

COLUMBIA RIVER BASIN
FISH AND WLDLIFE PROGRAM
WORK PLAN
FOR FISCAL YEAR 1988

BY

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TO THE READER:

The FY 1988 Columbia River Basin Fish and Wildlife Program Work Plan (Work Plan) has been streamlined and simplified for reading ease:

- Each Action Item (title, measure language, background, progress to date, and plans) is addressed.
- The associated projects are then presented in tabular form
- Common abbreviations are used consistently throughout the Work Plan. (A list of these abbreviations is found at the end of the Introduction, in Table 3.)

While the Work Plan was being prepared in final form, the amended Program was published. It contained a revised numbering system for both the measures and Action Items. Numbers familiar to the reader from the 1984 Fish and Wildlife Program (and from the 1987 Working Copy of the Final Amendment Document) have been changed. The Council's "Numerical Guide for 1984 and 1987 Programs" contains a complete cross-listing of all number changes for both measures and Action Items.

To assist the reader in locating each renumbered Action Item, we have written the FY 1988 Work Plan with a double number scheme.

- Table of Contents. Each Action Item is listed by its new number. For example, Action Item 2.1 in the 1987 Program was Action Item 32.1 in the 1984 Program. However, a cross-reference column also cites the old number in brackets for the reader.
- Individual Action Items. Each Action Item is identified by its new number in the upper right-hand corner and as part of the title. The old number is included in brackets for reference. Measure language is also cited by its new number, with the old reference in brackets.
- Measure Language and Numbers. We have not conducted a complete measure-by-measure comparison of the Work Plan and the 1987 Program to detect discrepancies in measure language or numbering between the Work Plan and the Program.

We hope that these aids will ease this transition.

EXECUTIVE SUMMARY

The FY 1988 Columbia River Basin Fish and Wildlife Program Work Plan (Work Plan) presents Bonneville Power Administration's plans for implementing the Columbia River Basin Fish and Wildlife Program (Program) in FY 1988. The Work Plan focuses on individual Action Items found in the amended Program for which Bonneville Power Administration (BPA) has determined it has authority and responsibility to implement. Each of the entries in the Work Plan includes BPA's implementation objectives, background and progress to date in achieving those objectives, and a summary of plans for implementation in FY 1988. Most Action Items are implemented through one or more BPA-funded projects. A list of all past, present, and planned projects; along with objectives, results, schedules, and milestones for each project; follows each Action Item entry.

The FY 1988 Work Plan emphasizes continuation of 95 ongoing projects most of which involve protection, mitigation, or enhancement of anadromous fishery resources. These continuing activities are summarized briefly by Program area:

Mainstem Passage: Eleven BPA-funded projects will continue to support the smolt marking and monitoring program, the Fish Passage Center, and management of the Water Budget. Development of the Passive Integrated Transponder (PIT) tag as a research tool will also continue.

Artificial Propagation: The primary thrust of the artificial production projects is investigation of ways to increase the quality and quantity of fish produced in hatcheries. Development and recording of fish health data, research on two major fish disease problems (infectious hematopoietic necrosis virus and bacterial kidney disease) and research on effects of nutrition on immune response, growth, and survival of salmon will also continue. A demonstration project to verify the efficacy of malachite green removal from hatchery effluent and a project evaluating the contribution of Columbia River fall chinook hatcheries to the Pacific Ocean chinook salmon fishery will be completed by the end of FY 1988. Construction of the Umatilla Hatchery is expected to begin.

Natural Propagation: A total of 26 ongoing habitat and tributary passage projects in Section 703(c)(1) of the Program will continue or be completed. 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. Six ongoing passage improvement projects in the Yakima Basin will also continue.

Resident Fish and Wildlife: The resident fish projects in Montana are nearing completion, with final reports and recommendations for mitigation and protection scheduled to be sent to the Council in 1988 and 1989. In Idaho, a study to evaluate the contribution of the Cabinet Gorge Hatchery to the Lake Pend Oreille kokanee fishery and two projects designed to determine the effects of construction and operation of Dworshak Dam on resident fish will continue. A study of the status and habitat

requirements of white sturgeon in the Columbia River downstream from McNary Dam has started and is scheduled to last through FY 1990. Ongoing wildlife mitigation planning activities will continue for Bonneville, Albeni Falls, and Dworshak dams, along with the advanced design of wildlife mitigation projects for Libby and Hungry Horse dams.

Planning Activities: BPA will continue to fund and participate in the four Area of Research Emphasis Technical Work Groups. BPA will also participate in the Council-managed System and Subbasin Planning, and System Monitoring and Evaluation programs.

BPA has identified and plans to initiate only 19 new projects during FY 1988. These "new start" activities include offsite enhancement, turbine intake screen design, wildlife, and resident fish projects. Eight offsite enhancement projects will address habitat and passage improvements in the Umatilla, Yakima, and Lower Clearwater subbasins as well as design and construction of the Yakima Hatchery. One project will investigate alternative turbine intake screen designs suitable for application at small hydroelectric projects.

A total of five new wildlife projects will be pursued in FY 1988. These projects involve initiating wildlife loss assessments for Chief Joseph Dam, Minidoka Dam, and the Lower Columbia facilities McNary, John Day, and The Dalles dams). Wildlife habitat enhancement activities for Libby and Hungry Horse dams will also be initiated.

A trust fund arrangement is being explored for the funding of wildlife mitigation activities for Libby and Hungry Horse dams. If the details of a trust fund can be worked out, then mitigation activities will be funded through this arrangement.

In the area above Chief Joseph Dam, five projects that substitute resident fish for lost steelhead and salmon are scheduled for implementation. Included are two kokanee salmon hatcheries for Lake Roosevelt, habitat improvement projects on Lake Roosevelt tributaries, an assessment of the status of white sturgeon in the Kootenai River of Idaho which may lead to the construction of a small experimental sturgeon hatchery, and a project to assess possible fishery improvements in the Pend Oreille River on the Kalispel Indian Reservation.

A major feature of the FY 1988 Work Plan is the provision of decision-making flexibility necessary to accommodate priority projects anticipated from new planning activities added during the recent amendment of the Program. This feature was necessary because the first products of the new planning activities will not be defined and thus available for BPA funding until the second quarter of FY 1988, at the earliest. These planning activities include anadromous fish Research Area of Emphasis Technical Work Groups, System and Subbasin Planning, and System Monitoring and Evaluation. BPA, in collaboration with the Columbia River Basin Fish and Wildlife Authority and the Northwest Power Planning Council, was able to estimate costs of the

amended Program and then determine reasonable budget levels necessary to implement the Program over the next five years. The results of these discussions are summarized in the Work Plan. BPA has also sought ways to provide an opportunity for the agencies and Tribes to become more involved in planning the implementation of the Program BPA anticipates that a collaborative and cooperative implementation process will be developed and operational in FY 1988.

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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 Bonneville Power Administration (BPA) in carrying out our responsibility to protect, mitigate, and enhance fish and wildlife of the Columbia River Basin. The Act explicitly gave BPA the authority and responsibility to use the BPA fund for these ends, to the extent that fish and wildlife were affected by the development and operation of hydroelectric generation in the Columbia River Basin. This document presents BPA's plans for Program implementation during Fiscal Year (FY) 1988.

BPA's Columbia River Basin Fish and Wildlife Program Work Plan (Work Plan) reflects the primary goals of the Program's Action Plan: to provide a solid, timely, and focused basis for budgeting and planning. Additionally, BPA's Work Plan provides a means to judge progress and the success of Program implementation.

This Work Plan has been organized and written to meet the specific needs of the Council's Action Plan, as described in Action Items 10.1-10.3. It includes schedules with key milestones for FY 1988 through FY 1990. The Work Plan is organized to address the Action Items assigned to BPA in Section 1400 of the 1987 Program

Action Items are identified by a new numbering system used by the Council in the 1987 Program Those new numbers (and new numbers for Program measures were published by the Council in August 1987 in the "Numerical Guide for 1984 and 1987 Programs." In the FY 1988 Work Plan, the new Action Item numbers appear at the beginning of each entry. The former numbers are included parenthetically (as are old measure numbers) for reader convenience.

Table 1 includes all BPA-funded projects discussed in the FY 1987 and 1988 Work Plans. The listing also shows the current status of the projects (ongoing, deferred, or completed). Table 2 lists all projects which BPA plans to fund as "new" projects in FY 1988. (Tables are placed at the end of Section I.)

FY 1988 Work Plan Format

The FY 1988 Work Plan 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 1988 to accomplish the Action Item

However, the Work Plan presentation of individual project implementation will depart from the previous model. Project level reporting has been condensed to tabular form wherever possible. Tables are subdivided into:

- I. Completed Projects
- II. FY 1987 Ongoing Projects
- III. Deferred Projects (if applicable)
- IV. New Projects

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

Abbreviations Used

The FY 1988 Work Plan uses many abbreviations to identify various agencies, organizations, and entities. Table 3 lists the full name of each group and the abbreviation used in the Work Plan.

Highlights of FY 1988 Work Plan

From the beginning, the Program emphasized anadromous fish and was organized around the life stages of salmon and steelhead trout, e.g., upstream and downstream migration, artificial and natural propagation. The Program also addressed the needs of resident fish and wildlife.

The major implementation activities of FY 1988 can be similarly highlighted:

A. Downstream (Water Budget and Passage) and Upstream Passage.

BPA-funded projects will continue to support the smolt monitoring program at the Fish Passage Center, as well as management of the Water Budget. Development of the Passive Integrated Transponder (PIT) tag will also continue in FY 1988, as a research tool. Following the completion and approval by the Council of the Reservoir Mortality and Water Budget Effectiveness Technical Work Group (M/WBTWG) Five-Year Work Plan, BPA will begin to incorporate this work plan and seek ways of implementing the M/WBTWG guidance. (See Table 48. Action Item 6.2.)

B. Artificial Propagation

1. Fish Disease

Ongoing projects will focus on development and recording of fish health data, and on disease problems and incidence. Emphasis will also continue on two major fish disease problems: infectious hematopoietic necrosis (IHN) virus and bacterial kidney disease (BKD). The projects will address prevention and control of these diseases through chemicals or drugs.

Following the completion and approval by the Council of the Fish Disease Technical Work Group (FDTWG) Five-Year Work Plan, BPA will begin to incorporate this work plan and seek ways of implementing the FDTWG's guidance. (See Table 4B, Action Item 6.2.)

2. Hatchery Effectiveness

Ongoing projects focusing on effects of nutrition on immune response, growth, and survival of salmon will continue in FY 1988. Upon completion of the Hatchery Effectiveness Technical Work Group (HETWG) Five-Year Work Plan and its approval by the Council, BPA will begin development and procurement of appropriate research activities in FY 1988. (See Table 4B, Action Item 6.2.)

C. Natural Propagation

Habitat and passage projects in Section 703(c)(1) will continue in various implementation phases during FY 1988. Three new projects will be started, and 26 ongoing projects will continue or be completed. Construction activities will occur in several subbasins in eastern Oregon, Idaho, and Washington (See Table 5, Action Item 4.2).

D. Resident Fish

Five new projects will be added to the ongoing resident fish program during FY 1988. They are part of the "resident fish substitution" measures amended into the Program to mitigate for anadromous fish losses above Chief Joseph Dam

E. Wildlife

In FY 1988, BPA will continue to fund wildlife loss assessments and the development of mitigation plans for Federal hydroelectric facilities of the Columbia River Basin. Wildlife mitigation efforts for Libby and Hungry Horse dams are scheduled to begin in Montana.

Results of FY 1987 Planning

The FY 1988 Work Plan outlines BPA's implementation activity for the recently amended Fish and Wildlife Program. As such, it reflects BPA's activities to implement prior versions of the Program and new measures and Action Items amended into the Program during the 1987 amendment cycle. Unfortunately, many newly amended Program measures have not yet been defined enough for BPA implementation. This is especially true for activities related to the anadromous fisheries areas of emphasis and related research technical work groups, system and subbasin planning, and system monitoring and evaluation.

In order to provide for those priority Action Items not yet adequately defined for implementation, BPA has tried to identify funding requirements and then means to protect flexibility within the budget to accommodate those Action Items. BPA has worked closely with ad-hoc committees of the Columbia Basin Fish and Wildlife Authority (CBFWA) and staff from the Council on two major efforts. First, BPA has explained its implementation planning process in order to seek ways to provide more opportunity for the agencies and tribes to be involved in this process. We anticipate that a collaborative and cooperative implementation process will be developed and operational before FY 1989.

Second, BPA, the CBFWA, and the Council have sought to identify the costs of the amended Program and then to establish a budget level that could be expected to carry out the Program reasonably. These costs have been outlined in Tables 4A and 4B. Table 4A lists those activities which are detailed enough to determine reasonable cost estimates and implementation schedules. Table 4B lists measures and Action Items for which there is not enough information to plan implementation schedules. In many cases, Table 4B activities require some type of action by the Council (e.g., amendment into the Program) before BPA would be able to implement them. It is important to understand that the Table 4A and 4B costs reflect planning targets for implementation activity: the dollar estimates are neither floor nor ceiling levels, but rather a level of effort that would be likely to achieve the Program objectives in an efficient and prudent manner.

TABLE 1
FY 1988 WORK PLAN PROJECTS

ONGOING, DEFERRED, AND COMPLETED PROJECTS

ACTION ITEM		TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
1987 PROGRAM	1984 PROGRAM				
2.1	133.11	WATER BUDGET MANAGEMENT	83-491	COMPLETED	WATER BUDGET MANAGEMENT
			83-536	COMPLETED	WATER BUDGET MANAGEMENT
			87-127	ONGOING	SMOLT MONITORING AND WATER BUDGET PROGRAM
2.2	[33.2]	SMOLT MONITORING	80-1	COMPLETED	SMDLT MONITORING
			83-323	ONGOING	SMOLT CONDITION AND ARRIVAL TIMING AT LOWER GRANITE
			84-14	ONGOING	SMOLT MONITORING AT FEDERAL DAMS
			84-17	COMPLETED	FISH MARKING: CHINOOK/STEELHEAD (IDAHO)
			84-54	COMPLETED	JUVENILE SALMONID MONITORING AT ROCK ISLAND DAM
			86-60	COMPLETED	DOWNSTREAM MIGRANT MONITORING
			86-119	COMPLETED	FREEZE-BRANDING SALMON/STEELHEAD AT LYONS FERRY HATCHERY
			87-61	DEFERRED	ESTIMATING RESERVOIR MORTALITY
			87-103	DEFERRED	SHORT-TERM FLOW FLUCTUATION EFFECTS ON SMOLTS
			87-127	ONGOING	SMOLT MDNITORING AND WATER BUDGET PROGRAH
			87-401	ONGOING	SMOLT SURVIVAL AND TRAVEL TIME
87-XXX	DEFERRED	SYSTEM-WIDE DESIGNS FOR SMOLT TRANSPORTATION EVALUATION STUDIES			
Deleted	[39.1]	RESEARCH	82-3	ONGOING	PREDATOR FOOD HABITS STUDY
			82-12	ONGOING	JOHN DAY RESERVOIR SQUAWFISH/WALLEYE ABUNDANCE
3.1	[32.1]	CONDUIT DESIGN	86-47	ONGOING	CONDUIT BYPASS EVALUATION
4.1	[34.4]	ELLENSBURG	87-47	ONGOING	ELLENSBURG TOWN FISH SCREENS

TABLE 1
FY 1988 WORK PLAN PROJECTS

ONGOING, DEFERRED AND COMPLETED PROJECTS

ACTION ITEM		TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
1987 PROGRAM	1984 PROGRAM				
4.2	[FAD 34.02]	SUBBASIN HABITAT AND PASSAGE	81-108	ONGOING	WARM SPRINGS HABITAT PRODUCTION POTENTIAL ASSESSMENT
			82-1	COMPLETED	NEZ PERCE STREAM INVENTORY
			82-9	TERMINATED	JOHN DAY HABITAT IMPROVEMENT EVALUATION
			82-14	COMPLETED	DEVELOPMENT OF NEW CONCEPTS IN FISH LADDER DESIGN
			83-7	ONGOING	IDAHO HABITAT EVALUATION/OFFSITE MITIGATION RECORD
			83-34 1	COMPLETED	HOOD RIVER PASSAGE
			83-359	ONGOING	BEAR VALLEY CREEK HABITAT IMPROVEMENT
			83-373	COMPLETED	DESCHUTES SPAWNING GROUND STUDY
			83-384	COMPLETED	MURDERERS/DEER CREEK FISH HABITAT
			83-392	COMPLETED	PEAVINE CREEK SPAWNING HABITAT
			83-415	ONGOING	ALTURAS LAKE
			83-4 16	COMPLETED	POLE CREEK IRRIGATION DIVERSION SCREENING
			83-423	COMPLETED	TROUT CREEK RIPARIAN ENHANCEMENT
			83-434	COMPLETED	LOWER UMATILLA RIVER CHANNEL MODIFICATION
			83-436	ONGOING	THREE MILE DAM PASSAGE
			83-440	DEFERRED	WHITE RIVER FALLS PASSAGE - USFS/ODFW
			83-446	COMPLETED	TUMWATER/DRYDEN PASSAGE - CONSULTANT
			83-450	DEFERRED	WHITE RIVER FALLS PASSAGE - CONSULTANT
			83-473	COMPLETED	COTTONWOOD CREEK HABITAT IMPROVEMENT
			83-477	DEFERRED	ENLOE DAM PASSAGE
			83-834	COMPLETED	EVALUATION OF UMATILLA CHANNEL MODIFICATION
			84-5	ONGOING	RED R./CROOKED R. HABITAT/PASSAGE IMPROVEMENTS
			84-6	ONGOING	LOLO/CROOKED FORK/ELDORADO CREEK IMPROVEMENTS
			84-7	COMPLETED	TROUT CREEK COORDINATION
			84-8	ONGOING	NORTH FORK JOHN DAY HABITAT IMPROVEMENT
			84-9	ONGOING	JOSEPH CREEK, GRANDE RONDE RIVER, OREGON
			84-10	COMPLETED	UMATILLA RIVER BASIN COMPREHENSIVE PLAN
			84-1 1	ONGOING	FISH/LAKE BRANCH CREEKS/COLLOWASH FALLS
			84-2 1	ONGOING	MAINSTEM, MIDDLE FORK, JOHN DAY RIVER
			84-22	ONGOING	MAINSTEM AND UPPER JOHN DAY RIVER
			84-23	ONGOING	CAMAS CREEK, IDAHO
			84-24	ONGOING	MARSH, ELK, UPPER SALMON RIVER, IDAHO
			84-25	ONGOING	JOSEPH CREEK, GRANDE RONDE RIVER, OREGON
			84-28	DEFERRED	LEMHI RIVER REHABILITATION, IDAHO
			84-29	DEFERRED	PANTHER CREEK, IDAHO, HABITAT REHABILITATION

TABLE 1
FY 1988 WORK PLAN PROJECTS

ONGOING, DEFERRED, AND COMPLETED PROJECTS

<u>ACTION ITEM</u>		TECHNICAL SUBJECT	PROJECT		
1987 PROGRAM	1984 PROGRAM		NUMBER	TITLE	STATUS
4.2	[FAD 34.02]	SUBBASIN HABITAT AND PASSAGE cont.	84-31	COMPLETED	CLEARWATER BASIN AGREEMENT
			84-62	ONGOING	TROUT CREEK HABITAT IMPROVEMENT
			85-52	COMPLETED	TUMWATER DAM PASSAGE
			85-53	COMPLETED	DRYDEN DAM PASSAGE
			85-71	COMPLETED	SOUTH FORK JOHN DAY R. MAINSTEM
			85-71	DEFERRED	IZEE FALLS
			86-75	ONGOING	LITTLE NACHES RIVER PASSAGE
			86-78	ONGOING	HABITAT EVALUATION AND MONITORING/COLUMBIA BASIN
			86-79	ONGOING	FIFTEENMILE CREEK BASIN HABITAT IMPROVEMENT
			86-90	COMPLETED	LITTLE FALL CREEK FISH PASSAGE
			86-93	COMPLETED	TROUT CREEK COST-EFFECTIVENESS REFINEMENT
			86-94	COMPLETED	TROUT CREEK COST-EFFECTIVENESS REFINEMENT
			86-107	COMPLETED	EVALUATION AND MONITORING WORKSHOP
			86-117	COMPLETED	TROUT CREEK BPA ANNUAL PRESENTATION
			86-121	COMPLETED	TROUT CREEK COST-EFFECTIVENESS
			87-56	DEFERRED	TUCANNON RIVER HABITAT IMPROVEMENT
			87-100-0	ONGOING	UMATILLA HABITAT IMPROVEMENT - USFS
			87-100-1	ONGOING	UMATILLA HABITAT IMPROVEMENT - CTUIR
			87-100-2	ONGOING	UMATILLA HABITAT IMPROVEMENT - ODFW
			87-104	ONGOING	PASSAGE IMPROVEMENTS AT WESTLAND AND STANFIELD DIVERSIONS
			87-112	ONGOING	OROFINO CREEK PASSAGE
87-113	DEFERRED	HABITAT EVALUATION AND MONITORING/OREGON			
87-114	DEFERRED	HABITAT EVALUATION AND MONITORING/WASHINGTON			
87-115	DEFERRED	GRANDE RONDE MONITORING			
87-409	ONGOING	WEID MAIN CANAL PUMPING			
87-416	ONGOING	COLD SPRINGS AND MAXWELL DIVERSION IMPROVEMENT			
4.3	[34.1]	ROZA	NONE		
4.4	[34.2]	PROSSER	NONE		

TABLE 1
FY 1988 WORK PLAN PROJECTS

ONGOING, DEFERRED AND COMPLETED PROJECTS

<u>ACTION ITEM</u>		TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
1987 PROGRAM	1984 PROGRAM				
4.5	[34.3]	YAKIMA PASSAGE	84-55	COMPLETED	SUNNYSIDE SCREENS AND LADDER CONSTRUCTION
			84-56	COMPLETED	HORN RAPIDS SCREENS AND STRUCTURE
			84-57	COMPLETED	WAPATO SCREEN LADDER CONSTRUCTION
			84-58	COMPLETED	TOPPENISH CREEK/SATUS UNIT SCREEN CONSTRUCTION
			85-62	ONGOING	PASSAGE IMPROVEMENT EVALUATION
			86-65	ONGOING	SNIPES/ALLEN SCREEN CONSTRUCTION
			86-88	COMPLETED	SATUS CREEK SCREEN/LADDER CONSTRUCTION
			86-89	COMPLETED	UPPER TOPPENISH LADDER CONSTRUCTION
			86-9 1	ONGOING	PREDESIGN FOR YAKIMA BASIN FISH PASSAGE
			86-1 12	ONGOING	TOPPENISH/WESTSIDE/ELLENSBURG SCREEN FABRICATION
			87-108	ONGOING	WESTSIDE DITCH SCREEN CONSTRUCTION
			87-109	ONGOING	MARION DRAIN SCREEN CONSTRUCTION
4.6	[FAD 34.01]	UMATILLA RIVER WATER EXCHANGE	NONE		
4.14.1	[34.13]	JOHN DAY ACCLIMATION	86-82	ONGOING	JOHN DAY ACCLIMATION POND
			83-313	ONGOING	NET PEN REARING OF FALL CHINOOK SALMON
4. 5.1	[34.14]	YAKIMA HATCHERY	86-45	ONGOING	YAKIMA HATCHERY - CLE ELUM PROJECT
			87-135	ONGOING	YAKIMA HATCHERY - MASTER PLAN DEVELOPMENT
			87-136	ONGOING	YAKIMA HATCHERY - WAPATO CANAL PEN REARING
Deleted	[34.15]	HATCHERY SURVEY	NONE		
Deleted	[34.16]	LOW-CAPITAL PRODUCTION FACILITIES	83-364	ONGOING	EVALUATION OF A LOW-CAPITAL FACILITY
4.16.1- 4.16.2	[F A D 34.03]	NORTHEAST OREGON SPRING CHINOOK	NONE		
4.17.1	[34.11]	UMATILLA RELEASE AND COLLECTION	82-18	COMPLETED	BONIFER SPRINGS ACCLIMATION FACILITY
			83-435	ONGOING	MINTHORN AND BONIFER SPRINGS ACCLIMATION FACILITIES

TABLE 1
FY 1988 WORK PLAN PROJECTS

ONGOING, DEFERRED, AND COMPLETED PROJECTS

ACTION ITEM		TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
1987 PROGRAM	1984 PROGRAM				
4.17.2	[34.12]	UMATILLA HATCHERY	84-33-1 84-33 87-415	COMPLETED ONGOING ONGOING	COST ANALYSIS OF HATCHERY EXPANSION UMATILLA HATCHERY UMATILLA HATCHERY MASTER PLAN
4.17.3	[34.17]	NEZ PERCE	83-350	ONGOING	NEZ PERCE RESERVATION PROPAGATION FACILITIES
4.17.4	[34.18]	LOWER CLEARWATER	NONE		(SEE TABLE 2 FOR NEW PROJECT)
Deleted	[34.23]	IMPROVED HATCHERY EFFECTIVENESS	82-21 83-304 83-312 83-363 83-451 84-43 84-44 84-45 84-46 84-945 86-96 87-403	COMPLETED COMPLETED ONGOING ONGOING COMPLETED ONGOING COMPLETED ONGOING ONGOING ONGOING COMPLETED ONGOING	IHN VIRUS CONTROL RAPID SERIODIAGNOSTIC TESTS EPIDEMIOLOGY AND CONTROL OF INFECTIOUS DISEASES DEVELOPMENT OF DIETS FOR ENHANCED SURVIVAL OF SALMON COLUMBIA RIVER CHINOOK/STEELHEAD STOCK ID EVALUATION OF A SUBUNIT VACCINE AGAINST IHN ETIOLOGY OF EARLY LIFESTAGE DISEASES EFFECT OF NUTRITION ON IMMUNE RESPONSES OF SALMON DEVELOPMENT OF A VACCINE FOR BACTERIAL KIDNEY DISEASE INFLUENCE OF VITAMIN NUTRITION ON IMMUNE RESPONSE FACILITY SUPPORT FOR BKD VACCINE TESTING WET LAB FOR DISEASE RESEARCH
4.17.5	[34.25]	WILLAMETTE RIVER SPRING CHINOOK	85-68	COMPLETED	WILLAMETTE SPRING CHINOOK STUDY
Deleted	[34.27]	SITE EVALUATION STUDY	NONE		
4.17.6	[FAD 34.]	PELTON DAM	NONE		
4.21	[34.28]	UPPER COLUMBIA HATCHERY RELEASE	NONE		
5.1	[38.1]	KNOWN STOCK ELECTROPHORESIS	84-2	ONGOING	PROTECTION OF UPPER SNAKE RIVER WILD ADULT STEELHEAD

TABLE 1
FY 1988 WORK PLAN PROJECTS

ONGOING, DEFERRED, AND COMPLETED PROJECTS

ACTION ITEM		TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
1987 PROGRAM	1984 PROGRAM				
6.1	[FAD 39.01]	TECHNICAL WORK GROUPS	87-307	ONGOING	AREAS OF EMPHASIS TECHNICAL WORK GROUPS
6.2	[FAD 39.02]	FIVE-YEAR WORK PLANS	NONE		
6.3	[FAD 39.03]	HATCHERY DATA BASE	84-51	COMPLETED	SURVEY OF ARTIFICIAL PRODUCTION FACILITIES
			86-13	ONGOING	FISH HEALTH MONITORING IN WASHINGTON - WDW
			86-54	ONGOING	FISH HEALTH MONITORING IN WASHINGTON - WDF
			86-117	ONGOING	FISH HEALTH MONITORING IN IDAHO
			86-1 18	ONGOING	FISH HEALTH MONITORING IN OREGON
87-1 19	ONGOING	FISH HEALTH MONITORING - USFWS			
6.4	[FAD 39.04]	NATURAL PRODUCTION DATA BASE	NONE		
6.5	[FAD 39.05]	HIGH PRIORITY PROJECTS	87-421	ONGOING	MALACHITE GREEN REMOVAL FROM HATCHERY EFFLUENT
6.7	[34.24]	SUPPLEMENTATION	NONE		
6.12	[FAD 42.1]	COORDINATE & CONSULT ACCORDING TO SECTION 1203	NONE		
7.1	[41.2]	COLVILLE HATCHERY	85-38	ONGOING	COLVILLE HATCHERY
7.2	[FAD 41.02]	COEUR D'ALENE	NONE		
7.3	[FAD 41.03]	KOKANEE SALMDN HATCHERIES	NONE		(SEE TABLE 2 FOR NEW PROJECT)

