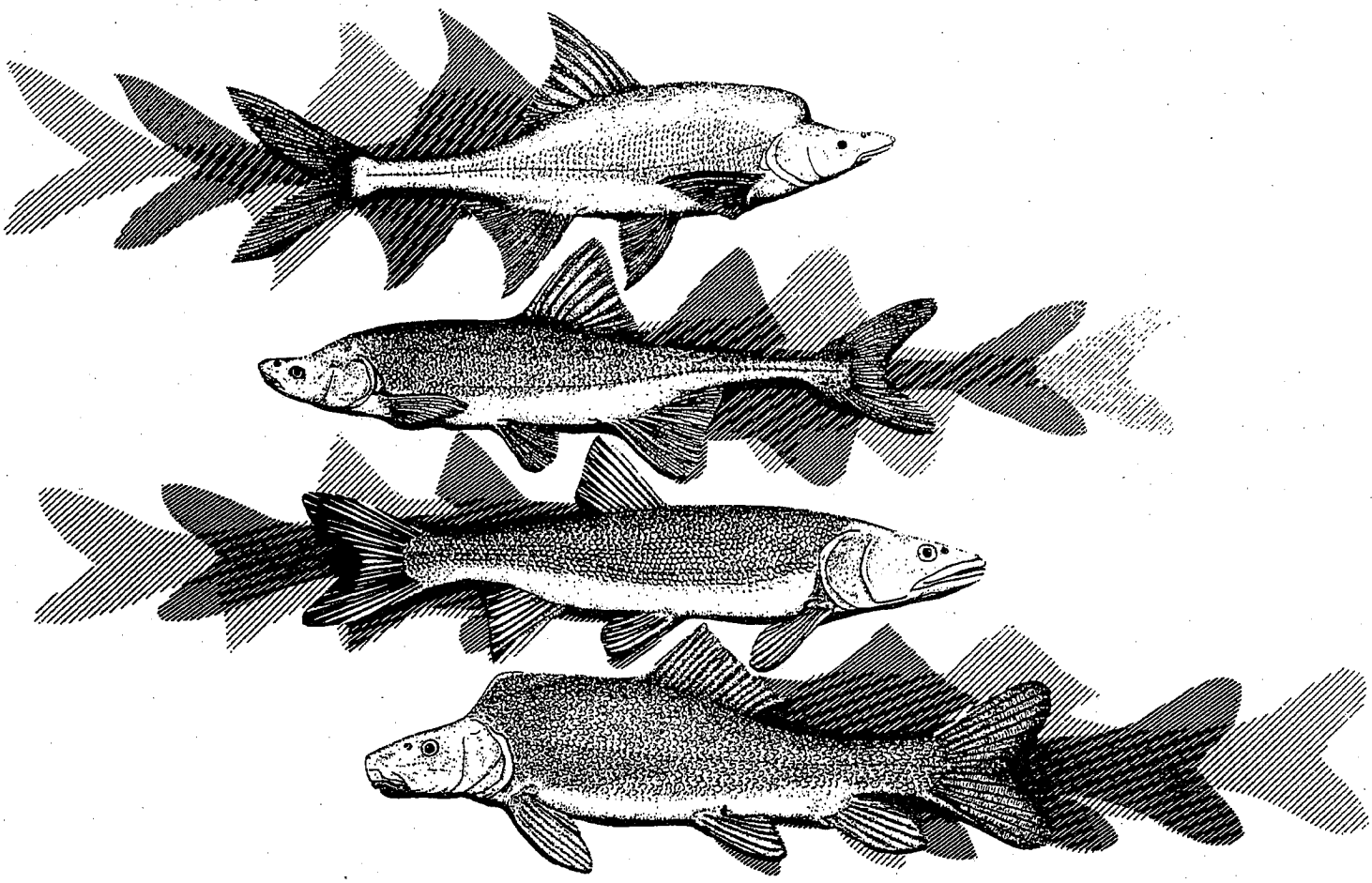

SECTION 7 CONSULTATION, SUFFICIENT PROGRESS, AND HISTORIC PROJECTS AGREEMENT

AND

RECOVERY ACTION PLAN (RIPRAP)

RECOVERY IMPLEMENTATION PROGRAM FOR ENDANGERED FISH SPECIES IN THE UPPER COLORADO RIVER BASIN

United States Department of the Interior
Fish and Wildlife Service
Region 6, Denver, Colorado

REVISED
MARCH 6, 1998

PREFACE

This document was originally finalized on October 15, 1993. Part One remains unchanged. Part Two has been revised to accommodate annual updates as well as the designation of critical habitat for the endangered fishes.

PART ONE: Section 7 Consultation, Sufficient Progress, and Historic Projects Agreement

Sections 4.1.5, 4.1.6, and 5.3.4 of the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (Recovery Program) outline procedures for consultation pursuant to Section 7 of the Endangered Species Act on water projects in the Upper Colorado River. The Section 7 Consultation, Sufficient Progress, and Historic Projects Agreement (Section 7 Agreement), was developed by Recovery Program participants to clarify how Section 7 consultations will be conducted on water depletion impacts related to new projects and impacts associated with historic projects (existing projects requiring a new Federal action) in the Upper Basin.

PART TWO: Recovery Implementation Program Recovery Action Plan

The Recovery Implementation Program Recovery Action Plan (RIPRAP) was developed by the Recovery Program participants in support of the Section 7 Agreement using the best information available and the recovery goals established for the four endangered fish species. It identifies specific actions and time frames currently believed to be required to recover the endangered fishes in the most expeditious manner in the Upper Basin. The RIPRAP will serve as a measure of accomplishment so that the Recovery Program can continue to serve as the reasonable and prudent alternative to avoid the likelihood of jeopardy to the continued existence of the endangered fishes for projects undergoing Section 7 consultation as well as to avoid the likely destruction or adverse modification of critical habitat.

PART ONE:

RECOVERY IMPLEMENTATION PROGRAM SECTION 7 CONSULTATION, SUFFICIENT PROGRESS, AND HISTORIC PROJECTS AGREEMENT

Agreement

Section 7 Consultation, Sufficient Progress, and Historic Projects

Recovery Implementation Program for the Endangered Fish Species in the Upper Colorado River Basin

October 15, 1993

I. Background

The Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (RIP) is intended to go considerably beyond offsetting water depletion impacts by providing for the full recovery of the four endangered fishes. The RIP participants recognize that timely progress toward recovery in accordance with a well-defined action plan is essential to the purposes of the RIP, including both the recovery of the endangered fishes and providing for water development to proceed in compliance with State law, Interstate Compacts, and the Endangered Species Act (ESA). Recovery activities which result in significant protection and improvement of the endangered fish populations and their habitat need to receive high priority in future planning, budgeting, and decision making. The RIP participants accept that certain positive population responses to RIP initiatives are not likely to be measurable for many years due to the time required for the endangered fishes to reach reproductive maturity, limited knowledge about their life history and habitat requirements, sampling difficulties and limitations, and other factors. The RIP participants also recognize that further degradation of endangered fish habitats and populations will make recovery increasingly difficult.

II. RIP Recovery Action Plan (RIPRAP)

The Recovery Action Plan (RIPRAP) identifies actions currently believed to be required to recover the endangered fishes in the most expeditious manner possible in the upper basin. It has been developed using the best information available and the recovery goals established for the four endangered fish species. By reference, the RIPRAP is incorporated and considered part of this agreement. The RIPRAP will be an adaptive management plan because additional information, changing priorities, and the development of the States' entitlement may require modifications to the RIPRAP. The RIPRAP will be reviewed annually and modified or updated, if necessary, by September 30 of each year or prior to adoption of the annual work plan, whichever comes first. The RIPRAP will serve as a guide for all future planning, research, and recovery efforts, including the annual work-planning and budget decision process.

The RIP is intended to provide the reasonable and prudent alternatives for projects undergoing Section 7 consultation in the upper basin. While some recovery actions in the RIPRAP are expected to have more direct or immediate benefits for the endangered fishes than others, all are considered necessary to accomplish the objectives of the RIP. Recovery

actions which protect or improve habitat conditions and result in more immediate, positive population responses will be most important in determining the extent to which the RIP provides the reasonable and prudent alternatives for projects undergoing Section 7 consultation. In general, these actions will be given highest priority in the RIPRAP.

The Fish and Wildlife Service (FWS) will determine whether progress by the RIP provides a reasonable and prudent alternative based on the following factors:

a. Actions which result in a measurable population response, a measurable improvement in habitat for the fishes, legal protection of flows needed for recovery, or a reduction in the threat of immediate extinction.
b. Status of fish population.
c. Adequacy of flows.
d. Magnitude of the impact of projects.

Therefore, these factors were considered in the development and prioritization of the recovery actions in the RIPRAP.

III. Framework for Agreement

The following describes the agreement among RIP participants on a framework for conducting Section 7 consultations on depletion impacts related to new projects (as defined in Section 4.1.5 a. of the RIP) and impacts[1] associated with historic projects in the Upper Colorado River Basin. This agreement is meant to supplement and clarify the process outlined in Sections 4.1.5, 4.1.6 and 5.3.4 of the RIP. This agreement applies only to the four Colorado River endangered fishes in the Upper Colorado River Basin, excluding the San Juan River, and is not a precedent for other endangered species or locations.

1. Activities and accomplishments under the RIP are intended to provide the reasonable and prudent alternatives which avoid the likelihood of jeopardy to the continued existence of the endangered Colorado River fishes (hereinafter the "reasonable and prudent alternative") resulting from depletion impacts of new projects and all existing or past impacts related to historic projects with the exception of the discharge by historic projects of pollutants such as trace elements, heavy metals, and pesticides.

   The RIP participants intend the RIP also to provide the reasonable and prudent alternatives which avoid the likely destruction or adverse modification of critical habitat, to the same extent as it does to avoid the likelihood of jeopardy. Once critical habitat for the endangered fishes is formally designated, the RIP participants

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[1] All impacts except the discharge of pollutants such as trace elements, heavy metals, and pesticides.

will make any necessary amendments to the RIPRAP to fulfill such intent.

2. The RIP is intended to offset both the direct and depletion impacts of historic projects occurring prior to January 22, 1988 (the date when the Cooperative Agreement for the RIP was executed) if such offsets are needed to recover the fishes. Under certain circumstances, historic projects may be subject to consultation under Section 7 of the ESA. An increase in depletions from a historic project occurring after January 22, 1988, will be subject to the depletion charge. Except for the circumstances described in item 11 below, depletion charges or other measures will not be required from historic projects which undergo Section 7 consultation in the future.

3. The Bureau of Reclamation (BR) and the Western Area Power Administration will operate projects authorized and funded pursuant to Federal reclamation law consistent with its responsibilities under Section 7 of the ESA and with any existing contracts. No depletion charge will be required on depletions from BR projects as long as BR continues its contributions to the RIP's annual budget.

4. The FWS will assess the impacts of projects that require Section 7 consultation and determine if progress toward recovery has been sufficient for the RIP to serve as a reasonable and prudent alternative. The FWS will use accomplishments under the RIP as its measure of sufficient progress. The FWS will also consider whether the probable success of the RIP is compromised as a result of a specific depletion or the cumulative effect of depletions. Support activities (funding, research, information and education, etc.) in the RIP contribute to sufficient progress to the extent that they help achieve a measurable population response, a measurable improvement in habitat for the fishes, legal protection of flows needed for recovery, or a reduction in the threat of immediate extinction. Generally, sufficient progress will be evaluated separately for the Colorado and Green River subbasins (but not individual tributaries within each subbasin). However, the FWS will give due consideration to progress throughout the upper basin in evaluating sufficient progress.

5. If sufficient progress is being achieved, biological opinions will identify the activities and accomplishments of the RIP that support it serving as a reasonable and prudent alternative.

6. If sufficient progress is not being achieved, biological opinions for new and historic projects will be written to identify which action(s) in the RIPRAP must be completed to avoid jeopardy. Specific recovery actions will be implemented according to the schedule identified in the RIPRAP. The FWS will confer with the Management Committee on the identification of these actions within established timeframes for the Section 7 consultation. For historic projects, these actions will serve as the reasonable and prudent

alternative as long as they are completed according to the schedule identified in the RIPRAP. For new projects, these actions will serve as a reasonable and prudent alternative so long as they are completed before the impact of the project occurs. The FWS has ultimate authority and responsibility for determining whether progress is sufficient to enable it to rely upon the RIP as a reasonable and prudent alternative and identifying actions necessary to avoid jeopardy.

7. Certain situations may result in the FWS determining that the recovery action in previously rendered biological opinions are no longer serving as a reasonable and prudent alternative. These situations may include, but are not limited, to:

   a. Critical deadlines for specified recovery actions are missed;
   b. Specified recovery actions are determined to be infeasible; and
   c. Significant new information about the needs or population status of the fishes becomes available;

8. The FWS will notify the Implementation and Management Committees when a situation may result in the RIP not serving as a reasonable and prudent alternative. The Management Committee will work with the FWS to evaluate the situation and develop the most appropriate response to restore the RIP as a reasonable and prudent alternative (such as adjusting a recovery action so it can be achieved, developing a supplemental recovery action, shortening the timeframe on other recovery actions, etc.).

9. The RIP is responsible for providing flows which the FWS determines are essential to recovery of the endangered fishes. Whether or not a Section 7 review is required, the RIP will work cooperatively with the owners/operators of historic projects on a voluntary basis to implement recovery actions needed to recover the endangered fishes.

10. The responsibility for the efficiency and effectiveness of the RIP, and for its viability as a reasonable and prudent alternative, rests upon RIP participants, not with individual project proponents. RIP participants fully share that responsibility.

11. If the RIP cannot be restored to provide the reasonable and prudent alternative per item 8, above, as a last resort the FWS will develop a reasonable and prudent alternative, if available, with the lead Federal Agency and the project proponent. (RIP participants recognize that such actions would be inconsistent with the intended operation of the RIP). The option of requesting a depletion charge on historic projects or other measures on new or historic projects will only be used in the event that the RIPRAP does not or can not be amended to serve as a reasonable and prudent alternative. In this situation, the reasonable and prudent alternative will be consistent with the intended purpose of the action, within the

Federal Agency's legal authority and jurisdiction to implement, and will be economically and technologically feasible.

12. This agreement becomes effective upon adoption of the RIPRAP by the Implementation Committee. Until the RIPRAP is adopted, the FWS will use the procedures in this agreement and the January 1993, draft RIPRAP as the basis for identifying reasonable and prudent alternatives.

13. Experience may dictate a need to modify this agreement in the future. This agreement may be modified or amended by consensus of all the RIP participants. A review of the agreement may be initiated by any voting member of the Implementation Committee.

PART TWO:

RECOVERY IMPLEMENTATION PROGRAM
RECOVERY ACTION PLAN
(RIPRAP)

RECOVERY IMPLEMENTATION PROGRAM
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1.0 INTRODUCTION

1.1 RECOVERY PROGRAM PURPOSE

The purpose of the Recovery Implementation Program for Endangered Fishes in the Upper Colorado River Basin (Recovery Program) is to recover the endangered fishes while providing for existing and new water development to proceed in the Upper Basin (Cooperative Agreement, 1988) in compliance with the Endangered Species Act. Further, the Recovery Program is intended to serve as a reasonable and prudent alternative to avoid the likelihood of jeopardy to the continued existence of the endangered fishes and to avoid the likely destruction or adverse modification of critical habitat in Section 7 consultations on depletion impacts related to new projects and all impacts (except the discharge of pollutants such as trace elements, heavy metals, and pesticides) associated with historic water projects in the Upper Basin.

1.2 SPECIES RECOVERY GOALS

The overall goal for recovery of the endangered fishes is to achieve naturally self-sustaining populations and to protect the habitat on which they depend. Attainment of this goal will result in recovery and delisting of the of the four species: Colorado squawfish (Ptychocheilus lucius), razorback sucker (Xyrauchen texanus), humpback chub (Gila cypha), and bonytail (Gila elegans). The goal of the Recovery Program is recovery and delisting of the four endangered fishes in the upper basin.

The Service has developed recovery goals for each species, which are described in the Service's recovery plans (the razorback sucker plan is still in development). These recovery plans, developed under Section 4(f) of the Endangered Species Act, provide a biological and research-oriented approach to species recovery and include a recommendation for detailed management and site-specific implementation plans. Since the recovery plans refer to species recovery in both the upper and lower basins, their recovery goals apply to both basins. The Recovery Program provides for the coordinated implementation of these recovery plans in the Upper Basin.

As described in the recovery plans, the primary recovery goals for the Colorado squawfish and humpback chub are to establish and maintain natural self-sustaining populations and their habitat. Because of the critical population status of the bonytail in the upper basin, the immediate goal for this species is to prevent its extinction. The first recovery priority for the razorback sucker is to prevent their extinction in the wild, since there has been limited evidence of successful recruitment of young fish into the populations. More specific recovery goals for the four endangered fishes are being developed based, in part, on the Interim Management Objectives.

