

COLUMBIA RIVER BASIN
FISH AND WILDLIFE PROGRAM
ANNUAL IMPLEMENTATION WORK PLAN
FOR FISCAL YEAR 1991

BY

DIVISION OF FISH AND WILDLIFE
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EXECUTIVE SUMMARY

The Columbia River Basin Fish and Wildlife Program Annual Implementation Work Plan (AIWP) for Fiscal Year (FY) 1991 presents Bonneville Power Administration's (BPA) plans for implementing the Columbia River Basin Fish and Wildlife Program (Program) in FY 1991. The AIWP focuses on individual Action Items found in the 1987 Program for which BPA has determined that it has authority and responsibility to implement. Each of the entries in the AIWP includes objectives, background, progress to date in achieving the objectives, and a summary of plans for implementation in FY 1991. Most Action Items are implemented through one or more BPA-funded projects. Each Action Item entry is followed by a list of completed, ongoing, and planned projects, along with objectives, results, schedules, and milestones for each project.

In October 1988, BPA and the Columbia Basin Fish and Wildlife Authority (CBFWA) initiated a collaborative and cooperative Implementation Planning Process (IPP). The IPP provided opportunities in FY 1990 for the fish and wildlife agencies, Tribes, and other interested parties to be involved in planning the implementation of the Program in FY 1991. This planning process contributed to the development of this year's AIWP. The joint BPA/CBFWA IPP will continue. During FY 1991 when FY 1992 implementation will be planned all of the IPP groups (the Policy Review Group (PRG), Scientific Review Group, and seven Scoping Groups) will be available to participate in the IPP, which is expected to be functioning on the prescribed IPP schedule.

The FY 1991 AIWP emphasizes continuation of 132 ongoing, or projected ongoing, Program projects, tasks, or task orders, most of which involve protection, mitigation, or enhancement of anadromous fishery resources. The FY 1991 AIWP also contains 29 new Program projects or tasks. However, some of these new projects were still under review by the PRG as the AIWP went to press. The new projects still under review have been noted in Table 2, New FY 1991 Program Projects, and in the text of the AIWP.

The continuing and new activities in FY 1991 are summarized briefly by Program or technical area:

Mainstem Passage: BPA-funded projects will continue to support the smolt marking and monitoring program, the Fish Passage Center, and management of the Water Budget (pp. 33-40). BPA will continue to implement ten projects in the Reservoir Mortality and Water Budget Effectiveness Research Area of Emphasis (pp. 126-132), as agreed upon through ad hoc negotiation with the fishery agencies and Tribes. Three new research Area of Emphasis projects (pp. 133-134), two new smolt monitoring projects (pp. 40-41), and a new bypass evaluation project (p. 264) are described in the AIWP.

Artificial Propagation: The aim of this Program area is primarily to investigate ways to increase the quality and quantity of fish produced in hatcheries. In FY 1991, BPA will continue to implement 16 ongoing Hatchery Effectiveness and Fish Disease Technical Work Group (TWG) Five-Year Work Plan research projects (pp. 136-149). Other continuing hatchery effectiveness/fish health projects include development and recording of fish health data (p. 262) and research on a vaccine for infectious hematopoietic necrosis virus (p. 111). The AIWP includes five

new research projects from the Fish Disease TWG Five-Year Work Plan (pp. 140-142).

Natural Propagation: A total of 31 ongoing habitat and tributary passage projects in Section 703(c)(1) of the Program will continue or be completed in FY 1991 (pp. 51-71). These projects, located throughout Oregon, Idaho, and Washington, emphasize enhancement of anadromous fish spawning and rearing habitat and improvement of passage conditions, with the goal of increasing production of naturally spawning stocks. Three new habitat enhancement-related projects (pp. 49-50) are described in the AIWP.

Supplementation: Three ongoing supplementation research projects from the Supplementation TWG Five-Year Work Plan will continue in FY 1991 (pp. 151-152). Three additional research projects may start in FY 1991 (pp. 153-154). The goal of supplementation research is to improve programs for supplementing natural production areas with stocked fish, whether from hatchery or wild stocks, and to assess the potential of supplementation to increase natural production.

Resident Fish: The resident fish projects begun in FY 1990 or before (pp. 171-206) will continue, as will the sturgeon studies being carried out throughout the Basin (p. 193). Three new projects are planned for addition to the resident fish program during FY 1991 (pp. 188 and 266).

Wildlife: In FY 1991, the emphasis will shift from planning to actual mitigation projects. A "placeholder" project for wildlife mitigation in Oregon, Washington, and Idaho has been included in the AIWP (p. 239). Upon development of priority mitigation objectives by the Council, the Wildlife Scoping Group is expected to develop specific projects. BPA will complete wildlife loss assessments for Federal Columbia River Power System (FCRPS) facilities (pp. 213-214) and will continue funding mitigation plans (p. 222). Wildlife mitigation efforts for Libby and Hungry Horse dams in Montana will continue (pp. 224-233), along with implementation of a long-term mitigation agreement for these facilities (p. 244).

Major Projects: This category includes major hatchery construction, passage improvement, and habitat enhancement projects implemented by BPA's Fish and Wildlife Project Management Branch. During FY 1991, construction of the Galbraith Springs kokanee hatchery on Lake Roosevelt will be completed (p. 176). Development of the Master Plan for the artificial production facility or facilities to be located in northeastern Oregon (p. 98) will continue. Construction of the Umatilla Hatchery (p. 102), preliminary design of the Nez Perce Low-Capital Propagation Facilities (p. 106), and operation and maintenance of the Colville Hatchery (p. 172) will continue. New FY 1991 projects include the final design of the Yakima Hatchery (p. 96), six other tasks associated with the Yakima/Klickitat production project (pp. 95-96), and a Umatilla Hatchery satellite siting study (p. 103).

Planning Activities: The IPP will continue to guide BPA's Program implementation in FY 1991 (pp. 23-24), and BPA will continue to participate in the seven IPP Scoping Groups. BPA will also participate in

the Council-managed System and Subbasin Planning and System Monitoring and Evaluation programs (pp. 25-26).

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I. INTRODUCTION

General

The Columbia River Basin Fish and Wildlife Program (Program) was developed by the Northwest Power Planning Council (Council) in accordance with Public Law 96-501, the Pacific Northwest Electric Power Planning and Conservation Act (Act). The purpose of the Program is to guide the Bonneville Power Administration (BPA) and other Federal agencies in carrying out their responsibilities to protect, mitigate, and enhance fish and wildlife of the Columbia River Basin. The Act explicitly gives BPA the authority and responsibility to use the BPA fund for these ends, to the extent that fish and wildlife are affected by the development and operation of hydroelectric generation in the Columbia River Basin. The Columbia River Basin Fish and Wildlife Program Annual Implementation Work Plan (AIWP) presents BPA's draft plans for implementing the Program during Fiscal Year (FY) 1991.

The AIWP reflects the primary goals of the Council's Action Plan (Section 1400 of the Program): to provide a solid, timely, and focused basis for budgeting and planning. In addition, the AIWP provides a means to judge the progress and the success of Program implementation. The AIWP is based on the outline developed by the Policy Review Group (PRG) during Step 1 of the annual cycle of the Implementation Planning Process (IPP), which is described in Section III.

This AIWP has been organized and written to meet the specific needs of Program Action Items 10.1-10.3. The AIWP includes schedules with key milestones for FY 1991 and beyond, and addresses the Action Items assigned to BPA in Section 1400 of the 1987 Program and in subsequent amendments.

All Program projects discussed in the AIWP are listed in Tables 1 and 2 according to their status as of September 1, 1990. Table 1 (pp. 3-14) lists completed, ongoing, and deferred projects. Table 2 (pp. 15-17) lists FY 1991 new-start projects. "Ongoing" status indicates that the project started in FY 1990 or before and that it is expected to continue through part or all of FY 1991. "Deferred" means that BPA implementation has been postponed to FY 1992 or later. "Completed" indicates completion during FY 1990. "New" denotes projects planned for BPA implementation in FY 1991. However, several of these new projects were still under review by the Policy Review Group as the FY 1991 AIWP went to press. The new projects still under review have been noted in Table 2 and in the text of the AIWP.

A number of projects are expected to begin in late FY 1990 and have been listed in Table 1 of the Draft AIWP as "Projected FY '90 Starts," based on their projected start dates. Several other projects are expected to end in late FY 1990. These projects have been listed in Table 1 as "Projected FY '90 Completions," based on their projected completion dates.

Section VIII describes BPA's non-Program, internal support projects. These projects were not subject to review by the PRG and have been included in the AIWP to help the PRG and the public to better understand what BPA is doing.

FY 1991 AIWP

The AIWP continues to focus on individual Program Action Items. Each Action Item entry is accompanied by the relevant Program measure language (or abstract), a statement of BPA's objectives in implementing the Action Item, a discussion of background and progress to date, and a summary of implementation plans for FY 1991 to accomplish the Action Item.

The AIWP also presents plans for individual project implementation. Project level reporting has been condensed to tabular form wherever possible. Tables are subdivided into:

- I. Completed Projects
- II. FY 1990 Ongoing Projects
- III. Deferred Projects (if applicable)
- IV. New Projects

Within each of these four categories, appropriate information is provided, e.g., Project Number, Project Title, Date Completed, Results/Conclusions, Project Status, Schedule and Milestones, Anticipated Start Date, Reason for Deferral, and Project Officer.

Abbreviations Used

The AIWP uses many abbreviations to identify various agencies, organizations, and technical terms. Table 3 (pp. 19-20) lists the full name of each group, or the technical term, and the corresponding abbreviation used in the AIWP.

TABLE 1. **ONGOING**, DEFERRED, AND COMPLETED PROGRAM PROJECTS

PROJECT STATUS DEFINITIONS:

ONGOING □ BPA is currently implementing project, i.e., there is a signed agreement, and project is expected to continue into FY 91.

PROJECTED

FY 90 START = Project was in FY 90 AIWP as a NEW FY 90 Project; there is no signed agreement yet, but BPA expects to start implementing project in FY 90.

DEFERRED = Project was in FY 90 AIWP; BPA implementation has been postponed to a future fiscal year beyond FY 91.

COMPLETED □ Project completed in FY 90. (Projects completed before FY 90 are not listed in the FY 91 AIWP.)

PROJECTED

COMPLETION = Project is expected to be completed in FY 90.

**TABLE 1
FY 1991 WORK PLAN PROJECTS**

ONGOING, DEFERRED, AND COMPLETED PROJECTS

ACTION ITEM	TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
2 1	WATER BUDGET MANAGEMENT	87-127	ONGOING	SMDLT MONITORING AND WATER BUDGET PROGRAM
		83-6	ONGOING	OPERATION/MAINTENANCE OF BPA FISH TAGGING TRAILER
2 2	SMDLT MONITORING	83- 323	ONGOING	SMDLT MONITORING/WATER BUDGET
		84-14	ONGOING	SMDLT MONITORING/WATER BUDGET
		87-401	ONGOING	SMDLT SURVIVAL AND TRAVEL TIME
3 1	CONDUIT DESIGN	NONE		
4 1	ELLENSBURG SCREENS	87- 47	COMPLETED	ELLENSBURG SCREENS CONSTRUCTION
2	HABITAT AND PASSAGE IMPROVE MENT PROJECTS	81-108	ONGOING	WARM SPRINGS HABITAT IMPROVEMENT
		83-7	ONGOING	IDAHO HABITAT EVALUATION/IMPROVEMENT PROJECTS
		83- 359	ONGOING	SALMON RIVER HABITAT ENHANCEMENT
		83-415	ONGOING	ALTURAS LAKE
		83- 436	ONGOING	THREE MILE DAM PASSAGE IMPROVEMENTS
		84-5	ONGOING	CLEARWATER RIVER SUBBASIN
		84- 6	ONGOING	CLEARWATER HABITAT ENHANCEMENT
		84-8	ONGOING	JOHN DAY RIVER SUBBASIN
		84-9	ONGOING	GRANDE RONDE RIVER SUBBASIN
		84-11	ONGOING	WILLAMETTE/CLACKAMAS RIVER SUBBASIN
		84-21	ONGOING	MAINSTEM, MIDDLE FORK, JOHN DAY RIVER
		84- 22	ONGOING	MIDDLE FORK & TRIBUTARIES, JOHN DAY RIVER
		84- 23	ONGOING	CAMAS CREEK, IDAHO
84- 24	ONGOING	MARSH, ELK, UPPER SALMON RIVER, IDAHO		

**TABLE 1 (cont.)
FY 1991 WORK PLAN PROJECTS**

ONGOING, DEFERRED, AND COMPLETED PROJECTS

ACTION ITEM	TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
4. 2	HABITAT AND PASSAGE IMPROVE- MENT (cont.)	84-25	ONGOING	GRAND RONDE HABITAT IMPROVEMENT PROJECT
		84- 62	ONGOING	TROUT CREEK HABITAT IMPROVEMENT
		85-7 1	ONGOING	SOUTH FORK JOHN DAY RIVER & IZEE FALLS FEASIBILITY STUDY
		86- 75	ONGOING	LITTLE NACHES RIVER PASSAGE
		86- 79	ONGOING	FIFTEENMILE CREEK BASIN HABITAT IMPROVEMENT
		86- 124	ONGOING	LITTLE FALL CREEK PASSAGE FACILITIES MAINTENANCE
		87-100	ONGOING	UMATILLA HABITAT IMPROVEMENT - USFS
		87- 100- 1	ONGOING	UMATILLA HABITAT IMPROVEMENT - CTUIR
		87-1 00-2	ONGOING	UMATILLA HABITAT IMPROVEMENT - ODFW
		87- 104	ONGOING	PASSAGE IMPROVEMENTS AT WESTLAND DIVERSION
		87- 104- 1	ONGOING	PASSAGE IMPROVEMENTS AT STANFIELD DIVERSION
		87-1 04- 2	ONGOING	WESTLAND NON-FISH IMPROVEMENTS
		87- 112	DEFERRED	OROFINO CREEK PASSAGE
		87- 416	ONGOING	MAXWELL DIVERSION IMPROVEMENT
		87- 416- 1	ONGOING	COLD SPRINGS DIVERSION IMPROVEMENT
		88- 22	ONGOING	UMATILLA BASIN TRAP AND HAUL
		88- 116	ONGOING	TROUT CREEK O & M
89- 24- 1	ONGOING	UMATILLA BASIN PASSAGE FACILITY EVALUATION		
4. 3	ROZA	NONE		
4. 4	PROSSER	NONE		
4. 5	YAKIMA PASSAGE	85- 62	ONGOING	PASSAGE IMPROVEMENT EVALUATION
		86- 112	COMPLETED	TOPPENISH/WESTSIDE/ELLENSBURG SCREEN FABRICATION
		89- 90	ONGOING	YAKIMA PASSAGE PHASE 2 SCREENS PREDESIGN

**TABLE 1 (cont.)
FY 1991 WORK PLAN PROJECTS**

ONGOING, DEFERRED, AND COMPLETED PROJECTS

ACTION ITEM	TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
4. 6	UMATILLA RIVER WATER EXCHANGE	89-27	PROJECTED FY 90 START	PROVIDE POWER FOR USBR COLUMBIA RIVER PUMPS
4. 6. 1	UMATILLA NON-STRUCTURAL WATER MEASURES	NONE		
4. 14. 1	JOHN DAY ACCLIMATION	83-313	ONGOING	NET PEN REARING OF FALL CHINOOK SALMON
4. 15. 1	YAKIMA HATCHERY (Tasks)	86-45 88-115 88-120 88-123 88-149 88-167 89-42 89-43 89-82 89-83 89-89 89-100 89-105 90-58 90-65	ONGOING ONGOING ONGOING ONGOING COMPLETED COMPLETED COMPLETED COMPLETED ONGOING ONGOING ONGOING ONGOING ONGOING ONGOING ONGOING ONGOING	YAKIMA HATCHERY - CLE ELUM PROJECT YAKIMA/KLICKITAT HATCHERY DESIGN AND CONSTRUCTION YAKIMA AND KLICKITAT NATURAL/ARTIFICIAL PRODUCTION PROGRAM YAKIMA HATCHERY COORDINATION - ROZA YAKIMA HATCHERY WATER ANALYSIS YAKIMA HATCHERY ECONOMIC STUDY KLICKITAT HATCHERY PRE-ENGINEERING YAKIMA HATCHERY PRE-ENGINEERING YAKIMA HATCHERY EXPERIMENTAL DESIGN-VDF YAKIMA HATCHERY EXPERIMENTAL DESIGN-VOW YAKIMA/KLICKITAT RADIOTELEMETRY STUDY TECHNICAL WRITER SPECIES INTERACTION STUDY PROJECT LEADER FUNCTION JUVENILE MONITORING TRAP CALIBRATION

**TABLE 1 (cont.)
FY 1991 WORK PLAN PROJECTS**

ONGOING, DEFERRED, AND COMPLETED PROJECTS

ACTION ITEM	TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
4. 16. 1- 4. 16. 2	NORTHEAST OREGON SPRING CHINOOK	88-53	ONGOING	NORTHEASTERN OREGON ARTIFICIAL PRODUCTION FACILITIES
4. 17. 1	UMATILLA RELEASE AND COLLECTION	83-435	ONGOING	MINTHORN AND BONIFER SPRINGS ACCLIMATION FACILITIES
4. 17. 2	UMATILLA HATCHERY	84-33 84-33-3 87-415	ONGOING PROJECTED COMPLETION COMPLETED	UMATILLA HATCHERY UMATILLA HATCHERY TRIBAL FISH CULTURE TRAINING UMATILLA HATCHERY MASTER PLAN
4. 17. 3	NEZ PERCE HATCHERY	83-350 88-126	ONGOING ONGOING	NEZ PERCE LOW CAPITAL PRODUCTION FACILITIES NEZ PERCE TECHNICAL SUPPORT
4. 17. 4	CLEARWATER STUDY	88-15	ONGOING	MAINSTEM CLEARWATER RIVER STUDY
----	IMPROVED HATCHERY EFFECTIVENESS (Action Item 34. 23 in 1984 Program)	83-312 83-363 84-43 87-403	ONGOING ONGOING ONGOING COMPLETED	EPIDEMIOLOGY AND CONTROL OF INFECTIOUS DISEASES DEVELOPMENT OF DIETS FOR ENHANCED SURVIVAL OF SALMON EVALUATION OF A SUBUNIT VACCINE AGAINST INFECTIOUS HEMATOPOIETIC NECROSIS REGIONAL FISH DISEASE LABORATORY
4. 17. 5	WILLAMETTE RIVER SPRING CHINOOK	NONE		

**TABLE 1 (cont.)
FY 1991 WORK PLAN PROJECTS**

ONGOING, DEFERRED, AND COMPLETED PROJECTS

ACTION ITFM	TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
4. 17. 6	PELTON DAM	89-29	ONGOING	PROPAGATION IN PELTON DAM LADDER
4. 21	UPPER COLUMBIA HATCHERY RELEASE	NONE		
5. 1	KNOWN STOCK ELECTROPHORESIS	NONE		
6. 1	TECHNICAL WORK GROUPS	87-307	ONGOING	TECHNICAL WORK GROUP COORDINATION
6. 2	RESEARCH AREAS OF EMPHASIS			
	<u>RES MDRT/VE</u>	82-3	ONGOING	MAGNITUDE/DYNAMICS OF PREDATOR-CAUSED MORTALITY ON JUVENILE SALMON DS
		82-12	ONGOING	PREDATION INDEX AND WAYS OF REDUCING SALMON10 LOSSES TO PREDATION
		83-319	ONGOING	PIT TAG RESEARCH
		87-413-1	ONGOING	FISH SURVIVAL AND SMOLT PHYSIOLOGY/BEHAVIOR WORKSHOPS
		87-413-z	ONGOING	ANALYSIS OF HISTORIC DATA FOR ADULT AND JUVENILE SALMONIDS
		86-118	ONGOING	FEASIBILITY OF SATISFYING MDEL ASSUMPTIONS OF THE
			(TASK ORDER 10)	BURNHAM/ANDERSON FISH SURVIVAL ESTIMATION TECHNIQUE
		88-134	PROJECTED COMPLETION	MENARY COLLECTION EFFICIENCY
		88-141	ONGOING	USE OF ADVANCED PHOTOPERIOD TO ACCELERATE SMOLTIFICATION
		89-107	ONGOING	EPIDEMIOLOGICAL METHODS FOR QUANTIFYING SURVIVAL
				RELATIONSHIPS FROM PIT TAG RELEASES OF SMOLTS
		90-77	ONGOING	DEVELOPMENT OF A SYSTEM WIDE PREDATOR CONTROL PROGRAM
		90-78	ONGOING	SYSTEM WIDE SIGNIFICANCE OF PREDATION ON JUVENILE SALMONIDS IN COLUMBIA AND SNAKE RIVER RESERVOIRS

TABLE 1 (cont.)
 FY 1991 WORK PLAN PROJECTS

ONGOING, DEFERRED, AND COMPLETED PROJECTS

<u>ACTION</u> <u>ITEM</u>	<u>TECHNICAL</u> <u>SUBJECT</u>	<u>PROJECT</u> <u>NUMBER</u>	<u>STATUS</u>	<u>TITLE</u>
	<u>FISH DISEASE</u>	88-152	ONGOING	INFECTIOUS HEMATOPOIETIC NECROSIS VIRUS RESEARCH
		89-31	ONGOING	CONTROL OF BACTERIAL KIDNEY DISEASE
		89-32	ONGOING	REGISTRATION OF ERYTHROMYCIN
		89-40	ONGOING	ANALYTICAL METHODS FOR MALACHITE GREEN
		89-54	ONGOING	RESEARCH ON ANTIFUNGAL COMPOUNDS
		89-81-z	ONGOING	ERYTHROCYTIC INCLUSION BODY SYNDROME ETIOLOGY
		90-61	PROJECTED FY 90 START	FUNGAL INFECTIONS OF SPRING AND SUMMER CHINOOK
	<u>HATCHERY EFF</u>	86-118	COMPLETED (TASK ORDER 8)	WORKSHOP - HATCHERY EFFECTIVENESS TECHNICAL WORKING GROUP
		86-118	COMPLETED (TASK ORDER 9)	WORKSHOP - VOLITIONAL AND SERIAL RELEASES
		88-160	ONGOING	BID-ENGINEERING EVALUATION OF OXYGEN SUPPLEMENTATION
		88-160-z	PROJECTED COMPLETION	ENGINEERING CONSULTATION/ASSISTANCE ON PROJECT 88-160
		88-163	ONGOING	EFFECTS OF CODED WIRE TAGGING ON SPRING CHINOOK
		89-30	ONGOING	EVALUATION OF PRE-RELEASE TEMPERATURE ACCLIMATION
		89-45	PROJECTED COMPLETION	ASSESS ANADROMOUS PRODUCTION CAPACITY IN COLUMBIA BASIN
		89-46	ONGOING	SPRING CHINOOK SMDLT QUALITY ASSESSMENT
		89-65	ONGOING 1/	CWT EVALUATION OF MISSING HATCHERY GROUPS, OR/WA - USFWS
		89-66	ONGOING 1/	CWT EVALUATION OF MISSING HATCHERY GROUPS, WA - WDF
		89-69	ONGOING 1/	CWT EVALUATION OF MISSING HATCHERY GROUPS, OR-ODFW
		89-81-3	ONGOING	MODELING OPTIMIZED HATCHERY PRODUCTION
		89-81-4	ONGOING	SURVEY OF RESEARCH AND RESEARCH IMPLEMENTATION

1/ Project will continue until current FY 90 contract expires in FY 91. FY 91 funds have been deleted from BPA's budget as recommended by the PRG at the August 30, 1990, PRG meeting.

TABLE 1 (cont.)
 FY 1991 WORK PLAN PROJECTS

GOI ON DEFERRED, AND COMPLETED PROJECTS

ACTION ITEM	TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
	<u>SUPPLEMENTATION</u>	88-100 89-96 89-97 89-98	PROJECTED COMPLETION ONGOING ONGOING ONGOING	ANALYSIS OF PAST & PRESENT SALMON AND STEELHEAD SUPPLEMENTATION GENETIC MONITORING AND EVALUATION PROGRAM FOR SUPPLEMENTED POPULATIONS OF SALMON AND STEELHEAD IN THE COLUMBIA BASIN EFFECTIVENESS OF SUPPLEMENTING IMNAHA RIVER STEELHEAD WITH HATCHERY SMOLTS AND EFFECTS ON NATURAL PRODUCTION PERFORMANCE, GENETIC CHARACTERISTICS, AND LIFE HISTORY CHANGES EFFECTIVENESS OF SUPPLEMENTATION STRATEGIES AND ASSESSMENT OF INTERACTIONS BETWEEN HATCHERY FISH AND NATURAL FISH IN SALMON AND CLEARWATER BASINS
6.3	HATCHERY DATA BASE	NONE		
6.4	NATURAL PRODUCTION DATA BASE	NONE		
6.5	HIGH PRIORITY PROJECTS	NONE		
6.10	SYSTEM MONITORING AND EVALUATION	88-108-1 88-108-2 89-104	ONGOING ONGOING ONGOING	COORDINATED INFORMATION SYSTEM (CIS) EPA/USGS MAPPING SYSTEM FOR CIS HISTORICAL DATA BASE
6.12	COORDINATION AND CONSULTATION	NONE		
7.1	COLVILLE HATCHERY	85-38	ONGOING	COLVILLE HATCHERY OPERATION AND MAINTENANCE
7.2	COEUR D'ALENE	90-44	ONGOING	STREAM SURVEY, HATCHERY, HABITAT IMPROVEMENTS, AND MONITORING

**TABLE 1 (cont.)
FY 1991 WORK PLAN PROJECTS**

ONGOING, DEFERRED, AND COMPLETED PROJECTS

ACTION ITFM	TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
7.3	KOKANEE SALMON HATCHERIES	88-24-1	COMPLETED	ARCHEOLOGICAL SURVEY - GALBRAITH SPRINGS
		88-62	ONGOING	KOKANEE HATCHERIES
		88-62-1	PROJECTED COMPLETION	HATCHERY CONSULTANT
		90-76	ONGOING	HATCHERY MANAGER TRAINING PROGRAM
7.4	LAKE ROOSEVELT	88-63	ONGOING	LAKE ROOSEVELT MONITORING PROGRAM
		90-18	ONGOING	LAKE ROOSEVELT HABITAT IMPROVEMENT PROJECTS
7.5	KOOTENAI INDIAN RESERVATION	88-64	ONGOING	DESIGN/CONSTRUCT/OPERATE STURGEON HATCHERY
7.6	KOOTENAI RIVER	88-65	ONGOING	ASSESS IMPACTS OF WATER LEVEL FLUCTUATIONS
7.7	KALISPEL RESERVATION	88-66	ONGOING	ASSESS FISHERY IMPROVEMENT OPTIONS IN THE PEND OREILLE RIVER
7.10	FUND PROJECTS	88-1 56	ONGOING	DUCK VALLEY RESIDENT FISH PROJECT
7.11	MONTANA PROJECTS	81-105	COMPLETED	KERR/HUNGRY HORSE EFFECTS ON FLATHEAD KOKANEE
7.12	STURGEON	86-50	ONGOING	STURGEON STATUS AND HABITAT REQUIREMENTS
		89-44	ONGOING	COLUMBIA RIVER WHITE STURGEON STUDY
----	PEND OREILLE HATCHERY	85-339	ONGOING	KOKANEE STOCK STATUS AND EVALUATION OF CABINET GORGE HATCHERY

**TABLE 1 (cont.)
FY 1991 WORK PLAN PROJECTS**

ONGOING, DEFERRED, AND COMPLETED PROJECTS

ACTION ITEM	TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
7.13	KOOTENAI RIVER MATERIALS REMOVAL	NONE		
7.14	DWORSHAK DAM IMPACTS ASSESSMENT	87-99 87-407	ONGOING ONGOING	DWORSHAK DAM IMPACTS ASSESSMENT/KOKANEE/LIMNOLOGY DWORSHAK IMPACTS ASSESSMENT/RAINBOW/SMALLMOUTH BASS
7.15	DRAWDOWN RECOMMENDATIONS	83-465 83-467	ONGOING ONGOING	HUNGRY HORSE RESERVOIR LEVELS LIBBY RESERVOIR LEVELS
----	MITIGATION STATUS REPORTS/ CONSULTATIONS	NONE		CONSULTATIONS AMONG AFFECTED PARTIES SHOULD BEGIN
8.1	LOSS STATEMENTS	88-12 88-44 90-51	COMPLETED ONGOING PROJECTED FY 90 START	LOWER COLUMBIA WILDLIFE MITIGATION PLANNING WILDLIFE MITIGATION PLANNING FOR CHIEF JOSEPH DAM LOWER CLEARWATER OTTER STUDY
8.2	LOSS STATEMENT CONSULTATIONS	NONE		
8.3	MITIGATION PLANS	88-154 90-25 90-50	COMPLETED PROJECTED FY 90 START ONGOING	WILDLIFE PROTECTION/ENHANCEMENT OF DWORSHAK DAM LOWER COLUMBIA WILDLIFE MITIGATION PLAN MINIDOKA WILDLIFE MITIGATION PLAN
8.4- 8.7	LIBBY DAM 1987-1991	84-38 84-39 87-55 88-43 90-49	COMPLETED COMPLETED ONGOING ONGOING ONGOING	URAL-TWEED BIGHORN SHEEP MITIGATION, HABITAT IMPROVEMENT URAL-TWEED BIGHORN SHEEP MITIGATION NW MONTANA WILDLIFE HABITAT ENHANCEMENT LIBBY WILDLIFE HABITAT ENHANCEMENT LIBBY/HUNGRY HORSE WILDLIFE PROJECT

**TABLE 1 (cont.)
FY 1991 WORK PLAN PROJECTS**

ONGOING, DEFERRED, AND COMPLETED PROJECTS

ACTION ITEM	TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
8. 8-	HUNGRY HORSE	87-60	PROJECTED COMPLETION	MONTANA EASEMENTS/LAND ACQUISITION
8. 10	1987- 1991	88-1 13	ONGOING	HUNGRY HORSE WILDLIFE ENHANCEMENT
		89- 23	ONGOING	MONTANA WILDLIFE HABITAT PROTECTION
8. 11	PUBLIC INVOLVEMENT	NONE		
8. 12	WILDLIFE	90-9 1	ONGOING	IDAHO TIMBER RIGHTS ADVANCE DESIGN STUDY
	MITIGATION	90-92	ONGOING	CONFORTH RANCH ADVANCE DESIGN STUDY
8. 13	MONITORING AND EVALUATION	NONE		
---	TRUST FUND	89- 52	ONGOING	MONTANA WILDLIFE TRUST AGREEMENT
9. 1	CONTINUE TO APPLY PROGRAM SECTIONS 1204 (a), (b), (c), AND (e) TO ALL NEW PROJECTS.			
9. 3	CUMULATIVE EFFECTS	NONE		
9. 4	DEMO - TURBINE INTAKE SCREEN	NONE		
10. 1- 10. 3	EXPENDITURE AND OBLIGATION PLANS AND PROGRAM WORK PLANS. SCHEDULES WITH KEY MILESTONES FOR THE SUBSEQUENT FISCAL YEAR.			

**TABLE 1 (cont.)
FY 1991 WORK PLAN PROJECTS**

ONGOING, DEFERRED, AND COMPLETED PROJECTS

ACTION ITEM	TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
----	PROGRAM RELATED, NON-MEASURE PROJECTS	82-13	ONGOING	CODED-WIRE TAG RECOVERY
		82-16	ONGOING	YAKIMA RIVER SPRING CHINOOK ENHANCEMENT STUDY
		87-130	COMPLETED	FREEZE-BRAND RECOVERY DATA (MCNARY DAM)
		86-13	ONGOING	FISH HEALTH MONITORING IN WASHINGTON - VDW
		86-54	ONGOING	FISH HEALTH MONITORING IN WASHINGTON - VDF
		87-117	ONGOING	FISH HEALTH MONITORING IN IDAHO
		87-118	ONGOING	FISH HEALTH MONITORING IN OREGON
		87-119	ONGOING	FISH HEALTH MONITORING - USFWS
		89-20	ONGOING	AIRLIFT FABRICATION
		90-80	ONGOING	COLUMBIA RIVER BASIN PIT TAG INFORMATION SYSTEM (PTAGIS)

TABLE 2. **NEWFY** 1991 PROGRAM PROJECTS

TABLE 2
FY 1991 WORK PLAN PROJECTS

NEW PROJECTS IN FY 1991

ACTION ITEM	TECHNICAL SUBJECT	PROJECT NUMBER	TITLE	
2.2	SMDLT MONITORING	91-13	PIT TAG FACILITIES	
		91-40	BONNEVILLE DAM JUVENILE FISH SAMPLING FACILITIES	
4.2	HABITAT AND PASSAGE IMPROVEMENT	91-15	EVALUATION/DEVELOPMENT OF STREAM HABITAT IMPROVEMENT STRATEGIES/STANDARDS	
		91-30	EAST FORK SALMON RIVER COMPLETION	
		86-79-1	FIFTEENMILE CREEK - PHASE IV AND V	
4.15.1	YAKIMA HATCHERY (Tasks)	90-64	KLICKITAT RIVER MONITORING	
		90-66	GENETIC GUIDELINE DEVELOPMENT	
		90-67	LOWER YAKIMA RIVER SMDLT TRAP DEVELOPMENT	
		90-68	ADULT TRAP PREDESIGN	
		90-69	YAKIMA HATCHERY FINAL DESIGN	
		90-71	SMDLT LOSS EVALUATION	
		90-72	COMPUTER INFORMATION SYSTEM DEVELOPMENT	
4.17.2	UMATILLA HATCHERY	91-14	UMATILLA SATELLITE FACILITIES	
6.2	RESEARCH AREAS OF EMPHASIS			
		<u>RES MORT/WB EFF</u>	91-17	INVESTIGATION OF FACTORS AFFECTING JUVENILE WILD SPRING CHINOOK MIGRATION ABOVE LOWER GRANITE DAM
			91-28	PIT-TAGGING OF WILD CHINOOK IN IDAHO AND OREGON
		91-29 1/	EARLY LIFE HISTORY REQUIREMENTS OF SUBYEARLING CHINOOK IN COLUMBIA BASIN	
	<u>FISH DISEASE</u>	91-22	HATCHERY SORTING FOR BKD	
		91-23	ECTOPARASITE RESEARCH	
		91-25	<u>CERATOMXA SHASTA</u> CONTROL	

1/ As the FY 91 AIWP went to press, project was still under review by the PRG. Implementation in FY 91 is contingent upon results of PRG review and BPA decision.

**TABLE 2
FY 1991 WORK PLAN PROJECTS**

NEW PROJECTS IN FY 1991

ACTION ITEM	TECHNICAL SUBJECT	PROJECT NUMBER	TITLE
	<u>FISH DISEASE</u>	91-26	BACTERIAL COLDWATER DISEASE
	cont.	91-31	IHN VIRUS VACCINE
	<u>SUPPLEMENTATION</u>	90-52 <u>2/</u>	PERFORMANCE/STOCK PRODUCTIVITY IMPACTS OF HATCHERY SUPPLEMENTATION
		90-53 <u>2/</u>	SOUTHEAST WASHINGTON SPECIES INTERACTION STUDIES
		90-55 <u>2/</u>	IMPACTS OF SUPPLEMENTATION ON STOCK PRODUCTIVITY AND PERFORMANCE IN SALMON RIVER
7.10	FUND PROJECTS	91-27	FEASIBILITY STUDY -- HATCHERY PRODUCTION ABOVE HELLS CANYON
8.12	WLDLIFE MTIGATION	91-16	WLDLIFE MTIGATION (OREGON, WASHINGTON, IDAHO)
- -	PROGRAM RELATED, NON-MEASURE PROJECTS	90-60	BYPASS EVALUATIONS
<u>NON-ACTION ITEM PROJECTS:</u>			
---	CLEARWATER RIVER	91-18	CLEARWATER RIVER TROUT STOCKING
---	HUNGRY HORSE MTIGATION	91-19	HUNGRY HORSE FISHERIES LOSS MTIGATION

2/ As the FY 91 AIWP went to press, project was still under review by the PRG.

