CREP lease agreement for Lindley Tract 37 from 2001 to 2016 to protect 5.45 river miles and 91.1 acres of productive habitat. CREP lease agreement for E. Hagen Tract 631 from 2002 to 2016 for .94 river miles and 23.3 acres of productive habitat. Both parcels were at risk of degradation.

BPA **Project: 77 1997-060-00 Clearwater Subbasin Focus Watershed Program - NPT**

Deliverable 1. Coordinate watershed project development within the 1855-treaty territory of the Nez Perce Tribe among federal, state, and local government agencies and private landowners in cooperation with the Idaho Soil Conservation Commission Focus Program. 2. Manage development of Clearwater Subbasin Restoration Program, including the assessment, subbasin plan, and the monitoring and evaluation plan.

Accomplishment Coordinated and managed 10 data, water quality, and habitat protection/enhancement projects and in the Clearwater Subbasin under this program.

BPA **Project: 89 2001-044-00 Conservation Easement, Baker Ranch, Salmon River East Fork**

Deliverable Enhance and preserve the natural character of the ranch lands. Obtain Conservation Easement. Fence easement to rejuvenate riparian habitat for fish & wildlife.

Accomplishment Contract was not signed; project is no longer under consideration for BPA funding.

BPA **Project: 239 2000-064-00 Conservation Reserve Enhancement Program Incentive**

Deliverable Continue to install riparian pasture fence and water developments.

Accomplishment 204 acres of productive fish habitat at risk of being degraded enrolled in CREP. Protected 8.1 miles of riparian buffers.

BPA **Project: 181 1993-040-00 Fifteenmile Creek Habitat Restoration Project**

Deliverable 1a. Inspect and evaluate riparian protection fences. 1b. Repair and maintenance of riparian protection fences. 1c. Elimination of high maintenance actions fence 1d. Inspect and evaluate instream habitat and bank stabilization structures. 1e. Repair and maintenance of instream habitat and bank stabilization structures. 1f. Elimination of high maintenance action items, instream structures. 2a. Work with private landowners to promote land management activities beneficial to the protection riparian areas and watersheds. 2b. Coordinate field activities with other agencies and landowners. 2c. Pursue outside funding & grants to expand habitat restoration within the project area. 2d. Make presentations related to the Fifteenmile Creek Habitat Restoration Project to agencies, schools and news media. 3. Project coordination

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Accomplishment Lease agreements completed to date are protecting over 54 miles and 447 acres of riparian buffers. 3 lease agreements duration >=30 years; 1 lease agreement >=15 years.

BPA **Project: 185 2001-020-00 Fifteenmile Creek Riparian Fencing / Physical stream Survey Project**

Deliverable 1. Construct approximately 30 miles of riparian protection fence over a three year period along Fifteenmile Creek and it's tributaries. Conduct a phyical stream of 90 miles of privatly owned stream in the Fifteenmile Subbasin. 2. Plan, coordiante, and assist in the development of watershed assessments and data collection and analysis. 3. Leverage, where feasible, appropriate agricultural conservation incentive programs.

Accomplishment Eight cooperative agreements signed from 2002 to 2017 to protect productive riparian habitat at risk of being degraded. Agreements aren't part of an agricultural incentive program. Total protection for 10.45 river miles and 312.42 acres. All sites are on property adjacent to streams.

BPA **Project: 123 2001-041-00 Forrest Ranch Acquisition**

Deliverable 1) Close the sale of the property. 2)Complete HEP. 3 Complete Hankin and Reeves Survey. 4) Complete property management plan. 5) River restoration of 2 mile reach of Middle Fork John Day

Accomplishment Acquisition of 4,323 acres and 25.2 cfs of water rights. Continued to protect 4.7 river miles of productive fish habitat at risk of being degraded.

BPA **Project: 398 1996-083-00 Grande Ronde Basin Watershed Restoration Project - Longley Meadows Restoration**

Deliverable Longley Meadows project includes: establishing 400 acre conservation easement onMainstem Grande Ronde (2mi), Bear Creek(2.5 mi), and Jordan Creek (1mi); designing and construction 5,600' restoration channel for lower Bear Creek, enhancing instream habitat conditions with whole tree additions, revegetation to faciliate development of hydrophytic vegetation; construction/maintenace of easement boundary fences, and developing off-channel water sources to assist landowner, Coop project (CTUIR/ODFW BPA fish habitat programs, and NRCS).

BPA **Project: 183 1998-021-00 Hood River Fish Habitat Project**

Deliverable Plan, coordinate and implement a wide array of habitat improvement actions for anaadromous fish including, replacement screens, riparian buffers, and alternative irrigation water delivery systems. Participate in watershed assessments actions and database development.

Accomplishment Two 5-year (2002 to 2007) protection agreements (non-agricultural incentive program) signed for productive private lands at risk of being degraded. Agreements protect 0.4 miles and 3.6 acres of riparian habitat. Installed 1 fish screen - opened 110 miles of upstream habitat. Engineering and design completed for 1 fish screen that would open 35 miles of upstream habitat.

BPA **Project: 70 1994-017-00 Idaho Model Watershed Habitat Improvement Project**

Deliverable 1. This project has been restructured consistent with a geographic approach for project selection, planning, implementation. 2. Minimize losses and migratory delays or blockages of salmonids that are associated with irrigation diversion structures and water withdrawels along streams on non-federal lands. 3. Improve critical habitats for salmonids on non-federal lands by improving riparian conditions and reducing streambed sedimentation and water temprature.

Accomplishment Signed cost share agreements with Lemhi SWCD for Goddard/Lemhi Fence December 2001 and for Canyon Creek Fence October 2001. Riparian protection for 1 river mile and 4 acres with Goddard/Lemhi Fence and 2 miles and 10 acres with Canyon Creek Fence.

BPA **Project: 342 1995-060-01 Iskuulpa Watershed Wildlife**

Accomplishment Continued habitat protection for Squaw Creek - 303(d) listed water with parameter of concern to fish.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

BPA **Project:** **208_1984-025-00_Joseph Creek, Grande Ronde River**

Deliverable 1)Construct 8.6 miles of fence; 2)repair 10.7 miles of fence; 3)remove 3000' of existing railroad grade; 4)place large wood along 3.7 miles of stream; 5)provide channel designs and construction oversight to relocate 1,200' of stream and replace culvert; 6)provide channel design and construction ispection to relocate 1.7 miles of Ladd Creek; 7)maintain 105 miles of fence, 144 livestock watering gaps, 34 of-site spring developments; 8)relocate 2 miles of existing riparian exclosure fence; 9)control noxious weeds on 1,800 acres of leased habitat; 10)maintain 62 miles of streambank stability structures; 11)conduct project monitoring

Accomplishment Conservation easement from 2002 to 2017 to protect 0.75 river miles of productive fish habitat (Milk Creek) at risk of degradation. Also, conservation easement to protect 3.5 river miles at Ladd Creek, Bear Creek, and Meadow Creek . Meadow Creek (2.0 river miles) is through ag-incentive program.

BPA **Project:** **366_1992-026-01_Mainstem Grande Ronde River Habitat Enhancement Project Phase 2: Upper Mainstem Grande Ronde River**

Deliverable Work includes combination of instream structure placement to facilitate development of natural, stable channel form, enhance instream structural diversity, and increase hydrophytic vegation development to support streambank stability and shade. An off-channel water development for the landowner is also being developed to provide livestock water sources outside 400 acre conservation easement in conjunction with Longley Meadows project.

Accomplishment 2.0 mile reach of Grande Ronde protected under CREP/BPA Habitat Conservation Easement under Longley Meadows Project.

BPA **Project:** **222_1996-083-01_McCoy Meadows Watershed Restoration**

Deliverable 450 acres perpetual conservation easement under Federal Wetland Reserve Program in cooperation with NRCS, CTUIR and ODFW. Complete project.

Accomplishment Project Completed - ongoing revegetation work with additional planning in 2.0 mile Meadow Creek. Ongoing protection of 7 river miles and 450 acres.

BPA **Project:** **358_1998-049-00_McIntyre Road Relocation, Phase 11 B**

Deliverable Work with US Forest Service and private landowners to develop fish habitat improvements.

Accomplishment Worked with US Forest Service and private landowners to pursue opportunities for fish habitat protection.

BPA **Project:** **401_1996-080-00_Nez Perce NE Oregon Wildlife Project: Helm Tract**

Deliverable Continue restoration efforts in the Helm tract.

Accomplishment Installed fencing to protected 7.8 river miles of productive fish habitat.

BPA **Project:** **120_2000-031-00_North Fork John Day River Subbasin Anadromous Fish Habitat Enhancement Project**

Deliverable Same as 01 except more miles of fence and more riparian easements - 1) Complete 12 miles of riparian fencing protection 2) Complete 4 off site water developments 3) Complete riparian easements

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Accomplishment Completed 2 long-term (2002 to 2017) CREP agreements (Ropp, Camas Creek and Cunningham Cattle) to protect 2.0 river miles of productive habitat at-risk of degradation. Completed 2 15-year leases (2002 to 2017) to protect 5.0 river miles of productive habitat at-risk of degradation (NF John Day Trough Creek and OWEB Camas Creek).

BPA **Project: 119 2000-015-00 Oxbow Ranch Acquisition**

Deliverable 1) Complete baseline assessments to include Hankin and Reeves survey 2) complete HEP survey 3) Complete plan 4) complete maintenance of property 5) Dredge tailings restoration

Accomplishment Continued long term protection of 1022 acres and 3.3 river miles of productive fish habitat that was at risk of being degraded.

BPA **Project: 117 1998-022-00 Pine Creek Ranch Acquisition**

Deliverable 1) Gather baseline information to assist in monitoring and the development of a property plan 2) initiate the development of a property management plan 3) protect and enhance the natural resources. 4) property management plan is to be completed

Accomplishment Lease (2002 to 2017) under CREP program to protect 5.4 river miles of Pine Creek productive fish habitat that was at risk of being degraded.

BPA **Project: 112 1984-021-00 Protect and Enhance John Day Anadromous Fish**

Deliverable 1) construct 6.5 miles of riparian protection fencing with 10 and 15 year lease agreements. 2)construct 6 off site water developments away from riparian area. 3)inspect 80 miles of fence and perform maintenance on 23 miles of fence. 4)complete maintenance on 5 off riparian site water developments 5) Complete mine tailings restoration on Granite Creek

Accomplishment Eleven 15-year leases (2002 to 2017) signed to protect 7.7 river miles of productive fish habitat at risk of being degraded.

BPA **Project: 80 1999-016-00 Protect and Restore Big Canyon Creek Watershed**

Deliverable 1. Provide fish access at all road crossings in all historical habitats by replacing 3 fish barrier culverts/year: 2. Increase summer low flows and decrease high flow events by protecting identified critical wetland areas for passive restoration. a. Build 2 miles of fence.

Accomplishment Cost share with CWA 319 Program, Continuous Reserve Program. Coordinated the TMDL process with Nez Perce Tribal Water Resources Dept. and Idaho DEQ. Contracted for road crossing surveys and prioritization of barriers replacements. Culvert replacements and fence construction to begin in FY 2003 pending funding allocation.

BPA **Project: 81 1999-017-00 Protect and Restore Lapwai Creek Watershed**

Deliverable 1. Return and protect stream, riparian, and watershed health by contributing in finishing 6 and developing 10 new Conservation Land Management Plans on private landowner property. 2.Fence 2 miles of riparian area. 3.Plant 5 acres of vegetation on private landowner property. 4. Increase summer low flows and decrease high flow events by protecting identified critical wetland areas for passive restoration. Build 2 miles of fence.

Accomplishment Contracted for road crossing surveys and prioritization of barrier replacements. Habitat protected through CCRP, CWA Section 319 and PL566 requirements and Nez Perce Tribal Action. Riparian fence construction planned for summer of 2003 that will protect 2.0 river miles and 52 acres of productive fish habitat at risk of degradation. Coordinating TMDL process with Nez Perce Tribe Water Resources Department and Idaho DEQ.

BPA **Project: 88 2001-035-00 Protect Bear Valley Wild Salmon, Steelhead, Bull Trout Spawning and Rearing Habitat**

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable Increase chinook salmon and steelhead trout to attain the Council's program & tribal & NMFS recovery goals, maintain biological diversity, and protect and enhance habitat for bull trout and westslope cuttroat trout and other riparian dependent spp. Increase chinook salmon adult numbers from 50 to 2000 in the Bear Valley Basin. Increase chinook salmon egg to parr survival from 3.5% to 15 % in the Bear Valley System. Decrease spawning substrate fine sediment in the Bear Valley system from 40% to less than 20%. Decrease water temperatures in the Bear Valley system to meet PACFISH RMO's and Bull Trout criteria. Increase bank stability in the Bear Valley system from 60% to 80%.

Accomplishment Permanently eliminate livestock grazing impacts on the Bear Valley and Deer Creek Allotments in the Bear Valley Creek watershed by buying back grazing permits on US Forest Service lands. Project occurred on 303(d) listed stream and improved parameters of concern to fish. TMDL planned by 2005 - Idaho DEQ; project data to be shared on request.

BPA Project: 96 1996-042-00 Restore and Enhance Anadromous Fish Populations and Habitat in Salmon Creek

Deliverable Provide instream flows through on-farm water conservaton and water leasing. Design a river pump station and an upgrade to the Salmon Lake Feeder Canal. Enhance channel habitat. Desgin channel restoration. Undertake NEPA. Raise funds for all the above.

Accomplishment Implemented third year of water leasing program with OID to provide passage for steelhead adults, juvenile outmigration and overwintering and rearing. Approximately 585 acres (3 ac. ft./acre) acquired on Salmon Creek and 2610 ac/ft (63 act/ft dry year; 4060 ac/ft wet yr) conserved through the Okanogan Irrigation District. Purchased protection for 0.75 river miles and 60 acres of productive fish habitat at risk of being degraded (Ruby townsite/Salmon Creek).

BPA Project: 330 Riparian Conservation Easement Purchase of Scarrow Property on Lake Creek a Tributary to the Secesh River, Idaho

Deliverable 1. Purchase of approximate 12 acre Conservation Easement 2. Purchase of mineral rights to be retired

Accomplishment New proposal was recommended for funding under 2002 Mountain Snake provincial review, but was not considered critical to implement the BiOp.

BPA Project: 14 1997-053-00 Toppenish-Simcoe Instream Flow Restoration and Assessment

Deliverable Adaptively update project management plan. Implement Management Plan. Operations and Maintenance. Monitoring and Evaluation. Quarterly and Annual Reports

Accomplishment Obtained 7 year (2002 to 2000) lease to protect 1.5 river miles and 80 acres of important spawning/rearing habitat at risk of being degraded. Passage improved at Toppenish Cr. Durham ditch barrier and Simcoe Narrows diversion improvement to open 88.8 miles of stream habitat. Acquired 2.5 cfs instream flow at Agency Creek; installed 2 gauges in Toppenish Creek and provided to YN database.

BPA Project: 203 1987-100-01 Umatilla River Anadromous Fish Habitat Enhancement Project

Deliverable 1) Develop projects and cost shares with landowners, and local, state and federal agencies, 2) Secure riparian easements on and off reservation, 3) Fulfill permitting requirements: NEPA, cultural surveys, Biological Assessments, etc. as required. 4) Maintain or continue implementation of instream habitat enhancement projects - a) Station 29, b) Hartman. 5) Maintain riparian corridor fencing. 6) Construct new riparian corridor fencing. Harvey - 2 mi, Simenton - 0.5 mi, Wolfe 1.0 mi. 7) Develop off-stream watering sources for livestock and wildlife - a) S&M Farms (last 75%); b) 5 troughs Buckaroo C. 8) Plant native grasses and plants: 300 pounds grasss seed; purchase 3,900 trees. 9) Treat noxious weeds - 468 acres. 10) Monitor pre- and post-implemetnation comparisons - a) aquatic invertebrate inventory; b) plant photopoints; c) water temperatute; d) suspended sediments. 11) Meacham Creek Wastershed Assessment and Restoration Plan. 12) Umatilla River sub-basin Watershed Assessment. 13) Riparian Easements (>= 15 yrs) Simenton - 80 acres/ 0.5 RM Hachler - 10-20 acres/0.1 RM. 14) Annual Report.

Accomplishment All activities completed within the contract period unless noted. 4a) All 100%; 4b) First 75%. 5) Little expected to be needed. 8) An additional 6,000 willow starts will be planted - no purchase cost. 11) Last 75% will complete the report. 12) Completed the report. 14) 2001 Annual Report to be completed in FY 2003. Conservation easements from 2002 to 2017 to protect 0.4 river miles and from 2001 to 2021 to protect 1.3 river miles of productive fish habitat.

BPA **Project: 122 2001-040-00 Wagner Ranch Acquisition**

Deliverable 1) Gather baseline information to assist in the monitoring and the development of a plan 2) Protect and manage the ranch resources

Accomplishment Gathered baseline information to assist in the monitoring and the development of a plan. Protected and managed the ranch resources. Continued long term protection of 9.7 river miles and 9,523 acres of productive fish habitat that was at risk of being degraded.

BPA **Project: 345 1996-046-01 Walla Walla River Basin Fish Habitat Enhancement**

Accomplishment Seeded 12 acres of former wheat fields in native grasses. Mowed and applied herbicides to reduce broadleaf plants. Conservation easement from 2001 to 2015. Protected 0.5 river miles and 12 acres of habitat at risk of degradation. Walla Walla River, Touchet River, and Mill Creek are 303(d) listed waters. Project will improve fish parameters of concern .

BPA **Project: 7 1992-062-00 Yakama Nation - Riparian/Wetlands Restoration**

Deliverable Secure lands for habitat enhancement. Monitor and evalualte habitat land condition. Prepare site specific enhancement and management plans. Perform maintenance of secured lands consistent with enhancement plans. Prepare and submit quarterly and annual reports.

Accomplishment About 2,500 acres of habitat proposed to be secured this year. M&E activities are occuring on 18,312 acres. Estimate 3 plans will be prepared in 2002. On-going. Quarterly and and annual report expected. Fish passage improved at 8 sites to open up more than 38 miles of stream habitat. Flow enhanced at 3 locations for a total of 12.7 cfs. Acquisition protects 2.1 river miles and 175 acres of productive fish habitat (Tillman, Bailey, and J.Lawrence).

BPA **Project: 13 1997-051-00 Yakama Nation Yakima/Klickitat Fisheries Project (YKFP) Yakima Side Channels**

Deliverable Protect priority habitats through acquisition, and purchase of conservation easements. Restore Yakima River/Naches River mainstem connectivity with protected lands, were possible, based on work plan. Restore and/or enhance the function of other side channel habitats, as identified following protection of such lands. Monitor habitat funcition on protected and restored lands. Update management plan(s) for protected lands. Prepare quarterly and annual report.

Accomplishment Maintained - 60 acres involving about 3,000 feet of Naches River side channel; 30.7 acres involving about 3,000 feet of Yakima River (Cle Elum reach) frontage; 139 acres of intact Yakima River (Union Gap reach) floodplains, reparian forest, backwater sloughs and side channels; 107 acres involving about .5 miles of (Cle Elum reach) Yakima River frontage with side channels and raparian forests. In 2002 purchased 96 acres of property along Yakima River (Easton reach) protecting about 3,000 feet of river frontage. Proposed to purchase in 2002 310 acres along the Yakima R. (Cle Elum reach) including complex wetlands, over one mile of river frontage. Prepare quarterly and annaul report.

RPA 151 Experiment with innovative ways to increase tributary flows

No Projects for this RPA. Please see RPA Summary Table.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

RPA 152 **Coordinate efforts and support offsite habitat enhancement measures**

BPA **Project: 17 1999-013-00 Ahtanum Creek Wastershed Assessment**

Deliverable Maintain and protect existing high quality habitat areas (and the native populations inhabiting those areas). Restore degraded areas, and return natural ecosystem functions to the subbasin. Increase the information and knowledge needed to restore and manage fish, wildlife and their habitat. Finalize and deep update the habitat assessment plan. Prepare quarterly and annual report.

Accomplishment Installed 5 staff gages in Ahtanum Creek; data repository YN database.

BPA **Project: 292 1999-052-00 Asotin Creek Five Year Minimum Till Program**

Deliverable 773 Acres of Direct Seed planting

Accomplishment Direct seed planted 773.3 acres.

BPA **Project: 289 1997-080-00 Asotin Creek Upland Sedimentation Reduction**

Deliverable 105 Acres of Direct Seed planting

Accomplishment Direct seed planted 105.25 acres.

BPA **Project: 291 1999-002-00 Asotin Watershed Project Implementation**

Deliverable Work Task #1. Coordinate activities in regards to fish habitat maintenance, enhancement and restoration in the Model Watershed area. Work Task #2. Ensure that the model watershed plan meets accepted environmental and biological standards. Work Task #3. Coordinate activities that keep people involved in the Model Watershed process. Work Task #4. Work with groups and individuals in the upper Asotin Creek basin to investigate expansion of the model watershed program. Work Task #5. Direct and assist with the planning and implementation of conservation management systems for ranchers in the model watershed area. Work Task #6. Coordinate with other agencies working on salmon habitat enhancement and restoration in the Model Watershed.

Accomplishment Work Task #1. Coordinated implemantation and O& M on the following Asotin Creek MWS projects: 2000-046-00, ISCO Water Sampling and Macroinvertebrate Samples; 2000-053-00, Asotin Creek Riparian Planting; 2000-047-00, GIS Mapping of Asotin Creek Watershed Habitat Projects; 2000-054-00, Asotin Creek Riparian Fencing Projects; 2000-067-00, Asotin Creek Channel, Floodplain and Riparian Restoration, 1999-060-00, Asotin Creek Watershed Upland BMP Implementation; 1999-052-00, Asotin Creek Five Year Minimum Till Program; 1997-086-00, Asotin Watershed Upland BPM;1998-047-00, Asotin Creek Information and Education. Work Task #2. Complied with all Federal and State environmental laws for project implementation. Work Task #3. Holds regular public meetings in conjunction with Asotin County Conservation District. Work Task #4. Work with landowners in nearby watersheds such as Ten Mile and Couse Creeks. Work Task #5. Implemented CREP, CRP and other conservation incentive programs throughout Asotin Creek watershed. Work Task #6. Coordinated work with Umatilla National Forest, Nez Perce Tribe, Asotin County Conservation District and Washington Department of Fish and Wildlife.

BPA **Project: 293 1999-060-00 Asotin Watershed Upland BMP Implementation**

Deliverable 5 Sediment Bains

Accomplishment 9 (3 in 2001 and 6 in 2000) sediment basins were completed, 41.4 ac of pasture/hayland planting in 2002, and 330 ac of two-year direct seeding in 2002. BPA's portion of this was $13,215.35 and Landowner Cost-Share was $30,682.77.

BPA **Project: 290 1997-086-00 Asotin Watershed Upland BMP's**

Deliverable 169 Acres of Direct Seed planting

Accomplishment Direct seed planted 115.35 acres.

BPA **Project: 399 1999-006-00 Bakeoven Riparian Assessment**

Deliverable Facilitate CREP agreement for Lindley Tract 37 and E. Hagen Tract 631.

Accomplishment CREP lease agreement for Lindley Tract 37 from 2001 to 2016 to protect 5.45 river miles and 91.1 acres of productive habitat. CREP lease agreement for E. Hagen Tract 631 from 2002 to 2016 for .94 river miles and 23.3 acres of productive habitat. Both parcels were at risk of degradation.

BPA **Project: 76 1996-086-00 Clearwater Focus Program**

Deliverable 1. Subbasin Plan Coordination 2. Implementation Project Support

Accomplishment Continued subbasin planning coordination and development.

BPA **Project: 77 1997-060-00 Clearwater Subbasin Focus Watershed Program - NPT**

Deliverable 1. Coordinate watershed project development within the 1855-treaty territory of the Nez Perce Tribe among federal, state, and local government agencies and private landowners in cooperation with the Idaho Soil Conservation Commission Focus Program. 2. Manage development of Clearwater Subbasin Restoration Program, including the assessment, subbasin plan, and the monitoring and evaluation plan.

Accomplishment Coordinated and managed 10 data, water quality, and habitat protection/enhancement projects and in the Clearwater Subbasin under this program.

BPA **Project: 181 1993-040-00 Fifteenmile Creek Habitat Restoration Project**

Deliverable 1a. Inspect and evaluate riparian protection fences. 1b. Repair and maintenance of riparian protection fences. 1c. Elimination of high maintenance actions fence 1d. Inspect and evaluate instream habitat and bank stabilization structures. 1e. Repair and maintenance of instream habitat and bank stabilization structures. 1f. Elimination of high maintenance action items, instream structures. 2a. Work with private landowners to promote land management activities beneficial to the protection riparian areas and watersheds. 2b. Coordinate field activities with other agencies and landowners. 2c. Pursue outside funding & grants to expand habitat restoration within the project area. 2d. Make presentations related to the Fifteenmile Creek Habitat Restoration Project to agencies, schools and news media. 3. Project coordination

Accomplishment Lease agreements completed to date are protecting over 54 miles and 447 acres of riparian buffers. 3 lease agreements duration >=30 years; 1 lease agreement >=15 years.

BPA **Project: 185 2001-020-00 Fifteenmile Creek Riparian Fencing / Physical stream Survey Project**

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable 1. Construct approximately 30 miles of riparian protection fence over a three year period along Fifteenmile Creek and it's tributaries. Conduct a phyical stream of 90 miles of privatly owned stream in the Fifteenmile Subbasin. 2. Plan, coordiante, and assist in the development of watershed assessments and data collection and analysis. 3. Leverage, where feasible, appropriate agricultural conservation incentive programs.

Accomplishment Eight cooperative agreements signed from 2002 to 2017 to protect productive riparian habitat at risk of being degraded. Agreements aren't part of an agricultural incentive program. Total protection for 10.45 river miles and 312.42 acres. All sites are on property adjacent to streams.

BPA **Project: 271 1994-018-07 Garfield County Sediment Reduction and Riparian Improvement Program - (proposal) - funded under: 1999-021-00. 1999-059-00, 1997-088-00 (closed, but some 088 activities carried into 021 and 059 contracts)**

Deliverable Planning = 1) Complete Pataha Creek Model Watershed Plan (PCMWP). 2) Implement Pataha Creek MWPa) Set up program with individual landowners - See implementation. 3) Coordinate PCMWP with the public and others to inform them about the program - a) Newsletters/newspaper-magazine articles, as applicable, b) Sponsor tours/workshops/ conferences, conduct PCMWP meetings, provide information and education with students. 4) Work with WSU on monitoring water quality to compare no-till, 2 pass seeding, and conventional seeding methods - a) Coordinate data collection, b) Operate water sediment samplers and electronic thermographs, c) Collect soil erosion data. 5) Coordinate salmon habitat work - a) Meet with landowners, Technical Adviory Committees, and WDFW, b) attend training into keep up to date on new techniques and opportunities. Implementation = 6) No till seeding (0-33% soil distrurbance - drill used to plant seed and fertilize). 7) Direct seeding (34-66% soil disturbance - 2 pass method- fertilizer then plant). 8) Critical Area seeding - grass seeding onto productive, but highly erodable land. Must remain in grass for 10 years to reduce erosion. Land that does not meet CRP criteria, or patches that are too small to be enrolled. 9) Pasture Planting - reduce erosion, but can be grazed. Usually used close to riparian areas to reduce near-stream erosion. Required to be pasture for 10 years. Often mets CREP criteria, but farmer was not interested in signing up with CREP (under which use for grazing is not be allowed). 10) Terrace rebuilding - reduce erosion by retiering land. 11) Pipeline and spring development. 12) Write Annual Report

Accomplishment Continued implementation of program.

BPA **Project: 216 1992-026-01 Grande Ronde Model Watershed - Bue Road Improvement**

Deliverable project scheduled to complete this year

Accomplishment Project was not implemented, Road was on private land and landowner was not interested in participation.

BPA **Project: 219 1992-026-01 Grande Ronde Model Watershed - Indian Creek/Trick Runoff and Buffering System**

Deliverable 1)Remove setback and reconstuct 80' of corrals to allow space for the proposed trench and vegetated swale; 2)construct a 150'x1'x2' wide diversion trench adjacent to the corrals to collect runoff; 3)construct a 200'x2'x3' wide vegetated wetland swale near corrals and plant vegetation (grass and sedges)

BPA **Project: 220 1992-026-01 Grande Ronde Model Watershed - Rangeland Drill/Watershed Restoration and Enhancement**

Deliverable 1)Purchase a Metalmasters rangeland drill; 2)seek landowner interest in watershed management by offering the rangeland drill for re-seeding purposes on degraded rangeland sites; 3)pland 200 acres over a five year period

Accomplishment Continue the Grande Ronde Model Watershed Program Administration and Habitat Restoration. Develop and oversee coordinated, sustainable resource management in the Grande Ronde Subbasin. Plan, design and implement salmonid habitat restoration projects

BPA **Project: 230 1999-071-00 Hagedorn Road Relacation/Stream Restoration**

Deliverable Project complete

Accomplishment Project complete - 1)Relocate 2900' of stream bottom road to 100' upslope; 2)install 4 culverts

BPA **Project:** **183 1998-021-00 Hood River Fish Habitat Project**

Deliverable Plan, coordinate and implement a wide array of habitat improvement actions for anaadromous fish including, replacement screens, riparian buffers, and alternative irrigation water delivery systems. Participate in watershed assessments actions and database development.

Accomplishment Two 5-year (2002 to 2007) protection agreements (non-agricultural incentive program) signed for productive private lands at risk of being degraded. Agreements protect 0.4 miles and 3.6 acres of riparian habitat. Installed 1 fish screen - opened 110 miles of upstream habitat. Engineering and design completed for 1 fish screen that would open 35 miles of upstream habitat.

BPA **Project:** **270 1994-018-06 Implement Tucannon River Model Watershed Plan to Restore Salmonid Habitat (Work contracted under 1999-001-00, 1999-057-00)**

Deliverable 1) Upland Best management Implementation to reduce soil erosion (e.g., grass waterways, sediment basins, critical area plantings): a) direct seeding 3 continued, 0 new. 2) Riparian re-vegetation and enhancement: a) develop off-stream watering sites: b) fence 1,000 ft of riparian, c) plant 20,000 stems. 3) Monitoring and Evaluation - a) Pre- versus Post- implementation habitat quality surveys, b) Water Quality sampling, c) Six-year milesone (resurvey previous habitat units after habitat improvements). 4) Install instream habitat structures - a) Camp Wooten Phase 2. 5) Coordinate wateshed council activities on private and public lands including. 6) Coordinate watershed project identification, selection, design, development, prioritization and acceptance (including NRCS). 7) Direct and assist the planning and implementation of conservation management systems for producers in the model waershed area. 8) Develop list of potential projects for FY 2003. 9) Monitor/Evaluate all projects for effectiveness in meeting Plan goal and objectives. 10) Coordinate Information and Education program. 11) Tucannon River Model Watershed Administration. 12) Subbasin Planning Coordination. 13) Water savings, Irrigation efficiency, Update screens, Install water meters. 14) Annual Report

BPA **Project:** **99 1998-031-00 Implementation of Wy-Kan-Ush-Mi Wa-Kish-Wit Watershed Assessment and Restoration Plan**

Deliverable Ongoing SOW being developed for FY02

Accomplishment Provided information and coordination assistance to promote scientifically valid methods in tribal restoration planning and project implementation throughout the Columbia River Basin. Water quality monitoring and evaluation of water quality effects are resulting in improvements in water quality management for habitat conditions.

BPA **Project:** **342 1995-060-01 Iskuulpa Watershed Wildlife**

Accomplishment Continued habitat protection for Squaw Creek - 303(d) listed water with parameter of concern to fish.

BPA **Project:** **4001 1998-018-00 John Day Watershed Restoration Program**

Deliverable 1) construct 3 off site watering systems 2) Install 8 permanent irrigation diversions 3) remove 500 acres of Junipers to increase trib flows and decrease erosion 4) construct 2 miles of riparian fencing 5) complete one return flow cooling system

Accomplishment Water quality improvements at 303(d) listed sites - Dans Creek, Indian Creek and Franks Creek. Improvements for Emmel return flow cooling, Lower Island ditch, Ricco ditch, Rice ditch, Holliday return flow cooling and Clausen pump station. Eight partial barriers (diversion dams) removed or improved.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

BPA **Project:** **94_1996-034-01_Methow Valley Irrigation District Rehabilitation**

Deliverable Initiate ESA consultation to determine flows under new project. Initiate NEPA work including any additional engineering needs. Complete lateral replacement project.

Accomplishment Acquired 25.0 cfs of instream flow at 2 locations from May to October from- MVID diversion on Methow River and on Twisp River. Installed approximately 23 flow meters to measure water savings. Saved water to be dedicated to state trust water right. The Methow and Twisp Rivers are 303(d) listed with parameters of concern to fish.

BPA **Project:** **333_Potlatch River Watershed Restoration**

Deliverable Complete Potlatch River watershed implementation plan.

Accomplishment BPA identified this new project for unding in the 2002 Mountain Snake provincial review process, but project is not considered critical for BiOp implementation.

BPA **Project:** **80_1999-016-00_Protect and Restore Big Canyon Creek Watershed**

Deliverable 1. Provide fish access at all road crossings in all historical habitats by replacing 3 fish barrier culverts/year: 2. Increase summer low flows and decrease high flow events by protecting identified critical wetland areas for passive restoration. a. Build 2 miles of fence.

Accomplishment Cost share with CWA 319 Program, Continuous Reserve Program. Coordinated the TMDL process with Nez Perce Tribal Water Resources Dept. and Idaho DEQ. Contracted for road crossing surveys and prioritization of barriers replacements. Culvert replacements and fence construction to begin in FY 2003 pending funding allocation.

BPA **Project:** **81_1999-017-00_Protect and Restore Lapwai Creek Watershed**

Deliverable 1. Return and protect stream, riparian, and watershed health by contributing in finishing 6 and developing 10 new Conservation Land Management Plans on private landowner property. 2.Fence 2 miles of riparian area. 3.Plant 5 acres of vegetation on private landowner property. 4. Increase summer low flows and decrease high flow events by protecting identified critical wetland areas for passive restoration. Build 2 miles of fence.

Accomplishment Contracted for road crossing surveys and prioritization of barrier replacements. Habitat protected through CCRP, CWA Section 319 and PL566 requirements and Nez Perce Tribal Action. Riparian fence construction planned for summer of 2003 that will protect 2.0 river miles and 52 acres of productive fish habitat at risk of degradation. Coordinating TMDL process with Nez Perce Tribe Water Resources Department and Idaho DEQ.

BPA **Project:** **85_2000-034-00_Protect and Restore The North Lochsa Face Analysis Area Watersheds**

Deliverable 1. Alleviate sediment input from road caused sources. 2. Survey 20 miles of road obliteration candidates. 3. Obliterate 20 miles of road.

Accomplishment Project delayed due to tribal appeal w/ Forest Service.

BPA **Project:** **88_2001-035-00_Protect Bear Valley Wild Salmon, Steelhead, Bull Trout Spawning and Rearing Habitat**

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable Increase chinook salmon and steelhead trout to attain the Council's program & tribal & NMFS recovery goals, maintain biological diversity, and protect and enhance habitat for bull trout and westslope cuttroat trout and other riparian dependent spp. Increase chinook salmon adult numbers from 50 to 2000 in the Bear Valley Basin. Increase chinook salmon egg to parr survival from 3.5% to 15 % in the Bear Valley System. Decrease spawning substrate fine sediment in the Bear Valley system from 40% to less than 20%. Decrease water temperatures in the Bear Valley system to meet PACFISH RMO's and Bull Trout criteria. Increase bank stability in the Bear Valley system from 60% to 80%.

Accomplishment Permanently eliminate livestock grazing impacts on the Bear Valley and Deer Creek Allotments in the Bear Valley Creek watershed by buying back grazing permits on US Forest Service lands. Project occurred on 303(d) listed stream and improved parameters of concern to fish. TMDL planned by 2005 - Idaho DEQ; project data to be shared on request.

BPA Project: 138 2002-021-00 Reduce Water Temperatures in Teanaway

Deliverable Increase irrigation efficiency on agricultural lands in lower Teanaway Basin. Restore riparian vegetation in Teanaway Basin. Monitor effectiveness of actions taken under this project. Monitor water quality (sediment & temperature) in Teanaway Basin. Reporting, project management and data input.

Accomplishment With guidance from Ecology, KCCD installed 7 data loggers at various locations on the Teanaway, including the forks. One site is shared with USFS for data quality assurance purposes since USFS is conducting similar monitoring on its land in the basin. Logger data retrieved successfully in August and October. Development has begun on a Quality Assurance Project Plan (QAPP) for Ecology's approval. Analyzed Ecology's FLIR data using GIS. Ecology / KCCD submitted 2 Quarterly reports covering May through September to BPA.

BPA Project: 86 2000-035-00 Rehabilitate Newsome Creek Watershed - South Fork Clearwater River

Deliverable 1. Alleviate sediment input and potential from road sources. 2.Design rehabilitation for the upper channel reaches of Newsome Creek affected by past dredge mining. 3.Improve Fish Passage and alleviate potential culvert problems.

Accomplishment Continued to alleviate sediment input from road sources.

BPA Project: 79 1999-015-00 Restoring Anadromous Fish Habitat in Big Canyon Watershed

Deliverable 1. Conservation Tillage. 2. sediment basins. 3. water and sediment control basins. 4. Culvert outlets. 5. Grade stabilizations. 5. Grassed waterways. 6. Permanent vegitation. 7. riparian habitat improvement

Accomplishment Continued installation of BMPs and monitoring of installed practices.

BPA Project: 143 1991-071-00 Snake River Sockeye Salmon Habitat and Limmological Research

Deliverable Limnological monitoring in Redfish, Pettit, Alturas, and Stanley lakes, ID. Fertilize Redfish, Pettit, and Alturas lakes. Monitoring of O. nerka population characteristics and densities in Sawtooth Valley lakes.

Accomplishment Project continued limnological monitoring of sockeye salmon nursery lakes in Sawtooth Valley, ID, fertilized nursery lakes, and continued monitoring and evaluation tasks in support of the Snake River sockeye salmon captive broodstock program. Preparing Annual Report.

BPA Project: 182 1994-042-00 Trout Creek Habitat Restoration Project

Deliverable 1. Increase natural summer steelhead smolt production in the Trout Creek Basin to an annual average of 100,000 outmigrants by increasing rearing capacity with targeted instream and riparian habitat restoration projects. 2. Increase monitoring of upper basin discharge and flow regime. 3. Participate in the planning, coordiantion and development of watershed assessments, long-range plans, and database development. 4. Plan, develop, and implement M&E on habitat improvement actions in Trout Creek Basin. 5. Monitor and evaluate the status of steelhead in Trout Creek.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Accomplishment Supplied smolt out migration information to ODFW and CTWS fishery managers and all interested parties. Supplied technical assistance to Trout Creek Watershed council on restoration projects. Developed and maintain off channel water developments. TMDL scheduled for 2006 - 2013 in Trout Creek - 303(d) listed stream with parameters of concern to fish.

BPA Project: 184 1998-028-00 Trout Creek Watershed Improvement Project

Deliverable 1. Increase natural summer steelhead smolt production in the Trout Creek Basin to an annual average of 100,000 outmigrants by increasing rearing capacity with targeted instream and riparian habitat restoration projects. 2. Complete watershed assessment and long-range plan. 3. Construct infiltration galleries to remove fish barriers and improve irrigation efficiency. 4. Construct off-site solar watering systems to manage livestock away from creek. 5. Construct and improve culverts where necessary. 6. Upland range improvements. Juniper removal, 200 acres per year with native vegetation reseeding.

Accomplishment Continued watershed assessment work. TMDL scheduled for 2006-2013 on Trout Creek.

BPA Project: 203 1987-100-01 Umatilla River Anadromous Fish Habitat Enhancement Project

Deliverable 1) Develop projects and cost shares with landowners, and local, state and federal agencies, 2) Secure riparian easements on and off reservation, 3) Fulfill permitting requirements: NEPA, cultural surveys, Biological Assessments, etc. as required. 4) Maintain or continue implementation of instream habitat enhancement projects - a) Station 29, b) Hartman. 5) Maintain riparian corridor fencing. 6) Construct new riparian corridor fencing. Harvey - 2 mi, Simenton - 0.5 mi, Wolfe 1.0 mi. 7) Develop off-stream watering sources for livestock and wildlife - a) S&M Farms (last 75%); b) 5 troughs Buckaroo C. 8) Plant native grasses and plants: 300 pounds grasss seed; purchase 3,900 trees. 9) Treat noxious weeds - 468 acres. 10) Monitor pre- and post-implemetnation comparisons - a) aquatic invertebrate inventory; b) plant photopoints; c) water temperatute; d) suspended sediments. 11) Meacham Creek Wastershed Assessment and Restoration Plan. 12) Umatilla River sub-basin Watershed Assessment. 13) Riparian Easements (>= 15 yrs) Simenton - 80 acres/ 0.5 RM Hachler - 10-20 acres/0.1 RM. 14) Annual Report.

Accomplishment All activities completed within the contract period unless noted. 4a) All 100%; 4b) First 75%. 5) Little expected to be needed. 8) An additional 6,000 willow starts will be planted - no purchase cost. 11) Last 75% will complete the report. 12) Completed the report. 14) 2001 Annual Report to be completed in FY 2003. Conservation easements from 2002 to 2017 to protect 0.4 river miles and from 2001 to 2021 to protect 1.3 river miles of productive fish habitat.

BPA Project: 72 1996-007-00 Upper Salmon River Diversion Consolidation Program

Deliverable 1. This project has been restructured consistent with a geographic approach for project selection, planning, implementation. 2. Minimize losses and migratory delays or blockages of salmonids that are associated with irrigation diversion structures and water withdrawels along streams on non-federal lands. 3. Improve critical habitats for salmonids on non-federal lands by improving riparian conditions and reducing streambed sedimentation and water temprature.

Accomplishment Diversions consolidated on Upper Salmon River which eliminated need to construct push up dams and reduced sedimentation. Work occurred on 303(d) listed stream segment with parameters of concern to fish. TMDLs planned by 2005 - Idaho DEQ has TMDL authority.

BPA Project: 272 1994-046-01 Walla Walla River Basin Fish Habitat Enhancement

Deliverable 1) Maintain/construct riparian corridor fencing 2.0 miles. 2) Plant native grasses and plants: a) 700 pounds grass seed, b) 1,000 plants. 3) Treat noxious weeds - 100 acres. 4) Monitor pre- and post-implemetnation comparisons; a) Aquatic invertebrate inventory, b) Plant photopoints, c) water temperature: Blue Creek, Mill Creek, Touchet River (rivermile 8 and 17), d) suspended sediments. 5) Walla Walla River Wastershed Assessment. 6) Annual Report.

Accomplishment Seeded 12 acres of former wheat fields in native grasses. Mowed and applied herbicides to reduce broadleaf plants. Conservation easement from 2001 to 2015. Protected 0.5 river miles and 12 acres of habitat at risk of degradation. Walla Walla River, Touchet River, and Mill Creek are 303(d) listed waters. Project will improve fish parameters of concern .

BPA **Project:** **359 1999-045-00 Water Temperature Manipulation/Data Sharing**

Deliverable Develop software for monitoring water temperatures.

Accomplishment Continued software development for monitoring water temperatures.

BPA **Project:** **135 1998-035-01 Watershed Scale Response of Habitat to Abandoned Mine Waste**

Deliverable Quarterly & Annual reports; papers

Accomplishment Quarterly/Annual Reports plus several published papers; conf posters

BPA **Project:** **16 1998-034-00 Yakama Nation Yakima/Klickitat Fisheries Project (YKFP) Reestablish Safe Access into Tributaries of the Yakima Subbasin**

Deliverable A report detailing the location, description and number of migration barriers and unscreened diversions in ten Yakima subbasin tributaries. This report will be provided in increments as addenda to the management plan and as surveys are completed. Identify sites and structures that provide migratory access for juvenile and adult anadromous salmonids, in all tributaries deemed economically feasible for fixing. Install irrigation diversion screens to provide safe access to tributaries, by preventing entrainment into irrigation ditches. Develop conservation easements and property acquisition on habitats with high functional value. Coordinate with lasdowners on fencing to protect riparian habitat from improper grazing. Prepare quarterly and annual reports on project efforts and results, including number of miles of tributary rearing habitat that is regained through the fishway/screening and habitat protection efforts. Update the Project Management Plan.

Accomplishment Completed feasibility study for screening, passage, and flow issues. Working on side channels of upper Yakima. Has 303(d) listed waters with parameters of concern to fish.

RPA 153 Long-term protection for 100 miles of riparian buffers per year

BPA **Project:** **324 Asotin County Riparian Buffer and Couse and Tenmile Creeks Protection and Implementation Project**

Deliverable 1. Coordinate Asotin County and Riparian Buffer Projects Prioritization and Planning. 2. Implement 22 new CRP / CREP riparian buffer system agreements with participating landowners on 26 Miles of stream (52 miles of streambank) to improve 1,323 riparian acres . 3. Secure additional funding and cooperative partnerships.

Accomplishment BPA decided to fund under 2002 Blue Mountain provincial review process, but project is not considered critical for BiOp implementation.