TABLE 1
FY 1988 WORK PLAN PROJECTS

ONGOING, DEFERRED, AND COMPLETED PROJECTS

<u>ACTION ITEM</u>		<u>TECHNICAL SUBJECT</u>	<u>PROJECT NUMBER</u>	<u>STATUS</u>	<u>TITLE</u>
<u>1987 PROGRAM</u>	<u>1984 PROGRAM</u>				
7.4	[FAD 41.04]	LAKE ROOSEVELT	NONE		(SEE TABLE 2 FOR NEW PROJECT)
7.5	[FAD 41.05]	KOOTENAI INDIAN RESERVATION	NONE		SEE TABLE 2 FOR NEW PROJECT)
7.6	[FAD 41.06]	KOOTENAI RIVER	NONE		SEE TABLE 2 FOR NEW PROJECT)
7.7	[FAD 41.07]	KALISPEL RESERVATION	NONE		(SEE TABLE 2 FOR NEW PROJECT)
7.11	[41.1]	MONTANA PROJECTS	81S-5 83-1 85-6 85-23	ONGOING ONGOING ONGOING COMPLETED	KERR/HUNGRY HORSE EFFECTS ON FLATHEAD KOKANEE LOWER FLATHEAD RIVER FISHERIES STUDY KODTENAI RIVER TRIBUTARIES INSTREAM FLOW STUDY FLATHEAD RIVER FISHERY LOSSES
7.12	[41.3]	STURGEON	83-316 86-50	ONGOING ONGOING	COLUMBIA RIVER WHITE STURGEON STUOY STURGEON STATUS AND HABITAT REQUIREMENTS
Deleted	[41.4]	PEND OREILLE HATCHERY	84-19 85-339 86-120	COMPLETED ONGOING COMPLETED	CABINET GORGE HATCHERY (LAKE PEND OREILLE) KOKANEE STOCK STATUS AND EVALUATION OF CABINET GORGE HATCHERY ENGINEERING EVALUATION OF CABINET GORGE HATCHERY
Deleted	[41.5]	CLARK FORK PROJECTS	83-463	COMPLETED	PAINTED ROCKS RESERVOIR WATER MANAGEMENT PLAN
7.13	[41.6]	KOOTENAI RIVER MATERIALS REMOVAL	NONE		
7.14	[41.7]	DWORSHAK DAM IMPACTS ASSESSMENT	87-99 87-407	ONGOING ONGOING	DWORSHAK DAM IMPACTS ASSESSMENT DWORSHAK IMPACTS ASSESSMENT/RAINBOW/SMALLMOUTH BASS

TABLE 1
FY 1988 WORK PLAN PROJECTS

ONGOING, DEFERRED, AND COMPLETED PROJECTS

<u>ACTION ITEM</u>		TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
1987 PROGRAM	1984 PROGRAM				
7.15	[FAD 41.01]	DRAWDOWN RECOMMENDATIONS	83-465 83-467	ONGOING ONGOING	HUNGRY HORSE RESERVOIR LEVELS LIBBY RESERVOIR LEVELS
Deleted	[40.1]	MITIGATION STATUS REPORTS/ CONSULTATIONS	NONE		CONSULTATIONS AMONG AFFECTED PARTIES SHOULD BEGIN
8.1	[40.2]	LOSS STATEMENTS	83-2 83-464 83-498 84-36 84-37 85-1 86-74 87-43 87-110 87-111 87-406	ONGOING COMPLETED COMPLETED COMPLETED COMPLETED COMPLETED COMPLETED ONGOING ONGOING ONGOING ONGOING	WATER LEVEL IMPACT ON CANADA GEESE HYDRO EFFECTS ON WILDLIFE IN MONTANA WATER LEVEL IMPACTS-FLATHEAD CANADA GEESE WILLAMETTE RIVER PROJECTS WILDLIFE LOSS STUDY PALISADES DAM WILDLIFE LOSS ASSESSMENT BLACK CANYON/ANDERSON RANCH WILDLIFE LOSS STUDY GRAND COULEE WILDLIFE MITIGATION PLAN ALBENI FALLS WILDLIFE LOSS STUDY & MITIGATION PLAN BONNEVILLE WILDLIFE ASSESSMENT/MITIGATION PLAN DWORSHAK WILDLIFE ASSESSMENT/MITIGATION PLAN - IDFG DWORSHAK WILDLIFE ASSESSMENT/MITIGATION PLAN - NPT
8.2	[40.3]	LOSS STATEMENT CONSULTATIONS	NONE		
8.3	[40.4]	MITIGATION PLANS	83-464 86-64 86-73 86-74 87-43	COMPLETED COMPLETED COMPLETED COMPLETED ONGOING	HYDRO EFFECTS ON WILDLIFE IN MONTANA WILLAMETTE RIVER PROJECTS WILDLIFE MITIGATION PLAN UPPER SNAKE PROJECTS WILDLIFE MITIGATION PLAN GRAND COULEE WILDLIFE MITIGATION PLAN ALBENI FALLS WILDLIFE LOSS STUDY AND MITIGATION PLAN
8.4 - 8.7	[FAD 40.01- 40.04]	LIBBY DAM 1987-1991	84-38 84-39 87-55 87-60	ONGOING ONGOING ONGOING ONGOING	URAL-TWEED BIGHORN SHEEP MITIGATION, HABITAT IMPROVEMENT URAL-TWEED BIGHORN SHEEP MITIGATION NW MONTANA WILDLIFE HABITAT ENHANCEMENT MONTANA EASEMENTS/LAND ACQUISITION
8.8 - 8.10	[FAD 40.05- 40.07]	HUNGRY HORSE 1987-1991	87-55 87-60	ONGOING ONGOING	NW MONTANA WILDLIFE HABITAT ENHANCEMENT MONTANA EASEMENTS/LAND ACQUISITION

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TABLE 1
FY 1988 WORK PLAN PROJECTS

ONGOING, DEFERRED, AND COMPLETED PROJECTS

<u>ACTION ITEM</u>		<u>TECHNICAL SUBJECT</u>	<u>PROJECT NUMBER</u>	<u>STATUS</u>	<u>TITLE</u>
<u>1987 PROGRAM</u>	<u>1984 PROGRAM</u>				
8.11	[FAD 40.08]	TRUST FUND	NONE		
9.1	[35.1]	CONTINUE TO APPLY PROGRAM SECTIONS 1204 (a), (b), (c), AND (e) TO ALL NEW PROJECTS.			
9.3	[35.4]	CUMULATIVE EFFECTS	84-41	COMPLETED	CUMULATIVE EFFECTS METHODOLOGY
Deleted	[35.5]	PROTECTED AREAS	84-40	COMPLETED	PACIFIC NORTHWEST RIVERS STUDY
9.4	[35.6]	DEMO - TURBINE INTAKE SCREEN	NONE		(SEE TABLE 2 FOR NEW PROJECT)
10.0- 10.3	[39.2]	EXPENDITURE AND OBLIGATION PLANS AND PROGRAM WORK PLANS. SCHEDULES WITH KEY MILESTONES FOR THE SUBSEQUENT FISCAL YEAR.			
----	----	OTHER PROJECTS	79-2	ONGOING	COLUMBIA RIVER HATCHERY CONTRIBUTIONS TO PACIFIC CHINOOK FISHERY
			81-1	ONGOING	JOHN DAY RESERVOIR REQUIREMENTS FOR CHINOOK SALMON
			82-16	ONGOING	YAKIMA RIVER SPRING CHINOOK ENHANCEMENT STUDY
			85-35	ONGOING	JUVENILE RADIO TAG STUDIES
			86-14	COMPLETED	CABINET GORGE EAGLE STUDY
			87-129	ONGOING	LOWER GRANITE POOL SURVIVAL STUDIES
			87-130	ONGOING	FREEZE-BRAND RECOVERY DATA (MCNARY DAM)
----	----		PROJECT SUPPORT ACTIVITIES	82-13	ONGOING
		83-6		ONGOING	OPERATION/MAINTENANCE OF BPA FISH TAGGING TRAILER
		83-319		ONGOING	NEW FISH TAG SYSTEM
		87-124		COMPLETED	PIT TAG PURCHASE/FY 87 SMOLT MIGRATION RESEARCH
		87-400		ONGOING	PIT TAG AND EQUIPMENT PURCHASE

TABLE 2
FY 1988 WORK PLAN PROJECTS

NEW PROJECTS

<u>ACTION ITEM</u>		TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
1987 PROGRAM	1984 PROGRAM				
4.2	[FAD 34.02]	SUBBASIN HABITAT AND PASSAGE	88-1 12 88-22 88-1 16	NEW NEW NEW	EVALUATION OF UMATILLA BASIN ENHANCEMENT PROJECTS UMATILLA RIVER BASIN TRAP AND HAUL TROUT CREEK OPERATION AND MAINTENANCE
4.5	[34.3]	YAKIMA PASSAGE	88-29 88-111	NEW NEW	OLD RESERVATION CANAL SCREEN STEVENS/NACHES/SELAH SCREEN CONSTRUCTION
4.15	[34. 4]	YAKIMA HATCHERY	88-1 15 88-1 17	NEW NEW	YAKIMA HATCHERY - DESIGN AND CONSTRUCTION YAKIMA HATCHERY - STEELHEAD STUDY
4.17.4	[34. 18]	LOWER CLEARWATER	88-15	NEW	MAINSTEM CLEARWATER RIVER STUDY
7.3	[FAD 41.03]	KOKANEE SALMON HATCHERIES	88-62	NEW	GALBRAITH SPRINGS AND SHERMAN CREEK HATCHERIES
7.4	[FAD 41.04]	LAKE ROOSEVELT	88-63	NEW	LAKE ROOSEVELT TRIBUTARIES HABITAT ENHANCEMENT
7.5	[FAD 41.05]	KOOTENAI INDIAN RESERVATION	88-64	NEW	KDOTENAI RESERVATION STURGEON HATCHERY
7.6	[FAD 41.06]	KOOTENAI RIVER	88-65	NEW	WATER LEVEL FLUCTUATION IMPACTS ON STURGEON

TABLE 2
FY 1988 WORK PLAN PROJECTS

NEW PROJECTS

<u>ACTION ITEM</u>		<u>TECHNICAL SUBJECT</u>	<u>PROJECT NUMBER</u>	<u>STATUS</u>	<u>TITLE</u>
<u>1987 PROGRAM</u>	<u>1984 PROGRAM</u>				
7.7	[FAD 41.07]	KALISPEL RESERVATION	88-66	NEW	PEND OREILLE RIVER FISHERY ASSESSMENT
8.1	[40.2]	LOSS STATEMENTS	88-110 88-12 88-44	NEW NEW NEW	MINIDOKA WILDLIFE LOSS ASSESSMENT LOWER COLUMBIA PROJECTS WILDLIFE ASSESSMENT CHIEF JOSEPH WILDLIFE MITIGATION PLANNING
8.4- 8.7	[FAD 40.01-40.04]	LIBBY DAM 1987-1991	88-43	NEW	LIBBY WILDLIFE MITIGATION/ENHANCEMENT
8.8- 8.10	[FAD 40.05-40.07]	HUNGRY HORSE 1987-1991	88-113	NEW	HUNGRY HORSE WILDLIFE MITIGATION/ENHANCEMENT
9.4	[35.6]	DEMO-TURBINE INTAKE SCREEN	88-114	NEW	ALTERNATIVE TURBINE INTAKE SCREEN DESIGNS

TABLE 3. ABBREVIATIONS USED IN THE WORK PLAN

Abbreviation	Complete Title
Act	Pacific Northwest Electric Power Planning and Conservation Act
BIA	Bureau of Indian Affairs
BKD	Bacterial Kidney Disease
BLM	Bureau of Land Management
BPA	Bonneville Power Administration
CBFWA	Columbia Basin Fish and Wildlife Authority
CCT	Confederated Colville Tribes
Council	Northwest Power Planning Council
CRITFC	Columbia River Inter-Tribal Fish Commission
CSKT	Confederated Salish-Kootenai Tribes
CTUIR	Confederated Tribes of the Umatilla Indian Reservation
EPA	Environmental Protection Agency
EPRI	Electric Power Research Institute
FAD	Final Amendment Document (1987)
FCRPS	Federal Columbia River Power System
FDTWG	Fish Disease Technical Work Group
FY	Fiscal Year
HETWG	Hatchery Effectiveness Technical Work Group
ICFWRU	Idaho Cooperative Fish and Wildlife Research Unit
IDFG	Idaho Department of Fish and Game
IHN	Infectious Hematopoietic Necrosis
IPN	Infectious Pancreatic Necrosis
MDFWP	Montana Department of Fish, Wildlife and Parks
MEG	System Monitoring and Evaluation Work Group
NEPA	National Environmental Policy Act
NF	National Forest
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
PIT	Passive Integrated Transponder
PMFC	Pacific Marine Fisheries Commission
PNUCC	Pacific Northwest Utilities Conference Committee
PNWFVC	Pacific Northwest Fish Health Protection Committee
Program	Columbia River Basin Fish and Wildlife Program
M/WBTWG	Reservoir Mortality and Water Budget Effectiveness Technical Work Group
RPA	Request for Project Authorization
SCS	Soil Conservation Service
STWG	Supplementation Technical Work Group
TWG	Technical Work Group
UCUT	Upper Columbia United Tribes
URB	Umatilla River Basin
URBFC	Upriver Bright Fall Chinook
USACE	U.S. Army Corps of Engineers

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

Abbreviation	Complete Title
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	Columbia River Basin Fish and Wildlife Program Work Plan
WSU	Washington State University
YIN	Yakima Indian Nation

Table 4. ESTIMATED COSTS (\$,000) FOR
1987 AMENDED FISH AND WILDLIFE PROGRAM 1/

A. Estimated Implementation Costs Directly Related to Amended Action Items

	<u>FY87</u>	<u>FY88</u>	<u>FY89</u>	<u>FY90</u>	<u>FY91</u>	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>	<u>FY96</u>	<u>TOTAL</u>
4.6: Provide Power/Repay Operation and Maintenance for Bureau of Reclamation CRP Pumping Project.	30	30	50	90	90	100	100	100	100	100	790
4.17.6: Fund Propagation In Pelton Dam Ladder											
Expense (RPA F1130)	0	400	400	200	200	200	200	200	200	200	2,200
Amendment Application estimated cost	0	260	260	160	160	150	150	150	150	150	1,590
4.2: Yakima Screen Facilities Phase II											
Expense (RPA F2113) 2/	0	0	0	500	1,000	2,000	2,000	1,000	0	0	6,500
4.16.1/4.16.2: Northeast Oregon Spring Chinook Outplanting Facility											
Capital (RPA F2113)	0	350	400	1,000	5,000	5,000	3,000	750	750	750	17,000
Amendment Application estimated cost	200	450	450	5,000	5,000	1,000	1,000	1,000	1,000	1,000	16,100

1/ Estimates included in Tables 4A and 4B have been developed by staff from BPA and the Council, and reviewed by an ad-hoc committee of the CBFWA. These estimates have been developed to convey the magnitude of costs associated with the amended Program. The Action Items listed in Table 4B require further Council action, ranging from review of project work plans to amendment of the Program. Estimates included in Table 4B are less certain than those presented in Table 4A.

2/ Budgeted under Pre-Engineering Design

	<u>FY87</u>	<u>FY88</u>	<u>FY89</u>	<u>FY90</u>	<u>FY91</u>	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>	<u>FY96</u>	<u>TOTAL</u>
6.1: Areas of Emphasis Technical Work Group Funding <u>3/</u>											
a. Water Budget & Reservoir Mortality											
Expense (RPA F1113)											
b. Disease											
c. Hatchery Effectiveness											
d. Supplementation	180	60	60	60	60	60	60	60	60	60	720
6.3: Hatchery Production Data Base <u>3/</u>											
Expense (RPA F1113)											
Hatchery Production Data Base <u>4/</u>	0	200	200	200	200	200	200	200	200	200	1,800
Amendment Application estimated cost	180	105	105	105	105	105	105	105	105	105	1,125
6.4: Natural Production Data Base <u>3/</u>											
Expense (RPA F1112)											
Natural Production Data Base <u>4/</u>	0	445	300	300	300	300	300	300	300	300	2,845
Amendment Application estimated cost	445	445	445	445	445	445	445	445	445	445	4,450
6.5: Area of Emphasis 204 (c)(1) <u>3/5/</u> (Priority Research)											
Expense (RPA F1130)											
Control of Disease Problems Affecting Chinook <u>6/</u>	400	0	0	0	0	0	0	0	0	0	400
Exploring ways to increase hatchery effectiveness <u>6/</u>	200	0	0	0	0	0	0	0	0	0	200

3/ Cost estimated by BPA staff.

4/ Schedule for implementation reflects input from the Ad-Hoc Roles Committee, June 9, 1987. Adjustments to Action Items 7.2, 7.4, 7.5, 7.6, and 7.7 have been made based on additional discussions with UCUT.

5/ No "Priority Research" funding is anticipated in Water Budget/Reservoir Mortality or in Supplementation Research in FY 87.

6/ Funds originally identified for "priority" research in FY 1988-89 have been reallocated to Action Item 6.10, Table 4B.

	<u>FY87</u>	<u>FY88</u>	<u>FY89</u>	<u>FY90</u>	<u>FY91</u>	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>	<u>FY96</u>	<u>TOTAL</u>
8.4 - 8.10: Libby and Hungry Horse Wildlife Mitigation <u>Z/</u>											
7.2: Fund Stream Survey, Build Hatchery, Improve Habitat, and Monitor; Coeur d'Alene Reservation											
Expense (RPA F1201) <u>4/</u>	0	0	150	80	80	100	100	400	200	100	1,210
Amendment Application estimated cost	200	130	130	175	215	74	74	74	74	74	1,220
7.3: Design, Construct, and Operate Two Kokanee Hatcheries (Galbraith Springs, and Sherman Creek, Lake Roosevelt). Evaluate Hatcheries											
Capital (RPA F1209)	0	300	500	4,000	250	250	250	250	250	250	6,300
Amendment Application estimated cost	0	300	1,200	1,200	125	125	125	125	125	0	3,325
7.4: Design, Construct, and Operate Habitat and Passage Improvement Projects on Tributaries to Lake Roosevelt. Monitor Program.											
Expense (RPA F1204) <u>4/</u>	0	100	100	200	200	200	100	100	100	0	1,100
Amendment Application estimated cost	0	0	180	180	205	205	205	0	0	0	975

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- 4/ Schedule for implementation reflects input from the Ad-Hoc Roles Committee, June 9, 1987. Adjustments to Action Items 7.2, 7.4, 7.5, 7.6, and 7.7 have been made based on additional discussions with UCUT.
- Z/ Funds to implement Libby and Hungry Horse Mitigation (Action Items 8.4 - 8.10) are budgeted under ongoing project numbers 87-055 and 87-060, and under new project numbers 88-43 and 88-113.

	<u>FY87</u>	<u>FY88</u>	<u>FY89</u>	<u>FY90</u>	<u>FY91</u>	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>	<u>FY96</u>	<u>TOTAL</u>
7.5: Design, Construct, and Operate a Sturgeon Hatchery on the Kootenai Indian Reservation. Evaluate effectiveness.											
Expense (RPA F1202) 4/	0	100	60	60	50	50	50	50	50	50	520
Amendment Application estimated cost	0	150	150	59	59	59	59	59	59	59	713
7.6: Assess Impacts of Water Level Fluctuations on Sturgeon in the Idaho Portion of the Kootenai River.											
Expense (RPA F1202) 4/	0	150	150	150	150	100	0	0	0	0	700
Amendment Application estimated cost	0	0	56	56	56	56	56	56	0	0	336
7.7: Assess Fishery Improvements on the Pend Oreille River within Boundaries of the Kalispell Reservation.											
Expense (RPA F1202) 4/	0	150	150	150	0	0	0	0	0	0	450
Amendment Application estimated cost	0	84	84	84	0	0	0	0	0	0	252
SUBTOTAL Table 4A. BPA estimates	810	2,285	2,520	6,990	7,580	8,560	6,360	3,410	2,210	2,010	42,735
Amendment application estimated cost	1,835	2,514	4,070	8,114	7,520	4,379	4,379	3,174	2,118	1,993	40,096

4/ Schedule for implementation reflects input from the Ad-Hoc Roles Committee at a June 9, 1987, meeting. Adjustments to Action Items 7.2, 7.4, 7.5, 7.6, and 7.7 have been made based on additional discussions with UCUT.

B. Estimated Implementation Costs Associated With Undefined Aspects of Amended Action Items

	<u>FY87</u>	<u>FY88</u>	<u>FY89</u>	<u>FY90</u>	<u>FY91</u>	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>	<u>FY96</u>	<u>TOTAL</u>
6.7 (and 6.2): Fund Supplementation Research from Five-Year Work Plan <u>4/</u>											
Expense (RPA F1130)	0	1,000	1,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	16,000
6.2: Area of Emphasis, Technical Work Group 5-year Research Work Plan Implementation.											
Fish Disease											
Fish Health Studies.	0	250	2,750	3,000	3,000	3,000	3,000	3,000	3,000	3,000	24,000
Hatchery Effectiveness											
Hatchery Effectiveness Studies and Implementation.	0	1,000	3,000	3,000	5,000	5,000	7,000	7,000	7,000	7,000	45,000
22 Water Budget and Reservoir Mortality <u>4/</u>											
Water Budget Effectiveness Studies	0	600	600	900	1,200	1,200	1,200	1,200	1,200	1,200	9,300
Reservoir Mortality Studies	0	250	300	800	800	800	800	800	800	800	6,150

4/ Schedule for implementation reflects input from the Ad-Hoc Roles Committee, June 9, 1987. Adjustments to Action Items 7.2, 7.4, 7.5, 7.6, and 7.7 have been made based on additional discussions with UCUT.

	FY87	FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95	FY96	TOTAL
1.2: System Plans by 1989 <u>8/</u>	0	0	0	0	5,000	6,000	6,000	6,000	6,000	6,000	35,000
6.10: System Monitoring and Evaluation <u>9/</u>	0	500	900	1,000	1,000	1,000	1,000	1,000	1,000	1,000	8,400
8.0: Wildlife Mitigation - OR/WA/ID <u>10/</u>											
Expense (enhancement)	0	0	0	1,500	1,500	1,500	1,500	1,500	1,500	1,500	10,500
Capital (land acquisition)	0	0	0	5,000	5,000	5,000	5,000	5,000	5,000	5,000	35,000
7.8: Resident Fish Substitution Projects Above Hells Canyon Dam <u>11/</u>	--	--	--	--	--	--	--	--	--	--	4,200
SUBTOTAL Table 4B	0	3,600	8,550	17,200	24,500	25,500	27,500	27,500	27,500	27,500	193,550
GRAND TOTAL - TABLE 4A AND 4B (BPA estimates only)	810	5,885	11,070	24,190	32,080	34,060	33,860	30,910	29,710	29,710	236,285

8/ Subbasin Planning activities are assigned to the Council for implementation. It is reasonable to anticipate related BPA expenditures. Such actions will result in plans for increased fish production in as many as 33 subbasins. BPA may be expected to fund habitat and passage improvement or hatchery-related projects. The Program inventories more than 250 habitat and/or passage improvement subbasin or project sites at which one or more of 16 habitat or passage problems may be corrected. We anticipate that the first year for implementation of subbasin plans will be FY 90.

9/ Implementation of system monitoring and evaluation activities has not been assigned by the Council. It is reasonable to anticipate related BPA expenditures for these activities. Funding shown for FY 1988-89 was reallocated from Action Item 6.5, Table 4A.

10/ No Action Item is currently in the Program to implement wildlife mitigation for facilities in Oregon, Washington, and Idaho. The funds displayed in Table 4b anticipate the Council's amending the Program. These figures are ten-year cost estimates for Grand Coulee, Willamette, and Palisades mitigation plans. Also assumes 50% of project costs allocated to hydro.

11/ Action Item 7.8 estimated by PNUCC for implementation of resident fish substitution above Hells Canyon total \$4.2 million plus \$14.4 K annual operation and maintenance.

II. FY 1988 BPA BUDGET ALLOCATION

BPA's FY 1988 Work Plan will continue to emphasize anadromous fish, with \$30.8 million in planned expenditures in FY 1988 directed at ongoing anadromous fish projects. However, the 1987 Council amendments to the Program add significant new activities for BPA implementation. These amendments range from specific activities which are ready for implementation to numerous planning activities.

BPA has identified and plans to initiate 19 new projects during FY 1988 (See Table 2). These "new start" activities include offsite enhancement, turbine intake screen design, wildlife, and resident fish projects. Eight offsite enhancement projects will address habitat and passage improvements in the Umatilla, Yakima, and Lower Clearwater subbasins as well as design and construction of the Yakima Hatchery. One project will investigate alternative turbine intake screen designs suitable for application at small hydroelectric projects.

A total of five new wildlife projects will receive \$1.1 million for wildlife loss assessment, mitigation planning, and enhancement planning at a similar number of Federal Columbia River hydroelectric projects. Five new Resident Fish projects costing \$2.8 million will involve kokanee and sturgeon artificial propagation, habitat enhancement, and reservoir operations impacts. All new Resident Fish projects are located in areas above Chief Joseph Dam on the Upper Columbia River.

As mentioned earlier, the amended Program has also identified several new planning activities. These involve several Technical Work Groups which are required to produce Five-Year Research Work Plans. The estimated costs of implementing research activities in the Five-Year Plans are contained in Tables 4A and 4B. Table 4A contains cost estimates for those activities which are detailed sufficiently to determine reasonable cost estimates and schedules. Table 4B lists cost estimates for general activities which might reasonably be expected from the ongoing planning process. As explained elsewhere in this Work Plan, BPA has taken steps to accommodate these planning activities in the FY 1988 Work Plan. Generally, this has been accomplished by providing the flexibility necessary to incorporate implementation of refinements as they become available.

III. FISH AND WILDLIFE DIVISION ORGANIZATION AND STAFF

The Division of Fish and Wildlife develops, coordinates, and manages BPA's implementation of the Program. The Division was reorganized and expanded in 1986 from two to three branches (Project Management, Fisheries Integration, and Biological Studies). The Biological Studies Branch was divided into two sections. Figure 1 contains an organization chart for the Division. Branch titles and functions are as follows:

Project Management Branch - This branch implements, manages, and coordinates major Fish and Wildlife projects, i.e., those requiring significant BPA internal and external coordination over an extended period of time. Such projects are often characterized by the need for environmental analysis; the existence of multi-agency jurisdiction; a requirement for Congressional approval under the Northwest Power Act; the need for feasibility, design, and construction planning; the need for operation and maintenance or other agreements; or the need for significant policy or legal analysis. Examples of "major projects" are the Yakima and Umatilla Basins.

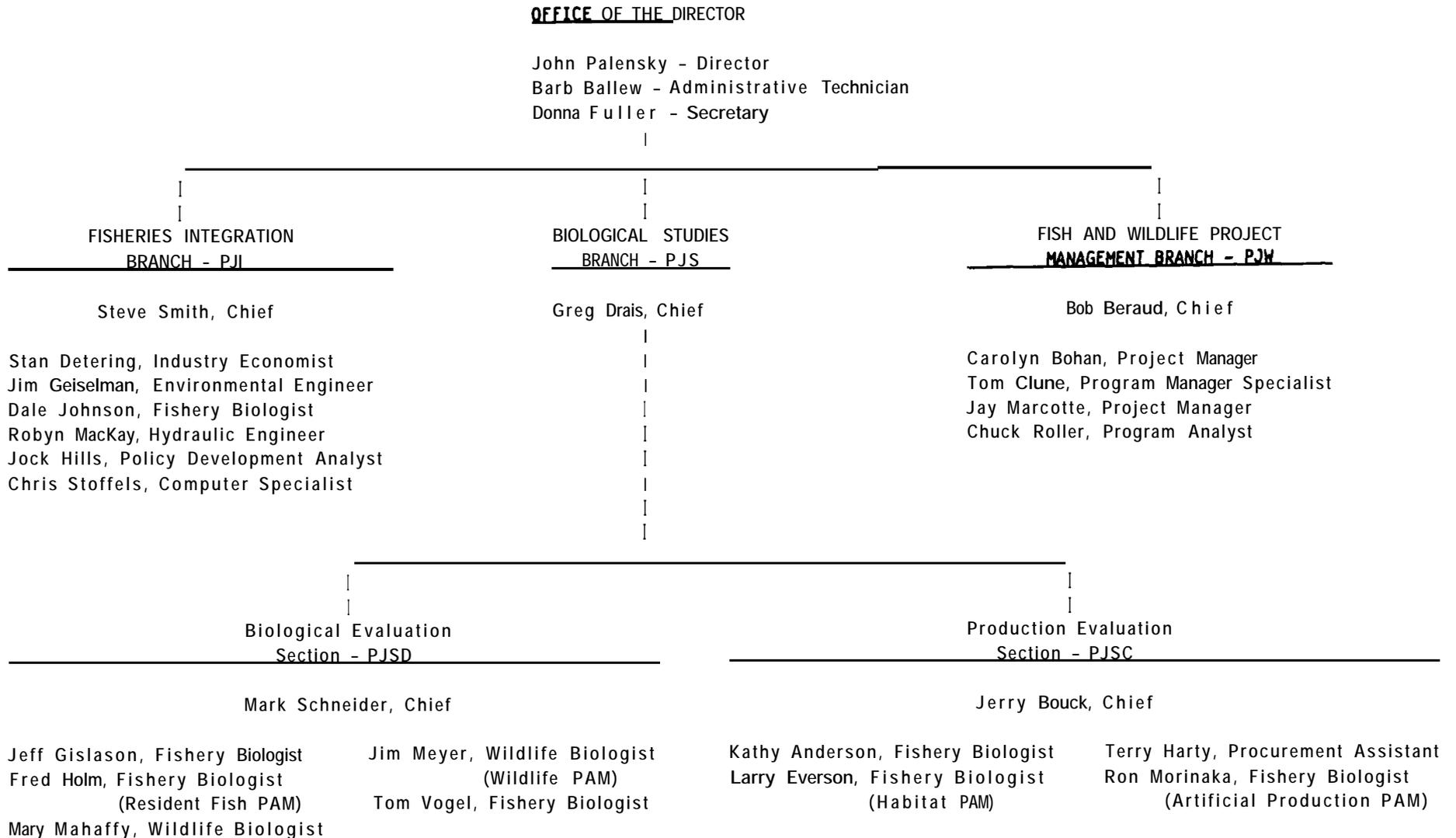
Fisheries Integration Branch - This branch focuses on the Federal Columbia River Power System (FCRPS) operational issues and mainstem passage and policy issues. Environmental (fisheries) analysis regarding hydroelectric operations is also provided. Branch staff participate on the Reservoir Mortality and Water Budget Effectiveness Technical Work Group (M/WBTWG).