1.3 RECOVERY ACTION PLAN PURPOSE

This Recovery Implementation Program Recovery Action Plan (RIPRAP) has been developed using the best information available and the recovery goals established for the four endangered fish species. The RIPRAP is intended to provide an operational plan for implementing the Recovery Program, including development of the Program's annual work plan and future budget needs. Specifically, the RIPRAP identifies the feasible actions which are necessary to recover the endangered fishes, including

schedules and budgets for implementing those actions. The RIPRAP also identifies the specific recovery actions which must be accomplished in order for the Recovery Program to serve as the reasonable and prudent alternative to jeopardy to the continued existence of the endangered fishes and to avoid the likely destruction or adverse modification of critical habitat in Section 7 consultations for depletion impacts of new projects and all existing or past impacts related to historic water projects (except impacts from contaminants) in the Upper Basin, in accordance with the October 15, 1993 Section 7 Agreement. The RIPRAP was developed in support of that Agreement.

1.4 ESTIMATED COST OF RECOVERY ACTIONS

The estimated total budget for the Recovery Program from FY 1998 - FY 2004 is approximately $100 million (see Section 5.0 on page 49). Funding for the Recovery Program is expected to come from the following sources:

a. An annual operating budget of approximately $3 million (adjusted annually for inflation, thus totaling approximately $24 million through FY 2004) will be contributed by the U.S. Bureau of Reclamation (including hydropower revenues); the U.S. Fish and Wildlife Service; and the States of Colorado, Utah, and Wyoming. Additional annual funding will come from water development depletion fees, which could provide $1 million through the year 2003. Under the Recovery Program, proponents of new water projects which undergo Section 7 Endangered Species Act consultation have agreed to pay a one-time depletion fee based on a project's average annual depletion. The rate is adjusted annually for inflation and as of October 1, 1997, it is $13.81 per acre foot. The actual rate of water development has not been projected.

   Annual operation and maintenance for refugia and hatchery facilities and fish passage facilities considered in Section 5.0 is expected to cost approximately $7 million through FY 2004.

b. Approximately $69 million will be needed through FY 2004 for capital projects, including: acquisition of water and water rights to implement and maintain adequate instream flows for the fish; building fish passages and hatcheries; and restoring flooded bottomlands. The Recovery Program is currently seeking long-term funding legislation in Congress to cover a portion of these costs. The capital funding total is capped, however, the actual cost of any one capital project will depend on final planning, design and budgeting. Costs for individual projects will be modified to more accurately reflect expected costs as the work plans are updated annually.

1.5 MEASURING PROGRESS TOWARD RECOVERY AND SCHEDULING RIPRAP ACTIVITIES

To achieve recovery in the upper basin, it will be essential to fully implement all of the actions in the RIPRAP; this will be accomplished only through cooperation by all Program participants. In general, actions will be scheduled such that recovery will be achieved in the most expeditious and cost-effective manner possible. However, decisions associated with ongoing Section 7 consultation may require some adjustment in the schedule to insure that both goals of the Recovery Program are met.

Recovery actions which result in a measurable population response, a measurable improvement in habitat for the fishes, legal protection of flows needed for recovery, or a reduction in the threat of immediate extinction have been determined by the Service to be most important in determining the extent to which the Recovery Program provides the reasonable and prudent alternatives to jeopardy for projects undergoing Section 7 consultation. These actions are identified by the carat ">" in the Action Plans. Actions which the Service believes will contribute to the RIPRAP serving as a reasonable and prudent alternative to adverse modification of critical habitat are identified by an asterisk (*). These carated and asterisked actions will generally be given highest priority.

The Recovery Program will need to continually evaluate the outcome of completed RIPRAP actions to determine their effectiveness in helping to achieve recovery. Ultimately, success of recovery efforts will be measured by species response (change in population size, distribution, composition, etc.). However, it may be many years before such responses are evident. In the interim, the Recovery Program also will gage its progress towards recovery by accomplishment of the actions identified in the RIPRAP.

1.6 RECOVERY ACTION PLAN STRUCTURE

The substance of the RIPRAP is in Section 4.0, the Recovery Action Plans. It is here that the specific recovery actions are listed. The first Recovery Action Plan identifies general recovery program support activities important to the success of the Recovery Program. The following two Recovery Action Plans for the Green and Colorado rivers and their subbasins in the upper basin. Each action plan is arranged by specific activities to be accomplished within the "recovery elements" listed below:

I. Protect instream flows;
II. Restore habitat;
III. Reduce negative impacts of nonnative fishes and sportfish management activities;
IV. Conserve genetic integrity and augment or restore populations;
V. Monitor populations and habitat and conduct research to support recovery actions;
VI. Increase public awareness and support for the endangered fishes and the Recovery Program(in the General Recovery Program Support Action Plan only); and
VII. Provide program planning and support (in the General Recovery Program Support Action Plan only).

The Recovery Action Plans (Section 4.0) have been formatted as tables for ease of scheduling and tracking activities. A general discussion of activities under each recovery element and of recovery priorities in each subbasin is found in Section 2.0 and 3.0, respectively. Projected budgets are broken out in Section 5.0.

2.0 DISCUSSION OF RECOVERY ACTION PLAN ELEMENTS

The Recovery Action Plan tables (Section 4.0) contain only very brief descriptions of recovery actions planned in each subbasin. In this section, recovery activities are explained in more detail, as they apply basin wide.

2.1 I. PROTECT INSTREAM FLOWS

Recovery cannot be accomplished without protecting and managing sufficient habitat to support self-sustaining populations of the endangered fishes. Protecting instream flows is key to protecting the habitat of these fishes. The first step in instream flow protection is to identify the flow regimes needed by the fish. In the Recovery Program, determining flow needs is primarily the responsibility of the Fish and Wildlife Service (in cooperation with other participants). Factors considered in determining flow needs include: flow effects on reproduction and recruitment; flow effects on food supplies and nonnative fishes; and interrelationships between flow and other habitat parameters believed to be important for the fish, such as channel structure, sediment transport, substrate characteristics, vegetative encroachment, and water temperature. Flow recommendations (for all or certain seasons) have been or are being developed for most river reaches targeted for recovery in the upper basin. Flow recommendations often are made in stages, with initial flow recommendations based on the best available scientific information, historic conditions, and extrapolation from similar reaches. Recommendations then are refined following additional field research. Below the Flaming Gorge and Aspinall Unit dams, test flows were provided while research was conducted to determine more precise flow recommendations.

Colorado

State acceptance of flow recommendations is the next step in instream flow protection. In Colorado, acceptance of flow recommendations by the Colorado Water Conservation Board is based on a review of their scientific basis, on legal and physical availability of water, and on an assessment of Compact considerations. Acceptance can be made on two levels in Colorado: one level is legal protection without any special qualifications; the other is for legal protection expressly subject to modification by the State. These levels of state acceptance will control the specific flow amounts to be legally protected by a variety of mechanisms.

Breaking state acceptance of flow recommendations into these two levels enables the flows to be legally protected despite uncertainties about the scientific basis for the Service's recommendations and about water availability or Compact allocations. These uncertainties will be periodically reviewed and the amount of legal protection that is explicitly modifiable can be continued, reduced, or converted to less qualified protection. Also as a part of these periodic reviews, the Service can make additional recommendations for flow protection and the state can decide to protect additional flow amounts, with more or less qualifications about the subsequent modification of those amounts.

Flow protection mechanisms are organized in many Recovery Action Plans according to their initial or dominant attribute. If a change in the ownership of a water right (by purchase, lease, etc.) is central to flow protection, then flow protection is placed under "Acquire." A change in water right ownership to

protect flows will usually be accompanied by a legal proceeding to change the nature or use of the water right, but this proceeding is still considered to be part of the "acquisition" of flow protection. Except for acquisition of conditional water rights in Colorado, such water rights acquisition also will result in physical alteration of flow conditions and will not just protect existing conditions.

Where flow protection involves filing for a new water right, it is placed under "Appropriate." With this mechanism, the ownership of the water right is established in the first instance, rather than being conveyed to a subsequent owner. In Colorado, the appropriation of an instream water right follows a structured process developed by the Colorado Water Conservation Board in 1997. The process begins with a Service flow recommendation, which is reviewed by the Board and the Colorado Division of Wildlife. Then the Board issues a notice of intent to appropriate, followed by their approval to appropriate. Finally, the Attorney General must make a water court filing to confirm the appropriation and to avoid postponement of the appropriation's priority date. It may take three to four years from the notice of intent to appropriate to obtain a decree from the water court, depending on the nature of any litigation over the filing. In appropriation, the water right will have a relatively junior priority date (the date the Board issued the notice of intent to appropriate), and only existing flow conditions can be protected.

Flows also may be protected through the physical alteration of flow conditions by reoperating a reservoir or other component of an existing or new water project. This kind of flow protection is placed under "Deliver" in the Recovery Action Plans and will usually involve both a change of water right ownership, including the lease of storage water, and a change in the legal nature of the water rights. (A management agreement between federal agencies also may be involved as in the case of the Aspinall Units, and compensation will be required where storage water is already under contract.)

Utah

Legal protection of flows in Utah will be achieved differently than in Colorado. Several approaches can be taken under Utah water law to protect instream flows, including: 1) acquiring existing water rights and filing change applications to provide for instream flow purposes; 2) withdrawing unappropriated waters by governor's proclamation; 3) approving presently filed and future applications subject to minimum flow levels; and 4) with proper compensation, preparing and executing contracts and subordinating diversions associated with approved and perfected rights. Although current Utah water law may not fully provide for all aspects of instream flow protection, Utah does believe they can provide an adequate level of protection.

After examining the available flow protection approaches, it appears the most common strategy will be to condition the approval of presently filed and new applications, making them subject to predetermined streamflow levels. To accomplish this, the State Engineer would add a condition of approval to water right applications (within the area) filed after the policy is adopted. The condition would state that whenever the flow of the Green River (or other stream) drops below the predetermined streamflow level, then diversions associated with water rights approved after such condition was imposed would be prohibited. Based on past legal challenges to the State's authority to impose conditions associated with new approvals, it would appear that this is within the authority of the State Engineer. This approach will not specifically recognize an instream flow right; however, it

will protect the flows from being diverted and used by subsequently approved water rights. This approach was adopted as policy by the State Engineer. The policy requires that presently filed and new applications to be approved are subject to the summer and fall flow recommendations. As flow recommendations are finalized and accepted (e.g. winter and spring flows in the Green River), the policy would be applied to address these flows, as well. This strategy of conditioning the approval of presently filed and new applications also could be combined with the others listed above and with appropriately contracted reservoir reoperations.

2.2 II. RESTORE HABITAT

Important elements of habitat protection include restoring and managing in-channel habitat and historically flooded bottomland areas, restoring passage to historically-occupied river reaches, preventing entrainment at diversion structures (if warranted), enhancing water temperatures, and reducing or eliminating the impacts of contaminants.

Historically, upper Colorado River basin floodplains were frequently inundated by spring runoff, but today much of the river is channelized by levees, dikes, rip-rap, and tamarisk. Fish access to these flooded bottomlands has been further reduced by decreased peak spring flows due to upstream impoundments. Numerous studies have suggested the importance of seasonal flooding to river productivity, and flooded bottomlands have been shown to contain large numbers of zooplankton and benthic organisms. When these habitats are available, razorback suckers use them extensively for feeding prior to and after spawning, and may also have spawned in such sites. Colorado squawfish also use these areas for feeding prior to migrating to spawning areas.

The Recovery Action Plans contain tasks to identify and restore important flooded bottomland habitats. During 1994, the Recovery Program completed an inventory of floodplain habitats for 870 miles of the Colorado, Green, Gunnison, Yampa, and White rivers. From the list of inventoried habitats, sites have been (and will continue to be) selected to visit and screen for restoration potential. Site restoration began in 1994 and will continue until at least 1999. Success will be measured by the response of the endangered fish populations.

The General Recovery Program Support Action Plan contains tasks to develop an issue paper on floodplain restoration and protection. This paper will identify legal, institutional, and political strategies to enhance and protect floodplain habitats for endangered fish and ameliorate the effects of levees, diking, rip-rap, gravel mining, and other forms of floodplain development. The issue paper will first identify what floodplain restoration and protection is needed for endangered fish, then determine how to accomplish that restoration and protection. The issue paper will evaluate responsibilities of the Recovery Program, Program participants, and other agencies involved in floodplain development, regulation, and management, and their roles and responsibilities with respect to endangered species.

Passage barriers have fragmented endangered fish populations and their habitats, resulting in confinement of the fishes to 20 percent of their former range. Blockage of Colorado squawfish movement by dams and water-diversion structures has been suggested as an important cause of the decline of this species in the upper basin (Tyus 1984, USFWS 1991). Restoring access to historically-

occupied habitats via fish passage ways has been identified in the Colorado Squawfish Recovery Plan as one of several means to aid in Colorado squawfish recovery (USFWS 1991).

The Recovery Action Plans contain tasks to assess and make recommendations for fish passage at various dams and diversion structures. The need for passage already has been determined at Redlands, Hartland, Grand Valley Irrigation Company (GVIC), Price Stubb, and Government Highline (5 sites). Passage has been restored at the Redlands Diversion Dam on the Gunnison River and at the GVIC diversion on the mainstem Colorado River near Palisade, Colorado. Activities are underway to restore passage at Price-Stubb (also on the mainstem Colorado River near Palisade).

The Green River directly downstream of Flaming Gorge Dam formerly provided habitat for all four of the endangered fishes. However, after the dam was closed, these warmwater species disappeared in the reach between the dam and the confluence with the Yampa River. Cold water temperatures (resulting from release of cold reservoir water) are presumed to be unsuitable and may be the primary reason for the absence of the endangered fishes there. Modifying water temperature by releasing warm surface water or otherwise manipulating flows from Flaming Gorge Reservoir has been suggested as a strategy to restore this habitat. As such, the Mainstem Green River Action Plan contains a task to identify options to release warmer water and restore native fish habitat in this reach.

A number of potentially harmful contaminants (including selenium, petroleum derivatives, heavy metals, and uranium) and suspected contaminant "hot spots" have been identified in the upper basin. It is the intent of the Recovery Program to support and encourage the activities of entities outside the Recovery Program that are working to identify problem sites, evaluate contaminant impacts, and reduce or eliminate those impacts.

2.3 III. REDUCE NEGATIVE IMPACTS OF NONNATIVE FISHES AND SPORTFISH MANAGEMENT ACTIVITIES

Fifty-two fish species occur in the upper basin, but only 13 of those are native species. Many of the nonnative fishes have been successful due to changes in the river system that favor their survival over that of native fishes. Competition with and predation from nonnative species (not including salmonids) is widely assumed to have played a role in the decline of the endangered fishes (Bestgen 1990). However, evidence of direct impacts of introduced species on native fishes is difficult to obtain (Schoenherr 1981) and often is masked by man-caused habitat alterations (Moyle 1976).

Recovery Program activities related to nonnative fishes initially focused on identifying impacts/interactions and developing nonnative fish stocking procedures. A nonnative fish control strategy has been developed to identify and prioritize options for controlling or removing nonnative fishes from the river. Through 2003, emphasis will be focused on the control activities identified in the strategy.

The states and the Service also have developed final procedures for stocking of nonnative fishes in the upper basin. The procedures are designed to reduce the impact of stocking of nonnative fishes on native fishes in the upper basin and clarify the role of the states, the Service, and others, in the review

of stocking proposals. A memorandum of understanding has been signed by the States and the Service implementing the Stocking Procedures.

2.4 IV. CONSERVE GENETIC INTEGRITY AND AUGMENT OR RESTORE POPULATIONS

Species recovery depends on protecting and managing species genetic resources. This is a complex activity that includes: determining the genetic stocks of the endangered fishes; protecting those stocks in refugia; planning, developing, and operating propagation facilities; propagating genetic stocks for research, information and education, and augmentation or restoration; and planning, implementing, and evaluating augmentation or restoration of genetic stocks in the wild. Stocking is only an interim tool in the Recovery Program since recovery, by definition, implies that the populations or stocks will be self-sustaining in the wild. The success of augmentation and restoration stocking is dependent on prior or concurrent implementation of other recovery actions such as flow protection, habitat restoration, and management of nonnative fishes. This dependency is reflected in the schedule of subbasin-specific actions in Section 4.0.

The Program has recognized the need to increase augmentation and restoration stocking, both for recovery of the fish and to establish fish in the system to be able to demonstrate that habitat and instream flow activities are having an effect on endangered fish recovery. Colorado squawfish and humpback chub populations currently appear stable; therefore, initial stocking programs will concentrate on razorback suckers and bonytails.