BPA **Project:** **297 2000-054-00 Asotin Creek Riparian Fencing Projects**

Deliverable One mile of riparian corridor fence, develop 5 spring sources, and 10 off site watering troughs

Accomplishment Continued riparian corridor fencing and off channel watering systems.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

BPA **Project: 296 2000-053-00 Asotin Creek Riparian Planting**

Deliverable Plant 16,000 trees within CREP riparian corridor

Accomplishment Planted trees within riparian corridors.

BPA **Project: 291 1999-002-00 Asotin Watershed Project Implementation**

Deliverable Work Task #1. Coordinate activities in regards to fish habitat maintenance, enhancement and restoration in the Model Watershed area. Work Task #2. Ensure that the model watershed plan meets accepted environmental and biological standards. Work Task #3. Coordinate activities that keep people involved in the Model Watershed process. Work Task #4. Work with groups and individuals in the upper Asotin Creek basin to investigate expansion of the model watershed program. Work Task #5. Direct and assist with the planning and implementation of conservation management systems for ranchers in the model watershed area. Work Task #6. Coordinate with other agencies working on salmon habitat enhancement and restoration in the Model Watershed.

Accomplishment Work Task #1. Coordinated implemantation and O& M on the following Asotin Creek MWS projects: 2000-046-00, ISCO Water Sampling and Macroinvertebrate Samples; 2000-053-00, Asotin Creek Riparian Planting; 2000-047-00, GIS Mapping of Asotin Creek Watershed Habitat Projects; 2000-054-00, Asotin Creek Riparian Fencing Projects; 2000-067-00, Asotin Creek Channel, Floodplain and Riparian Restoration, 1999-060-00, Asotin Creek Watershed Upland BMP Implementation; 1999-052-00, Asotin Creek Five Year Minimum Till Program; 1997-086-00, Asotin Watershed Upland BPM;1998-047-00, Asotin Creek Information and Education. Work Task #2. Complied with all Federal and State environmental laws for project implementation. Work Task #3. Holds regular public meetings in conjunction with Asotin County Conservation District. Work Task #4. Work with landowners in nearby watersheds such as Ten Mile and Couse Creeks. Work Task #5. Implemented CREP, CRP and other conservation incentive programs throughout Asotin Creek watershed. Work Task #6. Coordinated work with Umatilla National Forest, Nez Perce Tribe, Asotin County Conservation District and Washington Department of Fish and Wildlife.

BPA **Project: 293 1999-060-00 Asotin Watershed Upland BMP Implementation**

Deliverable 5 Sediment Bains

Accomplishment 9 (3 in 2001 and 6 in 2000) sediment basins were completed, 41.4 ac of pasture/hayland planting in 2002, and 330 ac of two-year direct seeding in 2002. BPA's portion of this was $13,215.35 and Landowner Cost-Share was $30,682.77.

BPA **Project: 399 1999-006-00 Bakeoven Riparian Assessment**

Deliverable Facilitate CREP agreement for Lindley Tract 37 and E. Hagen Tract 631.

Accomplishment CREP lease agreement for Lindley Tract 37 from 2001 to 2016 to protect 5.45 river miles and 91.1 acres of productive habitat. CREP lease agreement for E. Hagen Tract 631 from 2002 to 2016 for .94 river miles and 23.3 acres of productive habitat. Both parcels were at risk of degradation.

BPA **Project: 89 2001-044-00 Conservation Easement, Baker Ranch, Salmon River East Fork**

Deliverable Enhance and preserve the natural character of the ranch lands. Obtain Conservation Easement. Fence easement to rejuvenate riparian habitat for fish & wildlife.

Accomplishment Contract was not signed; project is no longer under consideration for BPA funding.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

BPA Project: 239 2000-064-00 Conservation Reserve Enhancement Program Incentive

Deliverable Continue to install riparian pasture fence and water developments.

Accomplishment 204 acres of productive fish habitat at risk of being degraded enrolled in CREP. Protected 8.1 miles of riparian buffers.

BPA Project: 68 1993-062-00 Custer Soil & Water Conservation District Salmon River Fish Passage Enhancement

Deliverable 1. This project has been restructured consistent with a geographic approach for project selection, planning, implementation. 2. Minimize losses and migratory delays or blockages of salmonids that are associated with irrigation diversion structures and water withdrawels along streams on non-federal lands. 3. Improve critical habitats for salmonids on non-federal lands by improving riparian conditions and reducing streambed sedimentation and water temprature.

Accomplishment Improved fish passage on Pahsimeroi (Circle Pie and Robins) - opened approximately 7 miles of stream.

BPA Project: 187 2001-054-00 Emergency Flow Augmentation for Buck Hollow

Deliverable 1. Project coordination / management. 2. Augment stream flow in Buck Hollow Creek.3. Monitor and evaluate stream flow and other environmental conditions

Accomplishment Completed Buck Hollow Proj. Phase 7a: Accomplishments to date include: 50.5 miles fence, 1255 ac. range seeding, 137400 ft. terraces, 152 sediment basins, 1240 ac. brush control, 5 livestock wells, 13 spring developments, 12490 ft. pipeline, and much more. 1.5 cfs of water was supplied to the upper reaches of the creek during the summer months of 2002. Flow at the confluence was about 0.9 cfs greater in late summer 2002 than in a similar drought year in the 1970's.

BPA Project: 67 1993-035-01 Enhance Fish, Riparian, and Wildlife Habitat Within the Red River Watershed

Deliverable 1. Secure conservation easements. This process includes hazardous substance surveys and appraisals on potential conservation easement properties. 2. Plant seedlings and willow poles. 3. Effectiveness Monitoring: Evaluate the performance of restoration work to stabilize the stream channel, restore floodplain function, enhance fish and wildlife habitat, and reestablish native riparian and wet meadow plant communities.

BPA Project: 189 2002-019-00 Establish Riparian Buffer Systems

Deliverable 1. Plan, Coordinate and Implement 20 new CRP/CREP riparian buffer system agreements with participating landowners on 36 miles of stream per year to improve 800 riparian acres. 2. Subbasin assessment & plan assistance.

Accomplishment Protected 4 miles of riparian stream habitat through the Conservation Reserve Enhancement Program (CREP).

BPA Project: 181 1993-040-00 Fifteenmile Creek Habitat Restoration Project

Deliverable 1a. Inspect and evaluate riparian protection fences. 1b. Repair and maintenance of riparian protection fences. 1c. Elimination of high maintenance actions fence 1d. Inspect and evaluate instream habitat and bank stabilization structures. 1e. Repair and maintenance of instream habitat and bank stabilization structures. 1f. Elimination of high maintenance action items, instream structures. 2a. Work with private landowners to promote land management activities beneficial to the protection riparian areas and watersheds. 2b. Coordinate field activities with other agencies and landowners. 2c. Pursue outside funding & grants to expand habitat restoration within the project area. 2d. Make presentations related to the Fifteenmile Creek Habitat Restoration Project to agencies, schools and news media. 3. Project coordination

Accomplishment Lease agreements completed to date are protecting over 54 miles and 447 acres of riparian buffers. 3 lease agreements duration >=30 years; 1 lease agreement >=15 years.

BPA **Project: 185 2001-020-00 Fifteenmile Creek Riparian Fencing / Physical stream Survey Project**

Deliverable 1. Construct approximately 30 miles of riparian protection fence over a three year period along Fifteenmile Creek and it's tributaries. Conduct a phyical stream of 90 miles of privatly owned stream in the Fifteenmile Subbasin. 2. Plan, coordiante, and assist in the development of watershed assessments and data collection and analysis. 3. Leverage, where feasible, appropriate agricultural conservation incentive programs.

Accomplishment Eight cooperative agreements signed from 2002 to 2017 to protect productive riparian habitat at risk of being degraded. Agreements aren't part of an agricultural incentive program. Total protection for 10.45 river miles and 312.42 acres. All sites are on property adjacent to streams.

BPA **Project: 123 2001-041-00 Forrest Ranch Acquisition**

Deliverable 1) Close the sale of the property. 2)Complete HEP. 3 Complete Hankin and Reeves Survey. 4) Complete property management plan. 5) River restoration of 2 mile reach of Middle Fork John Day

Accomplishment Acquisition of 4,323 acres and 25.2 cfs of water rights. Continued to protect 4.7 river miles of productive fish habitat at risk of being degraded.

BPA **Project: 207 2002-035-00 Gilliam SWCD Riparian Buffers**

Deliverable Plan coordinate and implement 46 new CREP/Continuous CRP riparian buffer system agreements with participating landowners on 94 miles of streams to improve 1458 acres of riparian habitat during the 3 year project. 2. Subbasin assessment & plan assistance.

Accomplishment Signed contract; hired and trained technician for project implementation.

BPA **Project: 98 1998-029-00 Goat Creek In-Stream Restoration for Salmonids**

Deliverable Remaining vegetation planting.

Accomplishment Continued O&M of project.

BPA **Project: 218 1992-026-01 Grande Ronde Model Watershed - Clark Creek/Bryant Alternative Watering System**

Deliverable 1)Install 3 alternative livestock watering systems; 2)construct 1820' of riparian fence

BPA **Project: 221 1992-026-01 Grande Ronde Model Watershed - Eisminger/CREP Dike Relocation**

Deliverable 1)Remove existing dike and build new dike farther from river; 2)seed new dike and wetland area to grasses; 3)plant trees and shrubs as riparian buffer; 4)monitor vegetation

Accomplishment Continue the Grande Ronde Model Watershed Program Administration and Habitat Restoration. Develop and oversee coordinated, sustainable resource management in the Grande Ronde Subbasin. Plan, design and implement salmonid habitat restoration projects.

BPA **Project: 212 1992-026-01 Grande Ronde Model Watershed - Grouse Creek Restoration**

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable 1)Rock structures would be constructed in the stream channel to replicate a B3 (Rosgen) stream type; 2)seeding of native grass species and planting of hardwoods along the stream

BPA **Project:** **213 1992-026-01 Grande Ronde Model Watershed - LaGrande Ranger District FY01 Projects**

Deliverable Deliverables were scheduled to be completed in 2001 & 2002

BPA **Project:** **214 1992-026-01 Grande Ronde Model Watershed - Wallowa Valley Ranger District FY01 Projects**

Deliverable 1a)capture and tag 28 adult bull trout; 1b)track movements throughout the season on Lostine/Imnaha; 2a)add large wood to 9 miles on Carrol Creek; 2b)plant 3 acres of riparian veg; 2c)decommission 7.2 miles of road; 2d)install 4 troughs/spring boxes; 2f)reconstruct 5/8 miles of exclosure fence; 2g)monitor via photo points; 3a)construct 4 miles of riparian fence on Swamp Creek; 3b)construct water bars on 6.5 miles of road; 3c)collect/propagate seeds and cutting to plant 25 acres; 3d)establish photo points; 3e)establish 2 water temp stations; 3f)establish 12 channel cross sections to measure channel morphology; 4a)add large wood to 3.5 miles of Muddy Elk Hunter; 4b)plant 2 miles vegetation; 4c)construct 1.25 miles of riparion pasture fence; 4d)construct spprox 1 mile of exclosure fence; 4e)reconstruct approx 7 miles of exclosure fence; 4f)establish photo points. The above deliverables are scheduled to be completed between 2001 and 2004.

Accomplishment 1a)capture and tag 28 adult bull trout; 1b)track movements throughout the season on Lostine/Imnaha; 2a)add large wood to 9 miles on Carrol Creek; 2b)plant 3 acres of riparian veg; 2c)decommission 7.2 miles of road; 2d)install 4 troughs/spring boxes; 2f)reconstruct 5/8 miles of exclosure fence; 2g)monitor via photo points; 3a)construct 4 miles of riparian fence on Swamp Creek; 3b)construct water bars on 6.5 miles of road; 3c)collect/propagate seeds and cutting to plant 25 acres; 3d)establish photo points; 3e)establish 2 water temp stations; 3f)establish 12 channel cross sections to measure channel morphology; 4a)add large wood to 3.5 miles of Muddy Elk Hunter; 4b)plant 2 miles vegetation; 4c)construct 1.25 miles of riparion pasture fence; 4d)construct spprox 1 mile of exclosure fence; 4e)reconstruct approx 7 miles of exclosure fence; 4f)establish photo points; The above deliverables are scheduled to be completed between 2001 and 2004.

BPA **Project:** **103 2001-065-00 Hancock Springs Passage and Habitat Restoration Improvements**

Deliverable Complete NEPA Watershed Checklist, Prepare Biological Assessment, Engineering survey of the culvert replacment site. Coordinate with NMFS on the BO. Remove existing culvert. Install arched/box culvert. Conduct final Inspection. Install K-weir and pump screen, Install off-channel rock watering sites for livestock, conduct streamside planings, conduct fencing around spring sources.

Accomplishment Contracts in place. NEPA & ESA and permitting nearly complete. Installation of culvert scheduled between July 1 and August 15, 2002.

BPA **Project:** **83 1999-019-00 Holistic Restoration of the Twelvemile Reach of the Salmon River near Challis, Idaho**

Deliverable Develop project designs for selected restoration opportunities. Quantify benefits at the watershed scale - particularly related to temperature and fine sediments. Implementation and restoration and bank stabilization work on 12 mile section of Salmon River. Restore meadow and riparian plant communities. Conservation/access easements.

Accomplishment Completed surveys of river cross-sections, adjacent wetlands, and floodplains. Developed a hydrodynamic model of the study reach to assess flood risks, hydroperiod of floodplain and wetland areas, and physical characteristics of fish habitat. Completed a geomorphic study of both existing and historic conditions throughout the study reach.

BPA **Project:** **183 1998-021-00 Hood River Fish Habitat Project**

Deliverable Plan, coordinate and implement a wide array of habitat improvement actions for anaadromous fish including, replacement screens, riparian buffers, and alternative irrigation water delivery systems. Participate in watershed assessments actions and database development.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Accomplishment Two 5-year (2002 to 2007) protection agreements (non-agricultural incentive program) signed for productive private lands at risk of being degraded. Agreements protect 0.4 miles and 3.6 acres of riparian habitat. Installed 1 fish screen - opened 110 miles of upstream habitat. Engineering and design completed for 1 fish screen that would open 35 miles of upstream habitat.

BPA Project: **70 1994-017-00 Idaho Model Watershed Habitat Improvement Project**

Deliverable 1. This project has been restructured consistent with a geographic approach for project selection, planning, implementation. 2. Minimize losses and migratory delays or blockages of salmonids that are associated with irrigation diversion structures and water withdrawels along streams on non-federal lands. 3. Improve critical habitats for salmonids on non-federal lands by improving riparian conditions and reducing streambed sedimentation and water temprature.

Accomplishment Signed cost share agreements with Lemhi SWCD for Goddard/Lemhi Fence December 2001 and for Canyon Creek Fence October 2001. Riparian protection for 1 river mile and 4 acres with Goddard/Lemhi Fence and 2 miles and 10 acres with Canyon Creek Fence.

BPA Project: **270 1994-018-06 Implement Tucannon River Model Watershed Plan to Restore Salmonid Habitat (Work contracted under 1999-001-00, 1999-057-00)**

Deliverable 1) Upland Best management Implementation to reduce soil erosion (e.g., grass waterways, sediment basins, critical area plantings): a) direct seeding 3 continued, 0 new. 2) Riparian re-vegetation and enhancement: a) develop off-stream watering sites: b) fence 1,000 ft of riparian, c) plant 20,000 stems. 3) Monitoring and Evaluation - a) Pre- versus Post- implementation habitat quality surveys, b) Water Quality sampling, c) Six-year milesone (resurvey previous habitat units after habitat improvements). 4) Install instream habitat structures - a) Camp Wooten Phase 2. 5) Coordinate wateshed council activities on private and public lands including. 6) Coordinate watershed project identification, selection, design, development, prioritization and acceptance (including NRCS). 7) Direct and assist the planning and implementation of conservation management systems for producers in the model waershed area. 8) Develop list of potential projects for FY 2003. 9) Monitor/Evaluate all projects for effectiveness in meeting Plan goal and objectives. 10) Coordinate Information and Education program. 11) Tucannon River Model Watershed Administration. 12) Subbasin Planning Coordination. 13) Water savings, Irrigation efficiency, Update screens, Install water meters. 14) Annual Report

BPA Project: **44 2001-075-00 Increase Instream Flows to Dewatered Stream Reaches in the Walla Walla Basin**

Deliverable Ditch pipelining: 1) Ramp flumes installed in 3 ditches; 2) Measurements taken - ditch losses quantified; 3) Design of ditch piping systems for 3 ditches; 4) Ditch pipe improvemeents installed on 3 ditches; 5) Monitoring system in place. CREP leases and buffers: 1) Water rights appraised for 350 acres; 2) CREP contracts signed and buffers installed for 350 acres; 3) Monitoring program in place.

Accomplishment Ditch pipelining: 1) Ramp flumes installed in 3 ditches; 2) Measurements taken - ditch losses quantified; 3) Design of ditch piping systems for 3 ditches; 4) Ditch pipe improvemeents installed on 3 ditches; 5) Monitoring system in place. CREP leases and buffers: 1) water rights appraised for 350 acres; 2) CREP contracts signed and buffers installed for 350 acres; 3) Monitoring program in place. Acquired 1.4 cfs of instream flow (Gardena Farms Pipeline).

BPA Project: **4001 1998-018-00 John Day Watershed Restoration Program**

Deliverable 1) construct 3 off site watering systems 2) Install 8 permanent irrigation diversions 3) remove 500 acres of Junipers to increase trib flows and decrease erosion 4) construct 2 miles of riparian fencing 5) complete one return flow cooling system

Accomplishment Water quality improvements at 303(d) listed sites - Dans Creek, Indian Creek and Franks Creek. Improvements for Emmel return flow cooling, Lower Island ditch, Ricco ditch, Rice ditch, Holliday return flow cooling and Clausen pump station. Eight partial barriers (diversion dams) removed or improved.

BPA Project: **208 1984-025-00 Joseph Creek, Grande Ronde River**

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable 1)Construct 8.6 miles of fence; 2)repair 10.7 miles of fence; 3)remove 3000' of existing railroad grade; 4)place large wood along 3.7 miles of stream; 5)provide channel designs and construction oversight to relocate 1,200' of stream and replace culvert; 6)provide channel design and construction ispection to relocate 1.7 miles of Ladd Creek; 7)maintain 105 miles of fence, 144 livestock watering gaps, 34 of-site spring developments; 8)relocate 2 miles of existing riparian exclosure fence; 9)control noxious weeds on 1,800 acres of leased habitat; 10)maintain 62 miles of streambank stability structures; 11)conduct project monitoring

Accomplishment Conservation easement from 2002 to 2017 to protect 0.75 river miles of productive fish habitat (Milk Creek) at risk of degradation. Also, conservation easement to protect 3.5 river miles at Ladd Creek, Bear Creek, and Meadow Creek . Meadow Creek (2.0 river miles) is through ag-incentive program.

BPA Project: 78 1999-014-00 Little Canyon Creek Subwatershed-Steelhead Trout Habitat Improvement Project

Deliverable 1. Conservation Tillage. 2. sediment basins. 3. water and sediment control basins. 4. Culvert outlets. 5. Grade stabilizations. 5. Grassed waterways. 6. Permanent vegetation. 7. riparian habitat improvement

Accomplishment Continued enhanced level of conservation on the watershed acreage.

BPA Project: 241 2000-066-00 McCoy Creek-Alta Cunha Rances Riparian Restoration

Deliverable work scheduled for completion this year

Accomplishment Property changed owners and project implementation is uncertain. CTUIR may approach current landowner and pursue opportunities to protect productive fish habitat.

BPA Project: 190 2002-026-00 Morrow County Buffer Initiative

Deliverable 1. Implement 40 new CCRP/CREP riparian buffer system agreements with participating landowners on 50 miles of streams to improve 1000 riparian acres during the 3 year duration. 2. Subbasin assessment & plan assistance.

Accomplishment Protected 5 miles of of riparian stream habitat through the CREP program.

BPA Project: 120 2000-031-00 North Fork John Day River Subbasin Anadromous Fish Habitat Enhancement Project

Deliverable Same as 01 except more miles of fence and more riparian easements - 1) Complete 12 miles of riparian fencing protection 2) Complete 4 off site water developments 3) Complete riparian easements

Accomplishment Completed 2 long-term (2002 to 2017) CREP agreements (Ropp, Camas Creek and Cunningham Cattle) to protect 2.0 river miles of productive habitat at-risk of degradation. Completed 2 15-year leases (2002 to 2017) to protect 5.0 river miles of productive habitat at-risk of degradation (NF John Day Trough Creek and OWEB Camas Creek).

BPA Project: 119 2000-015-00 Oxbow Ranch Acquisition

Deliverable 1) Complete baseline assessments to include Hankin and Reeves survey 2) complete HEP survey 3) Complete plan 4) complete maintenance of property 5) Dredge tailings restoration

Accomplishment Continued long term protection of 1022 acres and 3.3 river miles of productive fish habitat that was at risk of being degraded.

BPA Project: 117 1998-022-00 Pine Creek Ranch Acquisition

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable 1) Gather baseline information to assist in monitoring and the development of a property plan 2) initiate the development of a property management plan 3) protect and enhance the natural resources. 4) property management plan is to be completed

Accomplishment Lease (2002 to 2017) under CREP program to protect 5.4 river miles of Pine Creek productive fish habitat that was at risk of being degraded.

BPA Project: 87 2000-036-00 Protect & Restore Mill Creek

Deliverable 1. Restore meadow and riparian plant communities to enhance fish and wildlife habitat. 2. Return passage to inaccessible tributary habitat and alleviate sediment sources associated with culverts.

Accomplishment Continued protection of meadow and riparian communities; stabilized stream banks and improved water quality.

BPA Project: 112 1984-021-00 Protect and Enhance John Day Anadromous Fish

Deliverable 1) construct 6.5 miles of riparian protection fencing with 10 and 15 year lease agreements. 2)construct 6 off site water developments away from riparian area. 3)inspect 80 miles of fence and perform maintenance on 23 miles of fence. 4)complete maintenance on 5 off riparian site water developments 5) Complete mine tailings restoration on Granite Creek

Accomplishment Eleven 15-year leases (2002 to 2017) signed to protect 7.7 river miles of productive fish habitat at risk of being degraded.

BPA Project: 80 1999-016-00 Protect and Restore Big Canyon Creek Watershed

Deliverable 1. Provide fish access at all road crossings in all historical habitats by replacing 3 fish barrier culverts/year: 2. Increase summer low flows and decrease high flow events by protecting identified critical wetland areas for passive restoration. a. Build 2 miles of fence.

Accomplishment Cost share with CWA 319 Program, Continuous Reserve Program. Coordinated the TMDL process with Nez Perce Tribal Water Resources Dept. and Idaho DEQ. Contracted for road crossing surveys and prioritization of barriers replacements. Culvert replacements and fence construction to begin in FY 2003 pending funding allocation.

BPA Project: 81 1999-017-00 Protect and Restore Lapwai Creek Watershed

Deliverable 1. Return and protect stream, riparian, and watershed health by contributing in finishing 6 and developing 10 new Conservation Land Management Plans on private landowner property. 2.Fence 2 miles of riparian area. 3.Plant 5 acres of vegetation on private landowner property. 4. Increase summer low flows and decrease high flow events by protecting identified critical wetland areas for passive restoration. Build 2 miles of fence.

Accomplishment Contracted for road crossing surveys and prioritization of barrier replacements. Habitat protected through CCRP, CWA Section 319 and PL566 requirements and Nez Perce Tribal Action. Riparian fence construction planned for summer of 2003 that will protect 2.0 river miles and 52 acres of productive fish habitat at risk of degradation. Coordinating TMDL process with Nez Perce Tribe Water Resources Department and Idaho DEQ.

BPA Project: 73 1996-077-02 Protect and Restore Lolo Creek Watershed

Deliverable 1. Restore and enhance critical riparian and in-stream habitat to reduce sedimentation and stream temperatures. 2. Restore hydrologic connectivity and fish passage within the Lolo Creek watershed. 3. Alleviate sediment input to the stream and reduce risk from sediment related mass wasting and surface erosion related to road sources.

Accomplishment Continued restoration and enhancement of critical riparian and in-stream habitat, reduction of sedimentation and stream temperatures.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

BPA **Project:** **22_2002-038-00_Protect Normative Structure and Function of Critical Aquatic and Terrestrial Habitat**

Deliverable New project in 2002 - just initiating work. Develop a habitat assessment and strategic plan for project. -coordinate with lanowners to secure rights of assess - acquire maps and GIS products; assess and analyze fisheries habitat conditions, water quality, riparian conditons, erosion hazards, hydrologic hazards, agricultural practices for impacts on riparian areas, wildlife habitat; Synthesize information and draft assessment plan; Finalize plan; prepare quarterly and annual report.

Accomplishment Landowner contacts on-going. Data collection on-going. Analysis on-going. Finalize habitat assessment plan. Prepare quarterly and annual report

BPA **Project:** **188_2002-015-00_Provide Coordination and Technical Assistance to Watershed Councils and Individuals in Sherman County, Oregon**

Deliverable 1Employ two full-time conservation planners to provide Resource Management System Plans (including NEPA) to project participants in Pine Hollow/Jackknife Watershed Council, Grass Valley WC, Fulton & Gordon WC, Spanish Hollow WC, and others. 2. Train conservationist in NRCS planning method, hydrology, watershed assessment methods, other subjects. 3. Produce at least 60 Resource Management System Plans (with associated NEPA documentation) upon which future conservation projects will be based. 4. Coordinate five watershed councils which provide local input to conservation programs throughout Sherman County

BPA **Project:** **138_2002-021-00_Reduce Water Temperatures in Teanaway**

Deliverable Increase irrigation efficiency on agricultural lands in lower Teanaway Basin. Restore riparian vegetation in Teanaway Basin. Monitor effectiveness of actions taken under this project. Monitor water quality (sediment & temperature) in Teanaway Basin. Reporting, project management and data input.

Accomplishment With guidance from Ecology, KCCD installed 7 data loggers at various locations on the Teanaway, including the forks. One site is shared with USFS for data quality assurance purposes since USFS is conducting similar monitoring on its land in the basin. Logger data retrieved successfully in August and October. Development has begun on a Quality Assurance Project Plan (QAPP) for Ecology's approval. Analyzed Ecology's FLIR data using GIS. Ecology / KCCD submitted 2 Quarterly reports covering May through September to BPA.

BPA **Project:** **86_2000-035-00_Rehabilitate Newsome Creek Watershed - South Fork Clearwater River**

Deliverable 1. Alleviate sediment input and potential from road sources. 2.Design rehabilitation for the upper channel reaches of Newsome Creek affected by past dredge mining. 3.Improve Fish Passage and alleviate potential culvert problems.

Accomplishment Continued to alleviate sediment input from road sources.

BPA **Project:** **96_1996-042-00_Restore and Enhance Anadromous Fish Populations and Habitat in Salmon Creek**

Deliverable Provide instream flows through on-farm water conservaton and water leasing. Design a river pump station and an upgrade to the Salmon Lake Feeder Canal. Enhance channel habitat. Desgin channel restoration. Undertake NEPA. Raise funds for all the above.

Accomplishment Implemented third year of water leasing program with OID to provide passage for steelhead adults, juvenile outmigration and overwintering and rearing. Approximately 585 acres (3 ac. ft./acre) acquired on Salmon Creek and 2610 ac/ft (63 act/ft dry year; 4060 ac/ft wet yr) conserved through the Okanogan Irrigation District. Purchased protection for 0.75 river miles and 60 acres of productive fish habitat at risk of being degraded (Ruby townsite/Salmon Creek).

BPA **Project:** **75_1996-077-05_Restore McComas Meadows/Meadow Creek Watershed**

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable 1. Restore hydrologic connectivity within the Meadow Creek area of McComas Meadows. 2. Restore fish passage. 3. Restore meadow and riparian plant communities to enhance fish and wildlife habitat. 4. Alleviate sediment input to the stream and reduce risk from sediment related mass wasting and surface erosion related to road sources.

Accomplishment Continued to protect and restore critical riparian/stream habitat in Meadow Creek thru streambank stabilization, riparian re-vegetation, road decommissioning, culvert repalcement/repair, and native plant restoration.

BPA Project: 97 1998-025-00 Restore Steelhead and Chinook habitat in Early Winters Creek

Deliverable This project was delayed by almost two years due to delays in receiving a biological opinion from NMFS. The project work includes terracing the eroding bank along the north side of the Early Winters campground with an excavator and restabilize the bank using native vegetation; removing two non-functioning bridge abutments from the Early Winters Creek floodplain; placing ten to twenty large boulders (2.5-4 ft. diameter) in the active stream channel to enable potential spawning and rearing habitat complexity; enhance natural high flow side channel complexity and refugia habitat by creating 5-10 step pool sequences excavated in the dry floodplain; placing large wood on a gravel bar near Early Winters ditch headgate to create additional refugia during high flow and augment a natural logjam at the downstream end of the project by placing LWD.

Accomplishment Continued pulling invasive weeds and installed temperature recording devices in project area. Complete habitat assessment.

BPA Project: 15 1998-033-00 Restore Upper Toppenish Watershed

Deliverable Stablize headcuts, especially in headwater meadows. Retain sediment in incised and widened ephemeral and intermittent channels. Stablize sediment depsits with appropriate native vegetation. Enhance channel/floodplain interactions. Reduce fine sediment delivery to fish-bearing streams. Monitor/evaluation. Reports.

Accomplishment Continue O&M.

BPA Project: 79 1999-015-00 Restoring Anadromous Fish Habitat in Big Canyon Watershed

Deliverable 1. Conservation Tillage. 2. sediment basins. 3. water and sediment control basins. 4. Culvert outlets. 5. Grade stabilizations. 5. Grassed waterways. 6. Permanent vegitation. 7. riparian habitat improvement

Accomplishment Continued installation of BMPs and monitoring of installed practices.

BPA Project: 71 1994-050-00 Salmon River Habitat Enhancement M & E

Deliverable 1. Decrease both surface and subsurface streambed sediment in Bear Valley Creek (BVC) (MF Salmon River) to less than 25% surface fines in low gradient reaches and less than 30% subsurface fines by volume.
2. Increase streambank cover and stability in BVC to bank stability greater than 80% with 75% of banks undercut.
3. Increase rearing area for anadromous fish in the Yankee Fork Salmon River (YFSR).
4. Incorporate the off-channel rearing area into a low-tech, bioenhancement facility for chinook salmon and steelhead in the YFSR.
5. Decrease both surface and subsurface streambed sediment in Herd Creek (HC) and Big Boulder Creek (BBC) (EF Salmon River) to less than 25% surface fines in low gradient reaches and less than 30% subsurface fines by volume.
6. Increase streambank cover and stability in HC and BBC to bank stability greater than 80% with 75% of banks undercut. Increase streambank cover and stability in HC and BBC.
7. Monitor habitat improvements and fish numbers.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Accomplishment Continued O&M of riparian habitat protection initiated in the late 1980's and early 1990s. Proposals being developed for long term habitat protection through agricultural incentive programs.

BPA Project: 11 1996-035-00 Status Watershed Restoration

Deliverable Restore natural riparian and upland vegetation patterns. Reduce erosion. Improve wildlife habitat. Moderate the flow regime on fish bearing streams. Improve aquatic habitat. Monitor changes in fish populations, watershed behavior and results of restoration treatments. Prepare quarterly and annual report.

Accomplishment Restore vegetation to areas critical for watershed recovery. Rehabilitate incised and ephemeral channels. Reintegrate fire as a landscape process. Restore vegetation in areas critical to watershed function. Restore vegetation in areas critical to watershed function - enhance beaver habitat; rehabilitate degraded channels; restore vegetation in areas critical to watershed function; continue the patrol and maintenance of fences; annual spawning ground surveys; fish habitat surveys; characterize streamflow; characterize suspended sediment; climate monitoring; revegetation success; issue reports as required.

BPA Project: 182 1994-042-00 Trout Creek Habitat Restoration Project

Deliverable 1. Increase natural summer steelhead smolt production in the Trout Creek Basin to an annual average of 100,000 outmigrants by increasing rearing capacity with targeted instream and riparian habitat restoration projects. 2. Increase monitoring of upper basin discharge and flow regime. 3. Participate in the planning, coordiantion and development of watershed assessments, long-range plans, and database development. 4. Plan, develop, and implement M&E on habitat improvement actions in Trout Creek Basin. 5. Monitor and evaluate the status of steelhead in Trout Creek.

Accomplishment Supplied smolt out migration information to ODFW and CTWS fishery managers and all interested parties. Supplied technical assistance to Trout Creek Watershed council on restoration projects. Developed and maintain off channel water developments. TMDL scheduled for 2006 - 2013 in Trout Creek - 303(d) listed stream with parameters of concern to fish.

BPA Project: 184 1998-028-00 Trout Creek Watershed Improvement Project

Deliverable 1. Increase natural summer steelhead smolt production in the Trout Creek Basin to an annual average of 100,000 outmigrants by increasing rearing capacity with targeted instream and riparian habitat restoration projects. 2. Complete watershed assessment and long-range plan. 3. Construct infiltration galleries to remove fish barriers and improve irrigation efficiency. 4. Construct off-site solar watering systems to manage livestock away from creek. 5. Construct and improve culverts where necessary. 6. Upland range improvements. Juniper removal, 200 acres per year with native vegetation reseeding.

Accomplishment Continued watershed assessment work. TMDL scheduled for 2006-2013 on Trout Creek.

BPA Project: 203 1987-100-01 Umatilla River Anadromous Fish Habitat Enhancement Project

Deliverable 1) Develop projects and cost shares with landowners, and local, state and federal agencies, 2) Secure riparian easements on and off reservation, 3) Fulfill permitting requirements: NEPA, cultural surveys, Biological Assessments, etc. as required. 4) Maintain or continue implementation of instream habitat enhancement projects - a) Station 29, b) Hartman. 5) Maintain riparian corridor fencing. 6) Construct new riparian corridor fencing. Harvey - 2 mi, Simenton - 0.5 mi, Wolfe 1.0 mi. 7) Develop off-stream watering sources for livestock and wildlife - a) S&M Farms (last 75%); b) 5 troughs Buckaroo C. 8) Plant native grasses and plants: 300 pounds grasss seed; purchase 3,900 trees. 9) Treat noxious weeds - 468 acres. 10) Monitor pre- and post-implemetnation comparisons - a) aquatic invertebrate inventory; b) plant photopoints; c) water temperatute; d) suspended sediments. 11) Meacham Creek Wastershed Assessment and Restoration Plan. 12) Umatilla River sub-basin Watershed Assessment. 13) Riparian Easements (>= 15 yrs) Simenton - 80 acres/ 0.5 RM Hachler - 10-20 acres/0.1 RM. 14) Annual Report.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Accomplishment All activities completed within the contract period unless noted. 4a) All 100%; 4b) First 75%. 5) Little expected to be needed. 8) An additional 6,000 willow starts will be planted - no purchase cost. 11) Last 75% will complete the report. 12) Completed the report. 14) 2001 Annual Report to be completed in FY 2003. Conservation easements from 2002 to 2017 to protect 0.4 river miles and from 2001 to 2021 to protect 1.3 river miles of productive fish habitat.

BPA **Project:** **236 2000-061-00 Upper Wildcat and Joseph Creek Watershed improvement**

Deliverable Deliverables are scheduled to be completed between 2001 and 2003

Accomplishment Deliverables are scheduled to be completed between 2001 and 2003 - Constructed 5 miles of fence; Added large wood on 2 miles of stream; Placed 4 spring boxes.

BPA **Project:** **235 2000-059-00 USFS Marr Flat Allotment and Big Sheep/Imnaha Fisheries Enhancement**

Deliverable Deliverables are scheduled to be completed between 2001 and 2003

Accomplishment Deliverables are scheduled to be completed between 2001 and 2003 - Added large woody material on 10 miles of stream; Placed 5 spring boxes

BPA **Project:** **122 2001-040-00 Wagner Ranch Acquisition**

Deliverable 1) Gather baseline information to assist in the monitoring and the development of a plan 2) Protect and manage the ranch resources

Accomplishment Gathered baseline information to assist in the monitoring and the development of a plan. Protected and managed the ranch resources. Continued long term protection of 9.7 river miles and 9,523 acres of productive fish habitat that was at risk of being degraded.

BPA **Project:** **272 1994-046-01 Walla Walla River Basin Fish Habitat Enhancement**

Deliverable 1) Maintain/construct riparian corridor fencing 2.0 miles. 2) Plant native grasses and plants: a) 700 pounds grass seed, b) 1,000 plants. 3) Treat noxious weeds - 100 acres. 4) Monitor pre- and post-implemetnation comparisons; a) Aquatic invertebrate inventory, b) Plant photopoints, c) water temperature: Blue Creek, Mill Creek, Touchet River (rivermile 8 and 17), d) suspended sediments. 5) Walla Walla River Wastershed Assessment. 6) Annual Report.

BPA **Project:** **206 2002-034-00 Wheeler SWCD Riparian Buffer Planning and Implementation**

Deliverable 1. Plan, coordinate, and implement 60 new CREP / CCRP riparian buffer system agreements with participating landowners on 78 miles of stream to improve 1,135 acres during the three year duration. 2. Subbasin assessment & plan assistance.

Accomplishment Signed contract; hired and trained the technician to work on this project.

BPA **Project:** **7 1992-062-00 Yakama Nation - Riparian/Wetlands Restoration**

Deliverable Secure lands for habitat enhancement. Monitor and evalualte habitat land condition. Prepare site specific enhancement and management plans. Perform maintenance of secured lands consistent with enhancement plans. Prepare and submit quarterly and annual reports.

Accomplishment About 2,500 acres of habitat proposed to be secured this year. M&E activities are occuring on 18,312 acres. Estimate 3 plans will be prepared in 2002. On-going. Quarterly and and annual report expected. Fish passage improved at 8 sites to open up more than 38 miles of stream habitat. Flow enhanced at 3 locations for a total of 12.7 cfs. Acquisition protects 2.1 river miles and 175 acres of productive fish habitat (Tillman, Bailey, and J.Lawrence).

BPA **Project: 13 1997-051-00 Yakama Nation Yakima/Klickitat Fisheries Project (YKFP) Yakima Side Channels**

Deliverable Protect priority habitats through acquisition, and purchase of conservation easements. Restore Yakima River/Naches River mainstem connectivity with protected lands, were possible, based on work plan. Restore and/or enhance the function of other side channel habitats, as identified following protection of such lands. Monitor habitat funcition on protected and restored lands. Update management plan(s) for protected lands. Prepare quarterly and annual report.

Accomplishment Maintained - 60 acres involving about 3,000 feet of Naches River side channel; 30.7 acres involving about 3,000 feet of Yakima River (Cle Elum reach) frontage; 139 acres of intact Yakima River (Union Gap reach) floodplains, reparian forest, backwater sloughs and side channels; 107 acres involving about .5 miles of (Cle Elum reach) Yakima River frontage with side channels and raparian forests. In 2002 purchased 96 acres of property along Yakima River (Easton reach) protecting about 3,000 feet of river frontage. Proposed to purchase in 2002 310 acres along the Yakima R. (Cle Elum reach) including complex wetlands, over one mile of river frontage. Prepare quarterly and annaul report.

BPA **Project: 21 2002-025-00 Yakima Tributary Access and Habitat Program (Objective 1: Early Actions)**

Deliverable Complete Strategic Plan for project. Meet and coordinate with are landowners and irrigators to coordinate on actions. Identify prioritized sites through surveys. Organize tributary teams and work plans to address passage problems. Prepare design plans for screens. Prepare construction plans, implement contracts in coordination with landowners. Install new screens on irrigation diversions.

Accomplishment 1 passage barrier removed/improved, 6 diversion screens installed.

RPA 154 Development and updating of subbasin assessments and plans

BPA **Project: 17 1999-013-00 Ahtanum Creek Wastershed Assessment**

Deliverable Maintain and protect existing high quality habitat areas (and the native populations inhabiting those areas). Restore degraded areas, and return natural ecosystem functions to the subbasin. Increase the information and knowledge needed to restore and manage fish, wildlife and their habitat. Finalize and deep update the habitat assessment plan. Prepare quarterly and annual report.

Accomplishment Installed 5 staff gages in Ahtanum Creek; data repository YN database.

BPA **Project: 291 1999-002-00 Asotin Watershed Project Implementation**

Deliverable Work Task #1. Coordinate activities in regards to fish habitat maintenance, enhancement and restoration in the Model Watershed area. Work Task #2. Ensure that the model watershed plan meets accepted environmental and biological standards. Work Task #3. Coordinate activities that keep people involved in the Model Watershed process. Work Task #4. Work with groups and individuals in the upper Asotin Creek basin to investigate expansion of the model watershed program. Work Task #5. Direct and assist with the planning and implementation of conservation management systems for ranchers in the model watershed area. Work Task #6. Coordinate with other agencies working on salmon habitat enhancement and restoration in the Model Watershed.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Accomplishment Work Task #1. Coordinated implemantation and O& M on the following Asotin Creek MWS projects: 2000-046-00, ISCO Water Sampling and Macroinvertebrate Samples; 2000-053-00, Asotin Creek Riparian Planting; 2000-047-00, GIS Mapping of Asotin Creek Watershed Habitat Projects; 2000-054-00, Asotin Creek Riparian Fencing Projects; 2000-067-00, Asotin Creek Channel, Floodplain and Riparian Restoration, 1999-060-00, Asotin Creek Watershed Upland BMP Implementation; 1999-052-00, Asotin Creek Five Year Minimum Till Program; 1997-086-00, Asotin Watershed Upland BPM;1998-047-00, Asotin Creek Information and Education. Work Task #2. Complied with all Federal and State environmental laws for project implementation. Work Task #3. Holds regular public meetings in conjunction with Asotin County Conservation District. Work Task #4. Work with landowners in nearby watersheds such as Ten Mile and Couse Creeks. Work Task #5. Implemented CREP, CRP and other conservation incentive programs throughout Asotin Creek watershed. Work Task #6. Coordinated work with Umatilla National Forest, Nez Perce Tribe, Asotin County Conservation District and Washington Department of Fish and Wildlife.

BPA **Project:** **76 1996-086-00 Clearwater Focus Program**

Deliverable 1. Subbasin Plan Coordination 2. Implementation Project Support

Accomplishment Continued subbasin planning coordination and development.

BPA **Project:** **77 1997-060-00 Clearwater Subbasin Focus Watershed Program - NPT**

Deliverable 1. Coordinate watershed project development within the 1855-treaty territory of the Nez Perce Tribe among federal, state, and local government agencies and private landowners in cooperation with the Idaho Soil Conservation Commission Focus Program. 2. Manage development of Clearwater Subbasin Restoration Program, including the assessment, subbasin plan, and the monitoring and evaluation plan.

Accomplishment Coordinated and managed 10 data, water quality, and habitat protection/enhancement projects and in the Clearwater Subbasin under this program.

BPA **Project:** **321 2002-028-00 Conduct Watershed Assessments for Priority Watersheds on Private Lands in the Columbia Plateau**

Deliverable 1.Develop request for assessment work. 2. Contract for watershed assessment.

Accomplishment Contract negotiations were not successfully concluded and the project has been dropped from further consideration by the NPCC and BPA.

BPA **Project:** **271 1994-018-07 Garfield County Sediment Reduction and Riparian Improvement Program - (proposal) - funded under: 1999-021-00. 1999-059-00, 1997-088-00 (closed, but some 088 activities carried into 021 and 059 contracts)**

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable Planning = 1) Complete Pataha Creek Model Watershed Plan (PCMWP). 2) Implement Pataha Creek MWPa) Set up program with individual landowners - See implementation. 3) Coordinate PCMWP with the public and others to inform them about the program - a) Newsletters/newspaper-magazine articles, as applicable, b) Sponsor tours/workshops/ conferences, conduct PCMWP meetings, provide information and education with students. 4) Work with WSU on monitoring water quality to compare no-till, 2 pass seeding, and conventional seeding methods - a) Coordinate data collection, b) Operate water sediment samplers and electronic thermographs, c) Collect soil erosion data. 5) Coordinate salmon habitat work - a) Meet with landowners, Technical Adviory Committees, and WDFW, b) attend training into keep up to date on new techniques and opportunities. Implementation = 6) No till seeding (0-33% soil distrurbance - drill used to plant seed and fertilize). 7) Direct seeding (34-66% soil disturbance - 2 pass method- fertilizer then plant). 8) Critical Area seeding - grass seeding onto productive, but highly erodable land. Must remain in grass for 10 years to reduce erosion. Land that does not meet CRP criteria, or patches that are too small to be enrolled. 9) Pasture Planting - reduce erosion, but can be grazed. Usually used close to riparian areas to reduce near-stream erosion. Required to be pasture for 10 years. Often mets CREP criteria, but farmer was not interested in signing up with CREP (under which use for grazing is not be allowed). 10) Terrace rebuilding - reduce erosion by retiering land. 11) Pipeline and spring development. 12) Write Annual Report

Accomplishment Continued implementation of program.

BPA **Project:** **209 1992-026-01 Grande Ronde Model Watershed - Planning**

Deliverable 1) Maintain program administration and service to Board of Directors; 2) Direct the planning, development implementation of restoration projects; 3)Coordinate project effectiveness and water quality monitoring.

