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Implementation Committee

Upper Colorado River Endangered Fish Recovery Program

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Memorandum

To: Implementation/Management Committee, Consultants, and Interested Parties

From: Acting Regional Director, Region 6

Subject: Final 2008—2009 Assessment of "Sufficient Progress" under the Upper Colorado River Endangered Fish Recovery Program in the Upper Colorado River Basin, and of Implementation of December 20, 1999, "15-Mile Reach" Programmatic Biological Opinion

I. "SUFFICIENT PROGRESS"

In accordance with the Section 7, Sufficient Progress, and Historic Projects Agreement, the U.S. Fish and Wildlife Service (Service) has reviewed 2008—2009 and cumulative accomplishments and shortcomings of the Upper Colorado River Endangered Fish Recovery Program (Recovery Program) in the Upper Colorado River Basin. Per that Agreement, the Service used the following criteria to evaluate whether the Recovery Program is making "sufficient progress" toward recovery of the four listed fish species:

- 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;
- status of the fish populations;
- adequacy of flows; and
- magnitude of the impact of projects.

The final April 2, 2009, assessment of accomplishments and shortcomings of the Recovery Program under the Recovery Implementation Program Recovery Action Plan (RIPRAP) from March 1, 2008 through February 1, 2009, is attached. Previous years' accomplishments and shortcomings are described in previous "sufficient progress" memoranda and outlined in the RIPRAP itself.

The Service issued its last sufficient progress memorandum on July 3, 2008.

A. Status of the Species

Wild populations of Colorado pikeminnow and humpback chub occur in the upper Colorado and Green River systems. These populations have been studied since the 1960s, and population dynamics and responses to management actions have been evaluated since the early 1980s. Hatchery-produced, stocked fish form the foundation for the reestablishment of naturally self-sustaining populations of razorback sucker in the upper Colorado, Green, and San Juan river systems; bonytail in the upper Colorado and Green river systems; and Colorado pikeminnow in the San Juan River. It is anticipated that self-sustaining populations of razorback sucker and bonytail will be reestablished in 2015; in the interim, population dynamics and responses to management actions will be evaluated. Regions 6 and 2 of the Service are collaborating to ensure a coordinated effort to achieve recovery in both the upper (including the San Juan River) and lower basins.

Significant changes in the status of the four species generally are not detected on a year-to-year basis. Closed-population, multiple mark-recapture estimators are being used (where possible) in the Upper Colorado River Basin to derive population point estimates for Colorado pikeminnow and humpback chub for tracking of population trends. The accuracy and precision of each point estimate is assessed by the Service in cooperation with the Recovery Program and in consultation with investigators developing the point estimates and qualified statisticians and population ecologists.

Evaluation of stocked razorback sucker and bonytail is ongoing, with an initial draft report provided in July 2006. A subsequent study was conducted to determine survival estimates of stocked razorback sucker to ascertain if changes in the stocking plan are warranted. A draft report from that study is under review and the evaluation is being extended to razorback sucker data collected from 2004 through 2008. Many of the recommendations from that evaluation already are being implemented. A razorback sucker monitoring plan is being developed to identify sampling needed to estimate demographic parameters for small- and large-bodied razorback suckers in the Colorado and Green River sub-basins. Meanwhile, a pilot study to monitor juvenile and larval razorback will be conducted in the lower Green River beginning in 2009.

To date, the Service has convened two workshops on population estimates. The first workshop recommended changes in sampling methods to increase the reliability of population point estimates and identified numeric targets for capture probability and coefficients of variation to help evaluate confidence in the point estimates. The second workshop involved discussions on environmental variables and life-history traits influencing population estimates and population dynamics. An *ad hoc* group of species experts reviewed information presented at the workshop and prepared a final report (with recommendations) that is being used to guide research and management.

Recovery goals for the endangered fishes identify site-specific management actions to minimize or remove threats and establish criteria for naturally self-sustaining populations. A key requirement of the population criteria is no net loss of fish over established monitoring periods. Downward trends in some wild populations of Colorado pikeminnow and humpback chub have

been observed during dry weather and low river runoff conditions since 1999. Biologists believe that these declines are a result of reduced recruitment that can be largely attributed to increases in certain problematic nonnative fishes and habitat changes associated with the recent drought. The recovery programs are actively implementing and adaptively evaluating management actions to reduce these threats (e.g., increased nonnative fish control) and reverse the downward population trends to achieve and maintain self-sustaining populations. Meanwhile, progress is being made to reestablish specific populations through stocking.

The most current estimates of the mean number of wild adult Colorado pikeminnow and humpback chub are shown in Table 1. Table 1 also provides a general overview of Colorado pikeminnow stocking in unoccupied reaches of the upper Colorado River subbasin, and stocking efforts to reestablish a population in the San Juan River. Table 2 provides a general overview of stocking efforts to reestablish razorback sucker and bonytail populations in the Upper Colorado River Basin (including razorback sucker in the San Juan River).

Table 1.—Summary of Colorado pikeminnow and humpback chub status (includes preliminary data and data in draft reports undergoing peer and Biology Committee review).

SPECIES	RIVER SYSTEM		
	MIDDLE GREEN	LOWER GREEN	UPPER COLORADO
Colorado Pikeminnow	Estimates of wild adults ranged from about 2,300 in 2003 to about 3,100 in 2001 (final report on the Green River subbasin population was approved by the Biology Committee in 2005). The next 3-year estimate of adult abundance will be completed in 2009. Catch rates for young Colorado pikeminnow in 2004 were the highest since 1996 in the Green River. Collections of larvae in 2006 indicate a strong reproductive year. It is anticipated that these strong year-classes will show up as subadult or adult fish in future estimates. For example, 369 pikeminnow 182-399 mm TL were captured, tagged, and released in the lower Green River reach in 2006. That number may be greater than the total number of fish in that size class present in all years of sampling the lower Green River from 2001-2003.		Estimates of wild adults ranged from about 440 in 1992 to about 890 in 2005. The final report on 2003-2005 estimates of adult abundance including all estimates since 1991 is in review; sampling for the next estimate began in 2008.
	SAN JUAN: An estimate of about 20 wild adults was based on data collected in the early to mid-1990s. Stocking of juvenile fish is ongoing under the 2003 augmentation plan. Over 668,000 juveniles were stocked in 2002–2004; about 300,000 juveniles were stocked in fall 2005; and more than 326,000 and 479,000 juveniles were stocked in 2006 and 2007, respectively, and 275,105 in 2008. Catch per unit of effort of fish in the river for 1+ overwinter periods post-stocking has not changed significantly over the last several years. Recaptures of fish stocked in the San Juan River have steadily increased. Captures of larvae document that stocked fish are surviving to sexual maturity and reproducing.		
Humpback Chub	Yampa Canyon: Population is small, with an estimate of about 400 wild adults in 1998-2000. Sampling during 2003-2004 caught so few fish an estimate could not be made. In 2007 the Recovery Program brought 400 young-of-year *Gila* spp. caught in Yampa Canyon into captivity as a research activity to determine the best methods for capture, transportation, and holding at two different hatchery facilities.	Desolation/Gray Canyons: Estimates of wild adults vary from about 2,000 in 2001, 2,200 in 2002, and 1,000 in 2003. Sampling in 2001 and 2002 was conducted in summer, whereas sampling in 2003 was conducted in fall, which may account for reduced numbers. Final report on this population estimate was approved by the Biology Committee in July 2005. Draft report on 2006-2007 estimates pending in 2009.	Black Rocks Canyon: Estimates of wild adults vary from about 800 in 1998, 900 in 1999, and 500 in 2000 and 2003. 2007-2008 estimate pending in 2009. Westwater Canyon: Estimates of wild adults range from about 4,700 in 1998 to 2,500 in 1999, 2000, and 2003. 2007-2008 estimate pending in 2009. Cataract Canyon: Population is small, with an estimate of about 150 wild adults in 2003 to 66 in 2005. 2008-2009 estimate underway. Estimates are difficult to obtain; therefore, CPUE has been determined to be an effective replacement (began in 2008 for 2 years on, 2 years off).
	LOWER COLORADO, GRAND CANYON: The population associated with the LCR Inflow was probably stabilized at around 6,000 adults (Coggins, L.G., Jr. 2008. Abundance trends and status of the Little Colorado River population of humpback chub: an update considering 1989–2006 data. U.S. Geological Survey Open-File Report 2007-1402). In recent years, scientists also detected more juvenile and young-of-the-year fish.		

Table 2. General overview of stocking efforts to reestablish razorback sucker and bonytail populations in the Upper Colorado River Basin (including the San Juan River for razorback sucker).

	RIVER SYSTEM		
SPECIES	MIDDLE GREEN	LOWER GREEN	UPPER COLORADO
Razorback Sucker	Since implementation of the 2003 stocking plans, about 137,000 subadult razorback suckers have been stocked in the Green and upper Colorado River subbasins. Monitoring and evaluation of fish stocked in 2003–2008 is currently being accomplished through analysis of data collected in sampling conducted for other population estimates and nonnative fish management. About 2,550 recaptures of stocked razorback sucker were reported from the Green, Colorado, and Gunnison rivers in 2000–2005. A draft report on survival estimates of stocked razorback sucker is in review and the evaluation is being extended to razorback sucker data collected from 2004 through 2008.		
	Data from 1998–1999 suggested that about 100 wild adults remained at that time, with an estimated annual survival rate of about 70%. The population is being augmented through stocking, which has been expanded with excess fish stocked into selected floodplain depressions. Stocked fish in reproductive condition have been captured at spawning sites, and captures of larvae demonstrate that these fish are reproducing. Numbers of larvae collected from the Green River in 2007 were the highest ever recorded. Survival of larvae through the first year is evidenced by captures of juveniles (some of these may have been stocked larvae).	Few wild adults have been captured in recent years. The population is being augmented through stocking. Larvae were collected below Green River, UT and 1+ year-old fish were collected in the lower Green River.	Few wild adults have been captured in recent years. The population is being augmented through stocking. Larvae were collected in the Gunnison River in 2002–2006, demonstrating reproduction by stocked fish. The detection of larvae is a direct result of spawning razorback sucker that have been stocked in the Gunnison River or have moved into the Gunnison using the Redlands Fish ladder. Survival of larvae through the first year is evidenced by captures of juveniles (some of these may have been stocked larvae). Larvae also were collected in the Colorado River between Palisade and Moab from 2004–2007 (at several locations between Grand Junction and Westwater 2004–2007 and at two upstream locations between Palisade and Grand Junction in 2007). Running ripe female razorback suckers were captured between Loma and Moab in 2005 and 2008.
	SAN JUAN: No estimate of adults is available. Stocking 1-year-old-plus fish (greater than 300 mm total length) is ongoing under the 2003 augmentation plan. Since 2003, about 1.7 million age-1 and 45,000 subadults and adults have been stocked. Reproduction by stocked fish at separate locations has been documented through collection of larvae every year since 1998, and juveniles were found in 2002–2005.		