(0395W)

TABLE 3. ABBREVIATIONS USED IN THE WORK PLAN

Abbreviation	Complete Title
Act	Pacific Northwest Electric Power Planning and Conservation Act
AIWP	Annual Implementation Work Plan
BIA	Bureau of Indian Affairs
BCWD	Bacterial Cold Water Disease
BKD	Bacterial Kidney Disease
BLM	Bureau of Land Management
BPA	Bonneville Power Administration
BPNL	Battelle Pacific Northwest Laboratory
CBFWA	Columbia Basin Fish and Wildlife Authority
C-E	Cost-effectiveness
CCT	Confederated Colville Tribes
CIS	Coordinated Information System
Council	Northwest Power Planning Council
CRB	Columbia River Basin
CRITFC	Columbia River Inter-Tribal Fish Commission
CRSP	Columbia River Salmon Passage
CSKT	Confederated Salish-Kootenai Tribes
CTUIR	Confederated Tribes of the Umatilla Indian Reservation
CTWSIR	Confederated Tribes of the Warm Springs Indian Reservation
cwu	Central Washington University
CY	Calendar Year
DOE	Department of Energy
EIBS	Erythrocytic Inclusion Body Syndrome
ELISA	Enzyme-Linked Immunosorbent Assay
EPA	Environmental Protection Agency
EPRI	Electric Power Research Institute
FCRPS	Federal Columbia River Power System
FDA	Food and Drug Administration
FDTWG	Fish Disease Technical Work Group
FONSI	Finding of No Significant Impact
FY	Fiscal Year
HEP	Habitat Evaluation Procedure
HETWG	Hatchery Effectiveness Technical Work Group
ICFWRU	Idaho Cooperative Fish and Wildlife Research Unit
IDFG	Idaho Department of Fish and Game
IFIM	Instream Flow Incremental Methodology
IHN	Infectious Hematopoietic Necrosis
IPN	Infectious Pancreatic Necrosis
IPP	Implementation Planning Process
IRB	Internal Review Budget
KCFS	Thousand cubic feet per second
KIT	Kalispel Indian Tribe
MAF	Million acre-feet
MDFWP	Montana Department of Fish, Wildlife and Parks
MEG	System Monitoring and Evaluation Work Group
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding

TABLE 3. ABBREVIATIONS USED IN THE WORK PLAN
(Continued)

Abbreviation	Complete Title
M/WBTWG	Reservoir Mortality and Water Budget Effectiveness Technical Work Group
NEPA	National Environmental Policy Act
NF	National Forest
NFH	National Fish Hatchery
NMFS	National Marine Fisheries Service
NPT	Nez Perce Tribe
ODFW	Oregon Department of Fish and Wildlife
OHSU	Oregon Health Sciences University
osu	Oregon State University
OWRD	Oregon Water Resources Department
PIT	Passive Integrated Transponder
PSMFC	Pacific States Marine Fisheries Commission
PMIS	Program Management Information System
PNUCC	Pacific Northwest Utilities Conference Committee
PNWFHPC	Pacific Northwest Fish Health Protection Committee
PNWRS	Pacific Northwest Research Station
PRG	Policy Review Group
Program	Columbia River Basin Fish and Wildlife Program
PSMFC	Pacific States Marine Fisheries Commission
RFF	Resources for the Future
RM/WBE	Reservoir Mortality/Water Budget Effectiveness
RPA	Request for Project Authorization
scs	Soil Conservation Service
SMEP	System Monitoring and Evaluation Program
SPG	System and Subbasin Planning Group
SPM	System Planning Model
SPOC	System Planning Oversight Committee
SPT	Shoshone Paiute Tribe
SRG	Scientific Review Group
STWG	Supplementation Technical Work Group
TBA	To Be Announced
TWG	Technical Work Group
TWgG	Technical Working Group
UCUT	Upper Columbia United Tribes
UI	University of Idaho
URB	Umatilla River Basin
URBFC	Upriver Bright Fall Chinook
USACE	U.S. Army Corps of Engineers
USBR	U.S. Bureau of Reclamation
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
uw	University of Washington
WDF	Washington Department of Fisheries
WDW	Washington Department of Wildlife
WEID	West Extension Irrigation District
Work Plan	Annual Implementation Work Plan
wsu	Washington State University
YIN	Yakima Indian Nation

II. FY 1991 BPA BUDGET ALLOCATION

The FY 1991 AIWP reflects strengthened coordination and prioritization through the Implementation Planning Process (IPP). Anadromous fish will continue to be the area of focus of the AIWP (Figure 1), with the following highlights: 1) hydro system operations/downstream migration reflects increased emphasis on fish passage; 2) fish health, artificial production, and supplementation projects will be scrutinized and implemented at a reduced level due to emphasis on production rather than research; 3) the Umatilla Hatchery should be completed during the year, and activities will continue on the Yakima and Northeastern Oregon production facilities.

Resident fish activities, including first year operation of the Lake Roosevelt hatcheries, will continue. Most of the existing resident fish measures in the Council's Program will be completed by the end of FY 1991.

The wildlife program will be obligated at a higher level than in the past, due to anticipated full implementation of the FY 1990 wildlife Program amendment. Many new mitigation projects are expected to be implemented in Oregon, Washington, and Idaho following the establishment of priority mitigation objectives by the Council. The Montana wildlife trust payment will be made, and specific projects will be implemented through the mitigation agreement with Montana.

Operation and maintenance (O&M) will continue to increase as the Fish and Wildlife Program matures, and more facilities that require O&M are constructed.

FY 1991 FISH AND WILDLIFE PROGRAM

Annual Implementation Work Plan

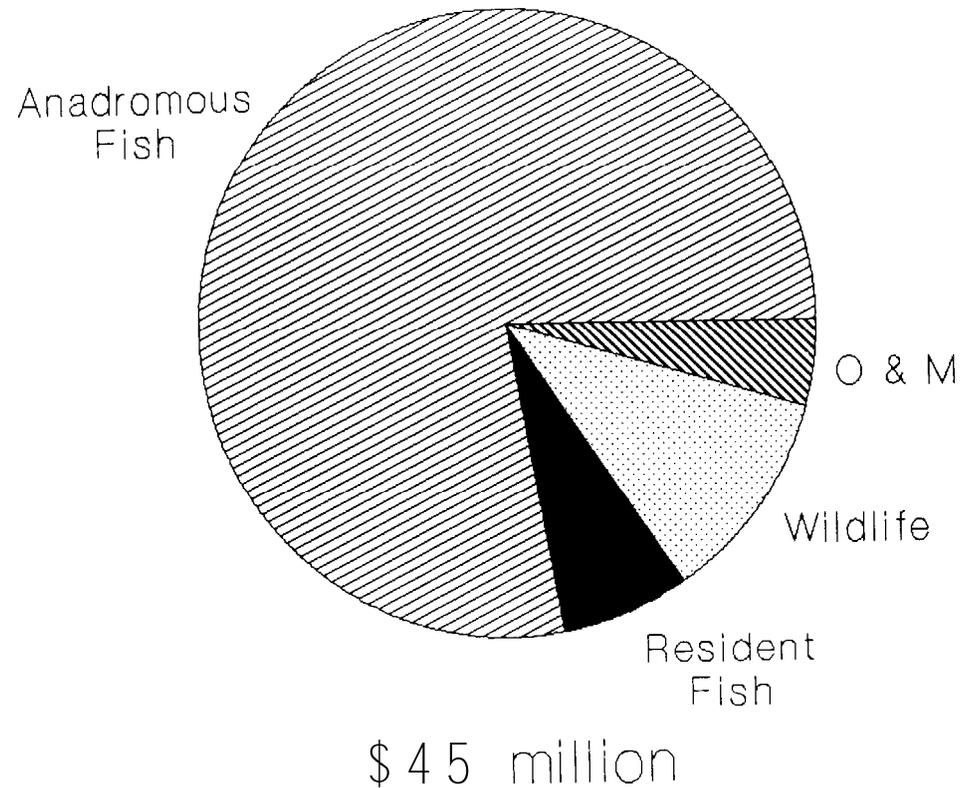


Figure 1. FY 1991 Fish and Wildlife Program Budget Allocation by Major Program Areas

III, IMPLEMENTATION PLANNING PROCESS

Background: On October 19, 1988, Bonneville Power Administration (BPA) and the Columbia Basin Fish and Wildlife Authority (CBFWA) signed a letter endorsing the Implementation Planning Process (IPP). The IPP is an annual, sequential, nine-step process by which BPA, in collaboration with the CBFWA, plans its implementation of the Columbia River Basin Fish and Wildlife Program (Program). The nine steps of the IPP are:

- Step 1. Program Policy Review
- Step 2. Project Scoping
- Step 3. Draft AIWP Development
- Step 4. Public Review and Comment on Draft AIWP
- Step 5. Publication of AIWP
- Step 6. Project Specifications
- Step 7. Project Selection and Negotiation
- Step 8. Contract Awards
- Step 9. Evaluation of Implementation Progress

The IPP relies on three types of working groups to accomplish the nine steps: 1) the Policy Review Group (PRG); 2) the Scientific Review Group (SRG); and 3) Scoping Groups (SGs), formerly called Technical Working Groups (TWgGs).

Responsibilities: The primary role of the PRG is to provide BPA with the best possible guidance and recommendations, from a policy perspective, on the direction, emphasis, and funding of Program implementation. Most of the PRG's activities occur during Step 1 of the IPP, Program Policy Review. The PRG is comprised of senior-level representatives from the CBFWA, BPA, Northwest Power Planning Council, U.S. Army Corps of Engineers, utilities, and other interested parties.

The SRG will provide the PRG and BPA with objective scientific/technical advice and recommendations related to implementation of the Program and evaluate implementation progress. Development of the annual evaluation report during Step 9 is the major task of the SRG. The SRG is comprised of senior-level scientists from the Northwest and other regions of the country.

The SGs assist BPA with scoping of projects (Step 2), responding to public comments (Step 4), and development of project specifications (Step 6). Currently, there are seven IPP SGs: Wildlife, Resident Fish, Columbia and Snake River Flow and Passage, Artificial Propagation, Habitat, Supplementation and Genetics, and Tributary Passage. These SGs are comprised of the region's technical experts in specific areas of expertise. The IPP provides a process to create additional SGs if they are needed.

BPA is responsible for developing the AIWP (Step 3), implementing the public review process (Step 4), publishing the AIWP (Step 5), initiating procurement activities (Step 6), selecting contractors (Step 7), and awarding contracts (Step 8). BPA representatives also participate with the SGs in IPP Steps 2, 4, and 6.

Progress : The PRG was established in late 1988, held its initial meeting in January 1989, and continues to meet as needed to accomplish IPP tasks. The PRG provided BPA with funding-level recommendations on BPA's FY 1992-1993 Fish and Wildlife Program Internal Review Budget (IRB). With the assistance of the PRG's ad hoc Work Group, the PRG developed the Outline of the Draft FY 1991 AIWP. The Draft FY 1991 AIWP is based on this Outline, which represents the PRG's recommendations to BPA regarding FY 1991 Program implementation. Seven SGs were established in May 1990, and the SGs are expected to contribute to the development of the final FY 1991 AIWP. The SRG continued to provide BPA and the PRG with objective advice on the scientific aspects of Program implementation in FY 1991. The SRG will develop its first annual evaluation report on Program implementation in July 1990. Because the IPP is a unique and relatively new program, BPA has conducted, and continues to conduct, educational efforts to familiarize IPP participants with their roles and responsibilities.

Plans: In FY 1991, the IPP will continue to provide an opportunity for the fish and wildlife agencies, Tribes, and other interested parties to participate with BPA in planning its implementation of the Program. Step 1 of the third annual IPP cycle, during which FY 1992 implementation will be planned, is expected to begin in August 1990, and the prescribed 12-month IPP schedule will be followed for the first time since the inception of the IPP. The SRG's annual evaluation report is expected to provide valuable technical recommendations to the PRG for use in planning FY 1992 Program implementation. The SRG and SGs will continue to meet as needed throughout FY 1991.

Copies of the complete IPP document and the Terms of Reference for the PRG, SRG, and SGs (formerly TWGs) are available from:

Publications Clerk
Bonneville Power Administration
Division of Fish and Wildlife - PJ
P. O. Box 3621
Portland, OR 97208

IV. SYSTEM PLANNING ACTIVITIES

BPA actively participates in two Council-managed system planning programs, System and Subbasin Planning and System Monitoring and Evaluation. These two programs will strongly influence future Program direction and will ultimately affect BPA's implementation of the Program, its evaluation and monitoring efforts, and its future Fish and Wildlife Program budget levels. The current status and plans of these two programs are presented below.

System and Subbasin Planning

Responsibilities: The Council funds the activities of the fish and wildlife agencies and tribes to develop an Integrated System Plan, including 31 separate Subbasin Plans. The fish and wildlife agencies and tribes have organized committees at the system and subbasin levels for completing this task. The system level committee, the System Planning Group (SPG), has been responsible for developing the format for the plans, guiding the subbasin planners, and reviewing draft plans. The SPG will develop the Integrated System Plan. The subbasin level committees have been responsible for collecting information and developing drafts of specific Subbasin Plans. The Council has organized another committee at the system level, the System Planning Oversight Committee (SPOC), that has identified and is addressing major issues that have been and will be part of the system planning process.

Progress: The Council contract with the fish and wildlife agencies and tribes through the Pacific States Marine Fisheries Commission calls for nine products over the life of the planning process. Planning began in September 1987, and several products have been completed to date. These products include the preliminary information report that contains information needed to evaluate the production potential of the subbasins and thereby identify realistic objectives for production, draft Subbasin Plans above Bonneville Dam that include proposed objectives for production, the preliminary system analysis report above Bonneville Dam that analyzes the proposed objectives for consistency, and final Subbasin Plans above Bonneville Dam that include recommended and alternative strategies for meeting the proposed objectives. The same products have been completed for subbasins below Bonneville Dam. The draft Integrated System Plan has been issued for public review, with a final expected in early 1991.

Plans: The Integrated System Plan will recommend objectives for salmon and steelhead production in the 31 subbasins of the Columbia River Basin. It also will include recommended strategies for meeting those objectives. This plan, including the 31 Subbasin Plans, will be considered for amendment into the Program in a process that will extend into early 1992. The results of that amendment process should provide guidance for funding activities in BPA's implementation of the Fish and Wildlife Program in the 1990s. BPA is participating in the system planning process to assist in the definition of strategies for meeting salmon and steelhead production objectives and to help make the link between the planning process and implementation scheduling in fiscal years beyond 1991. BPA participation in the SPG and the SPOC will continue on a regular monthly basis through the end of the planning process.

System Monitoring and Evaluation

Responsibilities: The Council's Monitoring and Evaluation Group (MEG) is charged with: formulating a System Monitoring and Evaluation Program (SMEP), maintaining the System Planning Model (SPM), integrating Subbasin Plans, recommending formats for System and Subbasin Plan reports (including habitat capacity, genetic impacts, production, and cost of alternative strategies), developing a Coordinated Information System (CIS), and evaluating and disseminating research results.

Progress: MEG subcommittees have been formed to address: SPM maintenance, genetics, analytical methods, System Plan integration, and the CIS. These efforts are underway.

Plans: The Council will prepare a work plan as the basis for direct BPA funding. After the SMEP is adopted by the Council, BPA funding of MEG activities will be formalized as a Program Action Item. MEG will focus on gaining public support for and eventual adoption of SMEP, CIS implementation, and System Plan integration.

Long-Term Role: MEG functions will continue as a result of its role in measuring systemwide progress, monitoring compliance with Program policies, integrating system plans, maintaining the SPM, guiding development and maintenance of the CIS, and evaluating research results for application to Program actions.

V. FISH AND WILDLIFE DIVISION ORGANIZATION AND STAFF

The Division of Fish and Wildlife develops, coordinates, and manages BPA's Fish and Wildlife Program pursuant to the requirements of the Pacific Northwest Power Planning and Conservation Act (Act). The Division was reorganized under BPA's Most Efficient Organization concept in late 1987. As a result, the functions of the Division's branches and sections were redefined. Figure 1 contains a current organization chart for the Division. Branch and section titles and functions are as follows:

Fisheries Integration Branch

This Branch reviews and analyzes proposed BPA policies programs, and plans for their consistency with BPA's fish and wildlife obligations under the Act and recommends standards, criteria, policy, or procedures necessary to ensure equitable treatment of fish and wildlife in BPA's decision making process; evaluates hydroelectric operations for fish and wildlife impacts and needs and recommends balanced operations; reviews and analyzes policies, programs, plans, and legislation of external entities to determine their impact on BPA's Fish and Wildlife Program; represents and integrates the biological and Fish and Wildlife Program requirements into the development of agency policy, programs, and plans; and develops and administers research and monitoring contracts directed at resolving fish passage problems at hydroelectric facilities. The Branch represents BPA on the Reservoir Mortality and Water Budget Effectiveness Technical Work Group and manages BPA's implementation of major sections of the Program.

Biological Planning Branch

This Branch provides biological/technical expertise to the Division for planning for and implementing the Program. It prepares and monitors the Fish and Wildlife Program budget; develops and maintains the Division's Program Management Information System (PMIS); develops annual implementation work plans; provides cost-effectiveness analysis and determination for funding actions; develops and maintains the fish and wildlife mitigation accounting records; represents BPA on technical planning work groups established by the Council and the CBFWA; and manages BPA's implementation of major sections of the Program.

Program Planning Section

The Program Planning Section oversees and provides BPA's representative to: Council TWGs addressing supplementation of wild fish with hatchery fish, System and Subbasin Planning, and System Monitoring and Evaluation. It oversees and coordinates the Implementation Planning Process and develops the Annual Implementation Work Plan. It oversees implementation of areas of the Program dealing with natural production of salmon and steelhead. It develops methods for and oversees the application of cost-effectiveness criteria in the selection of activities to be implemented by BPA and develops and maintains BPA's fish and wildlife mitigation accounting records.

Biological Research Section

This Section provides biological technical expertise necessary to assist the Division's development of the Program Annual Implementation Work Plan and annual budget planning documents and to assist in the implementation of complex major projects; serves as BPA's representative to the Council's Hatchery Effectiveness Technical Work Group (HETWG) and Fish Disease Technical Work Group (FDTWG); develops scopes of work and oversees the procurement of projects identified in the annual Work Plan; and serves as COTR for subsequent contracts. It oversees areas of the Program addressing artificial production (including fish health) of salmon and steelhead, resident fish, and wildlife and develops and maintains the Division's official contract and project files.

Project Management Branch

The Project Management Branch manages the implementation of fish and wildlife development projects of the Program; provides comprehensive oversight and management of such projects appropriate to their cost, policy precedents, political sensitivity, biological complexity, and associated controversy; formulates and directs the coordination efforts both within BPA and externally with Federal and State agencies, Tribes, utility groups, and the public to define, develop, and implement proposals; manages the development of the comprehensive long-term operations and maintenance agreements attendant on such projects; and manages and directs the allocation of financial and personnel resources necessary to implement, operate, and maintain capital and expense projects.

This Work Plan refers to four different personnel titles. It is helpful for the reader to understand the responsibilities and authorities of these positions, should questions or comments arise about BPA procurement, projects, or implementation. The positions are:

PROJECT MANAGER

Individual assigned working responsibility for the coordinated and timely implementation of one or more "major" projects within the Program. All Project Managers are assigned to the Project Management Branch..

PROJECT BIOLOGIST

Biologist who serves as the lead for all biological activities related to a major project. During project implementation, the Project Biologist oversees all biological aspects of the project and provides biological information to the Project Manager.

PROJECT OFFICER

Individual responsible for the management of "non-major" projects; often serves as the COTR for any contracts associated with the project.

CONTRACTING OFFICER'S TECHNICAL REPRESENTATIVE (COTR)

Individual responsible to BPA's Contracting Officer for the development,

negotiation, and management of contracts for specific goods and services associated with fulfillment of Program measures.

VI. PROGRAM PLANS BY ACTION ITEMS

ANADROMOUS FISH ACTION ITEMS AND TECHNICAL SUBJECTS

2.1 WATER BUDGET MEASURES

- 303(a) [Abstract] The Federal project operators and regulators shall provide the fish and wildlife agencies and Tribes with a total Water Budget of 78 kcfs-months (4.64 Maf). It is to be divided into 58 kcfs-months (3.45 Maf) at Priest Rapids Dam and 20 kcfs-months (1.19 Maf) at Lower Granite Dam, and used during April 15 through June 15.
- 303(b) [Abstract] BPA shall fund the establishment and operation of a Fish Passage Center, including funds for two Fish Passage Manager positions and for technical and clerical support. This support will assist the Fish Passage Managers in: 1) planning and implementing the annual smolt monitoring program called for in Section 304(d)(2); 2) developing and implementing flow and spill requests; and 3) monitoring and analyzing research results to assist in implementing the Water Budget and spill planning. The Fish Passage Center will function as the primary program center for housing data and information regarding juvenile fish passage.
- 303(c) [Abstract] The Federal project operators, Fish Passage Managers, fish passage advisor, and power system operators will coordinate system operations for the current year and develop experimental use and accounting procedures for both the mid-Columbia and Snake River Water Budgets. Experimental Water Budget procedures shall be implemented for at least water years 1987 and 1988. This committee also shall evaluate alternative Water Budget implementation procedures and report to the Council.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To provide adequate flows for fish migrations, and to insure clear and timely integration of fish requirements and hydrosystem operational decisions.

Background and Progress to Date:

The Council recognized that the agencies and Tribes lacked the expertise to work with the owners and operators of the hydrosystem. The agencies and Tribes needed such expertise to assure that the Water Budget would be considered in all phases of hydrosystem planning and operation. The Council therefore specified that BPA fund two Fish Passage Managers, one for the Tribes and one for the agencies. BPA has funded the operation of the Fish Passage Center and the Fish Passage Data Information System since 1983.

Plans:

BPA plans to continue to fund the operation of the Fish Passage Center, the Fish Passage Managers and support staff, and the Fish Passage Data Information System to benefit the integration of fish and hydrosystem operational requirements, and to provide increased adult returns by using supplemental flows in a timely fashion.

I. COMPLETED PROJECTS

None.

II. FY 1990 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
87-127	<p>Smolt Monitoring and Water Budget Programs - PSMFC and CRITFC</p> <p>Project Officer: D. Johnson</p> <p>Objectives: Fund the operation of the Fish Passage Center and provide Water Budget flows for shaping between April 15 and June 15 to reduce hydrosystem impacts on juvenile outmigrations. (See also Action Item 2.1)</p>	<p>Date initiated: February 1987</p> <p>Results/Conclusions: BPA funded the operation of the Fish Passage Center and the Fish Passage Data Information System in FY 1990.</p>	<ol style="list-style-type: none">1. Continuing: BPA will continue to fund the operation of the Fish Passage Center and the Fish Passage Data Information System and to provide Water Budget flows for shaping annually.2. Continuing: Contractors will guide the smolt monitoring program; they will provide an annual report by November 1 of each year and a smolt monitoring program by December 1 of each year.

Smolt monitoring, as provided under the fish Spill MDA, is also conducted under Project 87-127:

<p>Smolt Monitoring/Spill</p> <p>Project Officer: W Maslen</p> <p>Objectives: Provide monitoring of juvenile salmonid out-migrations at Lower Monumental and Ice Harbor Dams, as provided in the Fish Spill Memorandum of Agreement (MOA), to determine smolt numbers, migration timing, and species composition. This information will be used by the fishery agencies and Tribes to manage spill for fish passage under the terms of the MDA.</p>	<p>Date Initiated: 1989</p> <p>Results/Conclusions: Gatewell monitoring was conducted at Lower Monumental Dam for 12 hours/day (a 4 hour/day extension over the ongoing Smolt Monitoring Program). By mutual agreement of the parties, monitoring was not conducted at Ice Harbor Dam in 1990.</p>	<ol style="list-style-type: none">1. FY 1991: Continue gatewell sampling program as per terms of the MDA, or as agreed by the parties.2. Continuing: Continue gatewell sampling program for the purpose of spill management, pending installation of bypass.
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**PROJECT
NUMBER**

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES

83-6

Operation and Maintenance of
EPA Fish Marking Trailer - USFWS

Date initiated 3

Continuing: BPA will continue to fund marking
of various fish groups for BPA-funded projects.

Project Officer: W Maslen

Results/Conclusions: A total of ap-
proximately 1 million fish were marked
in 1990.

Objectives: Using mobile fish
marking trailers, conduct
marking (coded-wire tags, freeze
brand, and PIT tags) of juvenile
salmonids throughout the region
for BPA-funded projects, in-
cluding the Columbia River Basin
Smolt Monitoring Program and
Yakima Basin Monitoring and
Evaluation.

III. NEW PROJECTS

None.

2.2 SMOLT MONITORING PROGRAM

- 303(d) [Abstract] BPA shall fund an annual smolt monitoring program to be conducted by the agencies and Tribes. The monitoring program will provide information on the migrating characteristics of the various salmon and steelhead stocks and will include:
1. Field monitoring of smolt movement to determine the best timing of storage releases;
 2. Coordination of runoff forecasts with water budget usage and shaping;
 3. Continuous monitoring of runoff conditions and fish movement at Lower Granite and Priest Rapids dams to provide information to allow changes in water budget usage if actual runoff conditions are inconsistent with runoff forecasts; and
 4. Coordination of hatchery releases with water budget usage.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To determine where all major groups of migrating, juvenile hatchery and wild fish are in the hydrosystem. This information is used to implement the Water Budget and communicate spill requests.

Background and Progress to Date:

Starting in the 1970s, spring flows in the Columbia River changed dramatically with the completion of major headwater storage projects. This change helped flood control and power generation, but slowed the travel time of the outmigration. This resulted in increased exposure to predation and increased mortality of the juvenile salmon and steelhead. The Council sought to reduce the mortality associated with the downstream migrations by increasing the spring flows. A Water Budget volume was derived from agencies' and Tribes' recommendations and was specified for the mid-Columbia and lower Snake rivers. To be able to implement the Water Budget effectively, the smolt monitoring program has evolved to sample the downstream juvenile migrations at numerous key locations throughout the hydrosystem.

Plans:

BPA plans to continue funding the smolt monitoring program to improve the timely integration of the juvenile salmon and steelhead outmigration with the operation of the hydrosystem.

I. COMPLETED PROJECTS

None.

II. FY 1990 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
84-14	Monitoring of Downstream Salmon and Steelhead at Federal Hydroelectric Facilities - NMFS <u>Project Officer:</u> P. Poe <u>Objectives:</u> To monitor the seaward migration of juvenile salmon and steelhead at John Day, and Bonneville Dams as part of the Columbia River Smolt Monitoring Program to provide daily fish capture and condition data, as well as dam operations and river flow data, to the Fish Passage Center to assist in Water Budget management.	<u>Date initiated:</u> March 1984 <u>Results/Conclusions:</u> Project provided information that has been used by the Fish Passage Center as a basis for Water Budget requests and for Water Budget management directed toward improving the survival of juvenile salmon and steelhead migrants. Project has provided information on the migrating characteristics of the various stocks of salmon and steelhead produced in the Columbia River system Project continues to provide information for investigating relationships among flows, spill, travel time, smolt condition, and adult production. The 1984-1989 Annual Reports are available; 1990 Annual Report will be available May 1991.	1. FY 1991: 1990 Annual Report available May 1991. 2. Continuing: Project will continue to be funded as part of the Smolt Monitoring Program Contractor will provide annual operational reports and recommend changes as needed to the smolt monitoring schedule and facilities.

Smolt monitoring, as provided under the Fish Spill MDA, is also conducted under Project 84-14:

Smolt Monitoring/Spill - NMFS <u>Project Officer:</u> W Maslen <u>Objective:</u> Provide monitoring of juvenile salmonid out-migrations at John Day and The Dalles Dams, as provided in the Fish Spill Memorandum of Agreement (MDA),	<u>Date Initiated:</u> 1989 <u>Results/Conclusions:</u> Gatewell monitoring was conducted at the Dalles Dam for 24 hours/day during the spring and summer outmigrations. Hydroacoustic sampling proposed by the fishery agencies and Tribes was not conducted, as a result of insufficient lead time prior to the 1990 juvenile fish outmigration. Gatewell	1. FY 1991: Continue gatewell sampling program as per terms of the MDA, or as agreed 2. Continuing: Continue gatewell sampling program for the purpose of spill management, pending installation of bypass.
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**PROJECT
NUMBER**

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES

84-14
cont.

to determine smolt numbers, migration timing, and species composition. This information will be used by the fishery agencies and Tribes to manage spill for fish passage under the terms of the MDA.

monitoring at John Day Dam was conducted during the summer outmigration (no additional monitoring over the ongoing Smolt Monitoring Program).

83-323

Smolt Monitoring at the Head of Lower Granite Reservoir and Lower Granite Dam - IDFG

Project Officer: P. Poe

Objectives:

1. Operate the Lewiston and Clearwater traps from March 15 to mid-July as part of the Smolt Monitoring Program for Water Budget, fish collection, and transportation management purposes.
2. Monitor arrival time, relative passage index, and condition of juvenile salmon and steelhead into the head of Lower Granite reservoir from Snake River tributaries.
3. Determine travel time for hatchery chinook, hatchery steelhead, and wild steelhead migrants from the head of Lower Granite Reservoir to Lower Granite Dam using PIT-tagged smolts marked at the traps as well as freeze-branded and PIT-tagged smolts passing the traps from upriver sites.

Date initiated: January 1983

Results/Conclusions: The information collected on the migrational timing and condition of juvenile hatchery-produced and wild salmon and steelhead trout Snake River stocks from 1983 through 1990 has been used for in-season operational decisions relative to Water Budget, facility power operations, and fish collection and transportation programs. The collected information is also being used to investigate the relationships among river flows, travel time, smolt survival and condition, and adult production of salmon and steelhead trout stocks produced in the Snake River system. The 1983-1989 Annual Reports are available; 1990 Annual Report will be available May 1991.

1. FY 1991: BPA will continue to fund Project 83-323 activities as part of the Smolt Monitoring Program

2. Continuing: Contractor will provide annual reports and recommend changes as needed to the smolt monitoring schedule and facilities.

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
87-401	<p>Assessment of Smolt Condition for Travel Time Analysis -- USFWS</p> <p><u>Project Officer:</u> P. Poe</p> <p><u>Objectives:</u> Collect information on, smoltification, and prevalence of disease for marked groups of juvenile salmon and steelhead used by the Fish Passage Center in their travel time studies as part of the Smolt Monitoring Program. Continue the development of a smolt condition index to monitor fish quality during the seaward migration for use in real-time management and evaluation.</p>	<p><u>Date initiated:</u> May 1987</p> <p><u>Results/Conclusions:</u> Results show that level of stress, smoltification, and fish health can introduce bias/errors into estimates of smolt survival, and travel time. Measurements of parameters used to quantify the extent of smolt development, level of stress, and prevalence of disease are needed to evaluate how these biological factors are influencing experimental design assumptions in Columbia River mainstem passage juvenile fish migration studies. The 1987 and 1988 Annual Reports are available; 1989 Annual Report will be available September 1990.</p>	<p>FY 1990: BPA will continue to fund Project 87401 activities as part of the Smolt Monitoring Program</p> <p>2. Continuing: Contractor will provide annual reports and recommend changes based on evaluation of results.</p>

III. NEW PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
91-40	<p>Bonneville Dam Juvenile Fish Sampling Facilities</p> <p><u>Project Officer:</u> TBA</p>	New project	To be developed by SG.

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
91-40 cont.	<u>Objectives:</u> To develop multi-purpose juvenile fish sampling facilities capable of providing information on fish condition and species composition of the general population bypassing the powerhouses, and on the timing, physiology, condition, and growth of PIT-tagged fish.		
91-13	PIT Tag Facilities	New Project	FY 1991: Start project.
	<u>Project Officer:</u> D. Johnson		
	<u>Objectives:</u> To complete final design for Bonneville Dam I and II PIT tag facilities and construct the facilities. This work was formerly part of Project 83-319, PIT Tag Research. A separate contract (Project 91-13) was required for administrative reasons.		

3.1 ALTERNATIVE CONDUIT SYSTEM FOR JUVENILE FISH
(Test and Evaluate: November 15, 1987; Report January 1988)

403(d)(2) Test and evaluate an alternative conduit system for efficiently conveying juvenile fish from hydroelectric powerhouse intakes to the tailwater. This study shall test a design with potential for broad application at dams where turbine intake deflectors are in use or under consideration.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To test and evaluate alternative conduit systems for bypassing juvenile salmon and steelhead around dams.

Background and Progress to Date:

As juvenile salmon and steelhead migrate downstream past dams, they may be injured by pressurized conduit bypass systems used at most dams. A past study performed by the U. S. Army Corps of Engineers (USACE) and Idaho Cooperative Fish and Wildlife Research Unit (ICFWRU) demonstrated that an open flume has potential for minimizing injury to fish. BPA contracted with these two agencies to design and test different types of flumes to help pass fish safely around dams. The project was completed in March 1988. Results were used in the design of the new smolt bypass system at Little Goose Dam.

Plans:

Action Item 3.1 has been completed.

Projects:

None.

4.1 ELLENSBURG TOWN DIVERSION DAM FISHWAY AND BYPASS
(Design: October 1987)
(Construction Completed: October 1989)

803(b)(6) Bonneville shall fund the design and construction of a low flow vertical slot fishway and replacement of obsolete, inefficient juvenile fish screening/bypass facilities at the Ellensburg Town Diversion Dam.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To fund construction of the Ellensburg Town Diversion Dam fish screens.

Background and Progress to Date:

BPA funded the construction of the Ellensburg Town fish screens to improve the outmigration of juvenile salmon and steelhead from the Yakima River system. BPA did not fund the proposed fishway because no fishway presently exists, and the Ellensburg Water Company had a pre-Northwest Power Act obligation to fund fishway construction. Construction of the fish screens was completed in October 1989.

Plans:

Action Item has been completed.

I. COMPLETED PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>
87-47	Ellensburg Screens Construction - USBR	<u>Date Completed:</u> October 1989
	<u>Project Manager:</u> T Clune	<u>Results/Conclusions:</u> Construction of screens has been completed.
	<u>Objectives:</u> Improve fish screen facility on Ellensburg Water Company Canal.	

II. FY 1990 ONGOING PROJECTS

None.

III. NEW PROJECTS

None.

4.2 HABITAT AND PASSAGE IMPROVEMENT PROJECTS
(Consult with Project Sponsors on Need; Complete by 1991)

703(c)(1) [Abstract] BPA shall fund habitat and tributary passage projects as provided in Action Item 4.2. Upon Council approval of system plans provided for in Section 205, System Planning, BPA shall fund habitat and passage restoration or improvement measures in those plans, including those measures identified in the plans that are listed in Appendix A Table: Planning Inventory of Enhancement Projects.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To consult with project sponsors to determine whether projects listed in Action Item 4.2 are needed in the immediate future; to complete them by 1991 if they are needed.

Background and Progress to Date:

On May 7, 1987, BPA sent a letter to all habitat and tributary passage project sponsors to determine whether the listed projects were needed in the immediate future. All project sponsors, except Washington Department of Fisheries (WDF), stated that their listed projects were needed in the immediate future. WDF (June 2, 1987) recommended the following actions:

<u>Subbasin</u>		<u>Project</u>	<u>Recommendation</u>
Yakima	----	Thorpe Mill Screen (USBR Project)	Hold
	87-57	Old Reservation Canal Screen	Delay
	86-65	Snipes/Allen Screen	Delay

A total of 35 habitat and tributary passage improvement projects are listed in the AIWP, including 31 ongoing projects, one deferred project, and three new projects. Due to the large number of projects involved in the implementation of Program Measure 703(c)(1), the diversity of activities included, and BPA's continuous implementation support of habitat and passage projects, a table format was developed and used to review BPA implementation in the FY 1987 Work Plan. The same table format (Table 4) has been used in the current AIWP for projects started before FY 1991. New projects that start in FY 1991 and future FYs will be described using the same format as is used in the rest of the AIWP, with completed, ongoing, deferred, and new projects described in separate tables.

