

**UPPER COLORADO RIVER  
ENDANGERED FISH  
RECOVERY PROGRAM**

**FISCAL YEAR 2002  
PROGRAM GUIDANCE**

March 14, 2001



**FY 2002 PROGRAM GUIDANCE**  
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## INTRODUCTION

This is the guidance for development of the Recovery Program's FY 2002 Work Plan. The Program Director's office developed this guidance on the basis of the Recovery Program's Recovery Action Plan (RIPRAP) and input from Program participants. The guidance was subsequently reviewed, modified, and approved by the Program's technical, Management, and Implementation committees. The RIPRAP identifies all the activities currently believed necessary and feasible to recover the endangered fish in the Upper Basin. Thus, annual Program guidance is closely tied to the RIPRAP.

Like the RIPRAP, the guidance is organized by recovery element. Within each recovery element, guidance is provided for ongoing, ongoing-revised, and new projects. Projects to be completed in or discontinued after FY 2001 also are listed. Ongoing projects are those previously approved for out-year funding for which goals/objectives, methods, cost, and expected outcome have not changed significantly. Scopes of work for these projects should require only minor updates. Ongoing-revised projects are those previously approved for out-year funding for which goals, objectives, methods, cost, or expected outcome have changed significantly (as outlined in the guidance), thus their scopes of work may require more changes. New projects are those not previously approved for out-year funding and completely new scopes of work will be developed for these.

This FY 2002 guidance requests proposals for FY 2002 activities; proposed scopes of work are requested for each of the projects listed in this guidance. Scopes of work should be prepared according to the format in Appendix A. Please review this format carefully, especially the explanatory text printed in italics. Scopes of work which do not contain the information requested will be returned to the principal investigator for revision. This could prevent the scope from receiving FY 2002 funding consideration because of the tight work plan development schedule. The format is available electronically by request to [angela\\_kantola@fws.gov](mailto:angela_kantola@fws.gov).

To allow time for outside peer review, scopes of work for most new projects will be due to the appropriate Program coordinator (see list at the end of this section) in WordPerfect or Word format by electronic mail NO LATER THAN March 20, 2001 (unless otherwise noted due to a late addition). New projects in this category are:

- White River water demand study
- Evaluation of Flaming Gorge flow recommendations
- Evaluation of pikeminnow entrainment in diversion structures
- Stewart Lake management plan
- Evaluation of escapement of nonnative fishes from Starvation Reservoir
- Evaluation of razorback sucker reproduction in the Gunnison River
- Cataract Canyon humpback chub population estimate

For your information, the evaluation form that will be used by the Recovery Program in evaluating new scopes of work may be found at <http://www.r6.fws.gov/crrip/soweval2.htm>. The evaluation form used by the Recovery Program in reviewing and commenting on final draft project reports may be found at <http://www.r6.fws.gov/crrip/rprv.htm>; the proper format for final

draft reports that are submitted to the Biology Committee for review and approval is at <http://www.r6.fws.gov/crrip/rptfmt.htm>; and the Biology Committee review process for final draft reports is at <http://www.r6.fws.gov/crrip/finbcprt.htm>.

Scopes of work for ongoing and ongoing-revised biological and water acquisition projects (under recovery elements I-V) are due NO LATER THAN April 20, 2001 (this includes scopes of work for capital-funded projects). Submit new, ongoing-revised, and ongoing scopes of work for these projects to the appropriate Program coordinator (see list at end of this page) in WordPerfect or Word format by electronic mail. IN ADDITION, submit a courtesy electronic or hard copy of new and ongoing-revised biological scopes of work to each member of the Biology Committee and water acquisition scopes of work to each member of the Water Acquisition Committee. If you wish, you may provide this courtesy copy by posting it to the fws-coloriver listserver. (The technical committees do not need to see ongoing scopes of work until later in the work plan review process, and these will be sent to them by the Program Director's office.)

The following three projects listed as "NEW PROJECTS" in this guidance are "placeholders" which depend on the outcome of work being conducted in FY 2001. Principal investigators for these projects should work with the appropriate coordinator regarding their FY 2002 scopes of work.

- Gunnison River temperature model
- Elkhead Reservoir screening (unless this is done in 2001)
- Monitoring stocked fish

Scopes of work for information & education projects (under recovery element VI) also are due April 20, 2001, and should be submitted in WordPerfect or Word format to Debbie Felker ([debbie\\_felker@fws.gov](mailto:debbie_felker@fws.gov)).

Program management scopes of work (under recovery element VII) are due by June 29, 2001 (in WordPerfect or Word format by electronic mail to [angela\\_kantola@fws.gov](mailto:angela_kantola@fws.gov)).

Upon receipt of the proposed scopes of work, the Program Director's office will begin working (with technical advisory panels and principal investigators) to review and refine the scopes of work and develop a recommended technical annual work plan. This recommended work plan and refined scopes of work will be submitted by the Program Director to the technical committees for review on June 18. Technical committee comments are then due to the Program Director and the Management Committee by July 20. The recommended Program management work plan also is due from the Program Director to the Management Committee at this time. The Management Committee will meet in early August to discuss the recommended work plans and approve projects for the Draft FY 2002 Work Plan. The Draft Work Plan will be submitted to the Implementation Committee for review by August 17. The Implementation Committee will meet in September and the final FY 2002 Work Plan and final scopes of work will be distributed in the first quarter of FY 2002. If you have any questions about this guidance or the FY 2002 work plan development process, please contact Angela Kantola at 303/969-7322, ext 221, or the appropriate coordinator:

Instream flow protection and nonnative fish control -

Biological studies: Gerry Roehm 303/969-7322 ext. 272, [gerry\\_roehm@fws.gov](mailto:gerry_roehm@fws.gov);

Water acquisition activities: George Smith 303/236-5322 ext. 235, [george\\_smith@fws.gov](mailto:george_smith@fws.gov)

Habitat restoration - Pat Nelson 303/969-7322 ext. 226, [pat\\_nelson@fws.gov](mailto:pat_nelson@fws.gov)

Genetics and propagation, monitoring/research/life history - Tom Czapla 303/969-7322 ext. 228,  
[tom\\_czapla@fws.gov](mailto:tom_czapla@fws.gov)

Information, education, and public involvement - Debbie Felker 303/969-7322 ext. 227,  
[debbie\\_felker@fws.gov](mailto:debbie_felker@fws.gov)

Program management - Angela Kantola 303/969-7322 ext. 221, [angela\\_kantola@fws.gov](mailto:angela_kantola@fws.gov)

**I. INSTREAM FLOW IDENTIFICATION AND PROTECTION**

Instream flow activities in FY 2002 will be directed toward: 1) ongoing flow, temperature, and channel/sediment monitoring; 2) augmenting flows in the Colorado and Yampa rivers to help meet Service flow targets; and 3) continued determination of flow needs and available flows.

<b><u>PROJ. NO.</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECTED FY 02 BUDGET</u></b>
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**ONGOING PROJECTS**

<b>8</b>	<b>RECOVERY PROGRAM GAGE O&amp;M</b>	\$53,000
Supports several actions to identify, deliver, and protect instream flows on the Colorado, Green, Yampa, Duchesne, and Price rivers. Previously gages were cost-shared with USGS, but the Recovery Program will assume the full cost beginning in FY 02.		

<b>9</b>	<b>WATER RIGHT ACQUISITION CONSULTANT</b>	Up to \$10,000
Supports actions as needed to identify and protect flows on the Colorado, Green, and Yampa rivers.		

<b>CAP-4C</b>	<b>REDLANDS GAGE O&amp;M</b>	\$10,000
Reclamation's support of continued operation of the Redlands Fish passage structure and provision of data for minimum flow requirements.		

<b>19H</b>	<b>WATER ACQUISITION HYDROLOGY SUPPORT</b>	\$53,000
The Service's Division of Water Resources collects hydrology data, administers contracts, and develops data used by the Water Acquisition Committee to assess instream flow protection.		