Bonytail	Since 1996, 306,500 tagged bonytail subadults have been stocked in the Green and upper Colorado River subbasins. Of those, over 79,000 were stocked under the 2003 integrated upper basin stocking plan. Stocked bonytail have been recaptured at several locations throughout the upper basin. During September–November 2003, 16 stocked bonytail were recaptured in Cataract Canyon after about 1 year post stocking. Monitoring and evaluation of fish stocked in 2003–2004 is currently being accomplished through analysis of data collected in sampling conducted for other population estimates and nonnative fish control. About 200 stocked bonytails were captured in 2004–2005, all within 1 year after stocking. Captures of stocked bonytail only occur within the first year of release, after that time, few if any bonytail have been captured. J.W. Mumma Native Aquatic Species Restoration Facility has begun to expose their bonytail to flows in circular tanks for up to a month prior to their release in order to increase their fitness for the river. In addition, stocking sites have been changed from canyon-bound reaches to alluvial reaches, such as the Jensen to Ouray reach on the Green River with the objective of improving their survival.

B. Accomplishments and Concerns

Recovery Program participants accomplished several important objectives in 2008 and early 2009, including:

- continued implementation of nonnative fish management activities and a successful nonnative fish management workshop;
- continued success of stocking efforts;
- continued operation of Flaming Gorge Dam under the 2005 Biological Opinion (BO) and 2006 Record of Decision (ROD) in providing flows and temperatures to benefit the endangered fish;
- release and careful management of 5,000 af from Elkhead Reservoir to augment flows for endangered fish in late summer/early fall;
- completion of the Myton Diversion Dam rehabilitation which will help meet Duchesne River flow recommendations;
- implementation of Coordinated Reservoir Operations (CROS) for some peak flow augmentation (however, constraints on operations due to flooding concerns need further investigation and feasible options need to be identified to maximize potential CROS benefits;
- continued augmentation of late summer flows in the 15-Mile Reach;
- identification of the 10,825 water supply alternative; and
- completion of the programmatic biological assessment for the Gunnison basin and draft Environmental Impact Statement for Aspinall operations.

Although diligent efforts and some progress are underway, several concerns expressed in the Service's 2008 sufficient progress memorandum remain and some new concerns have arisen, as well, including:

- slippage in Utah's schedule for protecting Green River flows;
- implementation of Coordinated Facilities Operations Program (CFOPS) is behind schedule due to work on the 10,825 alternative (a schedule for CFOPS needs to be established as soon as possible);
- abundant nonnative fish remain a concern, especially in the Yampa River, where native fish remain rare;
- Colorado Division of Wildlife's upper Yampa River northern pike management strategy was promised by May 1, but is still pending;
- loss of hatchery-reared bonytail from Wahweap hatchery (2010 year class lost to bird predation);
- recent apparent downward trends in some Colorado pikeminnow and humpback chub populations and concern about recruitment failure in the middle Green River pikeminnow population; and
- research framework (initiated in 2005 and originally due in 2007) to determine impacts of management actions on each species and life stage and identify any information gaps is behind schedule.

A discussion of these recent accomplishments and concerns follow, with action items needed to remedy areas of concern.

C. Discussion of Recent Accomplishments and Concerns

General (Upper Colorado River and Green River Subbasins)

- Over the past 10 years, progress has been made in reducing the abundance of some of the target nonnative fish species in certain rivers of the Upper Colorado River Basin. However, a great deal of work remains to identify the methods and levels of management needed to minimize the threat of nonnative fish predation or competition and achieve and maintain recovery of the endangered fishes. The December 2008 nonnative fish management workshop and January 2009 annual researchers meeting resulted in necessary changes to nonnative fish management activities for 2009, including expansion of northern pike and smallmouth bass removal throughout critical habitat in the Yampa River.

  ACTION ITEM (1): The Service will continue to closely follow the effectiveness of nonnative fish management actions and the responses of the endangered and other native fishes. Data should continue to be reported annually, and necessary changes to nonnative fish management actions should be made in a timely fashion.

- Numbers of fish to be stocked as identified in the Program's Integrated Stocking Plan are generally being met. Recapture of stocked razorback sucker and detection of larval and early juvenile razorback continues to be encouraging. A loss of hatchery-reared bonytail from Wahweap hatchery (2010 year class lost to bird predation) is being addressed through a request of twice as many bonytail fry from Dexter this year, with the hopes of growing them to stocking size by 2010 through extra feeding, lower densities, and perhaps warming water through winter. Wahweap also is taking remedial measures (netting ponds, etc.) to prevent future bird predation.

- Population estimates indicate downward trends in the abundance of Colorado pikeminnow in the Green River subbasin and in the abundance of some populations of humpback chub. These Green River populations are viewed as the foundations for recovery of both species. At the same time, we have seen an increase in the Colorado pikeminnow population in the Colorado River. Limited recruitment of early life stages of Colorado pikeminnow in the middle Green River has been documented in the past decade. A pilot attempt to remove nonnative fish from backwaters in the Jensen to Ouray reach of the Green River prior to arrival of Colorado pikeminnow larvae was conducted in 2008. With the exception of removing nonnative fishes, the success of this pilot project could not be determined. This pilot project will be expanded in 2009 and will include drift net sampling to document downstream transport of Colorado pikeminnow larvae from the Yampa River into middle Green River backwater areas, removal of nonnatives from backwaters and then blocking the backwaters to reduce nonnative fish re-invasion, and assessment of the effects of this action on nonnatives and young Colorado pikeminnow.

ACTION ITEM (2): A research framework project (building on results and recommendations of previous population estimates and information developed as a result of previous population estimate workshops) was initiated in 2005 to conduct additional data analyses to further understand environmental variables and life-history traits influencing the dynamics of Colorado pikeminnow and humpback chub populations. The draft research framework report is behind schedule (originally due in 2007), but is expected in July 2009. Results will be used to refine hypotheses and direct management actions.

Green River Subbasin – Green River

- Operation of Flaming Gorge Dam under the Biological Opinion and ROD is going well. Reclamation's efforts to meet the flow and temperature targets should be commended. In 2008, both the Recovery Program's spring and base flow research requests were met.

  ACTION ITEM (3): The Flaming Gorge Technical Work Group (Reclamation, the Service, and Western) needs to continue to provide brief updates on current and projected Flaming Gorge operations at Biology Committee meetings.

  ACTION ITEM (4): The Recovery Program and the Utah's State Engineer's office have been working on mechanisms to protect year-round flows in the Green River; however, this is behind schedule. A schedule and outline of the steps required for both the year-round protection above the Duchesne (to occur in 2009) as well as flow protection below the Duchesne is needed: a) the public meeting held by August 31, and the protection finalized by December 31, 2009; and b) by September 30, a schedule outlining steps for year-round protection downstream of the Duchesne to the confluence with the Colorado River.

Green River Subbasin – Yampa River

- Elkhead Reservoir stakeholders and managers worked together to release and carefully manage 5,000 af of water to help meet the Recovery Program's flow request for endangered fish in late summer and early fall 2008.

- In 2008, the Colorado Division of Wildlife committed to complete an Upper Yampa River northern pike strategy by July 2008 and the Yampa River Aquatic Management Plan by May 2009 (still pending). An outline of the strategy was provided prior to 2009 annual researchers meeting and the full strategy will be made part of the Aquatic Management Plan. Meanwhile, Colorado continues to proactively manage problematic nonnative fishes in the Yampa River and is targeting northern pike sources (backwaters and sloughs) in the upper Yampa River through pike removal and habitat modification.

  ACTION ITEM (5): The Colorado Division of Wildlife will complete the Yampa River Aquatic Management Plan (with an Upper Yampa River northern pike strategy) by early

July 2009. The Program will use this strategy and available information to evaluate the need to expand northern pike control upstream of Hayden to Steamboat Springs, possibly including removal efforts.

Green River Subbasin – Duchesne River

- The Central Utah Water Conservancy District, the Duchesne Water Conservancy District and other water users (Duchesne Work Group) continue to cooperate to provide and shepherd available water to meet flow recommendations. Rehabilitation of Myton Diversion, completed in early 2009, will greatly enhance the ability to meet target flows for endangered fish in the lower Duchesne River.

  ACTION ITEM (6): Now that the Myton Diversion rehabilitation has been completed, the Program, Service, and Duchesne Work Group will work together to determine if any changes are needed in ongoing monitoring efforts necessary to evaluate the flow recommendations.

Upper Colorado River Subbasin – Colorado River

- Recovery Program participants continue to successfully coordinate releases and provide peak and base flows for the endangered fish in the Grand Valley area through coordinated reservoir operations and management of the Historic User Pool.

- East slope and west slope water cooperatively analyzed and compared a wide range of alternatives to meet their obligations to provide 10,825 af of water to the 15-Mile Reach on a permanent basis. After reviewing 25 alternatives, east and west slope water users reached consensus on the "Lake Granby-Ruedi" alternative.

  ACTION ITEM (7): Implementation of CROS provided some peak flow augmentation in 2008; however, constraints on operations due to flooding concerns need further investigation to determine the feasibility of further enhancing CROS benefits.

  ACTION ITEM (8): Work on CFOPS will resume and is expected to be completed in 2010, but a specific schedule needs to be developed by October 1, 2009.

  ACTION ITEM (9): Close coordination will be maintained by meeting twice a year with Grand Valley water users and conducting conference calls as needed to discuss river conditions prior to the weekly Historic User Pool calls. The focus should be on taking full advantage of water savings brought about by operation of the Grand Valley Water Management project for late summer flow augmentation.

  ACTION ITEM (10): The goal of the 10,825 Project is to have agreements signed with the Service prior to December 2009 committing east slope and west slope water users to permanent sources of Ruedi replacement water, as required by the Colorado River programmatic biological opinion.