Table 4 covers research projects, evaluation projects, and habitat and passage enhancement projects. The last group is listed by subbasin, beginning with the Willamette/Clackamas River subbasin and proceeding upriver to the Salmon River subbasin. Information presented in the Table includes: the project description, current project status, and contract-effective period.

In FY 1987, BPA developed an Implementation Plan outline for habitat and passage enhancement projects and asked Project Leaders to complete Implementation Plans in FY 1988. BPA funding in FY 1988 was contingent upon completion of plans for all ongoing and new projects. Plans were completed for ongoing projects funded in FY 1988.

These habitat and passage enhancement project Implementation Plans will improve planning and scheduling of implementation efforts and will clearly define the projects. The plans will also enable BPA to accurately determine the funding required for completion of a project. Each completed Implementation Plan contains:

- 1) background information, such as specific project location, existing conditions, fishery resources, land use activities, and limiting factors;
- 2) enhancement techniques and an implementation schedule;
- 3) expected increase in fish production due to the project;
- 4) methods for monitoring physical habitat changes resulting from the project; and
- 5) cost of the project, including total cost and cost by fiscal year.

BPA expects projects to be implemented as planned and scheduled in the Implementation Plans.

Plans:

BPA will continue to implement the projects listed in Action Item 4.2 (if they are needed in the immediate future) and plans to complete most of them by 1991.

I. COMPLETED PROJECTS

See Table 4.

II. FY 1990 ONGOING PROJECTS

See Table 4.

III. NEW PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
91-15	<p>Evaluation/Development of Stream Habitat Improvement Strategies/Standards</p> <p><u>Project Officer:</u> R. Austin</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none">1. Establish standardized methods for determining limiting factors and for evaluating all fish and wildlife benefits resulting from stream habitat improvements.2. Determine current "state-of-the-art" in habitat improvement and protection.3. Report critical research needed to improve/evaluate future habitat work.4. Review and evaluate selected projects to validate fish production estimates.5. Determine cost-effectiveness of stream protection versus restoration/enhancement.	New Project	FY 1991: BPA determines method of procurement for developed SOW and initiates project; estimated completion of project is within 12 to 18 months from start date.

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
91-30	East Fork Salmon River Completion	New Project	FY 1991: Start project.
	<u>Project Officer:</u> S. Levy		
	<u>Objectives:</u> Improve habitat for spring chinook.		
86-79-1	Fifteenmile Creek - Phase IV - V	New Project	FY 1991: Begin implementation FY 1992: Complete implementation.
	<u>Project Officer:</u> TBA		
	<u>Objectives:</u> Overall objective is to increase the production of wild winter steelhead within the basin:		
	<ol style="list-style-type: none"> 1. Reduce lethal summer water temperatures. 2. Increase summer water flow. 3. Enhance fish habitat diversity within the stream 4. Improve stream channel stability. 5. Reduce sediment loading through enhanced riparian vegetation. 		

Table 4: Habitat Improvement and Passage Enhancement
Measure 703(c)(1)
Status Report

PROJECT NUMBER	PO	1/ - PM	2/ PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
						START DATE	RENEWAL DATE
I. RESEARCH PROJECTS							
None.							
II. EVALUATION AND MONITORING PROJECTS							
83-7	RJA	Evaluation of Idaho Habitat Improvement Projects - IDFG		Objective: Evaluate the juvenile chinook and steelhead production benefits of habitat and passage improvement projects in the Clear-water and Salmon River basins in order to produce the offsite mitigation record for Idaho.	Field sampling in progress. Annual report completed. Project continuing.	8/15/83	7/1/90
84-11	RDS	Clackamas/Hood River Habitat Enhancement Program - USFS/Mt. Hood NF		Fish Creek Evaluation Subproject Objective: To evaluate and quantify drainage-wide changes in habitat and smolt production as a result of habitat improvement.	Monitoring and Evaluation is ongoing in FY 91.	4/1/84	4/1/91

1/PO = Project Officer: RJA/R. Austin, JAB/J. Bauer, DEJ/D. Johnson
2/PM = Project Manager: SML/S. Levy, JGM/J. Marcotte, RDS/R. Stoots

PROJECT NUMBER	1/ PO - PM	2/ TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE

III. PASSAGE AND HABITAT IMPROVEMENT

Willamette River/Clackamas River Subbasin

84-11	RDS	<p>Clackamas/Hood River Habitat Enhancement - Mt. Hood NF</p> <p>Collawash River Falls Passage Subproject</p> <p><u>Objective:</u> Construct a fishway to correct Collawash Falls passage problems. The falls prevent access to potential spawning and rearing habitat.</p> <p><u>Improvement:</u> Structure and passage</p> <p><u>Habitat:</u> miles</p> <p><u>Species:</u> chinook, winter and summer steelhead, and coho</p> <p><u>Benefit:</u> Increase of 55,532 smolts and 2,957 adults.</p> <p>Collawash River Drainage Habitat Improvement: Hot Springs Fork Subdrainages Subproject</p> <p><u>Objective:</u> Install instream structures to improve spawning habitat and effective cover.</p> <p><u>Improvement:</u> Instream structure</p> <p><u>Habitat:</u> 10.6 miles</p> <p><u>Species:</u> Winter and summer steelhead, spring chinook and coho salmon</p> <p><u>Benefit:</u> 7,249 coho smolts; 2,616 chinook smolts; and 4,229 steelhead smolts.</p>	<p>FY 88 activities included excavation of the fishway channel in the bedrock at the falls. Final implementation of improved passage was provided in FY 90 by blasting rocks to reduce the falls gradient. O&M in FY 91.</p> <p>Instream structure construction will continue in FY 91 along with O&M of past projects.</p>	4/1/84	4/1/91
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1/PO = Project Officer: RJA/R. Austin, JAB/J. Bauer, DEJ/D. Johnson
 2/PM = Project Manager: SML/S. Levy, JGM/J. Marcotte, RDS/R. Stoots

PROJECT NUMBER	PO	-	PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT	TERM
						START DATE	RENEWAL DATE
84-11 cont.				<p>Lake Branch/West Fork Hood River Improvement Subproject</p> <p><u>Objective:</u> Improve adult/juvenile fish passage and the quality of spawning and low-flow rearing habitat.</p> <p><u>Improvement:</u> Instream structure and passage</p> <p><u>Habitat:</u> 10.0 miles</p> <p><u>Species:</u> Summer and winter steelhead, chinook</p> <p><u>Benefit:</u> 1,309 chinook smolts; 1,748 steelhead smolts.</p>	FY 91 activities include instream structure and passage construction projects and O&M of previous projects.		
				<p>Fish/Wash Creek Habitat Improvement Subproject</p> <p><u>Objective:</u> Improve spawning and rearing habitat for salmon and steelhead through habitat improvement measures.</p> <p><u>Improvement:</u> Instream structure</p> <p><u>Habitat:</u> 11 miles</p> <p><u>Species:</u> Spring chinook, coho, winter and summer steelhead.</p> <p><u>Benefit:</u> 1,857 steelhead smolts; 1,317 coho smolts.</p>	FY 91 activities include O&M of past projects.		
				<p>Lower Oak Grove Fork Habitat Improvement Subproject</p> <p><u>Objective:</u> Improve fish rearing and spawning habitat in the lower 3.8 miles of stream</p> <p><u>Improvement:</u> Instream structure</p> <p><u>Habitat:</u> 3.8 miles</p> <p><u>Species:</u> Winter and summer steelhead, chinook and coho salmon</p> <p><u>Benefit:</u> 680 steelhead smolts; 2,536 coho smolts.</p>	FY 91 activities include instream structure construction projects and O & M of past projects.		

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1/PO = Project Officer: RJA/R. Austin, JAB/J. Bauer, DEJ/D. Johnson
2/PM = Project Manager: SML/S. Levy, JGM/J. Marcotte, RDS/R. Stoots

PROJECT NUMBER	PO	1/ - PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
					START DATE	RENEWAL DATE
84-11			Fifteenmile Creek Basin Habitat Improvement Subproject <u>Objective:</u> Improve adult and juvenile fish passage, spawning and rearing habitat, and water quality conditions. <u>Improvement:</u> Passage and instream structure <u>Habitat:</u> 120 miles (30 mi USFS lands) <u>Species:</u> Wild winter steelhead	FY 91 activities include instream structure construction projects and O & M of past projects.		
86-124	RDS		Little Fall Creek Fish Passage - Facilities Maintenance <u>Objective:</u> Provide O & M funding for Fish Passage facilities. <u>Improvement:</u> Structure and passage <u>Habitat:</u> 120 miles <u>Species:</u> Chinook and steelhead <u>Benefit:</u> Potential of adults: Steelhead adults: 543 Spring chinook adults: 256	A multi-year O&M agreement has been negotiated through 9/15/92, with FY 89 funding.	7/22/86	9/16/92
<u>Fifteenmile Creek Subbasin</u>						
86-79	RDS		Fifteenmile Creek Habitat Improvement - ODFW <u>Objective:</u> Increase wild winter steelhead production to levels which approximate historic maximum run sizes. <u>Improvement:</u> Passage and instream structure <u>Habitat:</u> 120 miles <u>Species:</u> Wild winter steelhead <u>Benefit:</u> 11,715 smolts/year	FY 91 activities include O & M of past projects.	9/87	10/1/90

1/PO = Project Officer: RJA/R. Austin, JAB/J. Bauer, DEJ/D. Johnson
2/PM = Project Manager: SM/S. Levy, JGM/J. Marcotte, RDS/R. Stoots

PROJECT NUMBER	1/ PO - PM	2/ TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE

Deschutes River Subbasin

81-108	ROS	Habitat Quality and Anadromous Fish Production Potential on the Warm Springs Indian Reservation - CTWSIR	Phase I: completed in FY 82. Phase II: completed in FY 87. Phase III: Implementation of habitat enhancement measures was completed in FY 89. Monitoring of project effectiveness will be completed in FY 90 with the final evaluation report completed in FY 91. O&M of past projects in FY 91.	9/30/81	5/1/91
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Objective: The project consists of three phases:
I. Survey existing and potential fishery resources on the Reservation; II. Identify factors limiting anadromous fish production and design appropriate instream or riparian enhancement measures to correct limiting factors; and III. Implement measures and evaluate effectiveness.

Species: steelhead and spring chinook.

Beaver Creek Habitat Improvement Subproject

Objective: Construct instream structures to provide juvenile salmon and steelhead rearing habitat in channelized sections of Beaver Creek. Fence riparian zone and rip-rap banks with juniper.

Improvement: Instream and riparian

Habitat: 1 mile

Species: Wild spring chinook.

Benefit: 6,750 spring chinook smolts.

Instream structures completed in FY 86. Fencing and juniper rip-rap completed in FY 89.

Mill Creek Habitat Improvement Subproject

Objective: Construct instream structures to provide juvenile salmon and steelhead rearing habitat in the Potter's Pond section of Mill Creek. Fence riparian zone.

Improvement: Instream and riparian

Habitat: 1 mile

Species: spring chinook and summer steelhead

Benefit: 1,020 spring chinook and 540 summer steelhead smolts.

Instream structures completed in FY 87. Fencing completed in FY 89.

1/PO □ **Project Officer:** RJA/R. Austin, JAB/J. Bauer, DEJ/D. Johnson

Z/PM □ **Project Manager:** SML/S. Levy, JGM/J. Marcotte, RDS/R. Stoots

PROJECT NUMBER	1/ PO - PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
81-108 cont.		<p>Shitike Creek Habitat Improvement Subproject</p> <p><u>Objective:</u> Stabilize stream channel, create a low-flow passage channel, develop pool habitat, and provide shading.</p> <p><u>Improvement:</u> Instream and riparian.</p> <p><u>Habitat:</u> i l e s</p> <p><u>Species:</u> Wild spring chinook and summer steelhead.</p> <p><u>Benefit:</u> 3,139 spring chinook smolts and 2,642 summer steelhead smolts.</p>	Instream structures completed in FY 89.		
84-62	DEJ	<p>Trout Creek Riparian Enhancement - ODFW</p> <p><u>Objective:</u> Construct instream and riparian structures to provide juvenile salmon and steelhead rearing habitat and adult spawning habitat.</p> <p><u>Improvement:</u> Instream and riparian.</p> <p><u>Habitat:</u> 90 miles</p> <p><u>Species:</u> Steelhead and spring chinook.</p> <p><u>Benefit:</u> 3000 - 4000 adult steelhead.</p>	Construction is ongoing and expected to be completed in FY 91.	9/1/84	9/30/89
88-1 16	DEJ	<p>Trout Creek O&M</p> <p><u>Objective:</u> To maintain fences and instream structures constructed under Project 84-62.</p>	BPA will continue funding maintenance of Trout Creek habitat improvement structures in FY 91.	9/88	9/90

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1/PO = Project Officer: RJA/R. Austin, JAB/J. Bauer, DEJ/D. Johnson
 2/PM = Project Manager: SML/S. Levy, JGM/J. Marcotte, RDS/R. Stoots

PROJECT NUMBER	PO	- PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT	TERM
					START DATE	RENEWAL DATE

John Day River Subbasin

84-8	RDS		N. Fork John Day River Habitat Enhancement - USFS/Umatilla NF		4/1/84	4/1/91
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Desolation Creek Subproject

FY 91 activities include O&M of previous projects.

Objective: Increase the production potential of summer steelhead and spring chinook by improving pool:riffle ratio, constructing adult salmon resting pools, increasing quality and quantity of spawning habitat, and controlling bank erosion.

Improvement: Instream structure

Habitat: 42 miles

Species: Spring chinook, summer steelhead

Benefit: Spring chinook - 4950 smolts

Summer steelhead - 2475 smolts

North Fork John Day River Habitat Improvement Subproject

FY 91 activities include O&M of previous projects.

Objective: Increase production of spring chinook through side-channel modification, improve juvenile rearing area, improve bank stabilization, increase adult resting areas, and increase amount of riparian vegetation.

Improvement: Instream structure

Spawning chinook

Benefit: 5,000 smolts/yr

1/PO = Project Officer: RJA/R. Austin, JAB/J. Bauer, DEJ/D. Johnson

Z/PM = Project Manager: SML/S. Levy, JGM/J. Marcotte, RDS/R. Stoots

PROJECT NUMBER	1/ PO - PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
84-8		Wall Creek System Subproject			
(cont.)		<p>Objective: Improve quality and quantity of juvenile salmonid rearing area and adult spawning area; control bank erosion; increase amount of riparian vegetation.</p> <p>Improvement: Instream structures.</p> <p>Habitat: i l e s</p> <p>Species: r s t e e l h e a d .</p> <p>Benefit: 2,274 summer steelhead smolts.</p>			
		Fivemile Creek Subproject			
		<p>Objective: Increase production of summer steelhead</p> <p>Improvement: Instream structure</p> <p>Habitat:</p> <p>Species: Summer Steelhead</p> <p>Benefit: 375 steelhead smolts</p>			
		Camas Creek System Subproject			
		<p>Objective: Improve quality of juvenile salmonid rearing area and adult spawning area; control bank erosion; increase amount of riparian vegetation.</p> <p>Improvement: Instream structures.</p> <p>Habitat: 16.5 miles</p> <p>Species: r s t e e l h e a d</p> <p>Benefit: 5,362 summer steelhead smolts.</p>			
			FY 91 activities include installation of weirs, adult resting pools, streambank stabilization structures, and riparian vegetation planting. O&M is included for FY 91.		
			FY 91 activities include construction of pool-creating structures and placement of instream boulders and woody material. O&M is included for FY 91.		
			FY 91 activities include installation of weirs, adult resting pools, streambank stabilization structures, and riparian vegetation planting. O&M is included for FY 91.		

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1/PO = Project Officer: RJA/R. Austin, JAB/J. Bauer, DEJ/D. Johnson
2/PM = Project Manager: SML/S. Levy, JGM/J. Marcotte, RDS/R. Stoots

PROJECT NUMBER	1/ PO -	2/ PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
					START DATE	RENEWAL DATE
84-8 (cont.)			<p>Clear/Granite Creeks Subproject</p> <p>Objective: Increase the potential of spawning salmon through habitat improvement measures.</p> <p>Improvement: Decrease mine waste water pollution.</p> <p>Habitat: 3 miles</p> <p>Species: chinook</p>	FY 91 activities include O&M of previous projects.		
84-21	RDS		<p>Mainstem Middle and North Fork/John Day River - ODFW</p> <p>Mainstem John Day River Subproject</p> <p>Objective: Provide additional rearing habitat for juvenile salmon and steelhead.</p> <p>Improvement: Fencing and instream structure</p> <p>Habitat: 23 miles</p> <p>Species: chinook and Summer steelhead</p> <p>Benefit: Steelhead smolt increase - 344,000; chinook smolt increase - 371,000 to 996,000</p> <p>Middle Fork John Day River Subproject</p> <p>Objective: Provide additional holding areas for adult chinook and steelhead; improve rearing area for juveniles of both species.</p> <p>Improvement: Fencing and instream structure</p> <p>Habitat: 30 miles</p> <p>Species: Spring chinook, summer steelhead</p> <p>Benefit: Included in benefits for the Mainstem John Day River.</p>	<p>FY 91 activities include construction of instream structures, riparian vegetation planting, and fencing for riparian leased areas negotiated during FY 90. FY 91 funding of land-owner contacts/riparian lease negotiations for FY 92 implementation is dependent on subbasin plans and budget negotiations for FY 92. O&M is included for FY 91.</p> <p>FY 91 activities include construction of instream structures, riparian vegetation planting, and fencing for riparian leased areas negotiated during FY 90. FY 91 funding of land-owner contacts/riparian lease negotiations for FY 92 implementation is dependent on subbasin plans and budget negotiations for FY 92. O&M is included for FY 91.</p>	6/30/85	5/1/90

1/PO □ Project Officer: RJA/R. Austin, JAB/J. Bauer, DEJ/D. Johnson
2/PM □ Project Manager: SML/S. Levy, JGM/J. Marcotte, RDS/R. Stoots

PROJECT NUMBER	1/ 2/ PO - PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
84-21 (cont.)		<p>North Fork John Day River Subproject, including Fox Creek</p> <p><u>Objective:</u> Fox Creek - improve steelhead spawning and rearing conditions through increasing riparian vegetation, reducing erosion and sedimentation, and increasing pool areas.</p> <p><u>Improvement:</u> Fencing and instream structure</p> <p><u>Habitat:</u> 42 miles</p> <p><u>Species:</u> Spring chinook and steelhead</p> <p><u>Benefit:</u> Included in benefits for the Mainstem John Day River.</p>	FY 91 activities include O&M of previous projects.		
		<p>North Fork John Day River Subproject, including Camas Creek</p> <p><u>Objectives:</u> Provide additional rearing habitat for juvenile steelhead.</p> <p><u>Improvement:</u> Fencing and instream structure</p> <p><u>Habitat:</u> 11 miles</p> <p><u>Species:</u> steelhead</p> <p><u>Benefit:</u> Included in benefits for the Mainstem John Day River.</p>	FY 91 activities include construction of instream structures, riparian vegetation planting and fencing for riparian leased areas negotiated during FY 90. FY 91 funding of land-owner contacts/riparian lease negotiations for FY 92 implementation is dependent on subbasin plans and budget negotiations for FY 92.		
84-22	RDS	<p>Middle Fork and Tributaries, John Day River-USFS/Malheur NF</p> <p><u>Objective:</u> Increase the quantity, quality, and diversity of pool habitat for juvenile steelhead and chinook salmon.</p> <p><u>Improvement:</u> Instream structure</p> <p><u>Species:</u> Chinook and Steelhead</p> <p><u>Habitat:</u> 11 miles</p>	FY 91 activities include instream structure construction projects and O&M of previous projects.	4/1/91	

1/PO = Project Officer: RJA/R. Austin, JAB/J. Bauer, DEJ/D. Johnson
2/PM = Project Manager: SML/S. Levy, JGM/J. Marcotte, RDS/R. Stoots

PROJECT NUMBER	1/ PO - PM	2/ TITLE/OBJECTIVE	PROJECT-STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE

85-71	RDS	South Fork John Day River Habitat Enhancement/Izee Falls Fish Passage - BLM		9/1/85	3/31/91
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Izee Falls Subproject

Objective: Provide fish access to 81 miles of spawning and rearing habitat by providing passage over 56-foot falls.

Improvement: Passage

Species: Wild Summer Steelhead

Benefit: Benefit:Cost ratio is 5.4:1

Habitat: 81 miles

Implementation deferred on fish passage at Izee Falls until completion of subbasin plans. O&M of past habitat enhancement projects continue in FY 91.

Umatilla River Subbasin

83-436	JGM	Three Mile Dam Passage Improvements - USBR		5/1/84	---
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Objective: Design and construct facilities, including ladders and canal screens, to enhance fish passage at Three Mile Dam and WEID canal screens. Design and build trapping and counting facilities.

Improvement: Passage

Species: Summer steelhead, spring and fall chinook

Construction of right bank ladder and trap completed winter-fall 1988. Operational shake-out period continues. Construction of left bank facilities completed July 1988. Operational shake-out period for left bank continues. Project-specific monitoring and evaluations began FY 1990.

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1/PO = Project Officer: RJA/R. Austin, JAB/J. Bauer, DEJ/D. Johnson
 2/PM = Project Manager: SML/S. Levy, JGM/J. Marcotte, RDS/R. Stoots

PROJECT NUMBER	1/ PO - PM	2/ TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
87-104 & 87-104-1	JGM	Westland (87-104) and Stanfield (87-104-1) Diversion Improvements - ODFW <u>Objective:</u> Improve passage up and downstream at Westland, and Stanfield irrigation diversion dams by ladder and screen improvements. <u>Improvement:</u> Passage <u>Species:</u> Summer steelhead, spring and fall chinook	Predesign completed. Westland hydraulic review completed. Final Design completed for Westland. Construction, screen/trap ~ completed in June 1990. <u>Schedule:</u> <u>Westland:</u> Start construction, ladder - June 1990. All construction to be complete by October 1990. <u>Stanfield:</u> Final design started March 1989. complete Oct. 1992. Start construction: ladder - June 1992, screens ~ Oct. 1991. All construction complete, Stanfield - June 1992.	1/87	Westland 10/90 Stan- field 6/90
87-100	JAB	Umatilla River Basin Fish Habitat Enhancement - USFS/Umatilla NF <u>Objective:</u> Instream and riparian habitat improvement for portions of the Umatilla River and tributaries on the Umatilla National Forest. <u>Improvement:</u> Instream structures <u>Habitat: i l e s</u> <u>Species:</u> Summer steelhead and spring chinook. <u>Benefit</u> basin) 21,700 summer steelhead and 21,100 spring chinook smolts.	FY 1990: Treat 6-mile section of Meacham Creek. FY 1991: Complete North Fork Meacham Creek and Pearson Creek.	4/87	3/91

1/PO = Project Officer: RJA/R. Austin, JAB/J. Bauer, DEJ/D. Johnson
2/PM = Project Manager: SML/S. Levy, JGM/J. Marcotte, RDS/R. Stoots

PROJECT NUMBER	PO	1/ - PM	2/ PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT	TERM
						START DATE	RENEWAL DATE
87-100-1	JAB			<p>Umtilla River Basin Fish Habitat Enhancement - CTUIR</p> <p><u>Objective:</u> Instream and riparian habitat improvement for portions of the Umtilla River and tributaries on the Umtilla Reservation.</p> <p><u>Improvement:</u> Fencing, riparian revegation, instream structures</p> <p><u>Habitat miles</u></p> <p><u>Species:</u> Summer steelhead and spring chinook.</p> <p><u>Benefit:</u> See Project 87-100.</p>	<p>FY 1990: Complete 2 miles at Umtilla River and Meacham Creek</p> <p>FY 1991: Begin construction at Squaw Creek.</p> <p>FY 1992: Complete construction at Squaw Creek.</p>	7/87	4/92
87-100-2	JAB			<p>Umtilla River Basin Fish Habitat Enhancement - ODFW</p> <p><u>Objectives:</u> Instream and riparian habitat improvement for portions of the Umtilla River and tributaries on privately-owned land.</p> <p><u>Improvement:</u> Fencing, riparian revegation, instream structures</p> <p><u>Habitat miles</u></p> <p><u>Species:</u> Summer steelhead.</p> <p><u>Benefit:</u> See Project 87-100</p>	<p>FY 1990: Complete work at East Birch Creek, continue at Meacham Creek, and begin work at West Birch Creek.</p> <p>FY 1991: Complete work at Meacham Creek, continue at West Birch Creek, and start at North Fork Meacham Creek.</p>	7/87	3/91
88-22	JGM			<p>Umtilla River Basin Trap and Haul - ODFW</p> <p><u>Objective:</u> To provide for passage of adults and smolts under low flow river conditions</p> <p><u>Improvement:</u> Passage</p> <p><u>Species:</u> Summer steelhead, spring and fall chinook</p>	<p>Design and acquisition of equipment (trucks, trailers, etc.) completed February 1989. Trap at Three Mile Dam right bank ladder operational - November 1987. West-land smolt trap operational - June 1990. Trap and haul program operational - May 1989. Continue to conduct program conduct shake-out at facilities and refine operational criteria. ODFW and Tribes are funded by BPA to operate trap and haul program</p>	10/87	5/91

1/PO □ Project Officer: RJA/R. Austin, JAB/J. Bauer, DEJ/D. Johnson
2/PM □ Project Manager: SML/S. Levy, JGM/J. Marcotte, RDS/R. Stoots

PROJECT NUMBER	PO	1/ ~	2/ PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
						START DATE	RENEWAL DATE
89-24-1	JAB			Passage Facility Evaluation and URB Adult Fish Monitoring <u>Objectives:</u> Evaluate loss of juvenile fish due to passage through or over WEID Canal screens. Monitor passage of adult salmon and steelhead at Three Mile Dam <u>Species:</u> Summer steelhead, spring and fall chinook	FY 1990: Evaluate WEID Canal screen and adult passage at Three Mile Dam	9/89	---
87-416 & JGM 87-416-1				Cold Springs (87-416-1) and Maxwell (87-416) Diversion Improvement - USBR <u>Objectives:</u> Improve passage up and downstream at Cold Springs and Maxwell diversions. Improvements include fishways and canal screens. <u>Improvement:</u> Passage <u>Species:</u> Summer steelhead, spring and fall chinook.	All construction complete. USBR turned projects over from construction to O&M in April 1990. BPA is funding O&M under an O&M contract with USBR. The contract term is indefinite.	7/87	O&M is ongoing
87-104-Z	JGM			Westland Non-Fish Improvements <u>Objectives:</u> To install improvements on Westland irrigation system that will allow fish passage facilities to operate as intended. <u>Improvement:</u> Passage <u>Species:</u> Steelhead and chinook.	Contract in place with Westland Irrigation District. Predesign to be completed by June 1990. Final design to be completed by end of summer 1990, and construction to be completed by end of fall 1990.	3/90	---

1/PO = Project Officer: RJA/R. Austin, JAB/J. Bauer, DEJ/D. Johnson
 2/PM = Project Manager: SML/S. Levy, JGM/J. Marcotte, RDS/R. Stoots

PROJECT NUMBER	1/ PO - PM	2/ TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE

Grande Ronde River Subbasin

84-9	RDS	Grande Ronde Habitat Improvement Project - USFS/Wallowa-Whitman NF		7/1/84	4/1/91
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Upper Grande Ronde Basin Subproject

Objective: Improve spawning and rearing habitat in the Upper Grande Ronde River.

Improvement: Instream structures

Habitat: 53 miles

FY 91 activities include the construction of instream structures, riparian fencing, vegetation planting and O & M of previous projects.

Upper North Fork John Day Basin Subproject

Objective: Improve spawning and rearing habitat in the North Fork John Day River

Habitat: 49 miles

Species: Wild spring chinook and steelhead

FY 91 activities include the construction of instream structures, riparian fencing, vegetation planting, and O & M of previous projects.

Lower Grande Ronde Basin Subproject

Objective: Improve spawning and rearing habitat in the Lower Grande Ronde River.

Habitat: 30 miles

Species: Spring chinook and summer steelhead

FY 91 activities include riparian fencing, construction of instream structures, riparian vegetation planting, and O&M of previous projects.

1/PO = Project Officer: RJA/R. Austin, JAB/J. Bauer, DEJ/D. Johnson
2/PM = Project Manager: SML/S. Levy, JGM/J. Marcotte, RDS/R. Stoots

PROJECT NUMBER	PO	1/ - PM	2/ PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
						START DATE	RENEWAL DATE

84-25	RDS			Grande Ronde Habitat Improvement Project -- ODFW		7/1/84	5/1/91
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Upper Grande Ronde Subbasin Subproject

Objective: Improve the quality and quantity of spawning and rearing habitat for salmon and steelhead through habitat improvement activities.

FY 91 activities include instream structure/streambank stabilization, riparian fencing and planting for riparian leased areas negotiated during FY 90. FY 91 funding of landowner contact/riparian lease negotiations for FY 92 implementation is dependent on subbasin plans and budget negotiations for FY 92.

Joseph Creek Subbasin Subproject

Objective: Improve the quality and quantity of spawning and rearing habitat for steelhead through habitat improvement activities.

FY 91 activities include instream structure/streambank stabilization, riparian fencing, and planting for riparian leased areas negotiated during FY 90. FY 91 funding of landowner contact/riparian lease negotiations for FY 92 implementation is dependant on subbasin plans and budget negotiations for FY 92.

Yakima River Subbasin

86-75	SML			Little Naches River Passage - USFS/Wenatchee NF		10/30/85	12/31/90
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Objective: Construct fish passage facility to correct passage problems resulting from Salmon Falls. Rehabilitate flood-damaged reach below falls to provide an adequate passage corridor to the fish passage facility.

Improvement: Passage, instream channel modification, and riparian revegetation

Construction of fishway and channel rehabilitation completed fall 1987. BPA will continue to fund operation and maintenance activities.

1/PO = Project Officer: RJA/R. Austin, JAB/J. Bauer, DEJ/D. Johnson
 2/PM = Project Manager: SML/S. Levy, JGM/J. Marcotte, RDS/R. Stoots

PROJECT NUMBER	1/ PO - 2/ PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT	TERM
				START DATE	RENEWAL DATE

86-75 cont. **Habitat:** 18 to 24 miles, depending on species
Species: Spring chinook, coho, and steelhead
Benefit:

Species	# Smolts
Spring chinook	30,300
Coho	39,600
Steelhead	6,500

Clear-water River Subbasin

84-5	SM	South Fork Clear-water River - USFS		1/1/84	1991
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Red River Subproject

Objective: Increase the quantity and improve the quality of spawning and rearing habitat for anadromous fish.

Improvement: Instream structure

Habitat: Approximately 20 miles

Species: Spring chinook

Benefit: Benefit:Cost ratio is 15:1

USFS has completed construction on Federal land. Construction of fences is in progress on four private ranches. Completion scheduled for 1990. O&M agreement will be required beyond 1990 to protect investments. USFS has requested additional funding to complete project. Final report will summarize project completion.

Project completion delayed until FY 91.

Crooked River Subproject

Objective: To increase natural smolt production potential of salmon and steelhead.

Improvement: Structures

Habitat: 17 miles

Species: Chinook and steelhead

Benefit: Benefit:Cost ratio is 6.22:1

Completion scheduled for 1991. Project has been funded to completion with FY 1987 funds. Evaluation and O&M scheduled for 1988-1991.

1/PO = Project Officer: RJA/R. Austin, JAB/J. Bauer, DEJ/D. Johnson
 2/PM = Project Manager: SML/S. Levy, JGM/J. Marcotte, RDS/R. Stoots

PROJECT NUMBER	1/ PO - PM	2/ PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT	TERM
					START DATE	RENEWAL DATE
84-6	SM		Clearwater River Habitat Enhancement Improvements - USFS/Clearwater NF		4/1/84	---
			Lolo Creek Subproject	Evaluation and monitoring of physical structures is ongoing. O&M will continue to 1991. Final report on all Clear-water NF projects will be completed in 1991. Project has been funded to completion with FY 1987 funds. Completion expected in FY 1991.		
			<u>Objective:</u> Increase the quantity and improve the quality of spawning and rearing habitat for anadromous fish.			
			<u>Improvement:</u> Instream structure			
			<u>Habitat:</u> 12 miles			
			<u>Spawning:</u> chinook and steelhead			
			<u>Benefit:</u> Benefit:Cost ratio is 40:1			
			Eldorado Creek Subproject	Project completed.		
			<u>Objective:</u> Remove rock barriers to correct passage problems resulting from basalt falls and associated high-velocity chutes which prevent access to spawning and rearing habitat above the site.			
			<u>Improvement:</u> Instream structure and blasting			
			<u>Habitat:</u> 10 miles			
			<u>Species:</u> Steelhead and chinook			
			<u>Benefit:</u> 24,000 chinook and 12,500 steelhead smolts			
			Crooked Fork Subproject	Project completed.		
			<u>Objective:</u> Remove rock barriers to correct passage problems resulting from rock chutes and waterfalls which prevent access to spawning and rearing habitat above the site.			
			<u>Improvement:</u> Instream structure			
			<u>Habitat:</u> 5.65 miles			
			<u>Spawning:</u> chinook and summer steelhead			
			<u>Benefit:</u> 36,000 chinook and 21,000 steelhead smolts			

1/PO = Project Officer: RJA/R. Austin, JAB/J. Bauer, DEJ/D. Johnson
2/PM = Project Manager: SML/S. Levy, JGM/J. Marcotte, RDS/R. Stoots

PROJECT NUMBER	1/ PO - PM	2/ TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT	TERM
				START DATE	RENEWAL DATE
87-112	SM	Orofino Creek Passage - Consultant <u>Objective:</u> Construct fish passage facility to correct passage problems resulting from Orofino Falls. <u>Improvement:</u> Passage <u>Habitat:</u> 62 miles <u>Species:</u> steelhead <u>Benefit:</u> 12,718 steelhead smolts	A biological/engineering feasibility study was completed in FY 1989. The Project TWG requested a review of the cost estimates for the alternatives in the engineering feasibility report and additional conceptual design of lower-cost trap-and-haul facilities. BPA's engineering consultant completed this task in October 1989. Further implementation has been deferred to a future FY beyond FY 91.	6/24/87	---

CD

Salmon River Subbasin

84-23	SM	Camas Creek. Idaho - USFS/Salmon NF <u>Objective:</u> Improve riparian conditions to increase salmon and steelhead spawning and rearing potential. <u>Improvement:</u> Fencing and riparian revegetation <u>Habitat:</u> miles <u>Species:</u> Spring chinook and steelhead <u>Benefit:</u>	Fencing and revegetation completed in FY 1989. Monitoring will continue in FY 1990.	6/29/84	9/01/91									
		<table border="1"> <thead> <tr> <th></th> <th>Smolt</th> <th>Adults</th> </tr> </thead> <tbody> <tr> <td>Steelhead</td> <td>4,586</td> <td>76</td> </tr> <tr> <td>Chinook</td> <td>24,570</td> <td>128</td> </tr> </tbody> </table>		Smolt	Adults	Steelhead	4,586	76	Chinook	24,570	128			
	Smolt	Adults												
Steelhead	4,586	76												
Chinook	24,570	128												

1/PO = Project Officer: RJA/R. Austin, JAB/J. Bauer, DEJ/D. Johnson
2/PM = Project Manager: SML/S. Levy, JGM/J. Marcotte, RDS/R. Stoots

PROJECT NUMBER	1/ PO -	2/ PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT	TERM
					START DATE	RENEWAL DATE
83-359	SM		Salmon River Habitat Enhancement -- Shoshone/Bannock Tribe		10/1/83	1/90
			Bear Valley Creek Habitat Improvement Subproject	Project construction was completed in FY 1988. Monitoring will continue in FY 1990.		
			Objective: Enhance habitat degraded by historic mining and dredging operations.			
			Improvement: Instream structure and riparian enhancement	East Fork construction to begin in FY 90. Funding is insufficient to accomplish all project measures as planned.		
			Species: Wild chinook salmon and summer steelhead			
			Yankee Fork/East Fork Salmon River Subproject	Plan/design and NEPA compliance in progress. Construction began in 1987 and was completed for Yankee Fork in FY 1988. East Fork NEPA compliance to be completed in 1990. Monitoring will continue in 1990.		
			Objective: Enhance habitat degraded by historic mining and dredging operations.			
			Improvement: Instream structure			
			Habitat: 152 miles			
			Species: chin and steelhead			

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1/PO = Project Officer: RJA/R. Austin, JAB/J. Bauer, DEJ/D. Johnson
2/PM = Project Manager: SML/S. Levy, JGM/J. Marcotte, RDS/R. Stoots

PROJECT NUMBER	1/ PO -	2/ PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT	TERM
					START DATE	RENEWAL DATE
83-415	SM		Alturas Lake Creek and Upper Salmon River Flow Augmentation - USFS/Sawtooth NF <u>Objective:</u> Enhance natural production of chinook salmon and reestablish sockeye salmon production through increased streamflow. <u>Improvement:</u> Instream structure <u>Species:</u> Chinook and sockeye <u>Benefit:</u> Flow augmentation alternative = benefit:cost ratio of 15.5:1 to 23.4:1; Water right acquisition alternative = 18.5:1.	Water rights will be acquired by the USFS with full flow available for fish passage in Alturas Lake Creek during Spring 1991. Increased flows will open up not only passage to Alturas Lake, but spawning gravels as well.	9/30/89	9/30/90
84-24	SM		Marsh/Elk/Valley/Upper Salmon River, Idaho - USFS/Region 4 <u>Objective:</u> Identify specific reaches of the Upper Salmon River, Marsh and Elk creeks where habitat improvements could lead to increased salmon and steelhead habitat; recommend, for future implementation, measures to improve habitat (e.g., fencing, streambank stabilization and instream structures). Develop a cost-sharing agreement (BPA/USFS) for implementation. <u>Improvement:</u> Instream structure <u>Habitat:</u> 150 miles <u>Steelhead,</u> spring and summer chinook	Plan/inventory phase has been completed. Construction began in 1987. Elk and Lower Bear Valley creeks were given high priority for completion. USFS completed an implementation plan early in FY 1988 for completion of all projects. Construction proceeding on Lower Bear Valley Creek, Elk Creek and Upper Salmon River projects.	6/29/84	4/30/92

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1/PO = Project Officer: RJA/R. Austin, JAB/J. Bauer, DEJ/D. Johnson
2/PM = Project Manager: SML/S. Levy, JGM/J. Marcotte, RDS/R. Stoots

- 4.3 ROZA DAM FISH PASSAGE FACILITIES
 (Juvenile Facilities Completion: March 1, 1987)
 (Adult Facilities Completion: March 1, 1988)

803(b)(2) [Abstract] BPA shall fund the U.S. Bureau of Reclamation (USBR) to renovate and repair adult and juvenile fish passage facilities at Roza Dam.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To fund the USBR to renovate and repair adult and juvenile fish passage facilities at Roza Dam.