Biological Studies Branch - This branch develops and administers research, design, and development contracts and other activities aimed at protecting, mitigating, and enhancing fish and wildlife resources. It also oversees and develops work plans used to evaluate effectiveness of Fish and Wildlife funding actions and determines future funding direction.

Biological Evaluation Section - Manages BPA's implementation of measures found in Sections 900, 1000, and 1400 of the Program, analyzing such measures as they relate to agency policy and procedures and to other measures and sections of the Program. Oversees the development of the Program Work Plans. Coordinates BPA funding and participation in the Technical Work Groups planning research in the Council's Areas of Emphasis. Section staff participate in the Supplementation Technical Work Group (STWG).

Production Evaluation Section - Manages BPA's implementation of artificial and natural production measures of the Program (Section 700), analyzing such measures as they relate to agency policy and procedures and to other measures and sections of the Program. Section staff participates in the Fish Disease and Hatchery Effectiveness Technical Work Groups (FDTWG, HETWG).

FIGURE 1. ORGANIZATION CHART: DIVISION OF FISH AND WILDLIFE ^{1/}



^{1/} A reorganization of the Division of Fish and Wildlife is anticipated in FY 1988.

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.

PROGRAM AREA MANAGER (PAM)

Individual who, based on biological expertise and skill, is charged with ensuring the coordinated development and implementation of measures within (and among) specific Program areas: e.g., Resident Fish, Wildlife, Habitat and Passage Improvement, and Artificial Production. The PAM is not necessarily the Project Officer or Contracting Officer's Technical Representative (COTR) for all projects in the respective Program area.

PROJECT OFFICER

Biologist responsible for the management of "non-major" projects; often serves as the COTR for any contracts associated with the project. The Project Officer could also have PAM responsibilities.

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.

IV. PROGRAM PLANS BY ACTION ITEMS

ANADROMOUS FISH ACTION ITEMS AND TECHNICAL SUBJECTS

2.1 WATER BUDGET MEASURES [33.1]

- 303(a) 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. [Abstract] [304(a)]
- 303(b) 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. [Abstract] (304(b))
- 303(c) 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. [Abstract] [304(b)]

ACTION ITEM ACTIVITY SUMMARY:**Objectives:**

To fund the fish and wildlife agencies and Tribes to develop hydrosystem expertise and a fish passage data information system 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 system 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

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>DATE COMPLETED</u>	<u>RESULTS/CONCLUSIONS</u>
83-491	Water Budget Manager: Columbia Basin Tribes - CRITFC	January 1987	Project was negotiated with the agencies and Tribes and terminated in January 1987. The work continues under a new Cooperative Agreement, Project 87-127 (see below).
83-536	Water Budget Manager: Federal and State Fish and Wildlife Agencies - PMFC Objectives: Shape flows between April 15 and June 15 to reduce salmon and steelhead mortality associated with passage through the hydrosystem.		

II. FY 1987 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
83-127	Smolt Monitoring and Water Budget Programs - PMFC and CRITFC Project Officer: D. Johnson 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)	<u>Date initiated:</u> February 1987 <u>Results/Conclusions</u> : The Fish Passage and Data Information System were operated in 1987; available Water Budget flows were shaped to benefit the outmigration and adult returns.	1. Continuing: BPA will continue to fund the operation of the Fish Passage Center and provide Water Budget flows for shaping annually. 2. Continuing: Contractors will guide the smolt monitoring program and provide an annual report by November 1 of each year, and a smolt monitoring program by December 1 of each year.

III. NEW PROJECTS

None.

2.2 SMDLT MONITORING PROGRAM C33. 21

- 303(d) 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. [Abstract] [304(d)]

ACTION ITEM ACTIVITY SUMMARY:**Objectives:**

To determine where all major groups of hatchery and wild fish are in the hydrosystem and thus to implement the Water Budget and communicate spill requests.

Background and Progress to Date:

Starting in the 1970's, 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

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>DATE COMPLETED</u>	<u>RESULTS/CONCLUSIONS</u>
86-60	Smolt Monitoring Program - NMFS	January 1987	Project was negotiated with the agencies and Tribes and terminated. The work continues under Project 87-127, a Cooperative Agreement (see below).
	Objectives: Operate and maintain the Fish Passage Data Information System at the Fish Passage Center.		
84-17	Fish Marking: Chinook and Steelhead at Idaho Hatcheries - IDFG	January 1987	Project was negotiated with the agencies and Tribes and terminated. The work continues under Project 87-127.
	Objectives: Mark Idaho hatchery groups for the smolt monitoring program.		
84-54	Juvenile Salmonid Monitoring at Rock Island Dam - Chelan County Public Utility District	January 1987	Project was negotiated with the agencies and Tribes and terminated. The work continues under Project 87-127.
	Objectives: Monitor the juvenile outmigration out of the mid-Columbia by sampling at Rock Island Dam for the Smolt Monitoring Program.		
86-119	Freeze Branding Salmon and Steelhead at Lyons Ferry Hatchery - WDF	January 1987	Project was negotiated with agencies and Tribes and terminated. The work continues under Project 87-127.
	Objectives: Mark the Lyons Ferry salmon and steelhead groups for the smolt monitoring programs.		

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>DATE COMPLETED</u>	<u>RESULTS/CONCLUSIONS</u>
80-I	Smolt Monitoring Program - PMFC Objectives: Gather information on the movement of fish and the status of the juvenile outmigration in the Columbia River Basin.	1986	Project was negotiated with the agencies and Tribes and terminated. The work continues under Project 87-127.

II. FY 1987 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
84-14	Smolt Monitoring at Federal Dams - NMFS Project Officer: D. Johnson Objectives: Monitor smolt migrations at Lower Granite, Lower Monumental, McNary, John Day, and Bonneville dams as part of the smolt monitoring program.	Date initiated: 1984 Results/Conclusions: Monitoring was conducted at each facility to assist the Fish Passage Managers and project operators to integrate fisheries resources with the hydrosystem.	1. Continuing: BPA will continue to fund these activities. 2. The contractor will provide an annual operational report and recommend changes as needed to the smolt monitoring schedule and facilities.
83-323	Smolt Condition and Timing of Arrival at Lower Granite Dam - IDFG Project Officer: D. Johnson Objectives: Determine the condition and timing of arrival of all major Idaho and north-eastern Oregon stocks to the	Date initiated: 1983 Results/Conclusions: Whitebird trap was operated due to low flows: Lewiston trap was ineffective at lower flows; Clearwater trap was evaluated using the juvenile radio tag. Passive Integrated Transponder (PIT) tags were used for travel time information to Lower Granite dam.	1. Continuing: BPA will fund the operation, maintenance, and evaluation of the Clearwater, Lewiston, and Whitebird traps. 2. Continuing: Contractor will provide an annual operational and evaluation report, and operate and maintain the three traps.

PROJECT
NUMBER

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES
FOR FY 1988 AND BEYOND

83-323
(cont.)

head of Lower Granite pool.
Calculate travel times from
Lewiston to Lower Granite dam
for salmon and steelhead.

87-127

Smolt Monitoring and Water
Budget Programs - PMFC and
CRITFC

Project Officer: D. Johnson

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)

Date initiated: February 1987

Results/Conclusions: The Fish Passage
Center and Data Information System were
operated in 1987 and available Water
Budget flows were shaped to benefit the
outmigration and adult returns.

1. Continuing: BPA will fund the operation of the Fish Passage Center and provide Water Budget flows for shaping annually.
2. Contractors will continue to guide the smolt monitoring program and provide an annual report by November 1 of each year, and a smolt monitoring program by December 1 of each year.

87-401

Correlation of Biological
Characteristics of Smolts With
Survival and Travel Time -
USFWS

Project Officer: D. Johnson

Objectives: Collect stress,
smoltification, and disease data
on marked groups of fish to
study assumptions and explain
variations in results.

Date initiated: 1987

Results/Conclusions: Data has been
collected and is being processed for
analysis.

1. Continuing: BPA has funded the project through to completion (February 1988) with FY 1987 funds.
2. Continuing: Contractor will continue to process samples and analyze data through 1987 and complete the final report in FY 1988.
3. Future funding of the type of work conducted under this project will be determined by the M/WBTWG Five-Year Research Work Plan.

III. DEFERRED PROJECTS

PROJECT NUMBER	TITLE	ANTICIPATED START DATE	REASON FOR DEFERRAL
87-XXX	System-wide Designs for Evaluating Smolt Quality and Disease Problems Pertaining to Transportation Evaluation Studies <u>Project Officer:</u> D. Johnson	1989	Work was deferred because the TWG's were being developed and because of budget constraints. Work should be coordinated with the USACE fish passage research program.
87-103	Effect of Short-Term Flow Fluctuations on Smolts <u>Project Officer:</u> D. Johnson	1988	Work needed to be discussed and evaluated in the MWBTWG. Funds are available for FY 1988 funding.
87-61	Estimating Reservoir Mortality <u>Project Officer:</u> D. Johnson	1988	Work was conducted on estimating survival through the Lower Granite pool under Project 87-127. Future work may be conducted under Project 87-61 if approved through the TWG process.

IV. NEW PROJECTS

None.

----- RESEARCH

(Former Action Item 39.1)

- 403(d)(1) BPA shall continue its existing study and shall fund any further studies necessary to investigate juvenile salmon and steelhead losses to predators while the fish are migrating through the Columbia and Snake river reservoirs. The use of Squoxin for control of squawfish shall be evaluated as part of this study.
[404(c)(1)1

TECHNICAL SUBJECT ACTIVITY SUMMARY:

Objectives:

To determine the losses to migrating salmonids in the Columbia River reservoirs caused by predation from squawfish, walleye, and smallmouth bass and to determine methods to reduce predation.

Background and Progress to Date:

Building dams and impounding water have changed the natural flows of the Columbia River. These flow changes have resulted in increased populations of resident fish, some of which prey on migrating juvenile salmon and steelhead. Although some research has been done on this problem, further studies are necessary to document the importance of predation as a cause of juvenile mortality.

Plans:

Projects are ongoing to determine the extent of predation in the John Day pool. Final reports, to be written in FY 1988, will include recommended predator control measures.

I. COMPLETED PROJECTS

None

II. FY 1987 ONGOING PROJECTS

PROJECT NUMBER	TITLE	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
82-3	Feeding Activity, Rate of Consumption, Daily Ration, and Prey Selection of Major Predators in the John Day Reservoir - USFWS <u>Project Officer:</u> F. Holm <u>Objectives:</u> Determine the importance of each of four major predatory fish (squawfish, walleye, smallmouth bass, and channel catfish) to the overall problem of predation on migrating juveniles.	<u>Date initiated:</u> 1983 <u>Results/Conclusions:</u> Food habits data for the major predators have now been analyzed and summarized for all years (1983-1986). Northern squawfish are the most significant predator on juvenile salmonids, followed by walleye, channel catfish, and smallmouth bass. The most intensive predation occurs by northern squawfish in the boat-restricted zone below McNary Dam in July, when up to 60% of all juvenile salmonids entering John Day Reservoir may be consumed by predators. Annual reports are available.	1. 1988: Final report will include development of a predation dynamics model to be used by the MMBTWG to develop mechanical and/or biological alternatives for control of predation on salmonid smolts.
82-12	Distribution, Abundance, and Population Dynamics of Northern Squawfish, Walleye, Smallmouth Bass, and Channel Catfish In John Day Reservoir - ODFW	<u>Date initiated:</u> 1983 <u>Results/Conclusions:</u> Distribution, abundance and population parameters of each species have been examined for years 1983-1986. Squawfish are the most abundant predator, followed	1. 1988: Same as above (Reports will be combined)

PROJECT
NUMBER

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES
FOR FY 1988 AND BEYOND

82-12
(con't.)

Project Officer: F. Holm

by smallmouth bass, channel catfish,
and walleye. Annual

Objectives: Estimate the
populations of predators in the
forebay, tailrace, and reservoir
of John Day Dam.

reports are available.

III. NEW PROJECTS

None.

3.1 ALTERNATIVE CONDUIT SYSTEM FOR JUVENILE FISH [32.1]
(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. [404(c)(3)]

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. To date, the USACE has completed plans and specifications for three test flumes, flume construction, preoperational testing, and hydraulic testing of flumes. The USACE plans to complete the final report by October 1, 1987. The ICFWRU has completed fish flume tests.

Plans:

Analysis of data is planned to be completed by October 30, 1987. BPA will publish the results of this study by the end of calendar year 1987. Results should have generic applicability to other hydroelectric facilities with similar fish passage problems.

1. COMPLETED PROJECTS

None.

II. FY 1987 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
86-47	Conduit Bypass Evaluation - USACE/ICFWRU <u>Project Officer</u> : D. Johnson Objectives: Design, construct, and test alternative types of fish bypass flumes. Compare stress levels and descaling of chinook smolts among flume types.	<u>Date initiated</u> : October 1, 1986 <u>Results/Conclusions</u> : Preliminary results indicate that stress levels and descaling in chinook smolts are not significantly different among the three test flumes.	1. December 1987: Publish final report. 2. BPA has funded the project to completion with FY 1987 funds.

III. NEW PROJECTS

None.

- 4.1 ELLENSBURG TOWN DIVERSION DAM FISHWAY AND BYPASS [34. 4]
 (Design: October 1987)
 (Construction Completed: October 1988)
 (Consider Delay if Consolidation Suggests Benefits)

- 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 [904(d)(5)]

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

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

Background and Progress to Date:

BPA will fund the construction of the Ellensburg Town fish screens to improve the outmigration of juvenile salmon and steelhead from the Yakima River system. BPA will not fund the proposed fishway because no fishway presently exists, and the Ellensburg Water Company had a pre-Regional Act obligation to fund fishway construction. Preliminary design of the fish screens is ongoing.

Plans:

See Project 87-47 in the following table.

I. COMPLETED PROJECTS

None.

II. FY 1987 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
87-47	Ellensburg Screens Construction - USBR	<u>Date initiated:</u> June 1986 <u>Results/Conclusions:</u> Design ongoing.	1. Complete design by March 1988. 2. Begin construction about August 1988.
	<u>Project Officer:</u> T. Clune		
	<u>Objectives:</u> Improve fish screen facility on Ellensburg Water Company Canal.		

III. NEW PROJECTS

None.

**4.2 HABITAT AND PASSAGE IMPROVEMENT PROJECTS [34.02]
(Consult with Project Sponsors on Need; Complete by 1991)**

703(c)(1) 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. [704(d)(1)]

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 64 BPA-funded habitat and tributary passage improvement projects are listed in Table 5. including 24 completed projects, 26 ongoing projects, 3 new projects, 10 deferred projects, and 1 terminated project. Due to the large number of projects involved in the implementation of Program Measure 703(c)(1), the diversity of activities included, and the continuous implementation support of BPA to 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 has been used in the current Work Plan.

Table 5 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.

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 them by 1991. BPA has developed a Habitat Implementation Plan Outline and asked all current Project Leaders to complete these plans in FY 1988. BPA funding in FY 1988 will be contingent upon completion of plans for all ongoing and new projects. These plans are necessary to plan, define, and schedule habitat improvement projects better and to determine the funding required for completion of the projects.

Table 5: Habitat Improvement and Passage Enhancement
Measure 703(c)(1)
Status Report

PROJECT NUMBER	PO ^{1/} - PM ^{2/}	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
I. RESEARCH PROJECTS					
82-1	TSV	Inventory of Nez Perce Reservation Streams - NPT Objective: To compile physical and biological data of rivers and creeks flowing through the Nez Perce Reservation; to develop protection and enhancement measures for the appropriate systems.	Project completed.	1/12/82	---
83-373	DEJ	Oeschutes River Spawning Gravel Study - Consultant/ODFW Objective: Determine the present quantity, quality, and distribution of fall chinook and summer steelhead spawning gravel habitat on a 106-km reach of the Oeschutes River below Pelton Dam. The data will be compared to existing baseline data and a quantitative assessment made on the extent and magnitude of the changes.	Project completed.	A-7/27/83 B-9/1/83	--- ---
82-14	TSV	Development of New Concepts in Fish Ladder Design - WSU Objective: To assess and document current practices in fish ladder design and to explore the development of new and more efficient fish ladder design(s) in terms of fish passage, water quantity, and economics.	Project completed.	6/4/82	---

1/ PO = Project Officer: KJA/K. Anderson, GRB/G. Bouck, LBE/L. Everson, JCG/J. Gislason, DEJ/D. Johnson, TSV/T. Vogel
2/ PM = Project Manager: CAB/C. Bohan, TJC/T. Clune, JGM/J. Marcotte

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

I. EVALUATION AND MONITORING PROJECTS

82-9	LBE	John Day River Habitat Improvement Evaluation - ODFW Objective: Measure changes in spring chinook and summer steelhead production due to habitat improvement projects: contrast fishery benefits from enhancement activities with costs of design and construction in Clear/Granite Creeks, Camp Creek, and Deer Creek.	Project terminated on 8/30/84.	6/4/82	---
83-7	LBE	Evaluation of Idaho Habitat Improvement Projects - IDFG Objective: (a) Evaluate the juvenile chinook and steelhead production benefits of habitat and passage improvement projects in the Clearwater and Salmon River basins in order to produce the offsite mitigation record for Idaho. (b) Implement passage projects on the South Fork Salmon River, including Boulder and Johnson creeks.	Field sampling in progress.	8/15/83	3/31/88
87-113	LBE	Habitat Evaluation and Monitoring/Oregon Objective: Develop an agreement with the fish and wildlife agencies and/or Tribes to monitor the biological effectiveness of projects in Oregon.	FY 1987 implementation was deferred pending guidance from the MEG.	---	---
87-114	LBE	Habitat Evaluation and Monitoring/Washington Objective: Develop an agreement with the fish and wildlife agencies and/or Tribes to monitor the biological effectiveness of projects in Washington. Tucannon River implementation will require a monitoring program.	FY 1987 implementation deferred until 1990 at the request of the fish and wildlife agencies.	FY 1990	---

1/ PO = Project Officer: KJA/K. Anderson, GRB/G. Bouck, LBE/L. Everson, JCG/J. Gislason, DEJ/D. Johnson, TSV/T. Vogel

2/ PM = Project Manager: CAB/C. Bohan, TJC/T. Clune, JGM/J. Marcotte

PROJECT NUMBER	1/ PO -	2/ PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT	TERM
					START DATE	RENEWAL DATE
86-78	LBE		Habitat Evaluation and Monitoring/Columbia Basin - Consultant Objective: Summarize and report the physical, biological, and cost effectiveness of projects being constructed throughout the Columbia River Basin.	Project ongoing.	9/10/86	10/1/88
84-11	LBE		Clackamas/Hood River Habitat Enhance ment Program - USFS/Mt. Hood NF Fish Creek Evaluation Objective: To evaluate and quantify drainage-wide changes in habitat and smolt production as a result of habitat improvement.	Evaluation is ongoing.	4/1/84	3/31/88
86-107	KJA		Evaluation and Monitoring Workshop - Consultant Objective: Workshop will develop specific recommendations and criteria for evaluating and monitoring stream habitat enhancement efforts.	Project completed.	2/10/86	---
87-115	LBE		Grande Ronde Monitoring - NPT Objective: Monitor and evaluate habitat improvement projects in the Grande Ronde River Subbasin.	FY 1987 implementation deferred pending guidance from the MEG.	---	---

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2/ PM = Project Manager: CAB/C. Bohan, TJC/T. Clune, JGM/J. Marcotte

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	LBE	Clackamas/Hood River Habitat Enhancement - Mt. Hood NF		4/1/84	3/31/88
		<p>Collawash River Falls Passage</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> 10 miles</p> <p><u>Species:</u> Spring chinook, winter and summer steelhead, and coho</p> <p><u>Benefit:</u> Increase of 100,546 smolts and 3,087 adults</p>			
		<p>Collawash River Drainage Habitat Improvement; Hot Springs Fork Subdrainages</p> <p><u>Objective:</u> Improve fish passage at a 9-foot falls in Hot Springs Fork at RM 7.1. Install instream structures to improve spawning habitat and effective cover.</p> <p><u>Improvement:</u> Instream structure and passage</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> 7,270 smolts, 390 adults</p>	<p>FY 1986/1987 activities included analysis of the engineering feasibility and economic efficiency for each passage option. The preferred design option was selected. Construction began August 1987. Site preparation has been completed. Drilling and blasting will continue through October 1987. Remaining concrete construction and passage evaluation will be completed in August 1988. Modifications and O&M may be needed in 1989.</p> <p>FY 1986/1987 activities included passage improvements at falls at RM 7.1 and installation of instream structures. Completed 1.5 of instream structures, Pansy Creek tributaries, Nohorn Creek passage, and Hot Springs Fork Creek passage. Instream structure construction will continue from 1988 to 1990 to complete the 10.6 miles.</p>		

1/ PO = Project Officer: KJA/K. Anderson, GRB/G. Bouck, LBE/L. Everson, JCG/J. Gislason, DEJ/D. Johnson, TSV/T. Vogel
 2/ PM = Project Manager: CAB/C. Bohan, TJC/T. Clune, JGM/J. Marcotte

PROJECT NUMBER	1/ PO -	2/ PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
					START DATE	RENEWAL DATE
84-11 cont.			<p>Lake Branch/West Fork Improvement</p> <p>Objective: Improve quality of spawning habitat and low-flow rearing habitat; provide unobstructed passage through the project area.</p> <p>Improvement: Instream structure</p> <p>Habitat: 10.0 miles</p> <p>Species: Summer and winter steelhead</p>	FY 1986/1987 construction activities included installation of log sills and blasting of pools in lower Lake Branch and installation of instream structures in McGee Creek, a tributary to the West Fork Hood River. Construction has been completed on about 4 miles. Lake Branch construction - completion in 1988. West Fork construction - completion in 1989.		
			<p>Fish/Wash Creek Habitat Improvement</p> <p>Objective: Improve spawning and rearing habitat for salmon and steelhead through habitat improvement measures.</p> <p>Improvement: Instream structure</p> <p>Habitat: 4 miles</p> <p>Species: Spring chinook, coho, winter and summer steelhead, and resident trout.</p>	FY 1986/1987 construction activities included development of side channel and excavation of ponds (alcoves) for rearing. Fish Creek construction - completion by October 1987. Upper Fish Creek (1 mile) - completion in 1988. Wash Creek (3 miles) - completion in 1988. Evaluation and modification in 1989. Final modifications and O&M in 1990.		
			<p>Lower Oak Grove Fork Habitat Improvement</p> <p>Objective: Improve fish rearing and spawning habitat in the lower 1.5 miles of stream.</p> <p>Improvement: Instream structure</p> <p>Habitat: 1.5 miles</p> <p>Species: Winter and summer steelhead, chinook and coho salmon</p> <p>Benefit: 3,993 smolts, 7.5:1</p>	FY 1986/1987 construction activities included construction of boulder berms and improvement of rearing habitat in two side channels. Construction will be completed in 1988. Final modification and O&M in 1989.		

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2/ PM = Project Manager: CAB/C. Bohan, TJC/T. Clune, JGM/J. Marcotte

PROJECT NUMBER	1/ 2/ PO - PM		TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
					START DATE	RENEWAL DATE
84-11 cont.			<p>Fifteenmile Creek Basin Habitat Improvement</p> <p>Objective: Improve adult and juvenile fish passage, spawning and rearing habitat, and water quality conditions.</p> <p>Improvement: Passage and instream structure</p> <p>Habitat: 120 miles (30 mi NFS lands)</p> <p>Species: Wild winter steelhead</p>	FY 1987 activities on USFS land included planning on Ramsey Creek. USFS is cooperating with ODFW to complete Fifteenmile Creek Basin Plan by FY 1988. Plan completion and acceptance will determine construction activities on both Federal and private lands to 1991.		
86-90	CAB		<p>Little Fall Creek Fish Passage - Consultant</p> <p>Objective: Construct fish passage facility and blast jump pools to correct passage problems.</p> <p>Improvement: Structure and passage</p> <p>Habitat: 14 miles</p> <p>Species: Salmon and steelhead</p> <p>Benefit: Potential of adults: Steelhead adults: 543 Spring chinook adults: 256</p>	Construction of passage facility completed. O&M activities for a three year period begun in FY 1987.	7/22/06	8/31/90
<u>Fifteenmile Creek Subbasin</u>						
06-79			<p>Fifteenmile Creek Habitat Improvement - ODFW</p> <p>Objective: Increase wild winter steelhead production to levels which approximate historic maximum run sizes.</p> <p>Improvement: Passage and instream structure</p> <p>Habitat: 120 miles</p> <p>Species: Wild winter steelhead</p> <p>Benefit: 7 1 5 smolts/year</p>	Construction activities started in FY 1987 and will continue through FY 1988. Future work relies upon the results of initial biological monitoring.	9/87	3/31/88

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2/ PM = Project Manager: CAB/C. Bohan, TJC/T. Clune, JGM/J. Marcotte

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

Hood River Subbasin

83-341	DEJ	West Fork Hood River Passage - ODFW	Project completed.	4/1/83	---
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Objective: Design and construct a fish passage facility to correct passage problems created by a natural waterfall on the West Fork of the Hood River. Falls block migration of adult salmon and steelhead to potential spawning and rearing area.

Improvement: Structure and passage

Habitat: 23 miles

Species: Sumner steelhead, spring chinook, fall chinook, and coho

Benefit: 2,000 adult steelhead

Deschutes River Subbasin

81-108	JCG	Habitat Quality and Anadromous Fish Production Potential on the Warm Springs Indian Reservation - Warm Springs Tribe.	Phase I completed in 1982. Phase II completed in FY 1987. Phase III is ongoing: Implementation of habitat enhancement measures is expected to be completed in FY 1988. These FY 1988 activities will be determined by the Habitat Project Implementation Plan, to be completed by October 1987. Evaluation and monitoring of project effectiveness will be completed by 1991.	9/30/81	12/31/07
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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: Sumner steelhead and spring chinook.

Strawberry Falls Passage

Project completed.

Objective: Construct bypass at Strawberry Falls on Mill Creek to allow fish access to upstream habitat. Benefit: 3,890 spring chinook and 2,760 summer steelhead smolts.