<b>67</b>	<b>STEAMBOAT LAKE WATER LEASE</b>	\$65,000
Lease of water from Steamboat Lake to augment late summer flows in the Yampa River. The term and amount of the lease are being renegotiated; and the Program will pay only for the amount of water released.		

<b>70</b>	<b>COLORADO INSTREAM FLOW PROTECTION</b>	TBD
CWCB activities to protect instream flows in the Colorado and Yampa river basins.		

<b>71</b>	<b>COLORADO RIVER DECISION SUPPORT SYS.</b>	TBD
CWCB uses CRDSS to assess legal and physical availability of water and Compact considerations for protection of instream flows in the Colorado and Yampa river basins.		

<b>CAP-11</b>	<b>GRAND VALLEY WATER MANAGEMENT</b>	\$1,118,000
Completion of construction on the Grand Valley Water Management Project to provide additional water for the 15-Mile Reach of the Colorado River.		

- CAP-14/ COORDINATED RESERVOIR OPERATION** \$ shown in  
**PIP-12C** Section VI  
 Voluntary coordination of reservoirs in the upper reaches of the Colorado River to provide spring peak flows to the 15-Mile Reach.
- 19B BIOLOGY HYDROLOGY SUPPORT** \$55,500  
 The Service's Division of Water Resources provides hydrology and temperature data used by Program investigators working to develop and refine instream flow recommendations.
- 85 CHANNEL/SEDIMENT MONITORING**
- 85a MAINSTEM COLORADO** \$0  
 Final report on channel monitoring work conducted to refine and verify results of earlier geomorphic studies and provide more specific information on the effects of coordinated reservoir releases. Funds for the final report were provided in FY 2001.
- 85c UPPER COLORADO RIVER** \$15,800  
 Monitors embeddedness of gravel and cobble substrates in the upper Colorado River and samples invertebrates to quantify the biological link between physical substrate characteristics and food base production.
- 85d GREEN RIVER** \$35,000  
 Time-series monitoring of deposition and erosion at the Jensen razorback sucker spawning bar on the Green River to quantify sediment dynamics and relate them to physical and biological processes creating razorback sucker habitat.
- 86 GEOMORPHOLOGY PEER REVIEW** Up to \$10,000  
 As-needed peer review of scopes of work and draft final reports containing a geomorphological component.
- 104 FLUCTUATING FLOW EFFECTS ON YOUNG OVERWINTERING PIKEMINNOW** \$99,800  
 Estimation of over-winter survival and movement of age-0 Colorado pikeminnow as related to stage fluctuations in the Green River below Flaming Gorge dam.
- 108 WINTER USE & SEASONAL FLOW NEEDS OF PIKEMINNOW IN THE PRICE RIVER** \$40,000  
 Development of year-round flow recommendations to protect Colorado pikeminnow in the Price River at their current levels.

ONGOING PROJECTS NEEDING REVISION

- 85 CHANNEL/SEDIMENT MONITORING**  
**85b GREEN/YAMPA/LITTLE SNAKE** \$45,000  
Placeholder. The study begun in FY 98 [CAP-9(12)] will end in FY 01; however further collect of suspended sediment and bedload samples in the Green, Yampa, and Little Snake rivers will be recommended. In outyears, this project will be part of a habitat monitoring project.
- CAP-9 YAMPA/GUNNISON/TRIB. MGMT. PLAN/PBO** \$590,000  
Implementation of the Yampa Endangered Fish and Water Management Plan (\$500,000 placeholder) and continued development of Gunnison River and other tributary management plans and programmatic biological opinions (PBO).

NEW PROJECTS

- 107 GUNNISON RIVER TEMPERATURE MODEL** \$70,000  
Placeholder for Phase II (modeling) should FY 01 results indicate a potential for temperature enhancements below the Aspinall Unit dams to benefit the endangered fish.

WHITE RIVER WATER DEMAND STUDY

**RIPRAP Item Number:** Green River Action Plan, White River. I.A.1 Develop a work plan (Management Plan) for protection of flows. The proposed study is a prerequisite to development of a Management Plan and Programmatic Biological Opinion process for the White River.

**General Project Title:** Identification of present and future water needs for human uses in the White River Basin

**Rationale/Problem Statement:** The study will develop a projection of future depletions for a 50-year planning period. The depletions will be categorized by type of use and justification for how the depletion numbers were developed will be included as a part of the study. This information is expected to be used as a baseline for agreements to be negotiated as part of a White River Basin Programmatic Biological Opinion process.

**Project Goals:** The goal of the effort is to develop a water demand projection which can be the basis for the development of a White River Management Plan.

**Recommended Approach/Methods:** The study team will utilize existing projections of future water use and population growth and standard water use estimating procedures to synthesize estimates of water demand in the basin at a date 50 years in the future. Additional information on the study methods and approach is contained in the description of tasks below.

### **Task Description and Schedule:**

- A. Identify date of baseline depletions currently included in CDSS to establish a “Base Case” as a starting point for the planning period.
- B. Identify segments to include (agricultural, M&I, rural domestic, mining, etc.).
- C. Identify, contact & visit (if needed) information sources (may include city/town/county planners, Colorado state demographer, CO Department of Local Affairs, Colorado Water Conservation Board, Colorado River Water Conservation District, and others).
- D. Estimate future depletions using a process which may involve the following steps:
  - 1. Use existing water use/diversion/consumptive use (CU) projections where available; extend those projections where necessary to cover the 50-year planning period;
  - 2. Extend population projections using the same or other growth rates (from state demographer’s existing 25-year projection);
  - 3. Use population projections for other areas (rural areas) with standard/accepted water use estimating values to estimate depletions.
- E. Develop several growth scenarios which bracket the future potential development in the basin.
- F. Develop a report detailing sources of information, assumptions, estimating process, and findings.

**Schedule:** FY 2002 Work to be completed by September 30, 2002.

**Estimated Cost Range:** \$10,000 - \$20,000

### **EVALUATE FLAMING GORGE FLOW RECOMMENDATIONS**

**RIPRAP Item Number:** Green River Action Plan I.D. Evaluate and revise as needed flow regimes to benefit endangered fish populations.

**General Project Title:** An evaluation of the effects of recent (1997 - 2001) flows on the fish community in Lodore and Whirlpool Canyons of the Green River

#### **Rationale / Problem Statement:**

In FY01, the Recovery Implementation Program (RIP) revised the RIP Recovery Action Plan to include evaluation and revision, as needed, of flow regimes to benefit the endangered fish populations throughout the Upper Colorado River Basin. Flaming Gorge Flow and Temperature Recommendations for Endangered Fishes in the Green River Downstream of Flaming Gorge Dam (Green River Flow and Temperature Recommendations) were approved by the RIP this fiscal year and are currently awaiting NEPA and ESA compliance. However, during the past 5 years many aspects of those recommendations have been implemented on an experimental basis. The primary purpose of this program guidance is to direct researchers to develop a SOW to determine the effects of those flow and temperature recommendations on the fish community in Lodore

and Whirlpool Canyons of the Green River and recommend how to monitor effects into the future. The secondary purpose of this program guidance is to determine the distribution of humpback chub population in Whirlpool Canyon to serve as the basis for future monitoring efforts. Future monitoring (i.e. population estimation), if deemed necessary, will be needed to evaluate the contribution of the Whirlpool Canyon population of humpback chub to the overall recovery of the species.

### *LODORE*

The Green River through Lodore Canyon has not been sampled on an annual basis, but fortunately has been sampled at very opportune times. Descriptions of the fish community are available prior to regulation (pre-1962), immediately following construction of Flaming Gorge Dam (1964-1966; Vanicek et al. 1970), and following the installation of temperature control device to warm releases (1978-1980; Holden and Crist 1981). The most recent investigations (1994-1996; Bestgen and Crist 2000) were conducted to determine the effect of flow and temperature recommendations as proposed in the 1992 Biological Opinion. In their analysis, Bestgen and Crist (2000) document trends in the fish community by comparing their contemporary sampling (1994-1996) with the historical data sets. Two recommendations that came from that study were: 1) manipulate Flaming Gorge Dam releases to more closely approximate natural flow and temperature, and 2) monitor the fish community and habitat particularly if the recommended flow and temperature regimes are implemented (with specifics identified).