Background and Progress to Date:

The USBR owns Roza Dam; fish passage facilities have been constructed through Congressional appropriations. The project is one of 20 such passage improvement projects in the Yakima River Basin. Fish screen and ladder improvements were required to protect juvenile fish from being lost in irrigation canals and to enable adult salmon and steelhead to migrate upstream to spawn. The project now provides adequate upstream and downstream fish passage, including adequate passage during periods of reservoir drawdown.

USBR began screen construction in December 1985; facilities and ladder modification construction bids were opened in August 1986. Construction of the facilities was completed in FY 1989.

Plans:

Action Item has been completed.

Projects:

No BPA-funded projects.

- 4.4 PROSSER DAM FISH PASSAGE FACILITIES
 (Juvenile Facilities Completion: March 1, 1987)
 (Adult Facilities Completion: December 1, 1987)

803(b)(3) [Abstract] BPA shall provide funds to the USBR for construction of improvements and additions to Prosser Dam necessary to provide safe, efficient, and timely passage of adult and juvenile fish.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

Provide funds to the USBR for construction of Prosser Dam improvements and additions necessary to provide safe, efficient, and timely passage of adult and juvenile fish.

Background and Progress to Date:

The USBR owns Prosser Dam; fish passage facilities have been constructed through Congressional appropriations. The project is one of 20 such passage improvement projects in the Yakima River Basin. Fish screen and ladder improvements were required to protect juvenile fish adequately from being lost in irrigation canals and to enable adult fish to migrate upstream to spawn.

USBR began screen construction in May 1986. Right bank ladder was completed in May 1986. Left and center ladders were completed in September 1989.

Plans:

Action Item has been completed.

Projects:

No BPA-funded projects.

4.5 YAKIMA RIVER FISH PASSAGE IMPROVEMENTS
 (Completion of Elements in Table 3 of 803(b)(5): December 1, 1988)
 (Post-Construction Evaluations)

803(b)(5) Upon approval by the Council, BPA shall fund the design and construction of the improvements listed in Table 2. All fish screening facilities shall meet current screening design standards.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To construct Yakima River fish passage improvements.

Background and Progress to Date:

A network of irrigation canals diverts water from the Yakima and Naches rivers for use by various agricultural interests in the Yakima River Basin of Central Washington. Juvenile salmon and steelhead often stray into these canals during their outmigration to the sea. The BPA, USBR, Bureau of Indian Affairs (BIA), and Washington State are constructing fish screens to direct the young salmon and steelhead back to the Yakima and Naches rivers.

The Yakima Project entities will fund the construction of fish ladders at various projects to facilitate the normal upstream migration of adult salmon and steelhead.

Plans:

BPA plans to fund construction through to completion and to evaluate projects as they are completed.

See project summaries on following table.

I. COMPLETED PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>
86-112	Toppenish/Westside/Ellensburg Screen Fabrication - WDF <u>Project Manager:</u> T. Clune <u>Objectives:</u> Fabricate screens for the three projects listed in the title.	<u>Date completed:</u> 1 9 8 9 <u>Results/Conclusions:</u> Screen fabrication completed.

II. FY 1990 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
85-62	Passage Improvement Evaluations - BPNL <u>Project Manager:</u> T. Clune <u>Objectives:</u> Evaluate effectiveness of passage improvement projects.	<u>Date initiated:</u> March 1985 <u>Results/Conclusions:</u> Evaluation is ongoing; results published in BPA annual reports.	<u>Continuing:</u> Evaluation will continue as projects are completed and go on line.
89-90	Phase II Screen Predesign - USBR <u>Project Manager:</u> T. Clune <u>Objectives:</u> Predesign/NEPA of 63 fish screen facilities throughout the Yakima Basin. project 88-111, Stevens/Naches/ Selah Screens, and Project 86-65, Snipes/Allen Screens, have been combined with Project 89-90.	<u>Date Initiated:</u> July 1989 <u>Results/Conclusions:</u> None at this time.	<u>FY 1990:</u> Begin predesign and NEPA.

III. NEW PROJECTS

None.

4.6 WATER EXCHANGE FOR UMATILLA RIVER
 (Support Beginning Spring 1987)
 (Report Evaluations: Annually)

703(a)(17) [Abstract] BPA shall provide power or reimbursement for power costs to USBR pumping plants designed to exchange Columbia River water for Umatilla River water. The USBR must obtain consent from all affected water users and regulators and provide assurance to the Council that water exchanged to augment streamflows will be used to meet annual flow objectives established by the ODFW and the CTUIR. The Oregon Water Resources Department (OWRD) will certify annually to the Council that the exchanged water will improve instream flows and will benefit fish. The USBR shall fund state and tribal fish and wildlife agency monitoring and evaluation studies to determine the biological effectiveness of this measure.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To support instream flow enhancement efforts, which will increase Umatilla anadromous fish production by improving passage and rearing conditions.

Background and Progress to Date:

Federal authorizing legislation prepared by project sponsors was approved in fall 1988. The Council amended the Program to provide for BPA funding of power costs associated with interim pumping. USBR will handle operation and maintenance, capital and evaluation activities.

Because the original Program language did not include interim pumping and because USBR pumping plants are still in the planning/design stage, no water exchanges under this Action Item took place until Spring 1989. Through passage-assistance projects (Projects 87-409 and 88-50) under Action Item 4.2, BPA had provided for pumping power to operate existing West Extension Irrigation District (WEID) pumps to increase flows below Three Mile Dam during spring and fall 1987 and during spring and fall 1988.

In June 1989, the USBR, with assistance from BPA, OWRD, ODFW, Tribes, and the Basin Steering Committee, finalized a basin work plan that included the schedule for interim pumping and project completion and defined the scope of monitoring and evaluation activities. BPA and USBR entered into an Interim Pumping Agreement in 1990 to provide for the transfer of funds for power costs associated with interim pumping. The first interim pumping under this Program measure took place in spring 1989. In spring 1990, USBR and BPA began planning for power needs for the CRB.

I. COMPLETED PROJECTS

None.

II. FY 1990 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
89-27	Provide Power for USER Columbia River Pumps <u>Project Officer:</u> J. Marcotte <u>Objectives:</u> Enhance instream flows in the Umatilla River by exchanging Columbia River water for Umatilla River water.	<u>Expected start date:</u> FY 1990	<ol style="list-style-type: none">1. FY 1991: Provide power or reimburse for power costs for interim pumping to Phase I-West Extension pumps. Continue planning for power arrangements for Phase I.2. FY 1992: Provide power to Phase I - WEID pumps.3. FY 1994 or 1995: Provide power to completed Columbia River pumps.

III. NEW PROJECTS

None.

4.6.1 EVALUATE NON-STRUCTURAL WATER MEASURES IN UMATILLA BASIN
(Develop Workplan, Report to Council in April 1989)

703(a)(17) [Abstract] BPA, USBR, Council, Oregon Water Resources Department, and other interested parties shall jointly prepare a workplan for an evaluation of non-structural alternatives that may benefit fish and hydropower generation, and whether the combined benefits of such measures can be quantified.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

Identify and evaluate alternative means of providing enhanced plans, other than pumping/exchange projects.

Background and Progress to Date:

This action item has been subsumed by the USBR "Section 213" study, mandated by Public Law 100-557. Section 213 instructs USBR to review Umatilla Project Operations to identify ways to further mitigate fishery losses. This study encompasses so-called "non-structural" measures in the Program, such as contracts, conservation, reservoir storage allocation, water deliveries, water rights, and water lease and purchase. USBR completed review of the report, finalized it and submitted it to Congress in late 1989.

Plans:

USBR to be prepared to follow up on any recommendations Congress may direct.

Projects

None.

4.14.1 TEMPORARY JOHN DAY ACCLIMATION FACILITY
(Upon Council Approval, Complete Construction by Spring 1988)

703(f)(2)(B) Upon the Council's approval of the plan, Bonneville shall fund design, construction, and evaluation of the temporary facilities.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To build and test the effectiveness of acclimation ponds for upriver bright fall chinook salmon from John Day Mitigation Facilities.

Background and Progress to Date:

Acclimation facilities reduce the transportation stress of upriver bright fall chinook transported from John Day Mitigation facilities for release above John Day Dam.

During the first 2 years of the Fish and Wildlife Program, disagreements among affected parties over the location of the acclimation ponds made it difficult for BPA to implement this Measure. When the Council amended the Program in 1984, it provided for: (1) an agency and Tribal plan to be approved before any construction; and (2) an evaluation of temporary acclimation ponds.

In FY 1986, BPA initiated a site survey of 10 candidate acclimation facility sites (Project 86-82) to assist the agencies and Tribes in developing their plan. The joint agency-Tribal work group and the Council have been provided the completion report for the site study completed under Project 86-82. They will select the final site(s) to be used for acclimation.

Plans:

BPA plans to fund the design, construction, and evaluation of the John Day Temporary Acclimation ponds, once the Fish and Wildlife agencies and Tribes have developed the acclimation pond plan and the plan has been approved by the Council. BPA removed Project 89-16, Temporary John Day Acclimation Facility, from the FY 1990 AIWP and has not included it in the FY 1991 AIWP. BPA will continue to fund Project 83-313 through completion.

I. COMPLETED PROJECTS

None.

II. FY 1990 ONGOING PROJECTS

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
83-313	Pen Rearing of Upriver Fall Chinook Salmon - USFWS <u>Project Officer:</u> A. Ruger <u>Objectives:</u> To evaluate the effectiveness of rearing Upriver Bright Fall Chinook (URBFC) salmon in net pens.	<u>Date initiated:</u> FY 1983 <u>Results/Conclusions:</u> URBFC salmon can effectively be reared in Columbia River backwaters with net pens, but the actual evaluation of ocean and freshwater contribution and escapement has yet to be completed.	1. Continuing: Contractor will collect and analyze adult return data; BPA will publish preliminary results in the Annual Report. 2. 1991: Contractor will collect and analyze adult return data, and prepare Final Report. BPA will publish Final Report.

III. NEW PROJECTS

None.

4.15.1 DESIGN AND CONSTRUCTION OF YAKIMA HATCHERY
(Upon Council Approval, Fund Beginning in FY 1988)

803(d) [Abstract] BPA shall fund the design and construction of a hatchery for salmon and steelhead enhancement in the Yakima River Basin and elsewhere as described in Section 503(c)(2), 703(f)(3), and 803(g)(3).

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To construct a hatchery to protect wild stocks and to enhance depressed stocks by using hatchery-reared fish to reseed underutilized habitat.

Background and Progress to Date:

BPA will fund the design, construction, operation, and maintenance of the Yakima outplanting facility. The facility will enhance the fishery for the Yakima Indian Nation and for other harvesters by supplementing natural runs. In November 1987, the Council completed the hatchery master plan, and BPA began predesign in November 1987. Predesign was completed in April 1990.

BPA will also fund several other related studies, including a study to determine the feasibility of establishing anadromous fish runs above Cle Elum Dam (Project 86-45). The results of this project will directly influence the size and production profile of the Yakima outplanting facility. Another study (Project 87-136) will determine the applicability of acclimating fall chinook salmon in irrigation canals prior to release. Additional studies will be initiated when defined by the Hatchery experimental design task team. The experimental design team, a component of the Yakima Hatchery Technical Work Group (TWG), will develop objectives for the supplementation program. Projects will be identified by the TWG and implemented to answer questions resulting from the experimental design. All projects are integral to the overall experimental/supplementation program and should not be regarded as separate or distinct studies.

Plans:

1. National Environmental Policy Act (NEPA) compliance for hatchery construction was completed in April 1990.
2. BPA will fund design, construction, operation, and maintenance of the hatchery:
 - Predesign: 11/87 - 3/90
 - Final design: 8/90 - 12/91
 - Construction: 12/91 - 6/95
 - O & M: Begin 3/92 and continue
3. Facility expected to be partially operational in FY 1992.

I. COMPLETED PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>
88-167	Economic Analysis -- CWU <u>Project Manager:</u> T Clune <u>Objectives:</u> Economic evaluation of hatchery construction and operation.	Completed : April 1990 <u>Results/Conclusions:</u> See final report
89-42	Klickitat Hatchery Pre-Engineering - Consultant <u>Project Manager:</u> T Clune <u>Objectives:</u> Conduct preliminary design of Klickitat Hatchery.	<u>Date Completed:</u> December 1989 <u>Results/Conclusions:</u> Pre-engineering completed.
88-149	Yakima Hatchery: Water Analysis - USBR <u>Project Manager:</u> T Clune <u>Objectives:</u> To determine water availability, key species and lifestage for hatchery production.	<u>Date Completed:</u> March 1990 <u>Results/Conclusions:</u> See final report

**PROJECT
NUMBER**

TITLE

PROJECT STATUS

89-43

**Yakima Hatchery Pre-engineering-
Consultant**

Project Manager: T. Clune

**Objectives: Conduct pre-
engineering on Yakima Hatchery
Project.**

Date Completed: March 1990

**Results/Conclusions: n e e r i n g
completed.**

II. FY 1990 ONGOING PROJECTS

**PROJECT
OR TASK
NUMBER**

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES

86-45

**Yakima Hatchery: Cle Elum
Study - NMFS**

Project Manager: T. Clune

**Objectives: Determine the
feasibility of establishing
sockeye salmon above
Cle Elum Dam**

Date initiated: October 1986

**Results/Conclusions: Eggs were
collected in July 1987/1990. Fingerlings
being reared. Tests indicate all
fish are IHN-negative. Test groups
were released in and below Lake Cle
Elum in May 1990. Preliminary data
being collected at Prosser and John
Day Dams. PIT tag detector installed
at Prosser juvenile trap.**

**1. 1991: Release 1989 brood year with
CW and PIT tags.**

**2. Continuing: Evaluate survival of tagged
fish. Continue through 1994.**

**PROJECT
OR TASK
NUMBER**

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES

88-115

**Yakima/Klickitat Hatchery
Design and Construction**

Project Manager: T. Clune

Objectives: Complete predesign
for Yakima/Klickitat Hatchery.

Date Initiated: FY 1988

Results/Conclusions: Completed predesign
report April 1990. Presented report to
Council.

FY 1991: Final design to begin August 1990.

88-120

**Yakima and Klickitat Basin
Artificial and Natural
Production Enhancement
Program - YIN**

Project Manager: T. Clune

Project Biologist: T. Vogel

Objectives : Provide for
participation of YIN, WDF,
and WDW in development of a
natural and artificial pro-
duction program

Date Initiated: October 1987

Results/Conclusions: Agreement
executed; participation in hatchery
TWG and public involvement. Project
87-136, Yakima Hatchery; Wapato Canal,
has been consolidated with Project
88-120.

1. Continuing: Collect data for chinook salmon
and steelhead natural production in Yakima basin.

2. Continue through hatchery construction.

88-123

**Yakima Hatchery Coordination-
Roza Irrigation District.**

Project Manager: T. Clune

Objectives: Provide for
technical assistance from
Roza Irrigation District
on hatchery project.

Date initiated: February 1988

Results/Conclusions: Good
participation and input from
irrigation entities.

FY 1991: Participate in public
involvement, TWG, and water analysis.

PROJECT OR TASK NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
89-82	<p>Experimental Design - WDF</p> <p><u>Project Manager:</u> T. Clune</p> <p><u>Objectives:</u> Develop experi- mental features of Yakima Hatchery Project.</p>	<p><u>Date Initiated:</u> June 1989</p> <p><u>Results/Conclusions:</u> Initial experimental design has been completed.</p>	FY 1991: Refine experimental design.
89-83	<p>Experimental Design - WDW</p> <p><u>Project Manager:</u> T. Clune</p> <p><u>Objectives:</u> Develop experi- mental design features of Yakima Hatchery Project.</p>	<p><u>Date Initiated:</u> June 1989</p> <p><u>Results/Conclusions:</u> Initial experimental design has been completed.</p>	FY 1991: Refine experimental design.
89-89	<p>Radiotelemetry Study - NMFS</p> <p><u>Project Manager:</u> T. Clune</p> <p><u>Project Biologist:</u> T. Vogel</p> <p><u>Objectives:</u> Determine the dis- tribution of distinct stocks of Yakima Basin steelhead and spring chinook.</p>	<p><u>Date Initiated:</u> June 1989</p> <p><u>Results/Conclusions:</u> None at this time.</p>	FY 1991: Continue radio tagging and monitoring.
89-100	<p>Technical Writer - BPNL</p> <p><u>Project Manager:</u> T. Clune</p> <p><u>Objectives:</u> Technical assis- tance for experimental design and NEPA compliance for hat- chery predesign report.</p>	<p><u>Date Initiated:</u> July 1989</p> <p><u>Results/Conclusions:</u> Predesign report complete; technical writer working with experimental design team</p>	FY 1991: Complete by October 1990,

PROJECT OR TASK NUMBER	TITLE	STATUS	SCHEDULE AND MILESTONES
89-105	<p>Species Interaction Study - WDW</p> <p><u>Project Manager:</u> T. Clune</p> <p><u>Project Biologist:</u> T. Vogel</p> <p><u>Objectives:</u> Determine the effect of anadromous fish production on resident fish.</p>	<p><u>Date Initiated:</u> September 1989</p> <p><u>Results/Conclusions:</u> Data collection ongoing.</p>	<p>FY 1991: Continue study.</p>
90-58	<p>Project Leader Function</p> <p><u>Project Manager:</u> T. Clune</p> <p><u>Objectives:</u> Project was requested by Council to coordinate identification and resolution of fishery management issues associated with the Yakima/Klickitat Production Project. The Project Leader was appointed by the YIN, WDF, and WDW.</p>	<p><u>Date Initiated:</u> FY 1990</p> <p><u>Results/Conclusions:</u> Project progressing satisfactorily.</p>	<p>FY 1991: Continue project.</p>
90-65	<p>Juvenile Monitoring Trap Calibration - NMFS</p> <p><u>Project Manager:</u> T. Clune</p> <p><u>Project Biologist:</u> T. Vogel</p> <p><u>Objectives:</u> Calibrate Prosser smolt trap for inriver vs. Canal distribution of outmigrating salmon and steelhead.</p>	<p><u>Date Initiated:</u> FY 1990</p> <p><u>Results/Conclusions:</u> None at this time.</p>	<p>FY 1991: Continue calibration studies.</p>

III. NEW PROJECTS

**PROJECT
OR TASK**

NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
90-64	Klickitat River Monitoring <u>Project Manager:</u> T. Clune <u>Project Bioloaist:</u> T. Vogel <u>Obiectives:</u> Monitor spring chinook and steelhead smolts in the hatchery supplementation program Coordinate with MEG, and supplementation TWG's.	New project	FY 1990: Develop program and initiate monitoring.
90-66	Genetic Guideline Development <u>Project Manaer:</u> T. Clune <u>Project Bioloaist:</u> T. Vogel <u>Obiectives:</u> Develop genetic guidelines for stocks of salmon and steelhead for Yakima Basin supplementation program	New project	FY 1991: Develop guidelines.
90-67	Lower Yakima River Smolt Trap Development - WDF <u>Project Manaer:</u> T. Clune <u>Project Bioloaist:</u> T. Vogel <u>Obiectives:</u> To develop a smolt trap for the Lower Yakima River to determine distribution of fall chinook juveniles.	New project	FY 1991: Develop trap and begin monitoring.

PROJECT OR TASK NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
90-68	Adult Trap Predesign - USBR <u>Project Manager:</u> T. Clune <u>Objectives:</u> Design of adult trap facilities for the Yakim Hatchery project.	New project	FY 1991: Begin preliminary design. FY 1992: Begin final design.
90-69	Yakim Hatchery Final Design <u>Project Manager:</u> T. Clune <u>Objectives:</u> Final design of Yakim Basin Facilities.	New project	FY 1991: Begin final design. FY 1992: Complete final design. Begin construction.
90-71	Smolt Loss Evaluation <u>Project Manager:</u> T. Clune <u>Project Biologist:</u> T. Vogel <u>Objectives:</u> To determine smolt losses below Prosser Dam due to various factors including predation, temperature, and passage conditions.	New project	FY 1991: Begin smolt loss evaluation.
90-72	Computer Information System Development <u>Project Manager:</u> T. Clune <u>Project Biologist:</u> T. Vogel <u>Objectives:</u> Develop CIS for Yakim/Klickitat supplementation program	New project	FY 1991: Refine program coordinate with Basin CIS program

4.16.1- NORTHEASTERN OREGON SPRING CHINOOK OUTPLANTING FACILITY

4.16.2 (Fund Development of Master Plan in FY 1988 or Earlier; Upon Council Approval, Fund Design and Construction>

703(f)(5) BPA shall fund planning, design, construction, operation and maintenance, and evaluation of artificial production facilities to raise salmon and steelhead for enhancement in the Hood, Umatilla, Walla Walla, Grande Ronde, and Imnaha rivers in Oregon. The artificial production facilities shall be used to supplement natural production in these rivers.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To fund Master Plan, design, and construction of the Northeastern Oregon salmon and steelhead facilities.

Background and Progress to Date:

The measure provides for outplanting of about 2.3 million to 3.0 million juveniles in the five Oregon rivers identified in the measure. The TWG has been organized and is assisting in the development of the hatchery Master Plan. The Master Plan may identify broader production needs in the basin, not all of which would be addressed by this project. BPA has budgeted for implementation through 1994. Phase I of the Master Plan is complete and Phase II underway as of May 1990. 1990 field season will be used to collect data for siting, conceptual design and genetic risk assessment.

Plans:

The Master Plan is scheduled to be completed in 1991. When the Council approves the master plan, BPA will proceed with environmental work, design, construction, operation, and monitoring of the facilities.

I. COMPLETED PROJECTS

None.

II. FY 1990 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
88-53	<p>Northeastern Oregon Artificial Production Facilities - CTUIR/CTWSIR/NPT/ODFW</p> <p><u>Project Officer:</u> J. Bauer</p> <p><u>Objectives:</u> Fund planning, design, construction, operation, maintenance, and evaluation of artificial production facilities to raise chinook and steelhead for enhancement in the Hood, Unatilla, Walla Walla, Grande Ronde, and Imaha rivers and elsewhere. The artificial production facilities will be used to supplement natural production in these rivers. The fish and wildlife agencies and Tribes expect these facilities to provide for outplanting 2.3 to 3.0 million juveniles in the five rivers identified.</p>	<p><u>Date Initiated:</u> Planning began in FY 1988.</p> <p><u>Results/Conclusions:</u> Contract in place to produce a Master Plan and to site and conceptually design needed facilities.</p> <p>Phase I complete April 1990 Phase II began May 1990.</p>	<ol style="list-style-type: none">1. FY 1990: Complete facilities master plan Phase I with production objectives, and facility siting. Begin Phase II to complete production objectives conceptually site facilities.2. FY 1991: Complete master plan.3. FY 1992: Obtain Council approval for final design, and construction.4. FY 1993: Begin construction.5. FY 1994: Complete construction.

III. NEW PROJECTS

None.

4.17.1 JUVENILE RELEASE/ADULT COLLECTION AND HOLDING FACILITIES ON UMATILLA RESERVATION
(Operate, Maintain)

703(f)(1) [Abstract] BPA shall fund the Confederated Tribes of the Umatilla Reservation (CTUIR) to operate and maintain the Bonifer and Minthorn juvenile release and adult collection and holding facilities on the reservation.

ACTION ITEM ACTIVITY SUMMARY

Objectives:

To fund operation, maintenance, and evaluation of the Bonifer and Minthorn facilities.

Background and Progress to Date:

The facilities are to acclimate and imprint juvenile salmon and steelhead before release into the Umatilla River, thereby increasing survival of juveniles and the homing ability of adults. The facilities are also used to hold adults before artificial spawning. When constructed, the Umatilla Hatchery (Project 84-33; Action Item 4.17.2) will rear juveniles for acclimation at the Minthorn and Bonifer facilities. Currently, juveniles from other hatcheries are acclimated at the facilities.

BPA has funded the operation and maintenance of the Bonifer and Minthorn facilities since construction in 1983 and 1985, respectively. During this time, about 979,000 fall chinook, 660,000 spring chinook, 307,000 coho salmon, and 192,000 steelhead juveniles have been acclimated and released. A study to evaluate the fishery benefits and operation of the acclimation facilities was begun in FY 1987.

Plans:

BPA will continue funding operation, maintenance, and evaluation of the facilities through an Intergovernmental Agreement with the CTUIR as long as there is an Action Item calling for BPA funding. BPA expects that results of the evaluation study will be used by the CTUIR to determine the actual fishery benefits of acclimation, to select effective juvenile release strategies, and to improve operational efficiency.

I. COMPLETED PROJECTS

None.

II. FY 1990 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
83-435	Minthorn and Bonifer Springs Summer Steelhead Juvenile Release and Adult Collection Facilities - CTUIR <u>Project Officer:</u> J. Bauer <u>Objectives:</u> To operate, maintain, and evaluate the Minthorn and Bonifer facilities for the acclimation and imprinting of juvenile anadromous salmonids and the collection and holding of adults.	<u>Date initiated:</u> FY 1983 <u>Results/Conclusions:</u> Approximately 79,000 fall chinook, 161,000 spring chinook, 157,000 coho, and 52,000 steelhead juveniles were acclimated and released during FY 1989. No results of the facility evaluation study are available yet.	1. Continuing: BPA will fund operation, maintenance, and evaluation of the facilities. 2. Continuing: Contractor will provide an annual operational report and preliminary results of the evaluation study in the Project's annual report. 3. FY 1993: BPA will publish the final results of the evaluation study in a final report.

III. NEW PROJECTS

None.

4.17.2 EXPANDED UMATILLA HATCHERY
(Fund, upon Council Approval)

703(f)(1)(A) [Abstract] BPA shall fund the construction of a facility to test the efficacy of oxygen supplementation hatchery techniques to produce up to 290,000 pounds of summer steelhead and chinook salmon smolts. These smolts shall be for release in the Umatilla juvenile release and adult collection holding facilities and for outplanting in the upper Umatilla River to enhance natural and hatchery production. Prior to construction of this facility, the ODFW and the CTUIR will develop a facility master plan for Council approval.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To provide an improved contribution of anadromous fish production from the Umatilla River to the Columbia River Basin.

Background and Progress to Date:

The facilities are to produce 290,000 pounds of salmon and steelhead juveniles for release in the Umatilla Subbasin to enhance natural and hatchery production. Hatchery production may also be used in other subbasins. A secondary purpose of the hatchery is to demonstrate oxygen supplementation technology. BPA began funding hatchery design in FY 1986 and hatchery master planning in FY 1987. The CTUIR and ODFW have been conducting a release program using fish from other hatcheries since 1982, and intend to continue until this hatchery is operational. The final design was completed during 1988, and the Master Plan was approved in October 1989. Agreement was reached in 1988 that the hatchery will be operated by ODFW as a joint facility with Irrigon hatchery and that the Umatilla Tribes will be responsible for preparing the annual operating plan.

The final design estimates revealed that the hatchery will cost more than originally expected. The cost increases are due to design evolution, delays in project implementation, changing site conditions at the well, and water production shortfalls. Costs have risen about \$4.0 million to total \$12.0 million. Construction began in March 1990.

Plans:

When the hatchery is completed in 1991, BPA will fund its operation and maintenance. After completion, BPA also expects to evaluate hatchery effectiveness. Planning for satellite facilities will begin in FY 1990, with the need to have one or two additional chinook adult holding facilities on line before the mid-1990s.

I. COMPLETED PROJECTS

PROJECT NUMBER	TITLE	PROJECT STATUS	RESULTS/CONCLUSIONS
87-415	Umtilla Hatchery Master Plan ~ ODFW <u>Project Officer:</u> J. Marcotte <u>Objectives:</u> Develop a Master Plan to guide hatchery production, management policies, and monitoring and evaluation.	<u>Completed:</u> FY 1990	This process was coordinated with regional fishery interests and appropriate Council Technical Work Groups. Final plan was submitted to Council for issue paper development in February 1989. Council approved the Master Plan in October 1989. Follow-on items to be completed in FY 90.

II. FY 1990 ONGOING PROJECTS

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
84-33	Umtilla Hatchery - USACE <u>Project Officer:</u> J. Marcotte <u>Objectives:</u> Design and construct the Umtilla Hatchery.	<u>Date initiated:</u> FY 1986 <u>Results/Conclusions:</u> Council approved hatchery predesign in October 1986. Hatchery site next to existing Irrigon Hatchery was selected in cooperation with Morrow County. Umtilla Hatchery Environmental Assessment was issued February 1987. FONSI issued April 1987. Council amended Program to expand hatchery production to 160,000 pounds and added salmon to production. Council amended program to expand production to 290,000 pounds and test efficiency of O2 supplementation. Final designs completed. Master Plan complete February 1989. Council approved Master Plan in October 1989. O&M agreement finalized in spring 1990. Feasibility studies for new chinook holding facilities will be conducted as part of Project 91-14.	1. Winter 1990: Continue construction. 2. Summer 1991: Hatchery operational; fund O&M.

PROJECT
NUMBER

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES

84-33-3

Umatilla Hatchery Tribal Fish
Culture Training Program - CTUIR

Date Initiated: September 988

FY 1990: Training program completed; funding to
continue for salaries and tuition only

Project Officer: J Marcotte

Results/Conclusions: Original objectives
of 18 months tech experience were met in
March 1991. 3 OJT were qualified.

Objectives: Train up to eight
tribal personnel to qualify as
Hatchery Technicians-1 for
employment in Umatilla Hatchery
Program facilities.

Funding to continue salaries and tuition
(for academic trainees) will continue
until hatchery staff selections made.

III. NEW PROJECTS

PROJECT
NUMBER

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES

9 -14

Umatilla Sautes Planning, New Project
Siting, Design, and Construction

1. FY 1991: Project definition based
on hatchery program projections. siting
study in Umatilla basin.

Project Officer: J Marcotte

2. FY 1994: Predesign and final design;
begin construction.

Objectives: Provide complemen-
tary facilities for adult hold-
ing for broodstock purposes or
required by the Umatilla
artificial production program.
Secondary objective may be to
provide recovery/acclimation
benefits to smolts, trucked
from Umatilla Hatchery, prior
to release.

3. FY 1995: Complete construction.

4.17.3 LOW-CAPITAL PROPAGATION FACILITY ON NEZ PERCE RESERVATION
(Design/Begin Construction by May 1989)

703(g)(2) Upon approval by the Council of design and construction plans for low-capital propagation facilities on the Nez Perce Reservation, Bonneville shall fund the construction, operation, and maintenance of those facilities. The Nez Perce Tribe will develop the facility plan and will incorporate the information provided under Section 703(g)(1).

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To design and construct a low-capital production facility to enhance fisheries on Nez Perce Reservation.

Background and Progress to Date:

Through construction of facilities for spawning, incubation, and rearing of chinook salmon and steelhead trout, the Nez Perce Tribe (NPT) seeks to re-establish its salmon and steelhead fishery. This fishery has nearly been destroyed through construction and operation of dams and poor land use practices, including agriculture, logging, road construction, and mining.

Work began on this measure in September 1983. The initial phase of the project, which developed an artificial propagation facility feasibility study, was completed in January 1985. Site investigations were conducted in FY 1988, FY 1989, and FY 1990.

Plans:

Preliminary design scheduled to begin in FY 1990, followed by environmental evaluation and final design in FY 1991. Project completion scheduled for FY 1995, when construction funds become available.

I. COMPLETED PROJECTS

None.

II. FY 1990 ONGOING PROJECTS

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
83-350	Nez Perce Low-Capital Production Facility - NPT <u>Project Officer:</u> S. Levy <u>Objectives:</u> Design and construct a low-cost salmon propagation facility on the Nez Perce Reservation.	<u>Date initiated:</u> FY 1983 <u>Results/Conclusions:</u> None at this time.	1. FY 1991: Amend measure to expand scope of facility, and allow construction off reservation. Continue preliminary design. 2. FY 1992: Complete NEPA assessment. Initiate final design. 3. FY 1992: Complete final design. 4. FY 1995: Begin construction, complete project, and begin operation and maintenance. (Funding for construction will be unavailable until FY 1995.)
88-126	Nez Perce Technical Support - IDFG <u>Project Officer:</u> S. Levy <u>Objectives:</u> To provide technical support on planning for Nez Perce Hatchery project.	<u>Date Initiated:</u> January 1988 <u>Results/Conclusions:</u> None.	On-going technical support will continue through FY 1992.

III. NEW PROJECTS

None.

4.17.4 HABITAT SURVEY ASSOCIATED WITH ACTION ITEM 4.17.3
(Fund)

703(c)(3) [Abstract] Bonneville shall fund an evaluation of the lower mainstem Clearwater River to study existing habitat and temperature regimes for spawning, incubation, and rearing for salmon and steelhead. Proposals for outplanting from the Nez Perce low-capital propagation facilities [703(g)(2)] will be based on the evaluation.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To evaluate the habitat and temperature regimes in the lower mainstem Clearwater River; the evaluation will determine the feasibility of establishing a run of anadromous fish.

Background and Progress to Date:

When constructed, a low-capital salmon and steelhead propagation facility (Action Item 4.17.3) on the Nez Perce Reservation will produce fish for outplanting in reservation streams. The mainstem Clearwater River habitat study will try to determine what species can successfully be outplanted in the mainstem Clearwater River and to identify opportunities to enhance existing steelhead rearing. BPA expects that the NPT will use study information to plan production and outplanting strategies for the low-capital facility.