1/ PO = Project Officer: KJA/K. Anderson, GRB/G. Bouck, LBE/L. Everson, JCG/J. Gislason, DEJ/D. Johnson, TSV/T. Vogel

2/ PM = Project Manager: CAB/C. Bohan, TJC/T. Clune, JGWJ. Marcotte

PROJECT NUMBER	PO ^{1/} - PM ^{2/}	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
81-108 cont.		Beaver Creek Habitat Improvement Objective: Construct instream structures to provide juvenile salmon and steelhead rearing habitat in channelired sections of Beaver Creek. Benefit: 6,750 spring chinook smolts.	Project completed.		
		Mill Creek Habitat Improvement Objective: Construct instream structures to provide juvenile salmon and steelhead rearing habitat in the Potter's Pond section of Hill Creek. Benefit: 1,020 spring chinook and 540 summer steelhead smolts.	Project completed.		
83-423	DEJ	Trout Creek Riparian Enhancement - Consultant Objective: Develop a series of draft restoration prescriptions describing major problems of the watershed in terms of salmonid habitat production: outline alternatives for correcting these problems. Also develop a comprehensive technical enhancement plan based on previous data collection, agency input, and draft prescriptions. Improvement: Structure and riparian Habitat: Approximately 150 miles Species: Steelhead	Project completed.	9/27/03	---
84-7	DEJ	Trout Creek Riparian Enhancement - SCS	Project completed.	6/24/86	---
84-62	DEJ	Trout Creek Riparian Enhancement - ODFW	Construction is ongoing and expected to be completed in FY 1989.	9/1/84	9/30/88

1/ PO = Project Officer: KJA/K. Anderson, GRB/G. Bouck, LBE/L. Everson, JCG/J. Gislason, DEJ/D. Johnson, TSV/T. Vogel
2/ PM = Project Manager: CAB/C. Bohan, TJC/T. Clune, JGM/J. Marcotte

PROJECT NUMBER	1/ PO -	2/ PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
					START DATE	RENEWAL DATE
86-93	DEJ		Trout Creek Cost Effectiveness Refinement - Consultant	Project completed.	1/15/86	---
86-94	DEJ		Trout Creek Cost Effectiveness Refinement - Consultant	Project completed.	2/1/86	---
86-117	DEJ		Trout Creek Annual Project Presentation - Consultant	Project completed.	3/01/86	---
86-121	DEJ		Trout Creek Cost Effectiveness - Consultant	Project completed.	9/11/86	---
88-116	DEJ		Trout Creek O&M	BPA will begin funding maintenance of Trout Creek habitat improvement structures in FY 1988.	8/88	- -
83-440a	LBE		White River Falls Passage - USFS	BPA funding deferred because of decision by Oregon Fish and Wildlife Commission. Council's Program includes this project in the Deschutes River Subbasin planning process.	4/20/83	---
83-440b		White River falls Passage - ODFW	4/01/83		---	
83-450		White River Falls Passage - Consultant	7/25/83		---	
			Objective: Increase runs of naturally produced anadromous salmonids in the Deschutes River by developing self-sustaining runs in the White River Basin above White River Falls. Improvement: Passage facility Habitat: Approximately 130 miles Species: Steelhead; spring, summer, and fall chinook; and coho			
<u>John Day River Subbasin</u>						
84-8	GRB		N. Fork John Day River Habitat Enhancement - USFS/Umatilla NF		4/1/84	3/31/88
			Desolation Creek	FY 1987 activities included pool construction on about 2 miles of		

1/ PO = Project Officer: KJA/K. Anderson, GRB/G. Bouck, LBE/L. Everson, JCG/J. Gislason, DEJ/D. Johnson, TSV/T. Vogel
2/ PM = Project Manager: CAB/C. Bohan, TJC/T. Clune, JGM/J. Marcotte

PROJECT NUMBER	1/ PO - PM	2/ TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
84-8 cont.		<p>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.</p> <p>Improvement: Instream structure</p> <p>Habitat: 42 miles</p> <p>Species: Spring chinook, summersteelhead</p> <p>Benefit: Spring chinook - 4950 smolts Sumner steelhead - 2475 smolts</p> <p>North Fork John Day River Habitat Improvement</p> <p>Objective: Increase production of spring chinook through side-channel modification, improve juvenile rearing rearing area, improve bank stabilization, increase adult resting areas, and increase amount of riparian vegetation.</p> <p>Improvement: Instream structure</p> <p>Species: Spring chinook</p> <p>Benefit: 5,000 smolts/yr</p> <p>Wilson Creek</p> <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: 6 miles</p> <p>Species: Summer steelhead.</p> <p>Benefit: 10,000 summer steelhead smolts.</p>	<p>stream. Pool construction and other construction activities will continue in FY 1988; completion expected by 1991.</p> <p>FY 1987 activities included weir construction, boulder placement, bank stabilization, and riparian vegetation planting. Construction will be completed in 1990.</p> <p>FY 1986/1987 activities included installation of weirs, adult resting pools, and alcove pools. Construction will be completed by 1990.</p>		

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PROJECT NUMBER	PO - PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
84-8 cont.	1/ 2/	Fivemile Creek Objective: Increase production of summer steelhead Improvement: Instream structure	FY 1986/1987 activities included conducting a stream survey and plan/design phase. The plan will be evaluated early in FY 1988 to determine feasibility, cost, and further implementation activities.		
		Clear/Granite Creeks (N. Fork John Day River) Objective: Increase the potential of spawning salmon through habitat improvement measures. Improvement: Instream structure Habitat: 12 miles Species: Spring chinook Benefit: Cost ratio 5:1	Projects completed.		
84-21	TSV	Mainstem, Middle Fork/John Day River - ODFW Mainstem John Day River Objective: Provide additional rearing habitat for juvenile salmon and steelhead. Improvement: Instream structure Habitat: 23 miles Species: Spring chinook and Summer steelhead Benefit: Steelhead smolt increase - 344,000: chinook smolt increase - 371,000 to 996,000	FY 1986/1987 activities involved design and instream construction activities. FY 1988 activities include plan/design phase and instream construction activities. Completion expected by 1991.	6/30/85	3/31/88

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2/ PM = Project Manager: CAB/C. Bohan, TJC/T. Clune, JGM/J. Marcotte

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

84-21
cont.

Middle Fork John Day River

Objective: Provide additional holding areas for adult chinook and steelhead: improve rearing area for juveniles of both species.

Improvement: Instream structure

Habitat: 30 miles

Species: Spring chinook, summer steelhead

Benefit: Included in benefits for the Mainstem John Day River.

FY 1988 activities will involve project plan and design phase. Completion of instream construction activities expected by 1991.

North Fork John Day River, including Fox, Deer, and Fivemile creeks

Objective: Fox Creek - improve steelhead spawning and rearing conditions through increasing riparian vegetation, reducing erosion and sedimentation, and increasing pool areas. Deer and Fivemile creeks - remove barriers to fish passage and provide additional 35 miles of steelhead habitat.

Improvement: Instream structure

Habitat: 42 miles

Species: Spring chinook and steelhead

Benefit: Included in benefits for the Mainstem John Day River.

FY 1986/1987 activities involved project plan and design phase and instream construction activities. Construction will continue in 1988. Completion expected by 1991.

Big Boulder, Myrtle, Badger, Wray, Vincent, Davis, and Vinegar creeks.

Objective: Increase the quantity, quality, and diversity of pool habitat for juvenile steelhead through habitat improvement measures.

FY 1986/1987 activities involved habitat improvement work on tributaries to the Middle Fork John Day River. Construction will continue in 1988. Completion expected by 1991.

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 2/ PM = Project Manager: CAB/C. Bohan, TJC/T. Clune, JGM/J. Marcotte

PROJECT NUMBER	PO - PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
84-21 cont.		<p>Improvement: Instream structure Habitat: 17 miles. Species: Steelhead and chinook Benefit: Steelhead: 5,000</p> <p>Granite Boulder Creek</p> <p>Objective: Increase the quantity, quality, and diversity of pool habitat for juvenile steelhead through habitat improvement measures. Improvement: Instream structure Species: Steelhead</p> <p>East Fork Beech Creek</p> <p>Objective: Increase the quality, quantity, and quantity, and diversity of pool diversity of pool habitat for juvenile steelhead through habitat improvement measures. Improvement: Instream structure Habitat: 6 miles Species: Summer steelhead Benefit: Benefit:Cost ratio is 2:1</p>	Project completed.		
84-22	TSV	<p>Mainstem, Upper John Day River USFS/Malheur NF</p> <p>Canyon Creek</p> <p>Objective: Increase the quality, quantity, and diversity of pool habitat for juvenile steelhead through habitat improvement measures.</p> <p>Upper Mainstem John Day River Habitat Improvement</p> <p>Objective: Increase the quantity, quality, and diversity of pool habitat for juvenile steelhead and chinook salmon.</p>	Project completed.	6/30/85	3/31/88

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2/ PM = Project Manager: CAB/C. Bohan, TJC/T. Clune, JGM/J. Marcotte

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PROJECT NUMBER	PO - PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
84-22 cont.		Middle Fork and Tributaries, John Day Habitat Improvement Objective: Increase the quantity, quality, and diversity of pool habitat for juvenile steelhead and chinook salmon.	FY 1986/1987 activities involved project plan and design phase and instream construction activities. Construction will continue in 1988. Completion expected by 1991.		
83-384	LBE	Murderers/Deer Creek Fish Habitat-USFS/Malheur NF Objective: Provide additional rearing and spawning habitat for steelhead through habitat improvement measures. Improvement: Instream structure Habitat: 30 miles Species: Summer steelhead Benefit: Benefit:Cost ratio is 3.8:1	Project completed.	4/1/83	---
83-473	LBE	Cottonwood Creek Habitat Improvement - BLM Objective: Provide for increased production of steelhead through habitat improvement measures. Improvement: Instream structure Habitat: 12.5 miles Species: Summer steelhead Benefit: Benefit:Cost ratio is 4.4:1	Project completed.	7/25/83	---
85-71	KJA	South Fork John Day River Habitat Enhancement/lzee Falls Fish Passage - BLM South Fork John Day River Habitat Enhancement Objective: Instream placement of 1500 boulders to create scour pools. Improvement: Instream structure Habitat: 10.5 miles Species: Wild summer steelhead Benefit: Benefit:Cost ratio is 4.13:1	Project completed.	9/1/85	---

1/ PO = Project Officer: KJA/K. Anderson, GRB/G. Bouck, LBE/L. Everson, JCG/J. Gislason, DEJ/D. Johnson, TSV/T. Vogel
 2/ PM = Project Manager: CAB/C. Bohan, TJC/T. Clune, JGM/J. Marcotte

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

85-71
cont.

Izee Falls

Objective: Provide fish access to 81 miles of spawning and rearing habitat by providing passage over a 56-foot falls.
Improvement: Passage
Species: Wild Summer Steelhead
Benefit: Benefit:Cost ratio is 5.4:1
Habitat: 81 miles

BLH and ODFW contracted with Oregon State University in 1987 to conduct electrophoretic studies on native trout above and below the falls. The results will be presented to the Oregon Fish and Wildlife Commission for review. If approved by the Commission, BPA will fund a feasibility study in FY 1990. If the results of the study show the project to be a prudent ratepayer investment, BPA will fund project construction in FY 1991/1992.

Umatilla River Subbasin

84-10

JGM

Plan for Restoring Salmon and Steelhead in the Umatilla River - ODFW

Project completed.

7/15/84

Objective: Establish rehabilitation objectives for the Umatilla River Basin and provide detailed information on preferred projects and alternatives to achieve the adopted rehabilitation objectives.
Species: Summer steelhead

83-434

TSV

Lower Umatilla River Channel Modification - USACE

Project completed.

2/1/84

Objective: Improve adult anadromous fish passage through channel modification from the Umatilla River confluence with the Columbia River to Three Mile Dam.
Improvement: Passage
Species: Summer steelhead

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PROJECT NUMBER	PO - PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
83-834	TSV	Evaluation of Lower Umatilla River Channel Modification - ODFW <u>Objective:</u> Evaluate ability of channel modifications constructed under Project 83-434 to improve adult summer steelhead passage.	Project completed. Evaluations were incomplete due to a lack of adult returns. However, limited assessment suggested passage improvements were adequate.	6/15/84	---
83-436	JGM	Three Mile Dam Passage Improvements - USBR <u>Objective:</u> Design and construct facilities to enhance fish passage at Three Mile Dam and WEID canal screens. Includes the ladders and canal screens. Also, design and build trapping and counting facilities. <u>Improvement:</u> Passage <u>Species:</u> Summer steelhead, spring and fall chinook	Final design of right bank ladder and trap completed spring 1987. Construction began and due to be complete by November 1987. Final design of left bank facilities (ladder, trap, screen) completed summer 1987. Construction to begin fall 1987. Schedule: Right bank ladder and trap operational - November 1987. Construction on left bank facilities begins - October 1987. WEID screens complete - April 1988. Left bank construction complete - October 1988.	5/1/84	1/31/89
87-104	JGM	Westland and Stanfield Diversion Improvements: Predesign - ODFW <u>Objective:</u> Improve passage up and downstream at Westland, Maxwell, Cold Springs and Stanfield irrigation diversion dams by ladder and screen improvements. <u>Improvement:</u> Passage <u>Species:</u> Summer steelhead, spring and fall chinook	Pre-design work in progress, including preliminary engineering environmental information, and detailed construction schedules. Schedule: Pre-design complete for Westland - October 1987. Final design complete for Westland - April 1988. Start construction, Westland screen/trap - October 1988. All construction complete, Westland - October 1989. All construction complete, Stanfield - October 1990.	1/87	9/30/87

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PROJECT NUMBER	PO - PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
87-100-0 JCG		Umatilla River Basin Fish Habitat Enhancement - USFS/Umatilla NF Objective: Instream and riparian habitat improvement for portions of the Umatilla River and tributaries on the Umatilla National Forest. Species: Summer steelhead and spring chinook. Benefit: (Entire basin) 36,800 summer steelhead and 6,250 spring chinook smolts.	Plan/design and construction activities on Thomas Creek are ongoing. FY 1988 construction work and schedule will be determined by the Habitat Project Implementation Plan, which will be completed in January 1988.	4/87	3/91
87-100-1 JCG		Umatilla River Basin Fish Habitat Enhancement - CTUIR Objective: Instream and riparian habitat improvement for portions of the Umatilla River and tributaries on the Umatilla Reservation. Species: Sumner steelhead and spring chinook. Benefit: See Project 87-100-0.	Plan/design and stream survey activities are ongoing. FY 1988 construction work and schedule will be determined by the Habitat Project Implementation Plan, which will be completed in January 1988.	7/87	3/90
87-100-2 JCG		Umatilla River Basin Fish Habitat Enhancement - ODFW Objectives: Instream and riparian habitat improvement for portions of the Umatilla River and tributaries on privately owned land. Species: Summer steelhead and spring chinook. Benefits: See Project 87-100-0	Plan/design and stream survey activities are ongoing. FY 1988 construction work and schedule will be determined by the Habitat Project Implementation Plan, which will be completed in January 1988.	7/87	3/90
88-22 JGM		Umatilla River Basin Trap and Haul Objective: To provide for passage of adults and smolts under low-flow river conditions Improvement: Passage Species: Sumner steelhead, spring and fall chinook	New project. Schedule: Design and acquire equipment (trucks, trailers, etc.) - October 1987. Trap at Three Mile Dam right bank ladder operational - November 1987. Westland smolt trap operational - Spring 1989.	10/87	- - -

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PROJECT NUMBER	1/ PO - PM	2/ TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
88-112	JGM	Evaluate Umatilla River Basin Enhancement Projects Objectives: Conduct project-specific and system-wide evaluations of URB projects, to determine: 1) the extent to which individual projects meet design criteria; and 2) overall progress toward meeting basin rehabilitation goals. Species: Summer steelhead, spring and fall chinook	New project: Evaluation of Three Mile Dam right bank ladder, trap, and trap and haul operation will begin in October 1987. Other evaluations will be initiated as planned basin facilities are completed.	10/87	- - -
87-409	JGM	WEID Main Canal Pumping - (Grant to ODFW) Objectives: To increase downstream survival of migrating juvenile salmon during spring 1987 below Three Mile Dam and to enhance upstream passage of adults returning to Three Mile during fall 1987. Improvement: Passage Species: Chinook	WEID pumps were operated in Spring 1987. The pumps allowed additional flow past the dam to enhance juvenile survival. Enhanced flows for returning adults will be provided in September 1987.	5/87	
87-416	JGM	Cold Springs and Maxwell Diversion Improvements Predesign - BOR Objectives: Conduct predesign studies for fish passage improvements at Cold Springs and Maxwell diversions. Improvements include fishways and canal screens. Improvement: Passage Species: Summer steelhead, spring and fall chinook.	Predesign work in progress, including preliminary engineering environmental information, and detailed construction schedule. Schedule: Predesign complete Cold Springs and Maxwell - October 1987. Final design complete, Cold Springs - November 1988. Start construction Cold Springs screens - May 1989. All construction complete, Cold Springs and Maxwell - September 1990.	7/87	9/30/87

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

Grande Ronde River Subbasin

84-9	LBE	Grande Ronde Habitat Improvement Project - USFS/Wallowa-Whitman NF		7/1/84	3/31/88
		UPPER GRANDE RONDE BASIN			
		Habitat Inventory and Determination of Potential	Anadromous fish streams were inventoried in FY 1987. Plan and design to be completed in FY 1988. Construction scheduled for 1989-1991. Meadow Creek construction is being coordinated with USFS Habitat Evaluation Research.		
		Objective: Inventory anadromous fish habitat on Main Meadow, Burnt Corral, Bear, Waucup, and Peat creeks. Habitat: 28 miles Species: Spring chinook and summer steelhead			
		Implementation Design	Inventory of Fly Creek completed in 1986. FY 1987: Construction completed on 3.5 miles of stream. FY 1988: Construction will be completed on 4.1 additional miles of stream. FY 1989: 2.0 miles of fencing to be completed. Project completion is scheduled for 1989. O&H will continue to 1991.		
		Objective: Implementation of the design phase will be conducted for a system of habitat improvement measures to improve spawning and rearing habitat for anadromous fish on Fly Creek. Habitat: 22.25 miles Species: Spring chinook and summer steelhead			
		Mainstem Upper Grande Ronde Falls Passage	Feasibility analysis completed in 1986. Passage determined not feasible; no further implementation.		
		Objective: Determine feasibility of improving fish passage over natural falls.			
		Mainstem Upper Grande Ronde Enhancement	FY 1987 activities involved placement instream and streambank/ structures in 0.9 miles of stream. FY 1988: Instream construction will		
		Objective: Improving spawning and rearing habitat in the Mainstem Upper Grande Ronde River.			

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PROJECT NUMBER	PO - PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
84-9 cont.	1/ 2/	Improvement: Instream structures Habitat: 3 miles	be completed in 1.1 additional miles of stream. FY 1989: Instream construction will be completed. FY 1990: Monitoring, O&M, and project completion.		
		Beaver Creek Habitat Inventory and Determination of Potential. Objective: Initiate enhancement work on North Fork John Day in the Wallowa-Whitman NF Habitat: 49 miles Species: Wild spring chinook and steelhead	1986-1987: Inventory completed. 1987-1988: Plan and design phase. 1989-1991: Trail Creek Construction, 5.0 miles. 1990 - Bull Run Creek construction, 2.5 miles. 1991 - Beaver Creek fencing, 1.0 miles. 1991 - O&M and project completion.		
		JOSEPH CREEK SUBBASIN Habitat Inventory and Determination of Potential Objective: Inventory 25.5 miles of anadromous fish habitat in Alder, Crow, Davis, Devils Run, and TNT Gulch creeks. Habitat: 25.5 miles Species: Spring chinook and summer steelhead	Plan and design phase completed.		
		Implementation Design Objective: Implementation of design phase will be conducted for a system of habitat improvement measures to improve spawning and rearing habitat for anadromous fish on Alder, Crow, Davis, Devils Run, TNT Gulch, Elk, Chesnimnus, and Swamp creeks.	FY 1986-1987 activities included establishment of baseline monitoring, streambank vegetation transects, and photo points. Plan and design was completed in 1987. Implementation scheduled for 1988-1990: 1988: Swamp Creek fencing, 4.0 miles.		

PROJECT NUMBER	1/ PO - PM	2/ TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
84-9 cont.		<p>Habitat: 30 miles</p> <p>Species: Spring chinook and summer steelhead</p>	<p>Elk Creek fencing and instream, 2.0 miles. Peavine Creek O&M Devil's Run, Crow, Davis, Alder, TNT Gulch fencing, 4.0 miles.</p> <p>1989: Swamp Creek planting, 4 miles. Peavine Creek O&M. Chesnimnus Creek O&M.</p> <p>1990: Peavine Creek instream structures, 1.2 miles</p> <p>1991: O&M on all projects and project completion.</p>		
84-25	TSV	<p>Grande Ronde Habitat Improvement Project - ODFW</p> <p>Upper Grande Ronde Subbasin (Sheep and Fly creeks and the Mainstem Grande Ronde River)</p> <p>Objective: Pework activities will be conducted. Activities will include physical stream surveys, project planning, onsite preparation, and easement/cooperative agreement procurement.</p> <p>Joseph Creek Planning (Swamp, Chesnimnus, Crow, Pine, and Butte creeks)</p> <p>Objective: Improve the quality and quantity of spawning and rearing habitat for salmon and steelhead through habitat improvement activities.</p> <p>Elk Creek</p> <p>Objective: Improve the quality and quantity of spawning and rearing habitat for salmon and steelhead through habitat improvement activities.</p>	<p>FY 1986/1987 activities included completion of plan/design phase and implementation of instream activities. FY 1988 activities will include continuation of construction activities. Project scheduled for completion in 1990.</p> <p>FY 1986/1987 activities included completion of plan/design phase and implementation of instream activities. FY 1988 activities will include continuation of construction activities. Project scheduled for completion in 1991.</p> <p>Fencing and installation of instream structures is in progress. The project is scheduled for completion in 1990.</p>	7/1/84	3/31/88

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

84-25
cont. **Improvement:** Instream structure
Habitat: 1 mile
Species: Summer steelhead and spring chinook

83-392	LBE	Peavine Creek Spawning Habitat - USFS/Wallowa-Whitman NF	<p>Objective: Inventory and design a system of habitat improvement measures to improve the quality and quantity of spawning and rearing habitat.</p> <p>Improvement: Instream structure</p> <p>Habitat: 4.5 miles</p> <p>Species: Sumner steelhead</p> <p>Benefit: Benefit:Cost ratio is 2.7:1</p>	<p>Project completed. Monitoring being conducted through Project No. 84-9. USFS has evaluated previous work, and scheduled O&M for 1988 and 1989. In 1990, additional instream structures will be constructed in 1.2 miles of stream.</p>	9/15/83	---
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Tucannon River Subbasin

87-56	JCG	Tucannon River Habitat Improvement Project	<p>Objective: Improve the quality and quantity of spawning and rearing habitat for salmon and steelhead.</p> <p>Improvement: Instream structure and riparian planting</p> <p>Species: Spring chinook and summer steelhead</p>	BPA funding deferred until subbasin planning is completed.	---	---
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Similkameen River Subbasin

83-477	LBE	Enloe Dam Passage - Consultant	<p>Objective: Determine the most efficient and cost-effective means for providing adult anadromous fish passage around Enloe Dam.</p> <p>Improvement: Passage</p> <p>Habitat: 350 miles</p> <p>Species: Steelhead, chinook</p> <p>Benefit: 98,000 steelhead and 55,000 chinook</p>	BPA deferred funding because agencies and Tribes could not determine a preferred alternative for implementations. Council has included this project in the Subbasin Planning Process.	4/25/83	---
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PROJECT NUMBER	PO ^{1/} - PM ^{2/}	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE

Wenatchee River Subbasin

83-446	TJC	Tumwater/Dryden Passage - Consultant	Project completed.	6/8/83	---
85-52	TJC	Tumwater Dam Passage			
85-53	TJC	Dryden Dam Passage			

Objective: Fish ladders at Tumwater and Dryden dams were rebuilt to improve upstream passage for salmon and steelhead.

Improvement: Passage

Species: Spring and summer chinook, sockeye, coho, and steelhead

Benefit: Benefit:Cost ratio is 4:1

Yakima River Subbasin

86-75	JCG	Little Naches River Passage - USFS/Wenatchee NF	Preliminary design of Salmon Falls fishway and majority of channel rehabilitation work completed in FY 1986. Final design of fishway completed in March 1987. Construction of fishway and remaining channel work scheduled for completion by Fall 1987.	10/30/85	12/31/87
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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

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

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PROJECT NUMBER	1/ PO - PM	2/ TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
Clearwater River Subbasin					
84-31	LBE	Clearwater Basin Agreement, Habitat Improvement - USFS/Clearwater NF		9/84	---
		South Fork Clearwater River	Project completed.		
		Objective: To increase salmon and steelhead smolt production through habitat enhancement measures. Improvement: Instream structure Species: Spring chinook, summer steelhead			
		Habitat Enhancement for Clearwater Lochsa River Tributaries	Project completed.		
		Objective: Increase salmon and steelhead smolt production through habitat enhancement measures. Improvement: Instream structure Habitat: 50 miles Species: Spring chinook, summer steelhead Benefit: 10,000 chinook and 4,000 steelhead smolts			
84-5	LBE	South Fork Clearwater River - USFS		1/1/84	1990
		Red River	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. Project funded to completion with FY 1987 funds. Final report will summarize project completion.		
		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: 8benefit:Cost ratio is 15:1			

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PROJECT NUMBER	1/ PO	2/ PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
					START DATE	RENEWAL DATE
84-5 cont.			<p>Crooked River</p> <p>Objective: To increase natural smolt production potential of salmon and steelhead.</p> <p>Improvement: Structures</p> <p>Habitat: 17 miles</p> <p>Species: Chinook and steelhead</p> <p>Benefit: Benefit:Cost ratio is 6.22:1</p>	<p>Instream structures and offsite pond construction will continue into FY 1988. Completion scheduled for 1990. Project has been funded to completion with FY 1987 funds. Evaluation and O&M scheduled for 1988-1990.</p>		
84-6	LBE		<p>Clearwater River Habitat Enhancement Improvements - USFS/Clearwater NF</p> <p>Lolo Creek</p> <p>Objective: Increase the quantity and improve the quality of spawning and rearing habitat for anadromous fish.</p> <p>Improvement: Instream structure</p> <p>Habitat: 12 miles</p> <p>Species: Spring chinook and steelhead</p> <p>Benefit: Benefit:Cost ratio is 40:1</p> <p>Eldorado Creek</p> <p>Objective: 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.</p> <p>Improvement: Instream structure and blasting</p> <p>Habitat: 10 miles</p> <p>Species: Steelhead and chinook</p> <p>Benefit: 24,000 chinook and 12,500 steelhead smolts</p>	<p>Riparian planting on Lolo Creek will be completed by 1988. Evaluation and monitoring of physical structures will be done in 1988 and 1989. O&M will continue from 1988 to 1990. Final report on all Clearwater NF projects will be completed in 1990. Project has been funded to completion with FY 1987 funds.</p> <p>Project completed.</p>	4/1/84	1990

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PROJECT NUMBER	1/ PO - PM	2/ TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
84-6 cont.		<p>Crooked Fork</p> <p>Objective: Remove rock barriers to correct passage problems resulting from rock chutes and waterfalls which prevent access to spawning and rearing habitat above the site.</p> <p>Improvement: Instream structure</p> <p>Habitat: 5.65 miles</p> <p>Species: Spring chinook and summer steelhead</p> <p>Benefit: 36,000 chinook and 21,000 steelhead smolts</p>	Project completed.		
87-112	JCG	<p>Orofino Creek Passage - Consultant</p> <p>Objective: Construct fish passage facility to correct passage problems resulting from Orofino Falls.</p> <p>Improvement: Passage</p> <p>Habitat: 130 miles</p> <p>Species: Spring chinook and steelhead</p> <p>Benefit: 72,000 steelhead smolts, 3,600 adult steelhead</p>	<p>A biological/engineering feasibility study is ongoing:</p> <p>January 1988: Biological feasibility report will be completed. BPA will decide whether to proceed with conceptual design of passage alternatives.</p> <p>March 1988: If appropriate, start conceptual design.</p> <p>August 1988: Conceptual design and engineering feasibility report scheduled for completion. If passage is feasible and cost-effective, BPA will proceed with alternative selection, NEPA compliance, design, construction, and evaluation and monitoring, beginning in August 1988.</p>	6/24/87	4/30/88

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

Salmon River Subbasin

83-7	LBE	Idaho Habitat Projects - IDFG		8/15/83	3/31/88
		Boulder Creek Passage	Project completed.		
		Objective: Modify existing falls to facilitate passage of migrating anadromous fish.			
		Improvement: Passage			
		Habitat: 12 miles			
		Species: Chinook salmon and steelhead			
		South Fork Salmon River Passage	Planning completed. Agency and Tribal Sediment Committee has postponed barrier removals due to potential impact on the spawning grounds. Further implementation pending approval of the Committee.		
		Objective: Remove migration barrier in tributaries of South Fork Salmon River to achieve full use of natural spawning and rearing potential for anadromous fish.			
		Improvement: Passage			
		Habitat: 75 miles			
		Species: Summer chinook and summer steelhead			
83-416	LBE	Pole Creek Irrigation Diversion Screening - USFS/Sawtooth NF	Project completed.	4/1/83	---
		Objective: Increase the production potential of chinook and steelhead by screening downstream migrants from the irrigation diversion.			
		Improvement: Passage			
		Habitat: 3 miles			
		Species: Chinook salmon and steelhead			
		Benefit: Benefit:Cost ratio is 70:1			

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PROJECT NUMBER	1/ PO -	2/ PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
					START DATE	RENEWAL DATE
84-23	JCG		Camas Creek, Idaho - USFS/Salmon NF Objective: Improve riparian conditions to increase salmon and steelhead spawning and rearing potential. Improvement: Fencing and riparian revegetation Species: Spring chinook Benefit:	FY 1987 activities included implementation of fencing project and completion of an environmental assessment. Fencing and revegetation to continue through FY 1988 and be completed in FY 1989.	6/29/84	8/31/88
83-359	LBE		Salmon River Habitat Enhancement - Shoshone/Bannock Tribe		10/1/83	3/31/88
			Bear Valley Creek Habitat Improvement Objective: Enhance habitat degraded by historic mining and dredging operations. Improvement: Instream structure and riparian enhancement Species: Wild chinook salmon and summer steelhead	Construction in progress to FY 1988. Project has been funded through FY 1988 with FY 1987 funds. Project construction will be complete in FY 1988. Monitoring will continue beyond FY 1988.		
83-415	CAB		Yankee Fork/Jordan Creek/East Fork Salmon River		1/1/83	3/31/88
			Objective: Enhance habitat degraded by historic mining and dredging operations. Improvement: Instream structure Habitat: 152 miles Species: Salmon and steelhead	Plan/design and NEPA compliance in progress. Construction begins in 1987 and scheduled for completion in FY 1988.		
83-415			Alturus Lake Creek and Upper Salmon River Flow Augmentation - USFS/Sawtooth NF Objective: Enhance natural production of chinook salmon and reestablish sockeye salmon production through increased streamflow.	BPA General Counsel Office is reviewing water rights. Project is on hold pending resolution of legal issues. Resolution is anticipated in FY 1988.	4/1/83	---

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PROJECT NUMBER	1/ PO - PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
83-415 cont.		<p>Improvement: Instream structure</p> <p>Species: Chinook and sockeye</p> <p>Benefit: Flow augmentation alternative= benefit:cost ratio of 15.5:1 to 23.4:1; Water right acquisition alternative= 18.5:1</p>			
84-24	LBE	<p>Harsh/Eik/Valley/Upper Salmon River, Idaho - USFS Region 4</p> <p>Objective: 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.</p> <p>Improvement: Instream structure</p> <p>Habitat: 150 miles</p> <p>Species: Steelhead, spring and summer chinook</p>	<p>Plan/inventory phase has been completed. Construction began in 1987. Elk and lower Bear Valley creeks were given high priority for completion. Marsh Creek is pending USFS decision on cattle grazing. Upper Salmon River projects are in design phase. USFS will complete an implementation plan early in FY 1988 for completion of all projects.</p>	6/29/84	3/31/88
84-28	LBE	<p>Lemhi River Rehabilitation - Consultant</p> <p>Objective: Identify problems, evaluate fishery potential, and recommend alternative methods for rehabilitating salmon and steelhead production in the Lemhi River,</p> <p>Improvement: Passage and flow enhancement</p> <p>Habitat: 62 miles</p> <p>Species: Salmon and steelhead</p>	<p>BPA funding deferred pending resolution of alternative selection for implementation. BPA will consult with IDFG and the Sho-Ban Tribes for selection of the preferred alternative in FY 1988.</p>	9/84	- - -

4

1/ PO = Project Officer: KJA/K. Anderson, GRB/G. Bouck, LBE/L. Everson, JCG/J. Gislason, DEJ/D. Johnson, TSV/T. Vogel
 2/ PM = Project Manager: CAB/C. Bohan, TJC/T. Clune, JGM/J. Marcotte

PROJECT NUMBER	1/ PO	2/ PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
					START DATE	RENEWAL DATE
84-29	LBE		<p>Panther Creek - Consultant</p> <p>Objective: Conduct engineering feasibility and cost analysis for historic mining reclamation to remove toxicity problem for fish passage. Evaluate potential spawning and rearing habitat for anadromous fish and recommend alternatives for habitat improvement measures.</p> <p>Improvement: Passage</p> <p>Habitat: 100 miles</p> <p>Species: Spring chinook and steelhead</p>	<p>BPA funding deferred pending resolution of legal issues. Private landowner and the Idaho State Attorney General are engaged in a lawsuit over historic mining impact on Panther Creek. The private landowner will not authorize any easement to BPA until the lawsuit is settled with the State. Implementation is on hold.</p>	8/27/84	

1/ PO = Project Officer: KJA/K. Anderson, GRB/G. Bouck, LBE/L. Everson, JCG/J. Gislason, DEJD. Johnson, TSV/T. Vogel
2/ PM = Project Manager: CAB/C. Bohan, TJC/T. Clune, JGH/J. Marcotte

4.3 ROZA DAM FISH PASSAGE FACILITIES 134.11
(Juvenile Facilities Completion: March 1, 1987)
(Adult Facilities Completion: March 1, 1988)

803(b)(2) BPA shall fund the U.S. Bureau of Reclamation (USBR) to renovate and repair adult and juvenile fish passage facilities at Roza Dam [Abstract] [904(d)(1)]

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 are being constructed through Congressional appropriations. The project is one of 20 such passage improvement projects in the Yakima River Basin. Fish screen and ladder improvements are required to protect juvenile fish adequately from being lost in irrigation canals and to enable adult salmon and steelhead to migrate upstream to spawn. The project will provide 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 construct bids were opened in August 1986. Construction of the facilities is ongoing and scheduled for completion in FY 1988.