Upper Colorado River Subbasin – Gunnison River

- The programmatic biological assessment for the Gunnison basin and draft Environmental Impact Statement for Aspinall operations have been completed.

D. Conclusion ("Sufficient Progress")

Recovery Program participants need to actively pursue completion of the aforementioned action items. The Service requests that responsibilities and timeframes be identified for each action item and regular progress reports be provided to the Management Committee on these action items and their effect on meeting RIPRAP schedules. In order to support appropriate inclusion of recommended activities in annual Program budgets, the Service will make every attempt to continue to provide the sufficient progress assessment in the early spring of each year.

The Service is confident that with continued cooperation by all Recovery Program participants, the Recovery Program will continue to make significant strides toward recovery of the four endangered fishes. Based on evaluation of the status of the fish, provision of flows during drought periods, magnitude of depletion impacts, and cumulative Recovery Program accomplishments and shortcomings, the Service concludes that when implemented as Conservation Measures (i.e. part of the proposed action), the Recovery Program is making sufficient progress to continue avoiding the likelihood of jeopardy resulting from depletion impacts of new projects that have an annual depletion of up to 4,500 acre feet[1]. Projects exceeding 4,500 acre feet or that have direct or indirect effects in addition to water depletions will be evaluated to determine if they jeopardize the species' continued existence on a case by case basis.

Despite significant Recovery Program accomplishments, the Service is very concerned about recent downward trends in endangered fish populations. Accordingly, the Service strongly encourages all Recovery Program participants to remain attentive to the impacts of drought conditions and nonnative fishes on recovery of the endangered fishes, and continue to aggressively pursue management actions to alleviate threats to the species, including providing and protecting the necessary flow and habitat conditions (including evaluation of flow recommendations), and reducing the abundance of problematic nonnative fishes so these downward trends are reversed.

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[1] The 15-Mile Reach programmatic biological opinion covers an average depletion of up to 1 million acre-feet per year of existing depletions (through September 30, 1995) and up to 120,000 acre-feet of new depletions (since September 30, 1995) in the Colorado River above the confluence with the Gunnison River. The Yampa River programmatic biological opinion covers an average depletion of up to 168,000 acre-feet per year of existing depletions and up to 53,000 acre-feet per year of new depletions.

II. IMPLEMENTATION OF ITEMS IN THE 15-MILE REACH PROGRAMMATIC BIOLOGICAL OPINION

On December 20, 1999, the Service issued a final programmatic biological opinion for the Bureau of Reclamation's operations and depletions, other depletions, and funding and implementation of Recovery Program actions in the upper Colorado River upstream from the Gunnison River confluence. Known as the "15-Mile Reach Programmatic Biological Opinion (PBO)", the PBO determined that implementation of recovery actions and continued water depletions in the Colorado River would not likely jeopardize the continued existence of the endangered fishes. The PBO cites action items in the RIPRAP and charges the Recovery Program with the responsibility to ensure that these action items are completed and/or implemented. Page 74 of the PBO says: "In 2003 and every 2 years thereafter, for the life of the Recovery Program, the Service and Recovery Program will review implementation of the Recovery Action Plan actions to determine timely compliance with applicable schedules." The Service recently conducted this review (2007) in consultation with Recovery Program partners (see attached spreadsheet) and concluded that the Recovery Program is making sufficient progress in accomplishing most of the action items listed in the PBO. Although the schedule for some tasks has slipped, the PBO recognized this might happen:

> Page 6: "Under the Recovery Program, the Recovery Program Director's office annually sends a request to all participants for recommended changes to the Recovery Program's Recovery Action Plan. These changes include revised due dates, additions and deletions of recovery actions, additional steps to complete a recovery action, or a change in the lead agency responsible for ensuring completion of a recovery action item. . .. Final changes to the Recovery Action Plan require consensus by all Implementation Committee members. If consensus is not reached on a proposed change, the subject item in the Recovery Action Plan remains unchanged. The Implementation Committee routinely makes changes to the schedule for completing recovery actions when the delay is due to uncontrollable circumstances."
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> Page 7: "It is the Recovery Program's responsibility to ensure that all elements of the Recovery Action Plan affecting the Colorado River and other rivers are completed and/or implemented consistent with Recovery Program schedules (contained in the April 1999, "Section 7 Consultation, Sufficient Progress, and Historic Projects Agreement and Recovery Action Plan" and subsequent revisions)."

The PBO review (see attached spreadsheet) identified no issues not already addressed under Sufficient Progress (section I of this memo).

Attachments

cc: Regional Director, Region 2

GENERAL RECOVERY PROGRAM SUPPORT ACTION PLAN

		ACTIVITY	WHO	STATUS	FY 09 10/08 9/09	FY 10 10/09 9/10	FY 11 10/10 9/11	FY 12 10/11 9/12	FY 13 10/12 9/13	OUT YEARS	Assessment of significant accomplishments (!) and shortcomings (X), (Focused on March 1, 2008 - February 1, 2009)
	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	"Guru II." Center for Public-Private Sector Cooperation, 1993.						
	I.A.2.	Develop recommendations for integrating geomorphology and food web studies into Recovery Program.	PD	Complete	Andrews, et al, 1996.						
	I.A.3.	Evaluate CDOW's instream flow methodologies and flow recommendations for warmwater native fishes (Anderson) as they relate to flows needed for endangered fish recovery.	FWS/PD	Complete	The Biology Committee reviewed Rick Anderson's report in April 2005, raised numerous questions regarding the application of this methodology to endangered fish flow recommendations, and declined to act on the report. The Service does not support adopting Anderson's methodology as the standard methodology for making flow determinations.						
	I.A.4.	Develop strategic plan for geomorphic research and monitoring.	Program	Complete	LaGory et al., 2003.						
	I.A.4.a.	Develop strategy and design for studies to address geomorphic research priorities.	Geo. Work Group	Ongoing	X	X					
	I.A.4.b.	Conduct needed geomorphic research and monitoring.	Program	Ongoing	X	X	X	X	X	X	USGS sediment data report completed: Data Series 409: Summary of Fluvial Sediment Collected at Selected Sites on the Gunnison River in Colorado and the Green and Duchesne Rivers in Utah, Water Years 2005–2008 (see http://pubs.usgs.gov/ds/409/); scientific investigations report pending in 2009. (See also river subbasins.) ! PD's office coordinated securing digital aerial photography at or near peak flows on Colorado, Gunnison, Yampa and Green rivers and also at base flows on Green, Gunnison, and Colorado rivers.
	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	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.						
	I.B.1.b.	CWCB approval/recommended action.	CWCB	Complete							
	I.B.1.c.	Adopt legislation or regulation, if necessary.	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	CWCB completed work on water availability study in 1995 after convening subbbasin work groups. Scenarios for future development and estimates for future water use were outlined for each basin.						
	I.B.3.	Assess need for retirement of senior conditional water rights.	CWCB/FWS	Dropped	Colorado law prohibits conversion of conditional water rights to instream flow						
	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	Agreement with FWS concerning the enforcement and protection of fish recovery flow water rights adopted by CWCB on September 21,1993.						
	I.D.	Develop tributary management plans (based in part on the tributary report, see V.F., pg. 23).									
	I.D.1.	Assess need for tributary management plans on a site specific basis.	PD	Complete	2004: PD's office determined most tributaries covered by biological opinions (except White and San Rafael rivers), so this item was moved to Green River						
	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	Inventory completed (see Irving & Burdick, 1995 as primary reference)						
	II.A.2.	Screen high-priority sites for potential restoration/acquisition.	PD	Complete	Future acquisition of sites to be determined.						
	II.B.	Support actions to reduce or eliminate contaminant impacts. [NOTE: Contaminants remediation (in all reaches) will be conducted independently of and funded outside of the Recovery Program]									PD's office needs to work with FWS ES to produce an annual report on contaminants activities in the upper basin. (See IIB2)
	II.B.1.	Evaluate effects of selenium.	FWS-ES	Ongoing	X	X	X	X	X	X	
	II.B.1.a.	Identify actions to reduce selenium contamination to levels that will not impede recovery.	FWS-ES	Ongoing	X	X	X	X	X	X	
	II.B.2.	Identify locations of petroleum-product pipelines and assess need for emergency shut-off valves.	FWS-ES	Ongoing	X						
>*	II.B.2.a.	Ensure that all new petroleum product pipelines have emergency shutoff valves.	FWS-ES	Ongoing	X	X	X	X	X	X	
	II.B.3.	Review and recommend modifications to State and Federal hazardous materials spills emergency response programs.	FWS-ES	Ongoing	X	X	X	X	X	X	
	II.C.	Develop an issue paper on the desirability and practicality of restoring and protecting certain portions of the floodplain for endangered fishes and evaluate the floodplain restoration program.									