Conducting studies to confirm presumed genetic stocks is vital to genetics management of the endangered fishes. Once identified, stocks may be protected in refugia to guard against catastrophe or to develop broodstocks. Representatives of stocks thought to be in immediate danger of extinction are brought into refugia immediately, rather than waiting until they have been confirmed as unique stocks through genetic studies. Refugia populations of genetic stocks are developed using paired breeding matrices to maximize genetic variability and integrity.

Most of this work is included under the General Recovery Program Support Action Plan, because it applies basinwide. Subbasin-specific activities of augmenting or restoring genetic stocks are placed under the subbasin Action Plans. As additional needs for augmentation or restoration are clearly identified, plans will be developed, fish produced, river reaches restored and augmented with those fish, and the results monitored and evaluated.

Four basic documents are used to plan, implement, and coordinate genetics management and artificial propagation for the endangered fishes. These are the Genetics Management Guidelines, Genetics Management Plan, Annual Propagation Operations Plan, and Coordinated Hatchery Facility Plan. All four of these plans have been developed and will be revised/updated annually, as needed.

The Genetics Management Guidelines document provides the rationale, genetics concepts, and genetic risks to be considered in genetics management planning and implementation. For example, it indicates that a fish population is the fundamental unit of genetics management and that its definition and characterization, relative to other populations, are important. Genetic surveys are part of the identification and characterization process. Further, the prioritization and genetics management

required for each population is determined by its relative population status, demographic trends, and genetics data derived from the surveys.

The Genetics Management Plan is the operational document. It tells the "what, who, when, where" of implementation. It identifies specific objectives, tasks, activities, and type of facilities necessary to accomplish Recovery Program goals, i.e., protect population genetic integrity or restore a self-sustaining population in nature. It is the action plan developed for implementation, directed by the Recovery Program goals, and structured along the format presented in the Genetics Management Planning Guidelines document.

Genetics management requires a great deal of operational activity. Refugia and propagation facilities must be planned, built, and operated in a coordinated fashion. For this reason, the General Recovery Program Support Action Plan contains a task to produce an annual Propagation Operational Plan. Based on the Genetics Management Plan, this annual Propagation Operational Plan provides specific annual guidance for propagation: numbers of adults and family lots needed from each population, number of fish needed in each family lot, and where these fish will be raised and maintained.

Additional facilities are required to meet short-term (within five years; experimental stocking) propagation needs, and plans are being formulated to meet long-term (five years or more; augmentation and restoration stocking) needs. The plan for these facilities is the Coordinated Hatchery Facility Plan. This Plan, in accordance with the Genetics Management Plan, defines facilities required to meet propagation needs, identifies fish needs that can be met by existing facilities, discusses the need for additional facilities, recommends expansion or modification of existing facilities or new constructions, and estimates costs for construction and operation of these facilities.

2.5 V. MONITOR POPULATIONS AND HABITAT AND CONDUCT RESEARCH TO SUPPORT RECOVERY ACTIONS

This category consists primarily of research and monitoring activities which have application to more than one of the foregoing elements. In the General Recovery Program Support Action Plan, this element includes: monitoring populations and habitat and annually assessing changes in habitat and population parameters; determining gaps in existing life history information (such as determining how the endangered fishes may imprint to their natal areas via chemoreception) and recommending and conducting research to fill those gaps; and improving scientific research and sampling techniques. Research activities are identified for each subbasin only to the extent that such activities are related to another recovery action in that subbasin. Such identification now, however, does not preclude further research in that subbasin that may be identified later or that is identified in the General Recovery Program Support Action Plan.

2.6 VI. INCREASE PUBLIC AWARENESS AND SUPPORT FOR THE ENDANGERED FISHES AND THE RECOVERY PROGRAM

Public information and education is crucial to the success of the Recovery Program. A multi-faceted information and education program is being implemented to: educate the public about the endangered fishes; increase public understanding and support regarding recovery of the fishes

(including support at the local, state, and national levels); involve the public in implementation of Recovery Program activities; and promote communication and cooperation among members of the Recovery Program. All of the activities in this program are included under the General Recovery Program Support Action Plan.

Numerous site-specific activities such as news releases, public meetings, presentations, and publication distribution are being undertaken to promote understanding and support of Recovery Program actions and to involve the public in decisions which may impact specific locations in the Upper Basin.

The information and education program has developed or continues to develop a number of products, including a newsletter twice a year, news releases, information brochure, angler information card, signs in popular angler areas, educational video, educational slide show, a summary of historic information about the fishes, educational displays, river guide education programs, and a technical library.

2.7 VII. PROVIDE PROGRAM PLANNING AND SUPPORT

This work also is placed entirely under the General Recovery Program Support Action Plan. Recovery Program planning and support includes planning and tracking recovery activities, participation in Recovery Program committees, and managing, directing, and coordinating the overall Recovery Program. Another important program support activity involves securing the funding necessary to implement the Recovery Program.

3.0 DISCUSSION OF SUBBASIN RECOVERY PRIORITIES

Following is a summary of the importance of the various subbasins in the Upper Colorado River Basin to the endangered fishes and a brief discussion of the major actions directed at recovering the endangered fishes in these subbasins. A more detailed accounting of the activities, including funding requirements and schedules is found in Sections 4.0 and 5.0.

3.1 GREEN RIVER

3.1.1 Importance

The importance of the Green River to the endangered fishes has been established by the Recovery Program and recognized by many biologists. The Green River was listed as the highest priority area for recovery of Colorado squawfish in the Colorado Squawfish Recovery Plan (USFWS 1991). The Green River in Desolation and Gray canyons and in Dinosaur National Monument (Dinosaur) is considered important to the recovery of humpback chub in the Humpback Chub Recovery Plan (USFWS 1990a). The Bonytail Recovery Plan (USFWS 1990b) indicates that one of the last known riverine concentrations of bonytail was in the Green River within Dinosaur and identifies the Green River in Desolation/Gray Canyon and within Dinosaur as high priority recovery and/or restoration sites. In addition, the Green River supports the largest known population of razorback sucker in their natural riverine habitat (Lanigan and Tyus 1989).

3.1.2 Recovery Actions

Recovery actions in the Green River will focus on refining the operation of Flaming Gorge dam to enhance habitat conditions for the endangered fishes. A biological opinion was issued on the operation of Flaming Gorge Dam in 1991. This opinion contained flow recommendations for the Green River at Jensen, Utah for the months of July-October, and specified a range of experimental test flows for the remainder of the year. The effects of the test flows on the endangered fishes and their habitat were evaluated through a variety of studies through 1997, and a revised biological opinion (including flow recommendations) will be finalized in October 1998.

Flow recommendations are also being developed for some tributaries to the Green River, such as the Yampa, White, and Duchesne rivers. Tributary and mainstem flow recommendations will be carefully coordinated to address recovery needs from a basin-wide perspective.

An element of the Flaming Gorge biological opinion identified the need to protect releases from Flaming Gorge from possible diversion in the occupied habitat of the endangered fishes. The initial focus of this effort was to legally protect Flaming Gorge releases in the Green River down to the confluence of the Duchesne River for the months of July through October. Flow protection for the remainder of the year (November - June) and downstream to Canyonlands National Park will be addressed following issuance of the revised final biological opinion in October 1998.

Other Green River activities will involve restoration of bottomlands adjacent to the Green River which flood in the spring and provide important habitat for razorback suckers and Colorado squawfish. Old

Charley Wash on the Ouray National Wildlife Refuge near Ouray, Utah has been restored, as well as six sites on BLM lands, and plans are underway to restore two additional areas along the Green River in 1998.

Refuge (captive) populations of razorback suckers collected from the Green River will be developed and maintained at the Endangered Fish Hatchery at Ouray, Utah. A plan for augmenting razorback suckers into the Green River using hatchery propagated fish was developed and is currently being implemented.

Contamination of water in Stewart Lake and Ashley Creek near Jensen, Utah with the heavy metal, selenium, has been identified as a source of impact to the razorback sucker. The Fish and Wildlife Service, the Environmental Protection Agency and the Bureau of Reclamation are actively pursuing clean-up activities in these areas independent of the Recovery Program.

3.2 YAMPA RIVER AND LITTLE SNAKE RIVER

3.2.1 Importance

The Yampa River, a tributary to the Green River, is essential for the maintenance and recovery of the endangered fishes in the Green River basin. The relatively unaltered flows of the Yampa River are responsible for providing a natural shape to the hydrograph of the Green River. Catch rates of adult and sub-adult Colorado squawfish which occupy the river year-round are high when compared with other areas of occupied habitat in the basin. The Yampa River contains one of two confirmed Colorado squawfish spawning areas in the Upper Basin and is a major producer of fish for the entire Green River basin (Tyus and Karp 1989). The Colorado Squawfish Recovery Plan (USFWS 1991) has identified the Yampa River as one of the essential habitat areas that must be protected before the Colorado squawfish can be considered eligible for delisting. A small but apparently self-sustaining population of humpback chub exists in the Yampa River in Dinosaur National Monument (Tyus and Karp 1989). The Humpback Chub Recovery Plan (USFWS 1990a) identified the Yampa River in Dinosaur as one of the primary recovery areas for the humpback chub. Adult and larval razorback suckers have been captured in the mouth of the Yampa River. Adult razorback suckers have been captured upstream to the mouth of the Little Snake River (Tyus and Karp 1989). The lower portion of the Yampa River was part of the historic range of the bonytail and is associated with some of the most recent captures of this very rare fish. The Bonytail Recovery Plan (USFWS 1990b) identifies the Yampa River within Dinosaur as high priority recovery and/or restoration site for the bonytail.

The Little Snake River provides approximately 28 percent of the Yampa River's flow and 60 percent of the river's sediment supply. The sediment supply of the Little Snake is believed to be important to the maintenance of backwater nursery areas utilized by young Colorado squawfish in the Green River (Smith and Green 1991). Adult Colorado squawfish have been captured up the Little Snake River to near Baggs, Wyoming. Humpback chub have been captured in the lower 10 miles of the Little Snake River.

3.2.2 Recovery Actions

Recovery actions in the Yampa River are focused on maintaining and legally protecting the natural flow regime required to recover the endangered fishes. To achieve this objective, the Recovery Program is participating in the development of a Yampa River Endangered Fish Recovery and Water Management Plan. The purpose of the plan will be to provide and protect the instream flow needs of the endangered fishes while providing water to meet human needs in the Yampa River basin. Through 2000, the Service and Reclamation will be developing an Environmental Impact Statement on the alternatives available for meeting those objectives. The potential enlargement of Elkhead Reservoir will be addressed as part of that NEPA process.

Colorado filed for a junior instream flow water right for the Yampa River between the confluences of the Williams Fork and the Little Snake River in December 1995. Forty-eight statements of opposition were filed against these filings in State water court. There will likely be several years of negotiations and/or litigation to address these statements of opposition. Colorado will file for a junior instream flow right for the Yampa River below the Little Snake River by December 2000.

The rehabilitation of several low-level agriculture water diversion dams on the Yampa River to provide for Colorado squawfish passage is being explored. A variety of existing diversions between Craig and Dinosaur National Monument were inventoried in 1994-5. Several diversions were identified as possible barriers to fish migration under certain conditions. However, due to uncertainties about whether these were in fact barriers to Colorado squawfish movement during the migration period, a study will be conducted to determine threshold flows for adult Colorado squawfish passage on the Yampa River between Craig and Dinosaur National Monument.

In studies on the Green River, researchers documented that young squawfish constituted 5% of the diet of northern pike, even though squawfish made up a much smaller portion of the available food base in the river. Researchers estimated that a single northern pike could consume 100 or more squawfish per year. Also, northern pike are know to prey on native roundtail chub and may also feed on humpback chubs in the Yampa River. Colorado has prepared a draft fisheries management plan for the Yampa Basin. The Recovery Program expects to begin removing nonnative sportfish from certain reaches of the Yampa River to more acceptable waters in 1998 (following acceptance of the nonnative fish control strategy and public involvement).

Initial flow recommendations for the Little Snake River will be developed and opportunities for improving late summer-early fall base flows will be evaluated in 1998-99. Inflows from the Little Snake River in Colorado and Wyoming that are necessary to recover endangered fishes on the lower Little Snake and Yampa rivers will need to be legally protected.

3.3 DUCHESNE RIVER

3.3.1 Importance

Colorado squawfish and razorback suckers regularly utilize the mouth of the Duchesne River especially during spring runoff. Fishery surveys conducted in 1993 documented the use of the lower 15 miles of the Duchesne River by Colorado squawfish and razorback suckers.

3.3.2 Recovery Actions

Initial flow recommendations were developed for the Duchesne River in 1995 to address immediate concerns of several proposed water projects being considered in the Duchesne River basin. A water availability study was completed which identified sources of water to meet the flow recommendations. The Duchesne Biological Opinion will be issued in early 1998.

3.4 WHITE RIVER

3.4.1 Importance

Adult Colorado squawfish occupy the White River below Taylor Draw dam near Rangely, Colorado in relatively high numbers. Adult Colorado squawfish which reside in the White River spawn on the Green and Yampa Rivers. Juvenile and subadult Colorado squawfish also utilize the White River on a year-round basis. Incidental captures of razorback suckers have been recorded on the lower White River. Construction of Taylor Draw dam in 1984 blocked Colorado squawfish migration to the upper portions of the White River.

3.4.2 Recovery Actions

A work plan for the White River was developed to synthesize current information about the endangered fish and provide recommendations for specific recovery actions, including the merits of providing fish passage at Taylor Draw dam. Interim flow recommendations are scheduled to be developed for the White River by April 1998, and instream flow filings made by August 2002.

3.5 COLORADO RIVER

3.5.1 Importance

The mainstem Colorado River from Rifle, Colorado to Lake Powell, Utah supports several very important populations of the endangered fishes. The recovery plans for the Colorado squawfish, humpback chub, and bonytail all recognize the Colorado River (or portions thereof) as being high priority recovery areas. A relatively large and healthy population of humpback chubs occurs at Black Rocks and Westwater Canyon near the Utah-Colorado state line. A smaller population of humpback chubs occurs in Cataract Canyon. All life stages of Colorado squawfish occur in the section of river from Palisade, Colorado downstream to Lake Powell. The upper reach of the Colorado River between Palisade and Rifle, Colorado is currently unoccupied Colorado squawfish habitat, presumably

the result of three diversion dams near Palisade which have blocked upstream migrations since the early 1900's. Razorback sucker populations in the mainstem Colorado River have declined precipitously in the past 20 years and only a few adult razorbacks have been captured from the river in the past 5 years. In 1993, 67 adult razorbacks were collected from isolated ponds adjacent to the Colorado River near Debeque, Colorado. There is no evidence of successful razorback reproduction in the Colorado River. A few (less than 10) suspected bonytail have been captured from the Colorado River in the Black Rocks area, near Moab, Utah and in Cataract Canyon over the past decade. However, this represents the highest catch rate of bonytails anywhere in the Upper Basin.

The 15-mile reach of the Colorado River immediately upstream of the confluence of the Gunnison River has been a focal point of recovery efforts to date. Catch rates of adult Colorado squawfish in the 15-mile reach are approximately double that of other areas in the Colorado River. In addition, concentrations of adult razorback suckers in spawning condition were found in the 15-mile reach prior to their precipitous decline over the past decade. Instream flows in the 15-mile reach have been heavily impacted as a result of several major agricultural water diversions during the late summer and early fall.

3.5.2 Recovery Actions

A variety of recovery actions are planned for the Colorado River. Numerous approaches are being taken to restore flows in the 15-mile reach to levels recommended by the Fish and Wildlife Service. The Bureau of Reclamation has been providing up to 20,000 acre feet of water from Ruedi Reservoir since 1990. When current Round II water sales contracts from Ruedi Reservoir are completed, Reclamation and the State of Colorado have agreed to develop an agreement addressing the reservoir's remaining uncommitted water, including providing a portion thereof for endangered fish. The agreement will accommodate environmental commitments agreed to by Reclamation in the Environmental Impact Statement on Round II sales and any constraints of the reservoir's authorizing legislation. Concerns about repayment of Ruedi construction costs to Reclamation remain an issue to be resolved.

In 1992, Colorado filed an application in State water court for a 581 cfs instream flow right in the 15-mile reach for the months of July, August, and September. A final decree was issued in 1997. Flow protection for the Colorado River below the confluence of the Gunnison River will be addressed following completion of the Biological Opinion on the Aspinall Project in 1999.

Other promising sources of water for the 15-mile reach being explored include: (a) utilizing water saved by more efficiently managing water in the government-operated Grand Valley irrigation system and (b) entering into an MOU with the Colorado River Water Conservation District for delivery of up to 6,000 acre feet of water from Wolford Mountain Reservoir. In addition, Reclamation has initiated coordinated operation of Federal and private projects (Colorado-Big Thompson Projects, Green Mountain, Ruedi, Williams Fork, etc.) in the headwater areas of the Colorado River to help meet the flow needs of the fish. The coordinated reservoir operations workgroup will be examining options to remove obstacles to coordinated reservoir operations.