Plans:

Construction schedule:

<u>Item</u>	<u>Begin Design</u>	<u>Begin Construction</u>	<u>Completion</u>
Screen Structure	12/84	12/85	Completed
Screens	10/84	6/84	Completed
Pumpback	6/85	9/86	10/87
Ladders	6/85	9/86	3/88
Wasteway Barrier	12/84	7/86	Completed

Projects:

No BPA-funded projects.

4.4 **PROSSER DAM FISH PASSAGE FACILITIES** [34.2]
 (Juvenile Facilities Completion: March 1, 1987)
 (Adult Facilities Completion: December 1, 1987)

803(b)(3) 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.
 [Abstract] [904(d)(2)]

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

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.

Background and Progress to Date:

The USBR owns Prosser Dam fish passage facilities are being constructed through Congressional appropriations. The project is one of 20 such passage improvement projects in the Yakima River Basin. Fish screen and ladder improvements are 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 are scheduled for completion in FY 1989.

Plans:

Construction schedule:

<u>Item</u>	<u>Begin Design</u>	<u>Begin Construction</u>	<u>Completion</u>
Screen Structure	10/84	5/86	Completed
Right Ladder	10/85	10/85	Completed
Left Ladder	6/86	6/87	12/88
Center Ladder	5/85	6/87	12/88
Fish Trap	4/85	9/86	7/88

Projects:

No BPA-funded projects

**4.5 YAKIMA RIVER FISH PASSAGE IMPROVEMENTS [34.3]
(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. [904(d)(4)]

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 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 completion and to evaluate projects as they are completed.

I. COMPLETED PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>DATE COMPLETED</u>	<u>RESULTS/CONCLUSIONS</u>
84-56	Horn Rapids/Richland Canal - USBR <u>Objectives:</u> Construct fish passage facilities.	March 1986	Screen facility - evaluated and working well.
84-55	Sunnyside Screen and Ladder - USBR <u>Objectives:</u> Construct juvenile and adult fish passage facilities in Sunnyside Valley Irrigation District.	March 1986	Evaluated and working well.
84-57	Wapato Screen and Ladders - USBR <u>Objectives:</u> Construct juvenile and adult fish passage facilities.	March 1987	Evaluated and working well.
84-58	Toppenish/Satus Screens and Ladders - USBR <u>Objectives:</u> Construct juvenile and adult fish passage facilities.	March 1986	Evaluated and working well.
86-88	Satus Creek Ladder - USBR <u>Objectives:</u> Construct adult fish passage facilities.	September 1986	Completed.
86-89	Toppenish Creek Screens and Ladder - USBR <u>Objectives:</u> Construct juvenile and adult fish passage facilities.	March 1987	Completed.

86-112 ONGOING PROJECTS

PROJECT N U M B E R	T I T L E	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
86-91	Yakima Fish Passage Predesign - USBR <u>Project Officer:</u> T. Clune <u>Objectives:</u> Perform predesign activities for Yakima Basin fish passage facilities.	<u>Date initiated:</u> FY 1986 <u>Results/Conclusions:</u> Predesign evaluations and preliminary engineering have been completed for several passage facilities.	October 1987: Project will be completed.
86-112	Toppenish/Westside/Ellensburg Screen Fabrication - WDF <u>Project Officer:</u> T. Clune <u>Objectives:</u> Fabricate screens for the three projects listed in the title.	<u>Date initiated:</u> October 1985 <u>Results/Conclusions:</u> Screen fabrication in progress.	1. Continuing: Complete fabrication of Westside screens. 2. FY 1988: Begin fabrication of Ellensburg screens. 3. FY 1988: Toppenish Screen complete.
87-108	Westside Screen Construction USBR <u>Project Officer:</u> T. Clune <u>Objectives:</u> Construction of fish screening facility.	<u>Date initiated:</u> September 1985 <u>Results/Conclusions:</u> Construction is ongoing.	December 1988: Construction will be completed.
86-109	Marion Drain Ladder Construction - USBR <u>Project Officer:</u> T. Clune <u>Objectives:</u> Fish ladder construction.	<u>Date initiated:</u> July 1986 <u>Results/Conclusions:</u> Design complete. About to begin construction.	November 1988: Construction will be completed.

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND
85-62	Passage Improvement Evaluations - Battelle Northwest Laboratories <u>Project Officer:</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 not available at this time.	Continuing: Evaluation will continue as projects are completed and go on line
86-65	Snipes/Allen Screen Construction - USBR <u>Project Officer:</u> T. Clune <u>Objectives:</u> Construct fish screening facility.	<u>Date Initiated:</u> Predesign was initiated in 1986. <u>Results/Conclusions:</u> Final design of the project has been delayed pending discussions of proposed consolidation of the Snipes/Allen and Roza Dam fish passage construction projects into one project.	FY 1988: Begin final design 2 FY 1989: Begin construction 3. Funds will be transferred from another project into this project to fund FY 1988 activities

III. NEW PROJECTS

PROJECT NUMBER	TITLE	OBJECTIVES	SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND
88-29	Old Reservation Canal - USBR <u>Project Officer:</u> T. Clune	Construct fish screening facility.	July 1988: Start project
88-1	Stevens/Naches Selah - USBR <u>Project Officer:</u> T. Clune	Construct fish screening facility.	July 1988: Start project.

**4.6 WATER EXCHANGE FOR UMATILLA RIVER [34.01]
(Support Beginning Spring 1987)
(Report Evaluations: Annually)**

- 703(a)(17) BPA shall provide power or reimbursement for operation and maintenance costs associated with provision of power 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 Oregon Department of Fish and Wildlife (ODFW) and the CTUIR. The Oregon Water Resources Department 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.
[Abstract] [704(a)(17)]**

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:

Because the USBR pumping plants are still in the planning/design stage, no water exchanges under this Action Item have taken place. Through a passage-assistance project (Project 87-409) under Action Item 4.2, BPA has 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.

Federal authorizing legislation prepared by project sponsors was introduced in summer 1987. Two bills which help effect water exchanges and project instream flows became law in Oregon during 1987.

Plans:

Assuming authorizing legislation is approved, BPA expects to provide power for pumping under initial project phases, perhaps early as spring 1988.

Projects:

No BPA-funded projects under Action Item 4.6 in FY 1987. Funds are available to implement this Action Item in FY 1988.

**4.14.1 TEMPORARY JOHN DAY ACCLIMATION FACILITY C34.131
(Upon Council Approval, Complete Construction by Spring 1988)**

703(f)(2)(B) Upon approval by the Council of the plan, Bonneville shall fund design, construction, and evaluation of the temporary facilities. [704(i)(2)(B)]

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

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

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 two 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 1984 program it provided for: (1) an agency and Tribal Plan to be approved before any construction, and (2) an evaluation of temporary acclimation ponds.

The 1985 agency/Tribal Plan still did not specify site locations, but included a survey of 10 candidate sites. The Council subsequently approved the site survey for funding, and BPA is now contracting for this site survey.

BPA reexamined Project 83-313, Pen Rearing of Upriver Fall Chinook Salmon, and determined that the project provided valuable information towards completion of this Action Item From a technical viewpoint, it would further the completion of 703(f)(2) in addition to 703(g) (low-capital facilities>. It is not BPA's intent to imply that this research project is part of John Day mitigation, but that it will provide information to enhance those efforts as well as to determine the feasibility of pen rearing for upriver bright fall chinook.

The joint agency-Tribal work group and the Council have been provided the site study completed under Project 86-82. They will select the final sites to be used for the study.

Plans:

BPA plans to fund the design, construction, and evaluation of the John Day Temporary Acclimation ponds, once sites are selected by the fisheries agencies and Tribes. This study will identify the benefits of acclimation sites.

I. COMPLETED PROJECTS

None.

II. FY 1987 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
86-82	Temporary John Day Acclimation Ponds - USFWS <u>Project Officer:</u> R. Morinaka <u>Objectives:</u> Collect and compile information on the potential sites for the temporary John Day Acclimation Ponds. Construct and evaluate the value of acclimation ponds on the Columbia River.	<u>Date initiated:</u> September 1986 <u>Results/Conclusions:</u> Potential sites were analyzed and submitted to the agencies, Tribes, and Council for final site.	1. 1988: Select sites for temporary ponds. 2. 1989: Construct necessary ponds. 3. 1990: Initiate and evaluate acclimation concept.
83-313	Pen Rearing of Upriver Fall Chinook Salmon - USFWS <u>Project Officer:</u> J. Gislason <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 be effectively 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. 1988: Collect and analyze adult return data. 2. 1989: Collect and analyze adult return data. 3. 1990: Collect and analyze adult return data.

IV. NEW PROJECTS

None.

4.15.1 **DESIGN AND CONSTRUCTION OF YAKIMA HATCHERY [34.14]**
(Upon Council Approval, Fund Beginning in FY 1988)

703(f)(3) **BPA shall fund the design, construction, operation, and maintenance of a hatchery to enhance the fishery for the Yakima Indian Nation as well as other harvesters. [Abstract] [704(i)(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 after development and Council approval of a hatchery master plan. The facility will enhance the fishery for the Yakima Indian Nation and for other harvesters. The hatchery will supplement natural runs.

BPA will also fund a study to determine the feasibility of establishing anadromous fish runs above Cle Elum Dam. This project will directly influence the size and production profile of the Yakima outplanting facility. During FY 1987, the Council continued to develop the master plan for the hatchery.

Plans:

- 1. National Environmental Policy Act (NEPA) compliance is scheduled to be completed in June 1988.**
- 2. BPA will fund design, construction, operation, and maintenance upon completion of the master plan.**
- 3. Operation of the facility is scheduled to begin in FY 1991.**

I. COMPLETED PROJECTS

None.

II. FY 1987 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
86-45	Yakima Hatchery: Cle Elum Study - NHFS <u>Project Officer:</u> T. Clune <u>Objectives:</u> Determine the feasibility of establishing sockeye salmon above Cle Elum Dam.	<u>Date initiated:</u> October 1986 <u>Results/Conclusions:</u> Eggs were collected in July 1987.	1. FY 1988: Incubate 87 brood eggs. 2. FY 1988: Raise juveniles in quarantine facility. 3. FY 1988: Collect 1988 brood-year adults and take eggs.
87-135	Yakima Hatchery Master Plan Development - YIN <u>Project Officer:</u> T. Clune <u>Objectives:</u> Assist YIN participation in Master Plan development.	<u>Date initiated:</u> May 1987 <u>Results/Conclusions:</u> Coordination is ongoing.	1. FY 1988: Comment on Master Plan. 2. FY 1988: Participate in Hatchery Work Group.
87-136	Yakima Hatchery: Wapato Canal - YIN <u>Project Officer:</u> T. Clune <u>Objectives:</u> Determine applicability of acclimating fall chinook salmon in irrigation canals prior to release.	<u>Date initiated:</u> Hay 1987 <u>Results/Conclusions:</u> Net pens under construction.	1. FY 1988: Evaluate net pen rearing in Wapato Canal. 2. FY 1988: Contractor (YIN) to provide annual report.

III. NEW PROJECTS

PROJECT NUMBER	TITLE	OBJECTIVES	SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND
88-117	Yakima Hatchery: Steelhead Study - YIN Project Officer: T. C l u n e	Determine the best locations and procedures for summer steelhead supplementation in the Yakima Basin.	November 1987: Initiate project if Council adopts the Master Plan.
88-115	Yakima Hatchery Design and Construction Project Officer: T. C l u n e	Design and construct the Yakima Hatchery.	November 1987: Initiate preconstruction if Council adopts Master Plan.

----- **HATCHERY SURVEY**
(Former Action Item 34.15)

MEASURE LANGUAGE:

Not applicable. Council deleted measure in amended Program

TECHNICAL SUBJECT ACTIVITY SUMMARY:

Ongoing projects formerly listed under this Action Item have been transferred to Action Item 6.3, Hatchery Data Base.

----- LOW CAPITAL PROPAGATION FACILITIES
(Former Action Item 34.16)

703(g)(1) BPA shall provide funds to develop and test low-cost, small scale propagation facilities adaptable to the Columbia Basin locales. [Abstract] [704(j)(1)]

ACTION ITEM ACTIVITY SUMMARY

Objectives:

To define, evaluate, and access low-capital production facilities.

Background and Progress to Date:

Low-capital propagation facilities require a smaller water supply than large hatcheries, and are readily adaptable to individual drainages, enabling the conservation of gene pools. A low-capital facility evaluation project was initiated in 1983 and is currently ongoing.

Criteria for identifying and defining low-capital facilities were drafted into the FY 1986 Work Plan. Comments on that plan criticized BPA's definition as being too limited. Confusion arose over the definition of "low cost." In FY 1986, BPA sought the assistance of the Council staff to clarify the definition of low-capital production facilities. To date, the Council has not responded.

Plans:

BPA will use the expertise of the HETWG to develop criteria for low-capital production facilities. At that time, BPA can seek and compare the usefulness of the other candidate sites. BPA will continue the ongoing evaluation project (Project 83-364) through completion.

I. COMPLETED PROJECTS

None.

II. FY 1987 ONGOING

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
83-364	Evaluation of a Low-Cost Salmon Production Facility - Clatsop Economic Development Committee Fisheries Project <u>Project Officer:</u> T. C I u n e <u>Objectives:</u> Evaluate the effectiveness of a low-cost, small-scale salmon propagation facility and a known-stock terminal fishery.	<u>Date initiated:</u> 1 9 8 3 <u>Results/Conclusions:</u> The project continued effectively to rear and release salmon that contributed to various fisheries from California to Alaska. The local community continued to be a major provider of funds, services, and equipment to the project.	1. FY 1988: Project will be completed and final evaluation results will be available.

III. NEW PROJECTS

None.

- 4.16.1- NORTHEASTERN OREGON SPRING CHINOOK OUTPLANTING FACILITY [34.03]
4.16.2 (Fund Development of Master Plan in FY 1988 or Earlier; Upon Council Approval, Fund Design and Construction)

703(f)(S) BPA shall fund planning, design, construction, operation and maintenance, and evaluation of artificial production facilities to raise chinook salmon and steelhead for enhancement in the Hood, Umatilla, Walla Walla, Grande Ronde, and Imaha rivers in Oregon and elsewhere. The artificial production facilities shall be used to supplement natural production in these rivers. [704(i)(S)]

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To fund master plan, design, and construction of the Northeast Oregon salmon and steelhead facilities.

Background and Progress to Date:

The fish and wildlife agencies and Tribes expect this facility to provide for outplanting of about 2.3 million to 3.0 million spring chinook juveniles in the five Oregon rivers identified in the measure.

Plans:

Funds are budgeted for construction in 1990, the first available funding window.

Projects:

BPA has budgeted for implementation in FY 1988. When the Council approves the master plan, BPA will proceed with implementation.

4.17.1 JUVENILE RELEASE/ADULT COLLECTION AND HOLDING FACILITIES ON UMATILLA RESERVATION [34.11]
(Operate, Maintain>

703(f)(1) BPA shall fund the Confederated Tribes of the Umatilla Reservation (CTUIR) to operate and maintain the Bonifer and Mnthorn juvenile release and adult collection and holding facilities on the reservation. [Abstract] [704(i>(1)]

ACTION ITEM ACTIVITY SUMMARY

Objectives:

To fund operation, maintenance, and evaluation of the Bonifer and Mnthorn 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 honing 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 Mnthorn and Bonifer facilities. Currently, juveniles from other hatcheries are acclimated at the facilities.

BPA has funded the operation and maintenance of the Bonifer and Mnthorn facilities since construction in 1983 and 1985, respectively. During this time, about 600,000 fall chinook, 400,000 spring chinook, and 100,000 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

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>DATE COMPLETED</u>	<u>RESULTS/CONCLUSIONS</u>
82-18	Bonifer Springs Juvenile Acclimation and Adult Holding Facilities - CTUIR	July 1986	The Bonifer Springs facility was constructed in 1983. Operation, maintenance, and evaluation were continued under Project 83-435.
	Objectives: Construct, operate, and maintain the Bonifer Springs facilities.		

II. FY 1987 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
83-435	Minthorn and Bonifer Springs Sumner Steelhead Juvenile Release and Adult Collection Facilities - CTUIR	Date initiated: FY 1983	1. Continuing: BPA will fund operation, maintenance, and evaluation of the facilities.
	Project Officer: J. Gislason	Results/Conclusions: Construction of the Minthorn facility was completed in 1985. Approximately 225,000 fall chinook, 200,000 spring chinook, and 25,000 steel-head juveniles were acclimated and released during FY 1987.	2. Continuing: Contractor will provide an annual operational report and preliminary results of the evaluation study in the Project's annual report.
	Objectives: 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.		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 [34.12]
(Fund, upon Council Approval)

703(f)(1) Bonneville shall also fund the construction of a facility to produce approximately 160,000 pounds of summer steelhead and chinook salmon smolts for release in the Umatilla juvenile release and adult collection and holding facilities and for outplanting in the upper Umatilla River to enhance natural and hatchery production. [704(i)(1)]

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 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. 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.

Plans:

In FY 1988, BPA plans to fund final design and construction of the hatchery and completion of the hatchery master plan. When the hatchery is completed in 1989, BPA will fund its operation and maintenance. BPA also expects to fund hatchery evaluation studies after completion.

I. COMPLETED PROJECTS

PROJECT NUMBER	TITLE	DATE COMPLETED	RESULTS/CONCLUSIONS
84-033-01	Cost Estimate Analysis of Proposed Umatilla Hatchery Expansion - Consultant	July 15, 1987	Objectives were met. Cost-saving measures were incorporated into final design, and hatchery cost estimates were refined.
	Objectives: To verify accuracy and appropriateness of hatchery engineering cost estimates and to conduct a conceptual design review to identify potential cost-saving measures.		

II. FY 1987 ONGOING PROJECTS

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND
84-033	Umatilla Hatchery - USACE	Date initiated: FY 1986	<ol style="list-style-type: none"> 1. September 1987: Amend Program to allow demonstration of oxygen supplementation. 2. February 1988: Complete final design. 3. June 1988: Start construction. 4. October 1989: Hatchery operational.
	Project Officer: J. Marcotte	Results/Conclusions: Council approved hatchery predesign in October 1986. Hatchery site next to existing Irrigon Hatchery was selected in cooperation with Morrow County. Umatilla Hatchery Environmental Assessment was issued February 1987. FONSI issued April 1987. Council amended program to expand hatchery production to 160,000 and added salmon to production.	
87-415	Umatilla Hatchery Master Plan - ODFW	Date initiated: June 1987	<ol style="list-style-type: none"> 1. September 1987: Completion of hatchery master plan 2. December 1987: Council action on master plan.
		Results/Conclusions: The master plan technical work group has developed draft	

PROJECT

NUMBER

T I T L E

P R O J E C T -

SCHEDULE AND MILESTONES

FOR FY 1988 AND BEYOND

87-415
(cont.)

Project Officer: J. Marcotte
Objectives: Develop a master plan to guide hatchery production, management policies, and monitoring and evaluation.

sections for all the required elements of the plan. These sections are being coordinated with regional fishery interests and appropriate Council technical work groups.

III. NEW PROJECTS

None.

**4.17.3 LOW CAPITAL PROPAGATION FACILITY ON NEZ PERCE RESERVATION [34.17]
(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). [704(j)(2)]

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 been nearly 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.

Plans:

Preliminary design scheduled to begin October 1987, followed by design and construction. Project completion scheduled for FY 1990.

I. COMPLETED PROJECTS

None.

II. FY 1987 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
83-350	Nez Perce Low-Capital Production Facility - NPT <u>Project Officer:</u> T. Clune <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> Developing contract package for design.	<ol style="list-style-type: none">1. FY 1988: Complete preliminary design, including NEPA assessment. Begin final design.2. FY 1989: Begin construction.3. FY 1990: Complete project, and begin operation and maintenance.4. FY 1991: Evaluation and monitoring.

III. NEW PROJECTS

None.

**4. 17. 4 HABITAT SURVEY ASSOCIATED WITH ACTION ITEM 4. 17. 3 [34. 18]
(Fund)**

703(c) (3) 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. [Abstract] [704(e)(1)]

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To implement an evaluation of 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 be successfully outplanted in the mainstem Clearwater River and identify opportunities to enhance existing steelhead production. BPA expects that the NPT will use study information to plan production and outplanting strategies for the low-capital facility.

The NPT submitted a study proposal on June 7, 1985. However, a fishery management dispute between the NPT and the IDFG made both measures unimplementable. BPA referred both measures back to the Council on October 28, 1985, for resolution or reconsideration.

Recently, BPA has met with NPT and IDFG representatives to review the status of the dispute. Enough progress toward resolution has been made to allow BPA to proceed with implementation of Action Item 4.17.4. During June 1987, BPA technically reviewed a revised work statement by the NPT.

Plans:

BPA will proceed with the implementation process for 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.

I. COMPLETED PROJECTS

None.

II. FY 1987 ONGOING PROJECTS

None.

III. NEW PROJECTS

PROJECT
NUMBER

TITLE

OBJECTIVES

SCHEDULE AND MILESTONES
FOR FY 1988 AND BEYOND

88-15

Mainstem Clearwater River
Study: Assessment for Salmonid
Spawning, Incubation, and
Rearing - NPT

Project Officer: J. Gislason

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 production.

1. FY 1988: Implement Phase I of the project, a literature review.
2. FY 1989: Proceed with field studies (Phase II), depending on results of Phase I.
3. The NPT will coordinate any outplanting plans with the STWG, MEG, and Subbasin Planning Group.

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

- 703(e) 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.
- (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. [Abstract] [704(h)]

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:

The Columbia River Basin has about 54 main hatcheries and about 40 satellite facilities, representing a capital investment of over \$600 million. These facilities are estimated to produce over 75 percent of the salmon and steelhead in the basin. Improving hatchery effectiveness will increase total adult fish production and will protect enormous public investments. More hatcheries may be needed to achieve Program goals, but their numbers, adverse impacts, and costs will be much lower if the existing hatchery production provides more adults via higher smolt survival, a goal requiring improvement in the quality of hatchery fish.

Most of the currently funded projects in this Action Item continue to concern research on bacterial kidney disease (BKD) or infectious hematopoietic necrosis (IHN) virus. Additional projects pursued the identification of the Ceratomyxa shasta life cycle and the role of nutrition in the growth, survival, and immune response of salmon. Efforts to expand work into other areas were precluded by the Council's moratorium on new research projects. Funding of existing projects and their oversight continued, but only one new project was begun under measure 703(e) in FY 1987.

As requested by 1984 Program Action Item 34.23, BPA evaluated the ongoing work under measure 703(e) and submitted a work plan to the Northwest Power Planning Council entitled: "Proposed Plans' for Qualitatively and Quantitatively Improving Artificial Propagation of Anadromous Salmonids in the Columbia River Basin."

In accordance with the 1987 Program amendments, a Hatchery Effectiveness Technical Work Group (HETWG) was formed. The group, composed of experts in hatchery effectiveness, developed a Five-Year Research Work Plan to address the technical needs of this Area of Emphasis, Section 206(b)(1)(c), and Program Measure 703(e).

Plans:

BPA plans to continue funding ongoing multiple-year projects, after reviewing their progress. BPA expects to use technical work groups to conduct onsite evaluations of existing projects. Following Council public review and approval of the HETWG Five-Year Work Plan, BPA will proceed with implementation of projects from the plan. BPA will continue to participate in the HETWG process and to rely on the group for expert opinion and collaboration in implementation.