GENERAL RECOVERY PROGRAM SUPPORT ACTION PLAN

		ACTIVITY	WHO	STATUS	FY 09 10/08 9/09	FY 10 10/09 9/10	FY 11 10/10 9/11	FY 12 10/11 9/12	FY 13 10/12 9/13	OUT YEARS	Assessment of significant accomplishments (!) and shortcomings (X), (Focused on March 1, 2008 - February 1, 2009)
	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	Phase 1 floodplain protection issue paper approved by Mgmt. Comm. 1/98 (Nelson 1998). Phase II (Tetra Tech 2000) and synthesis reports left in draft and highest priority work moved into Green and Colorado River floodplain management plans (Valdez and Nelson 2004a,b).						
	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	Complete	Final draft floodplain issues report given to Mgmt. Comm. 2/00. Phase II (Tetra Tech 2000) and synthesis reports left in draft and highest priority work moved into Green and Colorado River floodplain management plans (Valdez and Nelson 2004a,b).						
	II.C.3.	Identify viable options and develop specific restoration strategies for selected geographic areas (e.g., Grand Valley, Green River).	PD	Complete	Final draft floodplain issues report given to Mgmt. Comm. 2/00. Phase II and synthesis reports left in draft and highest priority work moved into Green and Colorado River floodplain management plans (Valdez and Nelson 2004 a,b).						
	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, hybridization) o 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	Adler and Crowl 1995, Bissonette and Crowl 1995, Lentsch et al. 1996a.						
	III.A.1.b.	Assess impact of northern pike predation on Colorado pikeminnow in the Green River.	UDWR	Complete	Crowl and Lentsch 1996.						
	III.A.1.c.	Re-evaluate levels of hybridization with white sucker and assess effects on razorback sucker populations. (Program will monitor for evidence of hybridization as razorbacks increase in the system.)	FWS/UDWR/ CSU	Ongoing	X	X	X	X	X	X	White sucker are being removed from the Green River (this began in 2007). Native sucker hybrids are identified and enumerated to evaluate levels of hybridization. The LFL will intiiate a pilot effort in 2009 to determine if they can incorporate white sucker and carp removal into Project 125 without compromising smallmouth bass removal. The Program cannot fully evaluate hybridization between razorback and white suckers until more razorback suckers are reproducing in the system.
>*	III.A.1.c.(1)	If necessary, implement actions to minimize hybridization between white sucker and razorback sucker.	FWS/UDWR/ CSU	Pending							See above.
	III.A.1.d.	Develop protocol for actions to be taken when a new nonnative species invasion or expansion is detected. (YS E-1)	PD	Pending							! The States and the Service are nearing completion of revisions to the "Procedures for Stocking Nonnative Fish Species in the Upper Colorado River Basin." In this version, the States and the Service have expanded their areas of interst beyond a proposed stocking event to consideration of subsequent management of that and other nonnative sport fish as covered under agency management plans. If an illicit introduction occurs, the States and the Service will review how that introduction may affect management of the water body as well as potentail effects to the recovery of the endangered Colorado River fish.
	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	Hawkins and Nesler 1991; Lentsch et al. 1996b; Tyus and Saunders 1996. Upper Colorado River Endangered Fish Recovery Program 2004.						
	III.A.2.b.	Review options and develop agreement with appropriate States on strategies and locations for implementing control options. Develop Nonnative Fish Management Policy.	FWS/STATES	Complete							
>*	III.A.2.c.	Evaluate the effectiveness (e.g., nonnative and native fish response) and develop and implement an integrated, viable active control program.	PD/FWS/ STATES	Ongoing	X	X	X	X	*X*	X	The Nonnative Fish Workshop was restructured in 2008. NNF PI's, managers, and other interested parties gathered December 9-10 in Grand Junction to discuss preliminary results from 2008 field studies, suggested revsions to the 2009 Work Plan and to coordinate on the development of 3 collaborative presentations (SMB removal, NP removal, and native fish response). Other topics discussed included: standardization of the electrofishing fleet; the need for greater coordination in sampling schedules; other nonnative species of concern; addtional removal effort needed and where. The collaborative presentations were presented during a follow-up Nonnative Fish Workshop Session at the Upper Basin Researcher's Meeting on January 14, 2009. The primary purpose of the presentations, and the open discussion that followed, was to evaluate the Program's ongoing efforts on these three fronts. The BC recommended changes to the FY09 Work Plan at their meeting the following day January 15, 2009.

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	III.A.2.c.(1)	Project-level synthesis: synthesize data on each species/river nonnative fish control effort and concomitant native fish response (e.g., smallmouth bass in the Yampa River and native fish response in the Yampa River) (completed by PI's and identified as a task in individual scopes of work). (YS G-3)	PI's	Ongoing		X	X			X	8 of 9 synthesis reports have been completed; ***X*** however, one report (98a, middle Yampa nonnative fish management CDOW) is still pending.
	III.A.2.c.(2)	Programmatic synthesis: assimilate project-level syntheses into a basinwide and population scale analyses of effectiveness of nonnative fish management. (YS G-3)	PD	Ongoing	X	X					Over the past 6 years, progress has been made in reducing the abundance of some of the target nonnative fish species in certain rivers of the Upper Colorado River Basin. However, a great deal of work remains to identify the methods and levels of management needed to minimize the threat of nonnative fish predation or competition and achieve and maintain recovery of the endangered fishes. It is expected that the increased nonnative fish management efforts will have the desired effect of reducing the abundance of problematic nonnative fishes while bringing about positive responses in populations of endangered and other native fishes. The NNF Subcommittee has worked with the BC in the latter part of 2008 to draft an RFP for the 2nd level SMB synthesis. That RFP calls for a contractor to develop a stock assessment model to describe smb population dynamics and to detemine if the Recovery Program is on the right track to meet its interim removal objectives.
	III.A.2.c.(3)	Develop one or more standardized nonnative fish datasets to facilitate data analyses and information tracking (one dataset will incorporate all tagging data, others may incorporate all movement, mar-recapture, removal data, etc.) *YS G-1.) Relates to item V.A.1., Interagency Data Management.	Program	Ongoing	X	X	X	X	X	X	***!*** The standardized nonnative fish database was developed in 2008 and is currently populated with data collected through 2007. NNF PI's are tasked with submitting their standardized 2008 data sets to CRFP-GJct by March 1, 2009.
	III.A.2.c.(4)	Evaluate additional techniques to improve data analysis (e.g., advanced software, exploitation models ecosystem response models). (YS M-1,2)	Program	Ongoing	X	X	X	X	X	X	Second-level synthesis, III.A.2.c.(2) will provide guidance.
>*	III.A.2.d.	Close river reaches to angling where and when angling mortality is determined to be significant. (See specific river reaches.)	STATES	Ongoing, as needed	X	X	X	X	X	X	
	III.A.2.e.	Increase law enforcement activity to decrease angling mortality.	STATES	Ongoing	X	X	X	X	X	X	
>*	III.A.2.f.	Develop control program for removal of small nonnative cyprinids in backwaters and other low velocity habitats. (Trammell et al. 2002 and 2005 complete, but development and implementation of a control program is on hold.)	STATES	On hold							Initial pilot effort conducted in 2008; SOW developed for expanded pilot in 2009.
>*	III.A.2.g.	Evaluate other methods for controlling nonnative fishes, including manipulation of flow and temperature, use of fish attractants, pathogens, genetic modification, and chemical piscicides. (YS N-1,2,3,4)			X						Researchers at LFL investigating relationships between smallmouth bass spawning/recruitment and environmental conditions which may be serve as the basis for future flow manipulation studies. Program anticipates helping to sponsor a national biocontrol workshop in 2010.
	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	IC gave proxy in January 1994; States & Service approved in spring of 1994.						
	III.B.2.	Implement Interim Nonnative Fish Stocking Procedures.									
	III.B.2.a.	Develop scope of work for evaluation of Interim Procedures.	PD	Complete	FY 95 SOW #62 (FWS, CO, UT, WY)						
	III.B.2.b.	Evaluate and revise Interim Procedures.	PD	Complete	Procedures for Stocking Nonnative Fish Species in the Upper Colorado River Basin, USFWS 1996.						
	III.B.3.	Finalize revised Nonnative Fish Stocking Procedures.									
	III.B.3.a.	Complete Biological Opinion/NEPA compliance.	FWS-ES/FR	Complete	FONSI, USFWS 1996.						
	III.B.3.b	Implementation Committee approval of revised Nonnative Fish Stocking Procedures.	PD	Complete	Implementation Committee approval October 2, 1996.						
	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	Cooperative agreement for implementation of procedures for stocking of nonnative fish species in the Upper Colorado River Basin. Agreement in 1996 Stocking Procedures.						
	III.B.4.	Incorporate final Procedures into State aquaculture permitting process.									
>*	III.B.4.a.	Colorado.	CDA/CDOW	Complete	January 1999.						
	III.B.4.a.(1)	Evaluate effectiveness of Colorado's stocking regulation.	CDOW	Complete	Martinez & Nibbelink 2004.						
>*	III.B.4.b.	Utah.	UDWR	Complete							
>*	III.B.4.c.	Wyoming.	WYGF	Complete							
	III.B.5.	Explore options for tribal acceptance of Nonnative Fish Stocking Procedures.	FWS-FR	Complete	Tribe verbally accepted Procedures (per memo from Dave Irving to Bob Muth, 2003).						