The Bureau of Reclamation has constructed a fish passage at the Grand Valley Irrigation Company Diversion Dam (Palisade), is preparing the environmental assessment for a passage structure at the Price-Stubb dam, and has initiated plans for passage at the Government Highline (Roller Dam) on the upper Colorado River. Successfully providing fish passage at these diversion dams would benefit both Colorado squawfish and razorback suckers by providing access to approximately 50 miles of the river that was used historically by these fish. Three floodplain sites on the Colorado River have been restored: a gravel pit at 29 5/8 Road in Grand Junction; a site at Walter Walker State Wildlife Area on the Colorado River downstream of Grand Junction; and an area near Adobe Creek downstream of Walter Walker. Plans are underway to restore the Jarvis site in Grand Junction and reconfigure the gravel pit at 29-5/8 Road, to make it drainable and prevent buildup of nonnative fishes.

Broodstock/refuge populations of Colorado squawfish and razorback sucker have been developed from Colorado River stocks.

3.6 GUNNISON RIVER

3.6.1 Importance

The Gunnison River is currently occupied Colorado squawfish habitat and is historical habitat for the razorback sucker and bonytail chub. Several adult Colorado squawfish were captured in the Gunnison River in fishery surveys conducted in 1992 and 1993. Unrestricted migration of fish has been limited by the 10-foot high Redlands diversion located two miles above the mouth of the Gunnison River. Several larval Colorado squawfish have been collected in the Gunnison River immediately downstream of the Redlands diversion. Kidd (1977) reported that razorback suckers were collected frequently by commercial fishermen near Delta between 1930 and 1950. No razorbacks have been collected in the Gunnison River in recent times, although the reach near Delta, Colorado is considered a priority razorback restoration site.

3.6.2 Recovery Actions

Recovery activities on the Gunnison River are focused on operating and evaluating a fish ladder at the Redlands diversion dam, reoperating the Aspinall Unit to improve flow/habitat conditions in the Gunnison, and restoring flooded bottomland habitats near Delta, Colorado. Construction of a fish ladder at the Redlands diversion dam was completed in 1996 and has provided for passage of squawfish and other native fishes (as well as allowing exclusion of nonnative fishes).

A 5-year research plan to evaluate the effects of the Aspinall Unit on the endangered fishes and their habitat was completed in 1997. During this research period, the Bureau of Reclamation and Western Area Power Administration provided test flows. The research culminates with a biological opinion on the operation of the Aspinall Unit in 1999. Legal protection of Aspinall releases and state protection of instream flows in the Gunnison River will be addressed following completion of the biological opinion on the Aspinall Unit.

Beginning in 1995, the Service experimentally stocked razorback suckers in the Gunnison River near Delta, Colorado.

3.7 DOLORES RIVER

3.7.1 Importance

The Dolores River is historical habitat of the Colorado squawfish; both adult and young-of-the-year fishes were captured in the 1950's and 1960's. Recent studies have only documented squawfish use in the lower mile of the river (Valdez et al., 1991). Uranium processing facilities operated during the late 1940's through the 1960's severely impacted the river and may have contributed to the decline of the Colorado squawfish in the Dolores drainage.

3.7.2 Recovery Actions

Recovery actions for the Dolores drainage have been limited to preventing escapement of nonnative sport fish (smallmouth bass, perch, kokanee salmon, etc.) from McPhee Reservoir. Environmental contaminant clean-up is being pursued by state and Federal agencies independent of the Recovery Program. Inflows from the Dolores River that are necessary to recover the endangered fishes on the mainstem of the Colorado River will need to be legally protected.

4.0 RECOVERY ACTION PLANS

The tasks in these Recovery Action Plans are prioritized by their schedules. Schedules are shown where they have been identified (if all the year columns for an activity are blank, then the activity has not yet been scheduled). If a completion date has been identified, it is shown under the appropriate fiscal year. Where specific dates have not been identified, but an action is ongoing, beginning, or ending in a year, an "X" appears in that year's column. The "who" column identifies the lead responsible agency (listed first) and any cooperating agencies. The status column is used where additional narrative is needed to explain the duration, status, etc. of an activity. Once again, the carat ">" identifies those recovery actions which are expected to result in a measurable population response, a measurable improvement in habitat for the fishes, legal protection of flows needed for recovery, or a reduction in the threat of immediate extinction. An asterisk (*) identifies those activities which will contribute to the RIPRAP serving as a reasonable and prudent alternative to the likely destruction or adverse modification of critical habitat.

The Recovery Action Plans are formatted in a stepdown-outline tables. This is reflected in the numbering system and indenting. Some actions which assess options or the feasibility of a recovery action are followed by a subsequent implementation step, and others are not, depending on how feasible the implementation step is considered to be at this time.

The following abbreviations are used to identify lead/cooperating agencies:

BR	Bureau of Reclamation
CO	State of Colorado
CDA	Colorado Department of Agriculture
CDOP	Colorado Department of Parks
CDOW	Colorado Division of Wildlife
CRWCD	Colorado River Water Conservation District
CWCB	Colorado Water Conservation Board
FWS	Fish and Wildlife Service
-ES	Ecological Services
-FR	Fishery Resources
-RW	Refuges and Wildlife
-WR	Water Resources
LFL	Larval Fishes Laboratory
PD	Recovery Program Director
TBD	To be determined
UT	State of Utah
UDWR	Utah Division of Wildlife Resources
UTWR	Utah Division of Water Resources
WYGF	Wyoming Game and Fish Division

		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
	I.	PROVIDE AND PROTECT INSTREAM FLOWS HABITAT MANAGEMENT										
	I.A.	Evaluate methods for defining habitat-flow needs and select methods most appropriate to specific stream reaches.										
	I.A.1.	Review instream flow methodologies and assess the technical adequacy of current flow recommendations.	PD	Complete								
	I.A.2.	Develop recommendations for integrating geomorphology and food web studies into Recovery Program.	PD	Complete								
	I.B.	Develop and select methods for modifiable protection of instream flows in Colorado.										
	I.B.1.	Develop, evaluate and select, as appropriate, options for interim protection of instream flows until uncertainty concerning habitat needs and water availability can be resolved.										
	I.B.1.a.	Colorado Attorney General review.	CO	Complete								
	I.B.1.b.	CWCB approval/recommended action.	CWCB	Complete								
	I.B.1.c.	Adopt legislation or regulation, if necessary. (CWCB adopted the Statement of Policy and Procedure Regarding the Appropriation of Instream Flows for the Recovery of Endangered Fishes of the Upper Colorado River Basin on March 9, 1994 and S.B. 96-064 concerning instream flow appropriations of the CWCB was passed in May '96.)	CWCB	Complete								
	I.B.2.	Evaluate options for allocating Colorado's compact entitlement among the five subbasins, the implications for water available to recover the endangered fishes, and implications of full protection of recovery flow recommendations on development of Colorado's compact entitlement.	CWCB	Complete								
	I.B.3.	Assess need for retirement of senior conditional water rights.	CWCB/FWS		8/98							
	I.C.	Develop an enforcement agreement between the Service and appropriate State agencies to protect instream flows acquired under the Recovery Program for the endangered fishes.										
>*	I.C.1.	Colorado.	FWS/CWCB	Complete								
	II.	RESTORE HABITAT (HABITAT DEVELOPMENT AND MAINTENANCE)										
	II.A.	Restore flooded bottomland habitats.										
	II.A.1.	Conduct inventory of flooded bottomland habitat for potential restoration.	FWS-FR	Complete								
	II.A.2.	Screen high-priority sites for potential restoration/acquisition.	PD		X	X	X	X	X	X		
	II.A.3.	Conduct NEPA for floodplain restoration program.	BR		X	X	X	X	X			
	II.B.	Support actions to reduce or eliminate contaminant impacts.[1]										
	II.B.1.	Evaluate effects of selenium, petroleum derivatives, heavy metals, uranium, agriculture, and municipal, industrial, and carrier sources of potential contaminants throughout the Upper Basin.	PROGRAM/ FWS-ES	Ongoing	X	X	X	X	X	X		
	II.B.2.	Evaluate and correct pipelines that threaten endangered fishes throughout the Upper Basin.	FWS-ES	Ongoing	X	X	X	X	X	X		
	II.C.	Develop an issue paper on the desirability and practicability of restoring and protecting certain portions of the floodplain for endangered fishes.										
	II.C.1.	Identify what restoration and protection are needed by addressing: 1) biological merits of restoring the floodplain with emphasis on endangered fish recovery; 2) priority geographic areas; and 3) integration of a broader floodplain restoration initiative into the current Recovery Program floodplain restoration program.	PROGRAM	Complete								

[1] [illegible]ntamin[illegible] [illegible]ediatio[illegible] [illegible]eaches[illegible] conduc[illegible] pender[illegible] [illegible]d fund[illegible] [illegible]de of th[illegible] [illegible]ery Pro[illegible]

		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
	II.C.2.	Identify how to conduct restoration and protection by addressing: 1) restoration and protection tools/approaches; 2) institutional options for floodplain restoration; 3) costs/funding strategy; and 4) implementation steps and schedule.	PD/CO/UT			12/98						
	II.C.3.	Identify viable options and develop specific restoration strategies for selected geographic areas (e.g., Grand Valley, Ashley Valley).	TBD			12/98						
	III.	REDUCE NEGATIVE IMPACTS OF NONNATIVE FISHES AND SPORTFISH MANAGEMENT ACTIVITIES (NONNATIVE AND SPORTFISH MANAGEMENT)										
	III.A.	Reduce negative interactions between nonnative and endangered fishes.										
	III.A.1.	Where not already generally known, identify negative impacts (e.g., predation, competition) of problem species.										
	III.A.1.a.	Determine role of nonnative fishes as potential competitors with bonytails and determine size-specific vulnerability of bonytails to nonnative fish predators.	UDWR	Complete								
	III.A.1.b.	Assess impact of northern pike predation on Colorado squawfish in the Green River.	UDWR	Complete								
	III.A.2.	Identify and implement viable active control measures.										
	III.A.2.a.	Identify options (including selective removal) to reduce negative impacts of problem species and assess regulations and options (including harvest) to reduce negative impacts on native fishes from nonnative sportfish.	PD	Complete								
	III.A.2.b.	Review options and develop agreement with appropriate States on strategies and locations for implementing control options.	FWS/STATES	Complete								
>*	III.A.2.c.	Implement and evaluate the effectiveness of viable active control measures. (See specific river reaches.)			X	X	X	X	X	X		
>*	III.A.2.d.	Close river reaches to angling where and when angling mortality is determined to be significant. (See specific river reaches.)										
	III.B.	Reduce negative impacts to endangered fishes from sportfish management activities.										
	III.B.1.	Implementation Committee approval of Interim Nonnative Fish Stocking Procedures.	PD	Complete								
	III.B.2.	Implement Interim Nonnative Fish Stocking Procedures										
	III.B.2.a.	Develop scope of work for evaluation of Interim Procedures.	PD	Complete								
	III.B.2.b.	Evaluate and revise Interim Procedures.	PD	Complete								
	III.B.3.	Finalize revised Nonnative Fish Stocking Procedures.										
	III.B.3.a.	Complete Biological Opinion/NEPA compliance.	FWS-ES/FR	Complete								
	III.B.3.b	Implementation Committee approval of revised Nonnative Fish Stocking Procedures	PD	Complete								
	III.B.3.c.	State wildlife commissions approval, as necessary.	STATES	Complete								
	III.B.3.d.	Execute memoranda of agreement between Service and States.	FWS/STATES	Complete								
	III.B.4.	Incorporate final Procedures into State aquaculture permitting process.										
>*	III.B.4.a.	Colorado.	CDA/CDOW	Start 11/96	X	1/99						
>*	III.B.4.b.	Utah.	UDWR	Complete								
>*	III.B.4.c.	Wyoming	WYGF	Complete								

		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
	III.B.5.	Explore options for tribal acceptance of Nonnative Fish Stocking Procedures.	FWS-FR		X	X						
	IV.	MANAGE GENETIC INTEGRITY AND AUGMENT OR RESTORE POPULATIONS (STOCKING ENDANGERED FISHES)										
	IV.A.	Genetics Management.										
	IV.A.1.	Develop and approve Genetics Management Guidelines.	PD	Complete (update as needed)								
	IV.A.2.	Develop and implement Genetics Management Plan for all species and genetic stocks and update as needed.	PD	Ongoing	X	X	X	X	X	X		
	IV.A.3.	Conduct genetic stock identification studies (includes Gila taxonomy studies) and confirm presumptive genetic stocks based on all available information.										
	IV.A.3.a.	Razorback sucker.	BR	Complete								
	IV.A.3.b.	Bonytail and humpback chubs.										
	IV.A.3.b.(1)	Morphological and allozyme analyses. (Draft 4/95)	PD		3/98							
	IV.A.3.b.(2)	Mitochondrial DNA analysis.	BR		3/98							
	IV.A.3.c.	Colorado squawfish.	PD		3/98							
>	IV.A.4.	Secure and manage the following presumptive genetic stocks in refugia (according to the Genetics Management Plan) (subject to change based on results of genetic stock identification studies).										
	IV.A.4.a.	Razorback sucker.										
	IV.A.4.a.(1)	Middle Green (including spawning bar at RM 311.5)	FWS-FR		X	X	X	X	X	X		
	IV.A.4.a.(2)	Upper Colorado River.	FWS-FR		X	X	X	X	X	X		
	IV.A.4.b.	Bonytail	UDWR			X	X	X	X	X		
	IV.A.4.c.	Humpback chub.										
	IV.A.4.c.(1)	Black Rocks Canyon.	FWS-FR	TBD								
	IV.A.4.c.(2)	Westwater Canyon.	UDWR	TBD								
	IV.A.4.d.	Colorado squawfish.										
	IV.A.4.d.(1)	Upper Colorado River above Westwater Canyon.	TBD									
	IV.A.5.	Revise basinwide bonytail chub restoration plan.	UDWR		9/98							
	IV.A.5.a	Implement bonytail chub reintroduction plan as approved.										
	IV.B.	Conduct annual fish propagation activities.										
	IV.B.1.	Identify fish needs for genetic stock refugia, research, augmentation, and information and education.	PD	Annual	12/97	12/98	12/99	12/01	12/02	X		
	IV.B.2.	Produce Annual Propagation Operational Plan.	PD	Annual	12/97	12/98	12/99	12/01	12/02	X		
	IV.B.3.	Conduct NEPA compliance and develop biological opinion on disposal of excess captive-reared endangered fish.	FWS-ES/FR	Complete								
	IV.C.	Operate and maintain facilities.		Ongoing								

	ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
IV.C.1.	Ouray.	FWS-FR		X	X	X	X	X	X		
IV.C.2.	Grand Valley endangered fish facilities	FWS-FR		X	X	X	X	X	X		
IV.C.3.	Wahweap.	UDWR		X	X	X	X	X	X		
IV.D.	Conduct independent review of Program endangered fish facilities and operations.	PD			X						
IV.E.	Plan, design, and construct needed facilities.										
IV.E.1.	Develop (and revise as needed) Coordinated Hatchery Facility Plan to meet long and short-term fish needs.	PD	Ongoing	4/98	12/98	12/99	12/00	12/01	X		
IV.E.2.	Design and construct appropriate facilities.										
IV.E.2.a.	Ouray expansion.	FWS/BR		X	X						
IV.E.2.b.	Wahweap.	UDWR/BR		X	X						
IV.E.2.c.	Grand Valley endangered fish facilities.	FWS/BR		X	X						
IV.E.2.d.	Secure and manage ponds for growout of endangered fishes.	FWS/STATES		X	X	X	X	X	X		
V.	MONITOR POPULATIONS AND HABITAT AND CONDUCT RESEARCH TO SUPPORT RECOVERY ACTIONS (RESEARCH, MONITORING, AND DATA MANAGEMENT)										
V.A.	Measure and document population and habitat parameters to determine status and biological response to recovery actions.										
V.A.1.	Conduct standardized monitoring program.	FWS-FR/ STATES	Annual	X	X	X	X	X	X		
V.A.1.a.	Evaluate and refine procedures periodically, as appropriate. (With emphasis on expanding ISMP to monitor response of fish community and endangered fishes to major recovery actions.)	FWS-FR/ STATES	Ongoing	X	X	X	X	X	X		
V.A.2.	Conduct interagency data management program to compile, manage, and maintain all research and monitoring data collected by the Recovery Program.	FWS-FR	Annual	X	X	X	X	X	X		
V.B.	Conduct research to acquire needed life history information.										
V.B.1.	Identify significant deficiencies in life history information and needed research (will come partially from Interim Management Objectives).	PD		X	X	X	X	X	X		
V.B.2.	Conduct appropriate studies to provide needed life history information.	FWS-FR/ STATES	Ongoing	X	X	X	X	X	X		
V.B.2.a.	Evaluate need for imprinting based on reintroduction plans.	FWS-FR	Through 00	X	X	X					
V.C.	Develop and enhance scientific techniques required to complete recovery actions.										
V.C.1.	Conduct marking study of young-of-the-year Colorado squawfish.	FWS-FR	Complete								
V.D.	Establish sampling procedures to minimize adverse impacts to endangered fishes.										
V.D.1.	Assess electrofishing injury impacts to endangered fishes.	BR	Complete								
V.D.2.	Implement scientific sampling protocols to minimize mortality for all endangered fishes.	FWS-ES/ STATES	Ongoing	X	X	X	X	X			
V.E.	Provide for long-term care, cataloging, and accessibility of preserved specimens.	PROGRAM	Ongoing	X	X	X	X	X	X	X	X

	ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
V.F.	Assess relative biological importance of tributaries and their potential contributions to endangered fish recovery (including a baseline assessment of the San Rafael River).	TBD			X						
VI.	INCREASE PUBLIC AWARENESS AND SUPPORT FOR THE ENDANGERED FISHES AND THE RECOVERY PROGRAM.										
VI.A.	Conduct survey to measure public awareness of and attitudes toward endangered Colorado River fishes and the Recovery Program.	PD	Periodic			X					
VI.B.	Train Recovery Program managers and researchers in media relations.	PD	Complete								
VI.C.	Plan and implement information and education and public involvement activities for all significant Recovery Program actions (e.g presentations, public meetings, public involvement training, etc.).	PROGRAM	Ongoing	X	X	X	X	X	X		
VI.D.	Promote technical publication of study results.	PD	Ongoing	X	X	X	X	X	X		
VI.E.	Produce, distribute, and evaluate information and education products (such as newsletter, brochures, etc); manage media relations, including contacting reporters, producing news releases, fact sheets, etc.	PD	Ongoing	X	X	X	X	X	X		
VI.F.	Participate in development and circulation of educational exhibits about the Recovery Program and the endangered fish.	PD	Ongoing	X	X	X	X	X	X		
VI.G.	Establish Recovery Program technical library and announce availability of research information clearinghouse; update annually.	PD	Ongoing	X	X	X	X	X	X		
VII.	PROVIDE PROGRAM PLANNING AND SUPPORT (PROGRAM MANAGEMENT)										
VII.A.	Determine actions required for recovery.										
VII.A.1	Assure consistency of RIPRAP with currently approved recovery plans.	PD	Ongoing	12/98	X	X	X	X	X		
VII.A.2.	Recognize the role of the Upper Colorado River Recovery Program in revised recovery plans.	FWS	Ongoing	X	X	X	X	X	X		
VII.A.3.	Update, refine, and prioritize recovery actions (RIPRAP) annually.	PD	Annual	X	X	X	X	X	X		
VII.A.4.	Develop Interim Management Objectives (IMO's) for each species and presumptive stock and an index to population status.	PD	Complete; update every 5 years					X			
VII.A.4.a.	Public and external peer review of IMO's.	FWS		5/98							
VII.A.4.b.	Implementation Committee review and approval of IMO's.	ALL		9/98							
VII.A.4.c.	Service uses IMO's to develop specific recovery goals.	FWS			9/99						
VII.A.4.d.	Maintain and update IMO model annually to incorporate new life history information	PD	Ongoing	X	X	X	X	X	X		
VII.A.5.	Monitor and assess Recovery Program accomplishments annually. IMOs will be used to gauge biological response of target populations or stocks to specific recovery actions.	PD	Annual	X	X	X	X	X	X		
VII.A.6.	Develop annual work plan to address priority needs.	PD	Annual	X	X	X	X	X	X		
VII.B.	Actively participate in Recovery Program committees and secure funding for annual work plan and larger projects (e.g., water acquisition, capital construction, and long term operation and maintenance) in accordance with the recovery actions and milestones (Utah, Colorado, Wyoming, Bureau of Reclamation, Fish and Wildlife Service, Western Area Power Administration, Water Users, Environmental Groups, Colorado River Energy Distributors Association).	PD	Ongoing	X	X	X	X	X	X		
VII.C.	Manage, direct, and coordinate Recovery Program activities.	PD	Ongoing	X	X	X	X	X	X		
VII.C.1.	Review Information and Education program (Management Committee).	PD	Complete								

		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
	I.	PROVIDE AND PROTECT INSTREAM FLOWS (HABITAT MANAGEMENT)										
	I.A.	Green River above Duchesne River (Utah only; flows not threatened in Colorado because river is entirely within a National Wildlife Refuge and National Monument.)										
	I.A.1.	Initially identify year-round flows needed for recovery while providing experimental flows.										
	I.A.1.a.	Summer/fall.	FWS-ES	Complete								
	I.A.1.b.	Winter/spring.	FWS-ES		5/98							
	I.A.1.c.	Review summer/fall flow recommendation.	FWS-ES		5/98							
	I.A.2.	State acceptance of initial flow recommendations.										
	I.A.2.a.	Summer/Fall.	UT	Complete; may be revised based on new info.								
	I.A.2.b.	Winter/Spring.										
	I.A.2.b.(1)	Review scientific basis.	UT		8/98							
	I.A.2.b.(2)	Assess legal and physical availability of water.	UT		8/98							
	I.A.3.	Deliver identified flows.										
>*	I.A.3.a.	Operate Flaming Gorge pursuant to the Biological Opinion to provide summer and fall flows.	BR	Begin 93, ongoing	X	X	X	X	X	X	X	X
>*	I.A.3.b.	Operate Flaming Gorge to supply winter and spring test flows for research.	BR	Complete								
	I.A.3.c.	Conduct NEPA to reoperate Flaming Gorge pursuant to Biological Opinion.	BR		8/98							
>*	I.A.3.d.	Operate Flaming Gorge Dam to provide winter and spring flows and revised summer/fall flows, pursuant to Biological Opinion.	BR	Begin 10/98, ongoing		X	X	X	X	X	X	X
	I.A.4.	Legally protect identified flows.										
	I.A.4.a.	Protect Summer/Fall flows.										
	I.A.4.a.(1)	Hold public meeting to establish future appropriation policy.	UT	Complete 10/94								
	I.A.4.a.(2)	Adopt and implement new policy (new appropriations subject to flow criteria).	UT	Complete 11/94								
>*	I.A.4.a.(3)	Prepare and execute contracts with water users as required to subordinate diversions associated with approved and/or perfected rights.	UT	As required	X	X	X	X	X	X	X	X
	I.A.4.a.(4)	Evaluate effectiveness of policy.	UT			X						
	I.A.4.b.	Protect Winter/Spring flows.										
	I.A.4.b.(1)	Hold public meeting to establish future appropriation policy.	UT			X						
	I.A.4.b.(2)	Adopt and implement new policy (new appropriations subject to flow criteria).	UT			X						
>*	I.A.4.b.(3)	Prepare and execute contracts with water users as required to subordinate diversions associated with approved and/or perfected rights.	UT	As required		X	X	X	X	X	X	X

		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
	I.B.	Green River below the Duchesne River										
	I.B.1.	Initially identify year-round flows needed for recovery while providing experimental flows.	FWS-ES		5/98							
	I.B.2.	State acceptance of initial flow recommendations (dependent on development of initial flow recommendations).										
	I.B.2.a.	Review scientific basis.	UT		8/98							
	I.B.2.b.	Assess legal and physical availability of water from Green River and tributaries.	UT		8/98							
	I.B.3.	Legally protect identified flows (dependent on development of initial flow recommendations).										
	I.B.3.a.	Hold public meeting to establish future appropriation policy.	UT			X						
	I.B.3.b.	Adopt and implement new policy (new appropriations subject to flow criteria).	UT			X						
>*	I.B.3.c.	Prepare and execute contracts with water users as required to subordinate diversions associated with approved and/or perfected rights.	UT	As required		X	X	X	X	X	X	X
	I.C.	Price River										
	I.C.1.	Estimate potential contributions of the Price River to achieving recovery.	UT		3/98							
	II.	RESTORE HABITAT (HABITAT DEVELOPMENT AND MAINTENANCE)										
	II.A.	Restore and manage flooded bottomland habitat.										
	II.A.1.	Conduct site restoration.										
	II.A.1.a.	Old Charley Wash.										
>*	II.A.1.a.(1)	Construct water control structure and fish access.	BR	Complete								
	II.A.1.a.(2)	Update management plan.	PD		X	X	X	X	X	X		
	II.A.1.a.(3)	Monitor and evaluate success.	FWS-FR/BR		X	X	X	X	X	X		
	II.A.2.	Acquire interest in high-priority flooded bottomland habitats between Ouray NWR and Jensen to benefit endangered fish.										
	II.A.2.a.	Identify and evaluate sites.	FWS-FR			X	X	X				
	II.A.2.b.	Pre-acquisition planning and identification of acquisition options.	PD			X	X	X				
	II.A.2.c.	Conduct appraisal/NEPA compliance.	PD		X	X	X	X				
>*	II.A.2.d.	Negotiate acquisition and acquire.	PD		X	X	X	X				
	II.A.2.e.	Evaluate effectiveness of land acquisition activities and provide recommendations.	PD		X	X	X	X				
	II.A.3.	Implement levee removal strategy at high-priority sites.										
	II.A.3.a.	Preconstruction (contaminants screening, floodablility assessments, environmental compliance, design, and engineering.	BR			X	X	X				

		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
>*	II.A.3.b.	Construction (levee breeching).[1]	BR		X	X	X	X				
	II.A.3.c.	Evaluation.	FWS		X	X	X	X				
	II.B.	Restore native fish passage at instream barriers.										
	II.B.1.	Assess and make recommendations for fish passage at low flows at Tusher Wash.	FWS-FR/ -WR/BR		X	12/98						
	II.B.2.	Evaluate and implement viable options to restore fish passage.	BR/FWS			X						
	II.B.2.a.	Design passage, conduct NEPA compliance.	BR			X	X					
>*	II.B.2.b.	Construct fish passage.	BR			X	4/00					
>*	II.B.3.	Operate and maintain fish passage.	TBD	Ongoing, beginning in FY 00			X	X	X	X	X	X
	II.B.4.	Monitor and evaluate success and reassess entrainment after passage is constructed.	FWS				X	X	9/01			
	II.B.5.	Screen Tusher Wash diversion to prevent endangered fish entrainment, if warranted.										
	II.B.5.a.	Assess need.	UDWR		X	X						
	II.B.5.b.	Design.	BR						X			
>*	II.B.5.c.	Construct	BR						9/02	4/03		
	II.C.	Enhance water temperatures to benefit endangered fishes.										
	II.C.1.	Identify options to release warmer water from Flaming Gorge Reservoir to restore native fish habitat in the Green River.	BR		5/98							
	II.D.	Support actions to reduce or eliminate contaminant impacts at Ashley Creek and Stewart Drain.[2]	FWS-ES		X	X	X	X	X	X		
	III.	REDUCE IMPACTS OF NONNATIVE FISHES AND SPORTFISH MANAGEMENT ACTIVITIES (NONNATIVE AND SPORTFISH MANAGEMENT)										
	III.A.	Reduce negative impacts to endangered fishes from sportfish management activities.										
	III.A.1.	Determine relationship between Flaming Gorge test flows and relative abundance of young Colorado squawfish and nonnative fishes in nursery habitat.	UDWR	Summary draft done 6/96	5/98							
>*	III.A.2.	Control escapement of nonnative fishes from Ouray National Wildlife Refuge originating from Pelican Lake.	FWS-RW	Complete								
>*	III.A.3.	Identify and control sources of catfish and centrarchids in the middle Green River.	UDWR		X	X						
>*	III.A.4.	Remove small nonnative cyprinids from backwaters and other low velocity habitats.	UDWR		X	X	X	X				
	IV.	MANAGE GENETIC INTEGRITY AND AUGMENT OR RESTORE POPULATIONS (STOCKING ENDANGERED FISHES)										
	IV.A.	Augment or restore populations as needed, and as guided by the Genetics Management Plan.										

[1] Subject to review and approval following preliminary review of levee removal study by 12/98.

[2] Contaminants remediation (in all reaches) will be conducted independently of and funded outside of the Recovery Program.

		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
	IV.A.1.	Razorback sucker.										
>	IV.A.1.c.	Implement augmentation plan on middle Green River.	FWS		X	X	X					
	IV.A.2.	Develop augmentation plan for the four endangered fishes in the Green River.										
	IV.A.2.a.	Prepare plan.	UDWR		6/98							
	IV.A.2.b.	Program acceptance.	UDWR		X							
>	IV.A.2.c.	Implement plan.	UDWR			X	X	X	X	X		
	IV.A.2.c.(1)	Conduct high-priority lab/field studies identified in bonytail reintroduction plan.	UDWR		X	X						
	V.	MONITOR POPULATIONS AND HABITAT AND CONDUCT RESEARCH TO SUPPORT RECOVERY ACTIONS (RESEARCH, MONITORING, AND DATA MANAGEMENT)										
	V.A.	Conduct research to acquire life history information and enhance scientific techniques required to complete recovery actions.										
	V.A.1.	Verify additional Colorado squawfish spawning areas in lower Green.	UT		5/98							
	V.A.2.	Identify additional razorback sucker spawning areas in lower Green.	UT		5/98							

		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
	I.	PROVIDE AND PROTECT INSTREAM FLOWS HABITAT MANAGEMENT										
	I.A.	Yampa River above the Little Snake River										
	I.A.1.	Initially identify year-round flows needed for recovery.	FWS-FR	Complete								
	I.A.3.	State acceptance of initial flow recommendations (dependent on development of initial flow recommendation).										
	I.A.3.a.	Review scientific basis.	CWCB/CDOW	Complete								
	I.A.3.b.	Assess legal and physical availability of water.	CWCB	Complete								
	I.A.3.c.	Assess compact considerations.	CWCB	Complete								
	I.A.3.d.	Preliminary notice of base and recovery flow amounts.	CWCB	Complete								
	I.A.4.	Legally protect identified flows.										
	I.A.4.a.	Acquire.										
	I.A.4.a.(1)	Steamboat Lake.										
	I.A.4.a.(1)(a)	Change decree (litigation dependent).	CDOP	Complete 5/97								
>*	I.A.4.a.(1)(b)	Lease 2,000 af. to augment late summer flows.	FWS-WR	Ongoing	X	X	X	X	X	X	X	X
	I.A.4.a.(2)	Juniper conditional decree(s).										
	I.A.4.a.(2)(a)	Complete Phase II Feasibility Study.	CRWCD/ CWCB/BR	Complete								
	I.A.4.a.(3)	Yampa River management plan.										
	I.A.4.a.(3)(a)	Develop public involvement plan.	FWS	Complete								
	I.A.4.a.(3)(a)(i)	Implement public involvement plan.	FWS/CDOW		X	X	6/00					
	I.A.4.a.(3)(b)	Revise and update estimates of basin water needs.	CRWCD/FWS		4/98							
	I.A.4.a.(3)(c)	Evaluate and recommend low flow and passage needs (also relates to restoration of fish passage, if needed -- Recovery Element II).	CDOW/FWS/ CRWCD		7/98							
	I.A.4.a.(3)(d)	Provide hydrology support to develop and evaluate NEPA alternatives.	CRWCD		X	X	6/00					
	I.A.4.a.(3)(e)	Install, operate, and/or maintain stream gages	CRWCD/FWS		X	X	1/00					
	I.A.4.a.(3)(f)	Develop basinwide aquatic management plan to reduce nonnative fish impacts while providing sportfishing opportunities (also relates to nonnative fish management/control -- Recovery Element III).	CDOW		7/98							
>*	I.A.4.a.(3)(f)(ii)	Implement Yampa Basin fish plan.	CDOW			X	X	X	X			
	I.A.4.a.(3)(g)	Identify NEPA alternatives.	FWS		X	1/99						
	I.A.4.a.(3)(h)	Collect missing data needed to evaluate NEPA alternatives.	FWS/ CRWCD/BR		X	X	1/00					
	I.A.4.a.(3)(i)	Prepare draft NEPA documents.	FWS/BR		X	X	1/00					
	I.A.4.a.(3)(j)	Finalize NEPA documents, ROD, and Implementation Agreement.	FWS/BR				9/00					