Five years have passed since the fish community in Lodore Canyon has been sampled. Since that time flow and temperature recommendations for the Green River have been approved by the RIP (Muth et al. 2000). Those recommendations will not be fully implemented until ESA and NEPA compliance are complete. However, they have been partially implemented in recent years on an experimental basis with spring peak releases in excess of 10,000 cfs in 1999, and in excess of 8000 cfs in 1997 and low, steady summer base flows (~1000 cfs) were released during the summer of 2000. Preliminary data suggest that main channel temperatures in excess of 20°C were achieved in Lodore Canyon in July and August 2000.

The Green River through Lodore Canyon is directly impacted by Flaming Gorge operations. In their flow recommendation report (Muth et al. 2000) the authors recognized “uncertainties”, one of which is potential shifts in the Lodore Canyon fish community. Data gathered in this study will provide an assessment of the experimental flows and establish a process to evaluate the Green River Flow and Temperature Recommendations in the future. This initiates an adaptive management process (along with other ongoing studies downstream) of addressing “uncertainties” which may lead to refining flows needed for recovery of the species. As postulated by Bestgen and Crist (2000) the following shifts (list not complete) in the fish community in Lodore Canyon may have occurred due to warmer main channel temperatures and a more natural hydrograph:

## Potential Positive Effects

### Native Species

- Colorado pikeminnow - increased abundance, expanded distribution upstream, potential spawning (ripe male pikeminnow collected in the lower canyon in 2000).
- Native chubs - increased roundtail abundance and distribution upstream, increased roundtail spawning. Immigration of humpback chub from the Yampa or Whirlpool Canyon.
- Native suckers - increased distribution and abundance, increased reproduction and recruitment; decreased hybridization with non-native white suckers.

### Non-native Species

- Non-native salmonids - decreased abundance and distribution
- Non-native cyprinids - decreased abundance and distribution of redbreast shiners.
- Northern pike - decreased abundance and distribution

## Potential Negative Effects

### Native Species

- A return to more natural flows and temperatures in Lodore Canyon may result in a decreased abundance and distribution of mountain whitefish and mottled sculpin. However, a decrease in these cooler water species and the concomitant increase in the warmer water natives would likely signal a return to a more natural assemblage of native species in this stretch of river.

### Non-native species

- Non-native cyprinids: increased abundance and distribution of red shiner, sand shiner, fathead minnow, and carp .
- Catfishes: increased abundance and distribution of channel catfish and black bullhead
- Bass and sunfish: increased abundance and distribution

## *WHIRLPOOL*

Located immediately downstream of the Green and Yampa Rivers confluence, flow and temperatures in Whirlpool Canyon are also affected by releases from Flaming Gorge Dam. Temperature recommendations (Muth et al 2000) were in part derived to benefit the native fish in Whirlpool Canyon.

A concerted effort to sample the fish community in Whirlpool Canyon has not been conducted in recent times. The following discussion excerpted from the recent Humpback Chub Recovery Goal document (SWCA 2000) highlights this data gap and a need for future work:

*Natural expansion of the Yampa Canyon population (of humpback chub) could occur downstream into reaches of the Green River in Whirlpool and Split Mtn Canyons, and possibly upstream of the Yampa/Green confluence into Lodore*

*Canyon. These areas have not been monitored for humpback chub in recent years and numbers of individuals may already be higher following releases of about 13°C based on the 1992 Biological opinion on operation of Flaming Gorge Dam (USFWS 1992).*

The purpose of extending sampling downstream into Whirlpool Canyon would be two-fold: 1) to characterize the fish community in Whirlpool Canyon to serve as a basis for evaluating future effects of Flaming Gorge Flow and Temperature recommendations immediately downstream of the Yampa / Green Rivers confluence, and 2) to characterize the distribution of humpback chub, which will in turn direct future monitoring efforts for this species. Sampling the adjacent canyons of Lodore (regulated Green River) and Whirlpool (regulation partially ameliorated by the Yampa) will in time provide a more comprehensive evaluation of the Green River Flow and Temperature Recommendations. Sampling both canyons simultaneously would be a cost effective approach to providing the Recovery Program with: 1) a basis for the evaluation of a major management action (Green River Flow and Temperature Recommendations), and start the adaptive management approach, and 2) gather preliminary information to determine how the Whirlpool Canyon population of humpback chub contributes to recovery.

**Project Goals:**

1. Determine the effect of recent (1997-2001) Flaming Gorge releases on the fish community in Lodore Canyon and develop a process to monitor the effect of future Flaming Gorge operations in Lodore and Whirlpool Canyons. Specific objectives would be developed to address the suspected fish community shifts identified above.
2. Characterize the humpback chub community in Whirlpool Canyon, which will direct monitoring in the future.

**Recommended Approach and Methods:** A systematic sampling program of both juvenile / adult and early life stages of the fish community will be required. Researchers are advised to consider the sampling protocol of Bestgen and Crist (2000) to gather comparable data enabling continued trend analyses. Any observed shifts in the fish community should be considered in light of an evaluation of both flow and temperature data collected in this portion of the basin. The Implementation Committee noted that this project also will need to be coordinated with EIS process for implementing the Flaming Gorge flow recommendations

**Schedule:** FY02 - FY03

**Cost Range:** \$60,000 - \$70,000 (annual budget)

**Literature Cited:**

Bestgen, K.R. and L.W. Crist. 2000. Response of the Green River fish community to

construction and re-regulation of Flaming Forge Dam, 1962-1996. Final Report of Colorado State University Larval Fish Laboratory to Upper Colorado River Endangered Fish Recovery Program, Denver, Colorado.

Holden, P.B. and L.W. Crist. 1981. Documentation of changes in the macroinvertebrate and fish populations in the Green River due to inlet modification of Flaming Gorge Dam. Final Report PR-16-5 of BIO/WEST, Inc., Logan, Utah.

Muth, R.T., L.W. Crist, K.E. LaGory, J.W. Hayse, K.R. Bestgen, T.P. Ryan, J.K. Lyons, R.A. Valdez. 2000. Flow and Temperature Recommendations for Endangered Fishes in the Green River Downstream of Flaming Gorge Dam. Upper Colorado River Endangered Fish Recovery Program, Project FG-53. Final Report

SWCA, Inc. 2000. Recovery Goals for the Humpback Chub (*Gila cypha*) on the Upper Colorado River Basin: A supplement to the Humpback Chub Recovery Plan, Draft Final (dated September 15, 2000). Prepared for the Upper Colorado River Endangered Fish Recovery Program, Denver, Colorado.

Vanicek, C.D., R.H. Kramer, and D.R. Franklin. 1970. Distribution of Green River fishes in Utah and Colorado following closure of Flaming Gorge Dam. *Southwestern Naturalist* 14:297-315.

COMPLETED/DISCONTINUED PROJECTS:

**71A REFINEMENT OF CRDSS MODEL**

Refinement of CRDSS model to better reflect depletions and flows of the Little Snake River will be completed in FY 2001.

**94/CAP24 DUCHESNE COORD. RESV. OPERATIONS**

Identification and implementation of opportunities to coordinate operation of reservoirs in the Duchesne River Basin to be completed in FY 2001.

**CAP-25 COORDINATED FACILITIES STUDY**

The "Colorado River Water Division 5 Water Availability Study" to identify additional options for enhancing peak and base flows in the 15-Mile Reach is scheduled for completion in FY 2001.

**CAP-30 GUNNISON RIVER WATER DEMAND STUDY**

Projection of future depletions in the Gunnison River will be completed in FY 2001.