Accomplishment 1) Maintained program administration and service to Board; 2)Planned and developed 15 restoration projects; 3)Coordinated project effectiveness and water quality monitoring

BPA **Project:** **270 1994-018-06 Implement Tucannon River Model Watershed Plan to Restore Salmonid Habitat (Work contracted under 1999-001-00, 1999-057-00)**

Deliverable 1) Upland Best management Implementation to reduce soil erosion (e.g., grass waterways, sediment basins, critical area plantings): a) direct seeding 3 continued, 0 new. 2) Riparian re-vegetation and enhancement: a) develop off-stream watering sites: b) fence 1,000 ft of riparian, c) plant 20,000 stems. 3) Monitoring and Evaluation - a) Pre- versus Post- implementation habitat quality surveys, b) Water Quality sampling, c) Six-year milesone (resurvey previous habitat units after habitat improvements). 4) Install instream habitat structures - a) Camp Wooten Phase 2. 5) Coordinate wateshed council activities on private and public lands including. 6) Coordinate watershed project identification, selection, design, development, prioritization and acceptance (including NRCS). 7) Direct and assist the planning and implementation of conservation management systems for producers in the model waershed area. 8) Develop list of potential projects for FY 2003. 9) Monitor/Evaluate all projects for effectiveness in meeting Plan goal and objectives. 10) Coordinate Information and Education program. 11) Tucannon River Model Watershed Administration. 12) Subbasin Planning Coordination. 13) Water savings, Irrigation efficiency, Update screens, Install water meters. 14) Annual Report

BPA **Project:** **99 1998-031-00 Implementation of Wy-Kan-Ush-Mi Wa-Kish-Wit Watershed Assessment and Restoration Plan**

Deliverable Ongoing SOW being developed for FY02

Accomplishment Provided information and coordination assistance to promote scientifically valid methods in tribal restoration planning and project implementation throughout the Columbia River Basin. Water quality monitoring and evaluation of water quality effects are resulting in improvements in water quality management for habitat conditions.

BPA **Project:** **27 2000-010-00 Klickitat River Subbasin Assessment**

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable Project is short-term, scheduled to be finished in one year.

BPA **Project: 81_1999-017-00_Protect and Restore Lapwai Creek Watershed**

Deliverable 1. Return and protect stream, riparian, and watershed health by contributing in finishing 6 and developing 10 new Conservation Land Management Plans on private landowner property. 2.Fence 2 miles of riparian area. 3.Plant 5 acres of vegetation on private landowner property. 4. Increase summer low flows and decrease high flow events by protecting identified critical wetland areas for passive restoration. Build 2 miles of fence.

Accomplishment Contracted for road crossing surveys and prioritization of barrier replacements. Habitat protected through CCRP, CWA Section 319 and PL566 requirements and Nez Perce Tribal Action. Riparian fence construction planned for summer of 2003 that will protect 2.0 river miles and 52 acres of productive fish habitat at risk of degradation. Coordinating TMDL process with Nez Perce Tribe Water Resources Department and Idaho DEQ.

BPA **Project: 188_2002-015-00_Provide Coordination and Technical Assistance to Watershed Councils and Individuals in Sherman County, Oregon**

Deliverable 1Employ two full-time conservation planners to provide Resource Management System Plans (including NEPA) to project participants in Pine Hollow/Jackknife Watershed Council, Grass Valley WC, Fulton & Gordon WC, Spanish Hollow WC, and others. 2. Train conservationist in NRCS planning method, hydrology, watershed assessment methods, other subjects. 3. Produce at least 60 Resource Management System Plans (with associated NEPA documentation) upon which future conservation projects will be based. 4. Coordinate five watershed councils which provide local input to conservation programs throughout Sherman County

BPA **Project: 18_2000-011-00_Rock Creek Watershed Assessment and Restoration project.**

Deliverable Implementation of proposed actions to address findings in assessment pending review of assessment plan (not anticipated until November 2002)

BPA **Project: 200_2002-051-00_Subbasin Planning, Regional Level**

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable

I. Regional Coordination. Council will create and support a Regional Group to advise Council on subbasin planning issues with regional implications. Such issues may, for example, include overall schedule, budget, federal and tribal coordination, and interstate coordination. Council review and tracking of subbasin planning regionwide. 1. Council will assemble a group of representatives to advise the Council on subbasin planning issues with regional implications, 2. Council will provide support to Regional Group by staffing and conducting meetings with regional coordination group; make reimbursements for necessary expenses for Regional Group meetings, 3. Council will establish a mechanism by which NMFS and the USFWS will review and endorse subbasin plans. Council will coordinate ESA recovery efforts and subbasin planning. 4. Council will coordinate/consult with the region's Indian Tribes. 5. Council will coordinate with resource management agencies regarding the relationship between subbasin planning and resource management planning 6. Council will coordinate with statewide/provincial/tribal coordination groups to establish appropriate coordination group(s) within each state. Conduct progress reviews; monitor funding allocations, and schedule progress on a statewide level. 7. Council will review and track progress of subbasin level work region-wide. Review statements of work, budgets and schedules for subbasin lead entities. Review subbasin allocation funding, progress reports and draft subbasin plans. Meet quarterly with statewide/provincial/tribal Coordination groups to review overall statewide progress. 8. Council will review the award of contracts with secondary entities within subbasins (co-leads or supporting organization) 9. Council will manage all subbasin and statewide/provincial/tribal level contracts. Prepare contracts and proposed amendments. Pay contractor invoices and prepare expenditure reports. Prepare and execute amendments to the master contract to reflect subcontract activities. 10. Council will initiate ISRP review and incorporate results into issue paper. 11. Council will initiate public review and incorporate results into issue paper. 12. Council will coordinate/consult with region's Indian Tribes for consistency with legal rights. 13. Council will coordinate with NMFS and USFWS for review and endorsement of subbasin plans for ESA use, where applicable. Incorporate results into issue paper. 14.Council will prepare final report and recommendation to Council for adoption of each subbasin plan. II. Regional Technical Support 1. Council will provide regional-level technical support basin-wide (assessment, coordination and information management) and provide out-of-subbasin assumptions. 2. Council will establish a regional technical group that will meet regularly to coordinate technical products associated for subbasin planning. 3. Council will prepare a report on out-of-subbasin effects. 4. Council will provide staff support for regional and subbasin-level technical support. 5. Council will establish and maintain a liaison to coordinate subbasin planning with NMFS's Technical Review Teams and USFWS's bull trout recovery teams. 6. Council will provide written guidance to statewide/provincial/tribal technical support teams regarding procedures for implementing subbasin and province-level biological assessments, including sample products and descriptions of information sources and available analytical tools. 7. Council will establish and maintain an Ecosystem Diagnosis and Treatment (EDT) support function, including providing appropriate training for technical support team members in the scientific concepts and analytical tools that will be applied to subbasin assessment. 8. Council will establish and maintain a wildlife technical support function. 9. Council will refine resident salmonid species/habitat rules and information on resident salmonid population dynamics. 10. Council will maintain and enhance the Internet version of the EDT model, including EDT databases and online tools. 11. Council will establish and maintain a web-based system for accessing and transferring subbasin planning information. 12. Council will, through Bonneville, establish and maintain a system for managing and accessing spatial data over the Internet using Internet Mapping System (IMS) software. 13. Council will, through Bonneville, produce and provide basic geographic information system (GIS) products and services for subbasin planning. 14. Council will provide fish productivity and related species data to planners. 15. Council will provide library services to subbasin planning including dissemination of literature and storage of subbasin plan products.

Accomplishment

Initial planning as of June 9, 2002, organizational meetings have occurred and some contract tasks are in progress. Bonneville and the Council are discussing payment for pre-award work.

BPA Project: 201 2002-051-00 Subbasin Planning, Statewide/Provincial/Tribal Level

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable I . Statewide (Provincial)/Tribal Coordination Council will provide support and funding for statewide/provincial/tribal coordination and project management for subbasin planning within each state. · Statewide/provincial/tribal groups in ID, MT, OR, WA will perform (a.) project management functions within each state and (b.) coordination. Specific tasks are outlined in detailed budget. II. Statewide Technical Support Council will provide analytical products and technical support to statewide coordination group and subbasin technical support teams · Council will assist with establishing technical support teams within each state, and further assist with developing a strategy that enables those teams to provide technical support to provinces and subbasins. · Technical support team(s) in Idaho will complete an assessment through the tasks identified in attached detailed budget. · Technical support team(s) in Montana will complete an assessment through the tasks identified in attached detailed budget. · Technical support team(s) in Oregon will complete an assessment through the tasks identified in attached detailed budget. · Technical support team(s) in Washington will complete an assessment through the tasks identified in attached detailed budget.

Accomplishment Initial planning as of June 9, 2002

BPA **Project: 202 2002-051-00 Subbasin Planning, Subbasin Level**

Deliverable Council will administer contracts for subbasin level planning. Council will contract with subbasin lead entities to develop subbasin level plans.

Accomplishment Initial planning as of June 9, 2002

BPA **Project: 66 1992-026-03 Upper Salmon Basin Watershed Project Administration/Implementation Support**

Deliverable 1. Guide Subbasin Assessment and plan on Upper Salmon River Basin which includes the Lemhi, Pahsimeroi, East Fork, Upper Salmon and Mid-Salmon/Panther Creek Watersheds. 2. Prioritize habitat actions (projects) based on subbasin assessment and plan for Lemhi, Pahsimeroi, East Fork, Upper Salmon and Mid-Salmon/Panther Creek Watersheds. 3. Coordination of watershed issues in relation to ESA listed fish species across jurisdictional responsibilities. 4. Operation and Maintenance coordination and oversight. 5. Prepare projects for protection, restoration and complexity of fish habitat.

BPA **Project: 226 1999-047-00 Wet Meadow Inventory and Assessment**

Deliverable Project Completed

Accomplishment Project Completed - 1)Air photo interpretation/truthing; 2)Compile data; 3)recommend restoration techniques and prioritize sites

CORPS **Project: 2135 Trout Creek Section 206**

Deliverable planning and design, EA

Accomplishment Project canceled. Sponsor expressed no interest in pursuing.

CORPS **Project: 2136 Walla Walla GI Feasibility Study**

Deliverable Sign Feasibility Cost Sharing Agreement to begin feasibility study

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

RPA 155 Improvement plans for all mainstem reaches and improvements in three reaches

BPA **Project: 51 1994-069-00 Estimate production potential of fall chinook salmon in the Hanford Reach of the Columbia River**

Deliverable 1) Define production potential of fall chinook salmon that spawn in the Hanford Reach. 2) Identify indicators of ecosystem health/processes for the Hanford Reach and evaluate existing conditions and capacity estimates relative to those indicators.

Accomplishment Completed journal publication from Visser, R., D.D. Dauble, and D.R. Geist. 2002. Use of aerial photography to monitor fall chinook salmon spawning in the Columbia River.

BPA **Project: 323 2000-012-00 Evaluate Factors Limiting Columbia River Gorge Chum Salmon Populations**

Deliverable 1) Evaluate the relationship between mainstem and tributary spawning chum salmon; 2) Evaluate factors limiting chum production in Hamilton and Hardy Creeks; 3) Enhance and restore chum salmon production both in Hamilton and Hardy Creeks, and in nearby tributaries

Accomplishment 2001 annual report to BPA

RPA 156 Improve spawning conditions for chum at Ives Island

BPA **Project: 323 2000-012-00 Evaluate Factors Limiting Columbia River Gorge Chum Salmon Populations**

Deliverable 1) Evaluate the relationship between mainstem and tributary spawning chum salmon; 2) Evaluate factors limiting chum production in Hamilton and Hardy Creeks; 3) Enhance and restore chum salmon production both in Hamilton and Hardy Creeks, and in nearby tributaries

Accomplishment 2001 annual report to BPA

BPA **Project: 198 2001-053-00 Re-Introduction of Lower Columbia River Chum Salmon into Duncan Creek**

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable

The Duncan Creek restoration goal is to provide chum salmon with a protected spawning and incubation environment. The goal is designed to be accomplished by removing mud, sand, and organics from the existing channels and replaced with gravels that are expected to maximize egg-to-fry survival rates. The banks of the restored channels will be protected against importation of fines from the banks by shielding them from the digging activities of spawning fish. Also, the uplands immediately adjacent to the channels will be planted with indigenous vegetation. Such plantings will provide shade, further stabilize the banks of the channel, reduce variation in water temperature and also help capture fines or sediments from upland areas. Run timing for the Bonneville Population of chum salmon is generally November through December, but may extend into mid-January. While specific run size forecasts were not available for the population, several hundred fish were expected to return in the fall of 2001. In generating plans for a salvage operation, a minimum goal of 30 spawning pairs for each of the four spawning locations (Hardy, Hamilton, and Duncan Creeks, and Ives Island) was deemed necessary to preserve genetic diversity. Evaluation of water levels in each area were conducted prior to beginning fish collection, and periodically throughout the run. To preserve the temporal integrity of the run, brood stock collection will span the months of November and December. It should be noted the goal of the project is not to hold brood stock in captivity over time (in the sense of captive brood stock for Snake River sockeye salmon). The intent of the chum salvage operation is also not to create (or enhance) a chum salmon return to the hatchery used for artificial spawning. It is also important to note that the following options for the chum salvage operation represent a range of scenarios varying from the worst to the best case. It is likely that water levels in Hardy, Hamilton, and Duncan Creeks and the mainstem Columbia River may all differ, and each stream will need to be evaluated individually. Actual circumstances were expected to fall somewhere in between these scenarios. Once a commitment has been made to intervene at a certain level, it was important to continue at this level throughout the entire run, despite an improvement in flow conditions. This is, again, necessary to protect the genetic diversity and temporal integrity of the Bonneville Population. Listed below are the various possible scenarios and resulting actions: Assumptions: Mainstem Columbia River: low flows limiting/preventing access to spawning areas near Ives Island. Hardy, Hamilton and Duncan Creeks: low flows preventing access into the creeks themselves. Flows from spring seeps are too low to support successful spawning. Action: Capture as many adult chum salmon as possible with a minimum goal of 120 pairs. Transport adults to the restored channels at Duncan Creek (the restored stream channels will support 200 to 250 natural spawners) and/or the Washougal Hatchery for artificial spawning and subsequent rearing of eggs and fry. Release fry from the hatchery into Hamilton, Hardy, and Duncan Creeks and near Ives Island in the mainstem Columbia River. The capture of 120 females is expected to produce a take of 300,000 to 400,000 eggs. Fry from artificial spawning will be divided into four treatment groups, allowing the progeny equivalent of up to 30 adult pairs to be replaced into each of the four release sites. Treatment groups will be thermally marked for identification before release. Assumptions: Mainstem Columbia River: low flows limiting/preventing access to spawning areas near Ives Island. Hardy, Hamilton, and Duncan Creeks: adequate flow to allow stream entry, but an anadromous barrier still exists preventing access to spawning areas. Adequate flow is available from spring seeps to allow successful spawning. Action: Capture as many adult chum salmon as possible that have entered the lower reaches of Hardy, Hamilton, and Duncan Creeks and transport these fish across any existing anadromous barriers to the respective spring seep spawning areas, allowing them to spawn naturally. Capture an additional 60 pair (minimum) of adult chum salmon from the mainstem Columbia River. Transport adults to the restored channels at Duncan Creek and/or Washougal Hatcheryfor artificial spawning, and subsequent rearing of eggs and fry. Release fry from the hatchery into Duncan Creek and/or the Ives Island area. The capture of 60 females is expected to produce a take of 150,000 – 200,000 eggs. The eggs will be divided into two treatment groups, each representing the progeny equivalent of up to 30 pairs. Treatment groups will be thermally marked for identification before release. Assumptions: Mainstem Columbia River: flows are adequate for natural spawning in the area near Ives Island. Hardy, Hamilton and Duncan Creeks: low flows preventing access into the creeks themselves. Flows from spring seeps are too low to support successful spawning. Action: Capture a minimum of 90 pair of adult chum salmon from the mainstem Columbia River. Transport adults to the restored channels at Duncan Creek and/or to Washougal Hatchery for artificial spawning, and subsequent rearing of eggs and fry. Release fry from Washougal Hatchery into Hardy, Hamilton, and Duncan Creeks. Monitor natural spawning in the Ives Island area. The capture of 90 females is expected to produce a take of 250,000 – 300,000 eggs. The eggs will be divided into three treatment groups, each representing the progeny equivalent of 30 pairs. Treatment groups will be thermally marked for identification before release. Assumptions: Mainstem Columbia River: flows are adequate for natural spawning in the area near Ives Island. Hardy, Hamilton, and Duncan Creeks: flow levels adequate to support complete access to streams and spawning grounds. Spring seep flows support natural spawning. Action: Monitor natural spawning. Capture 25-30 pair of adult chum salmon for use in the Duncan Creek Chum Salmon Reintroduction Program. These fish will be collected from the higher elevations in the mainstem Columbia River. Other brood stock sources for Duncan Creek could be Hamilton and Hardy Creeks. Washougal Hatchery was chosen as the hatchery facility because of facility and personnel attributes.

Accomplishment All physical modifications and construction were completed by late fall 2001. In the fall of 2001, there were 24 females and 28 males collected and taken to the Washougal Hatchery. Of the females, 23 were spawned and one died over the Thanksgiving weekend. January 3, the first set of eggs were weighed, the dead eggs were picked out and the cold water marking began. Egg loss was generally low as expected, 30-50 eggs per female. The next weighing, picking and marking should begin sometime late next week. A total of 20 chum were put into the north channel seeps of Duncan Creek. Nine were females and 11 were males. Twenty five chum were put into the south channel of Duncan Creek seeps. Five females escaped through the weir. One was recaptured two days later and put back into the south channel. Including recaptured female, a total of twenty one chum were held above the weir. Seven were females and 13 were males. One additional fish was put above the weir by the work crew and its not known what sex it was or whether it was jaw tagged (one of the escapees). Almost all the females from both channels were fully spawned out (usually <20 eggs per female) and many redds were observed. Three of the escaped females were recovered in Duncan Creek and all were spawned out. Only one has not been recovered yet. Chum brood stock collections have been completed for the season. All total, 44 females and 52 males were collected.

CORPS **Project: 2110 CENWW Improve spawning conditions for chum salmon in the vicinity of Pierce/Ives Islands.**

Deliverable Assignment of a COE team to work with ongoing efforts by other agencies to improve chum spawning and production in the mainstem river and tributaries immediately below Bonneville Dam. Implement coordinated actions.

Accomplishment Began feasibility study on improving spawning conditions for chum salmon in the vicinity of Pierce and Ives islands.

CORPS **Project: 2145 cenwp Ives Island Project**

Deliverable begin feasibility study

Determine locations for potential habitat restoration

Accomplishment Determined locations for potential habitat restoration - 3 in Lower Columbia, 3 near Bonneville Dam
Installed 9 piezometers and 2 stream gages in two areas that are being studied by Bonneville Dam

feasibility study begun

RPA 157 Improve and restore tributary and mainstem habitat for CR chum salmon

BPA **Project: 323 2000-012-00 Evaluate Factors Limiting Columbia River Gorge Chum Salmon Populations**

Deliverable 1) Evaluate the relationship between mainstem and tributary spawning chum salmon; 2) Evaluate factors limiting chum production in Hamilton and Hardy Creeks; 3) Enhance and restore chum salmon production both in Hamilton and Hardy Creeks, and in nearby tributaries

Accomplishment 2001 annual report to BPA

BPA **Project: 198 2001-053-00 Re-Introduction of Lower Columbia River Chum Salmon into Duncan Creek**

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable

The Duncan Creek restoration goal is to provide chum salmon with a protected spawning and incubation environment. The goal is designed to be accomplished by removing mud, sand, and organics from the existing channels and replaced with gravels that are expected to maximize egg-to-fry survival rates. The banks of the restored channels will be protected against importation of fines from the banks by shielding them from the digging activities of spawning fish. Also, the uplands immediately adjacent to the channels will be planted with indigenous vegetation. Such plantings will provide shade, further stabilize the banks of the channel, reduce variation in water temperature and also help capture fines or sediments from upland areas. Run timing for the Bonneville Population of chum salmon is generally November through December, but may extend into mid-January. While specific run size forecasts were not available for the population, several hundred fish were expected to return in the fall of 2001. In generating plans for a salvage operation, a minimum goal of 30 spawning pairs for each of the four spawning locations (Hardy, Hamilton, and Duncan Creeks, and Ives Island) was deemed necessary to preserve genetic diversity. Evaluation of water levels in each area were conducted prior to beginning fish collection, and periodically throughout the run. To preserve the temporal integrity of the run, brood stock collection will span the months of November and December. It should be noted the goal of the project is not to hold brood stock in captivity over time (in the sense of captive brood stock for Snake River sockeye salmon). The intent of the chum salvage operation is also not to create (or enhance) a chum salmon return to the hatchery used for artificial spawning. It is also important to note that the following options for the chum salvage operation represent a range of scenarios varying from the worst to the best case. It is likely that water levels in Hardy, Hamilton, and Duncan Creeks and the mainstem Columbia River may all differ, and each stream will need to be evaluated individually. Actual circumstances were expected to fall somewhere in between these scenarios. Once a commitment has been made to intervene at a certain level, it was important to continue at this level throughout the entire run, despite an improvement in flow conditions. This is, again, necessary to protect the genetic diversity and temporal integrity of the Bonneville Population. Listed below are the various possible scenarios and resulting actions: Assumptions: Mainstem Columbia River: low flows limiting/preventing access to spawning areas near Ives Island. Hardy, Hamilton and Duncan Creeks: low flows preventing access into the creeks themselves. Flows from spring seeps are too low to support successful spawning. Action: Capture as many adult chum salmon as possible with a minimum goal of 120 pairs. Transport adults to the restored channels at Duncan Creek (the restored stream channels will support 200 to 250 natural spawners) and/or the Washougal Hatchery for artificial spawning and subsequent rearing of eggs and fry. Release fry from the hatchery into Hamilton, Hardy, and Duncan Creeks and near Ives Island in the mainstem Columbia River. The capture of 120 females is expected to produce a take of 300,000 to 400,000 eggs. Fry from artificial spawning will be divided into four treatment groups, allowing the progeny equivalent of up to 30 adult pairs to be replaced into each of the four release sites. Treatment groups will be thermally marked for identification before release. Assumptions: Mainstem Columbia River: low flows limiting/preventing access to spawning areas near Ives Island. Hardy, Hamilton, and Duncan Creeks: adequate flow to allow stream entry, but an anadromous barrier still exists preventing access to spawning areas. Adequate flow is available from spring seeps to allow successful spawning. Action: Capture as many adult chum salmon as possible that have entered the lower reaches of Hardy, Hamilton, and Duncan Creeks and transport these fish across any existing anadromous barriers to the respective spring seep spawning areas, allowing them to spawn naturally. Capture an additional 60 pair (minimum) of adult chum salmon from the mainstem Columbia River. Transport adults to the restored channels at Duncan Creek and/or Washougal Hatcheryfor artificial spawning, and subsequent rearing of eggs and fry. Release fry from the hatchery into Duncan Creek and/or the Ives Island area. The capture of 60 females is expected to produce a take of 150,000 – 200,000 eggs. The eggs will be divided into two treatment groups, each representing the progeny equivalent of up to 30 pairs. Treatment groups will be thermally marked for identification before release. Assumptions: Mainstem Columbia River: flows are adequate for natural spawning in the area near Ives Island. Hardy, Hamilton and Duncan Creeks: low flows preventing access into the creeks themselves. Flows from spring seeps are too low to support successful spawning. Action: Capture a minimum of 90 pair of adult chum salmon from the mainstem Columbia River. Transport adults to the restored channels at Duncan Creek and/or to Washougal Hatchery for artificial spawning, and subsequent rearing of eggs and fry. Release fry from Washougal Hatchery into Hardy, Hamilton, and Duncan Creeks. Monitor natural spawning in the Ives Island area. The capture of 90 females is expected to produce a take of 250,000 – 300,000 eggs. 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Accomplishment All physical modifications and construction were completed by late fall 2001. In the fall of 2001, there were 24 females and 28 males collected and taken to the Washougal Hatchery. Of the females, 23 were spawned and one died over the Thanksgiving weekend. January 3, the first set of eggs were weighed, the dead eggs were picked out and the cold water marking began. Egg loss was generally low as expected, 30-50 eggs per female. The next weighing, picking and marking should begin sometime late next week. A total of 20 chum were put into the north channel seeps of Duncan Creek. Nine were females and 11 were males. Twenty five chum were put into the south channel of Duncan Creek seeps. Five females escaped through the weir. One was recaptured two days later and put back into the south channel. Including recaptured female, a total of twenty one chum were held above the weir. Seven were females and 13 were males. One additional fish was put above the weir by the work crew and its not known what sex it was or whether it was jaw tagged (one of the escapees). Almost all the females from both channels were fully spawned out (usually <20 eggs per female) and many redds were observed. Three of the escaped females were recovered in Duncan Creek and all were spawned out. Only one has not been recovered yet. Chum brood stock collections have been completed for the season. All total, 44 females and 52 males were collected.

RPA 158 Impacts of the FCRPS system on habitat and listed salmon in the estuary

BPA **Project: 199 2002-012-00 Lower Columbia River Habitat Assessment and Mapping**

Deliverable 1. Begin data analysis 2. Hold first planning meeting 3. Hold midterm project review meeting in conjuction with possible field verification

Accomplishment 1. Data analysis in progress 2. First planning meeting occured

BPA **Project: 195 1998-014-00 Ocean Survival of Salmonids**

Deliverable 1. Long-term observations - a. Conduct mesoscale surveys, b. Predator and forage fish surveys, c. Top trophic predators, d. Salmon growth, e. Endocrine assessment, f. Genetic stock assessment, g. Pathogen assessment, h. Prey resources & stomach content. 2. Fine scale process studies - a. Role of fronts, b. Diel studies, c. Pycnocline studies , d. Estuary fronts. 3. Spatial and temporal features of the Columbia River plume - a. Develop and calibrate plume circulation model, b. Field demonstration of plume model, c. Construct simulation database, d. Develop physical habitat metrics, e. Circulation forcasts, f. Physical habitats using historical and remote data. 4. Coupled physical-biological modeling - a. Adapt and validate LTM for plume, b. Develop and validate spatially explicit model, c. Reconstruct spatial-temporal histories. 5. Develop management scenarios - a. Define management scenarios, b. Construct simulation datbase, c. Analysis of management scenarios

Accomplishment

Fisheries: Juvenile salmon reside chiefly in the upper 5-10 m of the water column, and are most abundant near the mouth of the Columbia River in May and extend up to 50 miles offshore, depending on river flow. By June, most juvenile spring chinook salmon have moved north to continental shelf waters off Washington and southern British Columbia; most coho salmon appear to remain in coastal waters off Washington and Oregon (Figure 2). In June, fall chinook salmon juveniles are associated with the plume. Very few coho and spring chinook salmon were caught in June during the 1998 El Nino. Coho salmon catches have increased steadily each year, whereas spring chinook salmon catches were low in 1998 and 2001, but high in 1999-2000 (Appendix Figure 1). The spatial distribution of juvenile salmon in summer varies with water depth and species. Approximately 80% of the 0.0 (subyearling) age chinook salmon are caught from the nearshore zone out to a water depth of 69 m, 80% of 1.0 (yearling) age chinook salmon are caught to 77 m, and 80% of 1.0 age coho salmon to 113 m. These depth ranges match well with depths where zooplankton biomass was highest (zooplankton data shown in Appendix Figure 8b). The distance salmon were caught from shore was a function of river flow, indicating plume dynamics influence juvenile salmon marine distributions. The proportion of juvenile salmon originating from the Columbia River Basin was as high as 90% in May and 80% in September when averaged for all years. (Appendix Figure 2). Abundance of juvenile salmon (particularly coho salmon) in June is related to smolt-to-adult returns (SARs), confirming Pearcy's (1992) observation that the early ocean environment influences salmon survival. Large seasonal and biweekly fluctuations in marine survival of transported and in-river outmigrating juvenile salmon indicate that the nearshore ocean greatly influence survival. Juvenile coho salmon are associated with frontal regions of the plume. Juvenile chinook salmon also appear to prefer frontal and plume regions but not as strongly as juvenile coho salmon (Appendix Figure 3). Fronts, which concentrate food resources, benefit salmon, particularly in a turbid environment. Juvenile salmon feed selectively on large highly-pigmented prey such as fishes, amphipods and crab larvae. Salmon food habits vary greatly, but their diets often include several species of zooplankton (amphipods, euphausiids, pteropods), crab larvae and small (20-60 mm) fish. Salmon eat crab larvae in inshore waters, juvenile fish in the mid-shelf waters and euphausiids in deeper waters. (Appendix Figure 4). Length-to-weight relationships indicate that hatchery-produced juvenile salmon do not grow as well as wild salmon (Appendix figure 5). Juvenile salmon are larger in Oregon marine waters than those in the plume and off Washington. This may be attributed to higher mortality of slower growing juvenile salmon off Oregon than in the plume or off Washington. Years of poor salmon marine survival were not necessarily years when growth was poor. Average coho salmon lengths from this, and an earlier study, ranged from 164 - 188 mm in June, and 280 - 313 mm in September. Correlations between length in June and September and smolt-to-adult survival were poor, suggesting that growth rate may influence smolt survival only very early in the marine environment (plume or estuary). · Pathogen analyses have determined that at least two infective agents have relationships with growth and survival of juvenile salmon caught in the Columbia River plume habitat. There was a significant decline in the prevalence of Renibacterium salmoninarum from May to June of 2000 (Appendix Figure 6). Infected coho and chinook salmon weighed significantly less than uninfected fish. The prevalence and intensity of the trematode Nanophyetus salmincola also declined throughout the summers of 1999 and 2000 in coho salmon (Appendix Figure 6). The declines in coho salmon are likely a result of mortality and not recovery, nor emigration of selected stocks out of the area, as coho salmon stock composition in this area remains largely unchanged. We observed large increases in forage fish abundance over the period 1998-2001. These increases are correlated with recent increases in salmon survival, suggesting that forage fish act as "alternative" prey for predators.(Appendix Figure 7a). We also observed a large decrease in Pacific hake abundance with concurrent increases in salmon survival, suggesting that predator fish may affect juvenile salmon survival (Appendix Figure 7b). Plankton: Concentrations of nitrate and silicate are lower and higher, respectively, in the plume than in adjacent upwelled waters. The nitrate difference is likely related to high primary production in the plume and/or in the river and estuary. High silicate levels are directly related to fresh water inflow. Silicate concentrations trace the position of the plume and identify Columbia River plume origin water versus Grays Harbor/Willapa Bay, or Strait of Juan de Fuca waters. Phytoplankton standing stocks are almost always highest along the Washington coast and in the waters adjacent to the Columbia River, and lowest off northern-central Oregon. (Appendix Figure 8a). Zooplankton biomass and species composition is not clearly related to salinity, nor higher in the plume. Variations in zooplankton biomass and species composition are highly correlated with water depth, with highest biomass values in nearshore and mid-shelf waters, declining exponentially further offshore. (Appendix Figure 8b). Physical Oceanography: River flow has a strong impact on plume volume. During times of high river flow (June 1999; 8800 m3 s-1), 60-80 percent of the study region surface waters contain plume water (salinity <31 psu). With moderate river flow (June 2000; 6100 m3 s-1), only 30-40 percent is plume water, whereas with low river flow (Sept. 1999, Sept 2000, May 2001; <4000 m3 s-1), less than 15 percent is plume water (Figure 3). Fronts exhibit strong near-surface and cross-frontal convergences. In May 2001, plume fronts were studied in detail as they propagated away from the Columbia River mouth (Appendix Figure 9). Cross-frontal convergence rates were ~0.25 ms-1. There were strong velocity differences in the along-frontal direction (1 m s-1) with shears of 0.03 to 0.1 m s-1 per m. Tidal variability is 3-10 times larger in the plume area than for the Oregon-Washington shelf. This enhanced variability is caused by internal tides that are concentrated in the plume area (Jay and Hickey, 2001).

Their strong interfacial shear beneath the plume (usually 3 to 12 m depth), may disperse juvenile salmon. Also, internal tides represent a mechanism by which nutrients can be mixed up into plume waters from underlying waters.

CORPS **Project: 2114 CENWP Estuary General Investigation Study**

Deliverable Project Management Plan; Feasibility Cost Sharing Agreement signed

Accomplishment Continued coordination to identify cost-sharing partner and scoping in 2002

CORPS **Project: 2115 cenwp Estuary Mapping**

Deliverable Pre-mission planning Field Data Collection

Accomplishment Planning Assistance to States agreement signed April 2002. Pre-mission planning complete

CORPS **Project: 2090 CENWP Estuary study (CRFM)**

Deliverable

Accomplishment The following studies were funded in the estuary undr CRFM in 2002:
EST-P-02-01, EST-P-02-02, EST-P-02-03.

CORPS **Project: 2116 CENWP Research: Columbia River Estuary**

Deliverable Identify estuary research needs

Accomplishment Estuary/ocean RM&E work group was established, completed gap analysis.
The following studies were funded in the estuary by the Corps and BPAin 2002:
EST-P-02-01, EST-P-02-02, EST-P-02-03, BPS-00-11, TPE-W-00-01, 1998-014, 2002-012.

RPA 159 **BPA and the Corps, working with LCREP and NMFS, shall develop a plan addressing the habitat needs of salmon and steelhead in the estuary.**

CORPS **Project: 2114 CENWP Estuary General Investigation Study**

Deliverable Project Management Plan; Feasibility Cost Sharing Agreement signed

Accomplishment Continued coordination to identify cost-sharing partner and scoping in 2002

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

RPA 160 **Estuary restoration program**

BPA **Project:** **195 1998-014-00 Ocean Survival of Salmonids**

Deliverable

1. Long-term observations - a. Conduct mesoscale surveys, b. Predator and forage fish surveys, c. Top trophic predators, d. Salmon growth, e. Endocrine assessment, f. Genetic stock assessment, g. Pathogen assessment, h. Prey resources & stomach content. 2. Fine scale process studies - a. Role of fronts, b. Diel studies, c. Pycnocline studies , d. Estuary fronts. 3. Spatial and temporal features of the Columbia River plume - a. Develop and calibrate plume circulation model, b. Field demonstration of plume model, c. Construct simulation database, d. Develop physical habitat metrics, e. Circulation forcasts, f. Physical habitats using historical and remote data. 4. Coupled physical-biological modeling - a. Adapt and validate LTM for plume, b. Develop and validate spatially explicit model, c. Reconstruct spatial-temporal histories. 5. Develop management scenarios - a. Define management scenarios, b. Construct simulation datbase, c. Analysis of management scenarios

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Accomplishment

Fisheries: Juvenile salmon reside chiefly in the upper 5-10 m of the water column, and are most abundant near the mouth of the Columbia River in May and extend up to 50 miles offshore, depending on river flow. By June, most juvenile spring chinook salmon have moved north to continental shelf waters off Washington and southern British Columbia; most coho salmon appear to remain in coastal waters off Washington and Oregon (Figure 2). In June, fall chinook salmon juveniles are associated with the plume. Very few coho and spring chinook salmon were caught in June during the 1998 El Nino. Coho salmon catches have increased steadily each year, whereas spring chinook salmon catches were low in 1998 and 2001, but high in 1999-2000 (Appendix Figure 1). The spatial distribution of juvenile salmon in summer varies with water depth and species. 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Length-to-weight relationships indicate that hatchery-produced juvenile salmon do not grow as well as wild salmon (Appendix figure 5). Juvenile salmon are larger in Oregon marine waters than those in the plume and off Washington. This may be attributed to higher mortality of slower growing juvenile salmon off Oregon than in the plume or off Washington. Years of poor salmon marine survival were not necessarily years when growth was poor. Average coho salmon lengths from this, and an earlier study, ranged from 164 - 188 mm in June, and 280 - 313 mm in September. Correlations between length in June and September and smolt-to-adult survival were poor, suggesting that growth rate may influence smolt survival only very early in the marine environment (plume or estuary). · Pathogen analyses have determined that at least two infective agents have relationships with growth and survival of juvenile salmon caught in the Columbia River plume habitat. There was a significant decline in the prevalence of Renibacterium salmoninarum from May to June of 2000 (Appendix Figure 6). Infected coho and chinook salmon weighed significantly less than uninfected fish. The prevalence and intensity of the trematode Nanophyetus salmincola also declined throughout the summers of 1999 and 2000 in coho salmon (Appendix Figure 6). The declines in coho salmon are likely a result of mortality and not recovery, nor emigration of selected stocks out of the area, as coho salmon stock composition in this area remains largely unchanged. We observed large increases in forage fish abundance over the period 1998-2001. These increases are correlated with recent increases in salmon survival, suggesting that forage fish act as "alternative" prey for predators.(Appendix Figure 7a). We also observed a large decrease in Pacific hake abundance with concurrent increases in salmon survival, suggesting that predator fish may affect juvenile salmon survival (Appendix Figure 7b). Plankton: Concentrations of nitrate and silicate are lower and higher, respectively, in the plume than in adjacent upwelled waters. The nitrate difference is likely related to high primary production in the plume and/or in the river and estuary. High silicate levels are directly related to fresh water inflow. Silicate concentrations trace the position of the plume and identify Columbia River plume origin water versus Grays Harbor/Willapa Bay, or Strait of Juan de Fuca waters. Phytoplankton standing stocks are almost always highest along the Washington coast and in the waters adjacent to the Columbia River, and lowest off northern-central Oregon. (Appendix Figure 8a). Zooplankton biomass and species composition is not clearly related to salinity, nor higher in the plume. Variations in zooplankton biomass and species composition are highly correlated with water depth, with highest biomass values in nearshore and mid-shelf waters, declining exponentially further offshore. (Appendix Figure 8b). Physical Oceanography: River flow has a strong impact on plume volume. During times of high river flow (June 1999; 8800 m3 s-1), 60-80 percent of the study region surface waters contain plume water (salinity <31 psu). With moderate river flow (June 2000; 6100 m3 s-1), only 30-40 percent is plume water, whereas with low river flow (Sept. 1999, Sept 2000, May 2001; <4000 m3 s-1), less than 15 percent is plume water (Figure 3). Fronts exhibit strong near-surface and cross-frontal convergences. In May 2001, plume fronts were studied in detail as they propagated away from the Columbia River mouth (Appendix Figure 9). Cross-frontal convergence rates were ~0.25 ms-1. There were strong velocity differences in the along-frontal direction (1 m s-1) with shears of 0.03 to 0.1 m s-1 per m. Tidal variability is 3-10 times larger in the plume area than for the Oregon-Washington shelf. This enhanced variability is caused by internal tides that are concentrated in the plume area (Jay and Hickey, 2001).

Their strong interfacial shear beneath the plume (usually 3 to 12 m depth), may disperse juvenile salmon. Also, internal tides represent a mechanism by which nutrients can be mixed up into plume waters from underlying waters.

CORPS **Project: 2143 CENWP Crims Island Restoration**

Deliverable Preliminary Restoration Plan (PRP)

Accomplishment Initiated planning and preparation of PRP

CORPS **Project: 2114 CENWP Estuary General Investigation Study**

Deliverable Project Management Plan; Feasibility Cost Sharing Agreement signed

Accomplishment Continued coordination to identify cost-sharing partner and scoping in 2002

CORPS **Project: 2115 cenwp Estuary Mapping**

Deliverable Pre-mission planning Field Data Collection

Accomplishment Planning Assistance to States agreement signed April 2002. Pre-mission planning complete

CORPS **Project: 2113 CENWP Estuary Restoration 536 Program**

Deliverable Preliminary coordination with LCREP to identify potential projects. Requested funding.

Accomplishment Coordination continued and several potential projects were identified.

CORPS **Project: 2134 CENWP SW Washington Streams Section 206**

Accomplishment Initiated Preliminary Restoration Plan

RPA 161 Monitoring and research program

CORPS **Project: 2090 CENWP Estuary study (CRFM)**

Deliverable

Accomplishment The following studies were funded in the estuary undr CRFM in 2002:
EST-P-02-01, EST-P-02-02, EST-P-02-03.

CORPS **Project: 2116 CENWP Research: Columbia River Estuary**

Deliverable Identify estuary research needs

Accomplishment Estuary/ocean RM&E work group was established, completed gap analysis.
The following studies were funded in the estuary by the Corps and BPAin 2002:
EST-P-02-01, EST-P-02-02, EST-P-02-03, BPS-00-11, TPE-W-00-01, 1998-014, 2002-012.

RPA 162 Model the relationship between estuarine conditions and salmon population

BPA **Project: 195 1998-014-00 Ocean Survival of Salmonids**

Deliverable 1. Long-term observations - a. Conduct mesoscale surveys, b. Predator and forage fish surveys, c. Top trophic predators, d. Salmon growth, e. Endocrine assessment, f. Genetic stock assessment, g. Pathogen assessment, h. Prey resources & stomach content. 2. Fine scale process studies - a. Role of fronts, b. Diel studies, c. Pycnocline studies , d. Estuary fronts. 3. Spatial and temporal features of the Columbia River plume - a. Develop and calibrate plume circulation model, b. Field demonstration of plume model, c. Construct simulation database, d. Develop physical habitat metrics, e. Circulation forcasts, f. Physical habitats using historical and remote data. 4. Coupled physical-biological modeling - a. Adapt and validate LTM for plume, b. Develop and validate spatially explicit model, c. Reconstruct spatial-temporal histories. 5. Develop management scenarios - a. Define management scenarios, b. Construct simulation datbase, c. Analysis of management scenarios

Accomplishment

Fisheries: Juvenile salmon reside chiefly in the upper 5-10 m of the water column, and are most abundant near the mouth of the Columbia River in May and extend up to 50 miles offshore, depending on river flow. By June, most juvenile spring chinook salmon have moved north to continental shelf waters off Washington and southern British Columbia; most coho salmon appear to remain in coastal waters off Washington and Oregon (Figure 2). In June, fall chinook salmon juveniles are associated with the plume. Very few coho and spring chinook salmon were caught in June during the 1998 El Nino. Coho salmon catches have increased steadily each year, whereas spring chinook salmon catches were low in 1998 and 2001, but high in 1999-2000 (Appendix Figure 1). The spatial distribution of juvenile salmon in summer varies with water depth and species. Approximately 80% of the 0.0 (subyearling) age chinook salmon are caught from the nearshore zone out to a water depth of 69 m, 80% of 1.0 (yearling) age chinook salmon are caught to 77 m, and 80% of 1.0 age coho salmon to 113 m. These depth ranges match well with depths where zooplankton biomass was highest (zooplankton data shown in Appendix Figure 8b). The distance salmon were caught from shore was a function of river flow, indicating plume dynamics influence juvenile salmon marine distributions. The proportion of juvenile salmon originating from the Columbia River Basin was as high as 90% in May and 80% in September when averaged for all years. (Appendix Figure 2). Abundance of juvenile salmon (particularly coho salmon) in June is related to smolt-to-adult returns (SARs), confirming Pearcy's (1992) observation that the early ocean environment influences salmon survival. Large seasonal and biweekly fluctuations in marine survival of transported and in-river outmigrating juvenile salmon indicate that the nearshore ocean greatly influence survival. Juvenile coho salmon are associated with frontal regions of the plume. Juvenile chinook salmon also appear to prefer frontal and plume regions but not as strongly as juvenile coho salmon (Appendix Figure 3). Fronts, which concentrate food resources, benefit salmon, particularly in a turbid environment. Juvenile salmon feed selectively on large highly-pigmented prey such as fishes, amphipods and crab larvae. Salmon food habits vary greatly, but their diets often include several species of zooplankton (amphipods, euphausiids, pteropods), crab larvae and small (20-60 mm) fish. Salmon eat crab larvae in inshore waters, juvenile fish in the mid-shelf waters and euphausiids in deeper waters. (Appendix Figure 4). Length-to-weight relationships indicate that hatchery-produced juvenile salmon do not grow as well as wild salmon (Appendix figure 5). Juvenile salmon are larger in Oregon marine waters than those in the plume and off Washington. This may be attributed to higher mortality of slower growing juvenile salmon off Oregon than in the plume or off Washington. Years of poor salmon marine survival were not necessarily years when growth was poor. Average coho salmon lengths from this, and an earlier study, ranged from 164 - 188 mm in June, and 280 - 313 mm in September. Correlations between length in June and September and smolt-to-adult survival were poor, suggesting that growth rate may influence smolt survival only very early in the marine environment (plume or estuary). · Pathogen analyses have determined that at least two infective agents have relationships with growth and survival of juvenile salmon caught in the Columbia River plume habitat. There was a significant decline in the prevalence of Renibacterium salmoninarum from May to June of 2000 (Appendix Figure 6). Infected coho and chinook salmon weighed significantly less than uninfected fish. The prevalence and intensity of the trematode Nanophyetus salmincola also declined throughout the summers of 1999 and 2000 in coho salmon (Appendix Figure 6). The declines in coho salmon are likely a result of mortality and not recovery, nor emigration of selected stocks out of the area, as coho salmon stock composition in this area remains largely unchanged. We observed large increases in forage fish abundance over the period 1998-2001. These increases are correlated with recent increases in salmon survival, suggesting that forage fish act as "alternative" prey for predators.(Appendix Figure 7a). We also observed a large decrease in Pacific hake abundance with concurrent increases in salmon survival, suggesting that predator fish may affect juvenile salmon survival (Appendix Figure 7b). Plankton: Concentrations of nitrate and silicate are lower and higher, respectively, in the plume than in adjacent upwelled waters. The nitrate difference is likely related to high primary production in the plume and/or in the river and estuary. High silicate levels are directly related to fresh water inflow. Silicate concentrations trace the position of the plume and identify Columbia River plume origin water versus Grays Harbor/Willapa Bay, or Strait of Juan de Fuca waters. Phytoplankton standing stocks are almost always highest along the Washington coast and in the waters adjacent to the Columbia River, and lowest off northern-central Oregon. (Appendix Figure 8a). Zooplankton biomass and species composition is not clearly related to salinity, nor higher in the plume. Variations in zooplankton biomass and species composition are highly correlated with water depth, with highest biomass values in nearshore and mid-shelf waters, declining exponentially further offshore. (Appendix Figure 8b). Physical Oceanography: River flow has a strong impact on plume volume. During times of high river flow (June 1999; 8800 m3 s-1), 60-80 percent of the study region surface waters contain plume water (salinity <31 psu). With moderate river flow (June 2000; 6100 m3 s-1), only 30-40 percent is plume water, whereas with low river flow (Sept. 1999, Sept 2000, May 2001; <4000 m3 s-1), less than 15 percent is plume water (Figure 3). Fronts exhibit strong near-surface and cross-frontal convergences. In May 2001, plume fronts were studied in detail as they propagated away from the Columbia River mouth (Appendix Figure 9). Cross-frontal convergence rates were ~0.25 ms-1. There were strong velocity differences in the along-frontal direction (1 m s-1) with shears of 0.03 to 0.1 m s-1 per m. Tidal variability is 3-10 times larger in the plume area than for the Oregon-Washington shelf. This enhanced variability is caused by internal tides that are concentrated in the plume area (Jay and Hickey, 2001).