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	III.B.6.	Review, evalulate, and revise as needed, the Nonnative Fish Stocking Procedures.	PD/FWS/ STATES	As needed							! PD's office and the signatories to the "Cooperative Agreement for Implementation of Procedures for Stocking of Nonnative Fish Species in the Upper Colorado River Basin" have revised the Stocking Procedures document and the Cooperative Agreement is expected to be renewed in FY 09.
	III.B.7.	Increase law enforcement activity to prevent illicit stocking.									
	III.B.7.a.	Develop plan	STATES	Pending	X						Program participants have discussed providing funds for Operation Game Thief to encourage reporting illicit introductions, however States also would need to substantially increase penalties for such introductions.
>*	III.B.7.b.	Implement plan	STATES	Pending	X	X	X	X	X	X	
	III.B.8.	Evaluate designation of native fish conservation areas	PROGRAM	Pending	X	X	X	X	X	X	Need report from states. UT & WY are investigating, no progress in CO?
	III.C.	Evaluate sources of nonnative fishes into critical habitat using isotope technology.	CDOW	Ongoing	X	X	X	X	X	X	! CSU investigators report promising results, suggesting distinctive chemical signatures in fish from different reservoirs, and differences in river and reservoir signatures that may allow tracking origins of fish that have escaped from reservoirs into critical habitat.
	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	Williamson and Wydoski 1994.						
	IV.A.2.	Develop and implement Genetics Management Plan for all species and update as needed.	PD	Ongoing (updated 6/99)	X	X	X	X	X	X	
	IV.A.3.	Conduct genetic diversity studies (includes Gila taxonomy studies) and confirm presumptive genetic stocks based on all available information.									
	IV.A.3.a.	Razorback sucker.	BR	Complete	Wydoski 1995, Czapla 1999.						
	IV.A.3.b.	Bonytail and humpback chub.									
	IV.A.3.b.(1)	Morphological and allozyme analyses. (Draft 4/95)	PD	Complete	Douglas and Douglas 2007. Keeler-Foster 2008.						
	IV.A.3.b.(2)	Mitochondrial DNA analysis.	BR	Complete	Douglas and Douglas 2007. Keeler-Foster 2008.						
	IV.A.3.c.	Colorado pikeminnow.	PD	Complete	Williamson et al. 1999.						
>	IV.A.4.	Secure and manage the following species in ~~refugia~~ *hatcheries* (according to the Genetics Management Plan).									
	IV.A.4.a.	Razorback sucker.									
	IV.A.4.a.(1)	Middle Green	FWS-FR	Ongoing	X	X	X	X	X	X	
	IV.A.4.a.(2)	Upper Colorado River.	FWS-FR	Ongoing	X	X	X	X	X	X	
	IV.A.4.b.	Bonytail	UDWR/CDOW	Ongoing	X	X	X	X	X	X	
	IV.A.4.c.	Humpback chub.									
	IV.A.4.c.(1)	Black Rocks Canyon. (Broodstock currently represented by wild fish in the river.)	FWS-FR	Ongoing	X	X	X	X	X	X	
	IV.A.4.c.(2)	Westwater Canyon. (Broodstock currently represented by wild fish in the river.)	UDWR	Ongoing	X	X	X	X	X	X	
	IV.A.4.c.(3)	Cataract Canyon. (Broodstock currently represented by wild fish in the river.)	UDWR	Ongoing	X	X	X	X	X	X	
	IV.A.4.c.(4)	Yampa Canyon. (Broodstock currently represented by wild fish in the river; however, population appears to have declined and Recovery Program is exploring the possibility of establishing a refuge stock.)	FWS-FR	Ongoing	X	X	X	X	X	X	! Ouray NFH and Mumma NASRF successfuly raising *Gila* captured from Yampa R. in 2008. Preliminary identification suggests that >15% of the fish at Ouray are humpback chub. Program will develop captive stock management plan.
	IV.A.4.c.(5)	Desolation/Gray Canyons. (Broodstock currently represented by wild fish in the river.)	UDWR	Ongoing	X	X	X	X	X	X	
	IV.A.4.d.	Colorado pikeminnow.									
	IV.A.4.d.(1)	Upper Colorado River Basin. (Broodstock currently represented at Dexter NFH and by wild fish in the river.)	~~TBD~~ *FWS*	Ongoing	X	X	X	X	X	X	
	IV.B.	Conduct annual fish propagation activities.									
	IV.B.1.	Identify species needs for refugia, research, augmentation, and information and education.	PD	Annual	X	X	X	X	X	X	
	IV.B.2.	Implement integrated stocking plan (Nesler et al. 2003).	FWS, UDWR, CDOW	Annual	X	X	X	X	X	X	! All stocking targets met (see table). Wahweap hatchery now stocking middle Green River bonytail near Jensen in the alluvial reach; Mumma hatchery continuing to expose bonytail to flows for as long as two weeks prior to stocking.
	IV.B.3.	Conduct NEPA compliance and develop biological opinion on disposal of excess captive- reared endangered fish.	FWS-ES/FR	Complete	"Disposition of Captive-Reared Endangered CO River Fish," 06/08/95, FONSI.						
	IV.C.	Operate and maintain facilities.									
	IV.C.1.	Ouray.	FWS-FR	Ongoing	X	X	X	X	X	X	
	IV.C.2.	Grand Valley endangered fish facilities.	FWS-FR	Ongoing	X	X	X	X	X	X	Major facility repairs to begin in 2009.

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IV.C.3.	Wahweap.	UDWR	Ongoing	X	X	X	X	X	X	
IV.C.4.	Mumma.	CDOW	Ongoing	X	X	X	X	X	X	
IV.D.	Plan, design, and construct needed facilities.									
IV.D.1.	Develop Coordinated Hatchery Facility Plan based on revised State stocking plans.	PD	Complete	Wydoski 1994; revised by Czapla May 31, 2001. See also chapter 4 of Nesler et al., 2003.						
IV.D.2.	Design and construct appropriate facilities.									
IV.D.2.a.	Ouray.	FWS/BR	Complete	Ouray NFH water reuse system completed in 2002; hatchery fully functional & is producing razorback sucker for stocking & floodplain experiments.						
IV.D.2.b.	Wahweap.	UDWR/BR	Complete							
IV.D.2.c.	Grand Valley endangered fish facilities	FWS/BR	Complete	Grand Valley hatchery facility expansion completed in 1999.						
IV.D.2.d.	Acquire ponds for growout of endangered fishes.									
IV.D.2.d.(1)	23 acres of growout ponds in the Green River basin.	FWS/STATES	Complete	As a result of operational changes at Ouray NWR, leased ponds are no longer						
IV.D.2.d.(2)	100 acres of growout ponds in the Colorado River basin.	FWS/STATES	Complete	As a result of revised state stocking plans, growout pond acreage in the Colorado River basin was judged sufficient to meet required number & size of fish as of 2003.						
IV.E.	Conduct monitoring to evaluate effectiveness and continuation of endangered fish stocking.									
IV.E.1.	Assess the monitoring needed to evaluate the contribution to recovery of endangered fish stocking over relevant reaches, life stages, and generations. Assessment addressed in 2001and 2004 workshops (Upper Colorado River Endangered Fish Recovery Program 2002, 2006); continued assessment ongoing.	LFL/STATES	Ongoing	X	X	X	X	X	X	Razorback sucker monitoring plan to be developed FY 2009-2010; bonytail monitoring plan to be developed in 2010.
IV.E.2.	Evaluate endangered fish stocking and revise augmentation plans, as needed.	FWS/LFL/ States/PD	Ongoing	X	X	X	X	X	X	! LFL report on RBS stocking in draft and being reviewed by BC; results being used to guide future stocking efforts. Analysis showed that first-year survival is increased by stocking razorback >12" in fall through spring. Additional analysis will further evaluate stocking success under the 2003 Integrated Stocking Plan.
IV.E.3	Modify stocking plans to ensure successful stocking.	Program	Ongoing	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.									Basinwide razorback sucker monitoring plan to be developed in 2009-2010.
V.A.1.	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.A.2.	Evaluate population estimates.	PD	Ongoing	X	X	X	X	X	X	PD's office will schedule a workshop in summer 2009 on humpback chub monitoring.
V.A.3.	Collect and submit data according to standard protocol (e.g., location, PIT tag #, length, weight, etc.) on every endangered fish encountered in all field activities in order to provide annual information on population status outside of formal population estimates.	ALL	Ongoing	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.	PD	Ongoing	X	X	X	X	X	X	X Research Framework study behind schedule; however, significant progress made this year and report expected in PD's office in spring 2009.
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	Complete	Reintroduction plans complete; imprinting not called for.						
V.C.	Develop and enhance scientific techniques required to complete recovery actions.									
V.C.1.	Conduct marking study of young-of-the-year Colorado pikeminnow.	FWS-FR	Complete	Muth and Nesler 1989, Haines and Modde 1996, Haines at al. 1998.						
V.D.	Establish sampling procedures to minimize adverse impacts to endangered fishes.									
V.D.1.	Assess electrofishing injury impacts to endangered fishes.	LFL	Complete	See Snyder 2003.						
V.D.2.	Implement scientific sampling protocols to minimize mortality for all endangered fishes.	FWS-ES/ STATES	Ongoing	X	X	X	X	X	X	! Fish handling protocol finalized; PD's office will post handling protocol to listserver annually and put on Program website. ! Electrofishing equipment and technique standardized for hard-bottom boats and will be implemented in 2009.
V.E.	Provide for long-term care, cataloging, and accessibility of preserved specimens.	PROGRAM	Ongoing	X	X	X	X	X	X	
V.F.	Assess relative biological importance of tributaries and their potential contributions to endangered fish recovery.	Contract	Complete	Tyus and Saunders 2001.						
V.G.	Reevaluate overutilization for commercial, recreational, scientific or educational purposes and identify actions to ensure adequate protection.	FWS-ES	Ongoing	X	X	X	X	X	X	
V.H.	Reevaluate effects of disease and parasites and identify actions to ensure adequate protection.	FWS-ES	Ongoing	X	X	X	X	X	X	

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	VI.	**INCREASE PUBLIC AWARENESS AND SUPPORT FOR THE ENDANGERED FISHES AND THE RECOVERY PROGRAM.** (Includes integration with San Juan River Recovery Implementation Program.)									
	VI.A.	Conduct survey to measure public awareness of and attitudes toward endangered Colorado River fishes and the Recovery Program.	PD	Complete 1995.	Vaske 1995.						
	VI.B.	Train Recovery Program managers and researchers in media relations.	PD	Ongoing	X	X	X	X	X	X	
	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	**!** Coordinated a special event to celebrate completion of capital projects in Colorado's Grand Valley.
	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, public website, 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 interpretive exhibits about the Recovery Program and the endangered fish.	PD	Ongoing	X	X	X	X	X	X	Produced an integrated, freestanding exhibit that integrates information about both the Upper Colorado River Recovery Program and the San Juan River Basin Recovery Implementation Program.
	VI.G.	Maintain Recovery Program technical library and library web page.	PD	Ongoing	X	X	X	X	X	X	Completed the template design and navigation plan for the public website. Entire library being scanned to pdf in FY 09 and will be served on CWCB website.
	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	X	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 (IMOs) for each species and presumptive stock and an index to population status.	PD	Complete	Lentsch et al. 1998.						
	VII.A.4.a.	Public and external peer review of IMOs.	FWS	Complete	1998						
	VII.A.4.b.	Implementation Committee review and approval of IMOs.	ALL	Complete	September 10, 1998.						
	VII.A.5.	Develop specific recovery goals.									
	VII.A.5.a.	Convene Recovery Team.	FWS	Complete	1999						
	VII.A.5.b.	Develop recommended recovery goals.	PD/Contract	Complete	2000						
	VII.A.5.c.	Biology Committee review of recommended recovery goals.	Program	Complete	2000						
	VII.A.5.d.	Finalize recovery goals.	FWS/PD	Complete	U.S. Fish and Wildlife Service 2002a, 2002b, 2002c, 2002d.						
	VII.A.5.e.	Conduct species status review and update recovery goals at least every 5 years.	FWS/Program	Every 5 years	X				X	X	Initial stakeholder review of revised recovery goals completed; Service incorporating comments, peer review to follow.
	VII.A.6.	Identify elements of conservation plans to ensure long-term management and protection following delisting.	Program	Ongoing	X	X	X	X	X	X	
	VII.A.7.	Monitor and assess Recovery Program accomplishments annually.	PD	Annual	X	X	X	X	X	X	
	VII.A.8.	Develop biennial 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) and the National Park Service.	PD	Ongoing	X	X	X	X	X	X	Program partners pursuing amendments to PL 106-392; **!** capital funding amendments authorizing additional $15M for capital projects repair/replacement and Tusher Wash fish screen construction and extending the construction to 2023 passed (P.L. 111-11); amendments to extend the period of annual funding at current levels from FY11 to FY23 pending introduction.
	VII.B.1.	As defined in PL 106-392, prepare joint report with San Juan River RIP on the utilization of power revenues for base funding, including recommendations regarding the need for continued base funding after 2011 tha may be required to fulfill the goals of the Recovery Programs. Report is due to the committees of the U.S. Senate and House of Representatives 9/30/08.	Program	*Complete*	Report drafted, reviewed by all Program participants, submitted to Interior (January 8, 2008) and reviewed by the Solicitor & OMB. Interior did not transmit to Congress.						**!** Report drafted, reviewed by all Program participants, submitted to Interior (January 8, 2008) and reviewed by the Solicitor & OMB, but not been transmitted to Congress.
	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	Management Committee, July 28, 1994.						