BPA began funding a mainstem Clearwater River habitat study (Project 88-15) in October 1987. The study is progressing satisfactorily.

Plans:

BPA will continue with implementation of Project 88-15 (see following table). Upon completion of Project 88-15, the Action Item and measure will be completed; no additional projects are planned.

P. COMPLETED C T S

None.

II. FY 1990 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>OBJECTIVES</u>	<u>SCHEDULE AND MILESTONES</u>
88-15	Mainstem Cleat-water River Study: Assessment for Salmonid Spawning, Incubation, and Rearing - NPT <u>Project Officer:</u> J. Gislason <u>Objectives:</u> Evaluate the existing anadromous fish habitat and the temperature regime in the lower Clearwater River to determine 1) the feasibility of establishing a run of anadromous species in the lower river, and 2) opportunities for enhancing steelhead rearing.	<u>Date Initiated:</u> October 1987 <u>Results/Conclusions:</u> NPT completed Phase I of the project, a literature review and temperature/flow data analysis, and began implementing Phase II field studies in FY 1989. The Phase I analysis of historical temperature data indicated that Lower Cleat-water River temperatures are generally suitable for fall and summer chinook salmon reproduction. Instream flow field measurements and preliminary velocity, depth, substrate, and cover preference histograms for anadromous fish were completed in FY 1990. Results are available in annual report (DOE/BP- 37474-1).	1. FY 1991: Complete chinook salmon incubation, rearing, and outmigration timing studies; complete all data collection, data analysis, and final report. 2. FY 1991: Project scheduled for completion.

III. NEW PROJECTS

None.

HATCHERY EFFECTIVENESS

----- IMPROVED HATCHERY EFFECTIVENESS
(Former Action Item 34.23)

703(e) [Abstract] Measure 703(e) concerns "Improved Propagation at Existing Facilities" and gives priority to improving and reprogramming propagation at existing facilities, over construction of new facilities. The measure includes: (1) research, development, and demonstration of improved husbandry practices; (2) strategies for and rearing operations aimed at improved operating efficiencies of hatcheries and increased adult returns; (3) genetic stock assessment; (4) improved fish health protection; and (5) developing sensitive and reliable indices of smolt quality and readiness to migrate.

TECHNICAL SUBJECT ACTIVITY SUMMARY:

Objectives:

To identify and fund research, demonstration, or other projects necessary to accomplish improvements in the effectiveness of existing hatcheries.

Background and Progress to Date:

This section of the AIWP contains four improved hatchery effectiveness and fish health projects begun under former Program Action Item 34.23. In 1987, the Council amended the Program to delete Action Item 34.23 and form a Hatchery Effectiveness Technical Work Group (HETWG) and a Fish Disease Technical Work Group (FDTWG). These groups, composed of experts in hatchery effectiveness and fish health, developed Five-Year Research Work Plans to address the technical needs of the Hatchery Effectiveness and Fish Disease Research Areas of Emphasis, Section 206(b)(1)(c), and Program Measure 703(e). These plans are discussed under Action Item 6.1 in the AIWP.

BPA continues to fund to completion those projects begun under former Action Item 34.23. One of the currently funded projects is conducting research on infectious hematopoietic necrosis (IHN) virus. This disease was rated as one of the most important disease problems by the FDTWG in its Work Plan. Other projects are pursuing fish nutrition research and identification of the Ceratomyxa shasta life cycle. Construction of the Regional Fish Disease Laboratory was completed in June 1990.

Plans:

BPA plans to continue funding ongoing multiple-year projects begun under former Action Item 34.23, after reviewing their progress. No new projects will be initiated under Action Item 34.23, as it was deleted from the 1987 Program. (New and ongoing projects from the HETWG and FDTWG Five-Year Work Plans can be found under Action Item 6.2 in the AIWP.)

I. COMPLETED PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>
87-403	Regional Fish Disease Lab at Oregon State University - OSU <u>Project Officer:</u> A. Ruger	<u>Date Completed:</u> June 30, 1990 <u>Results/Conclusions:</u> The 9,300 square-foot facility is complete and operating at capacity with up to 500 research aquariums. Included are outdoor holding ponds, laboratories and offices.

II. FY 1990 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
83-363	Development of Diets for Enhanced Survival of Salmon - ODFW <u>Project Officer:</u> R. Austin <u>Objectives:</u> Develop a high-quality, cold-processed animal protein fish diet and evaluate the effect of the diet on survival and return of coho and chinook salmon.	<u>Date initiated:</u> 1983 <u>Results/Conclusions:</u> Preliminary adult recovery data suggest an improved survival for coho salmon fed the test diets. However, recovery data for adult fall chinook salmon showed inconsistent survival, both by brood year and stock (tule and upriver bright). Final Analysis of data from returning adults will be completed in 1991.	<ol style="list-style-type: none">1. Continuing: Contractor will evaluate the effect of diet on survival and return rate of coded wire-tagged coho and chinook salmon.2. Continuing: Collection of coded wire tagged adults will continue through 1990.3. June 1991: Recommendations for diet components for enhanced survival will be available. BPA will publish final report.

**PROJECT
NUMBER**

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES

83-312

Epidemiology and Control of
Infectious Diseases of
Salmonids in the Columbia
River Basin - OSU

Project Officer: A. Ruger

Objectives:

1. Confirm role of clam as a
concentrator of C. Shasta
2. Determine if C. Shasta
spores undergo any developmental
changes when injected by clams.
3. Develop a diagnostic test
kit for R. Salmoninarum caus-
itive agent of BKD.

Date Initiated: May 1983

Results/Conclusions:

1. Geographic range of C. Shasta
expanded.
2. Indication that a fresh water clam
is involved in life history of C. Shasta.
3. Immunological methods developed to
detect life stages.

1. Project is funded to completion with FY 1987
funds.

2. March 31, 1991: Final report and project
completion.

84-43

Evaluation of a Subunit
Vaccine Against IHN Virus - OSU

Project Officer: R. Morinaka

Objectives: Develop and test
a subunit vaccine against IHN
virus.

Date initiated: July 1984

Results/Conclusions: A recombinant DNA
vaccine for IHN virus has been prepared
and laboratory tested and found to be
effective. Large quantities of vaccine
have been prepared. The Idaho Department
of Fish is continuing to field test the
vaccine in 1990-91.

1991: Evaluate vaccine in production lots
and write completion reports.

III. NEW PROJECTS

Hatchery Effectiveness research projects in the Five-Year Work Plan of the HETWG are listed under Action Item 6.2.

4.17.5 WILLAMETTE BASIN STUDY PLAN
(Fund; Coordinate with Supplementation Work Plan)

703(h)(2) [Abstract] BPA shall provide funds to study the best method of supplementing natural stocks of spring chinook with hatchery stocks in the Willamette River.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To fund a study to supplement the Willamette spring chinook runs without adversely affecting natural runs of resident fishery or the genetic integrity of the Columbia Basin fish populations.

Background and Progress to Date:

Supplementation, or outplanting, has been identified by the agencies, Tribes, and the Council as one of the main ways to increase Columbia River salmon and steelhead runs. This project aims to develop the best methods for supplementing spring chinook in the Willamette Basin, in order to develop and maintain maximum sustained yield and to maintain genetic diversity.

Phase I, completed during September 1985, surveyed the literature of outplanting efforts and developed a detailed study design for evaluating possible Willamette Basin strategies. Phase II proposed planting fry, presmolts, and adults in areas with different production potential. The 9-year evaluation would determine which life stage of spring chinook to outplant for maximum survival.

A major review included the study design and the relationship to Section 703(h)(1), the overall work plan for supplementation. Section 703(h)(2) concerns only Willamette Basin spring chinook. The review, completed in FY 1986, concluded that the initial study design viewed outplanting as a potential continuing effort to supplement hatchery production by using hatchery surpluses. However, both Measures 703(h)(1) and 703(h)(2) view outplanting as a temporary means of enhancing natural production or re-establishing natural runs. Rebuilding natural runs was not addressed in the study plan, though it is one of the highest priorities of the Program.

The impacts of outplanting on resident fish will not be answered by this study design. BPA believes, however, that these impacts should be addressed in supplementation research.

Plans:

BPA submitted the study plan to the STWG for review, realizing the relationship with 703(h)(1) that this study should address. Measure 703(h)(2) was not a high priority in the STWG Five-Year Work Plan. However, BPA will develop a work plan and initiate research when and if the STWG determines it is a high priority for achieving the objectives of the Supplementation Research Work Plan.

Projects:

No BPA-funded projects are planned for FY 1991.

4.17.6 PROPAGATION OF SALMON/STEELHEAD IN PELTON DAM FISH LADDER
(Fund, upon Council approval of Master Plan)

703(g) (3) BPA shall fund propagation of salmon and/or steelhead smolts in the 2.5-mile-long fish ladder located at Pelton Dam on the Deschutes River in Oregon. This production shall be in addition to the fish propagated in the ladder by Portland General Electric to mitigate the effects of Pelton and Round Butte dams and will not affect the mitigation responsibilities of that company. The Oregon Department of Fish and Wildlife and the Confederated Tribes of Warm Springs will develop a master plan for Council approval prior to BPA funding of design and construction. The master plan should contain the same type of information as in other hatchery master plans for Yakima, Umatilla, and northeastern Oregon facilities.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

Fund the design and construction of propagation facilities at the Pelton Dam ladder; fund the propagation of salmon and/or steelhead.

Background and Progress to Date:

BPA is awaiting development of the master plan by the fisheries agencies and Tribes. The Master Plan will be complete June 1990.

Plans:

When the Council approves the agency and Tribal joint master plan for the Pelton Dam ladder rearing: BPA will form a work group to assist in the completion of this Action Item. The design and construction will follow the recommendation of this work group. When the facility is constructed, an operation and maintenance agreement with the operator will be established.

I. COMPLETED PROJECTS

None.

II. FY 1990 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
89-29	Propagation in Pelton Dam Ladder - ODFW <u>Project Officer:</u> J. Bauer <u>Objectives:</u> 1. To experimentally rear spring chinook smolts in Pelton Ladder. 2. To determine the capacity for additional rearing of smolts. 3. To produce spring chinook smolts for Deschutes River and other acceptable basins to meet Program production goals.	<u>Date Initiated:</u> September 1989 <u>Results/Conclusions:</u> None at this time.	1. FY 1990: After Council approval of the ODFW CTVSIR master plan, BPA will fund rearing of fish in the Pelton Dam fish ladder. 2. FY 1991: Begin rearing spring chinook smolts. 3. FY 1993: First smolt releases. 4. FY 1997: final report on experiment to determine ladder rearing capacity.

III. NEW PROJECTS

None.

4.21 HATCHERY RELEASES IN UPPER COLUMBIA
(Upon Council Review of Reprogramming Plan, Fund Releases>

703(d)(2) After Council review of the reprogramming plan developed by the fish and wildlife agencies and Indian Tribes, BPA shall provide funds to transfer a portion of the fish from existing lower Columbia River hatcheries to release sites in the upper Columbia River system to assist in restoring naturally spawning stocks, as provided in that plan.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To implement the reprogramming plan (approved by the Council> to assist in the rebuilding of upriver fish runs.

Background and Progress to Date:

BPA understands that the fishery agencies and Tribes have not submitted the plan to the Council. When the Council has reviewed the plan, BPA will proceed with funding of hatchery releases in the upper Columbia River. BPA still awaits Council review and approval of the plan.

Plans:

Future projects and required funding will be identified after the Council approves the reprogramming plan.

Projects:

No defined projects for FY 1991.

5.1 KNOWN STOCK FISHERIES FIVE-YEAR DEMONSTRATION PROGRAM
(Co-Fund to Test Electrophoresis: Begin 1985 Ocean Fishing Season or Subsequent Seasons>

503(b)(1) The Council supports in-season management of mixed-stock fisheries using electrophoresis to profile the contribution of the different upriver stocks. BPA shall share funding with the fishery management agencies of a five-year program that demonstrates the effectiveness of this technique in profiling the ocean fisheries more accurately and in refining harvest regulations to protect Columbia River stocks. At the conclusion of the five-year program, the fishery management agencies will propose a plan for further action.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To demonstrate the effectiveness of the electrophoresis technique for profiling the contribution of individual Columbia River stocks in mixed populations.

Background and Progress to Date:

BPA contributed funds to a study to perfect the electrophoresis technique to differentiate fish stocks and to demonstrate its applicability in the Columbia River Basin (Project 79-1). BPA funded further application of this technique (Project 83-451) to determine separate stocks of Columbia Basin anadromous fish. These efforts and those of the fishery management entities have produced a proven electrophoresis technique. This technique is now widely applied in fisheries management and could be applied to profile mixed stock ocean fisheries. The technique may also soon be used to determine whether sturgeon populations in the United States stretches of the Kootenai River are different from those in Canadian waters. BPA therefore believes that further research to improve stock identification methods as part of a hydroelectric mitigation program is unnecessary. Stock identification is now a matter of prescriptive application.

Plans:

BPA has no further plans for this Action Item.

Projects:

None.

6.1 TECHNICAL WORK GROUPS
(Begin to Fund in FY 1987)

- 206(b)(1) [Abstract] BPA shall focus its funding of salmon and steelhead research in the next five years in the following areas of emphasis:
1. Studying water budget effectiveness and reservoir mortality;
 2. Controlling disease problems affecting spring and summer chinook;
 3. Exploring methods for substantially increasing and improving hatchery production at existing hatcheries within the next 10 years; and
 4. Improving supplementation techniques.

BPA shall fund technical work groups composed of representatives of the Fish and Wildlife agencies, tribes, hydropower project operators and BPA, with technical input from other experts, to develop Five-Year Work Plans for each of the areas listed above.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To fund the establishment of a TWG in each of the four areas of research emphasis and to fund the development of Five-Year Work Plans.

Background and Progress to Date:

BPA funded the establishment of four TWGs in FY 1987. Each has made progress in its tasks:

1. Reservoir Mortality and Water Budget Effectiveness Technical Work Group (M/WBTWG):

The M/WBTWG agreed on four areas of emphasis: survival and flow relationships, predation, smoltification, and dam operations. As opinion was distinctly divided on the focus of survival and flow relationships, two Work Plans were submitted to the Council in September 1987. The fishery agencies/Tribes plan emphasized long-term monitoring to determine the effectiveness of the Water Budget and examination of the mechanisms of reservoir mortality. The BPA/USACE/PNUCC plan emphasized shorter-term survival research and simultaneous research on both the e x t and mechanisms involved in reservoir mortality. This latter plan also maintains a basal monitoring program. To date, BPA negotiates and funds research projects. In FY 1990, three new projects were, or will be, implemented.

2. Fish Disease Technical Work Group (FDTWG):

The FDTWG submitted a work plan to the Council in September 1987. The plan focused on eight major diseases/pathogens and their biological, economic, and programmatic impact on the Columbia River anadromous fishery resources. Basic information needs were identified and categorized by the level of urgency in relationship to the Fish and Wildlife Program. During 1988, the Council approved the FDTWG's Five-Year Work Plan.

In FY 1990 this program area budget was reduced dramatically, causing the PRG to put four new projects into a contingency file. These projects were:

- 90-46, Effects and Control of Whirling Disease
- 90-47, Bacterial Coldwater Disease Research
- 90-48, Ectoparasite Research
- 90-57, Ceratomyxa Control

The FDTWG did not change the priority of these projects.

During FY 1990 the FDTWG reviewed, with outside assistance, three ongoing projects:

- 84-43, IHN Sub-unit Vaccine Development and Evaluation
- 83-312, Epidemiology of 5 Pathogens
- 89-31, Control of BKD via ELISA

3. Hatchery Effectiveness Technical Work Group (HETWG):

The HETWG developed evaluation criteria and weighting factors for research and demonstration projects. They ranged from increasing survival of salmon and steelhead (5.7 weight) and increasing production (5.2) down to improving evaluation methods (2.4) and basic research (1.0). These criteria were used to prioritize research topics, ranging from husbandry practices to improve survival or production (ranked No. 1) and the meeting of future nutritional needs (no. 2) down to the water quality standards' potential to limit artificial propagation (no. 10) and potential for modifying fish behavior to increase survival (no. 11). Plans were drafted for each topic. The HETWG Work Plan was submitted to the Council in September 1987. The Council adopted this plan in January 1988.

During FY 1990 no new projects were started under the HETWG. A revised Five-Year Work Plan will be completed in FY 1990 that will identify 5-6 high priority projects. Priority status will be based, in part, on the project's ability to directly increase adult production and those projects whose results are not site specific.

4. Supplementation Technical Work Group (STWG):

During FY 1987, the STWG was formed in accordance with Sections 206(b)(1) and (2) of the Program. The STWG has developed a Five-Year Research Work Plan addressing stock selection, time of release, and other factors affecting the success of supplementation activities. The Five-Year Work Plan was submitted to the Council in June 1988. The Council approved the Plan in September 1988 with the provision that they approve all projects in advance of implementation.

The STWG identified six research projects during FY 1989 that addressed the research needs identified in the Work Plan. Three of these projects were developed in sufficient detail for approval and procurement activities to begin. The following three projects were implemented in FY 1989:

1. Project 89-96, A Genetic Monitoring and Evaluation Program for Supplemented Populations of Salmon and Steelhead in the Upper Columbia River Basin.
2. Project 89-97, Evaluation of the Success of Supplementing Imnaha River Summer Steelhead with Hatchery Reared Smolts and Assessment of the Effect on Natural Production Performance, Life History Characteristics, and Genetic Characteristics.
3. Project 89-98, Determination of Effectiveness of Supplementation Strategies and Assessment of Interaction Between Supplemental Hatchery Chinook Salmon and Natural Populations in the Salmon, Snake, and Clearwater Rivers in Idaho.

The STWG identified five projects for possible implementation in FY 1990. Additional review by the STWG reduced the number of projects for possible implementation in FY 1990 to three. These projects will need further development and refinement prior to submittal for approval and procurement. This activity will take place through September 1990. The STWG did not identify additional projects for implementation in FY 1991.

Plans:

BPA will continue to fund the TWGs as long as the Program contains a Measure calling for BPA funding.

I. COMPLETED PROJECTS

None.

II. FY 1990 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
87-307	<p>Technical Work Group (TWG) Coordination - PSMFC</p> <p><u>Project Officer:</u> J. Gislason</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none">1. Coordinate Council Area of Research Emphasis TWG activities within the TWG's and among the TWG's, as required by the Implementation Planning Process (IPP).2. Coordinate TWG planning activities with other activities such as MEG and System and Subbasin Planning, as required by the IPP.	<p><u>Date Initiated:</u> July 1987</p> <p><u>Results/Conclusions:</u> BPA has funded a TWG Coordinator position with the CBFWA through a contract with the PSMFC. Travel and per diem of CBFWA TWG members are also funded through this contract.</p>	<p>FY 1991: BPA will continue to fund the TWG Coordinator position as long as the CBFWA continues to participate in the Council's TWG's and the Program contains a measure calling for BPA to fund the TWG's.</p>

III. NEW PROJECTS

None.

6.2 RESEARCH IN THE FIVE-YEAR WORK PLANS
(Begin to Fund in FY 1988)

404 [Abstract] These measures address BPA funding of research,
703(e) development, and testing of improved fish husbandry practices,
703(h) rearing operations, release strategies, stock assessment, fish
206(b) health protection, indices of smolt quality, and hatchery
supplementation. Measure 206(b) in the Program directs BPA to
focus its funding of salmon and steelhead research in the next
five years in the four areas of emphasis described under Action
Item 6.1 in BPA's Work Plan. Technical Work Groups in each of
the areas of emphasis will develop a Five-Year Research Work
Plan for Council approval and BPA funding beginning in FY 1988.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

The Council Technical Work Group (TWG) process was instituted to focus research planning in four areas of technical emphasis considered fundamental to the success of the Fish and Wildlife Program. BPA will incorporate the results of the TWG planning into the annual work planning process and will pursue implementation of the research identified and prioritized by the TWGs and approved by the Council.

Background and Progress to Date:

The four TWGs (Reservoir Mortality and Water Budget Effectiveness, Fish Disease, Hatchery Effectiveness, and Supplementation) submitted Five-Year Research Work Plans in 1987 or early 1988 for Council review and approval. BPA began funding projects from the Work Plans in late FY 1988.

Plans:

BPA plans to continue funding projects from the TWG Five-Year Work Plans in FY 1991.

1. RESERVOIR MORTALITY AND WATER BUDGET EFFECTIVENESS

I. COMPLETED PROJECTS

None.

II. FY 1990 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
82-3	<p>Magnitude and Dynamics of Predator-Caused Mortality on Healthy Juvenile Salmonids in Columbia and Snake River Reservoirs - USFWS</p> <p><u>Project Officer:</u> W Maslen</p> <p><u>Objectives:</u> Determine the extent of predator-caused mortality on healthy vs. diseased, injured, and dead juvenile salmonids and develop and evaluate prey protective measures.</p>	<p><u>Date initiated:</u> 1983</p> <p><u>Results/Conclusions:</u> An index for estimating consumption by squawfish was refined, for use in combination with the abundance index (Project No. 82-12) to determine the significance of predation system wide.</p> <p>Laboratory experiments on prey selection were conducted to develop experimental protocol for future prey selection studies.</p>	<p>FY 1991: Continue prey selection experimentation in the laboratory and the field to determine relationship between predation and prey condition and develop and evaluate prey protective measures (e.g., reducing predator-prey encounters, reducing predator feeding deficiency, etc.).</p>

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
82-12	<p>Developing a Predation Index and Evaluating Ways to Reduce Salmonid Losses to Predation in the Columbia River Basin - DDFW</p> <p><u>Project Officer:</u> W Maslen</p> <p><u>Objectives:</u> Develop and evaluate squawfish harvest techniques.</p>	<p><u>Date initiated:</u> 1983</p> <p><u>Results/Conclusions:</u> An index for estimating abundance of squawfish was refined, for use in combination with the consumption index (Project 82-3) to determine the significance of predation.</p> <p>A plan was developed for step-wise implementation of commercial and sport reward fisheries on squawfish on a systemwide basis (Project 90-77).</p>	<p>FY 1991 and beyond: Additional development of squawfish harvest techniques are planned.</p>
83-319	<p>Passive Integrated Transponder (PIT) Tag Research - NMFS</p> <p><u>Project Officer:</u> D. Johnson</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> Determine the biological feasibility of injecting salmon and steelhead with PIT tags for passage and monitoring research activities. Determine biological and engineering feasibility of adult and smolt salmon and steelhead detection facilities for passage monitoring and research activities. 	<p><u>Date initiated:</u> 1983</p> <p><u>Results/Conclusions:</u> All data to date show that there are no biological problems with the PIT tag. The detection systems and monitorings continue to be improved and are working extremely well. Adult chinook salmon with PIT tags have been detected at Lower Granite Dam</p>	<ol style="list-style-type: none"> FY 1991: BPA will fund the project through to completion. Biological studies are essentially complete, and monitoring hardware continues to be developed. Continuing: Contractor will finalize biological studies and equipment development and provide evaluation reports annually.

PROJECT NUMBER	TITLE	P R O J E C T	SCHEDULE AND MILESTONES
87-413-1 (Task Order 97678)	<p>Fish Survival and Smolt Physiology/Behavior Workshops - UW/BPNL</p> <p><u>Project Officer:</u> P. Poe</p> <p><u>Objectives:</u> Through the workshop process:</p> <ol style="list-style-type: none"> 1. Better define measurements of salmon and steelhead smolt survival and smolt condition. 2. Outline research needs. 3. Present recommendations on how to proceed with future survival and smolt condition research. 4. Provide workshop results as one source of information to assist the Reservoir Mortality and Water Budget Effectiveness Technical Work Group in their development of a 5-year Work Plan for mainstem passage research. 	<p><u>Date Initiated:</u> January 1989</p> <p><u>Results/Conclusions:</u> Proceedings from Smolt Survival Workshop conducted February 1989 is available. Avenues of research were identified to clarify and reduce uncertainty in survival estimates and their application in program evaluation.</p> <p>This project combines Project 89-50 "Smoltification/Travel Time Research Methods Development Workshop," and Project 89-51, "Pool Survival Research Method Development Workshop," that were listed in the outline of the draft FY 1990 AIWP.</p>	<p>FY 1991: Conduct Smolt Physiology/Behavior Workshop that focuses on fish physiology and condition and its effect on downstream migrant behavior.</p>
87-413-2 (Task Order 01772)	<p>Analysis of Historic Data for Juvenile and Adult Salmonids - uw</p> <p><u>Project Officer:</u> P. Poe</p> <p><u>Objectives:</u> Phase I of this work will assemble a data base of statistically bounded estimates of survival from smolt</p>	<p><u>Date Initiated:</u> September 1989</p> <p><u>Results/Conclusions:</u> Report of Phase I activities available before end of 1990.</p> <p>This project combines Project 89-48, "Review and Synthesize Historical Data," and Project 89-49, "Cohort Method and Analysis," that were listed in the outline of the draft FY 1990 AIWP.</p>	<ol style="list-style-type: none"> 1. FY 1991: Complete Phase I tasks: develop criteria for decision to proceed to Phase II; begin Phase II if decision positive. 2. FY 1992: Continue Phase II if positive results from evaluation of Phase I.

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
87-413-2 cont.	to adult and contribution rates to ocean fisheries for Columbia River salmon and steelhead hatchery stocks based on the last 15 years of Coded-Wire Tag (CWT) data. Phase II of this research will consist of the analysis of the adult production and survival data base created in Phase I in relation to riverine factors that affect production and survival. Phase II will be funded upon outcome of Phase I.		
88-134	<p>Evaluation of Factors Affecting Collection Efficiency Estimates at McNary Dam - NMFS</p> <p><u>Project Officer:</u> P. Poe</p> <p><u>Objectives:</u> Assess potential sources of error associated with estimates of juvenile fish collection efficiency and improve techniques for estimating collection efficiency at McNary Dam. Study will use PIT tags to evaluate effects of fish origin, time of day of release, and the use of guided fish for test fish on collection efficiency results.</p>	<p><u>Date Initiated:</u> May 1988</p> <p><u>Results/Conclusions:</u> Field data from two years of research have been collected and analyzed. Recommendations to improve the accuracy of estimates of collection efficiency have been made, and when implemented, will improve the precision of daily fish passage estimates at Columbia River dams.</p>	<p>FY 1991: Project is scheduled for completion; final report by the end of 1990.</p>

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
88-141	<p>Biological Manipulation of Migration Rate and Recovery Rate - The Use of Advanced Photoperiod to Accelerate Smoltification in Yearling Chinook Salmon - NMFS</p> <p><u>Project Officer:</u> W Maslen</p> <p><u>Objective:</u> Determine the duration of exposure to advanced photoperiod and temperature (before release from the hatchery) treatments to optimize the migration rate of yearling chinook through the Snake River and improve fish guiding efficiency at dams.</p>	<p><u>Date Initiated:</u> May 1988</p> <p><u>Results/Conclusions:</u> Advanced photoperiod treatment in combination with holding fish in warmer water for a week prior to release from Dworshak Hatchery results in a measurable decrease in travel time to Lower Granite, Little Goose, and McNary Dams. The 1988 and 1989 Annual Reports are available.</p>	<ol style="list-style-type: none"> 1. FY 1991 and beyond: Anticipate advanced photoperiod and temperature treatment experimentation at additional hatchery sites with evaluation based on data from returning adults. 2. Implement photoperiod and temperature treatment, where practical, based on data from returning adults.
89-107	<p>Development of Epidemiological Methods for Use in Quantifying Survival Relationships from PIT-Tag Releases of Salmon and Steelhead Smolts - UW</p> <p><u>Project Officer:</u> P. Poe</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Phase I: Develop epidemiological models and regression estimators, tests of survival relationships, and tests of assumptions and goodness-of-fit statistics. Determine location and number of required PIT-tag facilities. 	<p><u>Date Initiated:</u> October 1989</p> <p><u>Results/Conclusions:</u> None at this time.</p>	<ol style="list-style-type: none"> 1. FY 1991: Complete Phase I tasks. 2. FY 1991 and beyond: Proceed with Phase II dependent upon the results of Phase I.

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
89-107 cont.	<p>2. Phase II: Develop sample size calculations for PIT-tag release studies, conduct computer studies of robustness of models, develop alternative scenarios for PIT-tag studies, and develop computer package for statistical design and analysis.</p>		
90-77	<p>Development of a System Wide (formerly Predator Control Program - ODFW 89-28)</p> <p><u>Project Officer:</u> W Maslen</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Determine the significance of predation in Columbia River reservoirs through implementation of indexing of predator abundance and integration with consumption indices. 2. Implement a squawfish management development plan, beginning with a test fishery in the John Day Reservoir in 1990. 3. Implement an evaluation of the Squawfish Management Program 	<p><u>Date Initiated:</u> April 1990</p> <p><u>Results/Conclusions:</u> Indexing of the significance of predation was conducted in the Lower Columbia River (Bonneville to Ice Harbor Dam) A pilot test fish- was initiated in the John Day Reservoir to evaluate the feasibility of commer- and sport reward fisheries. Baseline data were collected for evaluation of squawfish management.</p>	<p>FY 1991: Implement squawfish management in the Lower Columbia River. Conduct indexing of the significance of predation in the Snake River (Ice Harbor to Hell's Canyon Dam)</p> <p>FY 1991 and beyond: Continue implementation and evaluation of system wide squawfish management program</p>

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
90-78	<p>System Wide Significance of Predation on Juvenile Salmonids in Columbia and Snake River Reservoir - USFWS</p> <p><u>Project Officer:</u> W Maslen</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Index predator consumption rates of juvenile salmonids in reservoirs throughout Columbia River Basin. 2. Assist ODFW (Project 90-77) to index predator abundance, integrate predator abundance and consumption indices to estimate system wide losses of juvenile salmonids to predators, and synthesize data to develop systematic approach for implementation of squawfish management and evaluation of that program 	<p><u>Date Initiated:</u> March 1990</p> <p><u>Results/Conclusions:</u> Indexing of the significance of predation was conducted in the Lower Columbia River (Bonneville to Ice Harbor Dam).</p>	<p>FY 1991: Conduct indexing of the significance of predation in the Snake River (Ice Harbor to Hell's Canyon Dam).</p> <p>FY 1991 and beyond: Continue to assist ODFW in the implementation of the squawfish management program</p>
86-118 (Task Order 10)	<p>Feasibility of Satisfying Model Assumptions of the Burnham and Anderson Fish Survival Estimation Techniques</p> <p><u>Project Officer:</u> P. Poe</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Evaluate the practicability of applying the Burnham and Anderson model to improve estimates of smolt survival 	<p><u>Date Initiated:</u> September 1990</p> <p><u>Results/Conclusions:</u> None at this time.</p>	<p>FY 1990: Initiate project; assemble a multi-disciplinary team</p> <p>FY 1991: Complete model evaluation; issue report.</p>

PROJECT

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
86-118 (Task Order 10) cont.	in the Columbia River system 2. Evaluate how the practical problems related to conducting the survival experiments may limit the ability to satisfy the model assumptions.		

III. NEW PROJECTS

PROJECT

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
91-17	Investigation of Factors Affecting Juvenile Wild Spring Chinook Migration Above Lower Granite Dam <u>Project Officer:</u> P. Poe <u>Objectives:</u> Determine if the low detection of PIT-tagged juvenile spring chinook at Lower Granite Dam (LGR) is a function of the effects of poor reservoir conditions, e.g., disease, predation, flow, swimming behavior, smolt condition, and stage of development.	New Project	1. FY 1991: Literature review and study design. Study design contingent upon results of literature review. 2. FY 1992 and beyond: (a) Trap and PIT-tag juvenile wild spring chinook above LGR. (b) Determine recovery rate of juvenile wild spring chinook at LGR. (c) Determine recovery rate of adult wild spring chinook to LGR.

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
91-28	PIT-Tagging of Wild Spring Chinook in Idaho and Oregon <u>Project Officer:</u> TBA <u>Objectives:</u> Assess the migrational characteristics of wild/natural parr in selected streams above Lower Granite Dam in Idaho and Oregon during the summer/fall (marking phase). During the recovery phase the following spring, actual characteristics will be established at PIT-tag recovery sites.	New Project	FY 1991: Start project.
<p>[Note: As the FY 1991 AIWP went to press, the following project was still under review by the PRG. Implementation in FY 1991 is contingent upon the results of this review and BPA decision.]</p>			
91-29	Early Life History Requirements of Subyearling Chinook Salmon in the Columbia River Basin <u>Project Officer:</u> TBA <u>Objectives:</u> 1. Identify and estimate the influence of environmental and biological factors which stimulate and control season-	New Project	FY 1991: Start project.

**PROJECT
NUMBER**

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES

91-29
(cont.)

al migratory behavior of
subyearling chinook salmon,
such as water temperature,
flow, growth rate, and
physiological development.
2. Determine location and
success of summer and fall
chinook spawning in Columbia
River Basin impoundments.
3. Describe physical and
biological requirements of
subyearling summer and fall
chinook salmon to success-
fully rear in Columbia River
Basin impoundments.

2. FISH DISEASE

I. COMPLETED PROJECTS

None.

II. FY 1990 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
88-152	Infectious Hematopoietic Necrosis (IHN) Virus Research - OSU <u>Project Officer:</u> R. Mbrinaka <u>Objectives:</u> 1. To investigate and determine the pathogenicity of IHN virus strains in the Columbia River. 2. To determine the mechanism of the location of IHN virus throughout the life cycle of rainbow trout and kokanee salmon.	<u>Date Initiated:</u> May 1989 <u>Results/Conclusions:</u> None at this time.	1. Year 2: Identify sources and reservoirs of IHN virus. 2. Year 3: Compare pathogenicity of 10 strains of IHN virus. 3. Year 4: Test sediment and non-salmonid fish for sources of horizontal transmission.

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
89-31	<p>Control of Bacterial Kidney Disease (BKD) via Segregation of Adult Spring Chinook and Summer Chinook Salmon with Enzyme-Linked Immunosorbent Assay (ELISA) - OSU</p> <p>Project Officer: R. Mbrinaka</p> <p>Objectives:</p> <ol style="list-style-type: none"> 1. Standardize reagents: <ol style="list-style-type: none"> a) antigen b) monoclonal antibodies 2. Sample experimental fish and quantify BKD levels in experimental and production samples. 3. Determine whether progeny's BKD levels are influenced by the parental BKD level. 	<p>Date Initiated: December 1988</p> <p>Results / w: None at this time.</p>	<p>Year 2,3,4: Assay juvenile and adult salmon for levels of BKD. Segregate the gametes based upon BKD level. Determine quantitatively the levels of BKD relative to progeny levels.</p>
89-32	<p>Registration of Erythromycin -UI</p> <p>Project Officer: R. Mbrinaka</p> <p>Objectives:</p> <ol style="list-style-type: none"> 1. Analyze existing data on erythromycin. 2. Develop additional analytical data required by the Food and Drug Administration (FDA) for drug registration. 3. Work with appropriate sponsor for erythromycin registration. 4. Conduct field studies to develop data to support the registration application. 	<p>Date Initiated: March 1989</p> <p>Results/Conclusions: None at this time.</p>	<ol style="list-style-type: none"> 1. FY 1991: Complete tissue residue studies and clinical field trials. 2. FY 1992: Complete field trials and determine environmental fate. 3. FY 1993: Submit registration package to FDA.