**84 DUCHESNE RIVER BIOLOGICAL STUDIES**

Development of year-round flow recommendations for endangered fishes in the Duchesne River is to be completed in FY 2001.

**II. HABITAT RESTORATION**

The goal of Habitat Restoration is to provide and protect habitat necessary to both achieve and sustain endangered fish recovery. Currently there are three major thrusts under this element of the Recovery Program.

1. Re-open access to historically-occupied river sections by restoring fish passage at the following migration barriers:
  - a. Redlands Diversion Dam (completed 6/96)
  - b. Hartland Diversion Dam (on hold pending reassessment of need)
  - c. Grand Valley Irrigation Company Diversion (completed 1/98)
  - d. Price-Stubb Diversion Dam
  - e. Grand Valley Project Diversion Dam
  - f. Tusher Wash Diversion Dam, if warranted
  - g. Yampa River diversion structures, if warranted
2. Install fish screens to prevent entrainment of endangered fishes into diversion canals
3. Restore or enhance natural floodplain functions that support endangered fish recovery.

<u>PROJ.</u> <u>NO.</u>	<u>TITLE</u>	<u>PROJECTED</u> <u>FY 02 BUDGET</u>
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ONGOING PROJECTS

<b>CAP4b</b>	<b>REDLANDS FISH PASSAGE O&amp;M</b> Fish & Wildlife Service monitoring of the fish trap at the Redlands fish passage (sorting, examining and enumerating all fish; and cleaning trash and debris from the trash racks, bar screens, fish trap, and fishway entrance).	\$24,000
<b>CAP5</b>	<b>PRICE-STUBB FISH PASSAGE</b> Begin construction of fish passage at the Price-Stubb Diversion Dam on the Colorado River.	\$770,000
<b>CAP23</b>	<b>GRAND VALLEY PROJECT FISH PASSAGE</b> Construct and evaluate passage at the Grand Valley Project Diversion Dam (aka "Roller Dam") on the Colorado River.	\$2,980,000
<b>CAP28</b>	<b>TUSHER WASH DIVERSION SCREEN</b> Construction of a screen to prevent entrainment of endangered fish in the Tusher Wash Diversion structure on the Green River.	\$1,630,000
<b>CAP29</b>	<b>GVIC SCREEN</b> Construction of a screen to prevent entrainment of endangered fish in the GVIC Diversion Dam on the Colorado River near Palisade.	\$1,650,000

ONGOING PROJECTS NEEDING REVISION

**75 FLOODPLAIN PROTECTION**

\$0

Phase II of the Floodplain Protection Issue Paper was completed in February 2000. Most of the work will be conducted by the Program Director's Office. Therefore, no funds have been earmarked for FY 02.

**CAP6 FLOODPLAIN RESTORATION PROGRAM**

Following are the Program activities:

-Screen sites for contaminants	\$99,000 capital
a. Pre-acquisition and/or pre-restoration assessments	
b. Post-restoration assessments	
-Conduct floodability assessments	\$150,000 capital
a. Pre-acquisition and/or pre-restoration assessments	
b. Development of design options for restoration	
c. Construction oversight	
d. Post-restoration monitoring and evaluation	
-Conduct environmental compliance (NEPA, Section 7, 404, etc.)	
-Old Charlie Wash, Leota L-7/7a, Johnson (O&M)	
Annual draining and fish harvest	\$66,700
Annual O&M (excavation of drainage canal)	\$17,000
-Land acquisition activities	\$748,000 capital
-Easement and weed management (O&M)	\$50,000
-Levee removal	\$394,000 capital
-Evaluation of razorbacks stocked into depressions	\$15,000
-Public involvement plan (N/A)	

The Floodplain Habitat Restoration Program SOW will be revised based on input received during the SOW review process. All proposed additions and modifications to the Floodplain Habitat Restoration Program SOW will be subject to review and approval by the Recovery Program. Additions/modifications that are approved will also be contingent upon availability of funding. Some of these recommendations may be costly to implement, and could only be done in the event that 1) unobligated funds become available, and 2) the Recovery Program considers them to be higher priority than other contingency projects.

NEW PROJECTS

**TITLE: EVALUATE ENTRAINMENT OF COLORADO PIKEMINNOW BY DIVERSION STRUCTURES ON THE YAMPA RIVER**

**RIPRAP Item Number:** Green River Action Plan: Yampa and Little Snake Rivers.  
II.A.2. Reduce/eliminate entrainment of Colorado pikeminnow at diversion structures.

**General Project Title:** Evaluate the potential for Colorado pikeminnow to enter or be entrained by existing diversion structures on the Yampa River. If necessary, identify

remedial measures which can be implemented at existing structures to reduce or prevent entrainment and develop guidelines for reducing/preventing entrainment by new or modified structures.

**Rationale/Problem Statement:** Critical habitat has been designated for the Colorado pikeminnow along 145 miles of the Yampa River from its confluence with the Green River upstream to the City of Craig, Colorado. Within this reach, water is diverted from the river at several locations for irrigation and other purposes. Pikeminnow may enter or become entrained in irrigation canals or other water delivery systems. Water users in the Yampa River Basin have requested indemnification from “incidental take” of endangered fish that may result from entrainment. In response to this request, the Yampa River Management Plan stipulated that water diversions be evaluated for their potential to entrain pikeminnow, and that any existing diversions found to entrain significant numbers of fish be modified at Recovery Program expense to reduce or prevent entrainment. A Programmatic Biological Opinion (PBO) will be prepared pursuant to Section 7 of the Endangered Species Act in response to the management plan. The PBO must include an “Incident Take Statement” to address the potential for incidental take and may propose reasonable and prudent measures to reduce it. We believe this project will satisfy that requirement.

Humpback chubs and razorback suckers are found only in the lower reaches of the Yampa River, below all of the major diversions. Moreover, Colorado pikeminnow in the Yampa River spawn only in these lower reaches. So entrainment of other endangered species and other life stages (i.e., larvae, juveniles) of the Colorado pikeminnow is not considered an issue. However, due to the limited numbers of this species, it may be necessary to evaluate entrainment of surrogate species (e.g., roundtail chub, flannelmouth sucker, and/or other native species) as indicative of the potential to entrain pikeminnow.

Private property rights will be respected. Ditch owners may be reluctant to grant access to their property, and they may wrongly perceive that the Recovery Program is attempting to “make a case” against them. This project is to determine if there is a problem and take appropriate measures, at Program expense, to rectify it. This is not an attempt to assign blame to any individual or group. Respect for their concerns is critical to accomplishing this task. The principal investigator will develop a separate public involvement plan for this project.

### **Project Goals and Objectives:**

1. Evaluate the potential for entrainment of Colorado pikeminnow by diversion structures within critical habitat on the Yampa River.
2. Identify remedial measures to reduce/prevent entrainment by existing diversions where entrainment of Colorado pikeminnow has been found or is suspected.
3. Develop guidelines for new diversions that incorporate these remedial measures.

**Expected Products:**

1. Public involvement plan describing how project information will be disseminated and outlining a strategy to establish cooperative relationships with ditch owners.
2. Report identifying whether Colorado pikeminnow are likely to be entrained by diversions on the Yampa River downstream from Craig.
3. A scope of work and cost estimate to implement site-specific remedial measures to reduce/prevent entrainment at existing diversions found or likely to entrain adult Colorado pikeminnow.
4. Guidelines for use in designing new or modified diversion structures to reduce/prevent entrainment.

**Recommended Approach/Methods:**

Identify and rank diversions on the Yampa River within critical habitat for Colorado pikeminnow. After diversions have been identified and ranked, invite ditch owners to participate in this effort. Only those owners willing to grant access to their facilities will be included in the study.

A tiered approach is recommended, wherein diversions with the greatest likelihood of entrainment would be evaluated first. If entrainment is found to be significant at these higher ranked diversions, then lower ranked diversions should also be evaluated.