Fish produced and stocked by facility in 2008

Facility	Species	Target	Stocked	Percent
Grand Valley	Razorback sucker	14,895	16,729	112%
Ouray	Razorback sucker	14,895	18,058	121%
Wahweap	Bonytail	10,660	10,729	101%
Mumma	Bonytail	5,330	8,144	153%

Razorback sucker stocked by River

Facility	River	Taget	Stocked	Percent
Grand Valley	Upper Colorado	6,620	8,574	130%
	Gunnison	3,310	4,375	132%
	Lower Green	4,965	5,109	103%
Ouray	Middle Greem	9,930	11,677	118%
	Lower Green	4,965	5,052	102%

Bonytail stocked by River

Facility	River	Taget	Stocked	Percent
Wahweap	Middle Greem	2,665	2,741	103%
	Lower Green	5,330	5,336	100%
	Colorado	2,665	2,652	100%
Ouray	Middle Greem	2,665	4,900	184%
	Colorado	2,665	3,244	122%

GREEN RIVER ACTION PLAN: MAINSTEM

		ACTIVITY	WHO	STATUS	FY 09 10/08 9/09	FY 10 10/09 9/10	FY 11 10/10 9/11	FY 12 10/11 9/12	FY 13 10/12 9/13	OUT-YEARS	Assessment of significant accomplishments (!) and shortcomings (X), (Focused on March 1, 2008 - February 1, 2009)
	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	USFWS 1992.						
	I.A.1.b.	Winter/spring.	FWS-ES	Complete	Muth, et al. 2000.						
	I.A.1.c.	Review summer/fall flow recommendation.	FWS-ES	Complete							
	I.A.2.	State acceptance of initial flow recommendations.									
	I.A.2.a.	Summer/Fall.	UT	Complete	USFWS 1992 and revised in Muth et al. 2000.						
	I.A.2.b.	Winter/Spring.									
	I.A.2.b.(1)	Review scientific basis.	UT	Complete	Muth et al. 2000.						
	I.A.2.b.(2)	Assess legal and physical availability of water.	UT	Complete							
	I.A.3.	Deliver identified flows.									
>*	I.A.3.a.	Operate Flaming Gorge pursuant to the 1992 Biological Opinion to provide summer and fall flows.	BR	Complete							
>*	I.A.3.b.	Operate Flaming Gorge to supply winter and spring test flows for research.	BR	Complete	Muth et al. 2000.						
	I.A.3.c.	Complete NEPA on reoperation of Flaming Gorge pursuant to Biological Opinion and Record of Decision.	BR	Complete	ROD issued February 16, 2006: U.S. Bureau of Reclamation 2006.						
>*	I.A.3.d.	Operate Flaming Gorge Dam to provide winter and spring flows and revised summer/fall flows, pursuant to the new Biological Opinion and Record of Decision.	BR	Ongoing	X	X	X	X	X	X	**!** Operation of Flaming Gorge Dam under the ROD and Biological Opinion is going well. Reclamation's efforts to meet spring flow targets and recommended base flow temperatures in Reach 1 and at the confluence with the Yampa River is commended. In 2008, the request for spring peak flows was exceeded with 15,000 cfs for 21 days. Base flow request (1,500 - 1,700 cfs dam release through September 30) also were met. (See graph.) Although a trade-off was expected between temperature and elevated baseflows, this went better than expected.
	I.A.3.d.1.	Conduct real-time larval razorback and Colorado pikeminnow sampling to guide Flaming Gorge operations.	LFL/FWS	Ongoing	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	Utah Division of Water Rights. 1994 (public meetings October 1994; policy November 1994).						
	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	Ongoing	X	X	X	X	X	X	
	I.A.4.a.(4)	Evaluate effectiveness of policy.	UT	Ongoing	X	X	X	X	X	X	
	I.A.4.b.	Protect Winter/Spring flows.									In progress since summer 2008; anticipated to take about one year. This work is on track through the Duchesne/White confluence, the next step will be to pursue protection down to Green/Colorado confluence.
	I.A.4.b.(1)	Hold public meeting to establish future appropriation policy.	UT	Pending	X						
	I.A.4.b.(2)	Review policy, and, if needed adopt and implement new policy (new appropriations subject to flow criteria).	UT	Pending	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	Pending	X	X	X	X	X	X	
	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	Complete	Muth et al. 2000.						
	I.B.2.	State acceptance of initial flow recommendations (dependent on development of initial flow recommendations).									
	I.B.2.a.	Review scientific basis.	UT	Complete	Muth et al. 2000.						
	I.B.2.b.	Assess legal and physical availability of water from Green River and tributaries.	UT	Complete							
	I.B.3.	Legally protect identified flows (dependent on development of initial flow recommendations).									Same as I.A.4.b., but year-round.
	I.B.3.a.	Hold public meeting to establish future appropriation policy.	UT	Pending	X						
	I.B.3.b.	Review policy, and, if needed adopt and implement new policy (new appropriations subject to flow criteria).	UT	Pending	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	Pending	X	X	X	X	X	X	
	I.C.	Price River									