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
89-32 (cont.)	<p>5. Determine levels and dosage for oral and injectable forms of erythronycin.</p> <p>6. Determine tissue residues.</p> <p>7. Complete registration package for FDA.</p>		
89-40	<p>Analytical Methods for Malachite Green - USFWS</p> <p><u>Project Officer:</u> J. Bauer</p> <p><u>Objectives:</u> Accurately determine all three forms of malachite green (vernal-leukocarbinal analogs). Define detection limits within 10 ppb or less.</p>	<p><u>Date Initiated:</u> December 1988</p> <p><u>Results/Conclusions:</u> Literature search on methods for analysis has been done. The selectivity of High Pressure Liquid chromatography is being investigated.</p>	<p>1 FY 1990: Test existing analytical methods for measuring malachite green analogs in water. Determine if developed method will accurately detect malachite green levels at 10 ppb or less.</p> <p>2. FY 1991: Prepare final report.</p>
89-54	<p>Research to Identify Effective Anti-Fungal Agents - USFWS</p> <p><u>Project Officer:</u> R. Austin</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Identify and test alternate anti-fungal agents that can safely replace malachite green for the control and treatment of fungal infections on eggs, juveniles, and adult spring chinook. 2. Evaluate test results and rank order tested agents, based on safety and effectiveness on spring chinook eggs and adults. 3. Recommend alternative anti-fungal agent for U.S. Food and Drug Administration registration for use on food fish and eggs. 	<p><u>Date Initiated:</u> September 1989</p> <p><u>Results/Conclusions:</u></p> <ol style="list-style-type: none"> 1. List of ten alternative anti-fungal agents selected for testing on salmonid eggs. Selection criteria based upon fungicidal activity of agents from in-vitro test results. 2. Testing initiated on salmonid eggs. 	<ol style="list-style-type: none"> 1. FY 1990: Identify and test anti-fungal agents on eggs, juveniles, and adult spring chinook. 2. FY 1991: Continue testing anti-fungal agents on adult spring chinook; evaluate safety of alternative agents tested. 3. FY 1991: Evaluate test results and recommend alternative anti-fungal agent having best potential for U.S. Food and Drug Administration registration.

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
89-81-2	<p>Erythrocytic Inclusion Body Syndrome (EIBS) Research - OSU</p> <p><u>Project Officer:</u> R. Mbrinaka</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Determine epizootiology of EIBS virus including susceptibility and modes of transmission. 2. Assess relationship between EIBS and other fish pathogens relative to immunosuppression. 3. Develop more accurate and efficient methods to detect the early stages of the syndrome. 	<p><u>Date Initiated:</u> September 1989</p> <p><u>Results/Conclusions:</u> None at this time.</p>	<ol style="list-style-type: none"> 1. 1991: Analyze impact on survival. 2. 1992: Determine effect of water temperature on transmission.
90-61	<p>Research on Fungal Infections of Spring and Summer Chinook Salmon</p> <p><u>Project Officer:</u> A. Ruger</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Isolate and identify fungi species infecting spring chinook salmon. 2. Develop culture maintenance methods and develop protocol for identifying the isolated fungi species and strains. 	<p><u>Projected to start:</u> FY 1990</p>	<p>FY 1990: Start project.</p>

III. NEW PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
91-22	Hatchery Sorting for Bacterial Kidney Disease (BKD) <u>Project Officer:</u> TBA <u>Objectives:</u> 1. Transfer the present BKD detection technology to the hatchery system 2. Demonstrate that segregation of progeny by BKD infection levels will increase the quality of the smolts being released and positively affect adult returns. 3. Analyze the data generated by this research to evaluate the impact of BKD on hatchery-reared spring chinook salmon and assess the benefits of a segregation program	New Project	FY 1991: Start project.
91-23	Ectoparasite Research <u>Project Officer:</u> R. Morinaka <u>Objectives:</u> 1. Review literature to find efficacious chemotherapeutants. Determine life cycle relative to temperature. 2. Determine effects of parasite load on sea water acclimation. 3. Determine host resistance mechanisms.	New Project	Year 1: Review veterinary chemotherapy. Initiate host resistance study. Year 2: Find the effects of parasite load on sea water acclimation. Compare potential new drugs and chemicals with formalin. Year 3: Determine the non-specific and specific immunity mechanisms via acclimation.

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
90-25	<p><u>Ceratomyxa shasta</u> Control</p> <p><u>Project Officer:</u> R. Mbrinaka</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Determine if freshwater clams are essential for <u>C. Shasta.</u> 2. Identify infectious unit. 3. Develop new serological reagents. 4. Determine route of transmission. 	New Project	<ol style="list-style-type: none"> 1. Expose fish to clams from <u>C. shasta</u> endemic areas. 2. Develop monoclonal antibodies to recognize <u>C. shasta</u> life stages. 3. Test invertebrates, identify infectious stage, and describe. 4. Expose gill, skin, and gut to determine major routes of transmission.
91-26	<p>Bacterial Coldwater Disease (BCWD) Research</p> <p><u>Project Officer:</u> R. Mbrinaka</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Screen efficacious therapeutants for BCWD. 2. Develop serological techniques for rapid identification. 3. Conduct demonstration projects to determine effectiveness of certain fish cultural techniques. 4. Determine if disease is vertically transmitted. 	New Project	<p>Year 1: Initiate review of available drugs/chemicals for control.</p> <p>Year 2: Select strains and serological techniques to be used.</p> <p>Year 3: Construct vertical transmission studies.</p> <p>Year 4: Determine best preventive measures.</p>

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
91-31	Infectious Hematopoietic Necrosis Virus (IHNV) Vaccine	New Project	FY 1991: Start project.
	<u>Project Officer:</u> TBA		
	<u>Objectives:</u> 1. Test vaccine at several fish culture facilities and with different species of fish. 2. Develop a multivalent vaccine against IHNV. 3. Determine effectiveness of vaccine in preventing transmission of IHNV in broodstock fish.		

3. HATCHERY EFFECTIVENESS

I. COMPLETED PROJECTS

**PROJECT
NUMBER**

TITLE

PROJECT STATUS

86-118
(Task
Order 8)

Hatchery Effectiveness
Technical Working Group
Workshop/Retreat - BPNL

Date Completed: May 1990

Project Officer: R. Austin

Objectives:

1. Improve the effectiveness of the HETWG through clarifying its role and developing procedures for its operation.
2. Develop an action plan for revision of their current research plan.

Results/Conclusions: The retreat met its objectives of providing a forum for discussion of group process and development of an action plan for revising the current five-year research plan. Bylaws developed during the retreat were adopted at the February 1990 HETWG meeting. BPNL staff attended the March 1990 HETWG meeting as a follow-up to the January retreat. They critiqued the meeting and facilitated group discussion of "well done's" and "opportunities for improvement." Final report received April 1990.

86-118
(Task
Order 9)

Volitional and Serial Release
Workshop - BPNL

Date Completed: June 1990

Project Officer: J. Bauer

Objectives:

1. Review existing standards used for release strategies.
2. Identify new approaches, feasibilities, and/or equipment for improving release strategies.
3. Agree on standards for future release studies.
4. Recommend strategies for use.

Results/Conclusions: The workshop produced ranked research recommendations, a list of release practices to improve hatchery effectiveness, and general comments about hatchery effectiveness research. Final report with recommendations due June 1990.

**PROJECT
NUMBER**

TITLE

PROJECT STATUS

89-45

**Assess Present Anadromous
Production Facilities in
the Columbia River Drainage
-NMFS.**

Projected Completion: July 1990

**Results/Conclusions: None at this
time. Final report scheduled for
completion in July 1990.**

Project Officer: J. Bauer

**Objectives: This project will
complement completed Project
84-51 in providing accurate
existing hatchery capacities,
theoretical capacities, and
expansion potentials for
Columbia River hatcheries.**

II. FY 1990 ONGOING PROJECTS

**PROJECT
NUMBER**

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES

88-160

**Bioengineering Evaluation of
Retrofitted Supplemental
Oxygen for Rearing Spring
Chinook - ODFW**

Date Initiated: September 1988

Results/Conclusions: None at this time.

Project Officer: A. Ruger

Objectives:

- 1. Rear spring chinook under
experimental conditions;
tag fish; monitor fish
health/quality.**
- 2. Recover and decode tags
for returning adults.**
- 3. Analyze and summarize
all data.**
- 4. Transfer technology
to user groups.**
- 5. Write final report.**

- 1. 1994: Begin recovering and decoding tags from
returning adults.**
- 2. June 2000: Complete data analysis. Complete
final report.**

**PROJECT
NUMBER**

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES

88-160-Z

**Engineering Consultation/
Assistance on Project 88-160
- Consultant**

Date Initiated: August 1989

Results/Conclusions: None at this time.

Project Officer: G. Bouck

**Objectives: Conduct engineering
evaluations associated with
Project 88-160.**

**1. August 25, 1989: Complete evaluation of
proposed water quality monitoring methods in
project operation manual.**

**2. October 1, 1989: Evaluate and modify
oxygen contactor and supply system**

**3. Draft a plan for engineering evaluation of
the project.**

**4. Continuing: Attend quarterly meetings of
steering committee.**

88-163

**Effects of Coded-Wire
Tagging on the Survival
of Spring Chinook Salmon - WDF**

Date Initiated: January 1, 1989

**Results/Conclusions: First brood year
fish were otolith marked in winter
1989-90. Coded-wire tagging of first
year fish completed.**

Project Officer: A. Ruger

Objectives:

- 1. Mark entire production of
each of three hatcheries with
otolith marks and mark a
portion of the production with
coded-wire tags.**
- 2. Repeat procedure for three
brood-years at each facility.**
- 3. Determine difference in
survival rates between coded-
wire tagged and untagged groups.**

**1. October 1990: Begin otolith marking of second
brood year fish.**

**2. September 1993: Begin sampling
otoliths from adults.**

**3. June 30, 1997: End of project: final
report completed.**

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
89-30	<p>Evaluation of Pre-Release Temperature Acclimation at "Ground Water" Hatcheries - WDF</p> <p><u>Project Officer:</u> A. Ruger</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> To provide Klickitat River acclimation water to the Klickitat Hatchery site. Compare the performance (survival of adults to hatchery rack) of spring chinook smolts raised in and released directly from a groundwater supplied hatchery to smolts released from the same hatchery following acclimation with the ambient tributary receiving water for a period of time before release. 	<p><u>Date Initiated:</u> July 1989</p> <p><u>Results/Conclusions:</u> First objective is complete and BPA is reviewing construction documents and budget. Work on Objective 2 pending this review.</p>	<ol style="list-style-type: none"> July 1, 1989 - June 30, 1990: Feasibility and engineering studies and construction to provide river water to the hatchery site. September 1990: Start coded-wire tag fish for 4 years. August 1992: Start sampling coded-wire tags for 5 years. June 30, 1998: Final report and project completion.
89-46	<p>Spring Chinook Smolt Quality Assessment - NMFS</p> <p><u>Project Officer:</u> R. Austin</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> Select and monitor fish quality at four hatcheries. Correlate these data with overall survival of the released groups (total contribution). Determine suitability of smolt quality indices and other physiological parameters for assessing fish quality and improving hatchery effectiveness. 	<p><u>Date Initiated:</u> February 1989</p> <p><u>Results/Conclusions:</u></p> <ol style="list-style-type: none"> Sampling during the first year at four hatcheries indicated that most fish were released prior to the initiation of the smoltification process. Sampling is continuing. Developed plan for monitoring physiological parameters of wild smolts. 	<ol style="list-style-type: none"> FY 1990: Characterize physiological parameters for wild spring chinook in at least three subbasins; continue monitoring of hatchery smolts. FY 1991: Continue monitoring wild and hatchery smolts. FY 1992: Complete monitoring of smolt quality parameters. FY 1993-1996: Recovery of adult returns. FY 1996: Recovery of adult fish complete; final report written.

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
89-65	<p>Coded-Wire Tag Evaluation of Missing Hatchery Groups - USFWS</p> <p><u>Project Officer:</u> J. Bauer</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Identify missing production groups of salmon for Columbia River hatcheries. 2. Recover, decode and record survivability data. 3. Evaluate hatchery production programs. 	<p><u>Date Initiated:</u> November 1989</p> <p><u>Results/Conclusions:</u> All groups for FY 1990 have been tagged.</p>	FY 1991: Project ends on October 31, 1990.
89-66	<p>Coded-Wire Tag Evaluation of Missing Hatchery Groups - WDF</p> <p><u>Project Officer:</u> J. Bauer</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Identify missing production groups of salmon for Columbia River hatcheries. 2. Recover, decode and record survivability data. 3. Evaluate hatchery production programs. 	<p><u>Date Initiated:</u> September 1989</p> <p><u>Results/Conclusions:</u> All fish groups scheduled for tagging in 1989-90 were completed. Groups for 1991 will be tagged with FY 1990 dollars on hand.</p>	FY 1991: Project ends on September 30, 1991.

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
89-69	<p>Coded-Wire Tag Evaluation of Missing Hatchery Groups - ODFW</p> <p><u>Project Officer:</u> J. Bauer</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Identify missing production groups of salmon for Columbia River hatcheries. 2. Recover, decode, and record survivability data. 3. Evaluate hatchery production programs. 	<p><u>Date Initiated:</u> September 1989</p> <p><u>Results/Conclusions:</u> All fish groups scheduled for tagging in 1989-90 were completed. Groups for 1991 will be tagged with FY 1990 dollars on hand.</p>	<p>FY 1991: Project ends on September 30, 1991.</p>
89-81-3	<p>Modeling Optimized Hatchery Production - OSU</p> <p><u>Project Officer:</u> R. Austin</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Develop a computerized model for defining and solving the problems of optimizing hatchery production of anadromous salmonids. 2. Test the model by applying to actual hatchery situations. 3. Calibrate and apply the model to specific hatcheries. 4. Use model as a tool towards optimizing the hatchery production system and to identify areas where further research is necessary. 	<p><u>Date Initiated:</u> September 1989</p> <p><u>Results/Conclusions:</u> Contacts established with fisheries agencies and Tribes to form a project task force of hatchery biologists to assist in the development and testing of the hatchery model.</p>	<ol style="list-style-type: none"> 1. 1990: Model Development 2. 1991: Model Testing and Refinement 3. 1992: Model Application: final product will include full documentation of software.

**PROJECT
NUMBER**

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES

89-81-4

Survey of Research and Research Implementation - Consultant
Date Initiated: September 1989

Project Officer: A. Ruger

Results/Conclusions: None at this time.

1. Literature and research review. Nine months post-award.

2. Agency interviews complete. Ten months post-award.

3. Completion report with final recommendations. Eighteen months post-award.

Objectives:

1. Propose to BPA methods and approaches necessary to survey Pacific Northwest agencies involved in salmon/steelhead research.
2. Upon approval conduct survey of projects in progress.
3. Report results of unpublished research.
4. Determine why research was not implemented.

III. NEW PROJECTS

None.

4. SUPPLEMENTATION

I. COMPLETED PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>
88-100	Analysis of Past and Present Salmon and Steelhead Supplementation in the Northwest United States - USFWS <u>Project Officer:</u> T. Vogel <u>Objectives:</u> 1. Summarize and evaluate past and current supplementation of salmon and steelhead. 2. Develop a qualitative "model" of factors affecting the results of supplementation. 3. Develop recommendations for future supplementation needs and future opportunities.	<u>Projected Completion:</u> August 1990 <u>Results/Conclusions:</u> None at this time. Draft report available late May or early June 1990. Final completion report due August 1990.

II. FY 1990 ONGOING PROJECTS

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
89-96	A Genetic Monitoring and Evaluation Program for Supplemental Populations of Salmon and Steelhead in the Upper Columbia River Basin - NMFS	<u>Date Initiated:</u> September 1989 <u>Results/Conclusions:</u> None at this time.	September 1992: Evaluate Project and determine desirability to continue.
	<u>Project Officer:</u> T. Vogel		
	<u>Objectives:</u> 1. Evaluate the nature and extent of genetic changes in hatchery stocks to be used for supplementation. 2. Quantify the genetic impact of supplementation on targeted natural stocks and non-targeted wild stocks.		
89-97	Evaluation of the Success of Supplementing Imnaha River Summer Steelhead with Hatchery-Reared Smolts and Assessment of the Effect on Natural Production Performance, Life History Characteristics, and Genetic Characteristics - ODFW	<u>Date Initiated:</u> September 1989 <u>Results/Conclusions:</u> None at this time.	1. December 1990: Review experimental design and management agreements. 2. March 1991: Start Phase II, Experimentation.
	<u>Project Officer:</u> T. Vogel		
	<u>Objectives:</u> 1. Determine the effects on naturally produced fish due to predation by hatchery fish and competition for food and space between naturally produced fish and hatchery fish.		

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
89-97 cont.	<p>2. Determine the effects on indigenous stock productivity that result from hatchery adults interbreeding with indigenous wild fish.</p> <p>3. Determine the effects of supplementation with hatchery fish of indigenous stock.</p>		
89-98	<p>Determination of Effectiveness of Supplementation Strategies and Assessment of Interaction between Supplemental Hatchery Chinook Salmon on Natural Populations in the Salmon, Snake, and Clearwater Rivers in Idaho - IDFG</p>	<p><u>Date Initiated:</u> September 1989</p> <p><u>Results/Conclusions:</u> None at this time.</p>	<p>1. December 1990: Review experimental design and management agreements.</p> <p>2. March 1991: Start Phase II, Experimentation.</p>
	<p><u>Project Officer:</u> T. Vogel</p>		
	<p><u>Objectives:</u></p>		
	<p>1. Determine the effects of outplanting different life stages of spring and summer chinook on natural fish production.</p> <p>2. Determine effectiveness of supplementation in building self-sustaining natural runs of the species.</p> <p>3. Develop guidelines for future supplementation in terms of size and time of release.</p>		

III. NEW PROJECTS

[As the FY 1991 AIWP went to press, the three projects listed below were still under review by the PRG.]

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
90-52	Performance/Stock Productivity Impacts of Hatchery Supplementation.	New Project	FY 1991: Start project.
	<u>Project Officer:</u> T. Vogel		
	<u>Objectives:</u> generically applicable model using appropriate fish stock.		
90-53	Southeast Washington Species Interaction Study	New Project	FY 1991: Start project.
	<u>Project Officer:</u> T. Vogel		
	<u>Objectives:</u>		
	1. Determine inter-specific and intra-specific competition and predation among spring chinook, summer steelhead, and resident trout.		
	2. Determine magnitude and impact of residualization on wild stocks and supplementation programs.		

PROJECT

N U M B E R T I T L E

PROJECT STATUS

SCHEDULE AND MILESTONES

90-55

Effectiveness of Supplementation Strategies and Assessment of Interactions Between Wild/Natural and Hatchery Stocks of Summer Steelhead in Idaho.

New Project

FY 1991: Start project.

Project Officer: T. Vogel

Objectives: Evaluate existing Supplementation programs for stock performance characteristics.

6.3 DATA COLLECTION FOR HATCHERY DATA BASE
(Fund in Response to System Monitoring and Evaluation Work Group Proposals)

206(e)(1) Hatchery Data Base. BPA shall fund collection of Columbia River Basin hatchery data for anadromous fish. Data to be collected, format, and schedules shall be determined by the work group on improving hatchery production (described above), working in conjunction with the work group on system monitoring and evaluation (described above). These data shall include, at a minimum: numbers of returning adults; disposition of returning adults; source and description of brood stock; actions taken to maintain genetic diversity; and size, location, and time of release of juvenile fish. Data collected shall be stored in the Council's anadromous fish data base.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To develop and implement the Hatchery Data Base.

Background and Progress to Date:

The scoping of the CIS in FY 1990 and 91 (Project 88-108-1) will provide overall guidance for development of the Hatchery Data Base, as well as the Natural Production Data Base.

Plans:

The Hatchery Data Base will be designed as part of the CIS project (Project 88-108-1).

Projects:

None at this time.

6.4 DATA COLLECTION FOR NATURAL PRODUCTION DATA BASE
(Fund in Response to System Monitoring and Evaluation Work Group Proposals)

206(e)(2) Natural Production Data Base. BPA shall fund collection of information on the natural production of anadromous fish in the Columbia River Basin. Data to be collected shall include, at a minimum: adult escapement, redd counts, and juvenile migration for key index streams in the Columbia River Basin. The key index streams shall be consistent with any key index streams identified through the U.S./Canada Pacific Salmon Treaty and other planning processes. Data collected shall be stored in the Council's anadromous fish data base.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To develop and implement the Natural Production Data Base.

Background and Progress to Date:

The scoping of the CIS in FY 1989 (Project 88-108-1) provided overall guidance for development of the Natural Production Data Base, as well as the Hatchery Production Data Base. IDFG has the lead in coordination and development of the Natural Production Data Base Technical Work Statement by the Council's MEG. No work on development planned during FY 1990-91. CIS will be designing the data base during FYs 1991 and 1992.

Plans:

Following approval of the Work Statement by the MEG and CBFWA, BPA may be asked to fund a Natural Production Data Base project in FY 1992.

Projects:

None at this time.

6.5 HIGH PRIORITY PROJECTS IN AREAS OF EMPHASIS
(Fund Only These in FY 1987)

206(b) [Abstract] This measure directs BPA to focus its funding of salmon and steelhead research in the next five years in the four areas of emphasis.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To fund only high priority projects in the areas of emphasis during FY 1987.

Background and Progress to Date:

One project, a demonstration of a system for removing malachite green from hatchery effluent (Project 87-421), was identified by the agencies and Tribes as sufficiently important to merit priority funding in FY 1987. The FDTWG strongly supported this project and requested that it be funded immediately. BPA initiated Project 87-421 in FY 1987; the project was completed in FY 1989.

Plans:

Action Item 6.5 has been completed.

Projects:

None.

6.10 SYSTEM MONITORING AND EVALUATION
(Coordinated Information System)

206(d)(2)(c) [Abstract] The Council's system monitoring and evaluation program will include development of a coordinated information system designed to facilitate effective exchange and dissemination of fisheries data.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To fund development and operation of SMEP.

Background and Progress to Date:

In FY 1988, BPA began funding Project 88-108-1 to develop the CIS to contribute to the SMEP. Projects 88-108-2 and 89-104 began in FY 1989.

Plans:

BPA will continue to fund the three ongoing projects through completion.

I. COMPLETED PROJECTS

None.

II. FY 1990 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PRGSTATUS</u>	<u>SCHEDULE AND MILESTONES</u>
88-108-1	Coordinated Information System (CIS) - PSMFC Project Officer: S. Detering Objectives: 1. Select project team 2. Conduct project orientation 3. Complete scoping for CIS development (Phase I) 4. Complete CIS application and prototype development and watershed classification and stock analysis (Phase II) 5. Complete CIS Final Report, Watershed Classification Final Report, and Stock Analysis Report (Phase III)	Date initiated: January 1989 Results/Conclusions: Objectives 1 & 2 & 3 are completed. CIS Team has provided guidance for development of stock assessment and the Hatchery and Natural Production Data Bases.	FY 1990: Complete Phase I. FY 1991: Complete Phase II. FY 1992: Complete Phase III.
88-108-2	EPA/USGS Mapping System for Coordinated Information System (CIS) - USGS Project Officer: T. Pansky Objectives: 1. Complete regional digital hydrographic data base at 1:100,000 scale for use in CIS. 2. Enhance current EPA/USGS mapping system	Date Initiated: October 1989 Results/Conclusions: None at this time.	October 1990: Complete data base for Oregon and Montana.

**PROJECT
NUMBER**

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES

89-104

Historical Data Base
- USFS/PNWRS

Project Officer: S. Detering

Objectives: Archive summaries
and raw data from original
Bureau of Fisheries habitat
surveys of the Columbia River
and tributaries. Publish
summaries in book form by sub-
basin

Date Initiated: FY 1989

Results/Conclusions: None at this
time.

FY 1990: Microfiche original field notes and
prepare notes for data base management system

FY 1990 to FY 1993: Produce a data base manage-
ment system for historical stream inventories
which is integrated with CIS protocols for sub-
basin stream inventory data. Edit and produce
Columbia Basin stream inventory for areas above
and below Bonneville Dam

FY 1993: Project scheduled for completion.

III. NEW PROJECTS

None.

COORDINATION ACTION ITEMS

6.12 CONTINUING COORDINATION AND CONSULTATION
(By All Federal Project Operators/Regulators)

1203(c) [Abstract] The Federal project operators and regulators shall work with the agencies and Tribes to comply with the consultation/coordination requirements of the Act. The Council expects research planning consultation to occur among agencies, Tribes, and project operators and regulators. The Council will encourage improved coordination of fish and wildlife efforts by consulting with the fish and wildlife agencies, Tribes, project operators and regulators, BPA customers, Federal and state water and land management agencies, irrigation districts, academic experts, and interested citizens groups.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

In conjunction with the Council and the Ad-Hoc Roles Committee of CBFWA, BPA has participated in the development of a formal process through which BPA and the Fish and Wildlife agencies and Tribes jointly plan, and BPA subsequently implements, the Fish and Wildlife Program. This process provides for the involvement of the region's Fish and Wildlife agencies and Tribes at relevant decision-making points and should improve coordination and consistency between BPA's implementation actions and the agencies' and Tribes' existing and future management activities.

Background and Progress to Date:

In early April 1987, BPA staff began meeting with Council staff and an ad-hoc committee of CBFWA. The meetings focused on explaining BPA's process for implementing the Program, from inception through completion. Participants agreed to continue discussion, with a goal of developing a collaborative and cooperative process through which BPA would plan and implement the Program. As a result of these discussions, an Implementation Planning Process (IPP) was developed (see Section III of the AIWP).

The IPP was endorsed by the BPA Administrator and the CBFWA Chairman on October 19, 1988. The IPP's Policy Review Group (PRG) was formed in late 1988. In January 1989, the PRG began providing BPA with policy and funding recommendations related to Program implementation. The PRG continues to serve a forum for policy coordination and consultation among BPA, fish and wildlife agencies, Tribes, utility interests, Council, and other interested parties. The AIWP is based on the outline developed by the PRG during Step 1 of the annual IPP cycle.

Plans:

BPA plans to continue to use the IPP as a coordination and consultation mechanism and to develop the AIWP.

RESIDENT FISH ACTION ITEMS AND TECHNICAL SUBJECTS

7.1 COLVILLE HATCHERY
 (Complete Construction: March 1989)
 (Fund Operation and Maintenance)

903(g)(1)(A) [Abstract] Design, construction, operation and maintenance of a resident trout hatchery on the Colville Indian Reservation. The Council expects that state-of-the-art technologies will be used in the design of the hatchery.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To design and construct a resident trout hatchery on the Colville Indian Reservation to mitigate partially for anadromous fish losses from hydroelectric development and operation.

Background and Progress to Date:

The primary purpose of the hatchery is to produce trout to stock lakes and streams on the Reservation. The Colville Confederated Tribes (CCT) received the construction contract for the hatchery. The final design for the hatchery was completed in October 1987. Construction began in July 1988 and was completed in fall 1989.

Plans:

BPA is funding the operation and maintenance of the facility by the CCT.

I. COMPLETED PROJECTS

None.

II. FY 1990 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
85-38	Colville Hatchery - CCT	<u>Date initiated:</u> 1985	Continuing: Started operation and maintenance in October 1989. O&M to continue.
	<u>Project Officer:</u> J. Marcotte	<u>Results/Conclusions:</u> Design completed in FY 1987. Construction contract initiated July 1988. Completed construction of 50,000 pound trout hatchery in September 1989.	
	<u>Objectives:</u> Design and construct a resident trout hatchery on the Colville Indian Reservation.		

III. NEW PROJECTS

None.

7.2 COEUR D'ALENE RESERVATION ACTIONS
 (Fund Stream Survey; Design, Construction, Operation, and Maintenance of Cutthroat/Bull Trout Hatchery; Habitat Improvement Projects; 3-Year Monitoring Program)

903(g)(1)(B) [Abstract] BPA shall fund a baseline stream survey of tributaries located on the Coeur d'Alene Indian Reservation to compile information on improving spawning habitat, rearing habitat, and access to spawning tributaries for cutthroat and bull trout, and to evaluate the existing fisheries. If justified by the results of the survey, fund the design, construction, and operation of a cutthroat and bull trout hatchery on the Coeur d'Alene Reservation; necessary habitat improvement projects; and a three-year monitoring program to evaluate the effectiveness of the hatchery and habitat improvement projects. If the baseline survey indicates a better alternative than construction of a fish hatchery, the Coeur d'Alene Tribe will submit an alternative plan for consideration in program amendment proceedings.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

Survey the streams on the Coeur d'Alene Indian Reservation for status of stocks and the possibility of improving habitat. If feasible, construct habitat improvement projects. Determine need for stock supplementation and, if needed, fund design, construction, and operation of a cutthroat and bull trout hatchery.

Background and Progress to Date:

Not applicable.

Plans:

BPA plans to fund this Action Item, beginning in FY 1990 with a project to conduct the stream surveys.

I. COMPLETED PROJECTS

None.

II. FY 1990 ONGOING PROJECTS

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
90-44	Stream Survey, Hatchery, Improvements, and Monitoring on the Coeur D'Alene Reservation	<u>Date Initiated:</u> July 1990	1. FY 1990: Begin stream surveys and determine stock status. 2. FY 1991 and beyond: Identify projects to meet objectives 2, 3, and 4.
	<u>Project Officer:</u> R. Austin		
	<u>Objectives:</u> 1. Survey streams and determine stock status. 2. Assess possibilities for habitat improvement. 3. Construct hatchery, if needed. 4. Monitor results of habitat improvement projects and hatchery supplementation.		

III. NEW PROJECTS

None.

- 7.3 KOKANEE SALMON HATCHERIES
 (Fund Design, Construction, Operation, Maintenance of Hatcheries at Galbraith Springs and Sherman Creek: Begin FY 1988.)
 (Fund Monitoring Programs>

903(g)(1)(C) [Abstract] BPA shall fund design, construction, operation, and maintenance of two kokanee salmon hatcheries, one at Galbraith Springs and one at Sherman Creek. The Sherman Creek hatchery will be used as an imprinting site and egg collection facility to provide a source of kokanee fry for: i) stocking into Banks Lake and ii) transferring to Galbraith Springs hatchery for rearing to fingerling size before planting into Lake Roosevelt. Decisions on hatchery production, stocking, and outplanting locations will be coordinated by a three-member committee consisting of one representative each appointed by the Colville Confederated Tribes, Spokane Tribe, and the Washington Department of Wildlife.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To fund the design, construction, operation, and maintenance of two kokanee salmon hatcheries.

Background and Progress to Date:

Preliminary design began in FY 1988.

Plans:

BPA will complete the final design of the hatcheries, and construction will begin in FY 1990.

I. COMPLETED PROJECTS

PROJECT

NUMBER

TITLE

PROJECT STATUS

88-124-1

Archeological Survey -
Galbraith Springs - Consultant

Project Officer: K. Ward

Objectives: To investigate
and recover cultural resources
at hatchery site.

Date Completed: November 1989

Results/Conclusions: Cultural sites,
including stone ovens and a pit house
were discovered and documented. Criteria
for site protection during construction
were established.

88-162-1

Hatchery Consultant

Project Officer: S. Levy

Objectives Provide engineering
services in support of fish
project design and construction.

Exoected Completion Date: September 1998

Results/Conclusions: Consultant is
providing engineering services.

II. FY 1990 ONGOING PROJECTS

88-62

Kokanee Hatcheries - Galbraith
Springs and Sherman Creek

Project Officer: S. Levy

Objectives: Design, construct,
and operate kokanee hatcheries.

Date Initiated: FY 1988

Results/Conclusionse .

FY 1991: Complete final design and Galbraith Springs
Hatchery construction.

FY 1991: Complete construction of Sherman Creek
facility.

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
90-76	Hatchery Manager Training Program - Spokane Tribe	<u>Date Initiated:</u> April 1990	FY 1990: 1) Complete fisheries coursework; 2) complete practicums at Cabinet Gorge and Ford hatcheries; and 3) complete practicums at WDW and WDF Fish Disease Laboratory.
	<u>Project Officer:</u> S. Levy	<u>Results/Conclusions:</u> Training program is proceeding satisfactorily.	
	<u>Objectives:</u> 1. Provide advanced training for kokanee hatchery manager. 2. Write a hatchery management plan. 3. Provide on-site inspection during hatchery construction.		

III. NEW PROJECTS

None.

7.4 HABITAT AND PASSAGE IMPROVEMENTS ON LAKE ROOSEVELT TRIBUTARY
STREAMS

(Fund Design, Construction, Operation, Maintenance of Projects:
Begin FY 1989)
(Fund Monitoring Programs).

903(g)(1)(D) [Abstract] BPA shall fund capital, operation, and maintenance of pilot projects for improving habitat and passage into and out of Lake Roosevelt tributary streams for rainbow trout. The aim of this measure is to emphasize natural production by: i) facilitating passage of migratory rainbow trout between Lake Roosevelt and its tributary streams and ii) improving fry and fingerling rearing habitat in these streams.

903(g)(1)(E) [Abstract] Monitoring to evaluate the effectiveness of the above measures.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To improve stream habitat and passage into and out of Lake Roosevelt tributary streams for rainbow trout. Determine status of fish stocks in Lake Roosevelt before habitat improvements and hatchery construction. Evaluate the contribution of the hatcheries and habitat improvement projects of stocks in Lake Roosevelt.

Background and Progress to Date:

BPA funded a stock assessment study in FY 1988. Monitoring program started in summer of 1988.

Plans:

BPA will continue to fund habitat improvement projects in FY 1991. Annual reports on monitoring are available.

I. COMPLETED PROJECTS

None.

II. FY 1990 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
88-63	Lake Roosevelt Monitoring Program - Spokane Tribe <u>Project Officer:</u> F. Holm <u>Objectives:</u> 1. Determine status of fish stocks in Lake Roosevelt before construction of habitat improvement projects and hatcheries. 2. Evaluate contribution of these projects and hatcheries to Lake Roosevelt.	<u>Date Initiated:</u> July 1988 <u>Results/Conclusions:</u> Available in annual reports.	1. Continuing: Assess status of stocks in Lake Roosevelt and measure the success of habitat improvement projects and hatcheries. 2. FY 1995: Project scheduled for completion.
90-18	Lake Roosevelt Habitat Improvement Projects - CCT <u>Project Officer:</u> S. Levy <u>Objectives:</u> Facilitate passage of resident fish in Lake Roosevelt tributaries and improve rearing habitat.	<u>Date Initiated:</u> April 1990 <u>Results/Conclusions:</u> None at this time	FY 1991 and 1992: Implement improvements from work plan developed in FY 1990.

III. NEW PROJECTS

None.

- 7.5 KOOTENAI INDIAN RESERVATION STURGEON HATCHERY
 (Fund Design, Construction, Operation, Maintenance of Hatchery: Begin
 FY 1988)
 (Fund Evaluation Study)

903(g)(1)(H) [Abstract] BPA shall fund design, construction, operation and maintenance of a low-capital sturgeon hatchery on the Kootenai Indian Reservation. BPA and the Kootenai Tribe also shall explore alternative ways to make effective use of the hatchery facility year-round.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To design, construct, and operate a low-cost experimental sturgeon hatchery on the Kootenai Reservation in Idaho.

Background and Progress to Date:

Project was funded to develop a water supply, design a hatchery, and train personnel in sturgeon culture in FY 1990. Ground water was tested and hatchery scheduled for construction in FY 1990 and FY 1991.

Plans:

BPA has funded project as stated above. Hatchery will be constructed in FY 1990 and FY 1991.

I. COMPLETED PROJECTS

None.

1 _____ 1 _____

PROJECT

N U M B E R T I T L E

_____ PROJECT STATUS _____

_____ SCHEDULE AND MILESTONES _____

**88-64 Design, Construct, and
Operate a Sturgeon Hatchery
on the Kootenai Reservation,
Idaho - Kootenai Tribe**

Project Officer: F. Holm

Obiectives: Same as title.

Date Initiated: September 1988

**Results/Conclusions: Ground water has
been tested and hatchery scheduled for
construction in FY 1990 and FY 1991.**

**FY 1991: Construction has started and will be
completed in FY 1991. Hatchery is scheduled to be
in operation in spring of 1991.**

III. NEW PROJECTS

None.

7.6 STURGEON AND WATER LEVEL FLUCTUATIONS: IDAHO PORTION OF KOOTENAI RIVER
 (Fund Study to Assess Impacts: Begin FY 1989)

903(g)(1)(I) [Abstract] BPA shall fund a survey of the Kootenai River downstream from Bonners Ferry, Idaho, to the Canadian border to:
 i) evaluate the effectiveness of the hatchery and ii) assess the impact of water level fluctuations caused by Libby Dam on hatchery operation for outplanting of sturgeon in the Idaho portion of the Kootenai River.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To assess the status of sturgeon stocks in the Kootenai River; obtain brood fish for hatchery; assess the impact of water level fluctuations caused by Libby Dam.