Their strong interfacial shear beneath the plume (usually 3 to 12 m depth), may disperse juvenile salmon. Also, internal tides represent a mechanism by which nutrients can be mixed up into plume waters from underlying waters.

RPA 163 Model the relationship between estuarine conditions and salmon population

No Projects for this RPA. Please see RPA Summary Table.

RPA 164 Selective fishing methods and gear

BPA **Project: 304 2001-007-00 Evaluate Live Capture Selective Harvest Methods**

Deliverable 1. Continue to estimate and compare the long-term survival of adult spring chinook captured and released from tooth-tangle nets (specifically 5.5" conventional net and 4.5" tooth-net) (WDFW). 2. Analyze the effect of varying components of net construction of catch rates, immediate mortalities, short-term mortalities and fish condition at capture (ODFW). 3. Investigate feasiblilty of using live capture gear and mentods in a full-fleet commercial application (WDFW, ODFW).

Accomplishment Preliminary results.

BPA **Project: 300 1993-060-00 Select Area Fishery Evaluation**

Deliverable 1. Scope suitabiltiy of expanding sites for rearing and release of salmon at six potential sites. 2. Continue to collect and anlayze homing and straying information from current net-pen and lower Columbia River hatchery programs. 3. Evaluate the suitability of use of Willamette and Cowlitz stock spring chinook, SAB (Rogue Stock) fall chinook for optimal use in select area fishing sites.

Accomplishment Maintained various rearing and release strategies at 5 SAFE sites including underwater feeding strategies on chinook in Young's Bay. Began moving production from Tongue Point established site to the MERTS site between Mott and Lois islands to address straying issues. Continued second year of winter dormancy studies at Young's Bay. Initiated a study to compare different release locations to avoid avian predation. Investigated mammalian predation avoidance measures utilizing prototype perimeter electric fence.

RPA 165 Estimate fishery and stock-specific management parameters

No Projects for this RPA. Please see RPA Summary Table.

RPA 166 Changes in catch sampling programs and data recovery systems

BPA **Project: 307 2001-058-00 Removal of Ghost Fishing Nets - Feasibility**

Deliverable 1. Develop expertise to locate and mark lost fishing nets using side-scan sonar technology. 2. Develop salvage methods for located nets. Survey and map locations of lost nets. 3. Conduct salvage operation if deemed appropriate.

Accomplishment 1. Confirmed feasibility to detect gear webbing using sonar technology. 2. Identified that should use a trawl-type boat to conduct recovery. 3. Field activites somewhat hampered due to equipment problems.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

RPA 167 Methods for estimating incidental mortalities in fisheries

BPA **Project:** **304_2001-007-00_Evaluate Live Capture Selective Harvest Methods**

Deliverable 1. Continue to estimate and compare the long-term survival of adult spring chinook captured and released from tooth-tangle nets (specifically 5.5" conventional net and 4.5" tooth-net) (WDFW). 2. Analyze the effect of varying components of net construction of catch rates, immediate mortalities, short-term mortalities and fish condition at capture (ODFW). 3. Investigate feasiblilty of using live capture gear and mentods in a full-fleet commercial application (WDFW, ODFW).

Accomplishment Preliminary results.

BPA **Project:** **307_2001-058-00_Removal of Ghost Fishing Nets - Feasibility**

Deliverable 1. Develop expertise to locate and mark lost fishing nets using side-scan sonar technology. 2. Develop salvage methods for located nets. Survey and map locations of lost nets. 3. Conduct salvage operation if deemed appropriate.

Accomplishment 1. Confirmed feasibility to detect gear webbing using sonar technology. 2. Identified that should use a trawl-type boat to conduct recovery. 3. Field activites somewhat hampered due to equipment problems.

RPA 168 Crediting harvest reforms

No Projects for this RPA. Please see RPA Summary Table.

RPA 169 HGMPs for all the Columbia basin hatchery programs and facilities

CORPS **Project:** **2027_CENWP_HGMP Development for Bonneville Fish Hatchery and Spring Creek National Fish Hatchery**

Deliverable HGMPs for Bonneville Fish Hatchery and Spring Creek National Fish Hatchery.

Accomplishment Prepared HGMP for upriver bright fall chinook salmon rearing at Spring Creek and Little White Salmon Natinal Fish Hatchery Complex.

USBR **Project:** **4055_Ht169.CBP.01.100.00_HGMP Funding & Development-Leavenworth**

Deliverable Complete HGMPs, submit to NMFS for review and approval.

RPA 170 Capital modifications for LSRCP hatcheries

No Projects for this RPA. Please see RPA Summary Table.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

RPA 171 Grand Coulee mitigation anadromous fish hatchery programs

USBR **Project: 4056 Ht171.CBP.03.200.00 HGMPs Implementation - Leavenworth**

Deliverable Identify needed HGMP reforms

RPA 172 Columbia River basin mitigation anadromous fish hatchery programs

No Projects for this RPA. Please see RPA Summary Table.

RPA 173 Implement the reforms identified in the HGMP planning process

No Projects for this RPA. Please see RPA Summary Table.

RPA 174 Development and implementation of a comprehensive marking plan

BPA **Project: 176 1982-013-02 Annual Stock Assessment - Coded Wire Tag Program (ODFW)**

Deliverable 1. Coded wire tag juvenile salmon. 2. Recover tags from snouts of fish tagged in prior years. 3. Prepare annual report. 4. Evaluate alternative marking techniques.

Accomplishment Prepared 2001 Annual Report. Continued tagging of coho and chinook and collection of tags as reported in 2002 Annual Report.

BPA **Project: 177 1982-013-04 Annual Stock Assessment-Coded Wire Tag Program (WDFW)**

Deliverable 1. Coded-wire tag at least one group of smolts from each hatchery. 2. Recover snouts, decode tags, and use information to estimate survival of tagged groups. 3. Develop preliminary catch, escapement and distribution data for all Columbia River Hatcheries.

Accomplishment Prepared 2001 Annual Report. Tagged coho and chinook salmon as reported in 2002 Annual Report.

BPA **Project: 175 1982-013-01 Coded-Wire Tag Recovery Program**

Deliverable 1. Recover CWTs from adults returning to the Columbia River. 2. Estimate total number of salmon landed in Columbia River commercial and sport fisheries and returning to escapement areas. 3. Summarize and analyze data collected under Objectives 1 and 2. 4. CWT Recovery in Oregon Ocean Chinook and coho Fisheries . 5. Determine total Oregon ocean commercial troll and sport effort and landings by time/area from expansions of sampled data in both fisheries. 6. Summarize annual effort, landings, and CWT data to determine stocks represented in Oregon ocean salmonid fisheries. 7. Process fish heads containing CWTs. 8. CWT Recovery Data Delivery. 9. Provide regional CWT data management. 10. Provide regional coordination of marking programs.

Accomplishment Prepared 2001 Annual Report. Continued sampling and estimations as reported in 2002 Annual Report.

RPA 174 Pt.1 Comprehensive marking strategy for all salmon and steelhead hatcheries

No Projects for this RPA. Please see RPA Summary Table.

RPA 174 Pt.2 Begin marking all spring chinook salmon that are currently released unmarked

No Projects for this RPA. Please see RPA Summary Table.

RPA 174 Pt.3 Action Agencies' share of the comprehensive marking plan for production

No Projects for this RPA. Please see RPA Summary Table.

RPA 174 Pt.4 Determine relative distribution and timing of hatchery and natural spawners

No Projects for this RPA. Please see RPA Summary Table.

RPA 175 Implement safety-net projects

BPA **Project: 152 2002-004-02 Safety-Net Artificial Propagation Program - IDFG**

Deliverable Project expected to start in July 2002. Provide data on salmon and steelhead population status, review SNAPP work products prepared by the Extinction Risk Analysis contractor and provide fishery co-manager comments, participate in the SNAPP coordination process with other fishery co-managers.

Accomplishment Implementation of this project was delayed during ISRP and Council review and approval of the SNAPP proposal. Deliverables not due until FY 2003.

BPA **Project: 153 2002-004-03 Safety-Net Artificial Propagation Program - SBT**

Deliverable Project expected to start in July 2002. Provide data on salmon and steelhead population status, review SNAPP work products prepared by the Extinction Risk Analysis contractor and provide fishery co-manager comments, participate in the SNAPP coordination process with other fishery co-managers.

Accomplishment Implementation of this project was delayed during ISRP and Council review and approval of the SNAPP proposal. Deliverables not due until FY 2003.

BPA **Project:** **149_2002-004-04_Safety-Net Artificial Propagation Program - WDFW**

Deliverable Project expected to start in July 2002. Provide data on salmon and steelhead population status, review SNAPP work products prepared by the Extinction Risk Analysis contractor and provide fishery co-manager comments, participate in the SNAPP coordination process with other fishery co-managers.

Accomplishment Implementation of this project was delayed during ISRP and Council review and approval of the SNAPP proposal. Deliverables not due until FY 2003.

BPA **Project:** **150_2002-004-00_Safety-Net Artificial Propagation Program - CRITFC**

Deliverable Project expected to start in July 2002. Contractor will work closely with the Interior Columbia Technical Recovery Team to conduct Extinction Risk Analysis of "at risk" salmon and steelhead populations (Step 1 of Safety-Net Artificial Propagation Program [SNAPP] planning process) and prepare report for technical review.

Accomplishment Implementation of this project was delayed during ISRP and Council review and approval of the SNAPP proposal. Deliverables not due until FY 2003.

BPA **Project:** **151_2002-004-01_Safety-Net Artificial Propagation Program - NPT**

Deliverable Project expected to start in July 2002. Provide data on salmon and steelhead population status, review SNAPP work products prepared by the Extinction Risk Analysis contractor and provide fishery co-manager comments, participate in the SNAPP coordination process, and subcontract for expert scientific review of SNAPP work products, with focus on the Middle Fork Salmon River.

Accomplishment Implementation of this project was delayed during ISRP and Council review and approval of the SNAPP proposal. Deliverables not due until FY 2003.

BPA **Project:** **148_2001-049-00_Safety-Net Coordinator**

Deliverable Coordination and facilitation of the implementation of the four-step artificial propagation contingency planning process described in RPA 175 (Safety-Net Artificial Propagtion Program [SNAPP]). Integration of SNAPP planning with Interior Columbia TRT planning.

Accomplishment The Safety-Net Coordinator prepared a response to ISRP comments on the consolidated Safety-Net Artificial Propagation Program (SNAPP) proposal that had been submitted to the Mountain Snake Provincial Review in 2001. The Safety-Net Coordinator developed a revised SNAPP proposal that was submitted to the Council in July 2002 and subsequently approved for funding.

RPA 176 Grande Ronde and Tucannon spring/summer chinook safety-net programs

BPA **Project:** **158_1998-010-06_Captive Broodstock Artificial Propagation**

Deliverable 1) Coordinate project with Federal & State agencies 2) M&E program with ODFW & CTUIR 3) Monitor abundance & timing of migratation of adult chinook salmon into the Lostine R 4) M&E the F1 generation offspring 5) Prepare quarterly reports and annual report

Accomplishment (1) Collected wild parr (from Lostine R., Catherine Ck, Upper Grande Ronde) (2) Conducted qtly sampling of adult rearing at Bonneville Fish Hatchery & Manchester Marine Laboratory (3) Maturity sorts occurred (4) Fish spawning occurred according to specific spawning matrixes (5) Released Capitive Brood F1 progeny into natal waters.

BPA **Project:** **36_1998-007-02_Grande Ronde Supplementation - Lostine River Spring Chinook**

Deliverable 1) Annual operating plan finalized; 2) Adult spring chinook broodstock collected; 3) Fish transported for holding and to spawning grounds; 4) Juveniles acclimated and released to stream; 5) Annual report

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

BPA **Project:** **274 2000-019-00 Tucannon River Spring Chinook Captive Broodstock Program**

Deliverable 1) Rear and spawn captive broodstock fish at Lyon's Ferry Hatchery. 2) Identify and mark fish by family for captive broodstck program to track parentage, and mark any progeny produced. 3) Establish baseline data of parents to track family and pedigree of returning adults through genetic sampling and analysis. 4) Monitor and evaulate captive brood parents and progeny. 5) Compile and disseminte captive broodstcok results. 6) Target 150,000 smolt release.

Accomplishment All activities are expected to be completed within the contract period unless noted. 5) Likely that 2001 Annual Report will not be uploaded within contract period based on past performace. 6) Brood - 2000, Release - 2002, Eggs - 15,000, Exp. smolts - 3,000. Brood - 2001, Release - 2003, Eggs - 250,000, Exp. smolts - 180,000.

RPA 177 Safety-net projects

BPA **Project:** **174 1998-010-08 Big Canyon Fall Chinook Acclimation Facility**

Deliverable 1) Acclimate/release 150,000 Snake River Fall Chinook yearlings from Lyons Ferry Hatchery 2) Submit quarterly reports and annual report 3) Acclimate/release 1,000,000 sub-yearlings Snake R Fall Chinook from Lyons Ferry Hatchery

Accomplishment Released yearlings and subyearlings from Lyons Ferry Hatchery.

BPA **Project:** **159 1998-010-07 Capt. John Rapid's Fall Chinook Acclimation Facility**

Deliverable 1) Acclimate/release 150,000 Snake River Fall Chinook yearlings from Lyons Ferry Hatchery 2) Submit quarterly reports and annual report 3) Acclimate/release 1,000,000 sub-yearlings Snake R Fall Chinook from Lyons Ferry Hatchery

Accomplishment Released yearlings and sub-yearlings from Lyons Ferry Hatchery.

BPA **Project:** **158 1998-010-06 Captive Broodstock Artificial Propagation**

Deliverable 1) Coordinate project with Federal & State agencies 2) M&E program with ODFW & CTUIR 3) Monitor abundance & timing of migratation of adult chinook salmon into the Lostine R 4) M&E the F1 generation offspring 5) Prepare quarterly reports and annual report

Accomplishment (1) Collected wild parr (from Lostine R., Catherine Ck, Upper Grande Ronde) (2) Conducted qtly sampling of adult rearing at Bonneville Fish Hatchery & Manchester Marine Laboratory (3) Maturity sorts occurred (4) Fish spawning occurred according to specific spawning matrixes (5) Released Capitive Brood F1 progeny into natal waters.

BPA **Project:** **142 1990-093-00 Genetic Analysis of Onchorhynchus nerka (Modifed to Include Chinook Salmon)**

Deliverable Monitoring and evaluation of Snake River sockeye population genetics, assessment of mitochondrial DNA variation among Salmon River spring/summer chinook salmon, and assessment of nuclear genetic variation among Salmon River spring/summer chinook salmon

Accomplishment Continued monitoring and evaluation of Snake River sockeye population genetics in support of the Snake River sockeye salmon captive broodstock program, assessed mitochondrial DNA variation among Salmon River spring/summer chinook salmon, and continued to assess nuclear genetic variation among Salmon River spring/summer chinook salmon. 2002 Annual Report to be submitted in FY 2003.

BPA **Project:** **284 1998-010-01 Grande Ronde Basin Spring Chinook Salmon Captive Broodstock Program**

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable High risk of extinction due to small size of population, warrants management of actions to preserve & maintain genetic material of Snake River Spring/Summer-run Chinook. Implement captive broodstock programs and associated research, monitoring, evaluation, and fish health for spring chinooksalmon populations in Catherine Creek, upper Grande Ronde and Lostine rivers, to conserve genetic diversity and assist in recovery

Accomplishment To date, this program has met or exceeded most of its captive broodstock goals. In 2002, this project collected 1461 chinook salmon parr from the target streams – it's eighth cohort. It produced 710 mature fish and conducted it's fourth spawning, collecting over 600,000 eggs. It also released its third cohort of offspring (408,000 smolts) and part of a fourth cohort (55,000 parr). A total of 448 (ages 3 and 4) of the 1998 cohort F1 generation salmon have returned exceeding the anticipated return rate of 0.1% in all streams. This program is investgating methodologies to reduce mortality due to bacterial kidney disease and to detect maturation of fish at an earlier stage in order to improve health and productivity of the salmon in captivity.

BPA Project: 38 1998-007-03 Grande Ronde Satellite Facility O&M

Deliverable 1) Annual operating plan finalized; 2) Adult spring chinook broodstock collected; 3) Fish transported for holding and to spawning grounds; 4) Juveniles acclimated and released to stream; 5) Annual report

Accomplishment 1) Annual operating plan finalized; 2) Adult spring chinook broodstock collected; 3) Fish transported for holding and to spawning grounds; 4) Juveniles acclimated and released to stream; 5) Annual report.

BPA Project: 40 1998-007-04 Grande Ronde Spring Chinook Supplementation Program

Deliverable 1) Annual operating plan; 2) Collect ChS broodstock from Lostine, uper Grande Ronde and Catherine Creek traps and transport to Lookingglass for holding; 3) Hold and spawn broodstock at Lookingglass; 4) Incubate and rear 360,000 endemic ChS juveniles using conventional methods; 5) Transport juveniles back to acclimation sites for acclimation and release.

Accomplishment 1) Annual operating plan; 2) Collect ChS broodstock from Lostine, uper Grande Ronde and Catherine Creek traps and transport to Lookingglass for holding; 3) Hold and spawn broodstock at Lookingglass; 4) Incubate and rear 360,000 endemic ChS juveniles using conventional methods; 5) Transport juveniles back to acclimation sites for acclimation and release.

BPA Project: 285 1997-001-00 Idaho Chinook Salmon Captive Rearing

Deliverable Develop captive rearing techniques for chinook salmon and evaluate the success and utility of captive rearing for maintaining stock structure and minimum number of adult spawners in three drainages

Accomplishment In 2002 this project continued to investigate the utility of applying new technology (e.g., ultrasound use to predict maturation status) to the captive rearing program and rearing protocols (e.g., rearing in different temperature regimes to access impact on maturation and gamete quality). Eyed eggs were collected to establish brood year 2002 captive culture groups form the West Fork Yankee Fork Salmon River and East Fork Salmon River. Brood year 2000 smolts from West Fork Yankee Fork Salmon (N = 203) and East Fork Salmon rivers (N = 379) were transferred to the Manchester Research Station for rearing to adulthood in seawater. Mature adults from the Lemhi (N = 85), West Fork Yankee Fork (N = 156) and East Fork Salmon (N = 53) were transferred from the Manchester Research Station to the Eagle Fish Hatchery for release in their natal streams or hatchery evaluation. Program adults from the Lemhi River (N = 114) were maintained at the Eagle Fish Hatchery and spawned on-site. A total of 47,977 eyed-eggs produced from these crosses were placed in in-stream incubators in a tributary to the Lemhi River. Program adults from the West Fork Yankee Fork Salmon (N = 216) and East Fork Salmon (N = 134) were released for volitional spawning - courtship and spawning behavior were intensely monitored. 33 redds were constructed and an estimated 14,500 viable embryos were produced by these females.

BPA Project: 155 1996-043-00 Johnson Creek Artificial Propagation & Enhancement

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable 1) Rear 100,000 Johnson Creek Summer Chinook smolts 2) Collect & analyze recruits per spawner 3) Collect & analyze information on abundance, selected life history patterns, & spatial distribution of Johnson Creek juvenile summer chinook salmon & steelhead 4) Collect & analyze baseline information of genetic patterns of, supplementation vs. natural summer chinook salmon & steelhead 5) Monitor smolt production in the hatchery to evaluate health status, growth rates, & condition factors to compare supplementation fish with natural fish 6) Determine effectiveness of the supplemented hatchery summer chinook salmon to increase the overall population of Johnson Creek summer chinook salmon & compare to natural fish 7) Prepare 3 Quarterly Reports and an annual report

Accomplishment O&M: Released 57,392 Brood Year (BY) 2000 smolts back into Johnson Creek (JC) in March 2002. Reared 75,000 BY 2001 JC fry for release in March 2003. Trapped 1,192 adult JC salmon; 392 of these were from BY 1998 supplementation smolt release March 2000. 97 natural JC adults retained for broodstock; 55 males, and 42 females. Spawned 34 females producing 166,122 green eggs that eyed-up at an average of 85.9% to produce 142,786 eyed eggs. 8,549 eyed eggs were culled (destroyed) due to those females having high Bacterial Kidney Disease (BKD) levels. Eyed egg inventory reduced to 134,237. Out-planted 14,996 eyed eggs to artificial redds in upper JC in October 2002. Current JC fry inventory at McCall Fish Hatchery is 115,746 at 2.24 inches and 296.6 fish per pound. Scheduled release date is March 2004. Design work for rearing facilities was put on hold pending NOAA Fisheries permitting decision. Quarterly reports were submitted and annual reports are being finalized for 2002.
M&E: Spawning ground surveys; 300 total redds identified, 646 salmon carcasses recovered. Hatchery marking; 9,987 BY 2000 JC hatchery chinook PIT tagged. Juvenile Trapping; 29,351 wild Chinook trapped, 8,520 PIT tagged. 8,038 hatchery fish trapped, 2 PIT tagged. Supplemental Parr Tagging; 1,786 wild chinook captured; 1,041 wild chinook PIT tagged. Quarterly reports were submitted and annual reports are being finalized for 2002.

BPA Project: 156 1997-038-00 Listed Stock Chinook Salmon Gamete Preservation

Deliverable 1) Collect male chinook salmon gamete samples; strive for 100 samples/spawning aggregate in hatchery scenarios every yr and 30 samples/natural spawning aggregate/yr 2) Collect male steelhead gamete samples. Strive for 100 samples/spawning aggregate in hatchery scenarios every yr and 20 samples/natural spawning aggregate per yr

Accomplishment Sampled Snake River basin spring and summer chinook salmon and steelhead spawning aggregates for semen collection.

BPA Project: 287 1996-067-00 Manchester Spring Chinook Broodstock Project

Deliverable The high risk of extinction of Salmon and Grande Ronde River ESA listed stocks of spring/summer chinook salmon warrants management actions to preserve and maintain genetic material of these stocks. This component of the captive broodstock program provides these ESA listed stocks the seawater environment they would naturally experience during their marine life history phase, while protecting them from the hazards of life at sea. The marine survival of these captive broodstock fish is currently over 90%.

Accomplishment In FY 2002 the project generated more than 357 prespawning adults for recovery efforts in the Salmon River system (Lemhi, East Fork, and West Fork-Yankee Fork stocks) and over 313 adults for restoration activities in the Grand Ronde River Basin (Lostine, Catherine Creek, and Grande Ronde stocks).

BPA Project: 375 1983-350-00 Nez Perce Tribal Hatchery

Deliverable Finalize construction and begin supplementing spring and fall chinook populations.

Accomplishment Finalized construction and began operation. Phase I facilities began supplementing spring and fall chinook populations.

BPA Project: 32 1988-053-05 Northeast Oregon Hatchery Project

Deliverable 1) Provide input on development of Master Plans, predesign, NEPA and final design for enhancement of anadromous salmonids in the Imnaha, Grande Ronde

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable 1) Award ChS facility EIS contract and initiate NEPA process; 2.) acquire property for Lostine and Imnaha facilities; 2) Complete steelhead HMP and submit to NPPC; 3) Start Coho master planning efforts.

Accomplishment 1) Provide input on development of Master Plans, predesign, NEPA and final design for enhancement of anadromous salmonids in the Imnaha, Grande Ronde

1) Awarded EIS contract/EIS process begun; 2) 3 key properties acquired; 3) Steelhead HMP submitted to NPPC; 4) Coho HMP underway.

BPA **Project: 157 1996-010-05 Pittsburgh Landing Fall Chinook Acclimation Facility**

Deliverable 1) Acclimate/release 150,000 Snake River Fall Chinook yearlings from Lyons Ferry Hatchery 2) Submit quarterly reports and annual report 3) Acclimate/release 400,000 sub-yearlings Snake R Fall Chinook from Lyons Ferry Hatchery

Accomplishment Released yearlings and sub-yearlings from Lyons Ferry Hatchery.

BPA **Project: 144 1991-072-00 Redfish Lake Sockeye Salmon Captive Broodstock Program**

Deliverable Develop captive broodstocks from Redfish Lake anadromous sockeye salmon. Culture broodstocks. Determine the contribution hatchery-produced sockeye salmon make toward recovery. Describe O. nerka population characteristics for Sawtooth Valley lakes in relation to carrying capacity and broodstock program supplementation efforts. Determine the origin of wild and broodstock O. nerka to provide maximum effectiveness in their utilization within the broodstock program.Determine the origin of wild and broodstock O. nerka to provide maximum effectiveness in their utilization within the broodstock program. Transfer technology.

Accomplishment Continued maintenance, monitoring and evaluation of safety-net captive broodstocks. 2001 Annual Report to be available in FY 2003.

BPA **Project: 145 1992-040-00 Redfish Lake Sockeye Salmon Captive Broodstock Rearing and Research**

Deliverable Maintain anadromous Redfish Lake sockeye salmon in a safety-net captive broodstock program and provide pre-spawning adults, eyed eggs, and juveniles to aid recovery of this ESA-listed stock in Idaho.

Accomplishment Safety-net captive broodstocks were maintained and pre-spawning adults, eyed eggs, and juveniles were transported to Idaho for rearing and/or release. An Annual Report was provided to BPA and is available at the BPA Fish & Wildlife website.

BPA **Project: 143 1991-071-00 Snake River Sockeye Salmon Habitat and Limmological Research**

Deliverable Limnological monitoring in Redfish, Pettit, Alturas, and Stanley lakes, ID. Fertilize Redfish, Pettit, and Alturas lakes. Monitoring of O. nerka population characteristics and densities in Sawtooth Valley lakes.

Accomplishment Project continued limnological monitoring of sockeye salmon nursery lakes in Sawtooth Valley, ID, fertilized nursery lakes, and continued monitoring and evaluation tasks in support of the Snake River sockeye salmon captive broodstock program. Preparing Annual Report.

RPA 178 Safety-net projects for high risk salmon and steelhead populations

No Projects for this RPA. Please see RPA Summary Table.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

RPA 179 Develop recovery goals for listed salmon ESUs in the Columbia River basin

USBR **Project: 4076 RME179.JDB.02.200.01 Tech Recovery Team Task Support-Columbia Basin ESU Identification**

Deliverable Acquisition and reciept of products

Interagency Agreement set up with NMFS - NW Fishery Science Center

Initiate population studies

Accomplishment Projects ongoing

Scope of work developed

Interagency Agreement signed

RPA 180 Develop and implement a basinwide hierarchical monitoring program

BPA **Project: 84 1999-020-00 Analyze the Persistence and Spatial Dynamics of Snake River Chinook Salmon**

Deliverable Map the annual distribution of chinook salmon redds in the study area. Map the distribution of potential chinook salmon spawning areas. Describe spawning patch quality. Relate the location, size, and quality of spawning patches to basin geomorphic features. Evaluate the influence of patch size, quality, and context on the distribution of chinook salmon redds.

Accomplishment Drainage-wide redd count. Ground mapping of spawning patches. Measures of patch quality. Plotting of redd and spawning patches. Prepared Annual Report.

BPA **Project: 325 2002-053-00 Assess Salmonids in the Asotin Creek Watershed**

Deliverable 1. Estimate escapement of hatchery and wild steelhead and salmon into the Asotin Creek drainage above George Creek. 2. Document juvenile steelhead life history patterns and survival rates and smolt production from Asotin Creek. 2. Evaluate bull trout use of Asotin Creek watershed.

Accomplishment BPA decided to fund this project under the Blue Mountain Provincial Review process. It is considered critical to BiOp implementation.

BPA **Project: 160 Chinook Salmon Smolt Survival and Smolt to Adult Return Rate Quantification, South Fork Salmon River, Idaho**

Deliverable Collect and analyze information on abundance, selected life history characteristics/patterns, and spatial distribution of upper South Fork Salmon River juvenile summer chinook salmon. Collect and analyze information on abundance, selected life history characteristics/patterns, and spatial distribution of upper South Fork Salmon River juvenile summer chinook salmon. Collect and analyze baseline information of genetic characteristics/patterns upper SFSR summer chinook salmon. Compile and analyze South Fork Salmon River Basin SAR and R/S estimates using data from Secesh River, Johnson Creek, and upper SFSR studies to get a combined SFSR Basin estimate.

Accomplishment BPA decided to fund this project under the Mountain Snake Provincial Review process.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

BPA Project: 323 2000-012-00 Evaluate Factors Limiting Columbia River Gorge Chum Salmon Populations

Deliverable 1) Evaluate the relationship between mainstem and tributary spawning chum salmon; 2) Evaluate factors limiting chum production in Hamilton and Hardy Creeks; 3) Enhance and restore chum salmon production both in Hamilton and Hardy Creeks, and in nearby tributaries

Accomplishment 2001 annual report to BPA

BPA Project: 166 2002-068-00 Evaluating stream habitat using the Nez Perce Tribe Fisheries/Watershed Watershed Monitoring and Evaluation Plan

Deliverable Determine the quality and extent of habitat available to anadromous and resident fishes. Resolve uncertainties in juvenile abundances. Evaluate effectiveness of restoration projects for producing long-term watershed improvements. Use the data and trends developed to provide guidance for subbasin planning and future land management decisions. Evaluate effectiveness of restoration projects for producing long-term watershed improvements. Use the data and trends developed to provide guidance for subbasin planning and future land management decisions.

Accomplishment This project was identified as critical for BiOp implementaiton. This project was not contracted in FY2002 - Signed contract was sent to contractor 4/03, effective 5/1/03.

BPA Project: 37 1998-007-02 Grande Ronde Supplementation - Lostine River Spring Chinook M&E

Deliverable 1) Monitor and evaluate juvenile hatchery production and performance;
2) Collect baseline information on environmental conditions in the Lostine River;
3) Collect and analyze information on abundance, genetic and life history characteristics of the Lostine River wild spring chinook salmon population and compare with that of the returning hatchery fish;
4) Monitor and evaluate the operation of adult collection (weir and trap) for adverse impacts to resident and/or anadromous fish populations in the Lostine River;
5) Annual report

Accomplishment 1) Monitor and evaluate juvenile hatchery production and performance; 2) Collect baseline information on environmental conditions in the Lostine River; 3) Collect and analyze information on abundance, genetic and life history characteristics of the Lostine River wild spring chinook salmon population and compare with that of the returning hatchery fish; 4) Monitor and evaluate the operation of adult collection (weir and trap) for adverse impacts to resident and/or anadromous fish populations in the Lostine River; 5) Annual report

BPA Project: 269 1991-073-00 Idaho Natural Production Monitoring and Evaluation - previously 1989-098-00

Deliverable 1) Estimate parr densities and carrying capacities in 50 stream for steelhead and spring/summer chinook salmon. 2) Characterize habitat and relate to juvenile densities and survival. 3) Conduct redd surveys and carcass counts for spring/summer chinook salmon and steelhead. 4) Estimate smolt-to-adult survival rates yearly. 5) Estimate smolts per female (to index recovery targets). 6) Collect and analyze genetic samples. 7) Annual Report

Accomplishment Completed all FY 2002 deliverables, except Annual Report is delayed.

BPA Project: 283 1992-026-04 Investigate Early Life History of Spring Chinook Salmon and Summer Steelhead in the Grande Ronde River Basin

Deliverable The goal of this project is to investigate the critical habitat, abundance, migration patterns, survival, and alternate life history strategies exhibited by spring chinook salmon and summer steelhead juveniles from distinct populations in the Grande Ronde River and Imnaha River basins. This project will provide information on abundance of spring chinook and steelhead parr and estimates for egg-to- parr and parr-to-smolt survival for spring chinook salmon and parr-to-smolt survival for steelhead.

Accomplishment In 2002 this project: maintained Grande Ronde, Lostine, and Minam River and Catherine Creek traps; estimated steelhead and chinook salmon smolt production, described spring in-basin migration patterns, and compared among tributary populations; determined summer abundance of juvenile chinook salmon in Catherine Creek and Lostine River, and steelhead in Catherine Creek and its tributary Milk Creek; PIT-tagged O. mykiss and spring chinook salmon captured in traps and obtained detection data from mainstem dams; documented habitat conditions in upper rearing areas of Catherine Creek to begin to explore relationships between habitat conditions and survival and life history patterns of chinook salmon in tributaries; and characterized the use of winter concealment habitat by juvenile spring chinook salmon in Catherine Creek and Lostine River.

BPA Project: 52 1997-030-00 Listed Stock Chinook Salmon Escapement Monitoring

Deliverable 1) Coordinate the Chinook Salmon Adult Abundance Monitoring Project with appropriate Tribal, state and federal management agencies and independent scientists in the Snake River basin. 2) Develop engineering design for the selected technology for measuring chinook salmon abundance at the Secesh River and Lake and Marsh creeks.

Accomplishment The 2001 annual report was uploaded to the BPA website.

BPA Project: 250 1991-028-00 Monitoring Smolt Migrations of Wild Snake River Spring/Summer Salmon

Deliverable 1.0 Mark with PIT tags wild/natural spring/summer chinook salmon parr in selected streams above Lower Granite Dam in Idaho and during the summers/fall of 2002. 2.0 Monitor previously PIT-tagged parr/smolts as they leave natal rearing areas of selected streams in Idaho. 3.0 Intercept and automatically decode information from previously PIT-tagged parr/smolts at Lower Granite Dam during the spring/summer smolt outmigration. 4.0 Collect annual environmental data from environmental monitors in selected streams for assessment of relationships between environmental factors where wild parr reside and subsequent smolt outmigration timing at downstream traps and dams. 5.0 Provide Annual Report that summarizes results and assesses the annual migrational characteristics, estimates parr-to-smolt survival rates to Lower Granite Dam, and characterizes the survival and movement of parr and smolt as they leave natal rearing areas of selected Idaho streams.

Accomplishment The 2001 annual report was uploaded to the BPA website.

BPA Project: 126 1998-016-00 Salmonid Productivity, Escapement, Trend, and Habitat Monitoring in the Oregon Portion of the Columbia Plateau Province

Deliverable 1. Signed contract for 2002 project year (7/1/02 to 6/30/03)

Accomplishment Existing contract for ongoing activities was extended through FY2002 to 11/30/02. A new contract – adding a task for juvenile steelhead outmigrant trapping, tagging, and enumeration – became effective 12/1/02 (FY03).

BPA Project: 108 1996-019-00 Second-Tier Database Support

Deliverable 1. Provide optional information integration services to FWP and ESA participants. 2. Provide Internet-based electronic data integration services to generate data sets needed by FWP and ESA modeling, monitoring, and evaluation efforts. 3. Provide monitoring and evaluation products and services (via the Internet) on single and associated FWP-funded and ESA-mandated activities. Support Federal abilities to independently make and evaluate decisions committing federal resources. 4. Provide the public Internet interface to DART (Data Access in Real-Time). DART permits interactive selection of data items, time frame, presentation format, etc. from an integrated subset of historical and current fishery, hydraulic, project operation, and environmental information vital to year-round planning and in-season decision-making for operation of the Federal Columbia River Power System. 5. Increase coverage of stream temperature data by downloading the StreamNet temperature database onto DART. Increase historical data on adult passage at the dams by loading the adult counts back to 1938. 6. Implement a metadata structure to accompany the data. 7. Provide, maintain, and improve fundamental hardware, software, and procedural systems necessary for the scope of work, including DART.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Accomplishment 1. Integrated 3 climate information sources (USACE, NWS, Sno-Tel) with the NCDC historical records to provide extensive timeseries of climate records. 2. Assimilated Bonneville adult passage data from 1938-1948. 3. Acquired complete set of historical transport information. 4. Developed and launched hydrosystem performance measures of smolt exposures to temperature, spill, outflow and dissolved gas

BPA **Project:** **245 1987-127-00 Smolt Monitoring by Federal and Non-Federal Agencies**

Deliverable 1) Conduct annual Smolt Monitoring Program (SMP) at seven mainstem Snake and Columbia River dams, Lewiston Snake River trap, Lower Grande Ronde trap, and White Bird trap on the Salmon River. (Note: Imnaha River trap is another SMP site operated by the Nez Perce Tribe (NPT) under Project 1997-015-01). 2) Perform PIT tagging of ~25,500 juvenile fish at five hatcheries and upload data files to PSMFC databsase (USFWS tagging support component). 3) Transmit daily juvenile fish passage, sampling, marking, and other biological and hydrological data to online databases at Fish Passage Center (FPC) and Pacific States Marine Fisheries Commission (PSMFC) for distribution region wide. 4) Comply with ESA Section 10 sampling and reporting requirements at all monitiring sites. 5) Participating agencies and organizations prepare and submit annual reports to PSMFC summarizing SMP activities and data collected at each monitoring site for use in compiling FPC annaul report.

Accomplishment 1) Recorded observations of bull trout caught incidentally at Snake River traps and at smolt collection facilities at mainstem dams on the lower Snake and Columbia rivers.

BPA **Project:** **255 1997-015-01 Title Present Scope: Imnaha River Smolt Monitoring Program. Title for proposed expanded scope: Imnaha Smolt Survival and Smolt to Adult Return Rate Quantification**

Deliverable 1) Determine juvenile spring emigration timing of chinook salmon and steelhead smolts from the Imnaha River by operating permanent emigrant Imnaha River trap at rkm 7, March 15 to June 5, in cooperation with LSRCP. 2) Determine the emigration timing of previously PIT tagged natural and hatchery chinook salmon and steelhead smolts through interrogations at the lower Imnaha River trap. 3) Provide smolt-monitoring information to the FPC, LSRCP, NEOH M&E and PTAGIS. 4) In cooperation with the LSRCP program, PIT tag over 27,000 smolts to determine the arrival timing, travel time, and survival of natural and hatchery chinook salmon and steelhead released in the Imnaha River subbasin to Lower Granite, Little Goose, Lower Monumental, and McNary Dams.

Accomplishment 1) Determined the spring emigration timing of chinook salmon and steelhead smolts collected at the lower Imnaha River trap from March 15 to June 5. 2) Determined the emigration timing and travel time of previously PIT tagged natural and hatchery chinook salmon and hatchery steelhead smolts through interrogation at the lower Imnaha River trap from March 15 to June 5. 3) Determined the emigration timing, travel time and recovery rate of natural and hatchery steelhead PIT tagged from the Imnaha River through the Snake River and other Columbia River dams. 4) Provided smolt monitoring information to the Fish Passage Cemter (FPC), Lower Snake River Compensation Plan Program (LSRCP), Northeast Oregon Hatchery Monitoring and Evaluation Program (NEOH M&E), and the PIT Tag Information System database (PTAGIS) at the Pacific Marine Fisheries Commission (PSMFC). 6) Assisted with PIT tagging activities in the Imnaha subbasin for the Nez Perce Tribe.

BPA **Project:** **34 1990-005-01 Umatilla Natural Production M&E**

Deliverable 1) Monitor adult steelhead spawning; 2) Estimate run timing of juvenile steelhead using PIT tags; 3) Estimate juvenile salmonid abundance and rearing densities; 4) Monitor stream temperatures; 5) Determine age growth and life history characteristics of bull trout, salmon and steelhead in the Umatilla River Basin; 6) Annual report

Accomplishment 1) Monitor adult steelhead spawning; 2) Estimate run timing of juvenile steelhead using PIT tags; 3) Estimate juvenile salmonid abundance and rearing densities; 4) Monitor stream temperatures; 5) Determine age growth and life history characteristics of bull trout, salmon and steelhead in the Umatilla River Basin.

BPA **Project:** **42 2000-039-00 Walla Walla Natural Production M&E**

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable 1) Monitor adult steelhead and bull trout spawning; 2) Estimate run timing and survival of juvenile steelhead using PIT tags; 3) Estimate juvenile salmonid abundance and rearing densities; 4) Monitor stream temperatures; 5) Determine age growth and life history characteristics of bull trout, salmon and steelhead in the Umatilla River Basin; 6) Monitor adult steelhead and bull trout movements throughout the Walla Walla basin with radio telementry techniques; 7) Annual report.

Accomplishment 1) Monitor adult steelhead and bull trout spawning; 2) Estimate run timing and survival of juvenile steelhead using PIT tags; 3) Estimate juvenile salmonid abundance and rearing densities; 4) Monitor stream temperatures; 5) Determine age growth and life history characteristics of bull trout, salmon and steelhead in the Umatilla River Basin; 6) Monitor adult steelhead and bull trout movements throughout the Walla Walla basin with radio telementry techniques.

BPA Project: 9 1995-063-25 Yakima/Klickitat Fisheries Project Monitoring And Evaluation - Yakima Subbasin

Deliverable 1. Natural Production - Develop and implement methods of detecting indices of increasing natural production, as well as methods of detecting a realized increase in natural production, with specified statistical power.
2. Harvest - Develop methods to detect increases in harvest of YKFP targeted stocks.
3. Genetics - Develop methods of detecting significiant pre- and post- supplementation genetic changes in targeted stocks as reflected by changes in extinction risk, within-stock genetic variability, between-stock genetic variability, and domestication.
4. Ecological Interactions - Determine if impacts to non-target taxa can be kept within specified biological limits, and determine if biotic interactions limit ability of supplementation to increase natural production.

Accomplishment I.a Modeling analysis reports. I.b Yakima River fall chinook fry survival study. I.c Yakima River juvenile spring chinook micro-habitat utilization analysis. I.d Yakima River juvenile spring chinook marking est. 900,000. I.e Roza juvenile wild/hatchery spring chinook smolt PIT tagging. I.f Yakima River wild/hatchery salmonid survival and enumeration (Chandler) - on-going. I.g Yakima River fall chinook M&E - various studies. I.h Yakima River coho optimal stock, temporal, and geographic study I.i Yakima spring chinook juvenile behavior analysis and studies. I.j Yakima spring chinook morphometric/coloration (OCT and SNT). I.k I.l Adult salmonid enumeration at Prosser Dam - on-going. I.m Adult salmonid enumeration and broodstock collection at Roza and Cowiche (Naches River) dams - on-going. I.n Spawning ground surveys (redd counts). I.o I.p Yakima spring chinook residuals/precocials studies. I.q.1 Yakima River relative hatchery/wild spring chinook reproductive success I.q.2 Yakima River relative hatchery/wild spring chinook reproductive success - data analysis and study I.r Yakima spring chinook gamete quality monitoring - on-going. I.s Scale analysis - on-going. I.u Habitat monitoring flights and ground truthing. I.w Sediment impacts on habitat - on-going. I.x Predator avoidance training - data analysis and study. I.y Biometrical Support - on-going analysis of models. 2.b Yakima and Klickitat subbasin harvest monitoring - on-going. 3.a Allozyme/DNA data collection and analysis - on-going. 3.b stray recovery on Naches and American river spawning grounds - on-going. 3.c Yakima spring chinook domestication - on-going. 4.a Avian predation index - annual report. 4.b Fish predation index - annual report. 4.c Indirect Predation (and environmental analysis) - study 4.d Yakima River spring chinook competition/prey index - report. 4.e Upper Yakima spring chinook NTTOC monitoring - report. 4.f Pathogen sampling of wild and hatchery fish - on-going.

BPA Project: 24 1995-063-35 Yakima/Klickitat Fisheries Project Monitoring And Evaluation (Klickitat Only)

Deliverable Monitoring And Evaluation - Juvenile salmonid population surveys. Mobile juvenile monitoring - rotary traps. Spawning ground surveys. Scale analysis. Sediment impact analysis on habitat. Fish passage "obstruction" inventory; Water quality inventory; habitat production assessment. Genetics - DNA data collection/analysis on steelhead. Ecological Interactions - Pathogen sampling. Reports

Accomplishment M&E - 10 - 15 surveys at low flow. Three traps- one for 12 mos., one for 6 mos., and one for 2 mos. Steelhead - 20 surveys; Fall Chinook - 10 surveys; Spring Chinook - 10 Surveys; Coho - 10 surveys; Fall Chiook adult scale analysis, est 100; Spring Chinook Adult scale analysis est. 50. Sediment anlaysis taken from 10 sites. Obstruction inventory - 5 sites. Water qualiity inventory - temp 28 sites. Habitt production assessment - 8 surveys. Genetic - 200 samples collected (90% Juiv, 10 % adults. Ecological Interactions - Pathogen Sampling - delayed. Quarterly and annual reports are to be prepared.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

RPA 181 Digitize aerial or satellite imagery of the entire Columbia River basin

USBR **Project: 4071 RME181.JDB.02.100.03 John Day Basin Aerial Imagery Project**

Deliverable Collect and analize imagery.