GREEN RIVER ACTION PLAN: MAINSTEM

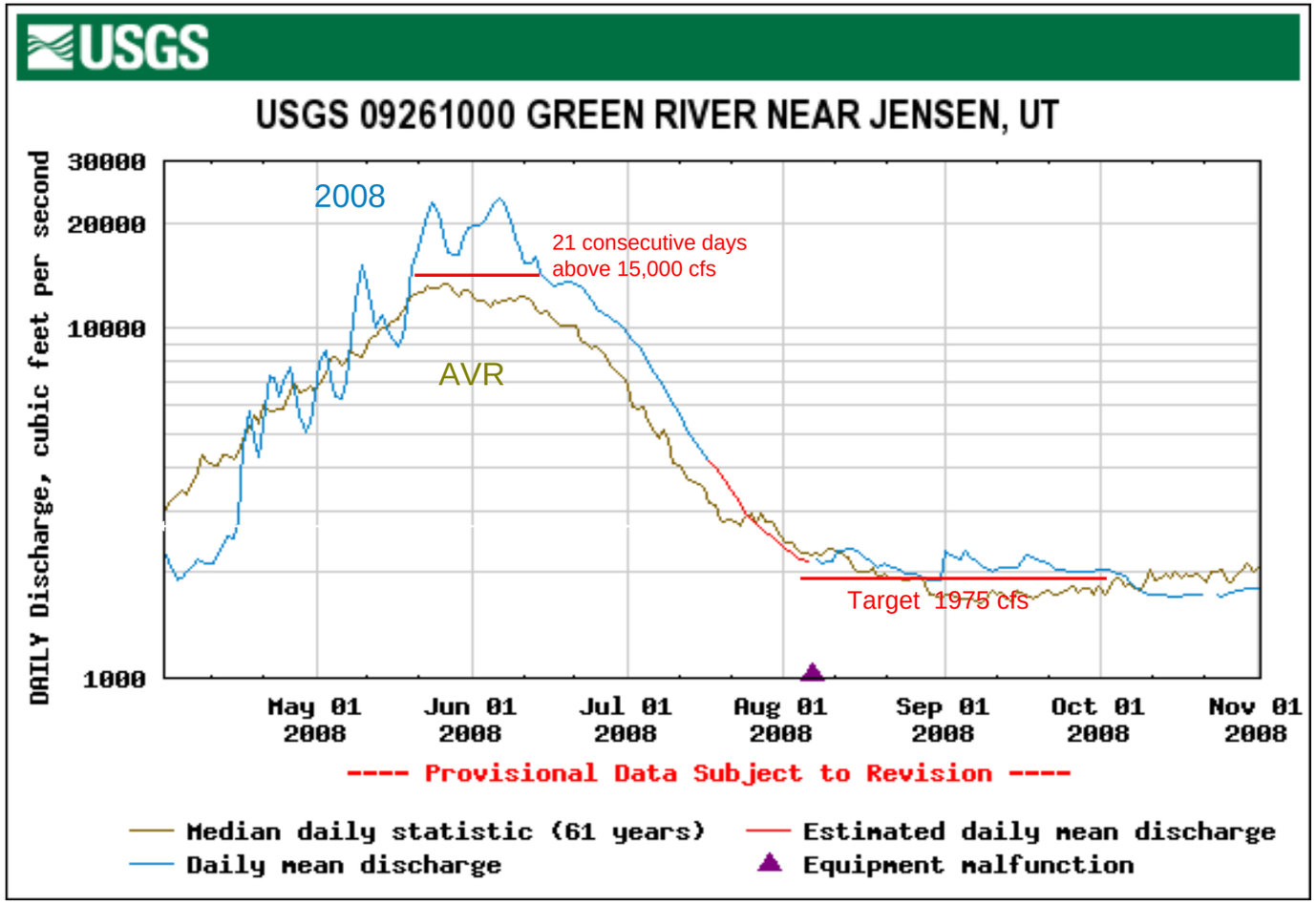
		ACTIVITY	WHO	STATUS	FY 09 10/08 9/09	FY 10 10/09 9/10	FY 11 10/10 9/11	FY 12 10/11 9/12	FY 13 10/12 9/13	OUT-YEARS	Assessment of significant accomplishments (!) and shortcomings (X), (Focused on March 1, 2008 - February 1, 2009)
	I.C.1.	Determine endangered fish spring through autumn use of the Price River.	UT	Complete	Cavalli 1999.						
	I.C.2.	Determine winter use and seasonal flow needs for Colorado pikeminnow in the Price River.	UT/FWS	Pending	X						***X*** The Price River flow recommendations report still needs to be revised. The report was submitted on 10-31-06. The Program Director's staff is revising the flow recommendations based on historic hydrology.
	I.D.	Evaluate and revise as needed, flow regimes to benefit endangered fish populations. See Kitcheyan and Montagne 2005, Bestgen et al. 2006.	FWS/Program	Ongoing	X	X	X	X	X	X	
	I.D.1.	Develop study plan to evaluate flow recommendations.	FWS/BOR/ WAPA	Complete							
	I.D.1.a.	Evaluate survival of young and movement of subadult razorback suckers from floodplains into the mainstem in response to flows.	TBD	Ongoing	X	X	X	X			
	I.D.1.b.	Evaluate recent peak flow studies related to floodplain inundation and entrainment of larval razorback suckers.									
	I.D.1.b.(1)	Complete final report on entrainment of larval razorback suckers in floodplains.	UDWR/LFL	Complete	Hedrick, T.N., et al, 2009.						! Report completed Feb. '09.
	I.D.1.b.(2)	Monitor changes in the magnitude, timing, and size distribution of sediment	USGS	Ongoing	X						Data Series 409: Summary of Fluvial Sediment Collected at Selected Sites on the Gunnison River in Colorado and the Green and Duchesne Rivers in Utah, Water Years 2005–2008. http://pubs.usgs.gov/ds/409/
	I.D.1.b.(3)	Synthesize physical and biological data from recent peak flow studies related to floodplain inundation and entrainment of larval razorback suckers.	LFL	Ongoing	X						Contracted with LFL (FR-FP SYNTH), preliminary analysis presented to BC 1/09.
	I.D.1.c.	Monitor larval razorback suckers in mainstem, and synthesize information on drift as related to flows and other conditions.									Also will be covered in FR-FP SYNTH.
	I.D.1.c.(1)	Conduct annual monitoring of larval razorback suckers and analyze historic monitoring data.	FWS/LFL	Ongoing	X	X	X	X	X	X	
	I.D.1.d.	Determine relationship of backwater development to sediment availability and peak flows in Reach 2. To be combined with I.D.1.e (4)	TBD	New Start	X	X	X				LFL & Argonne will begin work in 2009.
	I.D.1.e.	Evaluate effect of base flow variability on backwater maintenance and quality.									
	I.D.1.e.(1)	Conduct annual monitoring of larval Colorado pikeminnow.	LFL	Ongoing	X	X	X	X	X	X	
	I.D.1.e.(2)	Monitor age-0 Colorado pikeminnow in backwaters.	UDWR	Ongoing	X	X	X	X	X	X	FWS & UDWR will conduct pilot study in FY 09 to manage backwaters to advantage native fishes and investigate reasons for poor pikeminnow recruitment.
	I.D.1.e.(3)	Evaluate response of native fish to nonnative predator removal	UDWR	Ongoing	X	X	X	X	X	X	
	I.D.1.e.(4)	Integrate biological and physical data on backwaters.	TBD	New Start	X	X	X				LFL & Argonne will begin work in 2009.
	I.D.1.f.	Determine influence of flow and temperature recommendations on entire fish community with emphasis on nonnative fish life history in lower Reach 1 and upper Reach 2.	LFL/FWS	Ongoing	X						
	I.D.1.g.	Determine spillway entrainment of nonnative fish at Flaming Gorge Dam.	CDOW/UDWR	Ongoing	X	X	X	X	X	X	(As part of sportfish surveys.)
	I.D.2.	Integrate and synthesize reports for evaluation and recommended revision of flow and temperature recommendations.	PD/FWS	New Start	X	X	X			X	LFL & Argonne will begin work in 2009.
	I.E.	Assess need for tributary management plan for San Rafael River.									
	I.E.1.	Estimate future water demands on San Rafael River.	PD/Utah	Complete	Utah Division of Water Resources 2000.						Utah completed State Water Plan for the Western Colorado River Basin (2000), which included demands for the San Rafael Basin.
	I.E.2.	Develop tributary management plan for San Rafael River.	PD	TBD							
	I.E.3.	Conduct appropriate Section 7 and NEPA compliance to implement tributary management plan.	PD/FWS	TBD							
	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 Charlie Wash.									
>*	II.A.1.a.(1)	Construct water control structure and fish kettle.	BR	Complete	Inlet and outlet water control structures repaired and a fish-harvest kettle installed in spring 1995. Inlet structure replaced March 1996. Leaks to outlet structure repaired in 1999.						
	II.A.1.a.(2)	Update management plan.	PD	TBD	Need for operational plan TBD pending determination of role of OCW in recovery.						
	II.A.1.a.(3)	Monitor and evaluate success.	FWS-FR/BR	TBD							
	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	Complete	Six sites acquired (1008.1 acres total). Floodplain acquisition completed and operation, maintenance and evaluation of sites incorporated into Green River Subbasin Floodplain Management Plan (Valdez and Nelson 2004a) (IIA4).						
	II.A.2.b.	Pre-acquisition planning and identification of acquisition options.	PD	Complete							
	II.A.2.c.	Conduct appraisal/NEPA compliance.	PD	Complete							
>*	II.A.2.d.	Negotiate acquisition and acquire.	PD	Complete							
	II.A.2.e.	Evaluate effectiveness of land acquisition activities and provide recommendations.	PD	Complete							
	II.A.3.	Implement levee removal strategy at high-priority sites.									

GREEN RIVER ACTION PLAN: MAINSTEM

		ACTIVITY	WHO	STATUS	FY 09 10/08 9/09	FY 10 10/09 9/10	FY 11 10/10 9/11	FY 12 10/11 9/12	FY 13 10/12 9/13	OUT-YEARS	Assessment of significant accomplishments (!) and shortcomings (X), (Focused on March 1, 2008 - February 1, 2009)
	II.A.3.a.	Preconstruction (contaminants screening, floodablility assessments, environmental compliance, design, and engineering).	PD/BR	Complete	Levees breached at 8 sites(accessing 274 acres). Levee removal completed and operation, maintenance and evaluation of sites incorporated into Green River Subbasin Floodplain Management Plan (Valdez and Nelson 2004a) (IIA4) See also Birchell et al. 2002.						
>*	II.A.3.b.	Construction (levee breeching). [NOTE: Subject to review and approval for depression wetlands.]	BR	Complete							
>*	II.A.3.c.	Operate and maintain.	BR/FWS	Complete							
	II.A.3.d.	Evaluation.	FWS	Complete							
>*	II.A.4.	Develop and implement Green River Subbasin Floodplain Management Plan (Valdez and Nelson 2004a). See also Tetra Tech 2005, Christopherson et al. 2005, Brunson and Christopherson 2005, and Modde and Haines 2005.	Program	Ongoing	X	X	X	X	X	X	***X*** The first year of study to determine outmigration of Age 1+ and 2+ razorback suckers stocked into the Stirrup floodplain in 2007 experienced some setbacks. The first was a signficant amount of winterkill during the long hard winter ('07-'08) throughout the Uintah Basin. The second was technical difficulties experienced by the UDWR crews trying to establish a stationary PIT tag reader in the floodplain connection canal. Despite these difficulties several previously tagged fish were detected; however, overall the results were inconclusive. More razorback sucker were stocked in the Stirrup in 2008 and UDWR has committed to address the technical difficulties prior to the 2009 experiment. At Baeser Bend, preliminary results indicate good survival (~10%) of larval razorbacks suckers stocked in the spring 2008 as determined via a mark recapture population estimate conducted by Vernal CRFP in September. Unfortunately, maintaining good water quality in the Baeser site proved much more time consuming and costly than originally predicted.
	II.A.4.a.	Validate and refine Green River Subbasin Floodplain Management Plan	Program	Ongoing	X	X	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	Complete	Cavalli 2000.						
	II.B.2.	Screen Tusher Wash diversion to prevent endangered fish entrainment, if warranted.									
	II.B.2.a.	Assess need.	UDWR	Complete	Cavalli 2000, Kitcheyan et al. 2001.						
	II.B.2.b.	Design.	BR	Pending	X						Tusher Wash fish screen design will continue in 2009 with (construction date will depend on when Utah and the Green River Canal Company complete their analysis regarding raising the dam). Reclamation recommends moving forward with design and construction based on current estimates of remaining capital funds. Remaining capital funds will not allow for screening water that is diverted for hydroelectric generation. Section 7 consultation for the project will need to address potential take issues associated with the hydroelectric generation. Monitor the progress and potential likelihood of obtaining additional capital construction cost ceiling. Water users are discussing raising the diversion dam; this will affect plans/schedule for screen construction.
>*	II.B.2.c.	Construct.	BR	Pending; date TBD							
	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	Complete	USBR 2005.						
	II.D.	Support actions to reduce or eliminate selenium impacts at Ashley Creek and Stewart Drain. [NOTE: selenium remediation (in all reaches) will be conducted independently of and funded outside of the Recovery Program.]	FWS-ES	Ongoing	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 the fish community in Lodore Canyon..	UDWR	Complete	Bestgen 1997, Bestgen and Crist 2000, F60						
>*	III.A.2.	Control escapement of nonnative fishes from Ouray National Wildlife Refuge originating from Pelican Lake.	FWS-RW	Complete	Construction completed prior to spring 1997 runoff.						
>*	III.A.3.	Identify and control sources of catfish and centrarchids in the middle Green River.	UDWR	Complete	Jackson and Badame 2002.						