A. COMPLETED PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>DATE COMPLETED</u>	<u>RESULTS/CONCLUSIONS</u>
83-451	<p>Stock Identification of Columbia River Chinook Salmon and Steelhead Trout - USFWS/OSU</p> <p>Objectives: Collect and analyze the existing data on each stock, as well as tissue samples for electrophoresis, climatic data, life history data, and morphometric analyses.</p>	August 1, 1986	The project provides a basis for identifying each stock of Columbia River Basin chinook salmon and steelhead trout. Between-year variation does not explain differences among the stocks in the meristic and body shape characteristics, with the exception of pelvic fin ray numbers in steelhead.
84-44	<p>Etiology of Early Lifestage Diseases - OHSU</p> <p>Objectives: Identity whether viable bacteria exist in the yolk of spawned salmon eggs; if so, identify them as to genus or species if possible, and relate these to hatching success/survival.</p>	July 1986	Bacterial counts in egg yolks varied from negative to over 100,000 per ml. <u>Aeromonas hydrophila</u> were the most common bacteria within surface-sterilized egg yolk, but several genera were identified, including one human pathogen (genus <u>Listeria</u>). Bacteria were not isolated from about two-thirds of the salmon eggs; most of the dead eggs/fry occurred in egg lots with bacterial counts above 1,000 per mil of yolk. Most of the "bad" eggs came from only a few females which might be identifiable from the cloudiness of ovarian fluid. Endotoxin levels in ovarian fluid were correlated with subsequent mortalities, but the cause-effect relationship is not clear.
82-21	<p>Control and Development of IHN Virus Through Antiviral Drugs in Sockeye, Chinook Salmon and Steelhead Trout - USFWS</p> <p>Objectives: Develop methods of identifying and reducing the mortality by IHN and incidence of high titers among brood stock.</p>	October 1985	<p>Identified that IHN virus attaches sperm and may infect eggs.</p> <p>Brood stock segregation and culling techniques were developed. This allows the breeding of low-titer mating pairs.</p> <p>Several chemicals showed promise in reducing the ability of the virus to infect fish <u>in vitro</u>.</p>

PROJECT NUMBER	TITLE	DATE COMPLETED	RESULTS/CONCLUSIONS
83-304	<p>Development of a Rapid Serio-diagnostic Test for the Selection, Surveillance and Diagnosis of Five Important Pathogens in the Columbia River Basin - USFWS</p> <p><u>Objectives:</u> Develop improved diagnostic tests for 1) IHN virus; 2) IPN virus; 3) <u>Aeromonas salmonicida</u>; 4) <u>Renibacterium salmoninarum</u>; and 5) <u>Yersinia ruckeri</u>.</p>	March 1986	<p>ELISA tests for virus were successful down to 10^{-4} plaque forming units per ml of sample. However, even this level of sensitivity is not adequate. ELISA tests for bacteria are operative and successful down to 2×10^{-9} grams of antigen per ml of sample. Tests can be completed in a day (versus several weeks for culture technique), allowing diagnosis and treatment in the same day.</p>
86-96	<p>EPA Facility Support for BKD Vaccine Testing in Salmon - EPA</p> <p><u>Objectives:</u> Provide water, fish tanks, general workspace, and life support conditions in support of BPA Project 84-46 (Development of a Vaccine for BKD).</p>	June 1987	<p>Project was successfully concluded. See Project 84-46.</p>

1987 ONGOING PROJECTS

PROJECT	SCHEDULE AND MILESTONES		
NUMBER	TITLE	PROJECT STATUS	FOR FY 1988 AND BEYOND
84-043	Evaluation of a Subunit Vaccine Against IHN Virus - OSU	<p><u>Date initiated:</u> July 1984</p> <p><u>Results/Conclusions:</u> A recombinant DNA vaccine to IHN virus has been prepared and laboratory tested and found to be effective.</p>	<ol style="list-style-type: none"> 1. 1987: Modify lab for large-scale testing. Evaluate immunization procedures. Compare susceptibility of Round Butte vs. Dworshak strain. 2. 1988: Preparation of 20 liters of vaccine. 3. 1989: Field trials Kooskia/Dworshak NFH. 4. 1990: Evaluate vaccine in sentinel fish.
	<u>Project Officer:</u> R. Morinaka		
	<u>Objectives:</u> Develop and test a subunit vaccine against IHN virus.		
84-045	Effective of Vitamin Nutrition on the Immune Response of Hatchery-Reared Salmon - USFWS	<p><u>Date initiated:</u> August 1984</p> <p><u>Results/Conclusions:</u> Peak immune responses require more pyridoxine and folic acid than currently recommended as required for growth.</p>	<ol style="list-style-type: none"> 1. 1988: Determine requirements for vitamin E and ascorbic acid: issue final report. 2. Project is funded to completion with FY 1987 funds.
	<u>Project Officer:</u> J. Gislason		
	<u>Objectives:</u> Provide diets and husbandry of fish to determine the amounts of selected vitamins required for peak functioning of the immune systems and high resiliance to infectious diseases (Vitamins selected: pyridoxine, folic acid, pantothenic acid, riboflavin, vitamin E, and ascorbic acid).		

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND
83-363	<p>Development of Diets for Enhanced Survival of Salmon - OSU/ODFW</p> <p><u>Project Officer:</u> J. Gislason</p>	<p><u>Date initiated:</u> 1983</p> <p><u>Results/Conclusions:</u> Cold-processed salmon meal would greatly enhance growth (and survival) of tule fall chinook.</p>	<ol style="list-style-type: none"> 1. Continuing: Diets will be formulated and fed to fish through 1987. 2. Continuing: Test fish will be tagged and released through 1987. 3. 1991: Recommendations for diet components for enhanced survival will be available.
84-945	<p>Influence of Vitamin Nutrition on the Immune Responses of Hatchery-Reared Salmonids - OSU</p> <p><u>Project Officer:</u> J. Gislason</p> <p><u>Objectives:</u> Provide immunological testing to determine the amounts of selected vitamins required for peak functioning of the immune system and high resistance to infectious diseases.</p>	<p><u>Date initiated:</u> August 1984</p> <p><u>Results/Conclusions:</u> (Preliminary) Immunological tests were developed which allow the quantitative measurement of immune responses.</p>	<ol style="list-style-type: none"> 1. 1988: Determine required amounts for vitamin E and ascorbic acid, issue final report. 2. Project is funded to completion with FY 1987 funds.
83-312	<p>Epidemiology and Control of Infectious Diseases of Salmonids in the Columbia River Basin - OSU</p> <p><u>Project Officer:</u> G. Bouck</p> <p><u>Objectives:</u> Collect epidemiological information on IHN disease, BKD, and ceratomyxosis relative to Columbia River salmon; investigate ways and means of controlling diseases.</p>	<p><u>Date initiated:</u> May 1983</p> <p><u>Results/Conclusions:</u> Freshwater clams convey the infectious lifestage of <u>Ceratomyxa Shasta</u>. This disease is spreading in the Basin. BKD is highly prevalent in the ocean as well as in freshwater.</p>	<ol style="list-style-type: none"> 1. 1989: Determine the role of freshwater clams in the lifecycle of <u>C. shasta</u>. 2. 1989: Test a suite of drugs against BKD. 3. 1989: Determine whether <u>Renibacterium salmoninarum</u> can be diagnosed by the presence of N-acetylfucosamine. 4. Project is funded to completion with FY 1987 funds.

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND
84-046	<p>Development of a Vaccine Against BKD in Salmon - OSU</p> <p>Project Officer: G. Bouck</p> <p>Objectives: Collect and treat fractions of <u>Renibacterium salmoninarium</u> with various agents to promote immune responses. Vaccinate fish with these fractions and challenge with live BKD to determine whether immunity was conveyed.</p>	<p>Date initiated: July 1, 1984</p> <p>Results/Conclusions: Some fractions have conveyed protection. Most promising prototype vaccine protected about 30% of the fish.</p>	<ol style="list-style-type: none"> 1. 1987: Determine the prophylactic value of current prototype vaccines. 2. 1988: Determine the prophylactic value of new prototype vaccines. 3. 1988: Refine most promising fraction and test. 4. June 1989: Final report. 5. Project is funded to completion with FY 1987 funds.
87-403	<p>Development of a Wet Lab for Infectious Fish Disease Research - OSU</p> <p>Project Officer: G. Bouck</p> <p>Objectives: Design and construct an expanded facility for research on various aspects of infectious diseases, for testing of anti-microbial agents, for developing and testing of vaccine, for providing biologicals, for improving diagnostic tests, and for providing professional training to fishery scientists.</p>	<p>Date initiated: August 1987</p> <p>Results/Conclusions: None.</p>	<ol style="list-style-type: none"> 1. April 1988: Design to be completed. 2. February 1989: Construction completed. 3. Project is funded to completion with FY 1987 funds.

III. NEW PROJECTS

Identification of additional new projects awaits the Five-Year Work Plan of the HETWG.

**4.17.5 WILLAMETTE BASIN STUDY PLAN [34.25]
(Fund; Coordinate with Supplementation Work Plan)**

703(h)(2) BPA shall provide funds to study the best method of supplementing natural stocks of spring chinook with hatchery stocks in the Willamette River. [Abstract] [704(k)(2)]

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 nine-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). Section 703(h)(1) is 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 will submit the study plan to the STWG for review, realizing the close ties to 703(h)(1) that this study should address. If Measure 703(h)(2) is a high priority in the STWG Five-Year Work Plan, BPA will work with ODFW and the STWG to develop a work plan and initiate research.

I. COMPLETED PROJECTS

PROJECT NUMBER	TITLE	DATE COMPLETED	RESULTS/CONCLUSIONS
85-68	Willamette Spring Chinook Study Plan - ODFW Objectives: Develop methodology to supplement the Willamette spring chinook runs with hatchery outplants to: 1. Develop and maintain maximum substantial yield. 2. Maintain genetic integrity. 3. Avoid adverse effects on natural stocks and resident populations.	1985	The study design failed to ensure compatibility with the 1985 704(k)(1) Supplementation Work Plan. The study design must be consistent with this work plan to be cost-effective to BPA and avoid redundancy.

II. FY 1987 ONGOING PROJECTS

None.

III. NEW PROJECTS

None.

SITE EVALUATION STUDY
(Former Action Item 34.27)

MEASURE LANGUAGE:

The Council has deleted language requiring BPA to fund the evaluation of hatchery fish release sites.

TECHNICAL SUBJECT ACTIVITY SUMMARY:

Not applicable. No ongoing projects and no further BPA action is required.

**4.17.6 PROPAGATION OF SALMON/STEELHEAD IN PELTON DAM FISH LADDER [34.]
(Fund. upon Council approval of Master Plan)**

- 703(g)(3) BPA shall fund propagation of salmon and/or steelhead smolts in the 2.8-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. [704(j)(3)]**

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.

Plans:

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

Projects:

BPA has budgeted funds for implementation in FY 1988. When the Council approves the master plan, BPA will proceed with implementation.

4.21 HATCHERY RELEASES IN UPPER COLUMBIA [34.28]
(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. [704(g)(2)]

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:

When the Council has reviewed the plan, BPA will proceed with funding of hatchery releases in the upper Columbia River.

Plans:

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

Projects:

No BPA-funded projects in FY 1988.

5.1 **KNOWN STOCK FISHERIES FIVE-YEAR DEMONSTRATION PROGRAM [38.1]**
(Co-Fund to Test Electrophoresis: Begin 1985 Ocean Fishing Season or Subsequent Seasons)

- 503(b)(1) **The Council supports inseason 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. [504(c)(1)]**

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To implement known-stock fishery demonstration projects to protect wild steelhead.

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 79-001). 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 resulted in a proven electrophoresis technique that is now applied widely in fisheries management. 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.

BPA is currently funding a known-stock fishery demonstration project (Project 84-2) to protect wild steelhead. Results indicate that the project is successful.

Plans:

Continue to fund Project 84-2 through completion.

I. COMPLETED PROJECTS

None.

II. FY 1987 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
84-2	Protection of Snake River Adult Steelhead with the Use of an Adipose Fin Clip - IDFG <u>Project Officer:</u> R. Morinaka <u>Objectives:</u> Hark steelhead with an adipose fin mark to differentiate the hatchery and wild component of the various runs.	<u>Date initiated:</u> October 1984 Results/Conclusions: The adipose fin mark can be utilized to enhance the protection of wild adult steelhead.	1. 1988: Completion report to be submitted April 1988. 2. Project funded through completion with FY 1987 funds.

III. NEW PROJECTS

None.

6.1 **TECHNICAL WORK GROUPS [39 .01]**
(Begin to Fund in FY 1987)

206(b)(1) and (2) 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. Solving 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 to 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. [Abstract] [204(c)]

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

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

Background and Progress to Date

BPA funded the establishment of TWG's in FY 1987. Each made progress in its tasks:

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

The M/WBTWG agreed on three areas of emphasis: survival and flow relationships, predation, 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 first (fishery agencies/Tribes) emphasizes long-term monitoring to determine the effectiveness of the Water Budget and examination of the mechanisms of reservoir mortality. The alternative plan (BPA/USACE/PNUCC) emphasizes shorter-term survival research and simultaneous research on both the extent and mechanisms involved in reservoir mortality.

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 resource. Basic information needs were identified and categorized by the level of urgency in relationship to the Fish and Wildlife Program

3. Hatchery Effectiveness Technical Work Group (HETWG):

The HETWG developed evaluation criteria and their 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 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.

4. Supplementation Technical Work Group (STWG):

The STWG identified two major types of questions on supplementation of natural runs with hatchery production: the conditions for successful supplementation and the impacts of supplementation on Indigenous stocks. The STWG identified six specific questions to define research activities. The work plan identified a prioritized list of research activities, test fish requirements, and rough cost estimates. It included criteria and justifications for recommendations. The STWG Work Plan was submitted to the Council in September 1987.

Plans:

BPA will continue to fund the TWG's through completion of all tasks identified in Section 206(b).

I. COMPLETED PROJECTS

None.

II. FY 1987 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
87-307	Areas of Emphasis, Technical Work Groups - PMFC <u>Project Officer:</u> M. Schneider <u>Objectives:</u> To fund Technical Work Groups to develop five-year work plans and perform other tasks listed in Measure 206(b).	<u>Date Initiated:</u> FY 1987 Results/Conclusions: BPA funded the establishment of four Technical Work Groups (TWG's) in FY 1987 The TWG's submitted five-year research work plans to the Council in September 1987	<ol style="list-style-type: none">1. The TWG's will assist BPA in the development, evaluation, and review of RFP's, project work statements, and related documents.2. Begin to implement research project identified by the TWG's. (See Tables 4A and 4B.)

III. NEW PROJECTS

None.

6.2 **RESEARCH IN THE FIVE-YEAR WORK PLANS [39.02]**
(Begin to Fund in FY 1988)

404 These measures address BPA funding of research, development,
 703 (e) and testing of improved fish husbandry practices, rearing
 703(h) operations, release strategies, stock assessment, fish health
 206(b) 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 6.2 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. [Abstract]
 [704(h)(2)(A), (B), (C), (D), (F), 704(K), 204]

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 TWG's and approved by the Council.

Background and Progress to Date:

The four TWG's (Reservoir Mortality and Water Budget Effectiveness, Fish Disease, Hatchery Effectiveness, and Supplementation) submitted Five-Year Research Work Plans in September 1987, for Council review and approval. The approval and public comment process will occur during September/October 1987. The Council staff advises BPA that Council decision regarding these three work plans is expected at the December 9-10, 1987, Council meeting.

Plans:

Tables 4A and 4B (presented in the Introduction of this document) display BPA's intent to anticipate and accommodate the results of the Council's TWG planning process. Consequently, BPA is prepared to fund (within established budget limits) implementation of the TWG Five-Year Work Plans in FY 1988, once the plans are adopted by the Council.

**6.3 DATA COLLECTION FOR HATCHERY DATA BASE [39.03]
(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. [204(f)(1)]

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To develop and implement the Hatchery Data Base.

Background and Progress to Date:

BPA has consulted with the MEG to begin developing the technical scope of the data base. BPA has already funded six related projects from FY 1984 to FY 1987.

Plans:

BPA will continue development and anticipates funding the data base in FY 1988. The ongoing fish health monitoring projects will continue in FY 1988, and these activities will be coordinated with the MEG to maximize the relevance of gathered fish health data to the Hatchery Data Base.

I. COMPLETED PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>DATE COMPLETED</u>	<u>RESULTS/CONCLUSIONS</u>
84-51	Survey of Artificial Production Facilities in the Columbia Basin - Consultant	October 1985	A data base was developed to catalogue all available Columbia Basin hatchery information.
	<u>Objectives:</u> Catalogue information on Columbia Basin hatcheries.		

II. FY 1987 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
86-13	Augmented Fish Health Monitoring in Washington - WDW	<u>Date initiated</u> 87-13: August 1986 87-54: July 1986	1. 1988: Continue to fund a comprehensive fish health management system through standardized monitoring.
86-54	Augmented Fish Health Monitoring in Washington - WDF	87-117: June 1987 87-118: June 1987 87-119: July 1987	2. 1989: Define fish culture impediments in the Columbia Basin hatcheries.
87-117	Augmented Fish Health Monitoring in Idaho - IDFG	<u>Results/Conclusions:</u> Erythrocytic Inclusion Body Syndrome (EIBS) is much more prevalent than previously thought. The various hatchery operator Fish Health Monitoring programs, as well as documentation of the programs, were inconsistent.	3. Continuing: Ensure compatibility of the data generated by these projects and 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		
	<u>Objectives:</u> Collect in a systematic standardized manner and provide a system of rapid storage and retrieval of fish health/production information in the dnadromous fish hatcheries of the Columbia River Basin.		
	<u>Project Officer:</u> R. Morinaka		

III. NEW PROJECTS

None.

**6.4 DATA COLLECTION FOR NATURAL PRODUCTION DATA BASE [39.04]
(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. [204(f)(2)]**

ACTION ITEM ACTIVITY SUMMARY-:

Objectives:

To develop and implement the Natural Production Data Base.

Background and Progress to Date:

BPA has consulted with the MEG to begin developing the technical scope of the data base.

Plans:

BPA will continue development and anticipates funding the data base in FY 1988.

Projects:

No BPA-funded projects.

6.5 **HIGH PRIORITY PROJECTS IN AREAS OF EMPHASIS [39.05]**
(Fund Only These in FY 1987)

206(b) This measure directs BPA to focus its funding of salmon and steelhead research in the next five years in the four areas of emphasis. [Abstract] [204tc]

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, has been 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.

Plans:

BPA has funded the project to completion with FY 1987 funds.

I. COMPLETED PROJECTS

None.

II. FY 1987 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
87-421	Malachite Green Removal From Hatchery Effluents - USFWS <u>Project Officer:</u> R. Morinaka <u>Objectives:</u> Demonstrate (in full scale) the removal of malachite green from hatchery effluent; assess the need for it in the Basin; evaluate ways and means to reduce the need for malachite green treatments.	<u>Date Initiated:</u> FY 1987 <u>Results/Conclusions:</u> No results at this time; project has just begun.	<ol style="list-style-type: none">1. December 1987: Startup and simulation studies.2. July 1988: Complete tests on 150 gpm-sized filters.3. December 1988: Complete remaining tests.

III. NEW PROJECTS

None.

**6.7 SUPPLEMENTATION RESEARCH [34.24]
(Fund)**

**703(h)(1) BPA shall fund research to determine the best methods of supplementing naturally spawning stocks with hatchery fish, particularly in the upper mainstem Snake and Columbia Rivers.
[704(k)(1)]**

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To fund the research necessary to determine the most effective means to supplement the anadromous Columbia River runs.

Background and Progress to Date:

During FY 1985, BPA convened a technical work group to develop a 704(k)(1) work plan for supplementation research. The work plan was submitted to the Council in October 1985. However, 1984 Program Action Item 39.1 (research moratorium) prevented BPA from pursuing new work in the supplementation research area. 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.

Plans:

BPA intends to initiate research, as defined by the STWG Five-Year Work Plan, once the plan has been approved by the Council.

Projects:

No BPA-funded projects in FY 1987. Funds are available to implement research projects in FY 1988 (See Tables 4A and 4B).

COORDINATION ACTION ITEMS

**6.12 CONTINUING COORDINATION AND CONSULTATION [42.1]
(By All Federal Project Operators/Regulators)**

1203(c) 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 between the 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. [Abstract] [1304(c)]

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

In conjunction with the Council and the Ad-Hoc Roles Committee of CBFWA. BPA plans to participate 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 should provide 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:

The agencies and Tribes have characterized the BPA implementation process as largely internal to BPA, led by the efforts of BPA's PAMs and COTR's. The fish and wildlife agencies and Tribes have also stated that the process has not provided an opportunity for them to participate.

Since early April 1987, BPA staff have been meeting with Council staff and an ad-hoc committee of CBFWA. The meetings have focused on explaining of 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

A problem statement, reflecting the concerns of the CBFWA, the Council, and BPA, has now been developed. A draft set of objectives for future implementation planning has also been developed.

Plans:

Once the objectives have been finalized, the group will begin to focus its effort on the development of the process. The previously agreed-on objectives will be used to evaluate whether elements of the process are necessary and appropriate to realize the goal of this effort. BPA anticipates that the final process will be completed in time to be used by BPA in development of its FY 1989 Work Plan.

RESIDENT FISH ACTION ITEMS AND TECHNICAL SUBJECTS

7.1 **COLVILLE HATCHERY C41.21**
(Complete Construction: March 1989)
(Fund Operation and Maintenance)

903(g)(1)(A) **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. [804(e)(15)]**

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. A technical work group was formed to provide input to the hatchery design and construction. An Intergovernmental Agreement was negotiated with the Confederated Colville Tribe (CCT), and an engineering firm was selected to do the preliminary and final design of the hatchery.

The preliminary design was completed in June 1986, and included a preliminary ground water supply study. This water supply report facilitated the final design of the hatchery, which was completed in September 1987.

Plans:

Upon approval of the final design plans, a contract will be let for the construction of the hatchery. Construction is scheduled to be completed in FY 1988. BPA will fund the operation and maintenance of the facility by the CCT.

I. COMPLETED PROJECTS

None.

II. FY 1987 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
85-38	Colville Hatchery - CCT <u>Project Officer:</u> C. Bohan <u>Objectives:</u> Design and construct a resident trout hatchery on the Colville Indian Reservation.	<u>Date initiated:</u> 1985 <u>Results/Conclusions:</u> Design completed in FY 1987.	1. October 1987: Let construction contract. 2. FY 1988: Complete construction. Begin funding operation and maintenance.

III. NEW PROJECTS

None.

7.2 **COEUR D'ALENE RESERVATION ACTIONS [41.02]**
(Fund Stream Survey; Design, Construction, Operation, and Maintenance of Cutthroat/Bull trout Hatchery; Habitat Improvement Projects; 3-Year Monitoring Program)

903(g)(1)(B) 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. [Abstract] [804(g)(1)(B)]

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 1989 with a project to conduct the stream surveys.

Projects:

No BPA-funded projects.

- 7.3 **KOKANEE SALMON HATCHERIES** [41.03]
 (Fund Design, Construction, Operation, Maintenance of Hatcheries at Galbraith Springs and Sherman Creek: Begin FY 1988.)
 (Fund Monitoring Programs)

903(g)(1)(C) 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. [Abstract] [804(g)(1)(C)]

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

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

Background and Progress to Date:

Not applicable.

Plans:

BPA will proceed with the preliminary design of the hatcheries in FY 1988, final design in FY 1989. Construction will begin in FY 1990. if the budget receives Congressional approval.

I. COMPLETED PROJECTS

None.

II. FY 1987 ONGOING PROJECTS

None.

III. NEW PROJECTS

PROJECT
NUMBER

TITLE

OBJECTIVES

SCHEDULE AND MILESTONES
FOR FY 1988 AND BEYOND

88-62

Kokanee Hatcheries - Galbraith
Springs and Sherman Creek

Design, construct, and operate
kokanee hatcheries.

Project Officer: F. Holm

Develop scopes of work, budgets, etc., for
preliminary design of hatcheries, proceed with
NEPA requirements, and select contractor for NEPA and
pre-design in 1988. Design and construct hatcheries
1989-1990.

7.4 **HABITAT AND PASSAGE IMPROVEMENTS ON LAKE ROOSEVELT TRIBUTARY
STREAMS [41.04]**
**(Fund Design, Construction, Operation, Maintenance of Projects:
 Begin FY 1989)
 (Fund Monitoring Programs).**

**903(g)(1)(D) 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. [Abstract] [804(g)(1)(D)]**

**903(g)(1)(E) Monitoring to evaluate the effectiveness of the measures above.
 [Abstract] [804(g)(1)(E)]**

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 prior to 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:

Not applicable.

Plans:

**BPA plans to fund a stock assessment study in FY 1988 and habitat
 improvement projects in FY 1989.**

I. COMPLETED PROJECTS

None.

II. FY 1987 ONGOING PROJECTS

None.

III. NEW PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>OBJECTIVES</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
88-63	Design, Construct, and Operate Habitat and Passage Improvement Projects in Tributaries of Lake Roosevelt - Monitor and Evaluate <u>Project Officer:</u> F. Holm	1. Determine status of fish stocks in Lake Roosevelt before construction of habitat improvement projects and hatcheries. 2. Construct habitat and passage improvement projects. 3. Evaluate contribution of these projects and hatcheries to Lake Roosevelt.	1. FY 1988: Develop scope of work and budget for project to assess status of stocks in Lake Roosevelt and start project. 2. FY 1989: Proceed with habitat projects.

- 7.5 **KOOTENAI INDIAN RESERVATION STURGEON HATCHERY [41.05]**
(Fund Design, Construction, Operation. Maintenance of Hatchery: Begin
FY 1988)
(Fund Evaluation Study)

903(g)(1)(H) 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. [Abstract] [804(g)(1)(H)]

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:

Site inspection has been made. BPA has met with the Tribe and IDFG to begin developing work statements and budgets.

Plans:

BPA will proceed with funding in FY 1988.

I. COMPLETED PROJECTS

None.

II. FY 1987 ONGOING PROJECTS

None.

III. NEW PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>OBJECTIVES</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
88-64	Design, Construct, and Operate a Sturgeon Hatchery on the Kootenai Reservation, Idaho - Kootenai Tribe	Same as title.	Contract with Tribe to drill well for water supply and design low cost facility. Construction will follow when egg source is guaranteed.

Project Officer: F. Holm

7.6 **STURGEON AND WATER LEVEL FLUCTUATIONS: IDAHO PORTION OF KOOTENAI RIVER** [41.06]
 (Fund Study to Assess impacts: Begin FY 1989)

903(g)(1)(I) 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. [Abstract] [804(g)(1)(I)]

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 met with the Kootenai Tribe and IDFG to begin developing a work statement and budget.

Plans:

BPA will fund this study beginning in FY 1988, with emphasis directed toward obtaining brood fish for the proposed hatchery.

I. COMPLETED PROJECTS

None.

II. FY 1987 ONGOING PROJECTS

None.

III. NEW PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>OBJECTIVES</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
88-65	Assess Impacts of Water Level Fluctuations on Sturgeon in the Kootenai River - IDFG <u>Project Officer:</u> F. Holm	Assess status of sturgeon stocks in the Kootenai River and effects of water fluctuations on these stocks. Obtain brood fish for hatchery.	Contract with IDFG to conduct this study beginning in 1988.

7.7 **PEND OREILLE RIVER FISHERY IMPROVEMENTS ON KALISPEL RESERVATION**
[41.07]
(After Council Consultation, Fund Assessment of Improvement
Opportunities: Begin FY 1988)

903(g)(1)(G) 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.
[Abstract] [804(g)(1)(G)]

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:

A Council consultation was held in Spokane on September 3, 1987, as called for in Action Item 7.9. It was decided that this project should be funded as early in FY 1988 as possible.

Plans:

BPA will fund initiation of this project in FY 1988.

I. COMPLETED PROJECTS

None.

II. FY 1987 ONGOING PROJECTS

None.

III. NEW PROJECTS

PROJECT
NUMBER

TITLE

OBJECTIVES

SCHEDULE AND MILESTONES
FOR FY 1988 AND BEYOND

88-66

Assess Fishery Improvement
Options in the Pend Oreille
River

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

BPA will work with the Upper Columbia United Tribes
and Kalispel Tribe to implement this study in 1988.

Project Officer: F. Holm

- 7.11 ONGOING STUDIES IN MONTANA [41.1]
 (Continue Cooperative Studies; Present Results to Council.
 Submit Recommendations by October 1, 1989.)

- 903 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 [Abstract] [804]

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

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

Background and Progress to Date:

This project is being 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 will be completed in 1988; BPA will submit the project results to the Council. Recommendations for future action will be submitted to the Council by October 1, 1989, as called for in the Action Item.

I. COMPLETED PROJECTS

None.

II FY 1987 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
83-1	<p>Lower Flathead System Fisheries Study - CSKT</p> <p><u>Project Officer:</u> F. Holm</p> <p><u>Objectives:</u> To identify impacts of hydroelectric development on aquatic habitat and resident fish in the lower Flathead River system. Detailed objectives are provided in the Project's annual reports.</p>	<p><u>Date Initiated:</u> FY 1983</p> <p><u>Results/Conclusions:</u> The study identified mitigable impacts associated with hydroelectric operations, irrigation project development and operation, and agriculture practices in the lower Flathead River and its tributaries. Hydroelectric operations could not be identified as affecting the populations of target fish species. The study concluded with the development of a wide range of fisheries management strategies. BPA expects the responsible management entities to review the study results and integrate appropriate strategies into a basin-wide aquatic resource management plan.</p>	<ol style="list-style-type: none"> 1. December 1987: Project will be completed. 2. BPA does not plan further involvement in the lower Flathead system.
85-23	<p>Determination of the fishery Losses in the South fork of the Flathead River and Tributaries Resulting from the Completion of Hungry Horse Dam - MDFWP</p> <p><u>Project Officer:</u> F. Holm</p>	<p><u>Date Initiated:</u> FY 1985</p> <p><u>Results/Conclusions:</u> The reach, stream order, and gradient for the reservoir tributaries and the South fork Flathead lost to inundation have catalogued, along with fish loss estimates in the final completion report.</p>	<ol style="list-style-type: none"> 1. January 1987: Project will be completed. 2. Results from this study will be included in the mitigation package submitted to the Council, as called for in the Action Item.

PROJECT
NUMBER

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES
FOR FY 1988 AND BEYOND

85-23
cont.