Scope, work plan

Accomplishment Work plan developed

Contracted for imagery

Set up inventory database and prformed aenalysis of sites

USBR **Project: 4075 RME181.CBP.02.100.01 TRT Digital Satellite Imagery Project**

Deliverable Id project scope and dev work plan

Obtain imagery

Imagery Analysis

Accomplishment Acquire imagery and analize data

Developed project scope and work plan

RPA 182 Determine the reproductive success of hatchery fish relative to wild fish

BPA **Project: 147 2000-071-00 Analyzing Behavioral Changes During Salmonid Domestication**

Deliverable Artificially fertilize salmon and steelhead eggs to develop groups of juveniles with varying histories of hatchery rearing, rear these experimental fish, develop standardized laboratory behaviorial and physiological tests, and prepare Annual Report

Accomplishment Continued work on project. Prepared Annual Report.

BPA **Project: 140 1989-096-00 Genetic Monitoring and Evaluation Program for Supplemented Populations of Salmon and Steelhead in the Snake River Basin**

Deliverable Collect genetic samples from wild and hatchery Snake River spring/summer chinook and steelhead populations, conduct genetic analyses, quantify genetic changes in hatchery populations, evaluate genetic impacts of supplementation on natural/wild stocks, estimate reproductive success of hatchery and wild steelhead, and prepare annual report

Accomplishment Project collected samples, conducted electrophoretic and DNA analyses, and began a more extensive DNA survey of variation in steelhead. Submitted several research papers in lieu of Annual Reports.

BPA Project: 266 1989-098-02 Idaho Supplementation Studies - salmon

Deliverable All NPT data are collected in: Secesh River (SER), Lake Creek (LAC), Lolo Creek (LLC), Newsome Creek (NC), Johnson Creek (JC), Fishing Creek (FC), Bear Creek (BC), Eldorado Creek (EC), Yoosa Creek (YC), Slate Creek (SLC) - 1) Estimate juvenile salmon outmigration (CC) - a) Operate traps in SR, b) Assist wth trap operation (LLC, NC, JC). 2) Estimate survival to lower Snake River dams (SR). 3) Conduct redd and carcass counts (SR, LAC, Jc, FC, BC, LLC, EC, YC, NC, SLC). 4) Estimate parr abumdance (CC and PKC). 5) Collect returning adults at Kooskia Hatchery and pass a portion upstream. 6) Collect genetic samples. 7) Annual Report.

All USFWS data are collected in Pete King Creek (PKC) and Clear Creek(CC): 1) Estimate juvenile salmon outmigration (CC). 2) Estimate survival to lower Snake River dams (CC). 3) Conduct redd and carcass counts (CC and PKC). 4) Release chinook: a) smolts into CC; b) summer parr into PKC. 5) Estimate parr abumdance (CC and PKC). 6) Collect returning adults at Kooskia Hatchery and pass a portion upstream. 7) Annual Report

All SBT data are collected in: W.Fork Yankee Fk Salmon R. (WF), E.Fork Salmon River (EF), Upper Salmon River (USR). 1) Estimate juvenile survival to lower Snake River dams (WF, EF). 2) Conduct redd and carcass counts. 3) Estimate parr abumdance. 4) Collect returning adults at weirs. 5) Annual Report

All IDFG data are collected in Crooked Fork Creek, Colt Killed (White Sand) Creek, Marsh Creek, Pahsimeroi Creek, Lemhi River, Upper Salmon River, South Fork Salmon River: 1) Estimate juvenile salmon outmigration; 2) Estimate survival to lower Snake River dams; 3) Conduct redd and carcass counts; 4) Release chinook: a) smolts into upper Salmon River, East Fork Salmon River, South fork Salmon River, and Pahsimeroi River; b) summer parr into Pete King Creek, and Squaw Creek; c) presmolts into Red River and Crooked River; d) evaluate early rearing and volitional release in Stolle Ponds. 5) Develop small-scale experiments to compare behavioral interactions between natural and hatchery fish with Univ. of ID. 6) Annual Report.

Accomplishment Completed all FY 2002 deliverables, except IDFG Annual Report is delayed.

BPA Project: 268 1990-055-00 Idaho Supplementation Studies - steelhead - previously 1989-098-00

Deliverable 1) Outplant adult steelhead into upper Salmon River tribs. 2) Conduct redd and carcass counts. 3) Estimate parr abumdance (snorkeling) in South Fork Red RIver and Red River. 4) Collect returning adults at Red River and Fish Creek weirs. 5) Estimate juvenile steelhead outmigration on Fish Creek and Boulder Creek. 6) Collect and analyze genetic samples. 7) Annual Report

Accomplishment Completed all FY 2002 deliverables.

BPA Project: 141 1990-052-00 Performance/Stock Productivity Impacts of Hatchery Supplementation

Deliverable Compare growth and survival of progeny from wild and hatchery steelhead (Clearwater River, ID) and spring chinook salmon (Deschutes River, OR) in both hatcheries and natural streams. Compare reproductive success (number of offspring) from wild Selway River steelhead and Dworshak NFH steelhead. Prepare Final Report.

Accomplishment Implementation of this project was delayed during ISRP and Council review and approval of the SNAPP proposal. Deliverables not due until FY 2003.

BPA Project: 9 1995-063-25 Yakima/Klickitat Fisheries Project Monitoring And Evaluation - Yakima Subbasin

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable

1. Natural Production - Develop and implement methods of detecting indices of increasing natural production, as well as methods of detecting a realized increase in natural production, with specified statistical power.
2. Harvest - Develop methods to detect increases in harvest of YKFP targeted stocks.
3. Genetics - Develop methods of detecting significiant pre- and post- supplementation genetic changes in targeted stocks as reflected by changes in extinction risk, within-stock genetic variability, between-stock genetic variability, and domestication.
4. Ecological Interactions - Determine if impacts to non-target taxa can be kept within specified biological limits, and determine if biotic interactions limit ability of supplementation to increase natural production.

Accomplishment

I.a Modeling analysis reports. I.b Yakima River fall chinook fry survival study. I.c Yakima River juvenile spring chinook micro-habitat utilization analysis. I.d Yakima River juvenile spring chinook marking est. 900,000. I.e Roza juvenile wild/hatchery spring chinook smolt PIT tagging. I.f Yakima River wild/hatchery salmonid survival and enumeration (Chandler) - on-going. I.g Yakima River fall chinook M&E - various studies. I.h Yakima River coho optimal stock, temporal, and geographic study I.i Yakima spring chinook juvenile behavior analysis and studies. I.j Yakima spring chinook morphometric/coloration (OCT and SNT). I.k I.l Adult salmonid enumeration at Prosser Dam - on-going. I.m Adult salmonid enumeration and broodstock collection at Roza and Cowiche (Naches River) dams - on-going. I.n Spawning ground surveys (redd counts). I.o I.p Yakima spring chinook residuals/precocials studies. I.q.1 Yakima River relative hatchery/wild spring chinook reproductive success I.q.2 Yakima River relative hatchery/wild spring chinook reproductive success - data analysis and study I.r Yakima spring chinook gamete quality monitoring - on-going. I.s Scale analysis - on-going. I.u Habitat monitoring flights and ground truthing. I.w Sediment impacts on habitat - on-going. I.x Predator avoidance training - data analysis and study. I.y Biometrical Support - on-going analysis of models. 2.b Yakima and Klickitat subbasin harvest monitoring - on-going. 3.a Allozyme/DNA data collection and analysis - on-going. 3.b stray recovery on Naches and American river spawning grounds - on-going. 3.c Yakima spring chinook domestication - on-going. 4.a Avian predation index - annual report. 4.b Fish predation index - annual report. 4.c Indirect Predation (and environmental analysis) - study 4.d Yakima River spring chinook competition/prey index - report. 4.e Upper Yakima spring chinook NTTOC monitoring - report. 4.f Pathogen sampling of wild and hatchery fish - on-going.

RPA 183 Three tier 3 studies within each ESU

BPA **Project:** **325 2002-053-00 Assess Salmonids in the Asotin Creek Watershed**

Deliverable

1. Estimate escapement of hatchery and wild steelhead and salmon into the Asotin Creek drainage above George Creek. 2. Document juvenile steelhead life history patterns and survival rates and smolt production from Asotin Creek. 2. Evaluate bull trout use of Asotin Creek watershed.

Accomplishment

BPA decided to fund this project under the Blue Mountain Provincial Review process. It is considered critical to BiOp implementation.

BPA **Project:** **160 Chinook Salmon Smolt Survival and Smolt to Adult Return Rate Quantification, South Fork Salmon River, Idaho**

Deliverable

Collect and analyze information on abundance, selected life history characteristics/patterns, and spatial distribution of upper South Fork Salmon River juvenile summer chinook salmon. Collect and analyze information on abundance, selected life history characteristics/patterns, and spatial distribution of upper South Fork Salmon River juvenile summer chinook salmon. Collect and analyze baseline information of genetic characteristics/patterns upper SFSR summer chinook salmon. Compile and analyze South Fork Salmon River Basin SAR and R/S estimates using data from Secesh River, Johnson Creek, and upper SFSR studies to get a combined SFSR Basin estimate.

Accomplishment

BPA decided to fund this project under the Mountain Snake Provincial Review process.

BPA **Project:** **166 2002-068-00 Evaluating stream habitat using the Nez Perce Tribe Fisheries/Watershed Watershed Monitoring and Evaluation Plan**

Deliverable Determine the quality and extent of habitat available to anadromous and resident fishes. Resolve uncertainties in juvenile abundances. Evaluate effectiveness of restoration projects for producing long-term watershed improvements. Use the data and trends developed to provide guidance for subbasin planning and future land management decisions. Evaluate effectiveness of restoration projects for producing long-term watershed improvements. Use the data and trends developed to provide guidance for subbasin planning and future land management decisions.

Accomplishment This project was identified as critical for BiOp implementaiton. This project was not contracted in FY2002 - Signed contract was sent to contractor 4/03, effective 5/1/03.

USBR **Project:** **4073 RME183.JDB.02.100.00 John Day Basin Steelhead Data and Information Compilation**

Deliverable Collect/analize all available data

Set up database

Accomplishment Data collected, established database

Completed contract with ODFW

USBR **Project:** **4072 RME156.JDB.02.100.02 Pushup Dam Research - John Day Basin**

Deliverable Initiate project

RPA 184 Hatchery research, monitoring, and evaluation program

BPA **Project:** **281 2002-030-00 Develop Progeny Marker for Salmonids to Evaluate Supplementation**

Deliverable 1) Determine chemical composition and delviery medium of marker to be tested on maturing females. a) Define the best chemical composition to be used to allow strontium uptake by developing ova. b) Conduct intial trials to determine physiological test of the propossed markers on maturing females and developing embryos. c) Report preliminary results.

Accomplishment Statement of Work negotiated. Contract expected to be signed the first quarter of FY 2003. Expect task progress to be on schedule in FY 2003.

BPA **Project:** **63 2002-031-00 Growth Rate Modulation in Spring Chinook Salmon Supplementation**

Deliverable 1) Estimate incidence of precocious maturation and developmental physiology in wild Yakima River spring chinook salmon; 2) Estimate Incidence of age 1+ precocious male maturation in the Yakima Hatchery population. 3) Experimental control of precocious maturation through growth rate modulation in a conservation hatchery.

Accomplishment Work began June 1, 2002.

BPA **Project:** **378 1988-053-12 Hood River Steelhead Genetics Study**

Accomplishment This project was separated out from the Hood River Production Monitoring and Evaluation Program, consistent with ISRP recommendations. It was submitted to the 2003 Request for Studies solicitation and has been identified as critical to BiOp implementation.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

BPA **Project:** **204 1989-098-00 Idaho Supplementation Studies - salmon**

Deliverable

All IDFG data are collected in Crooked Fork Creek, Colt Killed (White Sand) Creek, Marsh Creek, Pahsimeroi Creek, Lemhi River, Upper Salmon River, South Fork Salmon River: 1) Estimate juvenile salmon outmigration; 2) Estimate survival to lower Snake River dams; 3) Conduct redd and carcass counts; 4) Release chinook: a) smolts into upper Salmon River, East Fork Salmon River, South fork Salmon River, and Pahsimeroi River; b) summer parr into Pete King Creek, and Squaw Creek; c) presmolts into Red River and Crooked River; d) evaluate early rearing and volitional release in Stolle Ponds. 5) Develop small-scale experiments to compare behavioral interactions between natural and hatchery fish with Univ. of ID. 6) Annual Report.

All USFWS data are collected in Pete King Creek (PKC) and Clear Creek(CC): 1) Estimate juvenile salmon outmigration (CC). 2) Estimate survival to lower Snake River dams (CC). 3) Conduct redd and carcass counts (CC and PKC). 4) Release chinook: a) smolts into CC; b) summer parr into PKC. 5) Estimate parr abumdance (CC and PKC). 6) Collect returning adults at Kooskia Hatchery and pass a portion upstream. 7) Annual Report

All SBT data are collected in: W.Fork Yankee Fk Salmon R. (WF), E.Fork Salmon River (EF), Upper Salmon River (USR). 1) Estimate juvenile survival to lower Snake River dams (WF, EF). 2) Conduct redd and carcass counts. 3) Estimate parr abumdance. 4) Collect returning adults at weirs. 5) Annual Report

All NPT data are collected in: Secesh River (SER), Lake Creek (LAC), Lolo Creek (LLC), Newsome Creek (NC), Johnson Creek (JC), Fishing Creek (FC), Bear Creek (BC), Eldorado Creek (EC), Yoosa Creek (YC), Slate Creek (SLC) - 1) Estimate juvenile salmon outmigration (CC) - a) Operate traps in SR, b) Assist wth trap operation (LLC, NC, JC). 2) Estimate survival to lower Snake River dams (SR). 3) Conduct redd and carcass counts (SR, LAC, Jc, FC, BC, LLC, EC, YC, NC, SLC). 4) Estimate parr abumdance (CC and PKC). 5) Collect returning adults at Kooskia Hatchery and pass a portion upstream. 6) Collect genetic samples. 7) Annual Report.

Accomplishment

Completed all FY 2002 deliverables, except IDFG Annual Report is delayed.

BPA **Project:** **268 1990-055-00 Idaho Supplementation Studies - steelhead - previously 1989-098-00**

Deliverable

1) Outplant adult steelhead into upper Salmon River tribs. 2) Conduct redd and carcass counts. 3) Estimate parr abumdance (snorkeling) in South Fork Red RIver and Red River. 4) Collect returning adults at Red River and Fish Creek weirs. 5) Estimate juvenile steelhead outmigration on Fish Creek and Boulder Creek. 6) Collect and analyze genetic samples. 7) Annual Report

Accomplishment

Completed all FY 2002 deliverables.

BPA **Project:** **54 1998-010-04 Monitoring and Evaluation of Yearling Snake River Fall Chinook Salmon Outplanted Upstream of Lower Granite Dam**

Deliverable

1) Monitor, evaluate, and compare pre-release and release conditions of yearling hatchery fall chinook released at the Pittsburg Landing, Big Canyon Creek, and Captain John Rapids acclimation facilities with on-station releases at LFH;
2) Monitor, evaluate, and compare post-release behavior, migration timing, and survival of yearling fall chinook released at Pittsburg Landing, Big Canyon Creek, Captain John Rapids, and LFH;
3) Monitor and compare contribution and distribution of adult returns and smolt-to-adult survivals of yearling fall chinook released from Pittsburg Landing, Captain John Rapids, Big Canyon Creek, and LFH;
4)

Accomplishment

Received draft 2001 annual report.

BPA **Project:** **286 1991-055-00 NATURES [Formerly Supplementation Fish Quality (Yakima)]**

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable The NATURES project's purpose is to evaluate the efficacy of hatchery reform protocols as tools for reducing the risk of extinction for Columbia River Basin salmonids and determining if conservation hatcheries contribute to recovery as called for by RPA 184.

Accomplishment In FY 2002, NATURES researchers completed the second of a four-year study evaluating the effect of NATURES seminatural raceway habitat on coho salmon smolt-to-adult survival. In this study, seminatural raceway habitat composed of gravel paver substrate, natural conifer in-water structure, and camouflage net overhead cover has been retrofitted to standard raceways and larger ponds where it has been successfully operated by fish culturists for over two years. Project researchers continued to monitor the smolt-to-adult survival of fall chinook salmon reared in an earlier seminatual raceway habitat study that were released to sea in 1997, 1998, 1999, and 2000. NATURES investigators completed experiments designed to determine the relative effects of conventionally- and NATURES-reared steelhead on agonistic behavior, feeding, shelter use, growth, and survival of wild juvenile steelhead in a laboratory flume and an outdoor stream channel. NATURES investigators released conventionally- and NATURES-reared fish into two natural streams and used snorkeling observations to estimate rates of aggression, feeding, territory size, habitat use, and movement of hatchery-reared and wild juvenile steelhead.

BPA Project: 154 1983-350-03 New Perce Tribal Hatchery; M & E

Deliverable 1) Determine if program targets for contribution rate of hatchery fish are being achieved 2) Determine the increases in natural production that results from supplementation of chinook salmon & relate them to limiting factors 3) Estimate ecological & genetic impacts to fish populations 4) Determine how harvest opportunities can be optimized 5) Effectively communicate M&E program approach & findings to resource mngrs

Accomplishment 1) Monitored wild juvenile life history characteristics in the lower mainstem Clearwater River, 2) performed Fall chinook redd counts, 3)collected fall chinook carcasses and identified hatchery contributions from the Nez Perce Tribe acclimation facilities.

BPA Project: 141 1990-052-00 Performance/Stock Productivity Impacts of Hatchery Supplementation

Deliverable Compare growth and survival of progeny from wild and hatchery steelhead (Clearwater River, ID) and spring chinook salmon (Deschutes River, OR) in both hatcheries and natural streams. Compare reproductive success (number of offspring) from wild Selway River steelhead and Dworshak NFH steelhead. Prepare Final Report.

Accomplishment Implementation of this project was delayed during ISRP and Council review and approval of the SNAPP proposal. Deliverables not due until FY 2003.

BPA Project: 60 2000-072-00 Phenotypic Correlations between Prevalence of Renibacterium salmoninarum among Spring Chinook Salmon and Resistance/Susceptibility of their Progeny to Infectious Bacteria and Bacterial Kidney Disease (BKD)

Deliverable 1) Test the null hypotheses: Percentages of "eyed" eggs infected with R. salmoninarum from single females are (a) equal for all 72 families and (b) not correlated phenotypically with parental levels of R. salmoninarum. 2) Test the null hypothesis: The ability of progeny to resist bacterial infections to Vibrio anguillarum is not correlated phenotypically with parental levels of R. salmoninarum. 3) Test the null hypothesis: The ability of progeny to resist bacterial infections to Renibacterium salmoninarum is not correlated phenotypically with parental levels of R. salmoninarum. 4) Prepare and submit FY2000 Final Report for BPA and scientific manuscripts for publication

Accomplishment progress reports on schedule

BPA Project: 48 1992-022-00 Physiological Assessment and Behavioral Interactions of Wild and Hatchery Juvenile Salmonids

Deliverable The objective of our research is to develop the technology to manipulate growth rates of hatchery reared fish to improve smolt quality, produce a more wild-type hatchery smolt, and accomplish the following goals: 1) Improve smolt-to-adult survival 2) Reduce interactions between wild and hatchery juveniles 3) Allow for the design of effective rearing programs for producing wild-like smolts in supplementation projects 4) Reduce straying and genetic introgression of hatchery fish on protected salmonid populations 5) Maintain a wild-like phenotype in hatchery-reared fish.

Accomplishment Research continued. No report received in FY 2002.

BPA **Project:** **288 2001-047-00 Reintroduction success of steelhead from captive propagation and release strategies**

Deliverable The purpose of this project is to determine the relative reproductive performance of captively reared and sea-ranched (smolt released) steelhead from anadromous and sequestered populations. More specifically, the goal is to goal is to evaluate adult reproductive success (e.g., quantify adult breeding behavior, determine adult-to-parr reproduction success by DNA analysis and evaluate juvenile behavioral characteristics and quantify juvenile social behavior.

Accomplishment To date the project has i) conducted reproductive behavior evaluations of captively reared and sea-ranched steelhead from anadromous and resident ancestry in replicated enclosures in Sashin Creek; ii) initiated DNA microsattelite analyses to quantify individual adult-to-fry reproductive success, and iii) conducted preliminary experiments to evaluate social behavior and dominance of progeny from resident and anadromous steelhead. Data from these evaluations are currently being analyzed and experiments to further evaluate juvenile survival related characteristics are being implemented.

BPA **Project:** **146 1993-056-00 Research on Captive Broodstock Programs for Pacific Salmon**

Deliverable Conduct research to improve natural reproductive success, improve olfactory imprinting, improve physiological development and maturation, improve in-culture survival of juveniles (prevention and control of disease), and evaluate inbreeding and inbreeding depression. Report results.

Accomplishment Project work continues. 2001 - 2002 Annual Report prepared.

BPA **Project:** **53 1998-010-03 Spawning Distribution of Fall Chinook Salmon Released as Yearlings above Lower Granite Dam**

Deliverable 1. Provide researchers and managers with accurate counts of fall chinook salmon redds upriver of Lower Granite Dam 2. Determine whether or not the current use of three acclimation-and-release facilities distributes spawners throughout the habitat normally used by Snake River fall chinook salmon.

Accomplishment Received draft journal manuscript entitled “Movement and Fidelity of Hatchery Fall Chinook Salmon Adults Acclimated as Yearling Juveniles at Three Locations in the Snake River Basin.”

BPA **Project:** **47 1991-029-00 The effects of summer flow augmentation on the migratory behavior and survival of juvenile Snake River fall chinook salmon**

Deliverable 1) Provide information to fishery managers to maximize the effectiveness of summer flow augmentation. 2) Understand how summer flow augmentation affects water temperature, water velocity, juvenile fall chinook salmon migratory behavior, and juvenile fall chinook survival salmon in Lower Granite Reservoir.

Accomplishment The 2000-2001 annual report was uploaded to the BPA website.

BPA **Project:** **34 1990-005-01 Umatilla Natural Production M&E**

Deliverable 1) Monitor adult steelhead spawning; 2) Estimate run timing of juvenile steelhead using PIT tags; 3) Estimate juvenile salmonid abundance and rearing densities; 4) Monitor stream temperatures; 5) Determine age growth and life history characteristics of bull trout, salmon and steelhead in the Umatilla River Basin; 6) Annual report

Accomplishment 1) Monitor adult steelhead spawning; 2) Estimate run timing of juvenile steelhead using PIT tags; 3) Estimate juvenile salmonid abundance and rearing densities; 4) Monitor stream temperatures; 5) Determine age growth and life history characteristics of bull trout, salmon and steelhead in the Umatilla River Basin.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

BPA **Project:** **9 1995-063-25 Yakima/Klickitat Fisheries Project Monitoring And Evaluation - Yakima Subbasin**

Deliverable

1. Natural Production - Develop and implement methods of detecting indices of increasing natural production, as well as methods of detecting a realized increase in natural production, with specified statistical power.
2. Harvest - Develop methods to detect increases in harvest of YKFP targeted stocks.
3. Genetics - Develop methods of detecting significiant pre- and post- supplementation genetic changes in targeted stocks as reflected by changes in extinction risk, within-stock genetic variability, between-stock genetic variability, and domestication.
4. Ecological Interactions - Determine if impacts to non-target taxa can be kept within specified biological limits, and determine if biotic interactions limit ability of supplementation to increase natural production.

Accomplishment

I.a Modeling analysis reports. I.b Yakima River fall chinook fry survival study. I.c Yakima River juvenile spring chinook micro-habitat utilization analysis. I.d Yakima River juvenile spring chinook marking est. 900,000. I.e Roza juvenile wild/hatchery spring chinook smolt PIT tagging. I.f Yakima River wild/hatchery salmonid survival and enumeration (Chandler) - on-going. I.g Yakima River fall chinook M&E - various studies. I.h Yakima River coho optimal stock, temporal, and geographic study I.i Yakima spring chinook juvenile behavior analysis and studies. I.j Yakima spring chinook morphometric/coloration (OCT and SNT). I.k I.l Adult salmonid enumeration at Prosser Dam - on-going. I.m Adult salmonid enumeration and broodstock collection at Roza and Cowiche (Naches River) dams - on-going. I.n Spawning ground surveys (redd counts). I.o I.p Yakima spring chinook residuals/precocials studies. I.q.1 Yakima River relative hatchery/wild spring chinook reproductive success I.q.2 Yakima River relative hatchery/wild spring chinook reproductive success - data analysis and study I.r Yakima spring chinook gamete quality monitoring - on-going. I.s Scale analysis - on-going. I.u Habitat monitoring flights and ground truthing. I.w Sediment impacts on habitat - on-going. I.x Predator avoidance training - data analysis and study. I.y Biometrical Support - on-going analysis of models. 2.b Yakima and Klickitat subbasin harvest monitoring - on-going. 3.a Allozyme/DNA data collection and analysis - on-going. 3.b stray recovery on Naches and American river spawning grounds - on-going. 3.c Yakima spring chinook domestication - on-going. 4.a Avian predation index - annual report. 4.b Fish predation index - annual report. 4.c Indirect Predation (and environmental analysis) - study 4.d Yakima River spring chinook competition/prey index - report. 4.e Upper Yakima spring chinook NTTOC monitoring - report. 4.f Pathogen sampling of wild and hatchery fish - on-going.

BPA **Project:** **24 1995-063-35 Yakima/Klickitat Fisheries Project Monitoring And Evaluation (Klickitat Only)**

Deliverable

Monitoring And Evaluation - Juvenile salmonid population surveys. Mobile juvenile monitoring - rotary traps. Spawning ground surveys. Scale analysis. Sediment impact analysis on habitat. Fish passage "obstruction" inventory; Water quality inventory; habitat production assessment. Genetics - DNA data collection/analysis on steelhead. Ecological Interactions - Pathogen sampling. Reports

Accomplishment

M&E - 10 - 15 surveys at low flow. Three traps- one for 12 mos., one for 6 mos., and one for 2 mos. Steelhead - 20 surveys; Fall Chinook - 10 surveys; Spring Chinook - 10 Surveys; Coho - 10 surveys; Fall Chiook adult scale analysis, est 100; Spring Chinook Adult scale analysis est. 50. Sediment anlaysis taken from 10 sites. Obstruction inventory - 5 sites. Water qualiity inventory - temp 28 sites. Habitt production assessment - 8 surveys. Genetic - 200 samples collected (90% Juiv, 10 % adults. Ecological Interactions - Pathogen Sampling - delayed. Quarterly and annual reports are to be prepared.

RPA 185 **Compare the sars of transported and non-transported fish**

BPA **Project:** **248 1990-080-00 Columbia River Basin PIT Tag Information System**

Deliverable

1.0 Operate and maintain the centralized Columbia River Basin-wide database for PIT-tagged Fish (at Gladstone, OR). 2.0 Install, operate and maintain permanent interrogation systems and provide the interrogation data to PTAGIS in near-real time (at Kennewick, WA). 3.0 Provide coordination and support for research projects that depend upon selective segregation of fish by code (SxC) at Columbia Basin fish collection facilities. 4.0 Provide training, system information, coordination, consultation and support for all Columbia Basin PIT tag research projects through the development of user manuals, newsletters, workshops, videos, etc. 5.0 Manage the purchase and distribution of PIT tags and PIT tag detection equipment for all NWPPC FWP projects. 6.0 Provide additional support actions related to PIT tag data recovery, System-wide Planning and Coordination and Public Outreach. 7.0 Project Administration and Management.

Accomplishment

2.1 During the winter and spring of 2001/02, PTAGIS installed an additional 88 PIT tag interrogation coils and established five new interrogation sites to support adult PIT tag interrogation systems in the Columbia basin. 2.2 During January and February 2002, the PTAGIS project provided labor and consulting services to install PIT tag detection systems at Bonneville and McNary dam fish ladders. Continued to operate and maintain the PTAGIS database and data collection software; operate and maintain separation-by-code systems; install, operate, and maintain interrogation systems in field locations.

BPA **Project:** **254 1996-020-00 Comparative Survival Rate Study (CSS) of Hatchery PIT Tagged Chinook & Comparative Survival Study BPA Short Title: PIT Tagging Spring/Summer Chinook in Hatcheries**

Deliverable

1) Conduct PIT tag marking of ~269,400 hatchery and wild juvenile chinook salmon and steelhead at CSS study hatcheries and smolt traps, scan returning adults for PIT tags at CSS study hatcheries and weirs, and upload data files to PSMFC PTAGIS database. 2) Perform annual refinement and preparation of CSS study design that is responsive to any questions on analysis and review comments. 3) Analyze data and prepare Annual CSS Status Report in cooperation with the Fish Passage Center. 4) Comply with ESA Section 10 permit requirements.

Accomplishment

1) PIT tagged ~269,400 juvenile salmon and steelhead at hatcheries and traps, scanned returning adults for PIT tags at CSS study hatcheries and weirs, and uploaded data files to regional PSMFC PTAGIS database. 2) 2002 Study Design and Analysis Report: Bouwes, N., et al. 2002. Comparative Survival Study (CSS) 2002 study design and analysis report. Contract Report to Bonneville Power Administration, Contract No. 00006203, Project No. 199602000. 3) Annual Status Report: Bouwes, N. et al. 2002. Comparative survival rate study (CSS) of hatchery PIT tagged chinook, status report for migration years 1997-2000 (available FPC Web Site). 4) ESA Section 10 permit compliance.

BPA **Project:** **252 1993-029-00 Estimate Survival for the Passage of Juvenile Salmonids Through Dams and Reservoirs of the Lower Snake and Columbia Rivers Short BPA Title: Survival Estimates Through Dams and Reservoirs**

Deliverable

1.0 Provide estimates of survival through various reaches of the Snake and Columbia Rivers for juvenile yearling chinook salmon and steelhead released at Lower Granite Dam. 2.0 Provide survival estimates through the Snake River for PIT-tagged yearling chinook salmon and steelhead released at traps and at hatcheries. 3.0 Provide estimate of survival and travel time for Lyons Ferry Hatchery-reared subyearling fall chinook salmon migrating from Pittsburg Landing and Billy Creek in the free-flowing Snake River through the Snake River dams. 4.0 Provide estimates of survival for river-run subyearling fall chinook salmon from the tailrace of McNary Dam to the tailrace of John Day Dam during the summer migration. 5.0 Determine whether assumptions of the Single-Release (SR) , Paired-Release (PR), and Modified Single-Release (MSR) Models are met by data from PIT-tagged juvenile salmonids migrating under river conditions and dam operations occurring during the 2001 migration season. 6.0 Provide evaluation of adult return data for PIT-tagged juveniles to determine whether juvenile survival is an indicator of survival to adult, and if not, help partition where in the life cycle mortality is occurring. 7.0 Provide information transfer to the fisheries community by presentations at meetings and workshops, by personal contact, by memorandum, by annual and final reports to the Bonneville Power Administration, and through peer-reviewed scientific publications.

Accomplishment 1.0 Completed and reported in 2001 Annual Report (June 2002 available on the web at http://www.efw.bpa.gov/cgi-bin/FW/ppublications.cgi). 2.0 Completed - 2.0 Provide survival estimates through the Snake River for PIT-tagged yearling chinook salmon and steelhead released at traps and at hatcheries. 3.0 Completed - 3.0 Provide estimate of survival and travel time for Lyons Ferry Hatchery-reared subyearling fall chinook salmon migrating from Pittsburg Landing and Billy Creek in the free-flowing Snake River through the Snake River dams. 4.0 Completed - 4.0 Provide estimates of survival for river-run subyearling fall chinook salmon from the tailrace of McNary Dam to the tailrace of John Day Dam during the summer migration. 5.0 Completed - 5.0 Determine whether assumptions of the Single-Release (SR) , Paired-Release (PR), and Modified Single-Release (MSR) Models are met by data from PIT-tagged juvenile salmonids migrating under river conditions and dam operations occurring during the 2001 migration season. 6.0 Continuing analysis, see Sanford and Smith publication under 2002 accomplishments. 7.0 Information Transfer: 7.1 Annual Report to BPA 2000 Migration. Zabel, R. W., S.G. Smith, W. D. Muir, D. M. Marsh, J. G. Williams, and J. R. Skalski. 2001. Survival estimates for the passage of spring-migrating juvenile salmonids through Snake and Columbia River dams and reservoirs, 2000. Annual report to Bonneville Power Administration, Portland, Contract DE-AI79-93BP10891. Available on the web at http://www.efw.bpa.gov/cgi-bin/FW/publications.cgi. 7.2 Journal Publications: Muir, W. D., S. G. Smith, J. G. Williams, E. E. Hockersmith, and J. R. Skalski. 2001(a). Survival estimates for PIT-tagged migrant juvenile chinook salmon and steelhead in the lower Snake River, 1993-1998. North American Journal of Fisheries Management 21:269-282. Muir, W. D. 2001(b). Survival of juvenile salmonids passing through bypass systems, turbines, and spillways with and without flow defectors at Snake River dams. North American Journal of Fisheries Management 21:135-146. Williams, J. G., S. G. Smith, and W. D. Muir. 2001. Survival Estimates for downstream migrant yearling juvenile salmonids through the Snake and Columbia River hydropower system, 1966-1980 and 1993-1999. N. Amer. J. Fish. Manage. 21:310-317.

BPA **Project: 251 1991-051-00 Monitoring and Evaluation Statistical Support**

Deliverable 1.0 Provide seasonal monitoring support. 1.1 Provide real-time smolt run-timing predictions for ESA demes NMFS ESUs and runs-at-large for the Snake and Columbia Rivers. 1.2 Provide annual review of run-timing predictions. 1.3 Provide post-season outmigration summary that provides retrospective analysis of the success of the current year's outmigration and a comparison with historical years. 2.0 Perform statistical analyses of historical tagging data to extract extra-value information on salmonid population dynamics and their interactions with the environment. 2.1 Perform analysis of smolt-to-adult ratios CWT data from 1970s and PIT-tag to present and make available on Internet. 2.2 Develop and provide interactive, internet-based sample size software to facilitate the design of tag-release studies to estimate ocean and upriver adult survival. 3.0 Statistical support to region. 3.1 Provide statistical consultaion for review of research proposals, technical reports, and statistical guidance on the design and analysis of tagging studies to BPA and the fisheries community. 3.2 Continue statistical evaluation of Biological Opinion performance standards to improve decision analysis for assessing RPA compliance.

Accomplishment Accomplishments to date for 2002 include: 1.0 Providing real-time run-timing predictions during the 2002 smolt outmigration season. 2.1 Ongoing-Compiling estimates and associated standard errors on smolt-to-adult ratios (SARs) using CWT recoveries for 90 Columbia Basin hatcheries from the 1970s to the present. Compiling inriver survival and travel time information using PIT-tag detections for 30 Columbia Basin hatcheries from the 1990s to the present. Results of the CWT and PIT-tag analyses will be available in DART for examination and analysis with ambient river data, power operations, and ocean conditions.

CORPS **Project: 2012 CENWW Delayed Mortality of Juvenile Salmonids**

Deliverable Conduct Rearing Study for Fish for Differential Delayed Mortality "D" (NMFS - Gilbreath-Strom-Arkoosh)
Presentation at Annual Review
Annual Report

Conduct Evaluation of Differential Delayed Mortality "D" for juvenile salmonids after barge release (OCFWRU - Schreck)
Presentation at Annual Review
Annual Report

Accomplishment Conduct Rearing Study (NMFS - Gilbreath-Strom-Arkoosh)
Annual Review Presentation

Accomplishment Conducted Evaluation of Differential Delayed Mortality "D" for juvenile salmonids after barge release (OCFWRU - Schreck)
Presentation at Annual Review

CORPS **Project: 2120 CENWW Juvenile salmon transportation evaluations**

Deliverable Evaluation of Physiological Changes in Transported juvenile salmonids and effects on survival - (ICFWRU - Congleton)
Annual Report

Lower Snake Fall Chinook Transport Marking and Evaluation
Annual Report - (NMFS - Marsh)

Evaluation of Mid-Columbia Juvenile Salmonid Transportation from McNary Dam (NMFS - Marsh) - Steelhead - Sp Chinook - Fall Chinook
Annual Report

Lower Granite Transport Evaluation, Wild spring chinook and steelhead - finish marking, adult returns through 2006 - (NMFS - Marsh)
Annual Report

Evaluation of migration and survival of steelhead and fall chinook following transportation - (OCFWRU - Schreck)
Annual Report

Accomplishment Evaluated Physiological Changes in Transported juvenile salmonids and effects on survival - (ICFWRU - Congleton)
Draft Report

Completed Marking for Fall Chinook Transport Study (NMFS - Marsh)
Draft Report

Evaluated migration and survival of juvenile steelhead and fall chinook
Draft Report

Completed Marking for Mid - C Spring Chinook
Draft Report

Completed Marking for LGR transport study - (NMFS - Marsh)
Draft Report

RPA 186 Determine whether D can be identified between BON and the mouth

CORPS **Project: 2012 CENWW Delayed Mortality of Juvenile Salmonids**

Deliverable Conduct Evaluation of Differential Delayed Mortality "D" for juvenile salmonids after barge release (OCFWRU - Schreck)
Presentation at Annual Review
Annual Report

Conduct Rearing Study for Fish for Differential Delayed Mortality "D" (NMFS - Gilbreath-Strom-Arkoosh)
Presentation at Annual Review
Annual Report

Accomplishment Conducted Evaluation of Differential Delayed Mortality "D" for juvenile salmonids after barge release (OCFWRU - Schreck)
Presentation at Annual Review

Accomplishment Conduct Rearing Study (NMFS - Gilbreath-Strom-Arkoosh)
Annual Review Presentation

CORPS **Project:** **2118 CENWW Evaluation of Transportation Strategies**

Accomplishment Began late season evaluation

CORPS **Project:** **2120 CENWW Juvenile salmon transportation evaluations**

Deliverable Lower Granite Transport Evaluation, Wild spring chinook and steelhead - finish marking, adult returns through 2006 - (NMFS - Marsh)
Annual Report

Evaluation of Mid-Columbia Juvenile Salmonid Transportation from McNary Dam (NMFS - Marsh) - Steelhead - Sp Chinook - Fall Chinook
Annual Report

Evaluation of migration and survival of steelhead and fall chinook following transportation - (OCFWRU - Schreck)
Annual Report

Evaluation of Physiological Changes in Transported juvenile salmonids and effects on survival - (ICFWRU - Congleton)
Annual Report

Lower Snake Fall Chinook Transport Marking and Evaluation
Annual Report - (NMFS - Marsh)

Accomplishment Completed Marking for LGR transport study - (NMFS - Marsh)
Draft Report

Evaluated Physiological Changes in Transported juvenile salmonids and effects on survival - (ICFWRU - Congleton)
Draft Report

Completed Marking for Mid - C Spring Chinook
Draft Report

Completed Marking for Fall Chinook Transport Study (NMFS - Marsh)
Draft Report

Evaluated migration and survival of juvenile steelhead and fall chinook
Draft Report

RPA 187 Ocean entry timing and sars for transported and downstream migrants

BPA **Project:** **254 1996-020-00 Comparative Survival Rate Study (CSS) of Hatchery PIT Tagged Chinook & Comparative Survival Study BPA Short Title: PIT Tagging Spring/Summer Chinook in Hatcheries**

Deliverable 1) Conduct PIT tag marking of ~269,400 hatchery and wild juvenile chinook salmon and steelhead at CSS study hatcheries and smolt traps, scan returning adults for PIT tags at CSS study hatcheries and weirs, and upload data files to PSMFC PTAGIS database. 2) Perform annual refinement and preparation of CSS study design that is responsive to any questions on analysis and review comments. 3) Analyze data and prepare Annual CSS Status Report in cooperation with the Fish Passage Center. 4) Comply with ESA Section 10 permit requirements.

Accomplishment 1) PIT tagged ~269,400 juvenile salmon and steelhead at hatcheries and traps, scanned returning adults for PIT tags at CSS study hatcheries and weirs, and uploaded data files to regional PSMFC PTAGIS database. 2) 2002 Study Design and Analysis Report: Bouwes, N., et al. 2002. Comparative Survival Study (CSS) 2002 study design and analysis report. Contract Report to Bonneville Power Administration, Contract No. 00006203, Project No. 199602000. 3) Annual Status Report: Bouwes, N. et al. 2002. Comparative survival rate study (CSS) of hatchery PIT tagged chinook, status report for migration years 1997-2000 (available FPC Web Site). 4) ESA Section 10 permit compliance.

BPA **Project:** **252 1993-029-00 Estimate Survival for the Passage of Juvenile Salmonids Through Dams and Reservoirs of the Lower Snake and Columbia Rivers Short BPA Title: Survival Estimates Through Dams and Reservoirs**

Deliverable 1.0 Provide estimates of survival through various reaches of the Snake and Columbia Rivers for juvenile yearling chinook salmon and steelhead released at Lower Granite Dam. 2.0 Provide survival estimates through the Snake River for PIT-tagged yearling chinook salmon and steelhead released at traps and at hatcheries. 3.0 Provide estimate of survival and travel time for Lyons Ferry Hatchery-reared subyearling fall chinook salmon migrating from Pittsburg Landing and Billy Creek in the free-flowing Snake River through the Snake River dams. 4.0 Provide estimates of survival for river-run subyearling fall chinook salmon from the tailrace of McNary Dam to the tailrace of John Day Dam during the summer migration. 5.0 Determine whether assumptions of the Single-Release (SR) , Paired-Release (PR), and Modified Single-Release (MSR) Models are met by data from PIT-tagged juvenile salmonids migrating under river conditions and dam operations occurring during the 2001 migration season. 6.0 Provide evaluation of adult return data for PIT-tagged juveniles to determine whether juvenile survival is an indicator of survival to adult, and if not, help partition where in the life cycle mortality is occurring. 7.0 Provide information transfer to the fisheries community by presentations at meetings and workshops, by personal contact, by memorandum, by annual and final reports to the Bonneville Power Administration, and through peer-reviewed scientific publications.

Accomplishment 1.0 Completed and reported in 2001 Annual Report (June 2002 available on the web at http://www.efw.bpa.gov/cgi-bin/FW/ppublications.cgi). 2.0 Completed - 2.0 Provide survival estimates through the Snake River for PIT-tagged yearling chinook salmon and steelhead released at traps and at hatcheries. 3.0 Completed - 3.0 Provide estimate of survival and travel time for Lyons Ferry Hatchery-reared subyearling fall chinook salmon migrating from Pittsburg Landing and Billy Creek in the free-flowing Snake River through the Snake River dams. 4.0 Completed - 4.0 Provide estimates of survival for river-run subyearling fall chinook salmon from the tailrace of McNary Dam to the tailrace of John Day Dam during the summer migration. 5.0 Completed - 5.0 Determine whether assumptions of the Single-Release (SR) , Paired-Release (PR), and Modified Single-Release (MSR) Models are met by data from PIT-tagged juvenile salmonids migrating under river conditions and dam operations occurring during the 2001 migration season. 6.0 Continuing analysis, see Sanford and Smith publication under 2002 accomplishments. 7.0 Information Transfer: 7.1 Annual Report to BPA 2000 Migration. Zabel, R. W., S.G. Smith, W. D. Muir, D. M. Marsh, J. G. Williams, and J. R. Skalski. 2001. Survival estimates for the passage of spring-migrating juvenile salmonids through Snake and Columbia River dams and reservoirs, 2000. Annual report to Bonneville Power Administration, Portland, Contract DE-AI79-93BP10891. Available on the web at http://www.efw.bpa.gov/cgi-bin/FW/publications.cgi. 7.2 Journal Publications: Muir, W. D., S. G. Smith, J. G. Williams, E. E. Hockersmith, and J. R. Skalski. 2001(a). Survival estimates for PIT-tagged migrant juvenile chinook salmon and steelhead in the lower Snake River, 1993-1998. North American Journal of Fisheries Management 21:269-282. Muir, W. D. 2001(b). Survival of juvenile salmonids passing through bypass systems, turbines, and spillways with and without flow defectors at Snake River dams. North American Journal of Fisheries Management 21:135-146. Williams, J. G., S. G. Smith, and W. D. Muir. 2001. Survival Estimates for downstream migrant yearling juvenile salmonids through the Snake and Columbia River hydropower system, 1966-1980 and 1993-1999. N. Amer. J. Fish. Manage. 21:310-317.

RPA 188 Studies of PIT-tagged wild stocks from the lower river streams

BPA **Project:** **254 1996-020-00 Comparative Survival Rate Study (CSS) of Hatchery PIT Tagged Chinook & Comparative Survival Study BPA Short Title: PIT Tagging Spring/Summer Chinook in Hatcheries**

Deliverable 1) Conduct PIT tag marking of ~269,400 hatchery and wild juvenile chinook salmon and steelhead at CSS study hatcheries and smolt traps, scan returning adults for PIT tags at CSS study hatcheries and weirs, and upload data files to PSMFC PTAGIS database. 2) Perform annual refinement and preparation of CSS study design that is responsive to any questions on analysis and review comments. 3) Analyze data and prepare Annual CSS Status Report in cooperation with the Fish Passage Center. 4) Comply with ESA Section 10 permit requirements.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Accomplishment 1) PIT tagged ~269,400 juvenile salmon and steelhead at hatcheries and traps, scanned returning adults for PIT tags at CSS study hatcheries and weirs, and uploaded data files to regional PSMFC PTAGIS database. 2) 2002 Study Design and Analysis Report: Bouwes, N., et al. 2002. Comparative Survival Study (CSS) 2002 study design and analysis report. Contract Report to Bonneville Power Administration, Contract No. 00006203, Project No. 199602000. 3) Annual Status Report: Bouwes, N. et al. 2002. Comparative survival rate study (CSS) of hatchery PIT tagged chinook, status report for migration years 1997-2000 (available FPC Web Site). 4) ESA Section 10 permit compliance.