Sample each of the first tier of diversion canals several times during the irrigation season at several different stages of river flow to determine if endangered or surrogate species are entering the canals. Numbers of any surrogate species entrained should be expressed as a percentage of that species in the river in the immediate vicinity of each diversion to more accurately estimate potential risk to Colorado pikeminnow.

**Schedule:** Field work will commence in spring 2002; data will be collected during and after spring runoff and will be completed by September 30, 2002. A report of findings will be completed by December 31, 2002 including, if necessary, a scope of work and cost estimate for remedial measures for existing diversions and design guidelines for new diversions.

**Estimated Cost Range:** \$30,000 - 40,000

**TITLE: STEWART LAKE MANAGEMENT PLAN**

**RIPRAP Item Number:**

Green River Action Plan: Mainstem

II.A. Restore and Manage Flooded Bottomland Habitat.

II.A.3. Implement Levee Removal Strategy at High-Priority Sites.

II.D. Support Actions to Reduce or Eliminate Contaminant Impacts at Stewart Drain.

**General Project Title:** Development of a management plan for Stewart Lake to benefit razorback suckers, waterfowl, and to reduce selenium levels.

**Rationale/Problem Statement:**

Stewart Lake Waterfowl Management Area is a large floodplain wetland 2 miles downstream from Jensen, Utah, and 11 miles downstream from the razorback sucker spawning bar on the Green River. The site is owned and managed by the Utah Division of Wildlife Resources (UDWR). Data collected for the National Irrigation Water Quality Program during the late 1980's detected selenium levels believed to adversely affect fish and waterfowl. In 1997, the U.S. Bureau of Reclamation removed portions of the levee that surrounds Stewart Lake, to allow Green River water to flush selenium from the site during high flows (i.e., Jensen flows greater than 7,250 cfs). At present, the Salt Lake City Ecological Services Office of the U.S. Fish and Wildlife Service is working in cooperation with UDWR and the U.S. Geological Survey to manage Stewart Lake in a manner that reduces selenium to levels that are not considered a threat to fish and wildlife resources.

Razorback suckers are known to spawn upstream of Stewart Lake during spring runoff; razorback larvae are known to drift down river; and larvae are believed to have drifted into Old Charlie Wash, a floodplain wetland some 60 miles downstream from the spawning bar. Since Stewart Lake is only 11 miles downstream from the spawning bar, it is believed that Stewart Lake may be able to entrain significant numbers of drifting razorback larvae if the site were configured properly.

Stewart Lake may also offer opportunities for acclimation of stocked razorbacks before they go into the river. Another possibility is use as a grow-out nursery area for stocked juvenile razorbacks.

Therefore, it may be possible to manage Stewart Lake to achieve multiple objectives, including achieving the original intent (waterfowl management), remediation for selenium, and assisting in recovery of the razorback sucker.

**Project Goals and Objectives:** Develop a management plan for Stewart Lake that would:

1. Continue to allow for selenium remediation;
2. Allow for waterfowl management;
3. Allow for management as a razorback sucker nursery habitat; and
4. Other objectives as identified.

**Recommended Approach/Methods:** Recommend that coordination meetings be held among UDWR, FWS-ES, and the Recovery Program to flesh out a mutually-acceptable plan designed to achieve the multiple goals/objectives of the agencies' programs.

**Schedule:** FY 2002

**Estimated Cost Range:** ~\$10K for meetings in Vernal and/or Salt Lake City, and for writing the management plan.

COMPLETED/DISCONTINUED PROJECTS

**CAP26 HARTLAND PASSAGE AND SCREEN**

Preparation (NEPA, permitting, etc.) for construction of fish passage and screen at the Hartland Diversion Dam on the Gunnison River at a cost of \$145,000 is on hold pending reassessment of the need for passage at Hartland.

**CAP-6: Larval Drift/Entrainment Evaluation**

Evaluation of larval razorback sucker drift into floodplain wetlands following reconfiguration of levee breeches is scheduled for completion in FY 2001. Final report 7/02 (\$28K provided in FY01, \$5K of which is for the final report).

### **III. NONNATIVE FISH CONTROL**

Nonnative fish control activities in FY 2002 will be directed toward: 1) removal/control of problematic nonnative fishes from river reaches occupied by the endangered fishes; 2) evaluation and control of escapement of nonnative fishes from off-channel ponds and reservoirs that serve as chronic sources of nonnative fishes into river reaches occupied by the endangered fishes; and 3) evaluation of nonnative fish stocking regulations.

#### **ONGOING PROJECTS**

<b><u>PROJ. NO.</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECTED FY 02 BUDGET</u></b>
<b>87B</b>	<b>CYPRINID REMOVAL - COLORADO</b> Complete report on removal of small nonnative cyprinid and centrarchid fish species in the mainstem Colorado River backwater and other low-velocity habitats.	\$20,000
<b>89</b>	<b>COLO.R. CENTRARCHID REMOVAL</b> Complete report on removal of nonnative centrarchids from Colorado pikeminnow habitats in the upper Colorado River.	\$11,000
<b>CAP18/19</b>	<b>COLORADO RIVER POND RECLAMATION</b> Continuation of removal and control of nonnative fishes from floodplain source ponds in the Colorado and Gunnison rivers.	\$352,000
<b>CAP-20</b>	<b>HIGHLINE LAKE SCREENING O&amp;M</b> Operation and maintenance of the nonnative fish net barrier at Highline Lake. Cost to be determined (Colorado additional in-kind funds).	TBD
<b>106</b>	<b>NONNATIVE STOCKING REGS. EVAL.</b> Continued evaluation of the effectiveness of (biological response to) Colorado's fish stocking regulations.	\$36,300
<b>109</b>	<b>MIDDLE GREEN NORTHERN PIKE REMOVAL</b> Continuation of the removal of northern pike from the middle Green River which was begun in FY 2001.	\$40,000
<b>110</b>	<b>LOWER YAMPA CATFISH REMOVAL</b> Removal of catfish from the lower Yampa River to sufficiently reduce their abundance and minimize predatory and competitive impacts on growth, recruitment, and survival of resident humpback chub.	\$101,800
<b>CAP-31</b>	<b>NORTHERN PIKE EXCLUSION ASSESSMENT</b>	\$50,000

Exclude northern pike from spawning habitats adjacent and connected to the Yampa River to reduce the abundance of northern pike in critical habitat for endangered fish downstream.

ONGOING PROJECTS NEEDING REVISION

**98**            **YAMPA RIVER NONNATIVE FISH CONTROL**            \$75,000  
Placeholder for continuation of removal of northern pike from the Yampa River.

NEW PROJECTS

**TITLE:**    **ELKHEAD RESERVOIR SCREENING** (Unless this is done in 2001).

**RIPRAP Item Number:** Green River Action Plan: Yampa and Little Snake Rivers, III.A.1.a.(1) Evaluate control options and implement measures to control nonnative fish escapement from existing Elkhead Reservoir.

**General Project Title:** Elkhead Reservoir Fish Barrier Feasibility Study and Design

**Rationale/Problem Statement:** The presence of nonnative fish, particularly northern pike, has been identified as a significant problem for endangered fishes in the Yampa River due to the nonnatives competing with adult life stages and preying on juvenile life stages of native species. Screening the Elkhead Reservoir outflow is recommended to reduce or eliminate continuous introduction of nonnative fishes into the Yampa River from this source. Elkhead Reservoir also was identified by the Colorado Division of Wildlife as a potential site to translocate northern pike removed from the Yampa mainstem. However, nonnative fish stocking regulations adopted by the states of Colorado, Utah and Wyoming preclude stocking nonnatives into facilities from which escapement back to the river is probable. Escapement from Elkhead is possible through both the unregulated spillway and the regulated outlet. However, escapement through the outlet is likely to occur only if the reservoir is drawn down. The current spillway may be enlarged or otherwise modified in the future to meet dam safety standards.