		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
>*	I.A.4.a.(3)(k)	Implement Yampa River Management Plan (also relates to restoration of passage, if needed -- Recovery Element II).	FWS					X	X			
	I.A.4.b.	Appropriate.										
	I.A.4.b.(1)	CWCB action to advance preliminary to final notice of base and recovery flow amounts.	CWCB	Complete								
>*	I.A.4.b.(2)	Colorado Attorney General's Office file date.	CWCB	Complete								
>*	I.A.4.b.(3)	Water court adjudication (litigation dependent)	CWCB					3/01				
	I.B.	Yampa River below Little Snake River										
	I.B.1.	Initially identify year-round flows needed for recovery.	FWS-FR	Complete								
	I.B.1.a.	Modify based on revisions to environmental baseline.	FWS-WR	Complete								
	I.B.1.b.	Update flow recommendations to include flows from the Little Snake River.	FWS		9/98							
	I.B.2.	State acceptance of initial flow recommendations.										
	I.B.2.a.	Review scientific basis.	CWCB/CDOW				1/00					
	I.B.2.b.	Assess legal and physical availability of water.	CWCB	Complete								
	I.B.2.c.	Assess compact considerations.	CWCB	Complete								
	I.B.2.d.	Preliminary notice of base and recovery flow amounts.	CWCB				5/00					
	I.B.3.	Legally protect identified flows.										
	I.B.3.a.	Appropriate.										
	I.B.3.a.(1)	CWCB approval to appropriate.	CWCB					11/00				
>*	I.B.3.a.(2)	Colorado Attorney General's Office file date.	CWCB					12/00				
>*	I.B.3.a.(3)	Water court adjudication (litigation dependent)	CWCB								12/03	
	I.B.4.	Review initial recommendations and legal protection.	CWCB	Ongoing								
	I.C.	Little Snake River (Colorado and Wyoming)										
	I.C.1.	Evaluate importance of Little Snake River to endangered fishes and develop management action plan. (Determine if habitat exists to protect under Colorado's instream flow program.)	BR/LFL	Complete								
	I.C.2.	Initially identify year-round flows needed for recovery (needed).										
	I.C.2.a.	Develop work plan.	BR/LFL	Complete								
	I.C.2.b.	Identify flows.	FWS-WR		5/98							
	I.C.3.	State acceptance of initial flow recommendations (dependent on development of initial flow recommendations).										
	I.C.3.a.	Review scientific basis, dependent on development of flow recommendations by FWS.	CWCB/CDOW				1/00					
	I.C.3.b.	Assess legal and physical availability of water.	CWCB	Complete								
	I.C.3.c.	Assess compact considerations.	CWCB	Complete								

		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
	I.C.3.d.	CWCB notice of intent to appropriate (in Colorado).	CWCB				5/00					
	I.C.4.	Legally protect identified flows (dependent on development of initial flow recommendations).										
	I.C.4.a.	Appropriate in Colorado										
	I.C.4.a.(1)	CWCB approval to appropriate.	CWCB					11/00				
>*	I.C.4.a.(2)	Colorado Attorney General's Office file date.	CWCB					12/00				
>*	I.C.4.a.(3)	Water court adjudication (litigation dependent)	CWCB								12/03	
	II.	RESTORE HABITAT (HABITAT DEVELOPMENT AND MAINTENANCE)										
	II.A.	Restore native fish passage at instream barriers and reduce impacts of maintaining diversion structures -- See items IA4a(3)(c) and >*IA4a(3)(k) under Yampa Management Plan.										
	II.A.1.	Inventory potential barriers.	CRWCD	Complete								
	II.A.2.	Determine threshold flows for passage on Yampa between Craig and Dinosaur National Monument (low-flow dependent).	CDOW		7/98							
	III.	REDUCE NEGATIVE IMPACTS OF NONNATIVE FISHES AND SPORTFISH MANAGEMENT ACTIVITIES (NONNATIVE AND SPORTFISH MANAGEMENT)										
	III.A.	Reduce negative interactions between nonnative and endangered fishes -- See items IA4a(3)(f)(i) and >*IA4a(3)(f)(ii) under Yampa Management Plan.										
	III.B.	Reduce negative impacts to endangered fishes from sportfish management activities.										
	III.B.1.	Identify potential conflicts between present fisheries management in existing Elkhead Reservoir and endangered fishes and formulate alternative management plan.	CDOW		X	X						
	III.B.2.	Evaluate control options and implement measures to control nonnative fish escapement from existing Elkhead Reservoir.	FWS-FR/ CDOW	Evaluation of control options complete	X	X	X	X	X			
>*	III.B.3.	Nonnative fish removal in Yampa Canyon	FWS		X	X	12/99					

		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
	I.	PROVIDE AND PROTECT INSTREAM FLOWS (HABITAT MANAGEMENT)										
	I.A.	Identify initial year-round flows needed for recovery.	FWS-ES	Complete								
	I.A.1.	Conduct hydrology/water availability study.	UT	Complete								
	I.A.2.	Conduct follow-up study to evaluate and refine flow recommendations.	FWS-FR		X	X	X	X				
	I.B.	State acceptance of initial flow recommendations (dependent on development of initial flow recommendations).										
	I.B.1.	Review scientific basis.	UT						X			
	I.B.2.	Assess legal and physical availability of water.	UT						X			
	I.C.	Legally protect and deliver identified flows.										
	I.C.1.	Strawberry Valley Project.										
	I.C.1.a.	Determine amount of water available from the Strawberry Valley Project for fish use. (This is part of the coordinated reservoir operation in I.D.)	USBR/DOI/PD/ Strawberry Water Users		X							
	I.C.2.	Management of Daniels Transbasin Diversion.										
	I.C.2.a.	Determine the amount of water available from the Daniels Diversion for endangered fish use and pattern and location for delivery.	DOI/IBAT/FWS/ Mitig. Comm./ CUWCD/ Ute Tribe		X							
>*	I.C.2.b.	Develop agreements if feasible to deliver and protect water available from the Daniels Diversion.	UT/IBAT/ FWS/DOI/ Mitig. Comm./ CUWCD				X	X				
	I.D.	Coordinate reservoir operation.										
	I.D.1.	Determine feasibility and benefits of coordinated reservoir operation.	BR/CUWCD/ DOI		X							
>*	I.D.2.	Develop agreements if feasible to coordinate reservoir operations and protect flows to the Green River.	BR/CUWCD/ UT/Ute Tribe			X						
	I.E.	Examine the feasibility of other options for obtaining water.	BR/DOI/PD/ Ute Tribe		X	X	X					
	II.	RESTORE HABITAT (HABITAT DEVELOPMENT AND MAINTENANCE)										
	II.A.	Support actions to reduce or eliminate contaminant impacts on the lower Duchesne.[1]	FWS-ES		X							
	III.	REDUCE NEGATIVE IMPACTS OF NONNATIVE FISHES AND SPORTFISH MANAGEMENT ACTIVITIES (NONNATIVE AND SPORTFISH MANAGEMENT)										
	III.A.	Reduce negative interactions between nonnative and endangered fishes.										
	III.A.1.	Identify most damaging nonnative fishes.	UDWR	Complete								

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		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
	III.A.2.	Assess options to control negative interactions from nonnative fishes from the Duchesne River to benefit Colorado squawfish and razorback sucker young-of-the-year.	UDWR	Complete								
>*	III.A.3.	Implement and evaluate the effects of viable measures to control negative interactions from nonnative fishes. (See III.A.3. under Green River Mainstem Action Plan.)	UDWR		X	X						

		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
	I.	PROVIDE AND PROTECT INSTREAM FLOWS (HABITAT MANAGEMENT)										
	I.A.	Initially identify year-round flows needed for recovery.										
	I.A.1.	Develop work plan.	FWS-FR	Complete								
	I.A.2.	Identify flows.	FWS-FR		4/98							
	I.B.	State acceptance of initial flow recommendations (dependent on development of initial flow recommendations).										
	I.B.1.	Review scientific basis, dependent on development of flow recommendations by FWS.	UT/CO					9/01				
	I.B.2.	Assess legal and physical availability of water.	UT/CO	Complete								
	I.B.3.	Assess compact considerations (in Colorado).	CWCB	Complete								
	I.B.4	CWCB notice of intent to appropriate (in Colorado).	CWCB						1/02			
	I.C.	Legally protect identified flows (dependent on development of initial flow recommendations).										
	I.C.1.	Protect flows in Colorado.										
	I.C.1.a	Appropriate.										
	I.C.1.a.(1)	CWCB approval to appropriate.	CWCB						7/02			
>*	I.C.1.a.(2)	Colorado Attorney General's Office file date.	CWCB						8/02			
>*	I.C.1.a.(3)	Water court adjudication (litigation dependent)	CWCB									8/05
	I.C.2.	Protect flows in Utah.										
	I.C.2.a.	Hold public meeting to establish future appropriation policy.	UT					X				
	I.C.2.b.	Adopt and implement new policy (new appropriations subject to flow criteria).	UT					X	X			
>*	I.C.2.c.	Prepare and execute contracts with water users as required to subordinate diversions associated with approved and/or perfected rights.	UT	As required					X	X	X	X
	II.	RESTORE HABITAT (HABITAT DEVELOPMENT AND MAINTENANCE)										
	II.A.	Restore native fish passage at instream barriers.										
	II.A.1.	Assess and make recommendations for fish passage at Taylor Draw.	PD	Complete								
	II.B.	Support actions to reduce or eliminate contaminant impacts of petroleum derivatives.[1]	FWS-FR		X							
	III.	REDUCE NEGATIVE IMPACTS OF NONNATIVE FISHES AND SPORTFISH MANAGEMENT ACTIVITIES (NONNATIVE AND SPORTFISH MANAGEMENT)										
	III.A.	Reduce negative interactions between nonnative and endangered fishes.										
	III.A.1.	Monitor escapement of nonnative fishes from Kenney Reservoir (especially black crappie and channel catfish).	CDOW	Complete								
	III.B.	Reduce negative impacts to endangered fishes from sportfish management activities.										

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		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
	III.B.1.	Assess adequacy of current regulations and options (including harvest) to reduce negative impacts on native fishes from nonnative sportfish and options to reduce angling mortality on native fishes below Kenney Reservoir.	CDOW	Complete								
	V.	MONITOR POPULATIONS AND HABITAT AND CONDUCT RESEARCH TO SUPPORT RECOVERY ACTIONS (RESEARCH, MONITORING, AND DATA MANAGEMENT)										
	V.A.	Conduct research to acquire life history information and enhance scientific techniques required to complete recovery actions.										
	V.A.1.	Determine relative abundance and fate of Colorado squawfish congregation below Kenney Reservoir.	FWS-FR	Complete								
	V.A.2.	Monitor the White River fish community downstream of Kenney Reservoir to determine long-term effects of mainstream impoundment on the White River.	FWS-FR	Complete								

	ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
I.	PROVIDE AND PROTECT INSTREAM FLOWS HABITAT MANAGEMENT										
I.A.	Colorado River above Gunnison River										
I.A.1.	Initially identify year-round flows needed for recovery.										
I.A.1.a.	Rifle to Roller Dam.	FWS-FR		6/98							
I.A.1.b.	Roller Dam to 15-Mile Reach.	FWS-FR		6/98							
I.A.1.c.	15-Mile Reach.	FWS-FR	Complete								
I.A.2.	State acceptance of initial flow recommendations.										
I.A.2.a.	Rifle to Roller Dam (Dependent on initial flow recommendations).										
I.A.2.a.(1)	Review scientific basis, dependent on development of flow recommendations by FWS.	CWCB/CDOW			1/99						
I.A.2.a.(2)	Assess legal and physical availability of water.	CWCB	Complete								
I.A.2.a.(3)	Assess compact considerations.	CWCB	Complete								
I.A.2.a.(4)	CWCB notice of intent to appropriate (in Colorado).	CWCB			5/99						
I.A.2.b.	Roller Dam to 15-Mile Reach (Dependent on initial flow recommendations).										
I.A.2.b.(1)	Review scientific basis, dependent on development of flow recommendations by FWS.	CWCB/CDOW			1/99						
I.A.2.b.(2)	Assess legal and physical availability of water.	CWCB	Complete								
I.A.2.b.(3)	Assess compact considerations.	CWCB	Complete								
I.A.2.b.(4)	CWCB notice of intent to appropriate (in Colorado).	CWCB			5/99						
I.A.2.c.	15-Mile Reach.										
I.A.2.c.(1)(a)	581 cfs (July - September).										
I.A.2.c.(1)(a)i)	Review scientific basis.	CWCB/CDOW	Complete								
I.A.2.c.(1)(a)ii)	Assess legal and physical availability of water.	CWCB	Complete								
I.A.2.c.(1)(a)iii)	Assess compact considerations.	CWCB	Complete								
I.A.2.c.(1)(a)iv)	Preliminary notice of base and recovery flow amounts.	CWCB	Complete								
I.A.2.c.(1)(b)	For flows up to flow recommendation.										
I.A.2.c.(1)(b)i)	Review scientific basis.	CWCB/CDOW	Complete								
I.A.2.c.(1)(b)ii)	Assess legal and physical availability of water.	CWCB	Complete								
I.A.2.c.(1)(b)iii)	Assess compact considerations.	CWCB	Complete								
I.A.2.c.(1)(b)iv)	Preliminary notice of base and recovery flow amounts.	CWCB	Complete								
I.A.2.c.(2)	Irrigation season return flows.										
I.A.2.c.(2)(a)	Review scientific basis.	CWCB/CDOW	Complete								
I.A.2.c.(2)(b)	Assess physical and legal availability.	CWCB	Complete								

		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
	I.A.2.c.(2)(c)	Assess compact considerations.	CWCB	Complete								
	I.A.2.c.(2)(d)	Preliminary notice of base and recovery flow amounts.	CWCB	Complete								
	I.A.3.	Legally protect identified instream flows.										
	I.A.3.a.	Rifle to Roller Dam.										
>*	I.A.3.a.(1)	Acquire (see 15-Mile Reach).										
	I.A.3.a.(2)	Appropriate.										
	I.A.3.a.(2)(a)	CWCB approval to appropriate.	CWCB				1/00					
>*	I.A.3.a.(2)(b)	Colorado Attorney General's Office file date.	CWCB				2/00					
>*	I.A.3.a.(2)(c)	Water court adjudication (litigation dependent)	CWCB							2/03		
	I.A.3.b.	Roller Dam to 15 Mile Reach (concurrent with Rifle to Roller Dam activities, also dependent on flow recommendation).										
>*	I.A.3.b.(1)	Acquire (see 15-Mile Reach).										
	I.A.3.b.(2)	Appropriate.										
	I.A.3.b.(2)(a)	CWCB approval to appropriate.	CWCB				1/00					
>*	I.A.3.b.(2)(b)	Colorado Attorney General's Office file date.	CWCB				2/00					
>*	I.A.3.b.(2)(c)	Water court adjudication (litigation dependent)	CWCB							2/03		
>*	I.A.3.b.(3)	Deliver (see 15-Mile Reach).										
	I.A.3.c.	15-Mile Reach.										
	I.A.3.c.(1)	Acquire.										
	I.A.3.c.(1)(a)	Assess, acquire and convert water rights to instream flows (process may be repeated).	CWCB	Ongoing until flow recs. achieved								
	I.A.3.c.(1)(b)	Ruedi.										
>*	I.A.3.c.(1)(b)i)	Short-term lease of remaining water from Ruedi Resv. Which currently is estimated at up to 21,650 af. (Note: this is in addition to the 10,000 af [5,000/5,000] EIS commitment.)	BR	Ongoing until agreement	X	X						
	I.A.3.c.(1)(b)ii)	Evaluate options for use of uncommitted Ruedi Reservoir water following Round II sales.	BR	Complete								
	I.A.3.c.(1)(b)iii)	After Ruedi Round II water sales are completed, or commitments to contracts agreed to, resolve the disposition of remaining uncommitted water from Ruedi Reservoir.	BR/CWCB/FWS	Legislation dependent		X						
>*	I.A.3.c.(1)(b)iv)	Pursuant to the resolution of item I.A.3.c.(1)(b)iii), establish agreements to deliver water from Ruedi Reservoir.	BR/FWS			X						
>*	I.A.3.c.(1)(c)	In conjunction with Wolford permitting, execute necessary water management agreements (if feasible) with FWS, BR, CWCB, and CRWCD to deliver Wolford water to the 15-Mile Reach (see explanation in text).	CRWCD/FWS		9/98							
	I.A.3.c.(2)	Appropriate.										
	I.A.3.c.(2)(a)i)	581 cfs (July - September).										