BPA **Project: 251 1991-051-00 Monitoring and Evaluation Statistical Support**

Deliverable 1.0 Provide seasonal monitoring support. 1.1 Provide real-time smolt run-timing predictions for ESA demes NMFS ESUs and runs-at-large for the Snake and Columbia Rivers. 1.2 Provide annual review of run-timing predictions. 1.3 Provide post-season outmigration summary that provides retrospective analysis of the success of the current year's outmigration and a comparison with historical years. 2.0 Perform statistical analyses of historical tagging data to extract extra-value information on salmonid population dynamics and their interactions with the environment. 2.1 Perform analysis of smolt-to-adult ratios CWT data from 1970s and PIT-tag to present and make available on Internet. 2.2 Develop and provide interactive, internet-based sample size software to facilitate the design of tag-release studies to estimate ocean and upriver adult survival. 3.0 Statistical support to region. 3.1 Provide statistical consultaion for review of research proposals, technical reports, and statistical guidance on the design and analysis of tagging studies to BPA and the fisheries community. 3.2 Continue statistical evaluation of Biological Opinion performance standards to improve decision analysis for assessing RPA compliance.

Accomplishment Accomplishments to date for 2002 include: 1.0 Providing real-time run-timing predictions during the 2002 smolt outmigration season. 2.1 Ongoing-Compiling estimates and associated standard errors on smolt-to-adult ratios (SARs) using CWT recoveries for 90 Columbia Basin hatcheries from the 1970s to the present. Compiling inriver survival and travel time information using PIT-tag detections for 30 Columbia Basin hatcheries from the 1990s to the present. Results of the CWT and PIT-tag analyses will be available in DART for examination and analysis with ambient river data, power operations, and ocean conditions.

BPA **Project: 126 1998-016-00 Salmonid Productivity, Escapement, Trend, and Habitat Monitoring in the Oregon Portion of the Columbia Plateau Province**

Deliverable 1. Signed contract for 2002 project year (7/1/02 to 6/30/03)

Accomplishment Existing contract for ongoing activities was extended through FY2002 to 11/30/02. A new contract – adding a task for juvenile steelhead outmigrant trapping, tagging, and enumeration – became effective 12/1/02 (FY03).

BPA **Project: 247 1989-107-00 Statistical Support for Salmonid Survival Studies**

Deliverable 1.0 Maintainence of statistical software and Internet access. 1.1 Maintain SURPH.2 software. 1.2 Maintain USER.2 (User Specified Estimation Routine) software. 1.3 Respond to user requests. 1.4 Adapt software to changing computing environment. 2.0 Improvements to statistical software. 2.1 Expand USER.1 capabilities. 2.2 Expand data input capabilities. 2.3 Expand SURPH.2 capabilities to include paired release-recapture modeling. 2.4 Expand SURPH.2 capabilities to incorporate time-varying covariates. 3.0 Provide adult survival study guidance. 3.1 Adult PIT PIT-tag capabilities. 3.2 Adult radiotelemetry investigations. 4.0 Provide technology transfer through preparation of technical reports, publications in the professional literature, and statistical consulting to the fisheries community on tagging and fish tracking studies.

Accomplishment Accomplishments to date for 2002 include: 1) Developed of new statistical methods for estimating transport/inriver ratios to account for the bias associated with low recovery rates of adults. {Application RPA 185} 2) Release of a new version of USER.2 that provides profile likelihood confidence intervals for parameters and functions of parameters.

RPA 189 Investigate adult return rates for juveniles with different passage histories

BPA **Project:** **254 1996-020-00 Comparative Survival Rate Study (CSS) of Hatchery PIT Tagged Chinook & Comparative Survival Study BPA Short Title: PIT Tagging Spring/Summer Chinook in Hatcheries**

Deliverable

1) Conduct PIT tag marking of ~269,400 hatchery and wild juvenile chinook salmon and steelhead at CSS study hatcheries and smolt traps, scan returning adults for PIT tags at CSS study hatcheries and weirs, and upload data files to PSMFC PTAGIS database. 2) Perform annual refinement and preparation of CSS study design that is responsive to any questions on analysis and review comments. 3) Analyze data and prepare Annual CSS Status Report in cooperation with the Fish Passage Center. 4) Comply with ESA Section 10 permit requirements.

Accomplishment

1) PIT tagged ~269,400 juvenile salmon and steelhead at hatcheries and traps, scanned returning adults for PIT tags at CSS study hatcheries and weirs, and uploaded data files to regional PSMFC PTAGIS database. 2) 2002 Study Design and Analysis Report: Bouwes, N., et al. 2002. Comparative Survival Study (CSS) 2002 study design and analysis report. Contract Report to Bonneville Power Administration, Contract No. 00006203, Project No. 199602000. 3) Annual Status Report: Bouwes, N. et al. 2002. Comparative survival rate study (CSS) of hatchery PIT tagged chinook, status report for migration years 1997-2000 (available FPC Web Site). 4) ESA Section 10 permit compliance.

BPA **Project:** **252 1993-029-00 Estimate Survival for the Passage of Juvenile Salmonids Through Dams and Reservoirs of the Lower Snake and Columbia Rivers Short BPA Title: Survival Estimates Through Dams and Reservoirs**

Deliverable

1.0 Provide estimates of survival through various reaches of the Snake and Columbia Rivers for juvenile yearling chinook salmon and steelhead released at Lower Granite Dam. 2.0 Provide survival estimates through the Snake River for PIT-tagged yearling chinook salmon and steelhead released at traps and at hatcheries. 3.0 Provide estimate of survival and travel time for Lyons Ferry Hatchery-reared subyearling fall chinook salmon migrating from Pittsburg Landing and Billy Creek in the free-flowing Snake River through the Snake River dams. 4.0 Provide estimates of survival for river-run subyearling fall chinook salmon from the tailrace of McNary Dam to the tailrace of John Day Dam during the summer migration. 5.0 Determine whether assumptions of the Single-Release (SR) , Paired-Release (PR), and Modified Single-Release (MSR) Models are met by data from PIT-tagged juvenile salmonids migrating under river conditions and dam operations occurring during the 2001 migration season. 6.0 Provide evaluation of adult return data for PIT-tagged juveniles to determine whether juvenile survival is an indicator of survival to adult, and if not, help partition where in the life cycle mortality is occurring. 7.0 Provide information transfer to the fisheries community by presentations at meetings and workshops, by personal contact, by memorandum, by annual and final reports to the Bonneville Power Administration, and through peer-reviewed scientific publications.

Accomplishment

1.0 Completed and reported in 2001 Annual Report (June 2002 available on the web at http://www.efw.bpa.gov/cgi-bin/FW/ppublications.cgi). 2.0 Completed - 2.0 Provide survival estimates through the Snake River for PIT-tagged yearling chinook salmon and steelhead released at traps and at hatcheries. 3.0 Completed - 3.0 Provide estimate of survival and travel time for Lyons Ferry Hatchery-reared subyearling fall chinook salmon migrating from Pittsburg Landing and Billy Creek in the free-flowing Snake River through the Snake River dams. 4.0 Completed - 4.0 Provide estimates of survival for river-run subyearling fall chinook salmon from the tailrace of McNary Dam to the tailrace of John Day Dam during the summer migration. 5.0 Completed - 5.0 Determine whether assumptions of the Single-Release (SR) , Paired-Release (PR), and Modified Single-Release (MSR) Models are met by data from PIT-tagged juvenile salmonids migrating under river conditions and dam operations occurring during the 2001 migration season. 6.0 Continuing analysis, see Sanford and Smith publication under 2002 accomplishments. 7.0 Information Transfer: 7.1 Annual Report to BPA 2000 Migration. Zabel, R. W., S.G. Smith, W. D. Muir, D. M. Marsh, J. G. Williams, and J. R. Skalski. 2001. Survival estimates for the passage of spring-migrating juvenile salmonids through Snake and Columbia River dams and reservoirs, 2000. Annual report to Bonneville Power Administration, Portland, Contract DE-AI79-93BP10891. Available on the web at http://www.efw.bpa.gov/cgi-bin/FW/publications.cgi. 7.2 Journal Publications: Muir, W. D., S. G. Smith, J. G. Williams, E. E. Hockersmith, and J. R. Skalski. 2001(a). Survival estimates for PIT-tagged migrant juvenile chinook salmon and steelhead in the lower Snake River, 1993-1998. North American Journal of Fisheries Management 21:269-282. Muir, W. D. 2001(b). Survival of juvenile salmonids passing through bypass systems, turbines, and spillways with and without flow defectors at Snake River dams. North American Journal of Fisheries Management 21:135-146. Williams, J. G., S. G. Smith, and W. D. Muir. 2001. Survival Estimates for downstream migrant yearling juvenile salmonids through the Snake and Columbia River hydropower system, 1966-1980 and 1993-1999. N. Amer. J. Fish. Manage. 21:310-317.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

BPA **Project:** **131 2001-003-00 Installation of Adult PIT-tag Detection Systems**

Deliverable 1) Install adult PIT detection systems in all ladders at Ice Harbor, Lower Granite, and The Dalles. 2) Design adult PIT detection systems at John Day, Little Goose, and Lower Monumental.

Accomplishment In FY2002, we installed adult PIT detection systems in all ladders at Bonneville and McNary. We designed adult PIT detection systems for Ice Harbor, Lower Granite, and Priest Rapids.

CORPS **Project:** **2118 CENWW Evaluation of Transportation Strategies**

Accomplishment Began late season evaluation

CORPS **Project:** **2120 CENWW Juvenile salmon transportation evaluations**

Deliverable

Evaluation of Physiological Changes in Transported juvenile salmonids and effects on survival - (ICFWRU - Congleton)
Annual Report

Lower Snake Fall Chinook Transport Marking and Evaluation
Annual Report - (NMFS - Marsh)

Evaluation of migration and survival of steelhead and fall chinook following transportation - (OCFWRU - Schreck)
Annual Report

Evaluation of Mid-Columbia Juvenile Salmonid Transportation from McNary Dam (NMFS - Marsh) - Steelhead - Sp Chinook - Fall Chinook
Annual Report

Lower Granite Transport Evaluation, Wild spring chinook and steelhead - finish marking, adult returns through 2006 - (NMFS - Marsh)
Annual Report

Accomplishment

Completed Marking for Fall Chinook Transport Study (NMFS - Marsh)
Draft Report

Evaluated Physiological Changes in Transported juvenile salmonids and effects on survival - (ICFWRU - Congleton)
Draft Report

Completed Marking for Mid - C Spring Chinook
Draft Report

Completed Marking for LGR transport study - (NMFS - Marsh)
Draft Report

Evaluated migration and survival of juvenile steelhead and fall chinook
Draft Report

CORPS **Project:** **2063 CENWW Multiple Bypass Accumulative Impacts**

Deliverable Evaluate Physiological Impacts to Migrating Salmonids
Annual Report
Final Report

Accomplishment Evaluate Physiological Impacts to Migrating Salmonids
Draft Report

RPA 190 Monitor survival and growth of Snake River wild juvenile fall chinook

BPA Project: **252 1993-029-00 Estimate Survival for the Passage of Juvenile Salmonids Through Dams and Reservoirs of the Lower Snake and Columbia Rivers Short BPA Title: Survival Estimates Through Dams and Reservoirs**

Deliverable 1.0 Provide estimates of survival through various reaches of the Snake and Columbia Rivers for juvenile yearling chinook salmon and steelhead released at Lower Granite Dam. 2.0 Provide survival estimates through the Snake River for PIT-tagged yearling chinook salmon and steelhead released at traps and at hatcheries. 3.0 Provide estimate of survival and travel time for Lyons Ferry Hatchery-reared subyearling fall chinook salmon migrating from Pittsburg Landing and Billy Creek in the free-flowing Snake River through the Snake River dams. 4.0 Provide estimates of survival for river-run subyearling fall chinook salmon from the tailrace of McNary Dam to the tailrace of John Day Dam during the summer migration. 5.0 Determine whether assumptions of the Single-Release (SR) , Paired-Release (PR), and Modified Single-Release (MSR) Models are met by data from PIT-tagged juvenile salmonids migrating under river conditions and dam operations occurring during the 2001 migration season. 6.0 Provide evaluation of adult return data for PIT-tagged juveniles to determine whether juvenile survival is an indicator of survival to adult, and if not, help partition where in the life cycle mortality is occurring. 7.0 Provide information transfer to the fisheries community by presentations at meetings and workshops, by personal contact, by memorandum, by annual and final reports to the Bonneville Power Administration, and through peer-reviewed scientific publications.

Accomplishment 1.0 Completed and reported in 2001 Annual Report (June 2002 available on the web at http://www.efw.bpa.gov/cgi-bin/FW/ppublications.cgi). 2.0 Completed - 2.0 Provide survival estimates through the Snake River for PIT-tagged yearling chinook salmon and steelhead released at traps and at hatcheries. 3.0 Completed - 3.0 Provide estimate of survival and travel time for Lyons Ferry Hatchery-reared subyearling fall chinook salmon migrating from Pittsburg Landing and Billy Creek in the free-flowing Snake River through the Snake River dams. 4.0 Completed - 4.0 Provide estimates of survival for river-run subyearling fall chinook salmon from the tailrace of McNary Dam to the tailrace of John Day Dam during the summer migration. 5.0 Completed - 5.0 Determine whether assumptions of the Single-Release (SR) , Paired-Release (PR), and Modified Single-Release (MSR) Models are met by data from PIT-tagged juvenile salmonids migrating under river conditions and dam operations occurring during the 2001 migration season. 6.0 Continuing analysis, see Sanford and Smith publication under 2002 accomplishments. 7.0 Information Transfer: 7.1 Annual Report to BPA 2000 Migration. Zabel, R. W., S.G. Smith, W. D. Muir, D. M. Marsh, J. G. Williams, and J. R. Skalski. 2001. Survival estimates for the passage of spring-migrating juvenile salmonids through Snake and Columbia River dams and reservoirs, 2000. Annual report to Bonneville Power Administration, Portland, Contract DE-AI79-93BP10891. Available on the web at http://www.efw.bpa.gov/cgi-bin/FW/publications.cgi. 7.2 Journal Publications: Muir, W. D., S. G. Smith, J. G. Williams, E. E. Hockersmith, and J. R. Skalski. 2001(a). Survival estimates for PIT-tagged migrant juvenile chinook salmon and steelhead in the lower Snake River, 1993-1998. North American Journal of Fisheries Management 21:269-282. Muir, W. D. 2001(b). Survival of juvenile salmonids passing through bypass systems, turbines, and spillways with and without flow defectors at Snake River dams. North American Journal of Fisheries Management 21:135-146. Williams, J. G., S. G. Smith, and W. D. Muir. 2001. Survival Estimates for downstream migrant yearling juvenile salmonids through the Snake and Columbia River hydropower system, 1966-1980 and 1993-1999. N. Amer. J. Fish. Manage. 21:310-317.

BPA Project: **64 2002-032-00 Investigating passage of ESA-listed juvenile fall chinook salmon at Lower Granite Dam during winter when the fish bypass system is inoperable**

Deliverable 1) Refine non-lethal methods for identifying the genetic lineage (i.e., fall or spring run) of holdover wild juvenile chinook salmon smolts for application to existing tissue samples collected from fish at Lower Granite and Little Goose in 1998; 2) Refine non-lethal methods for identifying the age at saltwater entry for unmarked Snake River fall chinook salmon adults collected at Lower Granite from 1998 to 2001, and then assess the importance of the holdover strategy to adult returns to the Snake; 3) Determine if holdover wild fall chinook salmon smolts pass Lower Granite Dam during the winter when the fish bypass systems are shut down.

Accomplishment The 2002 annual report is not yet due.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

BPA **Project: 47 1991-029-00 The effects of summer flow augmentation on the migratory behavior and survival of juvenile Snake River fall chinook salmon**

Deliverable 1) Provide information to fishery managers to maximize the effectiveness of summer flow augmentation. 2) Understand how summer flow augmentation affects water temperature, water velocity, juvenile fall chinook salmon migratory behavior, and juvenile fall chinook survival salmon in Lower Granite Reservoir.

Accomplishment The 2000-2001 annual report was uploaded to the BPA website.

RPA 191 Adult salmonid counting programs at FCRPS dams

CORPS **Project: 2005 CENWW Adult Fish Counting at Mainstem Columbia and Snake River Projects**

Deliverable Implement annual fish counting program.

Accomplishment Implemented annual fish counting program as coordinated through FPOM.

CORPS **Project: 2078 AFEP; Kelt Research, Unaccounted Adult Loss and Straying and Marine Mammal Monitoring**

Deliverable Fund Kelt, Marine Mammal, and Adult General Migration

Accomplishment completed 2nd year of kelt study, first year of 2-year marine mammal study, and ongoing adult migration studies

CORPS **Project: 2111 CENWP Operation and Maintenance of Bonneville Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

CORPS **Project: 2029 CENWP Operation and Maintenance of John Day Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

CORPS **Project: 2071 CENWP Operation and Maintenance of The Dalles Lock and Dam Fish Passage Facilities**

Deliverable Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

RPA 192 **Install necessary adult PIT-tag detectors at appropriate FCRPS projects**

BPA **Project:** **248 1990-080-00 Columbia River Basin PIT Tag Information System**

Deliverable 1.0 Operate and maintain the centralized Columbia River Basin-wide database for PIT-tagged Fish (at Gladstone, OR). 2.0 Install, operate and maintain permanent interrogation systems and provide the interrogation data to PTAGIS in near-real time (at Kennewick, WA). 3.0 Provide coordination and support for research projects that depend upon selective segregation of fish by code (SxC) at Columbia Basin fish collection facilities. 4.0 Provide training, system information, coordination, consultation and support for all Columbia Basin PIT tag research projects through the development of user manuals, newsletters, workshops, videos, etc. 5.0 Manage the purchase and distribution of PIT tags and PIT tag detection equipment for all NWPPC FWP projects. 6.0 Provide additional support actions related to PIT tag data recovery, System-wide Planning and Coordination and Public Outreach. 7.0 Project Administration and Management.

Accomplishment 2.1 During the winter and spring of 2001/02, PTAGIS installed an additional 88 PIT tag interrogation coils and established five new interrogation sites to support adult PIT tag interrogation systems in the Columbia basin. 2.2 During January and February 2002, the PTAGIS project provided labor and consulting services to install PIT tag detection systems at Bonneville and McNary dam fish ladders. Continued to operate and maintain the PTAGIS database and data collection software; operate and maintain separation-by-code systems; install, operate, and maintain interrogation systems in field locations.

BPA **Project:** **131 2001-003-00 Installation of Adult PIT-tag Detection Systems**

Deliverable 1) Install adult PIT detection systems in all ladders at Ice Harbor, Lower Granite, and The Dalles. 2) Design adult PIT detection systems at John Day, Little Goose, and Lower Monumental.

Accomplishment In FY2002, we installed adult PIT detection systems in all ladders at Bonneville and McNary. We designed adult PIT detection systems for Ice Harbor, Lower Granite, and Priest Rapids.

BPA **Project:** **247 1989-107-00 Statistical Support for Salmonid Survival Studies**

Deliverable 1.0 Maintainence of statistical software and Internet access. 1.1 Maintain SURPH.2 software. 1.2 Maintain USER.2 (User Specified Estimation Routine) software. 1.3 Respond to user requests. 1.4 Adapt software to changing computing environment. 2.0 Improvements to statistical software. 2.1 Expand USER.1 capabilities. 2.2 Expand data input capabilities. 2.3 Expand SURPH.2 capabilities to include paired release-recapture modeling. 2.4 Expand SURPH.2 capabilities to incorporate time-varying covariates. 3.0 Provide adult survival study guidance. 3.1 Adult PIT PIT-tag capabilities. 3.2 Adult radiotelemetry investigations. 4.0 Provide technology transfer through preparation of technical reports, publications in the professional literature, and statistical consulting to the fisheries community on tagging and fish tracking studies.

Accomplishment Accomplishments to date for 2002 include: 1) Developed of new statistical methods for estimating transport/inriver ratios to account for the bias associated with low recovery rates of adults. {Application RPA 185} 2) Release of a new version of USER.2 that provides profile likelihood confidence intervals for parameters and functions of parameters.

CORPS **Project:** **2102 Adult PIT tag program (Bonn, The dalles, John Day)**

Deliverable complete installation at Bonneville ladders

Accomplishment completed installation at Bonneville, initiated evaluation of system

CORPS **Project:** **2001 1989-107-00 Statistical Support for Salmonid Survival Studies**

Deliverable 1.0 Maintainence of statistical software and Internet access. 1.1 Maintain SURPH.2 software. 1.2 Maintain USER.2 (User Specified Estimation Routine) software. 1.3 Respond to user requests. 1.4 Adapt software to changing computing environment. 2.0 Improvements to statistical software. 2.1 Expand USER.1 capabilities. 2.2 Expand data input capabilities. 2.3 Expand SURPH.2 capabilities to include paired release-recapture modeling. 2.4 Expand SURPH.2 capabilities to incorporate time-varying covariates. 3.0 Provide adult survival study guidance. 3.1 Adult PIT PIT-tag capabilities. 3.2 Adult radiotelemetry investigations. 4.0 Provide technology transfer through preparation of technical reports, publications in the professional literature, and statistical consulting to the fisheries community on tagging and fish tracking studies.

Accomplishment Accomplishments to date for 2002 include: 1) Developed of new statistical methods for estimating transport/inriver ratios to account for the bias associated with low recovery rates of adults. {Application RPA 185} 2) Release of a new version of USER.2 that provides profile likelihood confidence intervals for parameters and functions of parameters.

RPA 193 State-of-the-art, novel fish detection and tagging techniques

BPA **Project:** **252 1993-029-00 Estimate Survival for the Passage of Juvenile Salmonids Through Dams and Reservoirs of the Lower Snake and Columbia Rivers Short BPA Title: Survival Estimates Through Dams and Reservoirs**

Deliverable 1.0 Provide estimates of survival through various reaches of the Snake and Columbia Rivers for juvenile yearling chinook salmon and steelhead released at Lower Granite Dam. 2.0 Provide survival estimates through the Snake River for PIT-tagged yearling chinook salmon and steelhead released at traps and at hatcheries. 3.0 Provide estimate of survival and travel time for Lyons Ferry Hatchery-reared subyearling fall chinook salmon migrating from Pittsburg Landing and Billy Creek in the free-flowing Snake River through the Snake River dams. 4.0 Provide estimates of survival for river-run subyearling fall chinook salmon from the tailrace of McNary Dam to the tailrace of John Day Dam during the summer migration. 5.0 Determine whether assumptions of the Single-Release (SR) , Paired-Release (PR), and Modified Single-Release (MSR) Models are met by data from PIT-tagged juvenile salmonids migrating under river conditions and dam operations occurring during the 2001 migration season. 6.0 Provide evaluation of adult return data for PIT-tagged juveniles to determine whether juvenile survival is an indicator of survival to adult, and if not, help partition where in the life cycle mortality is occurring. 7.0 Provide information transfer to the fisheries community by presentations at meetings and workshops, by personal contact, by memorandum, by annual and final reports to the Bonneville Power Administration, and through peer-reviewed scientific publications.

Accomplishment 1.0 Completed and reported in 2001 Annual Report (June 2002 available on the web at http://www.efw.bpa.gov/cgi-bin/FW/ppublications.cgi). 2.0 Completed - 2.0 Provide survival estimates through the Snake River for PIT-tagged yearling chinook salmon and steelhead released at traps and at hatcheries. 3.0 Completed - 3.0 Provide estimate of survival and travel time for Lyons Ferry Hatchery-reared subyearling fall chinook salmon migrating from Pittsburg Landing and Billy Creek in the free-flowing Snake River through the Snake River dams. 4.0 Completed - 4.0 Provide estimates of survival for river-run subyearling fall chinook salmon from the tailrace of McNary Dam to the tailrace of John Day Dam during the summer migration. 5.0 Completed - 5.0 Determine whether assumptions of the Single-Release (SR) , Paired-Release (PR), and Modified Single-Release (MSR) Models are met by data from PIT-tagged juvenile salmonids migrating under river conditions and dam operations occurring during the 2001 migration season. 6.0 Continuing analysis, see Sanford and Smith publication under 2002 accomplishments. 7.0 Information Transfer: 7.1 Annual Report to BPA 2000 Migration. Zabel, R. W., S.G. Smith, W. D. Muir, D. M. Marsh, J. G. Williams, and J. R. Skalski. 2001. Survival estimates for the passage of spring-migrating juvenile salmonids through Snake and Columbia River dams and reservoirs, 2000. Annual report to Bonneville Power Administration, Portland, Contract DE-AI79-93BP10891. Available on the web at http://www.efw.bpa.gov/cgi-bin/FW/publications.cgi. 7.2 Journal Publications: Muir, W. D., S. G. Smith, J. G. Williams, E. E. Hockersmith, and J. R. Skalski. 2001(a). Survival estimates for PIT-tagged migrant juvenile chinook salmon and steelhead in the lower Snake River, 1993-1998. North American Journal of Fisheries Management 21:269-282. Muir, W. D. 2001(b). Survival of juvenile salmonids passing through bypass systems, turbines, and spillways with and without flow defectors at Snake River dams. North American Journal of Fisheries Management 21:135-146. Williams, J. G., S. G. Smith, and W. D. Muir. 2001. Survival Estimates for downstream migrant yearling juvenile salmonids through the Snake and Columbia River hydropower system, 1966-1980 and 1993-1999. N. Amer. J. Fish. Manage. 21:310-317.

BPA **Project:** **130 1983-319-00 New Marking and Monitoring Techniques**

Deliverable 1) Convert the flat-plate PIT detection system in the Bonneville 1st powerhouse to a permanent system for Corps and PTAGIS operation & maintenance. 2) Continue development of small-stream PIT detection with capability of remote location. 3) Initiate development of a high-flow and high-Q PIT detection system. 4) Initiate the development of multiplexing in the existing adult PIT transceivers.

Accomplishment Continued project implementation; identified as critical for BiOp implementation.

BPA **Project:** **197 2000-080-00 Pacific Ocean Salmon Tracking (POST)**

Deliverable Workshop to review project results with west coast scientists, identify appropriate stocks for inclusion in tagging study, and describe the surgical techniques in order to identify qualified members of the various columbia River fisheries agencies as representatives and involve their agencies in the research program and to identify candidate stocks for tagging. Final report due August 1, 2002.

Accomplishment Workshop and all required components successfully completed. Final report is expected by August 1, 2002.

RPA 194 Physical model of the lower Columbia River and plume

BPA **Project:** **195 1998-014-00 Ocean Survival of Salmonids**

Deliverable 1. Long-term observations - a. Conduct mesoscale surveys, b. Predator and forage fish surveys, c. Top trophic predators, d. Salmon growth, e. Endocrine assessment, f. Genetic stock assessment, g. Pathogen assessment, h. Prey resources & stomach content. 2. Fine scale process studies - a. Role of fronts, b. Diel studies, c. Pycnocline studies , d. Estuary fronts. 3. Spatial and temporal features of the Columbia River plume - a. Develop and calibrate plume circulation model, b. Field demonstration of plume model, c. Construct simulation database, d. Develop physical habitat metrics, e. Circulation forcasts, f. Physical habitats using historical and remote data. 4. Coupled physical-biological modeling - a. Adapt and validate LTM for plume, b. Develop and validate spatially explicit model, c. Reconstruct spatial-temporal histories. 5. Develop management scenarios - a. Define management scenarios, b. Construct simulation datbase, c. Analysis of management scenarios

Accomplishment

Fisheries: Juvenile salmon reside chiefly in the upper 5-10 m of the water column, and are most abundant near the mouth of the Columbia River in May and extend up to 50 miles offshore, depending on river flow. By June, most juvenile spring chinook salmon have moved north to continental shelf waters off Washington and southern British Columbia; most coho salmon appear to remain in coastal waters off Washington and Oregon (Figure 2). In June, fall chinook salmon juveniles are associated with the plume. Very few coho and spring chinook salmon were caught in June during the 1998 El Nino. Coho salmon catches have increased steadily each year, whereas spring chinook salmon catches were low in 1998 and 2001, but high in 1999-2000 (Appendix Figure 1). The spatial distribution of juvenile salmon in summer varies with water depth and species. Approximately 80% of the 0.0 (subyearling) age chinook salmon are caught from the nearshore zone out to a water depth of 69 m, 80% of 1.0 (yearling) age chinook salmon are caught to 77 m, and 80% of 1.0 age coho salmon to 113 m. These depth ranges match well with depths where zooplankton biomass was highest (zooplankton data shown in Appendix Figure 8b). The distance salmon were caught from shore was a function of river flow, indicating plume dynamics influence juvenile salmon marine distributions. The proportion of juvenile salmon originating from the Columbia River Basin was as high as 90% in May and 80% in September when averaged for all years. (Appendix Figure 2). Abundance of juvenile salmon (particularly coho salmon) in June is related to smolt-to-adult returns (SARs), confirming Pearcy's (1992) observation that the early ocean environment influences salmon survival. Large seasonal and biweekly fluctuations in marine survival of transported and in-river outmigrating juvenile salmon indicate that the nearshore ocean greatly influence survival. Juvenile coho salmon are associated with frontal regions of the plume. Juvenile chinook salmon also appear to prefer frontal and plume regions but not as strongly as juvenile coho salmon (Appendix Figure 3). Fronts, which concentrate food resources, benefit salmon, particularly in a turbid environment. Juvenile salmon feed selectively on large highly-pigmented prey such as fishes, amphipods and crab larvae. Salmon food habits vary greatly, but their diets often include several species of zooplankton (amphipods, euphausiids, pteropods), crab larvae and small (20-60 mm) fish. Salmon eat crab larvae in inshore waters, juvenile fish in the mid-shelf waters and euphausiids in deeper waters. (Appendix Figure 4). Length-to-weight relationships indicate that hatchery-produced juvenile salmon do not grow as well as wild salmon (Appendix figure 5). Juvenile salmon are larger in Oregon marine waters than those in the plume and off Washington. This may be attributed to higher mortality of slower growing juvenile salmon off Oregon than in the plume or off Washington. Years of poor salmon marine survival were not necessarily years when growth was poor. Average coho salmon lengths from this, and an earlier study, ranged from 164 - 188 mm in June, and 280 - 313 mm in September. Correlations between length in June and September and smolt-to-adult survival were poor, suggesting that growth rate may influence smolt survival only very early in the marine environment (plume or estuary). · Pathogen analyses have determined that at least two infective agents have relationships with growth and survival of juvenile salmon caught in the Columbia River plume habitat. There was a significant decline in the prevalence of Renibacterium salmoninarum from May to June of 2000 (Appendix Figure 6). Infected coho and chinook salmon weighed significantly less than uninfected fish. The prevalence and intensity of the trematode Nanophyetus salmincola also declined throughout the summers of 1999 and 2000 in coho salmon (Appendix Figure 6). The declines in coho salmon are likely a result of mortality and not recovery, nor emigration of selected stocks out of the area, as coho salmon stock composition in this area remains largely unchanged. We observed large increases in forage fish abundance over the period 1998-2001. These increases are correlated with recent increases in salmon survival, suggesting that forage fish act as "alternative" prey for predators.(Appendix Figure 7a). We also observed a large decrease in Pacific hake abundance with concurrent increases in salmon survival, suggesting that predator fish may affect juvenile salmon survival (Appendix Figure 7b). Plankton: Concentrations of nitrate and silicate are lower and higher, respectively, in the plume than in adjacent upwelled waters. The nitrate difference is likely related to high primary production in the plume and/or in the river and estuary. High silicate levels are directly related to fresh water inflow. Silicate concentrations trace the position of the plume and identify Columbia River plume origin water versus Grays Harbor/Willapa Bay, or Strait of Juan de Fuca waters. Phytoplankton standing stocks are almost always highest along the Washington coast and in the waters adjacent to the Columbia River, and lowest off northern-central Oregon. (Appendix Figure 8a). Zooplankton biomass and species composition is not clearly related to salinity, nor higher in the plume. Variations in zooplankton biomass and species composition are highly correlated with water depth, with highest biomass values in nearshore and mid-shelf waters, declining exponentially further offshore. (Appendix Figure 8b). Physical Oceanography: River flow has a strong impact on plume volume. During times of high river flow (June 1999; 8800 m3 s-1), 60-80 percent of the study region surface waters contain plume water (salinity <31 psu). With moderate river flow (June 2000; 6100 m3 s-1), only 30-40 percent is plume water, whereas with low river flow (Sept. 1999, Sept 2000, May 2001; <4000 m3 s-1), less than 15 percent is plume water (Figure 3). Fronts exhibit strong near-surface and cross-frontal convergences. In May 2001, plume fronts were studied in detail as they propagated away from the Columbia River mouth (Appendix Figure 9). Cross-frontal convergence rates were ~0.25 ms-1. There were strong velocity differences in the along-frontal direction (1 m s-1) with shears of 0.03 to 0.1 m s-1 per m. Tidal variability is 3-10 times larger in the plume area than for the Oregon-Washington shelf. This enhanced variability is caused by internal tides that are concentrated in the plume area (Jay and Hickey, 2001).

Their strong interfacial shear beneath the plume (usually 3 to 12 m depth), may disperse juvenile salmon. Also, internal tides represent a mechanism by which nutrients can be mixed up into plume waters from underlying waters.

RPA 195 Causes of mortality below Bonneville Dam

BPA **Project: 195 1998-014-00 Ocean Survival of Salmonids**

Deliverable

1. Long-term observations - a. Conduct mesoscale surveys, b. Predator and forage fish surveys, c. Top trophic predators, d. Salmon growth, e. Endocrine assessment, f. Genetic stock assessment, g. Pathogen assessment, h. Prey resources & stomach content. 2. Fine scale process studies - a. Role of fronts, b. Diel studies, c. Pycnocline studies , d. Estuary fronts. 3. Spatial and temporal features of the Columbia River plume - a. Develop and calibrate plume circulation model, b. Field demonstration of plume model, c. Construct simulation database, d. Develop physical habitat metrics, e. Circulation forcasts, f. Physical habitats using historical and remote data. 4. Coupled physical-biological modeling - a. Adapt and validate LTM for plume, b. Develop and validate spatially explicit model, c. Reconstruct spatial-temporal histories. 5. Develop management scenarios - a. Define management scenarios, b. Construct simulation datbase, c. Analysis of management scenarios

Accomplishment

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BPA **Project: 247 1989-107-00 Statistical Support for Salmonid Survival Studies**

Deliverable 1.0 Maintainence of statistical software and Internet access. 1.1 Maintain SURPH.2 software. 1.2 Maintain USER.2 (User Specified Estimation Routine) software. 1.3 Respond to user requests. 1.4 Adapt software to changing computing environment. 2.0 Improvements to statistical software. 2.1 Expand USER.1 capabilities. 2.2 Expand data input capabilities. 2.3 Expand SURPH.2 capabilities to include paired release-recapture modeling. 2.4 Expand SURPH.2 capabilities to incorporate time-varying covariates. 3.0 Provide adult survival study guidance. 3.1 Adult PIT PIT-tag capabilities. 3.2 Adult radiotelemetry investigations. 4.0 Provide technology transfer through preparation of technical reports, publications in the professional literature, and statistical consulting to the fisheries community on tagging and fish tracking studies.

Accomplishment Accomplishments to date for 2002 include: 1) Developed of new statistical methods for estimating transport/inriver ratios to account for the bias associated with low recovery rates of adults. {Application RPA 185} 2) Release of a new version of USER.2 that provides profile likelihood confidence intervals for parameters and functions of parameters.

CORPS **Project: 2012 CENWW Delayed Mortality of Juvenile Salmonids**

Deliverable Conduct Rearing Study for Fish for Differential Delayed Mortality "D" (NMFS - Gilbreath-Strom-Arkoosh)
Presentation at Annual Review
Annual Report

Conduct Evaluation of Differential Delayed Mortality "D" for juvenile salmonids after barge release (OCFWRU - Schreck)
Presentation at Annual Review
Annual Report

Accomplishment Conducted Evaluation of Differential Delayed Mortality "D" for juvenile salmonids after barge release (OCFWRU - Schreck)
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Conduct Rearing Study (NMFS - Gilbreath-Strom-Arkoosh)
Annual Review Presentation

CORPS **Project: 2090 CENWP Estuary study (CRFM)**

Deliverable

Accomplishment The following studies were funded in the estuary undr CRFM in 2002:
EST-P-02-01, EST-P-02-02, EST-P-02-03.

CORPS **Project: 2120 CENWW Juvenile salmon transportation evaluations**

Deliverable Evaluation of Mid-Columbia Juvenile Salmonid Transportation from McNary Dam (NMFS - Marsh) - Steelhead - Sp Chinook - Fall Chinook
Annual Report

Lower Granite Transport Evaluation, Wild spring chinook and steelhead - finish marking, adult returns through 2006 - (NMFS - Marsh)
Annual Report

Evaluation of Physiological Changes in Transported juvenile salmonids and effects on survival - (ICFWRU - Congleton)
Annual Report

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable

Evaluation of migration and survival of steelhead and fall chinook following transportation - (OCFWRU - Schreck)
Annual Report

Lower Snake Fall Chinook Transport Marking and Evaluation
Annual Report - (NMFS - Marsh)

Accomplishment

Evaluated Physiological Changes in Transported juvenile salmonids and effects on survival - (ICFWRU - Congleton)
Draft Report

Completed Marking for Fall Chinook Transport Study (NMFS - Marsh)
Draft Report

Evaluated migration and survival of juvenile steelhead and fall chinook
Draft Report

Completed Marking for LGR transport study - (NMFS - Marsh)
Draft Report

Completed Marking for Mid - C Spring Chinook
Draft Report

RPA 196 Juvenile and adult salmon use of the Columbia River estuary

BPA **Project: 195 1998-014-00 Ocean Survival of Salmonids**

Deliverable

1. Long-term observations - a. Conduct mesoscale surveys, b. Predator and forage fish surveys, c. Top trophic predators, d. Salmon growth, e. Endocrine assessment, f. Genetic stock assessment, g. Pathogen assessment, h. Prey resources & stomach content. 2. Fine scale process studies - a. Role of fronts, b. Diel studies, c. Pycnocline studies , d. Estuary fronts. 3. Spatial and temporal features of the Columbia River plume - a. Develop and calibrate plume circulation model, b. Field demonstration of plume model, c. Construct simulation database, d. Develop physical habitat metrics, e. Circulation forcasts, f. Physical habitats using historical and remote data. 4. Coupled physical-biological modeling - a. Adapt and validate LTM for plume, b. Develop and validate spatially explicit model, c. Reconstruct spatial-temporal histories. 5. Develop management scenarios - a. Define management scenarios, b. Construct simulation datbase, c. Analysis of management scenarios

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Accomplishment

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CORPS **Project:** **2090 CENWP Estuary study (CRFM)**

Deliverable

Accomplishment The following studies were funded in the estuary undr CRFM in 2002:
EST-P-02-01, EST-P-02-02, EST-P-02-03.

RPA 197 Juvenile and adult salmon use of the Columbia River plume

BPA **Project:** **195 1998-014-00 Ocean Survival of Salmonids**

Deliverable 1. Long-term observations - a. Conduct mesoscale surveys, b. Predator and forage fish surveys, c. Top trophic predators, d. Salmon growth, e. Endocrine assessment, f. Genetic stock assessment, g. Pathogen assessment, h. Prey resources & stomach content. 2. Fine scale process studies - a. Role of fronts, b. Diel studies, c. Pycnocline studies , d. Estuary fronts. 3. Spatial and temporal features of the Columbia River plume - a. Develop and calibrate plume circulation model, b. Field demonstration of plume model, c. Construct simulation database, d. Develop physical habitat metrics, e. Circulation forcasts, f. Physical habitats using historical and remote data. 4. Coupled physical-biological modeling - a. Adapt and validate LTM for plume, b. Develop and validate spatially explicit model, c. Reconstruct spatial-temporal histories. 5. Develop management scenarios - a. Define management scenarios, b. Construct simulation datbase, c. Analysis of management scenarios

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Accomplishment

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CORPS **Project: 2090 CENWP Estuary study (CRFM)**

Deliverable

Accomplishment The following studies were funded in the estuary undr CRFM in 2002:
EST-P-02-01, EST-P-02-02, EST-P-02-03.

RPA 198 Common data management system

BPA **Project: 175 1982-013-01 Coded-Wire Tag Recovery Program**

Deliverable 1. Recover CWTs from adults returning to the Columbia River. 2. Estimate total number of salmon landed in Columbia River commercial and sport fisheries and returning to escapement areas. 3. Summarize and analyze data collected under Objectives 1 and 2. 4. CWT Recovery in Oregon Ocean Chinook and coho Fisheries . 5. Determine total Oregon ocean commercial troll and sport effort and landings by time/area from expansions of sampled data in both fisheries. 6. Summarize annual effort, landings, and CWT data to determine stocks represented in Oregon ocean salmonid fisheries. 7. Process fish heads containing CWTs. 8. CWT Recovery Data Delivery. 9. Provide regional CWT data management. 10. Provide regional coordination of marking programs.

Accomplishment Prepared 2001 Annual Report. Continued sampling and estimations as reported in 2002 Annual Report.

BPA **Project: 248 1990-080-00 Columbia River Basin PIT Tag Information System**

Deliverable 1.0 Operate and maintain the centralized Columbia River Basin-wide database for PIT-tagged Fish (at Gladstone, OR). 2.0 Install, operate and maintain permanent interrogation systems and provide the interrogation data to PTAGIS in near-real time (at Kennewick, WA). 3.0 Provide coordination and support for research projects that depend upon selective segregation of fish by code (SxC) at Columbia Basin fish collection facilities. 4.0 Provide training, system information, coordination, consultation and support for all Columbia Basin PIT tag research projects through the development of user manuals, newsletters, workshops, videos, etc. 5.0 Manage the purchase and distribution of PIT tags and PIT tag detection equipment for all NWPPC FWP projects. 6.0 Provide additional support actions related to PIT tag data recovery, System-wide Planning and Coordination and Public Outreach. 7.0 Project Administration and Management.

Accomplishment 2.1 During the winter and spring of 2001/02, PTAGIS installed an additional 88 PIT tag interrogation coils and established five new interrogation sites to support adult PIT tag interrogation systems in the Columbia basin. 2.2 During January and February 2002, the PTAGIS project provided labor and consulting services to install PIT tag detection systems at Bonneville and McNary dam fish ladders. Continued to operate and maintain the PTAGIS database and data collection software; operate and maintain separation-by-code systems; install, operate, and maintain interrogation systems in field locations.

BPA **Project: 111 2001-017-00 Idaho Conservation Data Center**

Deliverable 2002 Idaho Natural Heritage Program Occurrence File with updated data dictionary, and any other available data on sensitive species

Accomplishment 2002 Idaho Natural Heritage Program Occurrence File with updated data dictionary, and any other available data on sensitive species

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

BPA **Project: 110_1998-011-00_Montana Natural Heritage Program**

Deliverable 2002 Montana Natural Heritage Program Element Occurrence File of sensitive species data and other available species data with an updated data dictionary and other relevant documentation.

Accomplishment 2002 Montana Natural Heritage Program Element Occurrence File of sensitive species data and other available species data with an updated data dictionary and other relevant documentation.

BPA **Project: 109_1988-108-04_Pacific Northwest Hydropower Data Base and Analysis System (NWHS)**

Deliverable Maintain the currency of NWHS project information through processing of all incoming FERC site or project update or new application information; Pursue quality improvement of the NWHS data base through the replacement of erroneous or missing data with valid information; Assist with requirements definition, design, development, and maintenance of system to track Performance Indicators as identified in the Direct Funding agreements for the FCRPS; Prepare and provide written monthly and annual reports.

Accomplishment Data currency and quality maintained; all user queries answered in timely fashion; Performance Indicator tracking continued; status reporting completed.

BPA **Project: 108_1996-019-00_Second-Tier Database Support**

Deliverable 1. Provide optional information integration services to FWP and ESA participants. 2. Provide Internet-based electronic data integration services to generate data sets needed by FWP and ESA modeling, monitoring, and evaluation efforts. 3. Provide monitoring and evaluation products and services (via the Internet) on single and associated FWP-funded and ESA-mandated activities. Support Federal abilities to independently make and evaluate decisions committing federal resources. 4. Provide the public Internet interface to DART (Data Access in Real-Time). DART permits interactive selection of data items, time frame, presentation format, etc. from an integrated subset of historical and current fishery, hydraulic, project operation, and environmental information vital to year-round planning and in-season decision-making for operation of the Federal Columbia River Power System. 5. Increase coverage of stream temperature data by downloading the StreamNet temperature database onto DART. Increase historical data on adult passage at the dams by loading the adult counts back to 1938. 6. Implement a metadata structure to accompany the data. 7. Provide, maintain, and improve fundamental hardware, software, and procedural systems necessary for the scope of work, including DART.