Background and Progress to Date:

BPA has funded a project with IDFG to begin looking for broodstock and train hatchery personnel. Project began in late FY 1988. Sturgeon have been caught and tagged and are being monitored. It appears that broodstock will be available for spawning in spring of 1991 after hatchery is completed.

Plans:

BPA will continue to fund this study in FY 1991, with emphasis directed toward obtaining brood fish for the proposed hatchery.

I. COMPLETED PROJECTS

None.

II. FY 1990 ONGOING PROJECTS

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
88-65	<p>Assess Impacts of Water Level Fluctuations on Sturgeon in the Kootenai River - IDFG</p> <p><u>Project Officer:</u> F. Holm</p> <p><u>Objectives:</u> Assess status of sturgeon stocks in the Kootenai River and effects of water fluctuations on these stocks. Obtain brood fish for hatchery.</p>	<p><u>Date Initiated:</u> September 1988</p> <p><u>Results/Conclusions:</u> BPA contracted with IDFG to conduct this study beginning in 1988. Sturgeon are being caught, tagged and monitored. It is likely broodstock for experimental rearing can be obtained for 1991.</p>	<p><u>Continuing:</u> Status of sturgeon populations and availability of brood stock will be determined. Eggs will be taken for experimental rearing/ Project 88-64.</p>

III. NEW PROJECTS

None.

7.7 PEND OREILLE RIVER FISHERY IMPROVEMENTS ON KALISPEL RESERVATION
 (After Council Consultation, Fund Assessment of Improvement
 Opportunities: Begin FY 1988)

903(g)(1)(G) [Abstract] BPA shall fund an assessment of fishery improvement opportunities in the Pend Oreille River within the boundaries of the Kalispel Indian Reservation. This survey will provide:
 i) baseline information about existing fish populations and habitat and ii) information on possible means of improving fisheries. Upon completion of the assessments, recommendations for fisheries projects will be submitted to the Council.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To survey the fish populations in the Pend Oreille River within the boundaries of the Kalispel Reservation. Develop recommendations to improve the fisheries.

Background and Progress to Date:

Project began in February 1988. Baseline data of fish stocks and angler use are in annual reports printed in 1989 and 1990.

Plans:

BPA will continue to fund this project through completion in FY 1991. At that time, recommendations will be submitted to the Council for fisheries improvement alternatives.

I. COMPLETED PROJECTS

None.

II. FY 1990 ONGOING PROJECTS

PROJECT

N U M B E R T I T L E

PS T A T U S

SCHEDULE AND MILESTONES

**88-66 Assess Fishery Improvement
Options in the Pend Oreille
River - KIT**

Date Initiated: February 1988

**Results/Conclusions: Preliminary data
are in reports printed in 1989 and 1990.**

**FY 1991: Project will be completed and
recommendations will be made to the Council
for fisheries improvement alternatives.**

Project Officer: F. Holm

**Objectives: Survey fisheries
in the Pend Oreille River.
Develop recommendations to
improve the fisheries.**

III. NEWPROJECTS

None.

7.10 FUND PROJECTS AS PROVIDED IN SECTION 903(q)(2) AND ACTION ITEM 7.8.

903(g)(Z) [Abstract] The appropriate party or parties shall fund resident fish substitution actions in the blocked area above Hells Canyon Dam to partially mitigate for salmon and steelhead losses incurred as a result of the construction and operation of Federal and non-Federal hydropower projects in the blocked area.

ACTION ITEM ACTIVITY SUMMARY:Objectives:

Develop funding mechanisms and scheduling for resident fish substitution projects above Hells Canyon Dam.

Background and Progress to Date:

BPA has agreed to fund a portion of the Duck Valley measure. Trout were purchased from private growers and stocked in FY 1988, FY 1989, and FY 1990. BPA funded a study to develop alternative means to annual fish stocking to enhance the fisheries of the Reservation and the development of a fisheries management plan.

Plans:

The Duck Valley fisheries management plan will be refined and trout will be purchased in FY 1991. BPA plans to fund a feasibility study for resident fish artificial production above Hells Canyon Dam in FY 1991. Funding of this feasibility study does not represent agreement by BPA to fund additional resident fish substitution projects above Hells Canyon Dam prior to the determination of the appropriate funding entity, or entities, by the Council.

I. COMPLETED PROJECTS

None.

II. FY 1990 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
88-156	Duck Valley Resident Fish Project - SPT <u>Project Officer:</u> F. Hblm <u>Objective:</u> Purchase rainbow trout to stock waters on Duck Valley Reservation and develop a management plan for reservation waters.	<u>Date Initiated:</u> FY 1988 <u>Results/Conclusion:</u> The project funded the purchase of fingerling and catchable rainbow trout for stocking in waters on the Duck Valley Reservation and the development of a fisheries management plan.	FY 1991: The fisheries management plan will be refined and trout will be purchased.

III. NEW PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
91-27	Feasibility Study - Hatchery Production Above Hells Canyon <u>Project Officer:</u> TBA <u>Objectives:</u> Determine the costs, feasibility, and advantages of expanding capacity (construction of new raceways, collection of additional water from wells or springs, installation of oxygen injection, or additional staffing) at Ashton, Cabinet Gorge, Hayspur, Mckay, or Nampa hatcheries to meet fish	New Project	FY 1991: Start study and complete within 12 months.

PROJECT
NUMBER

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES

91-27
cont.

culture needs identified in Program
Section 903(g)(2) versus con-
struction of an appropriate incu-
bation and early rearing facility
combined with lesser expansion at
one of the above hatcheries or a
USFWS hatchery.

- 7.11 ONGOING STUDIES IN MONTANA
(Continue Cooperative Studies; Present Results to Council.
Submit Recommendations by October 1, 1990.)

903 [Abstract] The measures referenced in the Action Item are concerned with the operations of Hungry Horse and Kerr dams and how their operations affect the game fish populations in the Flathead Basin. They also concern the reservoir levels of Hungry Horse and Libby and how these levels affect the game fish population in the reservoirs themselves. Operation procedures are to be recommended and mitigation levels for fish losses determined for effects of the hydroelectric system.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To determine the effects of reservoir drawdown and flows on resident fish in the Flathead River Basin in order to determine how various reservoir levels affect the fish in Libby and Hungry Horse Reservoirs.

Background and Progress to Date:

These projects have been implemented because the resident fish resources of the Flathead Basin have been severely affected by the construction and operation of Hungry Horse and Kerr dams. In the Kootenai Basin, the resident fish resources have been similarly affected by the construction and operation of Libby Dam. The effects of reservoir drawdown and flows on the kokanee and other game fish are being determined. When projects have been completed, recommendations will be made for hydro operations and seasonal drawdown levels compatible with the needs of the fish. Mitigation plans will be developed for losses that have occurred.

Plans:

The final reports for the projects were completed in 1989 and 1990; BPA will submit the project results to the Council. Recommendations for future action will be submitted to the Council by November 1, 1991.

I. COMPLETED PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>
81-105	Effects of Operation of Kerr and Hungry Horse Dams on the Reproductive Success of Kokanee in the Flathead System — MDFWP <u>Project Officer:</u> F Holm <u>Objectives:</u> To evaluate the operational effects of Kerr and Hungry Horse dams on the reproductive success of kokanee in the Flathead System. Detailed objectives are provided in the Project's annual reports.	<u>Date Completed:</u> FY 1990 <u>Results/Conclusions:</u> Recommended flows have been implemented below Hungry Horse Dam to enhance success of kokanee reproduction; they are being evaluated. However, recent investigations of mysid shrimp interactions suggest factors other than river flows will affect kokanee production. For more detailed information, refer to the Project's annual reports: DOE/BP 200, 204, 383, 39641-1, 39641-2, 39641-3, 39641-4 and 39641-5. Mitigation plan will be submitted to the Council in November 1990.

II. FY 1990 ONGOING PROJECTS

None.

III. NEW PROJECTS

None.

7.12 STURGEON STUDIES
(Fund Ongoing Studies)

- 903(e)(1) BPA shall fund research to determine the impacts of development and operation of the hydroelectric power system on sturgeon in the Columbia River Basin. These studies may include: 1) habitat requirements; 2) maintenance of genetic integrity; 3) stock assessment; 4) potential for artificial propagation; and 5) migrating potential. Specific recommendations for the protection, mitigation, and enhancement of sturgeon may be submitted to the Council upon completion of these studies.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To determine the impacts on white sturgeon from the development and operation of the hydropower system. Develop recommendations for the protection, mitigation, and enhancement of white sturgeon.

Background and Progress to Date:

Impacts on white sturgeon from the development and operation of hydropower have not been determined, but there is evidence that the impacts have been substantial. From a series of workshops funded by BPA, a work plan for sturgeon research was developed, followed by a sturgeon research program implementation plan. These were submitted to the Council, as called for by Action Item 7.12. Two projects are currently being funded by BPA. The University of Idaho (UI) study transferred from the University of Washington will determine early life history requirements and the genetic makeup of the stocks throughout the Basin. The other study, a four-agency project to determine the habitat requirements and status of stocks downstream from McNary Dam, is in its fourth field season.

Plans:

The genetic identification study is being expanded into the Upper Columbia Basin and the Kootenai River areas, where a sturgeon hatchery is proposed. The habitat requirements and stock assessment study has been designed as a 6-year project because of the large study area and the multiple objectives involved.

I. COMPLETED PROJECTS

None.

II. FY 1990 ONGOING PROJECTS

PROJECT

N U M B E R T I T L E

PROJECT STATUS

SCHEDULE AND MILESTONES

**89-44 White Sturgeon Early Life
History Requirements and
Genetics Study - UI**

Project Officer: F. Holm

**Objectives: 1. Determine
whether white sturgeon are
represented by genetically
distinct stocks.
2. Determine the early life
habitat requirements and
effects of the hydropower
system on the sturgeon habitat.**

Date initiated: 1984

**Results/Conclusions: Allelic differences
have been identified in fish from Lake
Roosevelt and the Kootenai River.
Additional samples will be taken to
verify these differences. Stocks from
the lower Columbia appear to be geneti-
cally similar. Behavioral patterns and
food requirements for young sturgeon
have been documented. Annual reports
are available.**

1991: Project scheduled for completion.

**86-50 Determine the Status and Habitat
Requirements of White Sturgeon
Populations in the Columbia
River Downstream from McNary
Dam - ODFW (VDF, USFWS, and
NMFS are subcontractors)**

Project Officer: F. Holm

Date initiated: 1986

**Results/Conclusions:
Collection of all age groups of
sturgeon has been successful, with
larval sturgeon and eggs being
collected in The Dalles and Bonneville
Dam pools. Coordination with the work
ongoing below Bonneville Dam is
excellent.
Annual reports for 1988-DOE/BP-63584-2
and 1989-DOE/BP-63584-3 are available.**

**1. 1991: Study will continue in The Dalles,
John Day, and Bonneville Dam pools. Model
development will continue to identify effects
of hydropower on population status and habitat.**

2. 1992: Project is scheduled for completion.

**PROJECT
NUMBER**

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES

**86-50
cont.**

**Objectives: Determine the
status and habitat requirements
of white sturgeon in the
Columbia River downstream from
McNary Dam Detailed objectives
and results are described in
the Project's annual reports.**

III. NEW PROJECTS

None.

----- PEND OREILLE HATCHERY (FORMER ACTION ITEM 41.4)

MEASURE LANGUAGE:

Not applicable. Council deleted measure in amended Program.

TECHNICAL SUBJECT ACTIVITY SUMMARY:

Objectives:

To design, construct, and evaluate the Pend Oreille (Cabinet Gorge> Hatchery. Evaluate the degree to which the Albeni Falls and Cabinet Gorge projects are responsible for the decline of the Lake Pend Oreille fishery, and the level of mitigation necessary to restore a reasonable number of fish in Lake Pend Oreille.

Background and Progress to Date:

The Pend Oreille (Cabinet Gorge> Hatchery was completed in 1985. The hatchery produces 20 million kokanee fry annually to enhance the fishing of Lake Pend Oreille, which has been adversely affected by Cabinet Gorge and Albeni Falls dams and the introduction of mysis shrimp. BPA and the Washington Water Power Company shared the costs of constructing the facility. The IDFG funds the operation and maintenance of the hatchery. Evaluation activities are continuing.

Plans:

Fund evaluation activities through completion.

I. COMPLETED PROJECTS

None.

II. FY 1990 ONGOING PROJECTS

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
85-339	Kokanee Stock Status and Contribution of Cabinet Gorge Hatchery, Lake Pend Oreille, Idaho - IDFG <u>Project Officer:</u> F. Holm <u>Objectives:</u> Determine the contribution of the Cabinet Gorge Hatchery to the kokanee fishery in Lake Pend Oreille. Detailed objectives are described in the Project's annual reports.	<u>Date initiated:</u> 1985 <u>Results/Conclusions:</u> Kokanee egg takes for the hatchery have been increasing each year. 12 million eggs were taken in 1990. Hatchery water problems are being solved; flushing flows from Cabinet Gorge Dam are required to get fingerlings down the Clark Fork River into Lake Pend Oreille. IDFG continues to work with Washington Water Power on this. The current kokanee population in Pend Oreille is estimated to be 10.2 million, compared to 4.3 million in 1986. The increase is a direct result of the hatchery contribution. Over 100,000 kokanee were caught in 1989.	<ol style="list-style-type: none">1. 1991: Water will be requested for flushing flows in July and August 1991. Zooplankton data will be analyzed and results compared to previous years' data and related changes in kokanee densities and growth rates in order to define carrying capacity better. Some plants will be made, using a U.S. Navy barge. Creel census done in 1990 will be used to estimate contribution of Cabinet Gorge Hatchery.2. Project scheduled for completion in 1991.

III. NEW PROJECTS

None.

7.13 ACCUMULATED MATERIALS IN KOOTENAI RIVER
(Initiate Removal >

903(d)(1) BPA shall fund the removal of materials which have accumulated in Kootenai River tributary deltas below Libby Dam as a result of the dam's construction and operation and which interfere with the migration of spawning fish.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

When necessary, remove materials which have accumulated in Kootenai River tributary deltas and which interfere with fish migration.

Background and Progress to Date:

Not applicable.

Plans:

None at this time.

7.14 IMPACTS OF DWORSHAK DAM
 (Begin Assessment of Construction and Current Operation Impacts)

- 903(e)(4) BPA shall fund a study to assess the impacts of the original construction and current operation of Dworshak Dam on the resident fishery. This study will include the following research concerns of the Nez Perce Tribe: 1) population dynamics of kokanee; 2) reservoir productivity; 3) food habits of rainbow trout; 4) population dynamics and habitat preferences of small mouth bass; and, 5) the status of forage species. This study effort will be coordinated with the Corps. Recommendations detailing specific protection, mitigation and enhancement opportunities, consistent with the requirements of 804(e)916), may be submitted to the Council.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To assess the status of resident fish stocks, particularly kokanee; to compare data to that obtained when reservoir was first filled; to determine whether changes are caused by operation of Dworshak Dam.

Background and Progress to Date:

Two projects have been funded to cover the five concerns listed in the Program Measure. IDFG and the NPT are the contractors for the projects. The projects started July 1, 1987.

Plans:

The projects will run until December 31, 1991, at which time IDFG and the NPT may submit recommendations detailing specific protection, mitigation, and enhancement plans to the Council.

I. COMPLETED PROJECTS

None.

II. FY 1990 ONGOING PROJECTS

PROJECT

N U M B E R T I T L E

PROJECT STATUS

SCHEDULE AND MILESTONES

87-99 **Dworshak Dam Impacts Assessment and Fisheries Investigation - IDFG**

Project Officer: R. Austin

Objectives: 1. Assess the status of kokanee stocks in the reservoir.

2. Document losses of kokanee fish in Dworshak Reservoir through turbines at Dworshak Dam

3. Assess limnological parameters and evaluate impacts of reservoir management on the zooplankton community and kokanee production.

Date initiated: July 1987

Results/Conclusions: Kokanee abundance estimated from late June trawl data, was 540,000 fish in 1989. Anglers harvested 171,331 kokanee at 1.3 fish per hour. Creeled fish averaged 246 mm and 121 g; Yield was 3.1 kg/hr. Spawning escapement was similar to 1988 with 37,000 kokanee observed in five tributaries of the reservoir in mid-to-late September. Two-year old spawners (277 mm total length) comprised the bulk of the run.

1. FY 1990: Continue baseline data collection.

2. FY 1991: Continue baseline data collection. Prepare final report coordinated with Project 87-407. Recommendations will be made to the Council for measures to protect, mitigate, and enhance resident

87-407 **Dworshak Reservoir Investigation: Trout, Bass and Forage Species - NPT**

Project Officer: R. Austin

Objectives: 1. Assess the status of rainbow trout, small mouth bass, and forage species in the reservoir.

2. Assess changes in these populations in relation to reservoir management.

Date initiated: July 1987

Results/Conclusions: An estimated 152,700 angler hours were expended from March 1989 through February 1990 to catch a total of 20,426 rainbow trout, 13,064 smallmouth bass, and 180 bull trout. Approximately 98% of the rainbow trout caught were of hatchery origin. Overall growth of smallmouth bass is better than that reported for other smallmouth bass populations at similar latitudes. Fish production has apparently stabilized

1. FY 1990: Continue baseline data collection.

2. FY 1991: Continue baseline data collection. Prepare final report coordinated with Project 87-99. Recommendations will be made to the Council for measures to protect, mitigate, and enhance resident fish in Dworshak Reservoir.

PROJECT

NUMBER

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES

87-407

cont.

since the extreme population fluctuations
noted during the 1970's.

III. NEW PROJECTS

None.

7.15 ONGOING DRAWDOWN STUDIES
(Continue Cooperative Studies; Present Results to Council. Submit Recommendations by March 1, 1988.)

903(b)(3-4) [Abstract] BPA shall fund research to develop operating procedures for Libby and Hungry Horse, including establishment of reservoir levels to protect resident fish and development of alternative means to resolve conflicts between drawdown limits and requirements for fish flows by means of the water budget. BPA shall submit results to the Council by March 1, 1988. Mitigation projects shall be identified in the Flathead Basin in relation to construction and operation of Hungry Horse. Results will be submitted to the Council by November 15, 1987.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To determine the effects of reservoir operations on fish in Libby and Hungry Horse Reservoirs. Identify mitigation projects in the Flathead Basin in relation to construction and operation of the Hungry Horse hydroproject.

Background and Progress to Date:

Projects at Libby and Hungry Horse Reservoirs have been funded since 1983. Both projects were designed to document the effects of water level fluctuations on resident fish. The fluctuations reduce primary and secondary production in the reservoirs, hence they have a direct impact on fish production. Annual reports from 1983 through 1988 document these effects. Mitigation alternatives for losses from the construction and operation of Hungry Horse Dam are described in the final report for BPA-funded Project 85-23. The models developed during the project have been critically reviewed by researchers at the University of Washington.

Plans:

Recommendations for further action will be submitted to the Council after completion of the studies. Biological models will be run concurrently with the System Analysis Model to help guide recommendations.

I. COMPLETED PROJECTS

None.

II. FY 1990 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
83-465	<p>Quantification of Hungry Horse Reservoir Levels Needed to Maintain or Enhance Reservoir Fisheries - MDFWP</p> <p><u>Project Officer:</u> D. Johnson</p> <p><u>Objectives:</u> 1. To study the effects of reservoir drawdown. 2. To develop a predictive model of hydro operations on resident fisheries, and recommend seasonal drawdown levels compatible with the needs of the fish.</p>	<p><u>Date initiated:</u> April 1, 1983</p> <p><u>Results/Conclusions:</u> Reservoir drawdown has adverse effects on benthic macro-invertebrates and zooplankton, can increase competition between fish, and makes juveniles more accessible to predators. Fall drawdown is particularly damaging to cutthroat growth rates.</p>	<p>1. June 30, 1990: Biological model for the reservoir will be completed and runs will be made concurrently with the Systems Analysis Model. The biological model has been critically reviewed and will be improved by researchers at the University of Washington.</p>
83-467	<p>Quantification of Libby Reservoir Levels Needed to Maintain or Enhance Reservoir Fisheries - MDFWP</p> <p><u>Project Officer:</u> D. Johnson</p> <p><u>Objectives:</u> 1. To study the effects of reservoir drawdown. 2. To develop a predictive model of hydro operations on resident fisheries, and recommend seasonal drawdown levels compatible with the needs of the fish.</p>	<p><u>Date Initiated:</u> April 1, 1983</p> <p><u>Results/Conclusions:</u> Gill net sampling indicates fluctuations in kokanee numbers. The reservoir model now includes a hydrologic component downstream to Duncan and Corra Linn dams.</p>	<p>1. June 30, 1990: Biological model for the reservoir will be completed and runs will be made concurrently with the Systems Analysis Model. The biological model has been critically reviewed and will be improved by researchers at the University of Washington.</p> <p>2. Work on fish entrainment through the Libby Dam penstocks and effects of operations on the river fishery will begin in FY 1990 to increase utility of the reservoir model.</p>

III. NEW PROJECTS

None.

WILDLIFE ACTION ITEMS AND TECHNICAL SUBJECTS

8.1 LOSS STATEMENTS
(Fund as Needs are Identified.)

- 1003(b)(3) [Abstract] Bonneville shall fund studies to develop statements of wildlife and habitat losses at the projects listed in Table 3 of the Fish and Wildlife Program, including power-related storage and regulatory dams. These statements shall take into account all existing information pertinent to the project area and shall address both realized and potential positive and negative effects.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To obtain an estimate of the net impacts on wildlife and habitat from development and operation of Columbia River Basin Federal hydroelectric facilities. This information will be used in developing objectives to protect, mitigate, and enhance wildlife affected by hydro development and operation.

Background and Progress to Date:

The development of the hydroelectric system has caused both adverse and beneficial effects on wildlife and habitat. Action Item 8.1 calls for the funding of studies to identify net impacts on wildlife and wildlife habitat from hydroelectric development and operation. Study information will be used to develop Action Item 8.3: wildlife protection, mitigation, and enhancement plans.

Table 7 outlines the status of loss assessments at FCRPS facilities. Loss assessments have been completed for 22 of the 29 FCRPS facilities. Two facilities (Roza, and Chandler) do not require loss assessments. The U.S. Army Corps of Engineers has funded loss assessments for the Lower Snake facilities.

Plans:

The losses assessment for Chief Joseph Dam in Washington will continue and be completed in FY 1991.

TABLE 5
STATUS OF **ACTION ITEM 8.1** WILDLIFE LOSS STATEMENTS
AT FCRPS FACILITIES

<u>Hydro Facility</u>	<u>Status</u>
<u>Montana</u>	
Hungry Horse	Completed
Libby	Completed
<u>Idaho</u>	
Palisades	Completed
Anderson Ranch	Completed
Black Canyon	Completed
Boise Diversion	Completed
Dworshak	Completed
Minidoka	Completed
Albeni Falls	Completed
<u>Washington</u>	
Grand Coulee	Completed
Chief Joseph	Ongoing
I ce Harbor	Funded by USACE
Lower Monumental	Funded by USACE
Little Goose	Funded by USACE
Lower Granite	Funded by USACE
Chandler	None Proposed
Roza	None Proposed
<u>Oregon</u>	
Cougar	Completed
Lookout Point	Completed
Dexter	Completed
Hills Creek	Completed
Green Peter	Completed
Foster	Completed
Detroit	Completed
Big Cliff	Completed
<u>Oregon/Washington</u>	
Bonneville	Completed
The Dalles	Completed
John Day	Completed
McNary	Completed

I. COMPLETED PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>
88-12	<p>Lower Columbia (The Dalles, John Day, McNary) Wildlife Protection, Mtigation, and Enhancement Planning ~ Wildlife Assessment Phase - USFWS</p> <p><u>Project Officer:</u> A. Ruger</p> <p><u>Obiectives:</u></p> <ol style="list-style-type: none"> 1. Estimate net effects on wildlife from hydroelectric development and operation. 2. Identify current status and management plans/goals for target wildlife. 	<p><u>Date Completed:</u> December 1989</p> <p><u>Results/Conclusion:</u> Not available at this time. USFWS has not submitted the wildlife loss assessment report for these facilities.</p>

II. FY 1990 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
88-44	<p>Wildlife Protection, Mtigation and Enhancement Plan for Chief Joseph Dam - WDW</p> <p><u>Project Officer:</u> A. Ruger</p> <p><u>Obiectives:</u> Project implements Action Items 8.1 and 8.3.</p> <ol style="list-style-type: none"> 1. Identify pre-construction and current status of wildlife in the project area. 	<p><u>Date Initiated:</u> September 1988</p> <p><u>Results/Conclusions:</u> Project start-up has been delayed. Agreement will be modified or a new agreement will be developed to adjust the schedule, to incorporate changes resulting from the Council's amendments to the wildlife section of the Program and to include the Colville Tribe in the planning.</p>	<p>Schedule will be revised via an agreement modification or by execution of a new agreement. Project completion and final report anticipated in fall 1991.</p>

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>RESULTS/CONCLUSIONS</u>
88-44 cont.	<p>2. Estimate net effects on wildlife resulting from hydroelectric development and operation.</p> <p>3. Develop protection, mitigation, and enhancement goals/objectives.</p> <p>4. Coordinate project activities with involved/interested parties (public involvement).</p>	effort.	
90-51	<p>Clearwater River Otter Study</p> <p><u>Project Officer:</u> R. Walker</p> <p><u>Objectives:</u> Provide baseline data on population status, habitat use patterns, seasonal distribution, and food habits of otters along the Clearwater River and its tributaries. This information will help identify site-specific limiting factors affecting otter populations in the Clearwater River drainage and help direct mitigation efforts towards the selection of effective mitigation techniques and locations of mitigation efforts.</p>	<u>Expected start date:</u> September 1990	FY 1990: Start project.

III. NEW PROJECTS

None.

8.2 LOSS STATEMENT CONSULTATIONS
(Begin Consultation>

1003(b)(4)(A) [Abstract] Upon completion of the 1003(b)(3) studies, the appropriate fish and wildlife agencies, Tribes, BPA, and project operators for each project shall review the results and discuss the options available to provide wildlife protection, mitigation, and enhancement in accordance with the Northwest Power Act.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To provide a review of Action Item 8.1, loss assessments, and to assist in the development of Action Item 8.3, wildlife protection, mitigation, and enhancement plans. No projects/contracts will be funded by BPA in implementing this Action Item.

Background and Progress to Date:

Consultations have been held on 19 of the 29 FCRPS facilities. Consultations are not anticipated for six facilities. Table 8 outlines the status of these consultations.

Plans:

Consultations will be held on four FCRPS facilities in FY 1991. These facilities include Bonneville, The Dalles, John Day, and McNary Dams. Consultations will be conducted as part of the mitigation planning effort for these facilities being funded under Action Item 8.3 (Project No. 90-25).

Projects:

None.

TABLE 6
STATUS OF ACTION ITEM 8.2 WILDLIFE CONSULTATIONS
AT FCRPS **FACILITIES**

<u>Hydro Facility</u>	<u>Status</u>	<u>Outcome</u>
<u>Montana</u>		
Hungry Horse	Held	Mitigation plan was funded.
Libby	Held	
<u>Idaho</u>		
Palisades	Held	Mitigation plan was funded.
Anderson Ranch	Held	
Black Canyon	Held	
Boise Diversion	Held	Determined it was not effective to fund development of a mitigation plan.
Dworshak	Held	Mitigation plan was funded.
Albeni Falls	Held	Combined loss assessment and mitigation plan funded.
Minidoka	Held	Mitigation plan was funded.
<u>Washington</u>		
Grand Coulee	Held	Mitigation plan was funded.
Chief Joseph	Held	Combined loss assessment and mitigation plan funded.
Lower Snake (Ice Harbor, Lower Monumental, Little Goose, Lower Granite)	None Proposed	Mitigation planning being conducted by USACE.
Chandler	None Proposed	Status Review findings indicated no need for mitigation planning.
Roza	None Proposed	Status Review findings indicated no need for mitigation planning.

<u>Hydro Facility</u>	<u>Status</u>	<u>Outcome</u>
<u>Oregon</u>		
Willamette		Mitigation plan was funded.
Cougar	Held	
Lookout Point	Held	
Dexter	Held	
Hills Creek	Held	
Green Peter	Held	
Foster	Held	
Detroit	Held	
Big Cliff	Held	
<u>Oregon/Washington</u>		
Bonneville	Proposed for FY 1991	
The Dalles	Proposed for FY 1991	
John Day	Proposed for FY 1991	
McNary	Proposed for FY 1991	

8.3 MITIGATION PLANS
(Fund Development>

1003(b)(4) [Abstract] Bonneville shall fund the development of mitigation plans for each of the projects listed in Table 3 of the Fish and Wildlife Program, including power-related storage and regulatory Dams.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To identify target wildlife species for protection, mitigation, and enhancement; to develop protection, mitigation, and enhancement goals/objectives; and to coordinate mitigation goals/objectives with interested and involved parties for Federal hydroelectric facilities.

Background and Progress to Date:

Action Item 8.3 pertains to the development of wildlife protection, mitigation, and enhancement plans. These plans are to take into account the wildlife impacts identified under Action Item 8.1, are to complement existing wildlife management plans and goals, and are to take into account the standards outlined in Measure 1003(b)(4)(C). Wildlife protection, mitigation, and enhancement goals/objectives developed in these plans are submitted to the Council for their approval and prioritization.

Table 9 outlines the status of mitigation plans at FCRPS facilities. Mitigation plans have been completed for 16 of the 29 FCRPS facilities. Mitigation plans are not anticipated for seven FCRPS facilities (Roza, Chandler, Boise Diversion, and Lower Snake Facilities>.

Plans:

Mitigation plans for Chief Joseph, Minidoka, Bonneville, The Dalles, John Day, and McNary Dams will continue and be completed in FY 1991.

TABLE 7
STATUS OF ACTION ITEM 8.3 WILDLIFE MITIGATION PLANS
AT FCRPS FACILITIES

<u>Hydro Facility</u>	<u>Status</u>
<u>Montana</u>	
Hungry Horse	Completed
Libby	Completed
<u>Idaho</u>	
Palisades	Completed
Anderson Ranch	Completed
Black Canyon	Completed
Boise Diversion	None proposed
Dworshak	Completed
Minidoka	Ongoing
Albeni Falls	Completed
<u>Washington</u>	
Grand Coulee	Completed
Chief Joseph	Ongoing
Ice Harbor	None Proposed - Conducted by USACE
Lower Monumental	None Proposed - Conducted by USACE
Little Goose	None Proposed - Conducted by USACE
Lower Granite	None Proposed - Conducted by USACE
Chandler	None proposed
Roza	None proposed
<u>Oregon</u>	
Cougar	
Lookout Point	
Dexter	
Hills Creek	All completed
Green Peter	
Foster	
Detroit	
Big Cliff	
<u>Oregon/Washington</u>	
Bonneville	Ongoing
The Dalles	Ongoing
John Day	Ongoing
McNary	Ongoing

COMPLETED PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>
88-154	<p>Wildlife Protection, Mitigation, and Enhancement Plan for Dworshak Dam - IDFG</p> <p><u>Project Officer:</u> R. Austin</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none">1. Quantify net impacts on target wildlife species from hydroelectric development and operation.2. Address Nez Perce Tribe concerns listed in section 1000 of the Fish and Wildlife Program by identifying and summarizing the best available information.3. Develop protection, mitigation, and enhancement goals.4. Recommend protection, mitigation, and enhancement actions.	<p><u>Date Completed:</u> November 1989</p> <p><u>Results/Conclusions:</u> A total of 15,188 acres of low-elevation terrestrial habitat and 1,782 acres of free-flowing river habitat were inundated by Dworshak Reservoir, as determined by a Habitat Evaluation Procedure (HEP). Estimated losses included 16 breeding Canada goose habitat units (HU's), 91 black-capped chickadee HU's, 4,312 river otter HU's, 3,524 pileated woodpecker HU's, 11,603 elk HU's, and 8,906 white-tailed deer HU's. Gains to wildlife were 323 wintering Canada goose HU's, 2,678 wintering bald eagle HU's, 1,674 osprey HU's, and 119 yellow warbler HU's. Mitigation goals have been recommended by an interagency Workgroup to replace big game, old growth, and riverine habitats lost. Final results can be found in publication number: DOE/BP 92631-1.</p>

II. FY 1990 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
90-50	<p>Mnidoka Dam Wildlife Mitigation Plan ~ IDFG</p> <p><u>Project Officer:</u> R. Austin</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Develop and prioritize protection, mitigation, and enhancement goals for wildlife affected by hydroelectric development and operation (e.g., Wildlife Mitigation Plan). 2. Recommend protection, mitigation, and enhancement actions. 3. Coordinate project activities with interested/involved parties (public involvement). 	<p><u>Date Initiated:</u> December 1989</p> <p><u>Results/Conclusions:</u> Not available at this time.</p>	<p>Aug. 1990: Draft Mitigation Plan.</p> <p>Sept 1990: Public review of mitigation Plan.</p> <p>Oct. 1990: Final Mitigation Plan; Project Completion.</p>
90-25	<p>Lower Columbia Wildlife Mitigation Plan</p> <p><u>Project Officer:</u> R. Walker</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Identify target wildlife species for protection, mitigation, and enhancement. 2. Develop protection, mitigation, and enhancement goals/objectives. 3. Coordinate project activities with involved and interested parties (public involvement). 	<p><u>Expected Start Date:</u> Sept. 1990.</p> <p>However, the project start date is dependent upon receipt of the loss assessment report funded under Action Item 8.1 (Project No. 88-12)</p> <p><u>Results/Conclusions:</u> Not available at this time.</p>	<p>Schedule is being developed as part of negotiations for the project.</p> <p>Final report anticipated spring 1991.</p>

III. NEW PROJECTS

None.

- a. 4** LIBBY DAM MITIGATION
 (Initiate Advance Design for White-Tailed Deer, Mule Deer, Columbia Sharp-Tailed Grouse, and Waterfowl Projects; Continue Implementation and Monitoring of Bighorn Sheep Project: 1987)
- a. 5** LIBBY DAM MITIGATION
 (Continue Advance Design for Deer, Waterfowl, Grouse Projects; Begin Implementation and Monitoring for Mule Deer Project; Continue Implementation and Monitoring of Bighorn Sheep Project: 1988)
- 8.6** LIBBY DAM MITIGATION
 (Begin Implementation and Monitoring for White-Tailed Deer, Grouse, and Waterfowl Projects; Continue Implementation and Monitoring of Mule Deer and Bighorn Sheep Projects: 1989)
- a. 7** LIBBY DAM MITIGATION
 (Continue Implementation and Monitoring for White-Tailed Deer, Mule Deer, Bighorn Sheep, Grouse, and Waterfowl Projects: 1990, 1991)
- 1003(b) (7) [Abstract] Bonneville shall implement Council approved mitigation priorities and plans at Federal projects through the Implementation Planning Process. Council-approved mitigation plans and priorities for Libby Dam are listed in Table 4 of the 1987 Fish and Wildlife Program.

Table 4 calls for BPA to undertake projects to enhance winter range in Northwest Montana to support a target carrying capacity of an additional 1,340 white-tailed deer, 485 mule deer, and 66 bighorn sheep. Table 4 also calls for the protection of 2,462 acres of prairie habitat for Columbia sharp-tailed grouse, and 3,418 acres of wetland habitat in the Flathead Valley.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To undertake advance design and then begin implementation of the wildlife mitigation projects for Libby Dam.

Background and Progress to Date:

Action Items 8.4 through 8.7 pertain to the advance design and implementation of wildlife mitigation projects for Libby Dam.

In FY 1987, BPA began advance design for the wildlife habitat improvement and protection projects. In FY 1988, BPA continued advance design and began big game habitat improvement projects. Big Game habitat improvement projects were continued in FY 1989 and FY 1990. Sharp-tailed grouse work was initiated in FY 1989 and continued in FY 1990.