		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
	I.A.3.c.(2)(a)i)a)	CWCB approval to appropriate.	CWCB	Complete								
>*	I.A.3.c.(2)(a)i)b)	Colorado Attorney General's Office file date.	CWCB	Complete								
>*	I.A.3.c.(2)(a)i)c)	Water court adjudication (litigation dependent)	CWCB	Complete								
	I.A.3.c.(2)(a)ii)	For flows up to flow recommendation.										
	I.A.3.c.(2)(a)ii)a)	CWCB action to advance preliminary notice to final notice for base and recovery flow amounts.	CWCB	Complete								
>*	I.A.3.c.(2)(a)ii)b)	Colorado Attorney General's Office file date.	CWCB	Complete								
>*	I.A.3.c.(2)(a)ii)c)	Water court adjudication (litigation dependent)	CWCB			12/98						
	I.A.3.c.(2)(b)	Irrigation season return flows.										
	I.A.3.c.(2)(b)i)	CWCB approval to appropriate.	CWCB	Complete								
>*	I.A.3.c.(2)(b)ii)	Colorado Attorney General's Office file date (300 cfs).	CWCB	Complete								
>*	I.A.3.c.(2)(b)iii)	Water court adjudication (litigation dependent)	CWCB	Complete								
	I.A.3.c.(3)	Deliver.										
>*	I.A.3.c.(3)(a)	Pursuant to Ruedi Biological Opinion, deliver 5,000af annually & an additional 5,000af 4 out of 5 years (ongoing and protect by short-term agreement).	BR	Ongoing	X	X	X	X	X	X	X	X
>*	I.A.3.c.(3)(b)	Pursuant to Wolford Mountain (Muddy Creek) Biological Opinion, deliver water.	CRWCD	Ongoing	X	X	X	X	X	X	X	X
	I.A.3.c.(3)(c)	Coordinated reservoir operations.										
	I.A.3.c.(3)(c)i)	Evaluate (final report).	BR		2/98							
>*	I.A.3.c.(3)(c)ii)	Implement, evaluate process & hydrology, and provide annual report.	BR		X	X	X	X	X	X	X	X
	I.A.3.c.(3)(d)	Collbran Project.										
	I.A.3.c.(3)(d)i)	Evaluate.	BR	Complete								
	I.A.3.c.(3)(d)ii)	Implement & protect.										
	I.A.3.c.(3)(d)ii)a)	File for change in use to include instream flows.	BR	Complete								
>*	I.A.3.c.(3)(d)ii)b)	Enter contract. *(Upon execution of agreement for delivery of surplus Green Mountain water up to the excess capacity of the Grand Valley Power Plant pursuant to the Orchard Mesa Check Settlement [item I.A.3.c.(3)(f)ii)b)], this RIPRAP item (I.A.3.c.(d)ii)b)) will be deleted.)*	BR	Litigation/ legislation dependent								
	I.A.3.c.(3)(e)	Silt Project.										
	I.A.3.c.(3)(e)i)	Evaluate.	BR	Complete								
	I.A.3.c.(3)(e)ii)	Make recommendations.	CDOP/BR			6/99						
	I.A.3.c.(3)(f)	Grand Valley Water Management Project.										
	I.A.3.c.(3)(f)i)	Evaluate.	BR	Complete								
	I.A.3.c.(3)(f)ii)	Protect.										

		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
	I.A.3.c.(3)(f)ii)a)	Complete Draft Grand Valley Water Management Environmental Assessment. The agreement to deliver Green Mountain Reservoir water to the Grand Valley Power Plant, pursuant to the Orchard Mesa Check Settlement, will also be covered in this draft environmental assessment.	BR	Complete								
	I.A.3.c.(3)(f)ii)b)	Execute agreement for delivery of surplus Green Mountain Reservoir water up to the excess capacity of the Grand Valley Power Plant pursuant to the Orchard Mesa Check Settlement.	BR	Assumes EIS will not be required	6/98							
	I.A.3.c.(3)(f)ii)c)	Evaluate feasibility of delivery options for only additional Orchard Mesa Check Settlement water and Grand Valley Water Management Plan water to benefit endangered fish.	BR		9/98							
	I.A.3.c.(3)(f)ii)d)	Assess options and legally protect only additional Orchard Mesa Check Settlement water and Grand Valley Water Management Plan water. (To be determined based on the results of I.A.3.c.(3)(f)ii)c).)	BR	TBD								
>*	I.A.3.c.(3)(f)iii)	Construct and implement, depending on programmatic Biological Opinion.	BR	Begin 9/98		X	X	4/01				
	I.B.	Colorado River from the Gunnison to the Colorado-Utah State line (Includes the 18-Mile Reach (Flow recommendation needed; expected with completion of Aspinall Unit biological opinion.)										
	I.B.1.	Initially identify year-round flows needed for recovery.	FWS-FR			12/98						
	I.B.2.	State acceptance of initial flow recommendations.										
	I.B.2.a.	Review scientific basis, dependent on development of flow recommendations by FWS.	CWCB/CDOW					9/01				
	I.B.2.b.	Assess legal and physical availability of water.	CWCB	Complete								
	I.B.2.c	Assess compact considerations.	CWCB	Complete								
	I.B.2.d.	CWCB notice of intent to appropriate (in Colorado).	CWCB						1/02			
	I.B.3.	Legally protect identified flows.										
>*	I.B.3.a.	Acquire (see Colorado River above Gunnison and Gunnison River).										
	I.B.3.b.	Appropriate.										
	I.B.3.b.(1)	CWCB approval to appropriate.	CWCB						7/02			
>*	I.B.3.b.(2)	Colorado Attorney General's Office file date.	CWCB						8/02			
>*	I.B.3.b.(3)	Water court adjudication (litigation dependent)	CWCB									8/05
	I.B.3.c.	Deliver and legally protect flows from Aspinall (see Colorado River above Gunnison and Gunnison River).										
>*	I.B.3.c.(1)	Operate Aspinall to provide test flows.	BR	Complete								
>*	I.B.3.c.(2)	Continue annual coordination (meeting 3 times/year) of Aspinall operation until biological opinion complete.	BR		X	X						
>*	I.B.3.c.(3)	Operate Aspinall to provide flows pursuant to biological opinion.	BR				4/00	X	X	X	X	X
	I.C.	Colorado River from Colorado-Utah State line to Green River (Flow recommendations needed.)										
	I.C.1.	Initially identify year-round flows needed for recovery.	FWS-FR			12/98						
	I.C.2.	State acceptance of initial flow recommendations.										
	I.C.2.a.	Review scientific basis.	UT			4/99						
	I.C.2.b.	Assess legal and physical availability of water.	UT			4/99						

		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
	I.C.3.	Legally protect identified flows.										
	I.C.3.a.	Hold public meeting to establish future appropriation policy.	UT					X				
	I.C.3.b.	Adopt and implement new policy (new appropriations subject to flow criteria).	UT					X				
>*	I.C.3.c.	Prepare and execute contracts with water users as required to subordinate diversions associated with approved and/or perfected rights.	UT	As required				X	X	X	X	X
	I.D.	Colorado River below Green River										
	I.D.1.	Initially identify year-round flows needed for recovery.	FWS					X				
	I.D.2.	State acceptance of initial flow recommendations (dependent on development of initial flow recommendations).										
	I.D.2.a.	Review scientific basis.	UT					X				
	I.D.2.b.	Assess legal and physical availability of water.	UT					X				
	I.D.3.	Legally protect identified flows (dependent on development of initial flow recommendations).										
	I.D.3.a.	Hold public meeting to establish future appropriation policy.	UT					X				
	I.D.3.b.	Adopt and implement new policy (new appropriations subject to flow criteria).	UT					X				
>*	I.D.3.c.	Prepare and execute contracts with water users as required to subordinate diversions associated with approved and/or perfected rights.	UT	As required				X	X	X	X	X
	II.	RESTORE HABITAT (HABITAT DEVELOPMENT AND MAINTENANCE)										
	II.A.	Restore and manage flooded bottomland habitat.										
	II.A.1.	29-5/8 Road Gravel Pit										
	II.A.1.a.	Develop and approve management plans.	FWS-FR	Complete								
	II.A.1.b.	Site design/complete environmental compliance.	BR	Complete								
>*	II.A.1.c.	Construct.	BR	Complete								
	II.A.1.d.	Operate and maintain.	BR	Ongoing	X	X	X	X	X			
	II.A.1.e.	Monitor and evaluate success; modify as needed.	FWS-FR		X	X	X	5/01				
	II.A.2..	Adobe Creek.										
	II.A.2.a.	Develop and approve management plans.	FWS-FR	Complete								
	II.A.2.b.	Site design/complete environmental compliance.	BR	Complete								
>*	II.A.2.c.	Construct.	BR	Complete								
	II.A.2.d.	Operate and maintain.	BR	On hold	X	X	X	X	X			
	II.A.2.e.	Monitor and evaluate success; modify as needed.	FWS-FR	Complete								
	II.A.3.	Walter Walker.										
	II.A.3.a.	Develop and approve management plans.	FWS-FR	Complete								

		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
	II.A.3.b.	Site design/complete environmental compliance.	BR	Complete								
>*	II.A.3.c.	Construct.	BR	Complete								
	II.A.3.d.	Operate and maintain.	BR/FWS/ CDOW	Ongoing	X	X	X	X	X			
	II.A.3.e.	Monitor and evaluate success; modify as needed.	FWS-FR		X	7/99						
	II.A.4.	Develop and implement levee removal strategy at high-priority sites.										
	II.A.4.a.	Preconstruction (contaminants screening, floodability assessments, environmental compliance, design & engineering.	BR/FWS		X	X	X	X				
>*	II.A.4.b.	Construction (levee breaching)[1].	BR		X	X	X	X				
	II.A.4.c.	Operate and maintain.	BR/FWS		X	X	X	X	X			
	II.A.4.d.	Evaluation	FWS		X	X	X	X				
	II.A.5.	Acquire interest in high-priority flooded bottomland habitats.										
	II.A.5.a.	Identify and evaluate sites.	FWS		X	X	X	X				
	II.A.5.b.	Pre-acquisition planning and identification of acquisition options.	PD		X	X	X	X				
	II.A.5.c.	Conduct appraisal/NEPA compliance.	PD		X	X	X	X				
>*	II.A.5.d.	Negotiate and acquire.	PD		X	X	X	X				
	II.A.5.e.	Evaluate effectiveness of land acquisition activities and provide recommendations	PD		X	X	X	X				
	II.B.	Restore native fish passage at instream barriers.										
	II.B.1.	Restore passage at Grand Valley Irrigation Co. Diversion Dam (Palisade)										
	II.B.1.a.	Evaluate and implement viable options to restore fish passage.	BR/FWS	Complete								
	II.B.1.a.(1)	Obtain landowner consent/agreement.	BR	Complete								
	II.B.1.a.(2)	Site design/environmental compliance.	BR	Complete								
>*	II.B.1.a.(3)	Construct.	BR	Complete								
>*	II.B.1.a.(4)	Operate and maintain.	FWS-FR/BR	Ongoing	X	X	X	X	X	X	X	X
	II.B.1.a.(5)	Monitor and evaluate success.	FWS-FR/BR		X	X	3/00					
	II.B.1.b.	Screen GVIC diversion to prevent endangered fish entrainment, if warranted.										
	II.B.1.b.(1)	Assess need	BR		X	X	3/00					
	II.B.1.b.(2)	Design	BR				X					
>*	II.B.1.b.(3)	Construct	BR					4/01				
	II.B.2.	Restore fish passage at Price Stubb.										

[1] Subject to review and approval following preliminary review of levee removal study by 12/98.

		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
	II.B.2.a.	Evaluate and implement viable options.										
	II.B.2.a.(1)	Obtain landowner consent/agreement.	BR		X							
	II.B.2.a.(2)	Site design/environmental compliance.	BR		X							
>*	II.B.2.a.(3)	Construct[1].	BR		X	3/99						
>*	II.B.2.a.(4)	Operate and maintain.	TBD			X	X	X	X	X	X	X
	II.B.2.a.(5)	Monitor and evaluate success.	FWS-FR/BR			X	X	X	X			
	II.B.2.b.	Screen Price Stubb diversion to prevent endangered fish entrainment, if warranted.										
	II.B.2.b.(1)	Assess need	BR				X	9/01				
	II.B.2.b.(2)	Design	BR						X			
>*	II.B.2.b.(3)	Construct	BR							4/03		
	II.B.3.	Restore fish passage at Government Highline (Roller Dam).										
	II.B.3.a.	Evaluate and implement viable options.										
	II.B.3.a.(1)	Site design/environmental compliance.	BR		X	X						
>*	II.B.3.a.(2)	Construct.	BR				3/00					
>*	II.B.3.a.(3)	Operate and maintain.	BR				X	X	X	X	X	X
	II.B.3.a.(4)	Monitor and evaluate success.	FWS-FR/BR				X	X	X			
	II.B.3.b.	Screen Government Highline diversion to prevent endangered fish entrainment, if warranted.										
	II.B.3.b.(1)	Assess need	BR							9/03		
	II.B.3.b.(2)	Design	BR							X		
>*	II.B.3.b.(3)	Construct	BR								4/04	
	II.C.	Support actions to reduce or eliminate contaminant impacts of heavy metals and selenium in the Grand Valley.[2]			X	X	X	X	X	X		
	III.	REDUCE NEGATIVE IMPACTS OF NONNATIVE FISHES AND SPORTFISH MANAGEMENT ACTIVITIES (NONNATIVE AND SPORTFISH MANAGEMENT)										
	III.A.	Reduce negative impacts to endangered fishes from sportfish management activities.										
	III.A.1.	Determine relationship between Aspinall test flows and nonnative fish abundance.	UDWR/ FWS-FR			12/98						
	III.A.2.	Increase law enforcement activity to decrease angling mortality.	CDOW	Ongoing	X	X	X	X	X			
>*	III.A.3.	Reclaim ponds in critical habitat.	CDOW		X	X	X					

[1] If the recommended alternative is to remove the Price-Stubb diversion structure, this could be completed by 3/99; if the recommended alternative is to build a fish passage similar to Redlands, then this would be completed by 9/99.

[2] Conta[illegible] remedi[illegible] all reac[illegible] be cor[illegible] ndeper[illegible] of and fr[illegible] utside c[illegible] covery [illegible]n.

		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
	III.A.3.a.	Evaluate and make recommendations.	TBD		X	12/98						
>*	III.A.4.	Remove small nonnative cyprinids from backwaters and other low velocity habitats.	CDOW/UDWR		X	X	X					
	IV.	MANAGE GENETIC INTEGRITY AND AUGMENT OR RESTORE POPULATIONS (STOCKING ENDANGERED FISHES)										
	IV.A.	Augment or restore populations as needed,and as guided by the Genetics Management Plan.										
	IV.A.1.	Razorback sucker.										
	IV.A.1.a.	Develop experimental augmentation plan and seek Program acceptance.	FWS-FR	Complete								
	IV.A.1.b.	Implement experimental augmentation plan.										
>	IV.A.1.b.(1)	Stock fish.	FWS-FR			X	X	X	X	X		
	IV.A.1.b.(2)	Monitor and evaluate results; make recommendations regarding further augmentation.	FWS-FR			X	X	X	X	X		
	IV.A.2.	Monitor the fish community in the upper Colorado River (above Palisade and develop management action plan, including recommendations for Colorado squawfish and razorback sucker augmentation).	CDOW	Complete								
	IV.A.2.a.	Develop augmentation plan for razorbacks above Palisade.	CDOW/PD	Complete								
	IV.A.2.a.(1)	Program acceptance.	CDOW/PD		4/98							
>	IV.A.2.a.(2)	Implement augmentation plan.	CDOW/PD			X	X	X	X	X		
	IV.A.2.b.	Develop augmentation plan for squawfish above Palisade.	CDOW/PD	Complete								
	IV.A.2.b.(1)	Program acceptance.	CDOW/PD		4/98							
>	IV.A.2.b.(2)	Implement augmentation plan.	CDOW/PD			X	X	X	X	X		
	IV.A.3.	Develop augmentation plan for the four endangered fish in the Colorado River in Utah.										
	IV.A.3.a.	Prepare plan.	UDWR		6/98							
	IV.A.3.b.	Program acceptance.	UDWR		X							
>	IV.A.3.c.	Implement plan.	UDWR			X	X	X	X	X		
	V.	MONITOR POPULATIONS AND HABITAT AND CONDUCT RESEARCH TO SUPPORT RECOVERY ACTIONS (RESEARCH, MONITORING, AND DATA MANAGEMENT)										
	V.A.	Conduct research to acquire life history information and enhance scientific techniques required to complete recovery actions.										
	V.A.1.	Determine Colorado squawfish larval drift into Lake Powell.	NPS	Complete								