Objectives: 1) Assess the quality of game fish habitat lost in the South Fork Flathead River and its tributaries flooded by the reservoir.
2) Estimate game fish losses.
3) Propose alternatives to mitigate for lost game fish production.

Mitigation alternatives are listed.

81-55

Effects of Operation of Kerr and Hungry Horse Dams on the Reproductive Success of Kokanee in the Flathead System - MDFWP

Project Officer: T. Vogel

Objectives: 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.

Date initiated: September 1981

Results/Conclusions: 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, and 39641-4.

1. 1987: The contractor will complete field work in late 1987, analyze data, and prepare report.
2. March 1988: Final report will be issued.
3. Project is funded through completion in March 1988 with FY 1987 funds.

PROJECT
NUMBER

-TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES
FOR FY 1988 AND BEYOND

85-6

Determination of Instream flows Date initiated: 1985
Needed for Successful Migration,
Spawning and Rearing of Rainbow
and Cutthroat in Selected
Kootenai River Drainage
Tributaries - MDFWP

Results/Conclusions: Instream flow
requirements have been determined for
10 tributaries, as reported in the 1986
annual reports. Flows are being
determined for an additional 15 streams.

1. 1988: Project is scheduled for completion
in April 1988. The minimum flow recommendations
from this study will be filed for reservation under
the Montana Water Use Act of 1973.

2. Project is funded through completion with
FY 1987 funds.

Officer: F. H o l m

Objectives: 1. Determine instream
flow needs for fisheries using
wetted perimeter and IFG-1 methods.
2. Determine the existing trout
population in the affected reaches
of the tributaries and evaluate
potential fish passage problems.

111 NEW PROJECTS

None.

7.12 STURGEON STUDIES [41.3]
(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.
[804(e)(8)]

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 Washington (UW) study 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 first 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 six-year project because of the large study area and the multiple objectives involved.

I. COMPLETED PROJECTS

None.

II. FY 1987 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
83-316	White Sturgeon Early Life History Requirements and Genetics Study - UW <u>Project Officer:</u> F. Holm <u>Objectives:</u> 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 system on the sturgeon habitat.	<u>Date initiated:</u> 1984 <u>Results/Conclusions:</u> Allelic differences have been identified in fish from Lake Roosevelt. Additional samples will be taken to verify this. Stocks from lower Columbia appear to be genetically similar. Behavioral patterns and food requirements for young sturgeon have been documented. Annual reports are available.	1. 1988: The influence of water movement, substrate cover, and visibility on the feeding success of young sturgeon will be examined. Responses required to feed on prey and avoid predation will be identified. The genetic study will be extended to the upper Columbia River Basin. 2. 1990: 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 (WDF, USFWS, and NMFS are subcontractors) <u>Project Officer:</u> F. Holm	<u>Date initiated:</u> 1986 <u>Results/Conclusions:</u> First field season is underway. Collection of all age groups of sturgeon has been successful, with even larval sturgeon and eggs being collected in the Dalles pool. Coordination with the work ongoing below Bonneville Dam is excellent.	1. 1988: Study will continue in The Dalles pool, with some expansion into the BPA pool in 1988. Model development will begin to identify effects of hydropower on population status and habitat. 2. 1992: Project is scheduled for completion. 3. Project has been funded to completion with FY 1987 funds.

PROJECT
NUMBER

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES
FOR FY 1988 AND BEYOND

86-50
cont.

Objectives: Determine the status and habitat requirements of white sturgeon in the Columbia River downstream from McNary Dam. Detailed objectives are described in the projects 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 will produce 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 mysid 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

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>DATE COMPLETED</u>	<u>RESULTS/CONCLUSIONS</u>
84-19	Pend Oreil le (Cabinet Gorge) Hatchery - IDFG Objectives: Construct kokanee hatchery to produce 20 million fry annually.	November 1985	Construction of the Cabinet Gorge Kokanee Hatchery was completed. Hatchery is in operation.
86-120	Engineering Evaluation of Cabinet Gorge Hatchery - IDFG Objectives: Evaluate the effectiveness of design and construction practices as related to the production of kokanee fry. Make recommendations for improvements to future projects of this kind.	June 1987	Final report submitted July 1987, and presently under review.

II. FY 1987 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
85-339	Kokanee Stock Status and Contribution of Cabinet Gorge Hatchery, Lake Pend Oreille, Idaho - IDFG Project Officer: F. Holm Objectives: 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.	Date initiated: 1985 Results/Conclusions: Kokanee egg takes for the hatchery have been less than anticipated, but are increasing. 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 is working with Washington Water Power on this.	1. 1988: Additional techniques will be tried to mark kokanee before releases. Additional water will be requested for flushing flows in July 1988. 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. 2. Project will continue through 1990.

----- CLARK FORK PROJECTS (FORMER ACTION ITEM 41.5)

MEASURE LANGUAGE:

Not applicable. Council deleted measure in amended Program

TECHNICAL SUBJECT ACTIVITY SUMMARY:

Objectives:

To develop a water management plan for the supplemental water releases from Painted Rocks Reservoir to best enhance the fishery in the Bitterroot River.

Background and Progress to Date:

The work plan for Clark Fork fishery loss was combined with the work plan called for in Action Item 7.11. BPA has taken the position that it is not obligated to carry out the research or the water purchase called for in former Action Item 41.5 because all of the hydro projects on the Clark Fork River are privately owned. BPA did agree to fund a study (Project 83-463) to develop the water management plan for water releases from Painted Rocks Reservoir. Montana Power Company has agreed to purchase water from Painted Rocks Reservoir for flow augmentation in the Bitterroot River. This purchase will be made in perpetuity as mitigation for the Thompson Falls project on the Clark Fork River.

Plans:

BPA plans no further involvement in this or related projects.

I. COMPLETED PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>DATE</u>	<u>COMPLETED</u>	<u>RESULTS/CONCLUSIONS</u>
83-463	Evaluation of Management for Water Releases for Painted Rocks Reservoir, Bitterroot River, Montana - MDFWP Objectives: Develop a water management plan for the supplemental water releases from Painted Rocks Reservoir to best enhance the fishery in the Bitterroot River.	April 1987		The objectives of the project were met and the information is available in the final report. The water management plan has proved to be effective in enhancing the rainbow and brown trout population in the river. An additional 10,000 acre-feet of water to supplement the fish flows in the river has been purchased by Montana Power Company in perpetuity as off-site mitigation for Thompson Falls Dam. MDFWP will schedule the water releases using the water management plan.

II. FY 1987 ONGOING PROJECTS

None |

III. NEW PROJECTS

None.

7.13 ACCUMULATED MATERIALS IN KOOTENAI RIVER [41.6]
(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. [804(d)(1)]

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 [41.7**
(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)(16), may be submitted to the Council. [804(e)(12)]**

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 for 4 years, 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 1987 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
87-99	Dworshak Dam Impacts Assessment and fisheries Investigation - IDFG	<u>Date initiated:</u> July 1987 Results/Conclusions: N/A - Project just started. <u>Project Officer:</u> F. H o l m	1. Project will last four years. Afterward, recommendations will be made to the Council for measures to protect, mitigate, and enhance resident fish in Dworshak Reservoir.
	<u>Objectives:</u> 1. Assess the status of kokanee stocks in the reservoir. 2. Document losses of kokanee through turbines at Dworshak Dam. 3. Assess limnological parameters and evaluate impacts of reservoir management on the zooplankton community and kokanee production.		

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
87407	Oworshak Reservoir Investigation Trout, Bass and Forage Species -NPT	<u>Date initiated:</u> July 1987 <u>Results/Conclusions:</u> N/A - Project just started. <u>Project Officer:</u> F. H o l m	1. Project will last four years. Afterward, 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
FOR FY 1988 AND BEYOND

87-407
cont.

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.

III. NEW PROJECTS

None.

7.15 **ONGOING DRAWDOWN STUDIES 141.011**
(Continue Cooperative Studies; Present Results to Council. Submit Recommendations by March 1, 1988.)

903(b)(3-4) **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 via 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. [Abstract] [804(b)(3-4)]**

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, designed to document the effects of water level fluctuations on game fish, are nearing completion. The fluctuations have a negative impact on primary production in the reservoirs, hence a direct impact on fish production. Annual reports from 1983 through 1986 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.

Plans:

The projects will be completed this year and recommendations for further action submitted to the Council in July 1988.

I. COMPLETED PROJECTS

None.

II. FY 1987 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
83-465	Quantification of Hungry Horse Reservoir Levels Needed to Maintain or Enhance Reservoir fisheries - MDFWP	<u>Date initiated:</u> April 1, 1983 <u>Results/Conclusions:</u> See annual report.	1. Continuing: Collect data and develop quantitative model to predict the impact of reservoir operation upon habitat, primary production, secondary production, and gamefish populations. 2. November 15, 1987: Field studies will be completed. 3. July 1, 1988: Analysis of model results will be completed. 4. July 1, 1988: Completion reports will be finished.
	<u>Project Officer:</u> D. Johnson		
	<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.		
83-467	Quantification of Libby Reservoir Levels Needed to Maintain or Enhance Reservoir Fisheries - MDFWP	<u>Date initiated:</u> April 1, 1983 <u>Results/Conclusions:</u> See annual report.	1. See Project 83-465. 2. Funds will be transferred into this project to provide for FY 1988 activities.
	<u>Project Officer:</u> D. Johnson		
	<u>Objectives:</u> See Project 83-465.		

IV. NEW PROJECTS

None.

WILDLIFE ACTION ITEMS AND TECHNICAL SUBJECTS

The wildlife section of the Program establishes a process with two objectives: wildlife protection, mitigation, and enhancement planning; and implementation of actions to protect, mitigate, and enhance wildlife affected by development and operation of hydroelectric facilities in the Columbia River Basin. The Council's wildlife mitigation planning and implementation process is outlined in Table 6. This sequential process begins with the review of the status of wildlife mitigation at Columbia River Basin hydroelectric facilities [Measure 1003(b)(1)], proceeds to the development of estimates of wildlife losses, and then to development of recommended actions for the protection, mitigation, or enhancement of wildlife [Measure 1003(b)(3). Mitigation Plans]. Finally, implementation of wildlife protection, mitigation, and enhancement occurs upon amendment of wildlife actions into the Program by the Council [Measure 1003(b)(4)].

TABLE 6**WILDLIFE MITIGATION PLANNING AND IMPLEMENTATION PROCESS**

	<u>Action Item</u>	<u>Description</u>	<u>Measure</u>
Step 1	None	Status Reports	1003(b)(1)
Step 2	None	Consultation to discuss need for and direction of further studies.	1003(b)(2)
Step 3	8.1	Fund loss statements when needs are identified.	1003(b)(2), Table 3
Step 4	8.2	Initiate consultations on completed loss statements.	1003(b)(3) and (5)
Step 5	8.3	Fund development of mitigation plans and submit to Council for review and approval.	1003(b)(3) and (5). (d)(1)-(2)
Step 6	8.16	Council review of mitigation plans and amendment of mitigation actions into Program	1003(b)(3)-(5), (d)(1)-(2)
Step 7	8.5-8.11	Implementation of mitigation actions amended into Program	1003(b)(4), Table 4

----- CONSULTATION ON PRIORITY MITIGATION PROJECTS [40.1]
(Consult with Fish and Wildlife Agencies and Tribes on Need for Loss Estimates or Actual Mitigation Projects on Identified Priority Projects).

1003(b)(2) Initiate consultations on each hydroelectric project or series of projects, among the appropriate fish and wildlife agencies, Tribes, Federal project operators and regulators, and BPA customers to discuss the need for and direction of further studies. [Abstract] [1004(b)(2)]

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To use these consultations to scope the need for and direction of wildlife protection, mitigation, and enhancement planning for the Federal Columbia River Power System (FCRPS) hydroelectric facilities. No projects/contracts will be funded by BPA under this Action Item

Background and Progress to Date:

The wildlife section of the Program establishes a stepped planning process intended to develop protection, mitigation, and enhancement actions for wildlife affected by the development and operation of hydroelectric facilities in the Columbia River Basin. The purpose of former Action Item 40.1 consultations was to assist in identifying the need for and direction of studies to estimate the net hydropower impacts on wildlife and wildlife habitat.

Table 7 outlines the status of these consultations for FCRPS facilities. Consultations have been held on 23 of the 29 FCRPS facilities. Two facilities (Chandler and Roza) do not require consultations, as the Washington Department of Wildlife (WDW) and U.S. Fish and Wildlife Service (USFWS) indicated during the status review of these facilities that impacts on wildlife were minor and that further action under the Program was not recommended. The Lower Snake Facilities (Ice Harbor, Lower Monumental, Little Goose, and Lower Granite) are the only FCRPS projects yet to have consultations.

Plans:

BPA plans to hold a consultation on the Lower Snake Facilities in FY 1988. This will complete former Action Item 40.1 for the FCRPS Facilities.

TABLE 7
STATUS OF 1984 PROGRAM ACTION ITEM 40.1 WILDLIFE CONSULTATIONS
AT FCRPS FACILITIES

<u>Hydro Facility</u>	<u>Status</u>	<u>Outcome</u>
<u>Montana</u>		
Hungry Horse	Held - June 1983	Mitigation planning for this facility was initiated before the Program required consultations. See Action Item 8.1.
Libby	Held - July 1983	Mitigation planning for this facility was initiated before the Program required consultations. See Action Item 8.1.
<u>Idaho</u>		
Palisades	Held - June 1984	
Anderson Ranch	Held - January 1985	
Black Canyon	Held - January 1985	Loss assessment was funded. See Action Item 8.1.
Boise Diversion	Held - January 1985	
Dworshak	Held - March 1985	
Albeni Falls	Held - April 1987	Combined loss assessment and mitigation plan was funded. See Action Items 8.1 and 8.3.
Mnidoka	Held - February 1987	Recommended development of a loss assessment/mitigation plan. See Action Item 8.1.
<u>Washington</u>		
Grand Coulee	Held - April 1985	Loss assessment/mitigation plan was funded. See Action Item 8.1.
Chief Joseph	Held - February 1987	Recommended development of a loss assessment/mitigation plan. See Action Item 8.1.
Lower Snake (Ice Harbor, Lower Monumental, Little Goose, Lower Granite)	Proposed for FY 1988	
Chandler	None Proposed	
Roza	None Proposed	

<u>Hydro Facility</u>	<u>Status</u>	<u>Outcome</u>
<u>Oregon</u>		
Willanette		Loss assessments were funded for Willanette facilities. See Action Item 8.1.
Cougar	Held - May 1984	
Lookout Point	Held - May 1984	
Dexter	Held - May 1984	
Hills Creek	Held - May 1984	
Green Peter	Held - March 1985	
Foster	Held - March 1985	
Detroit	Held - March 1985	
Big Cliff	Held - March 1985	
<u>Oregon/Washington</u>		
Bonneville	Held - March 1985 - June 1985	Loss assessment was funded. See Action Item 8.1.
The Dalles	Held - March 1985 - June 1985	Recommended development of a loss assessment. See Action Item 8.1.
John Day	Held - March 1985 - June 1985	
McNary	Held - March 1985 - June 1985	

8.1 **LOSS STATEMENTS** [40.2]
(Fund as Needs are Identified.)

- 1003(b)(2) If BPA and the Council's wildlife coordinator determine that loss statements would be appropriate, then BPA shall fund studies to develop statements of wildlife and/or habitat losses. These statements of wildlife and/or wildlife habitat losses shall take into account all existing information pertinent to the project area and shall address both realized and potential positive and negative effects. [Abstract]
[1004(b)(2)]

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 recommendations 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 8 outlines the status of loss assessments at FCRPS facilities. Loss assessments have been completed for 15 of the 29 FCRPS facilities. Two facilities (Roza and Chandler) do not require loss assessments.

Plans:

Loss assessments are proposed to be initiated for five FCRPS facilities in FY 1988. Assessments for three facilities are ongoing and will be completed in FY 1988. The need to undertake loss assessments for the other FCRPS facilities (Lower Snake) depends upon outcome of 8.2 consultations.

TABLE 8
STATUS OF ACTION ITEM 8.1 WILDLIFE LOSS STATEMENTS
AT FCRPS FACILITIES

<u>Hydro Facility</u>	<u>Outcome</u>
<u>Montana</u>	
Hungry Horse	Completed - December 1983
Libby	Completed - December 1983
<u>Idaho</u>	
Palisades	Completed - January 1985
Anderson Ranch	Completed - May 1986
Black Canyon	Completed - May 1986
Boise Diversion	Completed - May 1986
Dworshak	Initiated - June 1987
Minidoka	Proposed for FY 1988
Albeni Falls	Initiated - September 1987
<u>Washington</u>	
Grand Coulee	Completed - August 1986
Chief Joseph	Proposed for FY 1988
Ice Harbor	Not started
Lower Monumental	Not started
Little Goose	Not started
Lower Granite	Not started
Chandler	None proposed
Roza	None proposed
<u>Oregon</u>	
Cougar	Completed - July 1985
Lookout Point	Completed - July 1985
Dexter	Completed - July 1985
Hills Creek	Completed - July 1985
Green Peter	Completed - January 1986
Foster	Completed - January 1986
Detroit	Completed - January 1986
Big Cliff	Completed - January 1986
<u>Oregon/Washington</u>	
Bonneville	Initiated - June 1987
The Dalles	Proposed for FY 1988
John Day	Proposed for FY 1988
McNary	Proposed for FY 1988

I. COMPLETED PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>DATE COMPLETED</u>	<u>RESULTS/CONCLUSIONS</u>
83-498	Impacts of Water Levels on Productivity of Canada Geese in the Northern Flathead Valley - MDFWP Objectives: 1. Identify effects of water level fluctuations on on goose nesting success and nesting habitat. 2. Identify effects of water level fluctuations on gosling survival and brooding habitat. 3. Develop recommendations to protect and/or enhance Canada goose production.	August 1987	MDFWP concluded in their report that the primary and most significant effect on geese has been the loss of 1,850 acres of nesting and brood-rearing habitat on the north shore of Flathead Lake and 273 acres along the Flathead River below Kalispell. The report attributes these impacts to the construction and/or operation of Kerr Dam. Hungry Horse Dam, as it is currently operated, does not appear to be having a significant effect on downstream island nests. Brood-rearing habitat appears to be limited in the project area, along with suitable nesting habitat in the upper river area. The report identifies possible mitigation/management recommendations. For more detailed information, see the final report.
83-464	Evaluation of the Effects on Wildlife and Wildlife Habitat Associated with Development of Hydroelectric Projects in Montana - MDFWP Objectives: This project implemented Action Items 8.1 and 0.3. For description see this project under Action Item 8.3.	January 1985	See this project under Action Item 8.3.

PROJECT NUMBER	TITLE	DATE COMPLETED	RESULTS/CONCLUSIONS
84-36	Wildlife and Wildlife Habitat Loss Assessments for the Willamette River Basin Federal Hydroelectric Facilities - ODFW	January 1986	<p>ODFW estimated that approximately 20,123 acres of habitat were lost due to development of the 8 Willamette facilities. Of the habitat lost, 49% was classified as general purpose big game winter range, 25% riparian and 26% old-growth forest.</p> <p>These losses are for the entire reservoir area. They do not take into account the need to allocate losses among the various project purposes. For more detailed information, see the loss assessment summary report for the Willamette Facilities; publication number DOE/BP 18969-6.</p>
04-37	Wildlife and Wildlife Habitat Loss Assessment for Palisades Dam, Idaho - USFWS	January 1985	<p>The USFWS completed a loss assessment for Palisades Dam. The report estimates that 15,600 acres of wildlife habitat were lost due to the reservoir, which affected big game, furbearers, waterfowl, upland game, raptors, and non-game wildlife.</p> <p>The loss assessment ascribes 100% of the wildlife impacts resulting from the reservoir to hydropower. For more detailed information see the Final Project Report; publication number DOE/BP 18968-1.</p>
85-I	Wildlife and Wildlife Habitat Loss Assessment for the Anderson Ranch, Black Canyon, and Boise Diversion Hydroelectric Facilities in Idaho - IDFG	May 1986	<p>IDFG completed loss assessments for Anderson Ranch, Black Canyon, and Boise Diversion. The report estimates that 5,220 acres of wildlife habitat were lost from Anderson Ranch, 1,104 acres from Black Canyon, and 66 acres from Boise Diversion.</p> <p>These loss assessments ascribe 100% of the wildlife impacts resulting from these facilities to hydropower. For more detailed information, see the Final Project Report; publication number DOE/BP 23578-I.</p>

Objectives: Estimate the net effects on wildlife from hydroelectric development and operation of the eight Federal facilities in the Willamette River Basin.

Objectives: Estimate the net effects on wildlife from hydroelectric development and operation of Palisades Dam.

Objective: Estimate the net effects on wildlife from hydroelectric development and operation.

PROJECT NUMBER	TITLE	DATE COMPLETED	RESULTS/CONCLUSIONS
86-74	Wildlife Protection, Mitigation and Enhancement Planning for Grand Coulee Dam - WDW	August 1986	See this project under Action Item 8.3.

Objectives: This project implemented Action Items 8.1 and 8.3. For description, see this project under Action Item 8.3.

II. FY 1987 ONGOING PROJECTS

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND
83-2	Impacts of Water Levels on Canada Geese - Confederated Salish and Kootenai Tribes	<p>Date initiated: January 1983</p> <p>Results/Conclusions: final results/ conclusions are not available at this time. Preliminary information can be found in the annual reports; publication numbers DOE/BP 203, DOE/BP 10062, DOE/BP 10062-I.</p>	<ol style="list-style-type: none"> 1. September 1987: Draft Completion Report. 2. October 1987: Final Completion Report. 3. Project has been funded to completion with FY 1987 funds.

Project Officer: J. Meyer

Objectives: 1. Identify effects of water level fluctuations on goose nesting success and nesting habitat.
2. Identify effects of water level fluctutations on gosling survival and brooding habitat.
3. Develop recommendations to protect and/or enhance Canada goose production.

PROJECT
NUMBER

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES
FOR FY 1988 AND BEYOND

87-43

Wildlife Protection, Mitigation
and Enhancement Planning for
Albeni Falls Dam - IDFG

Date initiated: September 1987

Results/Conclusions: Not available at
this time.

See this project under Action Item 8.3.
Project has been funded to completion with
FY 1987 funds.

Project Officer: J. Meyer

Objectives: This project
implements Action Items 8.1
and 8.3. For description,
see this project under
Action Item 8.3.

87-110

Wildlife Protection, Mitigation
and Enhancement Planning for
Bonneville Dam - USFWS

Date initiated: June 1987

Results/Conclusions: Not available at
this time.

1. March 1988: Draft Final Report for wildlife
assessment.
2. April 1988: Formal consultation on project
findings and recommendations.
3. FY 1988: Final Report for wildlife assessment
completed .
4. FY 1988: Possibly initiate mitigation plan
phase, under Action Item 8.3. Initiation and
schedule for mitigation planning depends upon
completion and results of the wildlife assessment
and consultation.

Project Officer: J. Meyer

Objectives: 1. Estimate net
effects on wildlife resulting
from hydroelectric development
and operation.
2. Identify current status and
management goals/plans for
target wildlife.
3. Recommend wildlife protection
mitigation and enhancement
goals.

PROJECT
NUMBER

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES
FOR FY 1988 AND BEYOND

87-111

Wildlife Protection, Mitigation, and Enhancement Planning for Dworshak Reservoir - IDFG

Date initiated: June 1987

Results/Conclusions: Not available at this time.

Project Officer: M. Mahaffy

Objectives: 1. Summarize the net effects on wildlife from development and operation of Dworshak Reservoir.
2. Identify current status and management goals/plans for target wildlife.
3. Recommend wildlife protection, mitigation, and enhancement goals for Dworshak Reservoir area.

1. September 1987: Consultation.
2. November 1987: Draft Report for wildlife assessment.
3. January 1988: Consultation.
4. January 1988: Final Report for wildlife assessment.
5. FY 1988: Possibly initiate mitigation plan phase, under Action Item 8.3. Initiation and schedule for mitigation planning depends upon completion and results of the wildlife assessment and consultation.

87-406

Wildlife Protection, Mitigation and Enhancement Planning for Dworshak Dam - NPT

Date initiated: June 1987

Results/Conclusions: Not available at this time.

Project Officer: M. Mahaffy

Objectives: 1. Summarize the net effects on wildlife in the Clearwater River area from development and operation of Dworshak Reservoir.
2. Identify current status and management goals/plans for target wildlife.
3. Recommend wildlife protection, mitigation, and enhancement goals for the Clearwater River area.

1. September 1987: Consultation.
2. November 1987: Draft Report for wildlife assessment.
3. January 1987: Consultation.
4. January 1988: Final Report for wildlife assessment.
5. FY 1988: Possibly initiate mitigation plan phase, under Action Item 8.3. Initiation and schedule for mitigation planning depends upon completion and results of the wildlife assessment and consultation.

III. NEW PROJECTS

PROJECT NUMBER	TITLE	<u>OBJECTIVES</u>	SCHEDULE AND MILESTONES <u>FOR FY 1988 AND BEYOND</u>
88-110	Wildlife and Wildlife Habitat Loss Assessment for Minidoka Dam in Idaho <u>Project Officer:</u> M. Mahaffy	1. Estimate net effects on wildlife from hydroelectric development and operation. 2. Identify current status and management goals/plans for target wildlife. 3. Recommend wildlife protection, mitigation, and enhancement goals.	January 1988: Initiate development of and negotiations for the project. Project schedule will be developed as part of this activity.
88-44	Wildlife Protection, Mitigation and Enhancement Planning for Chief Joseph Dam <u>Project Officer:</u> J. Meyer	1. Estimate the net effects on wildlife from hydroelectric development and operation. 2. Identify current status and management goals/plans for target wildlife. 3. Recommend protection, mitigation and enhancement goals for target wildlife. 4. Recommend wildlife protection, mitigation, and enhancement actions.	November 1987: Initiate development and negotiation of the project. Project schedule will be developed as part of this activity.
88-12	Lower Columbia (The Dalles John Day, McNary) Wildlife Protection, Mitigation, and Enhancement Planning - Wildlife Assessment Phase <u>Project Officer:</u> J. Meyer	1. Estimate net effects on wildlife from hydroelectric development and operation. 2. Identify current status and management plans/goals for target wildlife. 3. Recommend wildlife protection, mitigation, and enhancement goals.	January 1988: Initiate development and negotiations of the project. Project schedule will be developed as part of this activity.

8.2 **LOSS STATEMENTS [40.3]**
(Begin Consultation)

1003(b)(3) **Upon completion of the 1003(b)(2) 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.**
[Abstract] [1004(b)(3)]

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To provide a review of Action Item 8.1 loss assessments and to assist in defining the scope and direction for 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 10 of the 29 FCRPS facilities. Two facilities (Chandler and Rota) do not require consultations. Table 9 outlines the status of these consultations.

Plans:

Consultations will be held on four FCRPS facilities in FY 1988. The need to hold consultations on other FCRPS facilities will depend upon the outcome of 8.2, 8.14, and 8.15 consultations and 8.1 loss assessments.

TABLE 9
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 Libby	Held Held	Mitigation planning was initiated before the Program required 8.2 consultations. See Action Item 8.3.
<u>Idaho</u>		
Palisades Anderson Ranch Black Canyon	Held - January 1985 Held - August 1986 Held - August 1986	Mitigation plan was funded. See Action Item 8.3.
Boise Diversion	Held - August 1986	Determined it was not effective to fund development of a mitigation plan.
Dworshak	Proposed for FY 1988	
Albeni Falls	Proposed for FY 1988	
Mnidoka	Proposed for FY 1989	
<u>Washington</u>		
Grand Coulee	Held - April 1985	Mitigation plan was funded. See Action Item 8.3.
Chief Joseph	Proposed for FY 1988	
Lower Snake (Ice Harbor, Lower Monumental, Little Goose, Lower Granite)	Not held	
Chandler	None Proposed	
Roza	None Proposed	

<u>Hydro Facility</u>	<u>Status</u>	<u>Outcome</u>
<u>Oregon</u>		
Willamette		Mitigation plan was funded. See
Cougar	Held - May 1984	Action Item 8.3.
Lookout Point	Held - May 1984	
Dexter	Held - May 1984	
Hills Creek	Held - May 1984	
Green Peter	Held - March 1985	
Foster	Held - March 1985	
Detroit	Held - March 1985	
Big Cliff	Held - March 1985	

Oregon/Washington

Bonneville	Proposed for FY 1988
The Dalles	Not held
John Day	Not held
McNary	Not held

8.3 **MITIGATION PLANS** [40.4]
 (Fund Development)

1003(b)(3) **Based upon these discussions [1003(b)(3) consultations], BPA shall fund the development of mitigation plans for each of these projects. [Abstract] [1004(b)(3)]**

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To identify target wildlife species for protection, mitigation, and enhancement; to develop protection, mitigation, and enhancement goals; and to recommend actions to achieve these goals 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, and are to complement existing wildlife management plans and goals. Information from Action Item 8.2 consultations is used to develop the scope of these plans. Wildlife protection, mitigation, and enhancement recommendations developed in these plans are submitted to the Council for their consideration for amendment into the Program

Table 10 outlines the status of mitigation plans at FCRPS facilities. Mitigation plans have been completed for 14 of the 29 FCRPS facilities. Mitigation plans will not be undertaken for three FCRPS facilities (Roza, Chandler, and Boise Diversion).