Accomplishment 1. Integrated 3 climate information sources (USACE, NWS, Sno-Tel) with the NCDC historical records to provide extensive timeseries of climate records. 2. Assimilated Bonneville adult passage data from 1938-1948. 3. Acquired complete set of historical transport information. 4. Developed and launched hydrosystem performance measures of smolt exposures to temperature, spill, outflow and dissolved gas

BPA **Project: 136_1988-108-04_StreamNet (CIS/NED)**

Deliverable StreamNet is a cooperative project with overall administration by PSMFC. Cooperating projects are: CRITFC, IDFG, MFWP, ODFW, USFWS, and WDFW. Current data types provided are: anadromous fish and bull trout distributions, adult abundance - redd counts, adult abundance - peak spawner counts, adult abundance - spawner population estimates, fish counts at dams and weirs, hatchery releases, hatchery returns, hatchery facilities, dam facilities, the Pacific Northwest 1:100,000 routed hydrography, various pre built maps, and static data including the Council's Protected Areas, the smolt density model data, and spawner/recruit estimates. In addition, several data types are under development and partial information and database structure is available for: habitat restoration and improvement projects, barriers to fish migration, age data, water temperature, macroinvertebrates, genetics, carcass placement for fertilization, and hatchery fraction on spawning grounds.

Accomplishment Since StreamNet is a large and complex project, it had many accomplishments related to the deliverables. We refer the reader to the StreamNet FY 2002 Annual Progress Report on the project web site at http://www.streamnet.org/about-sn/project_management.html#work_plans . The StreamNet Program Manager was a member of the CBCIS / SAIC Project Team under RPA 198. Other project members participated in the Coordinating Committee and contributed to CBCIS data gathering meetings around the region.

CORPS **Project:** **6011 198 Develop Data Management System**

Deliverable Attend water quality database meetings and provide technical support.

Accomplishment Several meetings were attended in 2002 and 2003.

CORPS **Project:** **6031 ESA Coordination--Chief Joseph Dam**

Deliverable Conduct coordination of RPA and RPM actions.

Accomplishment Coordination completed annually.

CORPS **Project:** **2079 Regional Database**

Deliverable Review existing regional WQ databases and selection of a database.

Accomplishment Databases reviewed: CWMS, DASLER, NRIS, NWIS, LAZAR,EIM, and SEDQUAL

RPA 199 Implement the specific research/monitoring actions outlined in Appendix H

BPA **Project:** **254 1996-020-00 Comparative Survival Rate Study (CSS) of Hatchery PIT Tagged Chinook & Comparative Survival Study BPA Short Title: PIT Tagging Spring/Summer Chinook in Hatcheries**

Deliverable 1) Conduct PIT tag marking of ~269,400 hatchery and wild juvenile chinook salmon and steelhead at CSS study hatcheries and smolt traps, scan returning adults for PIT tags at CSS study hatcheries and weirs, and upload data files to PSMFC PTAGIS database. 2) Perform annual refinement and preparation of CSS study design that is responsive to any questions on analysis and review comments. 3) Analyze data and prepare Annual CSS Status Report in cooperation with the Fish Passage Center. 4) Comply with ESA Section 10 permit requirements.

Accomplishment 1) PIT tagged ~269,400 juvenile salmon and steelhead at hatcheries and traps, scanned returning adults for PIT tags at CSS study hatcheries and weirs, and uploaded data files to regional PSMFC PTAGIS database. 2) 2002 Study Design and Analysis Report: Bouwes, N., et al. 2002. Comparative Survival Study (CSS) 2002 study design and analysis report. Contract Report to Bonneville Power Administration, Contract No. 00006203, Project No. 199602000. 3) Annual Status Report: Bouwes, N. et al. 2002. Comparative survival rate study (CSS) of hatchery PIT tagged chinook, status report for migration years 1997-2000 (available FPC Web Site). 4) ESA Section 10 permit compliance.

BPA **Project:** **252 1993-029-00 Estimate Survival for the Passage of Juvenile Salmonids Through Dams and Reservoirs of the Lower Snake and Columbia Rivers Short BPA Title: Survival Estimates Through Dams and Reservoirs**

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable

1.0 Provide estimates of survival through various reaches of the Snake and Columbia Rivers for juvenile yearling chinook salmon and steelhead released at Lower Granite Dam. 2.0 Provide survival estimates through the Snake River for PIT-tagged yearling chinook salmon and steelhead released at traps and at hatcheries. 3.0 Provide estimate of survival and travel time for Lyons Ferry Hatchery-reared subyearling fall chinook salmon migrating from Pittsburg Landing and Billy Creek in the free-flowing Snake River through the Snake River dams. 4.0 Provide estimates of survival for river-run subyearling fall chinook salmon from the tailrace of McNary Dam to the tailrace of John Day Dam during the summer migration. 5.0 Determine whether assumptions of the Single-Release (SR) , Paired-Release (PR), and Modified Single-Release (MSR) Models are met by data from PIT-tagged juvenile salmonids migrating under river conditions and dam operations occurring during the 2001 migration season. 6.0 Provide evaluation of adult return data for PIT-tagged juveniles to determine whether juvenile survival is an indicator of survival to adult, and if not, help partition where in the life cycle mortality is occurring. 7.0 Provide information transfer to the fisheries community by presentations at meetings and workshops, by personal contact, by memorandum, by annual and final reports to the Bonneville Power Administration, and through peer-reviewed scientific publications.

Accomplishment

1.0 Completed and reported in 2001 Annual Report (June 2002 available on the web at http://www.efw.bpa.gov/cgi-bin/FW/ppublications.cgi). 2.0 Completed - 2.0 Provide survival estimates through the Snake River for PIT-tagged yearling chinook salmon and steelhead released at traps and at hatcheries. 3.0 Completed - 3.0 Provide estimate of survival and travel time for Lyons Ferry Hatchery-reared subyearling fall chinook salmon migrating from Pittsburg Landing and Billy Creek in the free-flowing Snake River through the Snake River dams. 4.0 Completed - 4.0 Provide estimates of survival for river-run subyearling fall chinook salmon from the tailrace of McNary Dam to the tailrace of John Day Dam during the summer migration. 5.0 Completed - 5.0 Determine whether assumptions of the Single-Release (SR) , Paired-Release (PR), and Modified Single-Release (MSR) Models are met by data from PIT-tagged juvenile salmonids migrating under river conditions and dam operations occurring during the 2001 migration season. 6.0 Continuing analysis, see Sanford and Smith publication under 2002 accomplishments. 7.0 Information Transfer: 7.1 Annual Report to BPA 2000 Migration. Zabel, R. W., S.G. Smith, W. D. Muir, D. M. Marsh, J. G. Williams, and J. R. Skalski. 2001. Survival estimates for the passage of spring-migrating juvenile salmonids through Snake and Columbia River dams and reservoirs, 2000. Annual report to Bonneville Power Administration, Portland, Contract DE-AI79-93BP10891. Available on the web at http://www.efw.bpa.gov/cgi-bin/FW/publications.cgi. 7.2 Journal Publications: Muir, W. D., S. G. Smith, J. G. Williams, E. E. Hockersmith, and J. R. Skalski. 2001(a). Survival estimates for PIT-tagged migrant juvenile chinook salmon and steelhead in the lower Snake River, 1993-1998. North American Journal of Fisheries Management 21:269-282. Muir, W. D. 2001(b). Survival of juvenile salmonids passing through bypass systems, turbines, and spillways with and without flow defectors at Snake River dams. North American Journal of Fisheries Management 21:135-146. Williams, J. G., S. G. Smith, and W. D. Muir. 2001. Survival Estimates for downstream migrant yearling juvenile salmonids through the Snake and Columbia River hydropower system, 1966-1980 and 1993-1999. N. Amer. J. Fish. Manage. 21:310-317.

BPA Project: 251 1991-051-00 Monitoring and Evaluation Statistical Support

Deliverable

1.0 Provide seasonal monitoring support. 1.1 Provide real-time smolt run-timing predictions for ESA demes NMFS ESUs and runs-at-large for the Snake and Columbia Rivers. 1.2 Provide annual review of run-timing predictions. 1.3 Provide post-season outmigration summary that provides retrospective analysis of the success of the current year's outmigration and a comparison with historical years. 2.0 Perform statistical analyses of historical tagging data to extract extra-value information on salmonid population dynamics and their interactions with the environment. 2.1 Perform analysis of smolt-to-adult ratios CWT data from 1970s and PIT-tag to present and make available on Internet. 2.2 Develop and provide interactive, internet-based sample size software to facilitate the design of tag-release studies to estimate ocean and upriver adult survival. 3.0 Statistical support to region. 3.1 Provide statistical consultaion for review of research proposals, technical reports, and statistical guidance on the design and analysis of tagging studies to BPA and the fisheries community. 3.2 Continue statistical evaluation of Biological Opinion performance standards to improve decision analysis for assessing RPA compliance.

Accomplishment

Accomplishments to date for 2002 include: 1.0 Providing real-time run-timing predictions during the 2002 smolt outmigration season. 2.1 Ongoing-Compiling estimates and associated standard errors on smolt-to-adult ratios (SARs) using CWT recoveries for 90 Columbia Basin hatcheries from the 1970s to the present. Compiling inriver survival and travel time information using PIT-tag detections for 30 Columbia Basin hatcheries from the 1990s to the present. Results of the CWT and PIT-tag analyses will be available in DART for examination and analysis with ambient river data, power operations, and ocean conditions.

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

BPA **Project:** **250 1991-028-00 Monitoring Smolt Migrations of Wild Snake River Spring/Summer Salmon**

Deliverable 1.0 Mark with PIT tags wild/natural spring/summer chinook salmon parr in selected streams above Lower Granite Dam in Idaho and during the summers/fall of 2002. 2.0 Monitor previously PIT-tagged parr/smolts as they leave natal rearing areas of selected streams in Idaho. 3.0 Intercept and automatically decode information from previously PIT-tagged parr/smolts at Lower Granite Dam during the spring/summer smolt outmigration. 4.0 Collect annual environmental data from environmental monitors in selected streams for assessment of relationships between environmental factors where wild parr reside and subsequent smolt outmigration timing at downstream traps and dams. 5.0 Provide Annual Report that summarizes results and assesses the annual migrational characteristics, estimates parr-to-smolt survival rates to Lower Granite Dam, and characterizes the survival and movement of parr and smolt as they leave natal rearing areas of selected Idaho streams.

Accomplishment The 2001 annual report was uploaded to the BPA website.

BPA **Project:** **126 1998-016-00 Salmonid Productivity, Escapement, Trend, and Habitat Monitoring in the Oregon Portion of the Columbia Plateau Province**

Deliverable 1. Signed contract for 2002 project year (7/1/02 to 6/30/03)

Accomplishment Existing contract for ongoing activities was extended through FY2002 to 11/30/02. A new contract – adding a task for juvenile steelhead outmigrant trapping, tagging, and enumeration – became effective 12/1/02 (FY03).

BPA **Project:** **245 1987-127-00 Smolt Monitoring by Federal and Non-Federal Agencies**

Deliverable 1) Conduct annual Smolt Monitoring Program (SMP) at seven mainstem Snake and Columbia River dams, Lewiston Snake River trap, Lower Grande Ronde trap, and White Bird trap on the Salmon River. (Note: Imnaha River trap is another SMP site operated by the Nez Perce Tribe (NPT) under Project 1997-015-01). 2) Perform PIT tagging of ~25,500 juvenile fish at five hatcheries and upload data files to PSMFC databsase (USFWS tagging support component). 3) Transmit daily juvenile fish passage, sampling, marking, and other biological and hydrological data to online databases at Fish Passage Center (FPC) and Pacific States Marine Fisheries Commission (PSMFC) for distribution region wide. 4) Comply with ESA Section 10 sampling and reporting requirements at all monitiring sites. 5) Participating agencies and organizations prepare and submit annual reports to PSMFC summarizing SMP activities and data collected at each monitoring site for use in compiling FPC annaul report.

Accomplishment 1) Recorded observations of bull trout caught incidentally at Snake River traps and at smolt collection facilities at mainstem dams on the lower Snake and Columbia rivers.

BPA **Project:** **53 1998-010-03 Spawning Distribution of Fall Chinook Salmon Released as Yearlings above Lower Granite Dam**

Deliverable 1. Provide researchers and managers with accurate counts of fall chinook salmon redds upriver of Lower Granite Dam 2. Determine whether or not the current use of three acclimation-and-release facilities distributes spawners throughout the habitat normally used by Snake River fall chinook salmon.

Accomplishment Received draft journal manuscript entitled “Movement and Fidelity of Hatchery Fall Chinook Salmon Adults Acclimated as Yearling Juveniles at Three Locations in the Snake River Basin.”

BPA **Project:** **255 1997-015-01 Title Present Scope: Imnaha River Smolt Monitoring Program. Title for proposed expanded scope: Imnaha Smolt Survival and Smolt to Adult Return Rate Quantification**

FY 2002 Deliverables and Accomplishments by RPA (NMFS)

Deliverable 1) Determine juvenile spring emigration timing of chinook salmon and steelhead smolts from the Imnaha River by operating permanent emigrant Imnaha River trap at rkm 7, March 15 to June 5, in cooperation with LSRCP. 2) Determine the emigration timing of previously PIT tagged natural and hatchery chinook salmon and steelhead smolts through interrogations at the lower Imnaha River trap. 3) Provide smolt-monitoring information to the FPC, LSRCP, NEOH M&E and PTAGIS. 4) In cooperation with the LSRCP program, PIT tag over 27,000 smolts to determine the arrival timing, travel time, and survival of natural and hatchery chinook salmon and steelhead released in the Imnaha River subbasin to Lower Granite, Little Goose, Lower Monumental, and McNary Dams.

Accomplishment 1) Determined the spring emigration timing of chinook salmon and steelhead smolts collected at the lower Imnaha River trap from March 15 to June 5. 2) Determined the emigration timing and travel time of previously PIT tagged natural and hatchery chinook salmon and hatchery steelhead smolts through interrogation at the lower Imnaha River trap from March 15 to June 5. 3) Determined the emigration timing, travel time and recovery rate of natural and hatchery steelhead PIT tagged from the Imnaha River through the Snake River and other Columbia River dams. 4) Provided smolt monitoring information to the Fish Passage Cemter (FPC), Lower Snake River Compensation Plan Program (LSRCP), Northeast Oregon Hatchery Monitoring and Evaluation Program (NEOH M&E), and the PIT Tag Information System database (PTAGIS) at the Pacific Marine Fisheries Commission (PSMFC). 6) Assisted with PIT tagging activities in the Imnaha subbasin for the Nez Perce Tribe.

BPA Project: 42 2000-039-00 Walla Walla Natural Production M&E

Deliverable 1) Monitor adult steelhead and bull trout spawning; 2) Estimate run timing and survival of juvenile steelhead using PIT tags; 3) Estimate juvenile salmonid abundance and rearing densities; 4) Monitor stream temperatures; 5) Determine age growth and life history characteristics of bull trout, salmon and steelhead in the Umatilla River Basin; 6) Monitor adult steelhead and bull trout movements throughout the Walla Walla basin with radio telementry techniques; 7) Annual report.

Accomplishment 1) Monitor adult steelhead and bull trout spawning; 2) Estimate run timing and survival of juvenile steelhead using PIT tags; 3) Estimate juvenile salmonid abundance and rearing densities; 4) Monitor stream temperatures; 5) Determine age growth and life history characteristics of bull trout, salmon and steelhead in the Umatilla River Basin; 6) Monitor adult steelhead and bull trout movements throughout the Walla Walla basin with radio telementry techniques.

FY 2002 Deliverables and Accomplishments by RPA (USFWS)

RPA 08.1.a Regulate Libby flows for sturgeon

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination was done at TMT meetings.

Coordination completed.

CORPS **Project: 2076 Libby Operations Sturgeon**

Deliverable 1. Store water and supply, at a minimum, flows in May through July based upon a water availability or "tiered" approach, per the final Sturgeon Recovery Plan. 2. Regulate flows from Libby, consistent with existing laws and orders, to maximize the probability of significant sturgeon recruitment. 3. During sturgeon recruitment flow periods, allow local inflow to supplement Libby Dam releases to the maximum extent feasible, while assuring public safety by monitoring water levels throughout relevant areas of the basin. 4. Keep Bonners Ferry Stage below 1764 during sturgeon pulse. 5. Limit daily load-following in Libby outflow to not damage downstream levees. Provide public outreach materials. 6. Seek opportunities to reduce the second peak flow created by July/August salmon flow through Kootenay Lake, perhaps via a Libby-Arrow water exchange. 7. Fulfill USFWS annual operational guidelines prior to and during the sturgeon spawning/incubation period. Specific release recommendations will be developed in consultation with action agencies and submitted annually via the TMT or similar process. 8. Follow ramp rates specified in the USFWS BiOp

Accomplishment Libby (April – August) forecast of 6.3 MaF put Libby operations in the 3rd Tier of operation
A sturgeon pulse operation was requested to begin June 26 after the Libby spill test. Requested outflow of water was exceeded because of the high inflow that occurred during this time period.
Libby ramped up to 8 kcfs for bull trout flows May 15th outflows from Libby were larger than 8 kcfs until September 2.
Ramp rates were followed. Any exceptions were due to unscheduled project operations or were coordinated.

RPA 08.1.b Implement VarQ at Libby by Oct. 2001

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination was done at TMT meetings.

Coordination completed.

CORPS **Project: 6004 8.3.c Kootenai River Valley Seepage Study for the Upper Columbia River Alternative Flood Control and Fisheries Operations EIS Preparation.**

Deliverable 1) USGS report covering all data USGS collected, water level data, aquifer test data, unsaturated zone studies, documentation from all of the USGS tasks relating to seepage related to high waters through the Kootenai River.

CORPS **Project: 6012 22; 137; 8.1.b; 8.2.a.1; 8.2.a.3; 8.2.a.4 Spill Test at Libby Dam on Total Dissolved Gas Impacts**

Accomplishment The spill test was accomplished in spring 2002 and confirmed that spilling over 800 cfs will violate the Sate of Montana's TDG limit of 110% immediately downstream of Libby Dam. Strict adherence to Montana water quality standards means that it is not feasible to routinely utilize the spillway to increase Libby flow capacity in incremental steps of 5000 cfs. The Corps is seeking final confirmation from the State that a variance to this water quality standard will not be granted.

RPA 08.1.c Supply Libby flows for sturgeon in 2001

CORPS **Project:** **6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination completed.

Coordination was done at TMT meetings.

CORPS **Project:** **6004 8.3.c Kootenai River Valley Seepage Study for the Upper Columbia River Alternative Flood Control and Fisheries Operations EIS Preparation.**

Deliverable 1) USGS report covering all data USGS collected, water level data, aquifer test data, unsaturated zone studies, documentation from all of the USGS tasks relating to seepage related to high waters through the Kootenai River.

CORPS **Project:** **2076 Libby Operations Sturgeon**

Deliverable 1. Store water and supply, at a minimum, flows in May through July based upon a water availability or “tiered” approach, per the final Sturgeon Recovery Plan. 2. Regulate flows from Libby, consistent with existing laws and orders, to maximize the probability of significant sturgeon recruitment. 3. During sturgeon recruitment flow periods, allow local inflow to supplement Libby Dam releases to the maximum extent feasible, while assuring public safety by monitoring water levels throughout relevant areas of the basin. 4. Keep Bonners Ferry Stage below 1764 during sturgeon pulse. 5. Limit daily load-following in Libby outflow to not damage downstream levees. Provide public outreach materials. 6. Seek opportunities to reduce the second peak flow created by July/August salmon flow through Kootenay Lake, perhaps via a Libby-Arrow water exchange. 7. Fulfill USFWS annual operational guidelines prior to and during the sturgeon spawning/incubation period. Specific release recommendations will be developed in consultation with action agencies and submitted annually via the TMT or similar process. 8. Follow ramp rates specified in the USFWS BiOp

Accomplishment Libby (April – August) forecast of 6.3 MaF put Libby operations in the 3rd Tier of operation
A sturgeon pulse operation was requested to begin June 26 after the Libby spill test. Requested outflow of water was exceeded because of the high inflow that occurred during this time period.
Libby ramped up to 8 kcfs for bull trout flows May 15th outflows from Libby were larger than 8 kcfs until September 2.
Ramp rates were followed. Any exceptions were due to unscheduled project operations or were coordinated.

RPA 08.1.d Supply Libby flows for sturgeon

CORPS **Project:** **6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination completed.

Accomplishment Coordination was done at TMT meetings.

CORPS **Project:** **6004 8.3.c Kootenai River Valley Seepage Study for the Upper Columbia River Alternative Flood Control and Fisheries Operations EIS Preparation.**

Deliverable 1) USGS report covering all data USGS collected, water level data, aquifer test data, unsaturated zone studies, documentation from all of the USGS tasks relating to seepage related to high waters through the Kootenai River.

CORPS **Project:** **2076 Libby Operations Sturgeon**

Deliverable 1. Store water and supply, at a minimum, flows in May through July based upon a water availability or "tiered" approach, per the final Sturgeon Recovery Plan. 2. Regulate flows from Libby, consistent with existing laws and orders, to maximize the probability of significant sturgeon recruitment. 3. During sturgeon recruitment flow periods, allow local inflow to supplement Libby Dam releases to the maximum extent feasible, while assuring public safety by monitoring water levels throughout relevant areas of the basin. 4. Keep Bonners Ferry Stage below 1764 during sturgeon pulse. 5. Limit daily load-following in Libby outflow to not damage downstream levees. Provide public outreach materials. 6. Seek opportunities to reduce the second peak flow created by July/August salmon flow through Kootenay Lake, perhaps via a Libby-Arrow water exchange. 7. Fulfill USFWS annual operational guidelines prior to and during the sturgeon spawning/incubation period. Specific release recommendations will be developed in consultation with action agencies and submitted annually via the TMT or similar process. 8. Follow ramp rates specified in the USFWS BiOp

Accomplishment Libby (April – August) forecast of 6.3 MaF put Libby operations in the 3rd Tier of operation
A sturgeon pulse operation was requested to begin June 26 after the Libby spill test. Requested outflow of water was exceeded because of the high inflow that occurred during this time period.
Libby ramped up to 8 kcfs for bull trout flows May 15th outflows from Libby were larger than 8 kcfs until September 2.
Ramp rates were followed. Any exceptions were due to unscheduled project operations or were coordinated.

RPA 08.1.e Reduce 2nd peak flow in the Kootenai River

CORPS **Project:** **6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination completed.

Coordination was done at TMT meetings.

CORPS **Project:** **6027 8.1.e Reduce Second Peak Flow, Libby Dam**

Deliverable Reduce second peak flow

Accomplishment The second peak flow has been minimized since October 2001. The Libby/Arrow swap is allowed under current Libby Coordination Agreement although it is not needed every year. The Corps and BPA will request the storage exchange in June/July each year based on July conditions. In 2002 a Libby / Duncan swap (In place of Arrow) was agreed to for 70 kcfd (or 63?).

FY 2002 Deliverables and Accomplishments by RPA (USFWS)

RPA 08.1.f Kootenay Lake fertilization

BPA **Project: 260 1994-049-00 Improving the Kootenai River Ecosystem**

Deliverable Initiate NEPA permitting process to accommodate Kootenai River ecosystem restoration research, monitoring and management activities. Test the feasibility of a Kootenai River controlled nutrient addition experiment. Evaluate the productivity within the Kootenai River before and after a large-scale nutrient supplementation experiment if warranted by results of mesocosm experiments. Monitor key water quality parameters, with an emphasis on macro-nutrients.

Accomplishment BPA funding was not used to fertilize Kootenay and Arrow lakes in FY02 because of administrative changes in BC Minisrty of Environment, Lands, & Parks, but a subcontract was executed for fertilization in FY03. Mesocosm study field work completed; results to be reported in FY03.

RPA 08.1.g Seek USFWS concurrence on water storage

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination completed.

Coordination was done at TMT meetings.

CORPS **Project: 6029 8.1.g IJC Reporting, Libby Dam**

Deliverable Inform FWS of transboundary meetings.

Accomplishment The Corps will notify FWS of transboundary meetings as necessary. The Secretary of the US Entity faxes draft agendas for the Columbia River Treaty Operating Committee meetings to USFWS prior to the meeting.Regional coordination occurs at TMT meetings.

CORPS **Project: 2077 Seek USFWS concurrence on water storage**

Deliverable Concurrance has Occured

Accomplishment TMT coordination occurred. 46 TMT meetings or conference calls took place.

RPA 08.1.h Eval. 12/31 Libby flood target of 2411 feet

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination was done at TMT meetings.

Accomplishment Coordination completed.

CORPS **Project: 2144 Libby - Flood Control Procedures**

Accomplishment New forecast equations including the Southern Oscillation Index are being developed. In 2002 these forecasts were available in November and December.Revision of Libby inflow forecast procedure is complete. No effort has been planned nor undertaken for revision to the “below-Libby” forecast procedure. That forecast is computed by the Northwest River Forecast Center.

The Corps has completed evaluation of El Nino Southern Oscillation Index (SOI) predictions, which is a necessary precursor to feasibility of modifying the storage reservation diagram. By October 1, 2003, the Corps will complete studies to develop and, if feasible, implement a revised storage reservation diagram for Libby reservoir that replaces the existing fall draft to a fixed end of December elevation. coordination with Canada to reach necessary agreement under the Columbia River Treaty has begun.

RPA 08.1.I Revisit Kootenai R. volume forecast procedure

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination was done at TMT meetings.

Coordination completed.

CORPS **Project: 2144 Libby - Flood Control Procedures**

Accomplishment New forecast equations including the Southern Oscillation Index are being developed. In 2002 these forecasts were available in November and December.Revision of Libby inflow forecast procedure is complete. No effort has been planned nor undertaken for revision to the “below-Libby” forecast procedure. That forecast is computed by the Northwest River Forecast Center.

The Corps has completed evaluation of El Nino Southern Oscillation Index (SOI) predictions, which is a necessary precursor to feasibility of modifying the storage reservation diagram. By October 1, 2003, the Corps will complete studies to develop and, if feasible, implement a revised storage reservation diagram for Libby reservoir that replaces the existing fall draft to a fixed end of December elevation. coordination with Canada to reach necessary agreement under the Columbia River Treaty has begun.

FY 2002 Deliverables and Accomplishments by RPA (USFWS)

RPA 08.2.a.1 Test Libby spill for TDG in 2001

BPA **Project: 258 1988-065-00 Kootenai River Fisheries Recovery Investigations**

Deliverable Test Null Hypothesis: survival of larval sturgeon released over sand substrate is higher than larvae released over cobble substrate. Test null hypothesis that winter operation of Libby Dam does not effect burbot migration distance or travel rate. Measure test and control in travel time, km/day. Test null hypothesis that high winter flows do not cause stress in burbot and impair reproductive fitness. Test null hypothesis under laboratory conditions that various flows and temperatures do not cause stress in burbot and impair reproductive fitness. Estimate the number of burbot from Bonners Ferry, ID, to Kootenay Lake, BC. and provide estimate of recruitment and survival. Determine affective means of sampling larval burbot and white sturgeon. Conduct a sportfishery survey on the Kootenai River from the Montana border to Deep Creek to determine angler use, harvest, sprtfish catch, catch effort, and as part of Large Scale sampling to determine eventual benefits to fertilization. Determine the contribution of mainstem rainbow, Westslope cutthroat, and bull trout spawners to the Idaho reach of the Kootenai River downstream of the Montana border. Large scale sampling, within two refernence reaches, to determine the pre-fertilization and post-fertilization status of the fish community, trophic structure, densities, standing stocks, and the population dynamics of salmonids. M&E experimental flows for sturgeon spawning and rearing, determine the minimum flow that will provide spawning and rearing habitat for Kootenai River white sturgeon and bring off a successful year class. M&E implementation of a recovery strategy for burbot as prescribed in the Recovery Strategy for burbot.

Accomplishment In FY02, 296 Kootenai R. white sturgeon eggs were collected on sampling mats, about mid-range in abundance relative to previous years. Only 1 naturally produced juvenile was captured during IDFG gillnet sampling.

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination was done at TMT meetings.

Coordination completed.

CORPS **Project: 6012 22; 137; 8.1.b; 8.2.a.1; 8.2.a.3; 8.2.a.4 Spill Test at Libby Dam on Total Dissolved Gas Impacts**

Accomplishment The spill test was accomplished in spring 2002 and confirmed that spilling over 800 cfs will violate the Sate of Montana's TDG limit of 110% immediately downstream of Libby Dam. Strict adherence to Montana water quality standards means that it is not feasible to routinely utilize the spillway to increase Libby flow capacity in incremental steps of 5000 cfs. The Corps is seeking final confirmation from the State that a variance to this water quality standard will not be granted.

RPA 08.2.a.2 Investigate Kootenai R. channel capacity; report

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination completed.

Coordination was done at TMT meetings.

CORPS **Project:** **6008 8.2.a.2; 8.2.a.3; 8.2.a.6 Kootenai River Channel Capacity Study for the Upper Columbia Alternative Flood Control and Fish Operations EIS.**

Deliverable 1) The USGS will produce a data report with all the collected information, including survey convey control. The report will be a stand-alone product that will contain high-quality survey data that can be used for many future modeling efforts.

Accomplishment Some field observations occurred during spill test of June/July 2002.

RPA 08.2.a.3 Spill to augment sturgeon flows @ Libby

CORPS **Project:** **6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination was done at TMT meetings.

Coordination completed.

CORPS **Project:** **6008 8.2.a.2; 8.2.a.3; 8.2.a.6 Kootenai River Channel Capacity Study for the Upper Columbia Alternative Flood Control and Fish Operations EIS.**

Deliverable 1) The USGS will produce a data report with all the collected information, including survey convey control. The report will be a stand-alone product that will contain high-quality survey data that can be used for many future modeling efforts.

Accomplishment Some field observations occurred during spill test of June/July 2002.

CORPS **Project:** **6012 22; 137; 8.1.b; 8.2.a.1; 8.2.a.3; 8.2.a.4 Spill Test at Libby Dam on Total Dissolved Gas Impacts**

Accomplishment The spill test was accomplished in spring 2002 and confirmed that spilling over 800 cfs will violate the Sate of Montana's TDG limit of 110% immediately downstream of Libby Dam. Strict adherence to Montana water quality standards means that it is not feasible to routinely utilize the spillway to increase Libby flow capacity in incremental steps of 5000 cfs. The Corps is seeking final confirmation from the State that a variance to this water quality standard will not be granted.

RPA 08.2.a.4 Use Libby spill in long-term sturgeon conserv'n if...

CORPS **Project:** **6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination was done at TMT meetings.

Coordination completed.

CORPS **Project:** **6002 8.2.a.4; 8.2.a.5; 8.2.a.6; 8.2.a.7; 8.2.d Preliminary Evaluation of the Feasibility of Commissioning One or Two Additional Generating Units at Libby Dam**

Deliverable Reinitiate consultation if additional flows cannot be achieved in each of Fys 2002, 2004, or 2007.

CORPS **Project:** **6012 22; 137; 8.1.b; 8.2.a.1; 8.2.a.3; 8.2.a.4 Spill Test at Libby Dam on Total Dissolved Gas Impacts**

Accomplishment The spill test was accomplished in spring 2002 and confirmed that spilling over 800 cfs will violate the Sate of Montana's TDG limit of 110% immediately downstream of Libby Dam. Strict adherence to Montana water quality standards means that it is not feasible to routinely utilize the spillway to increase Libby flow capacity in incremental steps of 5000 cfs. The Corps is seeking final confirmation from the State that a variance to this water quality standard will not be granted.

RPA 08.2.a.5 Begin Libby flow remedy if spill test fails

CORPS **Project:** **6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination completed.

Coordination was done at TMT meetings.

CORPS **Project:** **6002 8.2.a.4; 8.2.a.5; 8.2.a.6; 8.2.a.7; 8.2.d Preliminary Evaluation of the Feasibility of Commissioning One or Two Additional Generating Units at Libby Dam**

Deliverable Reinitiate consultation if additional flows cannot be achieved in each of Fys 2002, 2004, or 2007.

RPA 08.2.a.6 Release 10 kcfs more @ Libby by spring 2007

CORPS **Project:** **6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination completed.

Coordination was done at TMT meetings.

CORPS **Project:** **6008 8.2.a.2; 8.2.a.3; 8.2.a.6 Kootenai River Channel Capacity Study for the Upper Columbia Alternative Flood Control and Fish Operations EIS.**

Deliverable 1) The USGS will produce a data report with all the collected information, including survey convey control. The report will be a stand-alone product that will contain high-quality survey data that can be used for many future modeling efforts.

Accomplishment Some field observations occurred during spill test of June/July 2002.

CORPS **Project:** **6002 8.2.a.4; 8.2.a.5; 8.2.a.6; 8.2.a.7; 8.2.d Preliminary Evaluation of the Feasibility of Commissioning One or Two Additional Generating Units at Libby Dam**

Deliverable Reinitiate consultation if additional flows cannot be achieved in each of Fys 2002, 2004, or 2007.

RPA 08.2.a.7 Re-consult if flow objectives are not achievable

CORPS **Project:** **6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination completed.

Coordination was done at TMT meetings.

CORPS **Project:** **6002 8.2.a.4; 8.2.a.5; 8.2.a.6; 8.2.a.7; 8.2.d Preliminary Evaluation of the Feasibility of Commissioning One or Two Additional Generating Units at Libby Dam**

Deliverable Reinitiate consultation if additional flows cannot be achieved in each of Fys 2002, 2004, or 2007.

RPA 08.2.a.8 Determine effects of Libby flows on sturgeon, BT

BPA **Project:** **258 1988-065-00 Kootenai River Fisheries Recovery Investigations**

Deliverable Test Null Hypothesis: survival of larval sturgeon released over sand substrate is higher than larvae released over cobble substrate. Test null hypothesis that winter operation of Libby Dam does not effect burbot migration distance or travel rate. Measure test and control in travel time, km/day. Test null hypothesis that high winter flows do not cause stress in burbot and impair reproductive fitness. Test null hypothesis under laboratory conditions that various flows and temperatures do not cause stress in burbot and impair reproductive fitness. Estimate the number of burbot from Bonners Ferry, ID, to Kootenay Lake, BC. and provide estimate of recruitment and survival. Determine affective means of sampling larval burbot and white sturgeon. Conduct a sportfishery survey on the Kootenai River from the Montana border to Deep Creek to determine angler use, harvest, sprtfish catch, catch effort, and as part of Large Scale sampling to determine eventual benefits to fertilization. Determine the contribution of mainstem rainbow, Westslope cutthroat, and bull trout spawners to the Idaho reach of the Kootenai River downstream of the Montana border. Large scale sampling, within two refernence reaches, to determine the pre-fertilization and post-fertilization status of the fish community, trophic structure, densities, standing stocks, and the population dynamics of salmonids. M&E experimental flows for sturgeon spawning and rearing, determine the minimum flow that will provide spawning and rearing habitat for Kootenai River white sturgeon and bring off a successful year class. M&E implementation of a recovery strategy for burbot as prescribed in the Recovery Strategy for burbot.

Accomplishment In FY02, 296 Kootenai R. white sturgeon eggs were collected on sampling mats, about mid-range in abundance relative to previous years. Only 1 naturally produced juvenile was captured during IDFG gillnet sampling.

BPA **Project:** **172 1995-004-00 Libby Mitigation Plan**

Deliverable Quarterly and Annual Reports

Accomplishment Monitored and reported gas levels, incidence of gas bubble disease symptoms, and movements of radio-tagged fish downstream of Libby Dam during spill tests in June/July 2002.

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination completed.

Coordination was done at TMT meetings.

RPA 08.2.a.9 Re-consult when >20 naturally recruited sturgeon are found

BPA **Project: 258 1988-065-00 Kootenai River Fisheries Recovery Investigations**

Deliverable Test Null Hypothesis: survival of larval sturgeon released over sand substrate is higher than larvae released over cobble substrate. Test null hypothesis that winter operation of Libby Dam does not effect burbot migration distance or travel rate. Measure test and control in travel time, km/day. Test null hypothesis that high winter flows do not cause stress in burbot and impair reproductive fitness. Test null hypothesis under laboratory conditions that various flows and temperatures do not cause stress in burbot and impair reproductive fitness. Estimate the number of burbot from Bonners Ferry, ID, to Kootenay Lake, BC. and provide estimate of recruitment and survival. Determine affective means of sampling larval burbot and white sturgeon. Conduct a sportfishery survey on the Kootenai River from the Montana border to Deep Creek to determine angler use, harvest, sprtfish catch, catch effort, and as part of Large Scale sampling to determine eventual benefits to fertilization. Determine the contribution of mainstem rainbow, Westslope cutthroat, and bull trout spawners to the Idaho reach of the Kootenai River downstream of the Montana border. Large scale sampling, within two refernence reaches, to determine the pre-fertilization and post-fertilization status of the fish community, trophic structure, densities, standing stocks, and the population dynamics of salmonids. M&E experimental flows for sturgeon spawning and rearing, determine the minimum flow that will provide spawning and rearing habitat for Kootenai River white sturgeon and bring off a successful year class. M&E implementation of a recovery strategy for burbot as prescribed in the Recovery Strategy for burbot.

Accomplishment In FY02, 296 Kootenai R. white sturgeon eggs were collected on sampling mats, about mid-range in abundance relative to previous years. Only 1 naturally produced juvenile was captured during IDFG gillnet sampling.

BPA **Project: 257 1988-064-00 Kootenai River White Sturgeon Study and Experimental Aquaculture**

Deliverable Monitor, evaluate, and report genetic variability and diversity of hatchery white sturgeon juveniles produced and wild broodstock spawned in the Kootenai Hatchery. (Recovery measure 2.23) (Addresses ISRP concerns about genetics.). Monitor and evaluate survival, condition, growth, movement, and habitat use of hatchery reared juvenile white sturgeon released into the Kootenai River. (Recovery measure 3.31) Monitor and evaluate hatchery water quality (Recovery measure 2.22) Monitor and evaluate animal health of hatchery reared juvenile white sturgeon (Recovery measure 2.24.242)

Accomplishment In FY02, nine families of Kootenai River white sturgeon were propagated from mating 3 females with 9 males.

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination completed.

Accomplishment Coordination was done at TMT meetings.

RPA 08.2.b Report results of Libby flow effects monitoring

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination was done at TMT meetings.

Coordination completed.

RPA 08.2.c Fulfill sturgeon operational guidelines for Libby

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination was done at TMT meetings.

Coordination completed.

CORPS **Project: 2076 Libby Operations Sturgeon**

Deliverable 1. Store water and supply, at a minimum, flows in May through July based upon a water availability or “tiered” approach, per the final Sturgeon Recovery Plan. 2. Regulate flows from Libby, consistent with existing laws and orders, to maximize the probability of significant sturgeon recruitment. 3. During sturgeon recruitment flow periods, allow local inflow to supplement Libby Dam releases to the maximum extent feasible, while assuring public safety by monitoring water levels throughout relevant areas of the basin. 4. Keep Bonners Ferry Stage below 1764 during sturgeon pulse. 5. Limit daily load-following in Libby outflow to not damage downstream levees. Provide public outreach materials. 6. Seek opportunities to reduce the second peak flow created by July/August salmon flow through Kootenay Lake, perhaps via a Libby-Arrow water exchange. 7. Fulfill USFWS annual operational guidelines prior to and during the sturgeon spawning/incubation period. Specific release recommendations will be developed in consultation with action agencies and submitted annually via the TMT or similar process. 8. Follow ramp rates specified in the USFWS BiOp

Accomplishment Libby (April – August) forecast of 6.3 MaF put Libby operations in the 3rd Tier of operation
A sturgeon pulse operation was requested to begin June 26 after the Libby spill test. Requested outflow of water was exceeded because of the high inflow that occurred during this time period.
Libby ramped up to 8 kcfs for bull trout flows May 15th outflows from Libby were larger than 8 kcfs until September 2.
Ramp rates were followed. Any exceptions were due to unscheduled project operations or were coordinated.

RPA 08.2.d Seek Libby transformer redundancy

CORPS **Project:** **6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination was done at TMT meetings.

Coordination completed.

CORPS **Project:** **6002 8.2.a.4; 8.2.a.5; 8.2.a.6; 8.2.a.7; 8.2.d Preliminary Evaluation of the Feasibility of Commissioning One or Two Additional Generating Units at Libby Dam**

Deliverable Reinitiate consultation if additional flows cannot be achieved in each of Fys 2002, 2004, or 2007.

RPA 08.3.a Evaluate Kootenai R. flood levels below Libby

CORPS **Project:** **6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination completed.

Coordination was done at TMT meetings.

CORPS **Project:** **6035 8.3.a; 8.3.b Flood Level Assessment at Bonners Ferry; Levee Restoration at Bonners Ferry**

Deliverable By spring 2001, evaluate flood levels and public safety concerns, and the feasibility of increasing releases above identified channel capacity constraints through structural or non-structural means. Provide a report by December 1, 2001.

RPA 08.3.b Maintain or enhance Kootenai Valley levees

CORPS **Project:** **6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination completed.

Coordination was done at TMT meetings.

CORPS **Project:** **6035 8.3.a; 8.3.b Flood Level Assessment at Bonners Ferry; Levee Restoration at Bonners Ferry**

Deliverable By spring 2001, evaluate flood levels and public safety concerns, and the feasibility of increasing releases above identified channel capacity constraints through structural or non-structural means. Provide a report by December 1, 2001.

CORPS **Project:** **2076 Libby Operations Sturgeon**

Deliverable 1. Store water and supply, at a minimum, flows in May through July based upon a water availability or "tiered" approach, per the final Sturgeon Recovery Plan. 2. Regulate flows from Libby, consistent with existing laws and orders, to maximize the probability of significant sturgeon recruitment. 3. During sturgeon recruitment flow periods, allow local inflow to supplement Libby Dam releases to the maximum extent feasible, while assuring public safety by monitoring water levels throughout relevant areas of the basin. 4. Keep Bonners Ferry Stage below 1764 during sturgeon pulse. 5. Limit daily load-following in Libby outflow to not damage downstream levees. Provide public outreach materials. 6. Seek opportunities to reduce the second peak flow created by July/August salmon flow through Kootenay Lake, perhaps via a Libby-Arrow water exchange. 7. Fulfill USFWS annual operational guidelines prior to and during the sturgeon spawning/incubation period. Specific release recommendations will be developed in consultation with action agencies and submitted annually via the TMT or similar process. 8. Follow ramp rates specified in the USFWS BiOp

Accomplishment Libby (April – August) forecast of 6.3 MaF put Libby operations in the 3rd Tier of operation
A sturgeon pulse operation was requested to begin June 26 after the Libby spill test. Requested outflow of water was exceeded because of the high inflow that occurred during this time period.
Libby ramped up to 8 kcfs for bull trout flows May 15th outflows from Libby were larger than 8 kcfs until September 2.
Ramp rates were followed. Any exceptions were due to unscheduled project operations or were coordinated.

RPA 08.3.c Quantify effects of seepage from Kootenai R. flows

CORPS **Project:** **6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination was done at TMT meetings.

Coordination completed.

CORPS **Project:** **6004 8.3.c Kootenai River Valley Seepage Study for the Upper Columbia River Alternative Flood Control and Fisheries Operations EIS Preparation.**

Deliverable 1) USGS report covering all data USGS collected, water level data, aquifer test data, unsaturated zone studies, documentation from all of the USGS tasks relating to seepage related to high waters through the Kootenai River.

RPA 08.3.d Determine effects of Libby ops on sturgeon

BPA **Project: 258 1988-065-00 Kootenai River Fisheries Recovery Investigations**

Deliverable Test Null Hypothesis: survival of larval sturgeon released over sand substrate is higher than larvae released over cobble substrate. Test null hypothesis that winter operation of Libby Dam does not effect burbot migration distance or travel rate. Measure test and control in travel time, km/day. Test null hypothesis that high winter flows do not cause stress in burbot and impair reproductive fitness. Test null hypothesis under laboratory conditions that various flows and temperatures do not cause stress in burbot and impair reproductive fitness. Estimate the number of burbot from Bonners Ferry, ID, to Kootenay Lake, BC. and provide estimate of recruitment and survival. Determine affective means of sampling larval burbot and white sturgeon. Conduct a sportfishery survey on the Kootenai River from the Montana border to Deep Creek to determine angler use, harvest, sprtfish catch, catch effort, and as part of Large Scale sampling to determine eventual benefits to fertilization. Determine the contribution of mainstem rainbow, Westslope cutthroat, and bull trout spawners to the Idaho reach of the Kootenai River downstream of the Montana border. Large scale sampling, within two refernence reaches, to determine the pre-fertilization and post-fertilization status of the fish community, trophic structure, densities, standing stocks, and the population dynamics of salmonids. M&E experimental flows for sturgeon spawning and rearing, determine the minimum flow that will provide spawning and rearing habitat for Kootenai River white sturgeon and bring off a successful year class. M&E implementation of a recovery strategy for burbot as prescribed in the Recovery Strategy for burbot.

Accomplishment In FY02, 296 Kootenai R. white sturgeon eggs were collected on sampling mats, about mid-range in abundance relative to previous years. Only 1 naturally produced juvenile was captured during IDFG gillnet sampling.