In FY 1999, a net-type fish barrier was constructed in the spillway approach of Highline Lake near Fruita, Colorado, to reduce escapement of nonnative fishes from this facility. This polyester net, with a nominal ¼-inch mesh size, was installed at Highline as an experiment to evaluate the effectiveness of constructing and operating such fish barriers at similar facilities in the Upper Colorado Basin. In FY 2000, the Highline Lake barrier will be evaluated for: 1) its ability to prevent escapement of target nonnative species to be contained in the reservoir; 2) ease of maintenance and routine cleaning; 3) ease of removal and re-installation for protection from ice damage; 4) potential to leave in place during ice cover on lake; and 5) longevity and annual operational costs. If the Highline barrier proves to be effective and economical to operate, a similar barrier could be installed and evaluated at Elkhead Reservoir. Although these two facilities share similar problems of nonnative fish escapement, one significant difference between them is the size and yield of their watersheds. Highline Lake is situated on a small, ephemeral stream. Because it receives most of its water from the Colorado River through a canal, inflows can be

regulated. Elkhead impounds runoff from a 200-square-mile watershed and receives unregulated spring peak inflows much higher than those experienced at Highline Lake. Therefore, it may be reasonable to consider alternative fish barriers that may be more effective at higher volumes of discharge.

**Project Goals & Objectives:** Design, install and evaluate the effectiveness of a fish barrier to reduce or eliminate escapement of nonnative fishes from a reservoir on a significant tributary to the Yampa River.

**Expected Product(s):** Preliminary design for a fish barrier in FY 2001. Final report in FY 2003 on the effectiveness of this type of barrier to reduce or eliminate nonnative fish escapement.

**Recommended Approach/Methods:** Design a barrier to reduce or eliminate nonnative fish escapement from Elkhead Reservoir, incorporating any lessons learned from the Highline Lake evaluation and adapted to the more rigorous flow conditions likely to occur at Elkhead. Fabricate and install the barrier. If the proposed fish barrier would be incorporated into the spillway of the dam, it may be installed when the spillway is modified, if such a modification is determined to be necessary for dam safety.

The City of Craig, Colorado, owns and operates Elkhead Reservoir. The State of Colorado, Division of Parks and Outdoor Recreation, manages much of the land surrounding the reservoir. Following installation, the State of Colorado would be responsible for operating and maintaining the fish barrier on an experimental basis.

Evaluation of the effectiveness and acceptability of the Elkhead net should determine: 1) its ability to prevent escapement of target nonnative species to be contained in the reservoir; 2) ease of maintenance and routine cleaning; 3) ease of removal and re-installation if necessary for protection from ice damage; 4) potential to leave in place during ice cover on lake; and 5) longevity and annual operational costs.

**Schedule:** Investigate the feasibility of and design a fish barrier in FY 2001; install the fish barrier in FY 2002; evaluate the fish barrier in FY 2003; provide final report by December 2003.

**Cost Range:** \$~250,000

**TITLE: EVALUATION OF ESCAPEMENT OF NONNATIVE WARMWATER SPORTFISHES FROM STARVATION RESERVOIR**

**RIPRAP Item Number:** Green River Action Plan: Duchesne River. III.A.3.b, Evaluate escapement of nonnative fishes from Starvation Reservoir and the feasibility of screening.

**General Project Title:** Evaluation of Escapement of Nonnative Warmwater Sportfishes from Starvation Reservoir

**Rationale/Problem Statement:** The Recovery Program has determined that control of nonnative fishes is necessary for recovery of the endangered fishes. Chronic escapement of nonnative fishes from reservoirs or other impoundments and dispersal into riverine habitats occupied by the endangered fishes where they potentially pose a significant predatory or competitive threat has been identified as a problem. Screening of reservoir outflow to reduce escapement of target nonnative fishes has been implemented at Highline Lake and other such fish barriers are being considered for other upper basin reservoirs (e.g., Elkhead; Miller and Laiho 1997). Control of escapement through screening or other types of fish barriers is costly, and the need for such nonnative fish control measures needs to be evaluated on a case-by-case basis. Starvation Reservoir was identified in the 8 March 2000 version of the RIPRAP for such an evaluation beginning in 2002.

**Project Goals and Objectives:**

Determine the extent of escapement of target, potentially problematic nonnative fishes from Starvation Reservoir.

Determine the need to control escapement of nonnative fishes from Starvation Reservoir.

Assess the feasibility of control (if needed).

**Expected Products:** 1) Documentation of the extent of nonnative fish escapement from Starvation Reservoir 2) Recommendations to the Recovery Program as to the need for controlling escapement of nonnative fishes from Starvation Reservoir and preliminary assessment of feasibility.

**Recommended Approach/Methods:** Project design should consider approach used at Highline Reservoir to evaluate escapement (contact — Patrick J. Martinez, Colorado Division of Wildlife). Marking individuals (various sizes) of target species in Starvation Reservoir and recapture sampling downstream of the outflow. Sampling should occur at least during spring and summer. At least two sampling sites should be established downstream of the outflow, with a minimum of three sampling periods per year. Gear types could include electrofishing, netting, or some combination of active and passive collection methods. Evaluate extent of escapement through mark/recapture statistical analyses.

**Schedule:** FY 2002 through 2003

**Estimated Cost Range:** \$30,000 - \$40,000 per year

**References:**

Personal communication, Patrick J. Martinez, Colorado Division of Wildlife

Miller, W. J., and D.. Laiho. 1997. Feasibility evaluation of non-native fish control structures. Final Report of Miller Ecological Consultants, Inc. to Upper Colorado River Endangered Fish Recovery Program, Denver, Colorado.

COMPLETED/DISCONTINUED PROJECTS:

**87A            CYPRINID REMOVAL - UTAH**

This pilot project to remove nonnative cyprinids from the lower Colorado and Green rivers is scheduled to be completed in FY 2001.

**IV. PROPAGATION & GENETICS MANAGEMENT**

The goals of Propagation and Genetics management are: to prevent immediate extinction of any endangered Colorado River fish stocks; to conserve genetic diversity of wild endangered fish stocks through recovery efforts; to maintain genetic diversity in captive-reared endangered fish broodstock that is similar to that of the wild stock used as founders; and to produce genetically sound offspring for augmentation efforts.

**ONGOING PROJECTS**

<b><u>PROJ. NO.</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECTED FY 02 BUDGET</u></b>
<b>CAP-7</b>	<b>EXPANSION OF PROPAGATION FACILITIES</b> Construction and leasing of additional growout ponds to produce endangered fish for stocking and purchase of necessary tags and tagging equipment.	\$263,000
	<b>GREEN RIVER SUBBASIN GROWOUT PONDS GRAND VALLEY GROWOUT PONDS CODED WIRE AND PIT TAGGING EQUIPMENT FOR BROODSTOCK AND AUGMENTATION FISH</b>	
<b>105</b>	<b>PIKEMINNOW TRANSLOCATION</b> Completion of final report on translocation of radiotagged wild and hatchery-reared sub-adult Colorado pikeminnow above the Grand Valley Project diversion dam.	\$13,000

**ONGOING PROJECTS NEEDING REVISION**

<b>29</b>	<b>O&amp;M OF PROPAGATION FACILITIES</b> Operation and maintenance of Program hatchery facilities to produce endangered fish for stocking according to approved stocking plans. Revise to add funds for raising fish at Colorado’s native species hatchery.	
	<b>29a GRAND VALLEY END. FISH FACILITY</b>	\$320,000
	<b>29b WAHWEAP STATE FISH HATCHERY</b>	\$176,400
	<b>29c OURAY ENDANGERED FISH FACILITY</b>	\$400,000
	<b>OURAY WELL-FIELD DEVELOPMENT/REPAIR</b>	\$40,000
	<b>NEW COLORADO NATIVE SPECIES HATCHERY</b>	\$?