Plans:

Mitigation plans are proposed to be initiated for three facilities in FY 1988. Mitigation planning for one facility is ongoing and will be completed in FY 1988. The need to develop mitigation plans for the other FCRPS facilities depends upon the outcome of loss assessments (Action Item 8.1) and Action Item 8.2 consultations.

TABLE 10
STATUS OF ACTION ITEM 8.3 WILDLIFE MITIGATION PLANS
AT FCRPS FACILITIES

<u>Hydro Facility</u>	<u>Outcome</u>
<u>Montana</u>	
Hungry Horse	Completed - January 1985
Libby	Completed - January 1985
<u>Idaho</u>	
Palisades	Completed - November 1986
Anderson Ranch	Completed - June 1987
Black Canyon	Completed - June 1987
Boise Diversion	Not proposed
Dworshak	Proposed for FY 1988
Mnidoka	Not started
Albeni Falls	Initiated - September 1987
<u>Washington</u>	
Grand Coulee	Completed - August 1986
Chief Joseph	Proposed for FY 1988
Ice Harbor	Not started
Lower Monumental	Not started
Little Goose	Not started
Lower Granite	Not started
Chandler	None proposed
Roza	None proposed
<u>Oregon</u>	
Cougar	
Lookout Point	
Dexter	
Hills Creek	All completed - April 1987
Green Peter	
Foster	
Detroit	
Big Cliff	
<u>Oregon/Washington</u>	
Bonneville	Proposed for FY 1988
The Dalles	Not started
John Day	Not started
McNary	Not started

I. COMPLETED PROJECTS

PROJECT NUMBER	TITLE	DATE - -	RESULTS/CONCLUSIONS
83-464	<p>Evaluation of the Effects on Wildlife and Wildlife Habitat Associated with Development of Hydroelectric Projects in Montana - MDFWP</p> <p>Objectives: 1. Based on existing information, determine the net effects (on wildlife) associated with development of Columbia River Basin hydroelectric facilities in Montana. 2. Develop mitigation goals and objectives, and recommend actions for the protection, mitigation, and enhancement of target wildlife.</p>	January 1985	<p>Wildlife loss assessments and mitigation plans were developed for Libby, Hungry Horse, and the Clark Fork River hydroelectric facilities.</p> <p>Wildlife mitigation actions for Libby and Hungry Horse dams have been amended into the Program for implementation. (See Action Items 8.4 and 8.8.) For more detailed information, see Final Project reports; publication numbers DOE/BP 367 and DOE/BP 366.</p>
86-64	<p>Wildlife Protection, Mitigation and Enhancement Plan for Willamette River Basin Federal Hydroelectric Facilities - ODFW</p> <p>Objectives: Develop a wildlife protection, mitigation, and enhancement plan for the eight Federal hydroelectric facilities in the Willamette River Basin.</p>	April 1987	<p>A mitigation plan has been completed by ODFW and transmitted to the Council for review and consideration for amendment of wildlife actions into the Program. The plan directs mitigation towards losses of big game winter range, riparian habitat, and old-growth forest. Estimated cost of the plan is \$46 to \$106 million. The plan does not allocate mitigation among the various project purposes (ie., 100% ascribed to hydro). For more information, see the Final Project report: publication number DOE/BP 62381-1.</p>

PROJECT
NUMBER

TITLE

DATE COMPLETED

RESULTS/CONCLUSIONS

86-73

Wildlife Protection, Mitigation and Enhancement Plans for Upper Snake River Federal Hydroelectric Facilities in Idaho - IDFG

June 1987

Objectives: 1. Develop protection, mitigation, and enhancement goals for target.
2. Recommend actions for the protection, mitigation, and enhancement of target wildlife.

Mitigation plans have been developed by IDFG for Palisades, Black Canyon, and Anderson Ranch dams, for wildlife losses identified under Action Item 8.1 (projects 84-37 and 86-1. The estimated costs for these plans are \$15.5 million for Palisades, \$4.5 million for Anderson Ranch, and \$780,000 for Black Canyon.

These plans do not allocate mitigation among the various project purposes (i.e., 100% ascribed to hydro). For more information, see the Final Project reports: Palisades - DOE/BP 62775-1 and: Black Canyon/Anderson Ranch - DOE/BP-62775-2.

86-74

Wildlife Protection, Mitigation and Enhancement Planning for Grand Coulee Dam, Washington - WDW

August 1986

Objectives: 1. Estimate the effects on wildlife resulting from hydroelectric development and operation.
2. Develop protection, mitigation and enhancement goals for target wildlife.
3. Recommend actions for the projection, mitigation, and enhancement of target wildlife.

A mitigation plan has been completed by WDW and transmitted to the Council for review and consideration for amendment of wildlife actions into the Program. The plan recommends the acquisition of 51,000 acres of wildlife habitat in fee-title and management rights on 22,000 acres at an estimated cost of \$41 million.

The plan does not allocate mitigation among the various project purposes (i.e., 100% ascribed to hydro). For more information, see the Final Project report; publication number DOE/BP 60445-1.

II. FY 1987 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
87-43	Wildlife Protection, Mitigation and Enhancement Planning for Albeni Falls Dam - IDFG <u>Project Officer:</u> J. Meyer <u>Objectives:</u> 1. Estimate the net effects on wildlife, resulting from hydroelectric development and operation. 2. Identify current status and management goals/plans for target wildlife. 3. Recommend protection, mitigation, and enhancement goals for target wildlife. 4. Recommend wildlife protection, mitigation, and enhancement actions.	<u>Date initiated:</u> September 1987 <u>Results/Conclusions:</u> Not available at this time.	<ol style="list-style-type: none">1. September 1987: Consultation meeting.2. February 1988: Consultation meeting.3. May 1988: Draft report.4. June 1988: Consultation meeting.5. July 1988: Final report.6. Project has been funded to completion with FY 1987 funds.

III. NEW PROJECTS

None.

- 8.4** **LIBBY DAM MITIGATION [40.01]**
(Initiate Advance Design for White-Tailed Deer, Mile Deer, Columbia Sharp-Tailed Grouse, and Waterfowl Projects; Continue Implementation and Monitoring of Big Horn Sheep Project: 1987)
- 8.5** **LIBBY DAM MITIGATION [40.02]**
(Continue Advance Design for Deer, Waterfowl, Grouse Projects; Begin Implementation and Monitoring for Mile Deer Project; Continue Implementation and Monitoring of Bighorn Sheep Project: 1988)
- 8.6** **LIBBY DAM MITIGATION [40.03]**
(Begin Implementation and Monitoring for White-Tailed Deer and Waterfowl Projects; Begin Acquisition of Easements for Grouse; Continue Implementation and Monitoring of Mile Deer and Bighorn Sheep Projects: 1989)
- 8.7** **LIBBY DAM MITIGATION [40.04]**
(Continue Implementation and Monitoring for White-Tailed Deer, Mile Deer, Bighorn Sheep, and Waterfowl Projects; Continue Acquisition of Easements for Grouse: 1990, 1991)

1003(b)(4) **Upon Council review of the mitigation plans developed pursuant to Sections 1003(b)(3) or (5), the Council will amend appropriate portions of the mitigation plans into the Columbia River Basin Fish and Wildlife Program in accordance with Section 1400 of the program. After mitigation plans are amended into the program, BPA or the appropriate project operator shall fund implementation as specified in Table 4. [1004(b)(4)]**

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.
[Abstract]

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

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

Background and Progress to Date:

Action Items 8.4-8.7 pertain to the advanced design and implementation of wildlife mitigation projects for Libby Dam

In FY 1987, BPA initiated advanced design for the wildlife habitat improvement and protection projects.

Plans:

BPA plans to complete the advanced design for easements/acquisitions (habitat protection) projects in FY 1988, with implementation beginning in FY 1989. Also in FY 1988, an interim habitat improvement plan will be completed and begun. Advanced design for a ten-year habitat improvement program will be completed in FY 1990.

I. COMPLETED PROJECTS

None.

II. FY 1987 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
87-55	Northwest Montana Wildlife Habitat Enhancement - MDFWP <u>Project Officer:</u> J. Meyer <u>Objectives:</u> This project undertakes advanced design of the habitat enhancement actions for Libby and Hungry Horse Dams. 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.	<u>Date initiated:</u> September 1987 Results/Conclusions: Not available at this time.	1. December 1987 : Draft interim enhancement plans. 2. February 1988: Final interim enhancement plans. 3. October 1989: Draft ten-year enhancement plans. 4. December 1989: Final ten-year enhancement plans.
87-60	Montana Wildlife Easements/Land Acquisitions - MDFWP <u>Project Officer:</u> J. Meyer <u>Objectives:</u> This project undertakes advanced design for the Libby and Hungry Horse wildlife habitat protection actions. 1. Develop habitat protection plans for the bear, waterfowl, and grouse projects. 2. Develop a feasibility plan for protection of terrestrial furbearer habitat.	<u>Date initiated:</u> September 1987 Results/Conclusions: Not available at this time.	1. August 1988: Draft report. 2. September 1988: Final report.

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
84-38	Ural-Tweed Bighorn Sheep Enhancement - USFS <u>Project Officer:</u> J. Meyer <u>Objectives:</u> Enhance approximately 1,300 acres of sheep range on Kootenai National Forest lands.	<u>Date initiated:</u> September 1984 <u>Results/Conclusions:</u> Final results/ conclusions are not available at this time. Preliminary information is available in annual reports: publication numbers DOE/BP 18966-1 and DOE/BP 18966-2.	1. October 1988: Draft completion report. 2. December 1988: Final completion report. 3. Project has been funded to completion with FY 1987 funds.
84-39	Ural-Tweed Bighorn Sheep Mitigation - MDFWP <u>Project Officer:</u> J. Meyer <u>Objectives:</u> 1. Evaluate the effectiveness of the habitat improvements done under Project 84-38. 2. Outline a program to maintain a viable bighorn sheep population.	<u>Date initiated:</u> September 1984 <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.	1. October 1988: Draft report. 2. December 1988: Final report. 3. Project has been funded to completion with FY 1987 funds.

III. NEW PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>OBJECTIVES</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
88-43	Libby Wildlife Mitigation/ Enhancement <u>Project Officer:</u> J. Meyer	Initiate habitat improvement activities on Kootenai National Forest lands for mule deer and bighorn sheep (implements actions developed under Project 87-55).	Undetermined.

- 8.8** HUNGRY HORSE DAM MITIGATION [40.05]
 (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 [40.06]
 (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 [40.07]
 (Begin/Continue Implementation of Waterfowl, Elk/Mule Deer, Black
 Bear/Grizzly Bear Projects: 1989-1991.)

1003(b)(4) Upon Council review of the mitigation plans developed pursuant to Sections 1003(b)(3) or (5). the Council will amend appropriate portions of the mitigation plans into the Columbia River Basin Fish and Wildlife Program in accordance with Section 1400 of the program. After mitigation plans are amended into the program BPA or the appropriate project operator shall fund implementation as specified in Table 4. [1004(b)(4)]

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. [Abstract]

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

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

Background and Progress to Date:

Action Items 8.8-8.10 pertain to the advanced design and implementation of wildlife mitigation for Hungry Horse Dam

In FY 1987, BPA initiated advanced design for the wildlife habitat improvement and protection projects.

Plans:

BPA plans to complete the advanced design for easement/acquisitions (habitat protection) projects in FY 1988, with implementation beginning in FY 1989. In FY 1988, an interim habitat improvement plan will also be completed. Advanced design for a ten-year habitat improvement program will be completed in FY 1990.

I. COMPLETED PROJECTS

None.

II. FY 1987 ONGOING PROJECTS

PROJECT NUMBER	TITLE	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
87-55	<p>Northwest Montana Wildlife Habitat Enhancement - MDFWP</p> <p><u>Project Officer</u>: J. Meyer</p> <p><u>Objectives</u>: This project undertakes advanced design of the habitat enhancement actions for Libby and Hungry Horse Dams.</p> <p>1. Develop a habitat enhancement plan for elk/mule deer on Flathead National Forest lands.</p> <p>2. Develop a habitat enhancement plan for mule deer/bighorn sheep on Kootenai National Forest lands.</p>	<p><u>Date initiated</u>: September 1987</p> <p><u>Results/Conclusions</u>: Not available at this time.</p>	<p>1. December 1987: Draft interim enhancement plans.</p> <p>2. February 1987: Final interim enhancement plans.</p> <p>3. October 1989: Draft ten-year enhancement plans.</p> <p>4. December 1989: Final ten-year enhancement plans.</p>
87-60	<p>Montana Wildlife Easements/Land Acquisitions - MDFWP</p> <p><u>Project Officer</u>: J. Meyer</p> <p><u>Objectives</u>: This project undertakes advanced design for the Libby and Hungry Horse wildlife</p>	<p><u>Date initiated</u>: September 1987</p> <p><u>Results/Conclusions</u>: Not available at this time.</p>	<p>1 August 1988: Draft report.</p> <p>2 September 1988: Final report.</p>

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
87-60 cont.	habitat protection actions. 1. Develop habitat protection plans for the bear, waterfowl, and grouse projects. 2. Develop a feasibility plan for protection of terrestrial furbearer habitat.		

III. NEW PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>OBJECTIVES</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
88-1 13	Hungry Horse Wildlife Mitigation/Enhancement <u>Project Officer</u> : J. Meyer	Initiate habitat improvement activities on Flathead National Forest lands for elk and mule deer (implements actions developed under Project 87-55).	Undetermined.

8.11 INNOVATIVE FUNDING OF HUNGRY HORSE/LIBBY MITIGATION 140.081
 (Seek out Methods, Report to Council by May 1987)

1003(b)(4) Upon Council review of the mitigation plans developed pursuant to Section 1003(b)(3) or (5), the Council will amend appropriate portions of the mitigation plans into the Columbia River Basin Fish and Wildlife Program in accordance with Section 1400 of the Program. After mitigation plans are amended into the Program, BPA or the appropriate project operator shall fund implementation as specified in Table 4.

Table 4 calls for BPA to consult with the MDFWP, the USACE, the USBR, and BPA customers to explore alternative methods, including a trust fund, for financing wildlife mitigation measures at Hungry Horse and Libby dams. [Abstract]

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To explore the trust fund concept as an alternative (cost-effective) method for funding wildlife mitigation for Libby and Hungry Horse dams.

Background and Progress to Date:

The trust fund concept involves BPA making annual payments, over a period of years and up to an agreed-upon limit, to the State of Montana. These funds would be placed into an interest-bearing account; the funds generated by the account would be used by Montana to undertake wildlife mitigation. In return, Montana would absolve BPA of wildlife mitigation responsibilities for Libby and Hungry Horse dams.

A BPA review of the trust concept (completed May 1987) indicated that the concept is viable. In order to comply with Treasury regulations, however, BPA must receive performance of comparable value at the time it makes such payments. Performance of comparable value has been proposed as a settlement/hold-harmless agreement with the State of Montana.

In July 1987, The Council indicated interest in the concept and urged BPA to consider it in negotiations with Montana for wildlife mitigation at Libby and Hungry Horse. The Council, however, has concerns with a settlement agreement as the performance of comparable value BPA receives from Montana.

Plans:

BPA will continue discussions with the Council and Montana on the trust concept to determine whether a satisfactory agreement can be reached. If a satisfactory agreement can be developed, then mitigation actions for Libby Dam (Action Items 8.5 - 8.7) and Hungry Horse Dam (Action Items 8.9 - 8.10) will be funded through the trust arrangement.

Projects:

No BPA-funded projects.

**FUTURE HYDROMCTRIC DEVELOPMENT
ACTION ITEMS AND TECHNICAL SUBJECTS**

9.1 **APPLICATION OF PROGRAM SECTIONS 1204(a), (b), (c), AND (e) TO NEW PROJECTS 135.11**

1103 (a-c, e) These measures direct BPA and the hydroelectric project operators and regulators not to license, exempt from license, relicense, proposal, 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. [Abstract]
[1204(a-c, e)]

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 C35.41**
(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. [1204(b)(2)]**

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 developed a methodology to assess potential cumulative effects. The results will be used to illustrate the strengths and weaknesses of the method. The final report is being reviewed by BPA. Anticipated publication date is October 1, 1987.

Plans:

BPA has no plans for further funding.

I. COMPLETED PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>DATE COMPLETED</u>	<u>RESULTS/CONCLUSIONS</u>
84-41	Determination of Methods for Assessing Cumulative Effects of Hydroelectric Development in the Columbia River Basin - Argonne National Laboratory	July 1, 1987	The project developed a method for successfully assessing the cumulative effects of hydroelectric development.
	<u>Objectives:</u> See Action Item 9.3.		

II. FY 1987 ONGOING PROJECTS

None.

III. NEW PROJECTS

None.

----- PROTECTED AREAS
(Former Action Item 35.5)

1103(c)(1) Conduct a study of alternative means for classifying and designating certain streams and wildlife habitat, which should be protected from all future hydroelectric development. The study shall draw from existing information on the hydroelectric potential of such streams, as well as the value of the fish and wildlife resources. [1204(c)(1)]

TECHNICAL SUBJECT ACTIVITY SUMMARY:

Objectives:

To assess and document the significance of the region's river resources, such as resident fish, wildlife, natural features, cultural features, recreation, and institutional constraints. Findings will form a resource information base for use in Council, BPA, and state hydropower planning.

Background and Progress to Date:

Recent interest in hydropower energy has intensified public awareness of the potential conflict between hydroelectric development and other river values. This Action Item was to develop a method to evaluate rivers objectively and to establish areas for fish and wildlife protected from hydroelectric development. The Council will designate stream reaches to be protected. The designations will be based on the results of this study and other requirements of the Northwest Power Act. The River Study will also help BPA to forecast power needs reliably and to acquire cost-effective hydropower.

In order to ensure that all relevant river values were considered, BPA assisted the states, Tribes, Federal resource and land management agencies, energy development interests, and interested publics to identify significant river values throughout the region. Additional Council studies complemented the Rivers Study, by compiling information in the areas of Native American cultural sites and anadromous fish.

BPA has completed: 1) the resource data acquisition; 2) computerizing of the database; 3) the public review process; 4) project summaries; 5) final reports and guidelines; and 6) examples of statewide resource maps.

Plans:

Action Item has been completed.

I. COMPLETED PROJECTS

PROJECT
NUMBER

TITLE

DATE COMPLETED

RESULTS/CONCLUSIONS

84-40

Pacific Northwest Rivers
Study -Multiple Federal,
State, and Tribal Agencies

April 1, 1987

The significance of the region's river resources
was assessed and documented. The findings will form
a resource information base for use in hydropower
planning.

Objectives: See former Action
Item 35.5.

II. FY 1987 ONGOING PROJECTS

None.

III. NEW PROJECTS

None.

**9.4 TURBINE INTAKE SCREENS [35.6]
(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. [1204(d)(1)]

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To develop a new standard fish screen which 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:

The Electric Power Research Institute (EPRI) planned to conduct field tests of selected downstream fish diversion systems, including turbine intake screens. This EPRI research project would have fulfilled the Action Item. However, EPRI now does not plan to evaluate fish screening systems. In light of this change of plans, BPA will initiate a project in FY 1988 to evaluate new screen designs.

I. COMPLETED PROJECTS

None.

II. FY 1987 ONGOING PROJECTS

None.

III. NEW PROJECTS

PROJECT
NUMBER

TITLE

OBJECTIVES

SCHEDULE AND MILESTONES
FOR FY 1988 AND BEYOND

88-I 14

Develop Alternate Turbine
Intake Screen Designs

Evaluate existing and new fish screen
designs; determine biological
efficiency and cost-effectiveness.

Project Officer: D. Johnson

1. October - November 1987: Assemble a technical work group to scope and determine research needs.
2. November 1987 - June 1988: Develop procurement solicitation and negotiate contract to perform study.
3. July 1988: Begin design, complete design by January 1989.
4. 1989: Construct and test
5. January 1991: Project completed.

**WORK AND EXPENDITURE PLAN
ACTION ITEMS**

**10-1- EXPENDITURE AND OBLIGATION PLANS [39.2-
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) These measures describe Program implementation by Federal project operation and regulators and BPA, consultation and coordination, and BPA funding of the Program [Abstract] [1304(a, e)]

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

The Work Plan for fiscal year 1988 describes BPA plans for implementation of the Council's Program and, in particular, the Action Plan. The Work Plan 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:

This Work Plan was developed by BPA in consultation with the Council staff, state and Federal agencies, Tribes, and the PNUCC. A series of meetings has been conducted by the Ad-Hoc Roles Committee of the CBFWA. One of the primary purposes of these meetings was to review and obtain support from the fish and wildlife agencies and Tribes regarding the estimated costs ascribed to new activities resulting from amendments to the Council's Program (see Tables 4A and 4B).

Plans:

The thrust of the FY 1988 Not-k Plan is the maintenance of ongoing BPA project funding. However, providing the flexibility for BPA to respond to various planning efforts (e.g., the TWG's) is equally important. CBFMA, Council, and BPA collaborative planning has identified new implementation activities and their estimated costs resulting from the Program amendments. See Action Item 6.12.

NONMEASURE ACTIVITIES

OTHER PROJECTS

----- OTHER PROJECTS

MEASURE LANGUAGE:

Not applicable. These are nonmeasure projects.

TECHNICAL SUBJECT ACTIVITY SUMMARY:

See individual projects in the following table.

I. COMPLETED PROJECTS

PROJECT NUMBER	TITLE	<u>DATE COMPLETED</u>	<u>RESULTS/CONCLUSIONS</u>
86-14	Effects of the Cabinet Gorge Kokanee Hatchery on Wintering Bald Eagles in the Lower Clark Fork River and Lake Pend Oreille - IDFG	September 30, 1987	Not available at this time. The final report is in preparation.

II. FY 1987 ONGOING PROJECTS

PROJECT NUMBER	TITLE	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND</u>
85-35	Juvenile Radio Tag Studies - NMFS <u>Project Officer:</u> D. Johnson <u>Objectives:</u> Develop the concept and hardware needed to use mass releases of radio-tagged juveniles to resolve passage problems at dams.	<u>Date initiated:</u> 1985 Results/Conclusions: Radio tags can be used on yearling chinook and steelhead to determine passage issues without biologically affecting or biasing the test results.	1. This project will be completed in February 1988. 2. The contractor will provide the final project report by February 1988.
81-1	Flow and Spill Requirements for Juvenile Fall and Summer Chinook Salmon in John Day Reservoir - NMFS <u>Project Officer:</u> T. Vogel <u>Objectives:</u> Develop instream summer flow recommendations for subyearling summer migrating chinook.	<u>Date initiated:</u> 1981 <u>Results/Conclusions:</u> Subyearling chinook do not migrate as actively as yearling chinook and do not respond to flow augmentation up to 380 kcfs in the John Day reservoir.	1. Continuing: BPA will continue to fund the project through to completion in 1988. 2. Continuing: Contractor will continue to compile and analyze adult return data through 1987, and complete the final completion report in FY 1988.

PROJECT
NUMBER

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES
FOR FY 1988 AND BEYOND

87-129

Lower Granite Pool Survival
Study - NMFS

Date initiated: 1987

Results/Conclusions: Field data have
been collected and are being analyzed.

Project Officer: D. Johnson

Objectives: Estimate the
survival rate of juvenile
yearling chinook salmon traversing
the Lower Granite reservoir, and
determine the feasibility of using
the PIT tag to conduct survival
studies.

1. Continuing: BPA has funded the project
through to completion in 1988.

2. Continuing: Contractor will continue to analyze
the recapture data and complete the final report
by 1988.

87-130

An Assessment of the Freeze
Brand Recovery Data for Yearling
Chinook Salmon at McNary Dam -
NMFS

Date initiated: 1987

Results/Conclusions: Field data have
been collected and are being analyzed.

Project Officer: D. Johnson

Objectives: Determine whether
PIT-tagged and freeze-branded
yearling chinook and steelhead
are recovered at different rates
and identify the sources of
sampling error.

Same as Project 87-129.

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND
82-16	<p data-bbox="354 207 696 264">Yakima River Spring Chinook Enhancement Study - YIN</p> <p data-bbox="354 302 696 326"><u>Project Officer:</u> T. Vogel</p> <p data-bbox="354 363 737 553"><u>Objectives:</u> Establish methods to rebuild spring chinook salmon runs in the Yakima River while maintaining the genetic components of the naturally reproducing stocks.</p>	<p data-bbox="774 207 1079 232"><u>Date initiated:</u> FY 1982</p> <p data-bbox="774 269 1272 451"><u>Results/Conclusions:</u> 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.</p>	<ol style="list-style-type: none"> <li data-bbox="1307 207 1856 264">1. Continuing: BPA has funded the project to completion. <li data-bbox="1307 302 1856 354">2. March 1991: Project is scheduled for completion; final report will be available.
79-2	<p data-bbox="354 594 737 740">An Evaluation of the Contribution of Chinook Salmon Reared at Columbia River Hatcheries to the Pacific Salmon Fisheries - NMFS</p> <p data-bbox="354 781 737 805"><u>Project Officer:</u> R. Morinaka</p> <p data-bbox="354 846 737 997"><u>Objectives:</u> Determine the distribution, contribution, and value of artificially reared chinook salmon to the Pacific salmon fisheries.</p>	<p data-bbox="774 594 1079 618"><u>Date initiated:</u> FY 1979</p> <p data-bbox="774 656 1220 708"><u>Results/Conclusions:</u> Data analysis is not yet complete.</p>	<ol style="list-style-type: none"> <li data-bbox="1307 586 1856 643">1. September 1987: Data analysis and final report will be completed.

III. NEW PROJECTS

None.

PROJECT SUPPORT

----- PROJECT SUPPORT ACTIVITIES

MEASURE LANGUAGE:

Not applicable. These are nonmeasure projects.

TECHNICAL SUBJECT ACTIVITY SUMMARY:

See individual projects in the following table.

I. COMPLETED PROJECTS

PROJECT NUMBER	TITLE	DATE COMPLETED	RESULTS/CONCLUSIONS
87-124	PIT Tag Purchase for the 1987 Smolt Migration Research - Identification Devices, Inc.	1907	BPA purchased 32,000 PIT tags and distributed a portion of them to various fish passage research projects.
	<u>Objectives:</u> Purchase tags for field studies to be conducted in 1987 and beyond.		

II. FY 1987 ONGOING PROJECTS

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND
82-13	Coded Wire Tag Recovery - PMFC	<u>Date initiated:</u> 1982	1. Continuing: will fund the collection of coded wire tag data.
	<u>Project Officer:</u> D. Johnson	<u>Results/Conclusions:</u> A variety of sport, commercial, and hatchery recoveries were made, decoded, and documented.	2. Continuing: Contractor will provide an annual report of tag recovery activities and data.
	<u>Objectives:</u> Support WDF, WDW, and ODFW recoveries of coded wire tags for salmon and steelhead.		
83-6	Operation/Maintenance of BPA Fish Tagging Trailer - USFWS	<u>Date initiated:</u> 1983	1. Continuing: BPA will fund the marking of various smolt monitoring, freeze-branded, and PIT-tagged groups.
	<u>Project Officer:</u> D. Johnson	<u>Results/Conclusions:</u> New marking trailers are being outfitted and a total of 2.3 million fish is being marked.	2. Continuing: Contractor will provide an annual report on tagging operations and maintain the tagging trailers and equipment.
	<u>Objectives:</u> Using a mobile fish marking unit, conduct marking programs at hatcheries throughout the region for BPA funded activities, including the smolt monitoring program.		

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES FOR FY 1988 AND BEYOND
83-319	New Fish Tag System - NMFS	<u>Date initiated:</u> 1983	<ol style="list-style-type: none"> 1. Continuing: BPA will fund the project through to completion. Biological studies are essentially complete, and monitoring hardware continues to be developed. 2. Continuing: Contractor will finalize biological studies and equipment development and provide evaluation reports annually.
	<u>Project Officer:</u> D. Johnson	<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.	
	<u>Objectives:</u> Determine the biological feasibility of injecting salmon and steelhead with PIT tags for passage and monitoring research activities.		
87-400	PIT Tag and Equipment Purchase <u>Date Init-:</u> FY 1987 - Private Vendor	<u>Results/Conclusions:</u> Procurement of PIT tags is ongoing.	<ol style="list-style-type: none"> 1. 1988: Contractor will purchase tags and equipment. Develop installation designs and coordinate designs and schedules with agencies and Tribes. 2. Project has been funded to completion.
	<u>Project Officer:</u> D. Johnson		
	<u>Objectives:</u> Purchase detection equipment for John Day, Little Goose, and Bonneville dams for future PIT tag installations. Purchase 100,000 PIT tags for future passage research to be used during the 1988 to 1990 period of budgeting shortfalls.		

III. NEW PROJECTS

None.