BPA **Project: 257 1988-064-00 Kootenai River White Sturgeon Study and Experimental Aquaculture**

Deliverable Monitor, evaluate, and report genetic variability and diversity of hatchery white sturgeon juveniles produced and wild broodstock spawned in the Kootenai Hatchery. (Recovery measure 2.23) (Addresses ISRP concerns about genetics.). Monitor and evaluate survival, condition, growth, movement, and habitat use of hatchery reared juvenile white sturgeon released into the Kootenai River. (Recovery measure 3.31) Monitor and evaluate hatchery water quality (Recovery measure 2.22) Monitor and evaluate animal health of hatchery reared juvenile white sturgeon (Recovery measure 2.24.242)

Accomplishment In FY02, nine families of Kootenai River white sturgeon were propagated from mating 3 females with 9 males.

BPA **Project: 172 1995-004-00 Libby Mitigation Plan**

Deliverable Quarterly and Annual Reports

Accomplishment Monitored and reported gas levels, incidence of gas bubble disease symptoms, and movements of radio-tagged fish downstream of Libby Dam during spill tests in June/July 2002.

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination was done at TMT meetings.

Coordination completed.

RPA 08.3.e Report load-following effects on Kootenai levees

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination completed.

Coordination was done at TMT meetings.

CORPS **Project: 6033 8.3.e; 8.3.f Load Following Effects Evaluation and Report**

Deliverable Prepare a letter report of the findings of this investigation and report to FWS and the affected public.

RPA 08.3.f Limit Libby flow to avoid levee damage; outreach

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination was done at TMT meetings.

Coordination completed.

CORPS **Project: 2076 Libby Operations Sturgeon**

Deliverable 1. Store water and supply, at a minimum, flows in May through July based upon a water availability or “tiered” approach, per the final Sturgeon Recovery Plan. 2. Regulate flows from Libby, consistent with existing laws and orders, to maximize the probability of significant sturgeon recruitment. 3. During sturgeon recruitment flow periods, allow local inflow to supplement Libby Dam releases to the maximum extent feasible, while assuring public safety by monitoring water levels throughout relevant areas of the basin. 4. Keep Bonners Ferry Stage below 1764 during sturgeon pulse. 5. Limit daily load-following in Libby outflow to not damage downstream levees. Provide public outreach materials. 6. Seek opportunities to reduce the second peak flow created by July/August salmon flow through Kootenay Lake, perhaps via a Libby-Arrow water exchange. 7. Fulfill USFWS annual operational guidelines prior to and during the sturgeon spawning/incubation period. Specific release recommendations will be developed in consultation with action agencies and submitted annually via the TMT or similar process. 8. Follow ramp rates specified in the USFWS BiOp

Accomplishment Libby (April – August) forecast of 6.3 MaF put Libby operations in the 3rd Tier of operation
A sturgeon pulse operation was requested to begin June 26 after the Libby spill test. Requested outflow of water was exceeded because of the high inflow that occurred during this time period.
Libby ramped up to 8 kcfs for bull trout flows May 15th outflows from Libby were larger than 8 kcfs until September 2.
Ramp rates were followed. Any exceptions were due to unscheduled project operations or were coordinated.

CORPS **Project: 6033 8.3.e; 8.3.f Load Following Effects Evaluation and Report**

Deliverable Prepare a letter report of the findings of this investigation and report to FWS and the affected public.

RPA 08.3.g Allow local inflow to supplement Libby releases

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination was done at TMT meetings.

Coordination completed.

CORPS **Project: 6036 8.3.g; 8.3.h Water level and temperature monitoring in Kootenai River basin and Libby Dam.**

Deliverable During sturgeon recruitment flow periods, allow local inflow to supplement Libby Dam releases to the maximum extent feasible, while assuring public safety by monitoring water levels throughout relevant areas of the Kootenai River basin.

Continue to monitor water temperature profiles in the south end of Lake Koocanusa during May and June to provide information necessary for timing of sturgeon spawning/rearing flow augmentation.

Accomplishment The Corps is continuing to monitor water temperature profiles.

The Corps has been monitoring water levels and coordinates this data with its flow releases from Libby Dam to assure public safety.

RPA 08.3.h Monitor thermal profiles, S. end Lake Koocanusa

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination was done at TMT meetings.

Coordination completed.

CORPS **Project: 6036 8.3.g; 8.3.h Water level and temperature monitoring in Kootenai River basin and Libby Dam.**

Deliverable Continue to monitor water temperature profiles in the south end of Lake Koocanusa during May and June to provide information necessary for timing of sturgeon spawning/rearing flow augmentation.

During sturgeon recruitment flow periods, allow local inflow to supplement Libby Dam releases to the maximum extent feasible, while assuring public safety by monitoring water levels throughout relevant areas of the Kootenai River basin.

Accomplishment The Corps has been monitoring water levels and coordinates this data with its flow releases from Libby Dam to assure public safety.

Accomplishment The Corps is continuing to monitor water temperature profiles.

CORPS **Project:** **6023_8.3.h_Water Temperature Profile Project, Libby Dam**

Deliverable Install temperature string in forebay of Lake Koocanusa and collect water temperature data during 2002.

Accomplishment Temperature string installed and data collected.

RPA 08.3.I Evaluate depth, velocity, substrate near Bonners Ferry

BPA **Project:** **262_2002-002-00_Assess Feasibility of Enhancing White Sturgeon Spawning Substrate Habitat, Kootenai R., Idaho**

Deliverable Monitor and create animation of sediment transport and bedform movement in sturgeon spawning habitat. Describe availability and movement of fluvial sediment through white sturgeon spawning habitat and identify where habitat substrate is currently aggrading, degrading, and stable. Develop sediment-transport models, develop spawning habitat substrate improvement scenarios, and assess the feasibility of habitat enhancement.

Accomplishment In FY02, via new contract, USGS continued field instrumentation and defining streamflow and characteristics of suspended nad bedload sediments. Also defined channel geometry and began defining streambed particle size distribution and developing and calibrating 1-D sediment transport model.

CORPS **Project:** **6025_ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination completed.

Coordination was done at TMT meetings.

RPA 08.3.j Recommend habitat mods, if changes found

BPA **Project:** **262_2002-002-00_Assess Feasibility of Enhancing White Sturgeon Spawning Substrate Habitat, Kootenai R., Idaho**

Deliverable Monitor and create animation of sediment transport and bedform movement in sturgeon spawning habitat. Describe availability and movement of fluvial sediment through white sturgeon spawning habitat and identify where habitat substrate is currently aggrading, degrading, and stable. Develop sediment-transport models, develop spawning habitat substrate improvement scenarios, and assess the feasibility of habitat enhancement.

Accomplishment In FY02, via new contract, USGS continued field instrumentation and defining streamflow and characteristics of suspended nad bedload sediments. Also defined channel geometry and began defining streambed particle size distribution and developing and calibrating 1-D sediment transport model.

FY 2002 Deliverables and Accomplishments by RPA (USFWS)

RPA 08.4.a Maintain sturgeon preservation stocking program

BPA **Project: 257 1988-064-00 Kootenai River White Sturgeon Study and Experimental Aquaculture**

Deliverable Monitor, evaluate, and report genetic variability and diversity of hatchery white sturgeon juveniles produced and wild broodstock spawned in the Kootenai Hatchery. (Recovery measure 2.23) (Addresses ISRP concerns about genetics.). Monitor and evaluate survival, condition, growth, movement, and habitat use of hatchery reared juvenile white sturgeon released into the Kootenai River. (Recovery measure 3.31) Monitor and evaluate hatchery water quality (Recovery measure 2.22) Monitor and evaluate animal health of hatchery reared juvenile white sturgeon (Recovery measure 2.24.242)

Accomplishment In FY02, nine families of Kootenai River white sturgeon were propagated from mating 3 females with 9 males.

RPA 08.4.b Maintain sturgeon monitoring program

BPA **Project: 260 1994-049-00 Improving the Kootenai River Ecosystem**

Deliverable Initiate NEPA permitting process to accommodate Kootenai River ecosystem restoration research, monitoring and management activities. Test the feasibility of a Kootenai River controlled nutrient addition experiment. Evaluate the productivity within the Kootenai River before and after a large-scale nutrient supplementation experiment if warranted by results of mesocosm experiments. Monitor key water quality parameters, with an emphasis on macro-nutrients.

Accomplishment BPA funding was not used to fertilize Kootenay and Arrow lakes in FY02 because of administrative changes in BC Minisrty of Environment, Lands, & Parks, but a subcontract was executed for fertilization in FY03. Mesocosm study field work completed; results to be reported in FY03.

BPA **Project: 258 1988-065-00 Kootenai River Fisheries Recovery Investigations**

Deliverable Test Null Hypothesis: survival of larval sturgeon released over sand substrate is higher than larvae released over cobble substrate. Test null hypothesis that winter operation of Libby Dam does not effect burbot migration distance or travel rate. Measure test and control in travel time, km/day. Test null hypothesis that high winter flows do not cause stress in burbot and impair reproductive fitness. Test null hypothesis under laboratory conditions that various flows and temperatures do not cause stress in burbot and impair reproductive fitness. Estimate the number of burbot from Bonners Ferry, ID, to Kootenay Lake, BC. and provide estimate of recruitment and survival. Determine affective means of sampling larval burbot and white sturgeon. Conduct a sportfishery survey on the Kootenai River from the Montana border to Deep Creek to determine angler use, harvest, sprtfish catch, catch effort, and as part of Large Scale sampling to determine eventual benefits to fertilization. Determine the contribution of mainstem rainbow, Westslope cutthroat, and bull trout spawners to the Idaho reach of the Kootenai River downstream of the Montana border. Large scale sampling, within two refernence reaches, to determine the pre-fertilization and post-fertilization status of the fish community, trophic structure, densities, standing stocks, and the population dynamics of salmonids. M&E experimental flows for sturgeon spawning and rearing, determine the minimum flow that will provide spawning and rearing habitat for Kootenai River white sturgeon and bring off a successful year class. M&E implementation of a recovery strategy for burbot as prescribed in the Recovery Strategy for burbot.

Accomplishment In FY02, 296 Kootenai R. white sturgeon eggs were collected on sampling mats, about mid-range in abundance relative to previous years. Only 1 naturally produced juvenile was captured during IDFG gillnet sampling.

BPA **Project: 257 1988-064-00 Kootenai River White Sturgeon Study and Experimental Aquaculture**

Deliverable Monitor, evaluate, and report genetic variability and diversity of hatchery white sturgeon juveniles produced and wild broodstock spawned in the Kootenai Hatchery. (Recovery measure 2.23) (Addresses ISRP concerns about genetics.). Monitor and evaluate survival, condition, growth, movement, and habitat use of hatchery reared juvenile white sturgeon released into the Kootenai River. (Recovery measure 3.31) Monitor and evaluate hatchery water quality (Recovery measure 2.22) Monitor and evaluate animal health of hatchery reared juvenile white sturgeon (Recovery measure 2.24.242)

Accomplishment In FY02, nine families of Kootenai River white sturgeon were propagated from mating 3 females with 9 males.

RPA 10.1 Develop 1- and 5-yr implementation plans

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination completed.

Coordination was done at TMT meetings.

RPA 10.2 Coordinate 1- and 5-yr plans w/ NMFS, USFWS

CORPS **Project: 6031 ESA Coordination--Chief Joseph Dam**

Deliverable Conduct coordination of RPA and RPM actions.

Accomplishment Coordination completed annually.

CORPS **Project: 2076 Libby Operations Sturgeon**

Deliverable 1. Store water and supply, at a minimum, flows in May through July based upon a water availability or “tiered” approach, per the final Sturgeon Recovery Plan. 2. Regulate flows from Libby, consistent with existing laws and orders, to maximize the probability of significant sturgeon recruitment. 3. During sturgeon recruitment flow periods, allow local inflow to supplement Libby Dam releases to the maximum extent feasible, while assuring public safety by monitoring water levels throughout relevant areas of the basin. 4. Keep Bonners Ferry Stage below 1764 during sturgeon pulse. 5. Limit daily load-following in Libby outflow to not damage downstream levees. Provide public outreach materials. 6. Seek opportunities to reduce the second peak flow created by July/August salmon flow through Kootenay Lake, perhaps via a Libby-Arrow water exchange. 7. Fulfill USFWS annual operational guidelines prior to and during the sturgeon spawning/incubation period. Specific release recommendations will be developed in consultation with action agencies and submitted annually via the TMT or similar process. 8. Follow ramp rates specified in the USFWS BiOp

Accomplishment Libby (April – August) forecast of 6.3 MaF put Libby operations in the 3rd Tier of operation
A sturgeon pulse operation was requested to begin June 26 after the Libby spill test. Requested outflow of water was exceeded because of the high inflow that occurred during this time period.
Libby ramped up to 8 kcfs for bull trout flows May 15th outflows from Libby were larger than 8 kcfs until September 2.
Ramp rates were followed. Any exceptions were due to unscheduled project operations or were coordinated.

FY 2002 Deliverables and Accomplishments by RPA (USFWS)

RPA 10.3 Develop federal coordination MOU

No Projects for this RPA. Please see RPA Summary Table.

RPA 10.4 Coordinate measures annually w/ other agencies

No Projects for this RPA. Please see RPA Summary Table.

RPA 10.5 Coordinate water planning and in-season management

CORPS **Project:** **6031 ESA Coordination--Chief Joseph Dam**

Deliverable Conduct coordination of RPA and RPM actions.

Accomplishment Coordination completed annually.

RPA 10.6 Use adaptive management for sturgeon and BT

BPA **Project:** **265 2002-011-00 Implement Floodplain Operational Loss Assessment, Protection, Mitigation and Rehabilitation on the Lower Kootenai River Watershed Ecosystem**

Deliverable Review, analyze and select research projects that will best assess operational losses in the Lower Kootenai River Watershed and are regionally applicable .2)Assess historic (early 1900's) and current condition and status of floodplain vegetation types, slough, pocket water and associated watercourses within the Lower Kootenai River Watershed by 2003. 3) Produce hydrologic models for the floodplain and each natural analogue stream course by 2003. 4) Develop a framework for regional floodplain operational loss assessments by 2004, with the use of Lower Kootenai River floodplain operational assessment, EDT, and normative analogue comparisons during 2003. 5)Plan and establish a trust fund or other funding strategy for securing management rights, and operations and maintenance to mitigate priority floodplain habitat areas by 2005.

Accomplishment Contract was initiated in FY02, and selection of assessment methods was begun.

BPA **Project:** **263 2002-009-00 Lake Pend Oreille Predation Research**

Deliverable Balance the pelagic predator and prey populations at a standing stock of less than 1 kg/ha predator to 6 kg/ha prey. Redefine the point of balance for predators and prey in Lake Pend Oreille where kokanee survival drops below 50% for any year class. Research and implement methods for the removal of rainbow trout that will not impact bull trout, until balance point is reached (currently thought to be 1:6). the competition between bull trout and other predatory fish. Kokanee survival rates over 50% would indicate forage is not in limited supply.

Accomplishment Contract and field work (hydroacoustics and radio-telemetry) initiated in FY02; first results available in FY03.

FY 2002 Deliverables and Accomplishments by RPA (USFWS)

BPA **Project: 314 2002-008-00 Reconnection of floodplain slough habitat to the Kootenai River**

Deliverable 1. Identify the location of the initial reconnection site. 1a. Evaluate potential slough sites and estimate the ecological benefit reconnection will provide for each potential site. 1b. Determine the structural and physical feasibility of reconnecting the potential slough sites. River hydraulic data, Surface water profiles, field boring of dike, geotechnical evaluation of the dike, structural concept and design. 1c. Using the Kootenai River Network as a working group, create a priority list of potential sloughs for reconnection. 1d. Complete appropriate landowner agreements to facilitate construction and long-term protection and maintenance of enhanced habitat. 2. Establish baseline conditions in the area to be re-connected. 2a. Set up index sites and monitor primary production, nutrient concentrations, secondary production, and fish community. 2 b. Conduct a formal land survey of the physical features of the selected site. 3. Complete a plan to design and implement re-connection at the selected site. 3a. Report baseline conditions based on data collected in Objective 2. 3b. Outline project specific objectives, timelines, and define success. 3c. Prepare study design and cost that will thoroughly monitor and precisely evaluate success indicators as described. 3d. Prepare a cost estimate for engineered design and construction of reconnection. 3e. Prepare documents to complete all appropriate permits.

Accomplishment Contract was initiated in FY02, baseline conditions were measured, and sites were identified.

RPA 10.7 Coordinate a water temperature modeling plan

No Projects for this RPA. Please see RPA Summary Table.

RPA 10.8 Assess up/downstream passage needs of BT

BPA **Project: 128 2002-006-00 Evaluate Bull Trout Movements in the Tucannon and Lower Snake Rivers**

Deliverable 1) Radio tags implanted in 20-40 bull trout captured at or downstream of the Tucannon Hatchery weir, April-July. 2) Fixed radio receiver site established on lower Tucannon.

Accomplishment Radio tags were implanted in 41 bull trout at the Tucannon Hatchery trap in May and June, 2002, 35 of which were subsequently tracked to upstream spawning areas. As of November 30, 2002, none of the radio tagged fish had been tracked below river-mile 11.3 (i.e., none had entered the mainstem Snake).

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination was done at TMT meetings.

Coordination completed.

FY 2002 Deliverables and Accomplishments by RPA (USFWS)

RPA 10.A.1.1 Operate Libby to minimize flow effects on BT; monitor

BPA **Project: 172 1995-004-00 Libby Mitigation Plan**

Deliverable Quarterly and Annual Reports

Accomplishment Monitored and reported gas levels, incidence of gas bubble disease symptoms, and movements of radio-tagged fish downstream of Libby Dam during spill tests in June/July 2002.

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination was done at TMT meetings.

Coordination completed.

CORPS **Project: 2075 Libby Operations Bull Trout**

Deliverable 1. Constrain Libby operations to minimize adverse effects of flow fluctuations on bull trout, including year-round min. flows and ramping rates and seasonal water management. 2. Provide 6000 cfs minimum for bull trout during July and August if Koocanusa elevations are below salmon guidelines and salmon augmentation will not occur. Increased flows may be determined through TMT if additional water were available.

Accomplishment Libby ramped up to 8 kcfs for bull trout flows May 15th outflows from Libby were larger than 8 kcfs until September 2.
Ramp rates were followed. Any exceptions were due to unscheduled project operations or were coordinated.

CORPS **Project: 2076 Libby Operations Sturgeon**

Deliverable 1. Store water and supply, at a minimum, flows in May through July based upon a water availability or “tiered” approach, per the final Sturgeon Recovery Plan. 2. Regulate flows from Libby, consistent with existing laws and orders, to maximize the probability of significant sturgeon recruitment. 3. During sturgeon recruitment flow periods, allow local inflow to supplement Libby Dam releases to the maximum extent feasible, while assuring public safety by monitoring water levels throughout relevant areas of the basin. 4. Keep Bonners Ferry Stage below 1764 during sturgeon pulse. 5. Limit daily load-following in Libby outflow to not damage downstream levees. Provide public outreach materials. 6. Seek opportunities to reduce the second peak flow created by July/August salmon flow through Kootenay Lake, perhaps via a Libby-Arrow water exchange. 7. Fulfill USFWS annual operational guidelines prior to and during the sturgeon spawning/incubation period. Specific release recommendations will be developed in consultation with action agencies and submitted annually via the TMT or similar process. 8. Follow ramp rates specified in the USFWS BiOp

Accomplishment Libby (April – August) forecast of 6.3 MaF put Libby operations in the 3rd Tier of operation
A sturgeon pulse operation was requested to begin June 26 after the Libby spill test. Requested outflow of water was exceeded because of the high inflow that occurred during this time period.
Libby ramped up to 8 kcfs for bull trout flows May 15th outflows from Libby were larger than 8 kcfs until September 2.
Ramp rates were followed. Any exceptions were due to unscheduled project operations or were coordinated.

FY 2002 Deliverables and Accomplishments by RPA (USFWS)

RPA 10.A.1.2 Operate Hungry Horse to protect BT; monitor

BPA **Project:** **173 1991-019-03 Hungry Horse Mitigation - Habitat**

Deliverable Quarterly and Annual Reports

Accomplishment Determined BT movements relative to flows and preferred habitats. Determined the efficacy of water chemistry to find the orgin of natal streams. A thermograph of the S.F. Flathead relative to HHR flows developed. A Wetted Perimenter study to determine minimum flows in the SF.

USBR **Project:** **4081 Hy14.HGH.01.00.00 Hungry Horse Operations**

Deliverable Fill Hungry Horse to within 0.5 foot of the flood control rule (VARQ) on April 10. 2. Refill Hungry Horse to elevation 3560 feet by June 30. 3. Provide water for flow augmentation and observe summer draft limit of 3540 feet. 4. Limit Hungry Horse outflow to minimum flow after August 31. 5. Interim implementation of VARQ while complete EIS. 6. Constrain Hungry Horse operations to minimize adverse effects of flow fluctuations on bull trout, including year-round min. flows and ramping rates and seasonal water management. 7. Reduce "double peak" below Hungry Horse

Accomplishment VARQ Implemented, Voluntary EA prepared. 1. Hungry horse was below its April 10 elevation by about 15 feet due to minimum flow requirements at Columbia Falls. 2. Hungry Horse did not fill until July 14 as there was a late runoff and flood control space was required to prevent spill. 3. Horse drafted the full 20 feet by September 20. Water was not required in July, so to eliminate the double peak below Hungry Horse, the draft was spread out into the fall.

RPA 10.A.1.3 Eval. feasibility of BT passage at Albeni Falls

CORPS **Project:** **6001 10.A.1.3; 11.A.1.3.a Bull Trout Radio-Telemetry Study in the Pend Oreille Basin**

Deliverable Scope project/study and contract for study work

Accomplishment Battelle contracted to perform radio-telemetry study

RPA 10.A.1.4 Continue Lake PO elev. study for kokanee spawning

BPA **Project:** **259 1994-047-00 Lake Pend Oreille Fishery Recovery Project**

Deliverable Recover kokanee abundance so that a harvest of 750,000 fish can be maintained on an annual basis. This would require an adult kokanee population of 3.7 million fish and an egg-to-fry survival rate exceeding 3.6%. Have no net change in the amount of shoreline spawning gravel due to erosion or siltation during this experiment (maintain 1.7 million sq. feet). Increase the warm water fish population in the Pend Oreille River seven fold. Monitor baseline limnological factors which influence the lake's fish populations. Improve hatchery stocking program so that it contributes 375,000 kokanee to the harvest.

Accomplishment Kokanee abundance and redd surveys were completed in FY02, with summary results available on the IDFG website: http://www2.state.id.us/fishgame/common/technical/fisheries.cfm

CORPS **Project:** **2074 10.A.1.4; 11.A.1.4.a Draw down Albeni Falls for kokanee egg-to fry-study**

Deliverable Draw Albeni Falls down to 2051 feet

Accomplishment Drawdowns are accomplished per guidelines.

CORPS **Project: 6006 10.A.1.4; 11.A.1.4.a; b; c; and d Kokanee Project Coordination Meetings**

Deliverable Coordination w/ USFWS and IDFG

Accomplishment Last meeting w/ USFWS & IDFG in Aug 2002; meetings occur annually.

RPA 10.A.2.1 Determine BT use of lwr Columbia affected by FCRPS

CORPS **Project: 2062 CENWW Monitoring of Bull Trout at Mainstem Projects**

Deliverable Count bull trout as part of the adult fish counting program at the four lower Columbia River and four lower SnakeRiver projects. Record the presence of bull trout at all mainstem project smolt monitoring facilities. Extend adult fish counting at Lower Monumental and Little Goose dams to include year round counting of bull trout.

Accomplishment Bull trout were counted as part of the adult fish counting program at all projects. Bull trout were recorded at all mainstem project smolt monitoring facilities when observed. The adult fish countng season was extended at Lower Monumental and Little Goose dams to include year round counting of bull trout.

RPA 10.A.2.2 Develop BT passage PS at FCRPS dams

CORPS **Project: 2062 CENWW Monitoring of Bull Trout at Mainstem Projects**

Deliverable Count bull trout as part of the adult fish counting program at the four lower Columbia River and four lower SnakeRiver projects. Record the presence of bull trout at all mainstem project smolt monitoring facilities. Extend adult fish counting at Lower Monumental and Little Goose dams to include year round counting of bull trout.

Accomplishment Bull trout were counted as part of the adult fish counting program at all projects. Bull trout were recorded at all mainstem project smolt monitoring facilities when observed. The adult fish countng season was extended at Lower Monumental and Little Goose dams to include year round counting of bull trout.

RPA 10.A.2.3 Study stranding of BT and their prey

No Projects for this RPA. Please see RPA Summary Table.

RPA 10.A.2.4 Change Lwr Col. R. dams to reduce dissolved gas

No Projects for this RPA. Please see RPA Summary Table.

RPA 10.A.3.1 Study BT use of lower Snake R.

BPA **Project: 245 1987-127-00 Smolt Monitoring by Federal and Non-Federal Agencies**

Deliverable 1) Conduct annual Smolt Monitoring Program (SMP) at seven mainstem Snake and Columbia River dams, Lewiston Snake River trap, Lower Grande Ronde trap, and White Bird trap on the Salmon River. (Note: Imnaha River trap is another SMP site operated by the Nez Perce Tribe (NPT) under Project 1997-015-01). 2) Perform PIT tagging of ~25,500 juvenile fish at five hatcheries and upload data files to PSMFC databsase (USFWS tagging support component). 3) Transmit daily juvenile fish passage, sampling, marking, and other biological and hydrological data to online databases at Fish Passage Center (FPC) and Pacific States Marine Fisheries Commission (PSMFC) for distribution region wide. 4) Comply with ESA Section 10 sampling and reporting requirements at all monitiring sites. 5) Participating agencies and organizations prepare and submit annual reports to PSMFC summarizing SMP activities and data collected at each monitoring site for use in compiling FPC annaul report.

Accomplishment 1) Recorded observations of bull trout caught incidentally at Snake River traps and at smolt collection facilities at mainstem dams on the lower Snake and Columbia rivers.

RPA 10.A.3.2 Study BT in Dworshak reservoir

BPA **Project: 256 1987-407-00 Dworshak Integrated Rule Curves/M&E**

Deliverable Develop a comprehesive long-term monitoring and evaluation plan for Dworshak Reservoir.

RPA 11.1 Participate in developing BT performance standards

No Projects for this RPA. Please see RPA Summary Table.

RPA 11.2 Develop priority list of FCRPS dams for BT passage

CORPS **Project: 6030 ESA Coordination--Albeni Falls Dam**

Deliverable Conduct coordination of RPA and RPM actions.

Accomplishment Coordination completed annually.

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination was done at TMT meetings.

Coordination completed.

RPA 11.3 Determine BT passage requirements at FCRPS dams

CORPS **Project: 6030 ESA Coordination--Albeni Falls Dam**

Deliverable Conduct coordination of RPA and RPM actions.

Accomplishment Coordination completed annually.

RPA 11.4 Provide suitable passage for BT at FCRPS dams

No Projects for this RPA. Please see RPA Summary Table.

RPA 11.5 Develop list of priority dams for BT entrainment

CORPS **Project: 6030 ESA Coordination--Albeni Falls Dam**

Deliverable Conduct coordination of RPA and RPM actions.

Accomplishment Coordination completed annually.

CORPS **Project: 6031 ESA Coordination--Chief Joseph Dam**

Deliverable Conduct coordination of RPA and RPM actions.

Accomplishment Coordination completed annually.

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination completed.

Accomplishment Coordination was done at TMT meetings.

RPA 11.6 **Assess BT entrainment at FCRPS dams**

CORPS **Project: 6030 ESA Coordination--Albeni Falls Dam**

Deliverable Conduct coordination of RPA and RPM actions.

Accomplishment Coordination completed annually.

RPA 11.A.1.1.a **Provide BT base flows and ramping @ Libby in WY01**

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination was done at TMT meetings.

Coordination completed.

RPA 11.A.1.1.b **Provide >= 6 kcfs for BT in July, Aug. @ Libby if...**

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination completed.

Coordination was done at TMT meetings.

CORPS **Project: 2075 Libby Operations Bull Trout**

Deliverable 1. Constrain Libby operations to minimize adverse effects of flow fluctuations on bull trout, including year-round min. flows and ramping rates and seasonal water management. 2. Provide 6000 cfs minimum for bull trout during July and August if Koocanusa elevations are below salmon guidelines and salmon augmentation will not occur. Increased flows may be determined through TMT if additional water were available.

Accomplishment Libby ramped up to 8 kcfs for bull trout flows May 15th outflows from Libby were larger than 8 kcfs until September 2.
Ramp rates were followed. Any exceptions were due to unscheduled project operations or were coordinated.

FY 2002 Deliverables and Accomplishments by RPA (USFWS)

RPA 11.A.1.1.c Provide annual operations schedule for Libby

CORPS **Project: 6025 ESA Coordination--Libby Dam**

Deliverable Conduct coordination of RPA and RPM actions during FY02.

Accomplishment Coordination was done at TMT meetings.

Coordination completed.

RPA 11.A.1.2.a Provide annual ops schedule for Hungry Horse

No Projects for this RPA. Please see RPA Summary Table.

RPA 11.A.1.3.a Study feasibility 2-way BT passage @ Albeni Falls

CORPS **Project: 6001 10.A.1.3; 11.A.1.3.a Bull Trout Radio-Telemetry Study in the Pend Oreille Basin**

Deliverable Scope project/study and contract for study work

Accomplishment Battelle contracted to perform radio-telemetry study

CORPS **Project: 6030 ESA Coordination--Albeni Falls Dam**

Deliverable Conduct coordination of RPA and RPM actions.

Accomplishment Coordination completed annually.

RPA 11.A.1.3.b If BT passage feasible @ A.Falls, consult, seek $$.

CORPS **Project: 6001 10.A.1.3; 11.A.1.3.a Bull Trout Radio-Telemetry Study in the Pend Oreille Basin**

Deliverable Scope project/study and contract for study work

Accomplishment Battelle contracted to perform radio-telemetry study

CORPS **Project: 6030 ESA Coordination--Albeni Falls Dam**

Deliverable Conduct coordination of RPA and RPM actions.

Accomplishment Coordination completed annually.

RPA 11.A.1.3.c Evaluate TDG below Albeni Falls Dam

CORPS **Project: 6030 ESA Coordination--Albeni Falls Dam**

Deliverable Conduct coordination of RPA and RPM actions.

Accomplishment Coordination completed annually.

RPA 11.A.1.4.a Continue Lake PO winter elev. study for kokanee

BPA **Project: 259 1994-047-00 Lake Pend Oreille Fishery Recovery Project**

Deliverable Recover kokanee abundance so that a harvest of 750,000 fish can be maintained on an annual basis. This would require an adult kokanee population of 3.7 million fish and an egg-to-fry survival rate exceeding 3.6%. Have no net change in the amount of shoreline spawning gravel due to erosion or siltation during this experiment (maintain 1.7 million sq. feet). Increase the warm water fish population in the Pend Oreille River seven fold. Monitor baseline limnological factors which influence the lake's fish populations. Improve hatchery stocking program so that it contributes 375,000 kokanee to the harvest.

Accomplishment Kokanee abundance and redd surveys were completed in FY02, with summary results available on the IDFG website: http://www2.state.id.us/fishgame/common/technical/fisheries.cfm

CORPS **Project: 2074 10.A.1.4; 11.A.1.4.a Draw down Albeni Falls for kokanee egg-to fry-study**

Deliverable Draw Albeni Falls down to 2051 feet

Accomplishment Drawdowns are accomplished per guidelines.

CORPS **Project: 6030 ESA Coordination--Albeni Falls Dam**

Deliverable Conduct coordination of RPA and RPM actions.

Accomplishment Coordination completed annually.

CORPS **Project: 6006 10.A.1.4; 11.A.1.4.a; b; c; and d Kokanee Project Coordination Meetings**

Deliverable Coordination w/ USFWS and IDFG

Accomplishment Last meeting w/ USFWS & IDFG in Aug 2002; meetings occur annually.

CORPS **Project: 6009 11.A.1.4.a; 11.A.1.4.b; 11.A.1.4.c; 11.A.1.4.d Lake Pend Oreille Elevation Study**

Deliverable Albeni Falls Dam operation & fisheries coordination as required for continuation of IDFG study of lake level operation on kokanee reproductive study

Accomplishment Ongoing coordination & dam operation

RPA 11.A.1.4.b Eval. Lk PO winter elev. on all kokanee life stages

BPA **Project: 259 1994-047-00 Lake Pend Oreille Fishery Recovery Project**

Deliverable Recover kokanee abundance so that a harvest of 750,000 fish can be maintained on an annual basis. This would require an adult kokanee population of 3.7 million fish and an egg-to-fry survival rate exceeding 3.6%. Have no net change in the amount of shoreline spawning gravel due to erosion or siltation during this experiment (maintain 1.7 million sq. feet). Increase the warm water fish population in the Pend Oreille River seven fold. Monitor baseline limnological factors which influence the lake's fish populations. Improve hatchery stocking program so that it contributes 375,000 kokanee to the harvest.

Accomplishment Kokanee abundance and redd surveys were completed in FY02, with summary results available on the IDFG website: http://www2.state.id.us/fishgame/common/technical/fisheries.cfm

BPA **Project: 263 2002-009-00 Lake Pend Oreille Predation Research**

Deliverable Balance the pelagic predator and prey populations at a standing stock of less than 1 kg/ha predator to 6 kg/ha prey. Redefine the point of balance for predators and prey in Lake Pend Oreille where kokanee survival drops below 50% for any year class. Research and implement methods for the removal of rainbow trout that will not impact bull trout, until balance point is reached (currently thought to be 1:6). the competition between bull trout and other predatory fish. Kokanee survival rates over 50% would indicate forage is not in limited supply.

Accomplishment Contract and field work (hydroacoustics and radio-telemetry) initiated in FY02; first results available in FY03.

CORPS **Project: 6030 ESA Coordination--Albeni Falls Dam**

Deliverable Conduct coordination of RPA and RPM actions.

Accomplishment Coordination completed annually.

CORPS **Project: 6006 10.A.1.4; 11.A.1.4.a; b; c; and d Kokanee Project Coordination Meetings**

Deliverable Coordination w/ USFWS and IDFG

Accomplishment Last meeting w/ USFWS & IDFG in Aug 2002; meetings occur annually.

CORPS **Project: 6009 11.A.1.4.a; 11.A.1.4.b; 11.A.1.4.c; 11.A.1.4.d Lake Pend Oreille Elevation Study**

Deliverable Albeni Falls Dam operation & fisheries coordination as required for continuation of IDFG study of lake level operation on kokanee reproductive study

Accomplishment Ongoing coordination & dam operation

RPA 11.A.1.4.c USFWS will recommend Lake Pend Oreille winter elev.

CORPS **Project: 6030 ESA Coordination--Albeni Falls Dam**

Deliverable Conduct coordination of RPA and RPM actions.

Accomplishment Coordination completed annually.

CORPS **Project: 6006 10.A.1.4; 11.A.1.4.a; b; c; and d Kokanee Project Coordination Meetings**

Deliverable Coordination w/ USFWS and IDFG

Accomplishment Last meeting w/ USFWS & IDFG in Aug 2002; meetings occur annually.

CORPS **Project: 6009 11.A.1.4.a; 11.A.1.4.b; 11.A.1.4.c; 11.A.1.4.d Lake Pend Oreille Elevation Study**

Deliverable Albeni Falls Dam operation & fisheries coordination as required for continuation of IDFG study of lake level operation on kokanee reproductive study

Accomplishment Ongoing coordination & dam operation

RPA 11.A.1.4.d Monitor & eval. Lk PO results; adjust.

BPA **Project: 259 1994-047-00 Lake Pend Oreille Fishery Recovery Project**

Deliverable Recover kokanee abundance so that a harvest of 750,000 fish can be maintained on an annual basis. This would require an adult kokanee population of 3.7 million fish and an egg-to-fry survival rate exceeding 3.6%. Have no net change in the amount of shoreline spawning gravel due to erosion or siltation during this experiment (maintain 1.7 million sq. feet). Increase the warm water fish population in the Pend Oreille River seven fold. Monitor baseline limnological factors which influence the lake's fish populations. Improve hatchery stocking program so that it contributes 375,000 kokanee to the harvest.

Accomplishment Kokanee abundance and redd surveys were completed in FY02, with summary results available on the IDFG website: http://www2.state.id.us/fishgame/common/technical/fisheries.cfm

CORPS **Project: 6030 ESA Coordination--Albeni Falls Dam**

Deliverable Conduct coordination of RPA and RPM actions.

Accomplishment Coordination completed annually.

CORPS **Project: 6006 10.A.1.4; 11.A.1.4.a; b; c; and d Kokanee Project Coordination Meetings**

Deliverable Coordination w/ USFWS and IDFG

Accomplishment Last meeting w/ USFWS & IDFG in Aug 2002; meetings occur annually.

CORPS **Project: 6009_11.A.1.4.a; 11.A.1.4.b; 11.A.1.4.c; 11.A.1.4.d_Lake Pend Oreille Elevation Study**

Deliverable Albeni Falls Dam operation & fisheries coordination as required for continuation of IDFG study of lake level operation on kokanee reproductive study

Accomplishment Ongoing coordination & dam operation

RPA 11.A.2.1.a Count BT @ Lwr Columbia Dams

No Projects for this RPA. Please see RPA Summary Table.

RPA 11.A.2.1.b Record BT in Lower Columbia R. smolt facilities

BPA **Project: 245_1987-127-00_Smolt Monitoring by Federal and Non-Federal Agencies**

Deliverable 1) Conduct annual Smolt Monitoring Program (SMP) at seven mainstem Snake and Columbia River dams, Lewiston Snake River trap, Lower Grande Ronde trap, and White Bird trap on the Salmon River. (Note: Imnaha River trap is another SMP site operated by the Nez Perce Tribe (NPT) under Project 1997-015-01). 2) Perform PIT tagging of ~25,500 juvenile fish at five hatcheries and upload data files to PSMFC databsase (USFWS tagging support component). 3) Transmit daily juvenile fish passage, sampling, marking, and other biological and hydrological data to online databases at Fish Passage Center (FPC) and Pacific States Marine Fisheries Commission (PSMFC) for distribution region wide. 4) Comply with ESA Section 10 sampling and reporting requirements at all monitiring sites. 5) Participating agencies and organizations prepare and submit annual reports to PSMFC summarizing SMP activities and data collected at each monitoring site for use in compiling FPC annaul report.

Accomplishment 1) Recorded observations of bull trout caught incidentally at Snake River traps and at smolt collection facilities at mainstem dams on the lower Snake and Columbia rivers.

RPA 11.A.2.1.c Record, report BT observed in all field activities

No Projects for this RPA. Please see RPA Summary Table.

RPA 11.A.2.1.d Estim. BT pop. size migrating to/from Lower Columbia R. reservoirs

No Projects for this RPA. Please see RPA Summary Table.

RPA 11.A.2.1.e Determine BT movement into Bonn. pool from tribs

No Projects for this RPA. Please see RPA Summary Table.

RPA 11.A.2.1.f Study BT potential in Wh Salmon R. after Condit

No Projects for this RPA. Please see RPA Summary Table.

RPA 11.A.2.1.g Eval. re-intro. fluvial BT in Klickitat R.

No Projects for this RPA. Please see RPA Summary Table.

RPA 11.A.2.2.a Study stranding of BT and prey species

No Projects for this RPA. Please see RPA Summary Table.

RPA 11.A.2.2.b Determine BT habitat in Lwr Columbia R.

No Projects for this RPA. Please see RPA Summary Table.

RPA 11.A.2.2.c Include agencies when developing BT studies

No Projects for this RPA. Please see RPA Summary Table.

RPA 11.A.2.3.a Reduce TDG production at lower Columbia R. dams

No Projects for this RPA. Please see RPA Summary Table.

FY 2002 Deliverables and Accomplishments by RPA (USFWS)

RPA 11.A.3.1.a Record BT in Lwr Snake R. Smolt Monitoring Prog.

BPA **Project:** **245 1987-127-00 Smolt Monitoring by Federal and Non-Federal Agencies**

Deliverable 1) Conduct annual Smolt Monitoring Program (SMP) at seven mainstem Snake and Columbia River dams, Lewiston Snake River trap, Lower Grande Ronde trap, and White Bird trap on the Salmon River. (Note: Imnaha River trap is another SMP site operated by the Nez Perce Tribe (NPT) under Project 1997-015-01). 2) Perform PIT tagging of ~25,500 juvenile fish at five hatcheries and upload data files to PSMFC databsase (USFWS tagging support component). 3) Transmit daily juvenile fish passage, sampling, marking, and other biological and hydrological data to online databases at Fish Passage Center (FPC) and Pacific States Marine Fisheries Commission (PSMFC) for distribution region wide. 4) Comply with ESA Section 10 sampling and reporting requirements at all monitiring sites. 5) Participating agencies and organizations prepare and submit annual reports to PSMFC summarizing SMP activities and data collected at each monitoring site for use in compiling FPC annaul report.

Accomplishment 1) Recorded observations of bull trout caught incidentally at Snake River traps and at smolt collection facilities at mainstem dams on the lower Snake and Columbia rivers.

RPA 11.A.3.1.b Count BT at Lower Snake R. dams

No Projects for this RPA. Please see RPA Summary Table.

RPA 11.A.3.1.c Expand fish count period @ LMO and LGO

No Projects for this RPA. Please see RPA Summary Table.

RPA 11.A.3.1.d Study use of mainstem by BT from Tucannon R.

BPA **Project:** **128 2002-006-00 Evaluate Bull Trout Movements in the Tucannon and Lower Snake Rivers**

Deliverable 1) Radio tags implanted in 20-40 bull trout captured at or downstream of the Tucannon Hatchery weir, April-July. 2) Fixed radio receiver site established on lower Tucannon.

Accomplishment Radio tags were implanted in 41 bull trout at the Tucannon Hatchery trap in May and June, 2002, 35 of which were subsequently tracked to upstream spawning areas. As of November 30, 2002, none of the radio tagged fish had been tracked below river-mile 11.3 (i.e., none had entered the mainstem Snake).

RPA 11.A.3.1.e Minimize BT take during facility mods.

No Projects for this RPA. Please see RPA Summary Table.

FY 2002 Deliverables and Accomplishments by RPA (USFWS)

RPA 11.A.3.1.f Estim. BT pop. size migrating to/from lwr Snake R.

BPA **Project:** **128 2002-006-00 Evaluate Bull Trout Movements in the Tucannon and Lower Snake Rivers**

Deliverable

1) Radio tags implanted in 20-40 bull trout captured at or downstream of the Tucannon Hatchery weir, April-July. 2) Fixed radio receiver site established on lower Tucannon.

Accomplishment

Radio tags were implanted in 41 bull trout at the Tucannon Hatchery trap in May and June, 2002, 35 of which were subsequently tracked to upstream spawning areas. As of November 30, 2002, none of the radio tagged fish had been tracked below river-mile 11.3 (i.e., none had entered the mainstem Snake).

BPA **Project:** **214 1992-026-01 Grande Ronde Model Watershed - Wallowa Valley Ranger District FY01 Projects**

Deliverable

1a)capture and tag 28 adult bull trout; 1b)track movements throughout the season on Lostine/Imnaha; 2a)add large wood to 9 miles on Carrol Creek; 2b)plant 3 acres of riparian veg; 2c)decommission 7.2 miles of road; 2d)install 4 troughs/spring boxes; 2f)reconstruct 5/8 miles of exclosure fence; 2g)monitor via photo points; 3a)construct 4 miles of riparian fence on Swamp Creek; 3b)construct water bars on 6.5 miles of road; 3c)collect/propagate seeds and cutting to plant 25 acres; 3d)establish photo points; 3e)establish 2 water temp stations; 3f)establish 12 channel cross sections to measure channel morphology; 4a)add large wood to 3.5 miles of Muddy Elk Hunter; 4b)plant 2 miles vegetation; 4c)construct 1.25 miles of riparion pasture fence; 4d)construct spprox 1 mile of exclosure fence; 4e)reconstruct approx 7 miles of exclosure fence; 4f)establish photo points. The above deliverables are scheduled to be completed between 2001 and 2004.

Accomplishment

1a)capture and tag 28 adult bull trout; 1b)track movements throughout the season on Lostine/Imnaha; 2a)add large wood to 9 miles on Carrol Creek; 2b)plant 3 acres of riparian veg; 2c)decommission 7.2 miles of road; 2d)install 4 troughs/spring boxes; 2f)reconstruct 5/8 miles of exclosure fence; 2g)monitor via photo points; 3a)construct 4 miles of riparian fence on Swamp Creek; 3b)construct water bars on 6.5 miles of road; 3c)collect/propagate seeds and cutting to plant 25 acres; 3d)establish photo points; 3e)establish 2 water temp stations; 3f)establish 12 channel cross sections to measure channel morphology; 4a)add large wood to 3.5 miles of Muddy Elk Hunter; 4b)plant 2 miles vegetation; 4c)construct 1.25 miles of riparion pasture fence; 4d)construct spprox 1 mile of exclosure fence; 4e)reconstruct approx 7 miles of exclosure fence; 4f)establish photo points; The above deliverables are scheduled to be completed between 2001 and 2004.

RPA 11.A.3.2.a Estim. BT pop. size migrating to/from Dworshak Res.

No Projects for this RPA. Please see RPA Summary Table.