**COMPLETED/DISCONTINUED PROJECTS:**

<b>25</b>	<b>BONYTAIL INTRODUCTION</b> Incorporation of recommendations from this project will be conducted under the Program’s augmentation and monitoring efforts (project #29). Evaluation of stocking efforts will be conducted under project #111.	
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**V. RESEARCH, MONITORING, & DATA MANAGEMENT**

The goals of Research, Monitoring and Data Management are to provide the necessary information in life histories of endangered fishes to aid in the implementation of other Program activities, to determine the status and trends of the natural stocks, and to actively maintain the data in a useable format for researchers. The objective is to use this information in deciding the course of other Program management actions to recover the endangered fish.

<b>PROJ. NO.</b>	<b>TITLE</b>	<b>PROJECTED FY 02 BUDGET</b>
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**ONGOING PROJECTS**

<b>15</b>	<b>LARVAL FISHES IDENTIFICATION</b> Processing of collections under project #22F, backlog cataloging, and maintenance curation of existing specimens.	\$33,400
<b>16</b>	<b>DATABASE MANAGEMENT</b> The Service conducts the interagency data management program to compile, manage, and maintain all research and monitoring data collected by the Recovery Program. Also includes fall monitoring of Colorado pikeminnow in the Colorado River.	\$53,200
<b>22</b>	<b>INTERAGENCY STANDARDIZED MONITORING PROGRAM</b>	
	<b>22C UTAH PIKEMINNOW MONITORING</b> Fall YOY pikeminnow sampling in the Green & Colo. rivers in Utah.	\$42,100
	<b>22F YAMPA, LOWER GREEN &amp; COLO. RIVER PIKEMINNOW LARVAL ABUNDANCE</b> “Real-time” larval razorback and pikeminnow monitoring to determine optimal dam operations.	\$91,500
	<b>22I MIDDLE GREEN PIKEMINNOW EST.</b> Final year of 3-year population estimate of pikeminnow in the middle Green River.	\$150,000
	<b>22J LOWER GREEN PIKEMINNOW EST.</b> Second year of 3-year population estimate of pikeminnow in the lower Green River.	\$130,000
	<b>22K DESO/GREY HUMPBACK EST.</b> Second year of 3-year population estimate of humpback chub in Desolation/Grey Canyons of the Green River.	\$70,000

**50 RAZORBACK SUCKER STOCKING EVAL. \$11,000**  
Completion of final report on 5-year experimental stocking plan to evaluate survival of various sizes of razorback suckers stocked in the Gunnison and Colorado rivers.

NEW PROJECTS:

**111 MONITORING STOCKED FISH \$100,000-\$150,000**  
A plan is being developed in FY 2001 to monitor the stocked fish from various augmentation sites. Beginning in FY 2002, monitoring stocked fish will follow the protocols established under that plan.

**TITLE: HUMPBAC CHUB POPULATION ESTIMATE FOR CATARACT CANYON**

**RIPRAP Item Number:** General Recovery Program Support Action Plan, V.A.1.  
Conduct standardized monitoring program.

**Rationale/Problem Statement:** The Cataract Canyon humpback chub population was last estimated in the late 1980's (Valdez 1990). A new estimate is required to determine the status and trend in this population. This is the fifth of the five populations in the Upper Colorado River Basin which require intermittent population estimates. Downlisting actions can not begin until population estimates are available for all five populations in the Upper Basin.

In addition, this work needs to consider the recapture of any presumed bonytail. Cataract Canyon is one of the last locations where wild bonytail have been captured. Program protocol calls for the transport of any presumed bonytail to a hatchery. Because of the remoteness of the site, budgets should allow for these actions which may be required.

**Project Goals and Objectives:** Estimate the Cataract Canyon humpback chub population with confidence intervals as tight as possible. Transport of any presumed bonytail to hatchery completed.

**Expected Products:** A precise population estimate of the Cataract Canyon humpback chub population.

**Recommended Approach/Methods:** Similar approaches which are used in other humpback chub population estimates. Consider the transport of any presumed bonytail to Wahweap Hatchery.

**Schedule:** FY02-FY04

**Cost Range:** \$60,000 - \$80,000 per year

**Literature Cited:**

Valdez, R. 1990. The endangered fish of Cataract Canyon. Final Report of BIO/WEST to U.S. Department of Interior, Bureau of Reclamation, Salt Lake City, Utah.

**TITLE: SURVEY SAMPLING FOR LARVAL RAZORBACK SUCKERS IN THE GUNNISON RIVER**

**RIPRAP Item Number:** Colorado River Action Plan: Gunnison River. IV.A.1.b.(2); V.A.2.

**General Project Title:** Survey sampling for larval razorback suckers in the Gunnison River to determine evidence of reproduction by stocked fish for continued evaluation of stocking success.

**Rationale/Problem Statement:** Subadult razorback suckers have been stocked annually in reaches of the Gunnison River since 1996 as part of attempts to re-established self-sustaining populations in the upper Colorado River system. Indications are that at least some of these stocked fish have survived and remain in the Gunnison River (personal communication, Frank Pfeifer, U.S. Fish and Wildlife Service). Fish from the initial stocking efforts have reached sexual maturity, and documentation of spawning through captures of larvae would further evaluate stocking success and advance our understanding of environmental requirements and means to provide appropriate conditions.

**Project Goals and Objectives:**

Determine if reproduction by stocked razorback suckers is occurring in the Gunnison River through capture of larvae.

If larval razorback suckers are collected, determine distribution and habitat-use patterns, estimate spawning periods, and associate these data with hydrologic and habitat conditions.

**Expected Products:**

Documentation of reproduction by stocked razorback suckers in the Gunnison River.

Continued evaluation of stocking success.

Advancement of our understanding of environmental requirements of razorback sucker in the Gunnison River and means to provide appropriate conditions.

**Recommended Approach/Methods:** Project design should consider the approach used for sampling larval razorback suckers in the Green River (Muth 1995; Muth et al. 1998). The study should initially target the Gunnison River near Delta, Colorado, but may be later expanded to other areas as dictated by the need for further evaluation of razorback sucker stocking success. Sampling at established sites should occur at least bi-weekly during spring through early summer and target the expected spawning period for razorback suckers based on existing information from the Green River and historic accounts in the upper Colorado River system. Light trapping in low-velocity habitats should be the principal collecting method, but other gear types such as fine-mesh seines and drift nets could be considered depending on local habitat conditions. All samples should be

preserved in 100% ethanol (to allow for otolith aging of razorback sucker larvae) and sent to Colorado State University Larval Fish Laboratory for processing.

**Schedule:** 2002 through 2004

**Estimated Cost Range:** \$35,000 - \$45,000 per year

**Literature Cited:**

Muth, R. T. 1995. Conceptual framework document for development of a standardized monitoring program for basin-wide evaluation of restoration activities for razorback sucker in the Green and upper Colorado River systems. Final Report of Colorado State University Larval Fish Laboratory to Upper Colorado River Endangered Fish Recovery Program, Denver, Colorado.

Muth, R. T., G. B. Haines, S. M. Meisner, E. J. Wick, T. E. Chart, D. E. Snyder, and J. M. Bundy. 1998. Reproduction and early life history of razorback sucker in the Green River, Utah and Colorado, 1992-1996. Final Report of Colorado State University Larval Fish Laboratory to Upper Colorado River Endangered Fish Recovery Program, Denver, Colorado.

COMPLETED/DISCONTINUED PROJECTS:

**22 INTERAGENCY STANDARDIZED MONITORING PROGRAM**

**22A1 PIKEMINNOW POPULATION MONITORING**

Combined with project #16.

**22A2 COLORADO PIKEMINNOW POP. MONITORING**

This 3-year population estimate of pikeminnow in the mainstem Colorado was completed in FY 2000 and the report will be completed in FY 2001. Another 3-year estimate is scheduled to begin in FY 2004.

**22A3 BLACK ROCKS HUMPBACK POP. ESTIMATE**

This 3-year population estimate of humpback chub in Black Rocks was completed in FY 2000 and the report will be completed in FY 2001.

**22A4 YAMPA HUMPBACK POP. ESTIMATE**

This 3-year population estimate of humpback chub in Yampa Canyon was completed in FY 2000 and the report will be completed in FY 2001.