		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
	I.	PROVIDE AND PROTECT INSTREAM FLOWS HABITAT MANAGEMENT										
	I.A.	Initially identify year-round flows needed for recovery (Flow recommendations will be provided upon completion of Aspinall Unit studies.)										
	I.A.1.	Complete draft technical synthesis reports (FWS) and biological assessment (BR).	FWS/BR			10/98						
	I.A.2.	Complete final technical synthesis reports (FWS) and biological assessment (BR).	FWS/BR			12/98						
	I.A.3.	Complete draft biological opinion.	FWS			12/98						
	I.A.4.	Complete draft NEPA document.	BR			9/99						
	I.A.5.	Complete final biological opinion (FWS) and NEPA document (BR).	FWS/BR				4/00					
	I.B.	State acceptance of initial flow recommendations (Flow recommendations will be provided upon completion of Aspinall Unit studies.)										
	I.B.1.	Review scientific basis, dependent on development of flow recommendations by FWS.	CWCB/CDOW					11/00				
	I.B.2.	Assess legal and physical availability of water.	CWCB	Complete								
	I.B.3.	Assess compact considerations.	CWCB	Complete								
	I.B.4.	CWCB notice of intent to appropriate (in Colorado).	CWCB					3/01				
	I.C.	Legally protect identified flows.										
	I.C.1.	Acquire (flow recommendations will be provided upon completion of Aspinall Unit studies.)										
	I.C.1.a.	Assess, acquire and convert water rights to instream flows.	CWCB	Ongoing until flow recs. achieved.								
	I.C.2.	Appropriate (flow recommendations will be provided upon completion of Aspinall Unit studies.)										
	I.C.2.a.	CWCB approval to appropriate.	CWCB					9/01				
>*	I.C.2.b.	Colorado Attorney General's Office file date.	CWCB						10/01			
>*	I.C.2.c.	Water court adjudication (litigation dependent)	CWCB									10/04
	I.C.3.	Deliver.										
>*	I.C.3.a.	Aspinall Unit supplemental releases to maintain 2,000 cfs minimum flow at Colorado-Utah state line 9 out of 10 years. Provide annual report.	BR	Ongoing through 6/99	X	X						
	I.C.3.b.	Flows from Aspinall Unit for research studies.										
>*	I.C.3.b.(1)	Deliver flows.	BR	Complete	X	X						
>*	I.C.3.b.(2)	Protect research flows.	FWS/BR/CWCB	Complete								
	I.C.3.c.	Flows from Paonia Reservoir in accordance with FWS Horsethief Biological Opinion.										
>*	I.C.3.c.(1)	Deliver flows.	BR	Ongoing	X	X	X	X	X	X	X	X
	I.C.3.d.	Flows from Aspinall Unit pursuant to Aspinall Biological Opinion.										
	I.C.3.d.(1)	Determine if change in water right and/or contract is needed.	BR	Complete								

		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
	I.C.3.d.(2)	Enter into contract if needed.	BR				4/00					
>*	I.C.3.d.(3)	Deliver flows.	BR	Begin 4/00, ongoing			X	X	X	X	X	X
	II.	RESTORE HABITAT (HABITAT DEVELOPMENT AND MAINTENANCE)										
	II.A.	Restore and manage flooded bottomland habitat.										
	II.A.1.	Develop management plan for Escalante State Wildlife Area.		Complete 5/94								
	II.A.2.	Develop and implement levee removal strategy at high-priority sites										
	II.A.2.a.	Preconstruction (contaminants screening, floodability assessments, environmental compliance, design & engineering).	BR		X	X	X	X				
>*	II.A.2.b.	Construction (levee removal)[1].	BR			X	X	X				
	II.A.2.c.	Operate and maintain.	BR/FWS			X	X	X	X			
	II.A.2.d.	Evaluation.	FWS			X	X	X				
	II.A.3.	Acquire interest in high-priority flooded bottomland habitats.										
	II.A.3.a.	Identify and evaluate sites.	FWS		9/98	X	X	X				
	II.A.3.b.	Pre-acquisition planning and identification of acquisition options.	PD		X	X	X	X				
	II.A.3.c.	Conduct appraisal/NEPA compliance.	PD		X	X	X	X				
>*	II.A.3.d.	Negotiate & acquire.	PD		X	X	X	X				
	II.A.3.e.	Evaluate effectiveness of land acquisition activities and provide recommendations.	PD		X	X	X	X				
	II.B.	Restore native fish passage at instream barriers.										
	II.B.1.	Restore passage at Redlands.										
	II.B.1.a.	Assess and make recommendations for fish passage.	FWS	Complete								
	II.B.1.b.	Implement viable options to restore fish passage.										
	II.B.1.b.(1)	Design passage, conduct NEPA compliance.	BR	Complete								
>*	II.B.1.b.(2)	Construct fish ladder.	BR	Complete								
>*	II.B.1.c.	Operate and maintain fish ladder.	FWS-FR/BR	Ongoing	X	X	X	X	X	X	X	X
	II.B.1.d.	Monitor and evaluate success.	FWS-FR/BR	Through 99	X	X	X					
	II.B.1.e	Identify minimum flows below Redlands Diversion Dam	FWS-FR	Complete								
>*	II.B.1.f.	Deliver flows below Redlands.	BR	Ongoing	X	X	X					
	II.B.1.g.	Screen Redlands diversion structure to prevent endangered fish entrainment, if warranted.										

[1] Subject to review and approval following preliminary review of levee removal study by 12/98.

		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
	II.B.1.g.(1)	Design,	BR				X					
>*	II.B.1.g(2)	Construct.	BR					X				
	II.B.2.	Restore passage at Hartland.										
	II.B.2.a.	Assess and make recommendations for fish passage.	FWS-FR	Complete								
	II.B.2.b.	Evaluate and implement viable options to restore fish passage.										
	II.B.2.b.(1)	Design passage, conduct NEPA compliance.	BR				X	X				
>*	II.B.2.b.(2)	Construct fish passage.	BR					4/01				
>*	II.B.2.c.	Operate and maintain.	TBD					X	X	X	X	X
	II.B.2.d.	Monitor and evaluate success.	FWS					X	9/02			
	II.B.2.e.	Screen Hartland diversion to prevent endangered fish entrainment, if warranted.										
	II.B.2.e.(1)	Assess need.	BR					X	9/02			
	II.B.2.e.(2)	Design,	BR							X		
>*	II.B.2.e.(3)	Construct.	BR							9/03	4/04	
	III.A.1.	Evaluate angling mortality on endangered fishes below Redlands.	CDOW	On hold								
	III.A.2.	Increase law enforcement activity to decrease angling mortality.	CDOW	Ongoing	X	X	X	X	X			
>*	III.A.3.	Remove small nonnative cyprinids from backwaters and other low velocity habitats.	CDOW		X	X	X					
>*	III.A.4.	Reclaim ponds in critical habitat	CDOW		X	X	X					
	III.A.4.a.	Evaluate and make recommendations.	TBD		X	12/98						
	IV.	MANAGE GENETIC INTEGRITY AND AUGMENT OR RESTORE POPULATIONS (STOCKING ENDANGERED FISHES)										
	IV.A.	Augment or restore populations as needed and as guided by the Genetics Management Plan.										
	IV.A.1.	Razorback sucker.										
	IV.A.1.a.	Develop experimental augmentation plan and seek Program acceptance.	FWS-FR	complete								
	IV.A.1.b.	Implement experimental augmentation plan. (Goal: 10 adults/river mile.)										
>	IV.A.1.b.(1)	Stock fish.	FWS-FR	Ongoing	X	X	X					
	IV.A.1.b.(2)	Monitor and evaluate results; make recommendations regarding further augmentation.	FWS-FR	Ongoing	X	X	X					
	V.	MONITOR POPULATIONS AND HABITAT AND CONDUCT RESEARCH TO SUPPORT RECOVERY ACTIONS (RESEARCH, MONITORING, AND DATA MANAGEMENT)										
	V.A.	Conduct research to acquire life history information and enhance scientific techniques required to complete recovery actions.										
	V.A.1.	Conduct Colorado squawfish and razorback sucker inventory in Gunnison River above Redlands.	FWS-FR	Complete								
	V.A.2.	Identify additional spawning sites of endangered fishes on the Gunnison River.	FWS-FR	Complete								

		ACTIVITY	WHO	STATUS	FY 98 10/97-9/98	FY 99 10/98-9/99	FY 00 10/99-9/00	FY 01 10/00-9/01	FY 02 10/01-9/02	FY 03 10/02-9/03	FY 04 10/03-9/04	FY 05 10/04-9/05
	III.	REDUCE NEGATIVE IMPACTS OF NONNATIVE FISHES AND SPORTFISH MANAGEMENT ACTIVITIES (NONNATIVE AND SPORTFISH MANAGEMENT)										
	III.A.	Reduce negative interactions between nonnative and endangered fishes.										
	III.A.1.	Assess need and options to control nonnative fish escapement from McPhee Reservoir.	BR	Complete								
	III.B.	Reduce negative impacts to endangered fishes from sportfish management activities.										
	III.B.1.	Identify potential conflicts between present fish management practices in McPhee Reservoir and endangered fishes and formulate an alternative management plan.	CDOW	Complete								

5.0 RECOVERY ACTION PLAN PROJECTED FUNDING NEEDS (IN THOUSANDS)

	PROJECT TOTAL	FY98	FY99	FY00	FY01	FY02	FY03	FY04
ANNUAL OPERATING COSTS & FACILITY O&M:								
Annual Operating Costs	24,186	3,176	3,249	3,346	3,446	3,549	3,655	3,765
Facility Operation and Maintenance	6,740	790	890	930	980	1,000	1,070	1,080
ANNUAL AND O&M TOTAL	30,926	3,966	4,139	4,276	4,426	4,549	4,725	4,845
CAPITAL FUNDING:								
Yampa River Management Plan	16,827	327	1,500	3,000	4,000	4,000	4,000	
Grand Valley Water Management	6,170	1,780	2,200	1,130	1,060			
Coordinated Reservoir Operations	454	54	80	80	80	80	80	
Acquire New Water to Enhance Flows (Green River Subbasin)	5,169	169	1,000	1,000	1,000	1,000	1,000	
Bottomlands Restoration	6,416	2,516	2,600	1,300				
Hartland Fish Passage	1,800			200	1,550	50		
GVIC Fish Passage	500	427	60	13				
Price/Stubb Fish Passage	2,250	300	950	950	50			
Gov't Highline (Roller Dam) Passage	3,500			350	3,100	50		
Yampa River Passage	3,100		300	1,300	1,500	0		
Tusher Wash Passage	1,762	62	250	1,400	50			
Redlands Screening	2,300		0	300	2,000			
Hartland Fish Screening	200					0	45	155
GVIC Fish Screening	1,900			400	1,500			
Gov't Highline (Roller Dam) Screening	5,000						550	4,450
Tusher Wash Screening	1,565					215	1,350	
Endangered Fish Hatchery Facilities	5,700	1,500	1,500	2,500	100	50	50	
Colorado River Pond Reclamation	457	207	50	50	50	50	50	
Elkhead Screening	1,400		200	1,200				
Highline Reservoir Screening	600		150	450				
Capital Program Management	2,370	120	400	500	500	350	350	150
CAPITAL FUNDING TOTAL	69,440	7,462	11,240	16,123	16,540	5,845	7,475	4,755

The capital funding total is capped, however, the actual cost of any one capital project will depend on final planning, design and budgeting.

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APPENDIX: CRITICAL HABITAT ANALYSIS

BACKGROUND

The final rule determining critical habitat for the four endangered fishes was published in the Federal Register on March 21, 1994, and the final designation became effective on April 20, 1994. As stated in the Section 7 Agreement and in the RIPRAP, the Recovery Program is intended to serve as the reasonable and prudent alternative to avoid the likely destruction or adverse modification of critical habitat, as well as to avoid the likelihood of jeopardy to the continued existence of the endangered fishes resulting from depletion impacts of new projects and all existing or past impacts related to historic water projects with the exception of the discharge by historic projects of pollutants such as trace elements, heavy metals, and pesticides. Once critical habitat was designated, the Service reviewed the RIPRAP, and in coordination with the Recovery Program's Management Committee, developed modifications to fulfill this intent.

The Service's review concluded that many of the actions in the existing RIPRAP would not only contribute to allowing the Recovery Program to continue to serve as the reasonable and prudent alternative to avoid the likelihood of jeopardy to the continued existence of the endangered fishes, but also would avoid the likely destruction or adverse modification of critical habitat for the endangered fishes. Specifically, the RIPRAP already included several of the following kinds of habitat-related actions for each subbasin (except the Dolores River): instream flow acquisition, legal protection, and delivery from modified reservoir operations; fish passage restoration; and flooded bottomland restoration. Thus, the critical habitat modifications to the RIPRAP were not extensive. They were primarily intended to provide further definition to recovery actions already in the RIPRAP and to provide increased certainty that the Recovery Program can continue to serve as the reasonable and prudent alternative for projects subject to Section 7 consultations. Since many historic projects will be required to reinitiate Section 7 consultation with the Service due to the critical habitat designation, the Service encouraged Recovery Program participants to complete these RIPRAP actions as quickly as possible to facilitate fish recovery.

Destruction or adverse modification of critical habitat is defined at 50 CFR 402.02 as a direct or indirect alteration that appreciably diminishes the value of critical habitat for <u>both</u> the survival and recovery of a listed species. Section 7 consultation is initiated by a Federal Agency when its action may affect critical habitat by impacting any of the primary constituent elements or reducing the potential of critical habitat to develop those elements. The primary constituent elements defined in the final rule as necessary for survival and recovery of the four Colorado River endangered fishes include, but are not limited to, 1) water (quantity and quality), 2) physical habitat (areas inhabited or potentially habitable, including river channel, bottom lands, side channels, secondary channels, oxbows, backwaters, and other areas); and 3) biological environment (food supply, predation, and competition). The Service reviewed the RIPRAP to determine if it addressed these constituent elements and to identify existing and new actions that will contribute to the RIPRAP serving as a reasonable and prudent alternative to the likely destruction or adverse modification of critical habitat. Then, in coordination with the Management Committee, the Service recommended additions needed to address all of the constituent elements, to better define the expected result of the recovery action, and to increase the certainty that the constituent elements of critical habitat would be protected.

MODIFICATIONS

1. Instream Flow Protection: Modifications were made under this recovery element to protect the water quantity constituent element.

   a. Adjudication of the instream flow appropriations to be filed by the Colorado Water Conservation Board (on the Yampa, Little Snake, White, Colorado, and Gunnison rivers) was added since these instream flow appropriation filings will not be legally protected until they are adjudicated in water court. Adjudication may take up to three years after filing, depending on the amount of litigation.

   b. To provide more immediate habitat improvements in the Grand Valley area via instream flows, a modification was made under water acquisition for the 15-Mile Reach to enter into an interim agreement for uncommitted water remaining in Ruedi Reservoir after Round II water sales are completed or commitments to contracts are agreed to. If flow recommendations for the 15-mile reach are met from other sources during this interim agreement (thereby causing the additional water from Ruedi to exceed the flow recommendations) Ruedi would be relieved of this additional obligation. At the end of the interim agreement (whether the flow recommendations have been met or not), Reclamation may pursue additional water sales, however, these sales would be subject to review under Section 7 of the Endangered Species Act.

2. Habitat Restoration: Modifications were made under this recovery element to protect the physical habitat constituent element.

   a. Access to historically inundated floodplain habitats is believed to be very important to recovery of the razorback sucker and Colorado squawfish. Although the Recovery Program has begun a program to evaluate and restore flooded bottomland areas, the fishes riverine habitat has been and continues to be so channelized by levees, dikes, rip-rap, and tamarisk, that broader floodplain restoration and protection (e.g., through mechanisms such as landowner incentives, conservation easements, and perhaps zoning) is needed. Recovery Program participants are not yet sure exactly how such mechanisms might be implemented so development of an issue paper on restoration and protection of the floodplain has been recommended. The issue paper will first address what restoration and protection are needed and then how they might be accomplished. After completion of the issue paper, viable options will be identified and a restoration strategy developed for selected geographic areas (e.g. Grand Valley and Ashley Valley). Floodplain restoration activities may be implemented by the Recovery Program or by Program participants individually. Responsibilities of other agencies will be identified in the issue paper and actions implemented consistent with their authorities outside the Recovery Program.

   b. The Recovery Program has been evaluating agricultural diversion structures in the Yampa River and has discovered that although not all of these structures impede Colorado squawfish passage, the annual bulldozing in critical habitat in the river that is required to

maintain many of these structures may destroy or adversely modify fish habitat. Upgrading these structures so that they are more secure would eliminate the need for this annual bulldozing and modification of critical habitat.

c. Fish passage structures are planned for a number of diversion dams in the Upper Basin in the current RIPRAP. However, without screens or "entrainment structures," adult fish, especially razorback suckers may go into the diversion canals. To keep fish in the more secure river habitat, a modification was made to include an entrainment structure on the proposed passage structure at the Government Highline diversion (Roller Dam). Also, the need for an entrainment preclusion structure at Redlands Diversion Dam will be evaluated after construction of the fish ladder there.

3. Reduction of Negative Impacts of Nonnative Fishes and Sportfish Management Activities: Modifications were made under this recovery element to protect the constituent element of the fishes biological environment.

a. Competition with and predation from introduced species is widely assumed to have played a role in the decline of the endangered fishes. The Recovery Program has been and continues to assess options to reduce negative impacts of problem nonnative species, sportfish management, and angling mortality. Although we cannot yet fully predict the results of implementing some of these management options, we need to begin to implement the most viable ones. Therefore, actions have been added to implement (in cooperation with the States) viable measures which will decrease negative impacts of certain nonnative fishes, sportfish management, and angling mortality. Specific actions were added to selectively remove northern pike from the Yampa River and northern pike and centrarchids from the Gunnison River and possibly Paonia Reservoir.