Plans:

BPA plans to continue and complete projects for bighorn sheep, mule deer, and sharp-tailed grouse in FY 1991. Future wildlife projects for Libby Dam will be funded through the Montana Wildlife Mitigation Trust Agreement.

I. COMPLETED PROJECTS

PROJECT NUMBER	TITLE	PROJECT STATUS
84-38	<p>Ural-Tweed Bighorn Sheep Enhancement - USFS</p> <p><u>Project Officer:</u> R. Walker</p> <p><u>Objectives:</u> Enhance approximately 1,300 acres of sheep range on Kootenai National Forest lands.</p>	<p><u>Expected Completion Date:</u> June 1990</p> <p><u>Results/Conclusions:</u> Final results/conclusions are not available at this time. Preliminary information is in annual reports: publication numbers DOE/BP 18966-1 and DOE/BP 18966-2.</p>
84-39	<p>Ural-Tweed Bighorn Sheep Mitigation - MDFWP</p> <p><u>Project Officer:</u> R. Walker</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none">1. Evaluate the effectiveness of the habitat improvements done under Project 84-38.2. Outline a program to maintain a viable bighorn sheep population.	<p><u>Expected Completion Date:</u> June 1990</p> <p><u>Results/Conclusions:</u> Final results/conclusions are not available at this time. Preliminary information can be found in annual reports: publication numbers DOE/BP 18966-1 and DOE/BP 18966-2.</p>

II. FY 1990 ONGOING PROJECTS

Action Item No. 8.4 - 8.7

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
87-55	<p>Northwest Montana Wildlife Habitat Enhancement - MFWP</p> <p><u>Project Officer:</u> R. Walker</p> <p><u>Objectives:</u> This project undertakes advance design of the habitat enhancement actions for Libby and Hungry Horse Dams.</p> <ol style="list-style-type: none">1. Develop a habitat enhancement plan for elk/mule deer on Flathead National forest lands.2. Develop a habitat enhancement plan for mule deer/bighorn sheep on Kootenai National Forest lands.	<p><u>Date Initiated:</u> September 1987</p> <p><u>Results/Conclusions:</u> Not available at this time.</p>	<ol style="list-style-type: none">1. April 1990: Draft 10-year enhancement plans.2. June 1990: Final 10-year enhancement plans.3. October 1990: Draft monitoring plan.4. December 1990; Final monitoring plan; Project Completion.

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
88-43	<p>Libby Wildlife Habitat Enhancement - USFS</p> <p>Project Officer: R. Walker</p> <p>Objectives: Initiate habitat improvement activities on Kootenai National Forest lands for mule deer and bighorn sheep. Treat approximately 1000 acres of key winter range by slashing and prescribed burning.</p>	<p>Date Initiated: September 1988.</p> <p>Results/Conclusions: Not available at this time.</p>	<ol style="list-style-type: none"> 1. Fall 1990: Continue habitat treatments. 2. Spring 1991: Continue habitat treatments. 3. December 1991: Project Completion.
90-49	<p>Libby/Hungry Horse Wildlife Project - MDFWP</p> <p>Project Officer: R. Walker</p> <p>Objectives:</p> <ol style="list-style-type: none"> 1. Determine critical habitats necessary for the protection, enhancement, and maintenance of grouse on the Tobacco Plains. 2. Develop a mitigation strategy for grouse. 3. Refine the habitat protection programs for Libby and Hungry Horse. 4. Coordinate project activities with interested/involved parties. 	<p>Date Initiated: May 1990</p> <p>Results/Conclusions: Not available at this time.</p>	<ol style="list-style-type: none"> 1. February 1991: Status report on Libby/Hungry Horse Habitat Protection Program 2. April 1992: Draft report on grouse mitigation program 3. June 1992: Final report on grouse mitigation program and project completion.

III. NEW PROJECTS

None

- 8.8 HUNGRY HORSE DAM MITIGATION
(Initiate Advance Design/Begin to Implement Elk/Mule Deer Project; Begin Advanced Design, Interagency Coordination, Site Prioritization, and Appraisals for Black Bear/Grizzly Bear, Waterfowl, Terrestrial Furbearer Projects: 1987.)
- 8.9 HUNGRY HORSE DAM MITIGATION
(Continue Advance Design Waterfowl, Terrestrial Furbearer, Black Bear/Grizzly Bear Projects; Continue Implementation/Monitoring of Elk/Mule Deer Project: 1988..)
- 8.10 HUNGRY HORSE DAM MITIGATION
(Begin/Continue Implementation of Waterfowl, Elk/Mule Deer, Black Bear/Grizzly Bear Projects: 1989-1991.)

1003(b) (7) [Abstract] Bonneville shall implement Council approved mitigation priorities and plans at Federal projects through the Implementation Planning Process. Council-approved mitigation plans and priorities for Hungry Horse Dam are listed in Table 4 of the 1987 Fish and Wildlife Program.

Table 4 calls for BPA to undertake projects to enhance winter range in Northwest Montana to support a target carrying capacity of additional 133 elk. Table 4 also calls for the protection of 8,590 acres of riparian habitat for grizzly bears and 1,146 acres of wetland habitat, along with determining the feasibility of protecting 11,050 acres of old-growth timber for terrestrial furbearers.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To undertake advance design and then begin implementation of the wildlife mitigation projects at Hungry Horse Dam.

Background and Progress to Date:

Action Items 8.8 through 8.10 pertain to the advance design and implementation of wildlife mitigation for Hungry Horse Dam.

In FY 1987, BPA initiated advance design for the wildlife habitat improvement and protection projects. In FY 1988, BPA continued advance design and began habitat improvement and protection projects. In FY 1989 and FY 1990, habitat improvement and protection projects were continued.

Plans:

BPA plans to continue and complete activities for the elk/mule deer habitat enhancement projects and the easement/acquisitions (habitat protection) projects in FY 1991. Future wildlife projects for Hungry Horse Dam will be funded through the Montana Wildlife Mitigation Trust Agreement.

I. COMPLETED PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>
87-60	Montana Wildlife Easements/ Land Acquisitions - MDFVP <u>Project Officer:</u> R. Walker	<u>Expected Completion Date:</u> July 1990 <u>Results/Conclusions :</u> Not available at this time.

Objectives: This project undertakes advance design for the Libby and Hungry Horse wildlife habitat protection actions.

1. Outline habitat protection strategies for the bear, waterfowl, and grouse projects.
2. Outline the feasibility for protection of terrestrial furbearer habitat.

II. FY 1990 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
88-113	Hungry Horse Wildlife Habitat Enhancement - USFS <u>Project Officer:</u> R. Walker	<u>Date Initiated:</u> September 1988 <u>Results/Conclusions:</u> Not available at this time.	1. Fall 1990: Continue habitat treatments. 2. Spring 1991: Continue habitat treatments. 3. December 1991: Project completion.

Objectives: Begin habitat improvement activities on Flathead National Forest lands for elk and mule deer. Treat approximately 500 acres of key winter range by slashing and prescribed burning.

II. FY 1990 ONGOING PROJECTS

PROJECT

NUMBER

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES

89-23

**Montana Wildlife Habitat
Protection - MFWP**

Project Officer: **R. Walker**

Objectives:

1. Obtain information to evaluate specific habitats for protection.
2. Provide coordination for project actions.
3. Protect specific habitats.

Date Initiated: **September 1989**

Results/Conclusions:

Evaluation of acquiring and developing a waterfowl enhancement project (Ashley Creek) was completed. Soils evaluations indicated developing the Ashley Creek project was not economically feasible. Alternative habitat protection projects are being evaluated.

1. May - June 1990: Evaluate feasibility of modifying project to protect specific habitats.
2. September 1990: Report summarizing project activities.
3. September 1990: Project modification to provide for protection of specific habitats.

III. NEW PROJECTS

None.

8.11 PUBLIC INVOLVEMENT ON MITIGATION PLANS
(Fund Public Involvement Concerning Mitigation Plans>

- 1003(b)(4)(B) [Abstract] Bonneville shall fund the entity or entities preparing mitigation plans to conduct appropriate public involvement activities to ensure that interested and affected parties are informed concerning the mitigation plans and have been afforded the opportunity to comment on them.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To conduct appropriate public involvement for the mitigation plans being developed pursuant to Measure 1003(b)(4). No projects/contracts will be funded by BPA under this Action Item. Public involvement will be funded as part of the mitigation planning effort under Action Items 8.1 and 8.3.

Background and Progress to Date:

Public involvement on mitigation plans for Grand Coulee Dam in Washington; Palisades, Black Canyon, Anderson Ranch, Albeni Falls, and Dworshak Dams in Idaho; and for the Willamette facilities in Oregon have been completed by the entities that prepared these plans.

Plans:

Public involvement will be conducted for mitigation plans being developed for Chief Joseph, Minidoka, Bonneville, The Dalles, John Day, and McNary Dams as part of the mitigation planning effort being funded under Action Items 8.1 and 8.3 in FY 1991.

Projects:

None.

8. 12 FUND IMPLEMENTAION OF MITIGATION PRIORITIES
(Fund Mitigation Priorities approved by the Council)

1003(b) (7) [Abstract] Bonneville shall implement Council-approved mitigation priorities and plans at Federal projects through the IPP. Projects to be implemented shall take into consideration the standards listed under Measure 1003(b)(7). In reviewing proposals, the IPP will consider the extent to which proposals would protect or enhance special habitat or species that would not be available unless prompt action is taken; such proposals should be implemented only with the consent of the Council.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To identify, develop, and implement projects for priority wildlife mitigation objectives for Federal hydroelectric facilities.

Background and Progress to Date:

No wildlife mitigation has been implemented in the states of Oregon, Washington, or Idaho. Efforts to date have been directed towards mitigation planning (Action Items 8.1 and 8.3).

The Council is currently considering wildlife mitigation priorities for Grand Coulee Dam in Washington; for Palisades, Black Canyon, Anderson Ranch, and Albeni Falls Dams in Idaho; and for the Willamette facilities in Oregon.

Plans:

BPA will initiate wildlife mitigation projects for Federal hydroelectric facilities in Oregon, Washington and Idaho once the Council establishes mitigation priorities. Initiation in FY 1991 depends upon Council action.

I. COMPLETED PROJECTS

None.

II. FY 1990 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
90-91	Idaho Timber Rights Advance Design Study - IDFG <u>Project Officer:</u> R. Walker <u>Objectives:</u> Conduct advance design study to facilitate decision on implementation of acquisition.	<u>Date Initiated:</u> September 1990 <u>Results/Conclusions:</u> None at this time.	FY 1990: Initiate advance design study and conduct Habitat Evaluation Procedure (HEP) analysis. FY 1991: Complete advance design study.
90-92	Conforth Ranch Advance Design Study - USFWS <u>Project Officer:</u> R. Walker <u>Objectives:</u> Conduct advance design study to facilitate decision on implementation of acquisition.	<u>Date Initiated:</u> September 1990 <u>Results/Conclusions:</u> None at this time.	FY 1990: Initiate advance design study and conduct HEP analysis. FY 1991: Complete advance design study.

III. NEW PROJECTS

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
91-16	Wildlife Mitigation (Oregon, Washington, Idaho) Project Officer: R. Walker Objectives: Begin develop- ment and implementation of wildlife mitigation projects for Federal facilities in Oregon, Washington, and Idaho. Multiple mitigation actions (projects) will be developed and implemented.	New Project	1. Initiation in FY 1991 depends upon Council establishing priority mitigation objectives for the Columbia River Basin. 2. Initiation is also dependent upon scopes of work being developed and coordinated for priority mitigation objectives.

8.13 DEVELOP MONITORING AND EVALUATION PROGRAM
(In Consultation with Involved Parties, Develop a
Monitoring and Evaluation Program)

1003(c) Bonneville shall develop in consultation with the Council, the fish and wildlife agencies and tribes, utilities, and other interested parties a comprehensive program to monitor and evaluate the effectiveness of the wildlife program.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To develop and implement a program to monitor and evaluate wildlife projects funded by BPA.

Background and Progress to Date:

Wildlife mitigation to date has been limited to efforts for Libby and Hungry Horse Dams in the State of Montana. Monitoring and evaluation of these activities are being undertaken through the Montana Wildlife Mitigation Trust Agreement. Mitigation has not yet been initiated for facilities in Oregon, Idaho, and Washington. Monitoring and evaluation will be undertaken as part of the mitigation efforts in these states.

Plans:

In FY 1991, BPA will initiate discussions with the Council, the fish and wildlife agencies and tribes, utilities, and other interested parties to begin scoping a wildlife monitoring and evaluation program. Actions to be undertaken and/or funded will be determined through this scoping effort.

Projects:

None.

MITIGATION FUNDING

----- INNOVATIVE FUNDING OF HUNGRY HORSE/LIBBY MITIGATION
(Fund the Montana Wildlife Trust)

1003(b) (7) [Abstract] Bonneville shall implement Council approved mitigation priorities and plans at Federal Projects. Council approved mitigation plans and priorities for Libby and Hungry Horse Dams are listed in Table 4 of the 1987 Fish and Wildlife Program.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

Implement the Wildlife Mitigation Agreement (Montana Trust Fund) negotiated between BPA and the State of Montana for funding wildlife mitigation for Libby and Hungry Horse dams.

Background and Progress to Date:

BPA and the State of Montana signed a mitigation agreement in December 1988. The agreement establishes a \$12.5 million Trust Fund to finance wildlife mitigation for Libby and Hungry Horse Dams. BPA made its first payment of \$2 million to the Trust Account in December 1989.

Plans:

BPA plans to make its scheduled payment to the Trust account in December 1990.

I. COMPLETED PROJECTS

None.

II. FY 1990 ONGOING PROJECTS

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
89-52	Montana Wildlife Trust Project Officer: R. Walker Objectives: 1. Establishes a \$12.5 million Trust Account. 2. Sixty year agreement. 3. Addresses impacts to wildlife from the development of Libby and Hungry Horse Dams. 4. Montana, through the use of Trust Account, responsible for Wildlife Mitigation.	Date Initiated: December 1988 Results/Conclusions: Initial payment of \$2 million was made to the Trust Account in December 1989.	1. December 1990: Make scheduled payment to the Trust Account. 2. Subsequent payments to be made on an annual basis.

III. NEW PROJECTS

None.

FUTURE HYDROELECTRIC DEVELOPMENT
ACTION ITEMS AND TECHNICAL SUBJECTS

9.1 APPLICATION OF PROGRAM SECTIONS 1204(a), (b), (c), AND (e) TO NEW PROJECTS

1103 (a-c, e) [Abstract] These measures direct BPA and the hydroelectric project operators and regulators not to license, exempt from license, relicense, propose, recommend, agree to acquire power from, grant billing credits for, or otherwise support any hydroelectric development in the Columbia River Basin without providing for numerous development conditions related to protection of fish and wildlife resources.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To apply Program Section 1103(a-c, e) to all new hydro projects.

Background and Progress to Date:

BPA is applying these Program sections to the BPA Hydro Options Program.

Plans:

BPA will continue to apply these program sections to the BPA Hydro Options Program and any future hydro development.

Projects:

No BPA-funded projects.

9.3 ASSESSMENT OF CUMULATIVE EFFECTS
(Complete Study; Develop Methods: June 1987)

1103(b)(2) Develop methods for assessing the cumulative effects of hydroelectric development upon fish and wildlife in the Columbia River Basin.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To review all pertinent literature on potential cumulative hydroelectric effects, for specific key fish and wildlife species; to analyze existing techniques for assessment of identified cumulative effects; to develop an array of recommended pertinent assessment techniques for a cumulative effects method; and to develop a hypothetical example of a cumulative assessment using the method.

Background and Progress to Date:

Development of a cumulative effects method supported the Council's desire to have all applications or proposals for hydroelectric development reviewed in a consolidated manner. Project 84-41 (completed in 1987) developed a methodology to assess potential cumulative effects.

Plans:

BPA has no plans for further funding.

Projects:

No BPA-funded projects.

9.4 TURBINE INTAKE SCREENS
(Develop New Designs, Complete Tests, Report to Council: January 1989)

- 1103(d) Bonneville shall fund studies to determine the effectiveness of new designs for turbine intake screens and their suitability for application at small hydroelectric projects.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To develop a new standard fish screen that is biologically efficient and cost-effective for hydro developers.

Background and Progress to Date:

Installation and maintenance of currently available screening systems are expensive and must be tailored to the site. Most present screen systems have not been tested sufficiently to be characterized as proven. Existing designs and new designs must be evaluated to determine which designs are biologically and economically efficient. The suitability of screen designs for application at small hydroelectric facilities must also be determined. The intent is to provide acceptable fish screen designs with general applicability for regional hydropower developers.

Plans:

Presently deferred, since BPA's adoption of Protected Areas in its Long-Term Intertie Access Policy provides protection for fish investments through denying access to the Pacific Northwest-Pacific Southwest Intertie to any new hydroelectric projects located in designated Protected Areas of the Columbia River Basin.

Projects

No BPA-funded projects.

WORK AND EXPENDITURE PLAN
ACTION ITEMS

10.1- EXPENDITURE AND OBLIGATION PLANS

10.3 (Submit to Council by September 15 of Each Year. Update and Submit Information Quarterly. Submit Review of Previous Year. Report Expenditures by Measure.>

1203(a, c, d) [Abstract] These measures describe Program implementation by Federal project operators and regulators and BPA, consultation and coordination, and BPA funding of the Program.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

The Annual Implementation Work Plan (AIWP) for FY 1990 describes BPA plans for implementation of the Council's Program and, in particular, the Action Plan. The AIWP is intended to contain:

1. A report on progress to date on each Action Item.
2. A description of the activities to be undertaken under each Action Item, including:
 - a. the objective of each activity, and
 - b. the schedule for each activity, including key decision points and major milestones.

Background and Progress to Date:

Annually since FY 1986, BPA has completed a Program Work Plan and submitted this plan to the Council.

In 1987, BPA began developing a Program Implementation Planning Process (IPP) that would provide an opportunity for the agencies, Tribes, and other interested parties to become more involved in planning the implementation of the Program. Development of this process was completed in 1988, and the IPP (see Section III) was endorsed by the BPA Administrator and the Chairman of the CBFWA on October 19, 1988. The IPP's Policy Review Group (PRG) was formed in late 1988. In January 1989, the PRG began providing BPA with policy and funding recommendations related to Program implementation. The AIWP is based on the outline developed by the PRG during Step 1 of the annual IPP annual cycle.

Plans:

The AIWP will continue to be developed through the IPP.

PROGRAM-RELATED, NON-MEASURE PROJECTS

PROGRAM RELATED PROJECTS

----- PROGRAM-RELATED PROJECTS

MEASURE LANGUAGE:

Not applicable. These are non-measure projects.

TECHNICAL SUBJECT ACTIVITY SUMMARY:

See individual projects in the following table.

I. COMPLETED PROJECTS

PROJECT NUMBER	TITLE	PROJECT STATUS
87-130	<p>An Assessment of the Freeze Brand Recovery Data for Yearling Chinook Salmon at McNary Dam - NMFS</p> <p>Project Officer: D. Johnson</p> <p>Objectives: i n e w h e t h e r PIT-tagged and freeze-branded yearling chinook and steelhead are recovered at different rates and identify the sources of sampling error.</p>	<p>Date Completed: 1990</p> <p>Results/Conclusions: Information pending for first draft. Final report is in print.</p>

II. FY 1990 ONGOING PROJECTS

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
82-13	<p>Coded Wire Tag/Sampling Program Recovery - PSMFC</p> <p>Project Officer: P. Poe</p> <p>Objectives: Support VDF, VDW and ODFW fishery recoveries of coded-wire tagged salmon and steelhead.</p>	<p>Date initiated: 1982</p> <p>Results/Conclusions: Commercial and sport fishery recoveries of coded-wire tagged salmon and steelhead were de-coded, compiled, and reported.</p>	<p>Continuing: BPA will continue to fund coded-wire tag recoveries.</p>

**PROJECT
NUMBER**

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES

82-16

**Yakima River Spring Chinook
Enhancement Study - YIN**

Project Officer: T. Vogel

Objectives: Establish
methods to rebuild spring
chinook salmon runs in the
Yakima River while maintaining
the genetic components of the
naturally reproducing stocks.

Date Initiated: FY 1982

Results/Conclusions: Information has
been collected on survival and
emergence from redds, survival from fry
to smolt, and downstream movement of
fry. Project annual reports are
available.

1. **Continuing:** BPA has funded the project
to completion.

2. **March 1991:** Project is scheduled for
completion: final report will be available.

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
86-13	Augmented Fish Health Monitoring in Washington - VDW	<u>Date initiated:</u> 87-13: August 1986 87-54: July 1986	1. Continuing: Fund a comprehensive fish health management system through standardized monitoring.
86-54	Augmented Fish Health Monitoring in Washington - VDF	87-117: June 1987 87-118: June 1987 87-119: July 1987	2. Continuing: Define fish culture impediments, including water quality, in the Columbia Basin hatcheries.
87-117	Augmented Fish Health Monitoring in Idaho - IDFG	<u>Results/Conclusions:</u> Projects have assured consistent fish health data monitoring and reporting in the Columbia Basin anadromous fish hatcheries.	3. Continuing: Ensure compatibility of the data generated by these projects with that of the Artificial and Natural Production Data Bases (Program Measure 204).
87-118	Augmented Fish Health Monitoring in Oregon - ODFW		
87-119	Augmented Fish Health Monitoring - USFWS		

Project Officer: R. Morinaka

Objectives: Collect data in a systematic, standardized manner and provide a system of rapid storage and retrieval of fish health/production information in the anadromous fish hatcheries of the Columbia River Basin. Begin to develop a documentation and data retrieval system that can be used by persons who are not fish diagnosticians.

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
89-20	<p>Airlift Fabrication</p> <p><u>Project Officer:</u> W Maslen</p> <p><u>Objectives:</u> Provide funding for fabrication of airlift fish sampling devices and miscellaneous supporting hardware for Lower Monumental, Ice Harbor, John Day, and The Dalles Dams, as specified in the Long-Term Fish Spill Memorandum of Agreement. This equipment supports monitoring programs specified under projects 84-14 and 87-127.</p>	<p><u>Date Initiated:</u> 1989</p> <p><u>Results/Conclusions:</u> One airlift sampling device was fabricated for use at The Dalles Dam</p>	<p>Additional airlift fish sampling devices may be fabricated, as agreed by the parties.</p>
90-80	<p>Columbia River Basin PIT-Tag Information System (PTAGIS) - PSMFC</p> <p><u>Project Officer:</u> P. Poe</p> <p><u>Objectives:</u></p> <p>1. To develop, operate, maintain, and enhance a long-term Columbia River Basin-wide database of information on PIT-tagged fish to ensure that all PIT-tag information is available in a timely and useful manner to all state, Federal, Tribal and other interested entities.</p>	<p><u>Date Initiated:</u> May 1990</p> <p><u>Results/Conclusions:</u> PTAGIS office established at the Pacific States Marine Fisheries Commission (PSMFC) in Portland. Progress in transfer of responsibility of operation and maintenance of PIT-tag systems from the NMFS to PTAGIS.</p>	<p>1. 1991: Operate, maintain, and enhance Columbia River PIT-tag systems and database.</p> <p>2. Continuing: BPA will continue to fund PTAGIS.</p>

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
90-80 cont.	2. To perform all other activities related to Columbia River PIT-tag systems including: maintenance and documentation of fish tagging and interrogation systems; operation and maintenance of equipment at the remote sites. Provision of technical support for software and hardware; provision of training to users; and purchase of PIT-tags and associated equipment.		

III. NEW PROJECTS

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
90-60	<p>Bypass Evaluations</p> <p><u>Project Officer:</u> W. Maslen</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Determine fish guiding efficiency of prototype bypass screens. 2. Determine fish guiding efficiency of installed bypass screens. 3. Evaluate various means to improve fish guiding efficiency of bypass screens. 	New Project	<p>FY 1991: Prototype testing of standard length submersible traveling screens and evaluation of sluiceway effectiveness at the Ice Harbor Dam.</p> <p>FY 1991 and beyond: Provide funding as necessary to conduct prototype and post-installation testing of bypass screens (and sluiceway where appropriate), as provided in the Fish Spill Memorandum of Agreement.</p>

VII, NON-ACTION ITEM PROJECTS

PROJECT
NUMBER

PROJECT STATUS

SCHEDULE AND MILESTONES

91-18 Clearwater River Trout Stocking New Project

FY 1991: Start project

Project Officer: TBA

Objectives: Enhance rainbow trout populations by annual propagation and stocking of rainbow trout in the Clearwater River below the North Fork.

91-19 Hungry Horse Fisheries Mitigation New Project

FY 1991: Start project

Project Officer: TBA

Objectives: Replace hydro-related losses of resident fish in three major areas of the system: Hungry Horse Reservoir, downstream river habitats in the Flathead System, and Flathead Lake. The project should accomplish reasonable mitigation for the impacts of Hungry Horse Dam on resident fish in the Flathead drainage.

VIII, NON-PROGRAM, INTERNAL SUPPORT PROJECTS

This section of the AIWP lists and describes BPA Division of Fish and Wildlife internal support projects. These projects do not implement measures in the Program and were not subject to PRG review as part of the IPP. The projects are included in the AIWP to help the PRG and the public to better understand what BPA is doing.

I. COMPLETED PROJECTS

None.

II. FY 1989 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
85-87-01	<p>Anadromous Fish Mitigation Analysis Assistance - RFF</p> <p><u>Project Officer:</u> S. Detering</p> <p><u>Objectives:</u> To provide for technical participation in Council effort to develop Common Analytical Methods and to assist in developing in-house capability for fish modeling with workshops focused on cost-effectiveness (C-E) of mitigation alternatives.</p>	<p><u>Date initiated:</u> April 1987</p> <p><u>Results/Conclusions:</u> C-E analysis technical participation in review of Subbasin Plans has provided a format that the Council has decided to use in review of all Subbasin Plans. BPA Fish-Power Modeling Workshops have developed the nucleus for a modeling team within BPA. Expect this project to terminate this FY. New activities listed in 88-125.</p>	<p>FY 1991: Shift Analytical Methods Work Group and MEG support to new contract (Project 88-125).</p>
86-118	<p>Fish and Wildlife Task Order Agreement - BPNL</p> <p><u>Project Officer:</u> R. Austin</p> <p><u>Objectives:</u> To supplement the limited staff and time resources of BPA's Division of Fish and Wildlife with the services of a professional contractor (BPNL), who can provide technical assistance on a wide variety of tasks.</p>	<p><u>Date initiated:</u> June 1986</p> <p><u>Results/Conclusions:</u> Nine task orders have been completed under this master task order agreement: (1) Spring Chinook Outplanting, (2) Production/Cost Records, (3) Yakima Hatchery Master Plan, (4) Yakima Flow Enhancement, (5) Yakima Hatchery Master Plan II, (6) Smolt Survival Workshop, (7) Predator/Prey Workshop, (8) Hatchery Effectiveness TWG Workshop, (9) Anadromous Fish Release Workshop. If the task order implements a Program project, the task order is listed in the AIWP under the appropriate Action Item</p>	<p>FY 1991: Continue funding master task order agreement. Initiate individual technical assistance tasks orders as required by BPA staff.</p>

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
87-413	<p>Fish and Wildlife Task Order Agreement, Fisheries Technical Assistance - UW</p> <p><u>Project Officer:</u> D. Johnson</p> <p><u>Objectives:</u> To assist the limited staff and time resources of BPA's Division of Fish and Wildlife through the services of a uniquely qualified professional staff able to provide technical assistance on diverse fish and wildlife issues.</p>	<p><u>Date Initiated:</u> September 1987</p> <p><u>Results/Conclusions:</u> Numerous task orders have been completed under this master task order agreement, including 1) review of Project 84-46, Development of a Vaccine for Bacterial Kidney Disease in Salmon; 2) review of BPA's anadromous fish passage assessment methods; 3) review of relevant statistics and reports on population dynamics of Hanford Reach fall chinook salmon; and 4) conduct of a smolt survival workshop. If the task order implements a Program project, the project is listed in the AIVP under the appropriate Action Item</p>	<p>FY 1991: Continue funding master task order agreement. Initiate individual technical assistance task orders as required by BPA staff.</p>
89-108	<p>Columbia River Salmon Passage Model - UW</p> <p><u>Project Officer:</u> D. Johnson</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Replace FISHPASS model. 2. Develop graphical input and output features. 3. Develop Monte Carlo and multi-year analytical capabilities 4. Integrate database system 5. Develop and calibrate mechanistic submodels. 6. Develop model documentation. 7. Perform model analysis 8. Test statistical models 9. Develop life stage components. 	<p><u>Date Initiated:</u> 1988</p> <p><u>Results/Conclusions:</u> Work completed to date: Beta versions of the model for objectives 1, 2, and 3.</p>	<ol style="list-style-type: none"> 1. Continuing: The contractor will provide reports regarding all objectives. 2. Early 1990: Complete objectives 1, 2, and 3. 3. Late 1990: Complete objectives 4, 5, and 6. 4. 1991: Complete objectives 7 through 10. 5. Objective 11 is ongoing objective.

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
89-108 (cont.)	10. Interface cost-effectiveness algorithms. 11. Coordinate with other entities.		
89-47	Technical Assistance - Consultant <u>Project Officer:</u> D. Johnson <u>Objectives:</u> 1. Provide recommendations on fish passage related research and monitoring; 2. Assist in development of research designs.	<u>Date Initiated:</u> 1989 <u>Results/Conclusions:</u> Various technical recommendations on Water Budget Effectiveness and Reservoir Mortality have been made to BPA.	Continuing: Schedule and milestones vary with timing of issues and receipt of proposals.
89-62	Implementation Planning Process (IPP) Coordination - PSMFC <u>Project Officer:</u> J. Gislason <u>Objectives:</u> 1. Facilitate communication among BPA, CBFWA, Policy Review Group (PRG), Scientific Review Group (SRG), and IPP Scoping Groups (St's). 2. Ensure the timely delivery of all PRG, SRG, and SG work products required by the IPP. 3. Administer financial support (time and travel expense reimbursement) of non-Federal SRG scientists.	<u>Date Initiated:</u> May 1989 <u>Results/Conclusions:</u> BPA has funded an IPP Coordinator position with the CBFWA through a contract with the PSMFC. Through this contract, BPA also reimburses most of the SRG members or their employers for the time that the members spend on SRG activities.	FY 1991: BPA plans to continue funding the IPP Coordination contract.

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES</u>
89-72-1	<p>Scientific Review Group (SRG) Support - DOE</p> <p><u>Project Officer:</u> J. Gislason</p> <p><u>Objectives:</u> To provide financial support (time and travel expense reimbursement) for SRG scientist employed by DOE.</p>	<p><u>Date Initiated:</u> September 1989</p> <p><u>Results/Conclusions:</u> BPA provides financial support for one SRG member through this contract.</p>	<p>FY 1991: BPA plans to continue funding this contract.</p>
90-93	<p>Genetic Analysis of <u>Qncorhynchus nerka</u> (for Endangered Species Act) - UI</p> <p><u>Project Officer:</u> G. Bouck</p> <p><u>Objectives:</u> Phase I: 1. Collect <u>Q. nerka</u> for analysis. 2. Refine DNA analysis. 3. Develop a plan for Phase II. Phase II: Objectives to be defined.</p>	<p><u>Date Initiated:</u> August 1990</p> <p><u>Results/Conclusions:</u> None at this time.</p>	<p>1. FY 1991: Complete Objectives 1 and 2 by November 15, 1990; complete Objective 3 by December 1, 1990.</p> <p>2. FY 1992: Complete Phase II by December 31, 1991.</p>

III. NEW PROJECTS

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES
88-125	<p>Anadromous Fish Planning and Implementation Decision Support System - RFF</p> <p><u>Project Officer:</u> S. Detering</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Assist regional entities to complete cost-effectiveness (C-E) analysis of alternatives in all Subbasin Plans. 2. Compare existing and proposed fish passage alternatives with propagation alternatives of Subbasin plans. 3. Review methods used to evaluate effectiveness and cost of plan options. 4. Identify direct and opportunity cost of changes in water diversions. 5. Long Term Complete model components needed for C-E analysis of mitigation issues, including training and assistance needed for use of models by analysts in the region. 	New Project	<p>FY 1991: Assist Council in completing C-E analysis of all Subbasin Plans. Prepare multi-stock C-E models. Prepare C-E comparison of all passage and production alternatives consistent with BPA passage alternatives.</p> <p>FY 1991-92: In coordination with the Analytical Methods Work Group, UW's Center for Quantitative Science, and OSU, complete mitigation decision support system models and user guides, and provide user support. Review methods used to evaluate effectiveness and cost of plan options.</p>

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IX. APPENDIX

LETTERS OF COMMENT ON THE
DRAFT FY 1991 AIWP

United States
Department of
Agriculture

Forest
Service

Pacific
Northwest
Region

319 S.W. Pine Street
P.O. Box 3623
Portland, OR 97208-3623

Reply To: 2600

Date: August 10, 1990

Mr. John Palensky
Bonneville Power Administration
PO Box 21
Portland, OR 97208

Dear Mr. Palensky:

My fisheries staff has reviewed the Draft 1991 Columbia Basin Fish and Wildlife Program Annual Implementation Work Plan and agree with many of the Habitat Improvement and Passage Enhancement selections. These projects, aimed at restoring stream habitat capability to full potential, will play an important role in maintaining the genetic viability of wild stocks in the Columbia.

The selection of several hatchery augmentation, and/or supplementation programs generates some concern. Review of the CBFWA memorandum generated by the Scientific Review Group on the Hatchery Effectiveness Work Plan indicates that numerous information deficiencies exist with hatchery effectiveness. Specifically, more information is needed on the potential impacts of increased hatchery production on wild-stocks. In light of increasing concern on maintaining genetic diversity and identity of these stocks, we suggest that emphasis be placed on those proposals that serve to answer these questions, or promote existing natural and wild-stock diversity.

Thank you for the opportunity to respond to the 1991 Annual Implementation Work Plan. Strengthening communication between Fisheries Management Agencies will serve to better meet the established Columbia Basin goals.



BERNIE RIOS
Acting Columbia Basin Coordinator

cc:

Harv Forsgren - R4
Rick Stowell - R1
Gordon Haugen - WO Fish and Wildlife

5 AUG 90 8:43

ADDENDUM TO FY 1991 AIWP

REDUCTION LIST

The projects listed in the table below were in the Draft FY 1991 AIWP, but were recommended for deferral, modification, or deletion by the PRG to reconcile the AIWP with BPA's FY 1991 Fish and Wildlife Program budget. BPA incorporated the PRG's recommendations in the final FY 1991 AIWP.

RPA	PROJECT NUMBER	TITLE	ACTION/RATIONALE
F1107	87-112	Orofino Creek Passage, Idaho	The project is deferred in FY 91. Not ready for construction in FY 91. Funds were left in FY 91 budget for possible trap-and-haul pre-design activities.
F1113	88-160	Bio-Engineering Eval of Oxygen Supplementation	The Michigan raceway portion of this project will be dropped. Consensus of fish culturists was that the Michigan raceway was not needed to answer questions that the project was intended to answer.
F1113	89-065	Analysis of CW' Prog Missing Production OR/WA (USFWS)	Ongoing projects to continue until current FY 91 contracts expire; FY 91 funds deleted from BPA's budget. New projects deleted from FY 91 AIWP. Projects were dropped until an adequate program for coded-wire tagging can be developed.
	89-066	Analysis of CW' Prog Missing Production WA (WDW)	
	89-069	Analysis of CW' Prog Missing Production OR (ODFW)	
	91-038	Analysis of CW' Prog Missing Production WA (WDW)	
	91-039	Analysis of CW' Prog Missing Production OR (IFG)	
F1113	89-099	Hatchery Water Quality Survey	Project dropped in FY 91. Project not started yet. Agencies and Tribes/SG willing to drop project in FY 91.
F1113	91-021	IHN Rapid Diagnosis	Drop projects in FY 91. These were the lowest priority projects of the Artificial Propagation SG. Not implementing these proposed new projects would have the least impact. In general, research is a lower priority of the PRG in FY 92/93.
	91-024	Control of Whirling Disease	
	91-032	IHN Evolution	