**112 COMPUTER INTERACTIVE CATOSTOMID KEY**

Scheduled for completion in FY 2001.

**VI. INFORMATION, EDUCATION, & PUBLIC INVOLVEMENT**

**ONGOING PROJECTS NEEDING REVISION**

<b><u>PROJ. NO.</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECTED FY 02 BUDGET</u></b>
<b>12</b>	<b>INFORMATION AND EDUCATION</b>	<b>\$48,000</b>
	<p>The Information and Education Program scope of work is a comprehensive communications plan that addresses goals, objectives and tactics for all aspects of the Recovery Program. The plan includes calendars that detail I&amp;E activities in geographic locations served by the Program. Project-specific plans are included as subsets to the comprehensive plan. This method of planning and evaluating I&amp;E activities is designed to improve both internal and external communication with the program. The I&amp;E Committee will review and evaluate plans and calendars quarterly, updating and changing them as needed to address changes in Program activities.</p>	
	<p>The following projects have scopes of work that contain public involvement activities which are considered subsets of the comprehensive I&amp;E communication plan:</p>	
<b>(CAP-9)</b>	<b>YAMPA BASIN PIKE TRANSLOCATION</b>	<b>\$2,000</b>
	<p>Northern pike are being removed from the Yampa River and translocated to nearby reservoirs where they can be enjoyed by anglers without threatening native fish. Public relations play a key role in the success of this important nonnative fish control work.</p>	
<b>(CAP-11)</b>	<b>GRAND VALLEY PROJECTS</b>	<b>\$30,000</b>
	<p>This SOW is ongoing and addresses public involvement related to: Making efficiency improvements to the Government Highline Canal as part of the Grand Valley Water Management project; constructing a fish screen at the privately-owned Grand Valley Irrigation Company's diversion canal; restoring fish passage at the abandoned, privately-owned Price-Stubb Dam, the Grand Valley Project and the privately-owned Hartland Dam; and the Gunnison River biological opinion and NEPA compliance. These activities include, but are not limited to, public meetings, news releases, one-on-one meetings with affected interests, distribution of literature and provision of regular updates to local congressional staff.</p>	
<b>(CAP-14)</b>	<b>COORDINATED RESERVOIR OPERATIONS</b>	<b>\$43,800</b>
	<p>This SOW is ongoing and addresses public involvement related to coordinated operation of reservoirs in the upper reaches of the Colorado River to increase spring peak flows in the 15-Mile Reach of the Colorado River. Activities include, but are not limited to, informing the public through news releases and direct mailings as necessary of any decisions to adjust reservoir operations and bypasses made to enhance flows for endangered fish purposes.</p>	
<b>(CAP-6)</b>	<b>FLOODPLAIN RESTORATION</b>	<b>Funds within CAP-6</b>
	<p>This SOW is ongoing and addresses public involvement related to habitat restoration along the Colorado mainstem and its tributaries. Activities include, but are not limited to, one-</p>	

on-one meetings with affected landowners, involving potentially affected interests in decision-making processes, informing the public through news releases, distribution of literature and public meetings as appropriate.

**(CAP-18/19) POND RECLAMATION** Funds within CAP18/19

This SOW is ongoing and addresses public involvement related to the removal and control of nonnative fishes in Colorado and Gunnison River floodplain source ponds. Activities include, but are not limited to, maintaining a "Listening Log," preparing newsletter and magazine articles and working with the news media to ensure the public is informed about reclamation efforts.

**12-H INTERPRETIVE SIGNS AND EXHIBITS** \$30,000

The Recovery Program is working to install interpretive signs and exhibits in key locations in the upper Colorado River basin to explain the importance of recovering the endangered fishes. Possible sites in FY 02 include the Grand Valley area, the Vernal field museum and the visitors center.

**12-I INTERACTIVE BASINWIDE MAP** \$20,000

In fiscal years 2000 and 2001, the I&E Committee identified the need for a publication or poster that would visually depict the Upper Basin and how recovery efforts relate to a particular community or area of interest. The need for this schematic has grown to the extent that the Committee has determined that a modifiable, multi-purpose computer graphic should be developed. The Colorado River Water Users Association is interested in a web-based interactive map for the entire basin and the Program would like to pursue partnering with that group. About \$3,000 of this project budget would be offered to help with the cost of developing a base map. The remaining budget would go toward customizing the graphic for the various purposes to be detailed in the scope of work.

COMPLETED/DISCONTINUED PROJECTS:

**12-D (CAP-25) COORDINATED FACILITIES STUDY**

The Coordinated Facilities Study (CAP-25) will be completed in FY 2001.

**12-G ADVANCED PROJECT WILD WORKSHOP**

This was a one-year project for FY 2001.

**VII. PROGRAM MANAGEMENT**

Program management activities for FY 2002 focus on continued planning and coordination of Program activities by the Program Director and staff and by Utah, Colorado, Wyoming, and the Bureau of Reclamation.

<b><u>PROJ. NO.</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECTED FY 02 BUDGET</u></b>
<i><u>ONGOING PROJECTS</u></i>		
<b>1</b>	<b>UTAH PROGRAM MANAGEMENT</b>	<b>\$85,000</b>
<b>2</b>	<b>B. RECLAMATION PROGRAM MGMT.</b>	<b>\$150,000</b>
<b>3</b>	<b>SERVICE PROGRAM MANAGEMENT</b>	<b>\$820,000</b>
<b>4</b>	<b>COLORADO PROGRAM MANAGEMENT</b>	<b>\$110,000</b>
<b>5</b>	<b>WYOMING PROGRAM MANAGEMENT</b>	<b>\$14,000</b>
<b>CAP21</b>	<b>CAPITAL PROJECTS COORDINATION</b>	<b>\$400,000</b>

**FY-2002 PROPOSED SCOPE OF WORK for:**  
(Show brief title of project here)

**Project #: \_\_\_\_\_**

Lead Agency:

Submitted by: *[Give name of project manager, give name, address, phone, fax, and e-mail of principal investigator]*

Date:

Category:

- Ongoing project
- Ongoing-revised project
- Requested new project
- Unsolicited proposal

Expected Funding Source:

- Annual or  O&M funds
- Capital funds
- Other (explain)

I. Title of Proposal:

II. Relationship to RIPRAP: *[Action plan(s), task number(s) and title(s) in the most recent RIPRAP which are correlated with this project]*

III. Study Background/Rationale and Hypotheses: *[If applicable] [Include description of expected study results and how those results will be integrated into the overall recovery effort.]*

IV. Study Goals, Objectives, End Product: *[Include measurable outcomes and their expected due dates.]*

V. Study area *[including river miles and sampling dates, if appropriate]*

VI. Study Methods/Approach *[provide a clear description of sampling methods, gear types, numbers and life stages of fish to be collected, statistical analyses to be used, etc.]*

VII. Task Description and Schedule

VIII. FY-2002 Work

- Deliverables/Due Dates
- Budget *[broken out by task and funding target]*
  - Labor
  - Travel
  - Equipment
  - Other
  - Total

FY-2003 Work (for multi-year study)

- Deliverables/Due Dates
- Budget estimate

FY-2004 etc. (for multi-year study)

- IX. Budget Summary [*Provide total AND break-out by funding target (e.g. station)*]\*  
FY-2002  
FY-2003  
FY-2004

Total:

- X. Reviewers [*For new projects or ongoing-revised projects, list name, affiliation, phone, and address of people who have reviewed this proposal.*]

- XI. References

\* Do NOT include overhead costs on funds transferred from Reclamation to the Service (?)  
**EXCEPT FOR CAPITAL PROJECTS. IF YOU ARE UNSURE WHETHER YOUR PROJECT WILL BE FUNDED WITH CAPITAL OR ANNUAL FUNDS, PLEASE SHOW THE POTENTIAL OVERHEAD COST AS A LINE ITEM.** If you have questions about this, please call Angela Kantola at 303/969-7322, ext. 221.