GREEN RIVER ACTION PLAN: MAINSTEM

		ACTIVITY	WHO	STATUS	FY 09 10/08 9/09	FY 10 10/09 9/10	FY 11 10/10 9/11	FY 12 10/11 9/12	FY 13 10/12 9/13	OUT-YEARS	Assessment of significant accomplishments (!) and shortcomings (X), (Focused on March 1, 2008 - February 1, 2009)
	III.A.4.	Develop and implement control programs for nonnative fishes in river reaches occupied by the endangered fishes to identify required levels of control. Each control activity will be evaluated for effectiveness, and then continued as needed. See III.A.2.c.1.& 2. under General Recovery Program Support Action Plan.									Northern pike in the Uintah Basin continue to be maintained at low densities ever since specific removal efforts began in 2001. Adult smallmouth bass (>200mmTL) population estimates conducted in the Echo Park to Split Mtn Canyon reach rebounded in 2008, which was attributed to recruitment of strong year classes produced in 2007 and 2008. Densities of adult smallmouth bass in the Uintah Basin reach remained relatively static in 2008, and an exploratory effort conducted in Desolation Canyon indicated that smallmouth bass densities remain low there. All Green River investigators observed that smallmouth bass reproduction, as measured by the collection of young of the year, was delayed and greatly diminished in 2008 presumably as result of a return to wetter hydrology.
>*	III.A.4.a.	Northern pike in the middle Green River.	UDWR/FWS	Ongoing	X	X	X	X	X	X	
	III.A.4.b.	Nonnative cyprinids and centrarchids in nursery habitats.									
>*	III.A.4.b.(1)	Small nonnative cyprinids from backwaters and other low-velocity habitats in the lower Green River.	UDWR	On hold	Trammell et al. 2005 report complete; development and implementation of control program on hold.						A new, pilot project to determine abundance of larval pikeminnow and reduce impacts of nonnative fishes in middle Green River backwaters will begin in 2009.
>*	III.A.4.b.(2)	Smallmouth bass in middle and lower Green River.	UDWR/FWS	Ongoing	X	X	X	X	X	X	
>*	III.A.4.c.	Channel catfish (e.g. Deso./Gray Canyons) to protect humpback chub populations, and in the middle Green River to protect razorback sucker and Colorado pikeminnow. On hold pending development of more efficient techniques.	FWS/UDWR	Ongoing	X						FWS will incorporate channel catfish removal into Proj. #123 in FY 09.
	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.	Develop integrated stocking plan for the four endangered fishes in the Green River.									
	IV.A.1.a.	Prepare plan.	UDWR	Complete	Nesler at al. 2003.						
	IV.A.1.b.	Program acceptance.	UDWR	Complete	Nesler at al. 2003.						
>	IV.A.1.c.	Implement plan.	UDWR	Ongoing	X	X	X	X	X	X	
	IV.A.1.c.(1)	Conduct high-priority lab/field studies identified in bonytail reintroduction plan.	UDWR	Draft not accepted; dropped.	Crowl and Rivera 2000.						
	IV.A.1.d.	Evaluate stocking success as identified in monitoring plan for stocked fish.	LFL/FWS/ STATES/PD	Ongoing	X	X	X	X	X	X	! 344 sub-adult or adult razorbacks captured in lower Green River as part of Colorado pikeminnow estimate, including 10-15 pairs of ripe fish; in addition, 16 larvae and 3 age-1+ razorbacks captured in the lower Green River in 2008.
	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 pikeminnow spawning areas in lower Green.	UT	Complete	Chart et al. 1999.						
	V.A.2.	Identify additional razorback sucker spawning areas in lower Green.	UT	Complete	Chart et al. 1999, Muth et al. 1998.						
	V.B.	Conduct population estimate for humpback chub.									
	V.B.1.	Desolation/Gray. (Sampling occurs in September and October, overlapping fiscal years. Sampling is conducted for 2 years, followed by no sampling for 2 years, with report write-up in the first year following sampling, then sampling resumes in September of the second year). See Jackson and Hudson 2005.	UDWR	Ongoing		X	X			X	
	V.C.	Conduct population estimate for Colorado pikeminnow. Sampling is conducted for 3 years, followed by no sampling for 2 years.									
	V.C.1	Middle Green River (including Yampa and White rivers). See Bestgen et al. 2005.	LFL/UDWR/ FWS	Ongoing	X		X	X		X	Final report pending in 2009.
	V.C.2	Lower Green River. See Bestgen et al. 2005.	LFL/UDWR/ FWS	Ongoing	X		X	X		X	Final report pending in 2009.
	V.D.	Conduct abundance estimate for razorback sucker. Develop plan in FY 09 (based, in part, on recommendations from evaluation of stocked razorback report).	LFL/PD	Pending	X						! LFL report on RBS stocking in draft and being reviewed by BC; results being used to guide future stocking efforts. Analysis showed that first-year survival is increased by stocking razorback >12" in fall through spring. Additional analysis will further evaluate stocking success under the 2003 Integrated Stocking Plan.


USGS
USGS 09261000 GREEN RIVER NEAR JENSEN, UT
DAILY Discharge, cubic feet per second
30000
20000
10000
1000
2008
21 consecutive days
above 15,000 cfs
AVR
Target 1975 cfs
May 01 2008
Jun 01 2008
Jul 01 2008
Aug 01 2008
Sep 01 2008
Oct 01 2008
Nov 01 2008
---- Provisional Data Subject to Revision ----
Median daily statistic (61 years)
Daily mean discharge
Estimated daily mean discharge
Equipment malfunction

GREEN RIVER ACTION PLAN: YAMPA AND LITTLE SNAKE RIVERS

		ACTIVITY	WHO	STATUS	FY 09 10/08-9/09	FY 10 10/09-9/10	FY 11 10/10-9/11	FY 12 10/11-9/12	FY 13 10/12-9/13	OUT-YEARS	Assessment of significant accomplishments (!) and shortcomings (X), (Focused on March 1, 2008 - February 1, 2009)
	I.	**PROVIDE AND PROTECT INSTREAM FLOWS (HABITAT MANAGEMENT)**									
	I.A.	Basin-wide activities									
	I.A.1.	Identify fish habitat and flow needs									
	I.A.1.a.	Complete Phase II feasibility study.	CRWCD/ CWCB/BR	Complete	Hydrosphere 1995.						
	I.A.1.b.	Revise and update estimates of basin water needs.	CRWCD/FWS	Complete	BBC 1998.						
	I.A.1.c.	Evaluate and recommend low flow and passage needs (also relates to restoration of fish passage, if needed -- Recovery Element II).	CDOW/FWS/ CRWCD	Complete	Modde et al. 1999.						
	I.A.1.d.	Provide hydrology support to develop and evaluate flow augmentation alternatives.	CWCB	Complete	CWCB provided CRDSS model runs to evaluate augmentation water supply alternatives in 2003.						
	I.A.1.e.	Report synthesizing the results of water demand, low flow recommendations and hydrologic analyses.	FWS	Complete	Ayres 1999.						
	I.A.1.f.	Install, operate, and/or maintain stream flowmonitoring gages.	FWS	Ongoing	X	X	X	X	X	X	
	I.A.1.g.	Install, operate, and/or maintain sediment monitoring gages.		Complete	Final report 1/05.						
	I.A.2.	Develop and implement Yampa River management plan (Roehm 2004).									
	I.A.2.a.	Negotiate a Cooperative agreement to implement the Yampa River management plan.	Program	Complete							
	I.A.2.a.(1)	Develop a biological assessment for the management plan; initiate intra-Service Section 7 consultation based on the Service intent to enter into the Cooperative Agreement.	FWS	Complete							
	I.A.2.a.(1)a	Complete intra-Service consultation, resulting in a programmatic biological opinion (PBO) for the Yampa Basin.	FWS	Complete	January 10, 2005.						
	I.A.2.a.(2)	Fulfill NEPA requirements for the management plan.	FWS	Complete	September 2004.						
	I.A.2.b.	Sign Cooperative Agreement to implement the management plan.	FWS/Program/ Colorado/ CRWCD	Complete	January 2005.						
	I.A.3.	Develop public involvement plan.	FWS/CDOW	Complete	SOW FY 96 and forward.						
	I.A.3.a	Implement public involvement plan.	FWS/CDOW	Complete							
	I.A.4.	Evaluate and revise as needed flow regimes to benefit endangered fish populations.	FWS/Program	Ongoing	X	X	X	X	X	X	
	I.B.	Yampa River above the Little Snake River									
	I.B.1	Initially identify year-round flows needed for recovery.	FWS-FR	Complete	Modde and Smith 1995.						
	I.B.2	Provide augmentation of low flows.									
	I.B.2.a	Identify and acquire water source(s).									
	I.B.2.a.(1)	Steamboat Lake.									
	I.B.2.a.(1)(a)	Change decree.	CDPOR	Complete 5/97	Done in 1997.						
>*	I.B.2.a.(1)(b)	Lease up to 2,000 af. to augment late summer flows.	FWS-WR	Complete	Water is currently available from Elkhead Reservoir, so water no longer needed from Steamboat Lake.						
	I.B.2.a.(1)(c)	Quantify transit losses.	CWCB	Complete	Done in 2000.						
	I.B.2.a.(2)	Identify and evaluate water supply alternatives for up to 7,000 af of stream flow augmentation.	Program	Complete	Roehm 2003.						
	I.B.2.a.(2)(a)	Complete all necessary administrative, legal, environmental compliance, institutional and financial arrangements needed for development of Elkhead Reservoir enlargement.									
	I.B.2.a.(2)(a)i)	Complete environmental compliance.	CRWCD	Complete							
	I.B.2.a.(2)(a)ii)	Complete funding agreement.	CRWCD/CWCB	Complete							
	I.B.2.a.(2)(a)iii)	Construct	CRWCD	Complete							! Payment for Elkhead fish screens and Program's portion of Elkhead Reservoir enlargement completed in early FY 09 prior to agreement deadline (BOR).
>*	I.B.2.a.(2)(b)	Deliver water for endangered fish.	Program	Ongoing	X	X	X	X	X	X	! Augmentation of late summer flows in the Yampa River for the second year using releases from Elkhead Reservoir. Minimum instream flow target increased from 93 cfs to 134 cfs. Release of all 5,000 af of our 5,000 af pool from August 22 to October 10. For experimental purposes, flows were kept above 200 cfs, with an average of 293 cfs in order to disadvantage smallmouth bass recruitment. (See graph.) CWCB & USGS conducting transit loss study to improve river administration.
	I.B.3.	Evaluate need for instream flow water rights.									
	I.B.3.a	Review scientific basis.	CWCB/CDOW	Complete	Approval of Modde et al. 1999.						
	I.B.3.b	Assess legal and physical availability of water.	CWCB	Complete	Colorado completed work on a water availability study in early 1995 & the work was used as the basis of the allocation of compact water between the						
	I.B.3.c	Assess compact considerations.	CWCB	Complete	Colorado completed work on a water availability study in early 1995 & the work was used as the basis of the allocation of compact water between the five subbasins.						

GREEN RIVER ACTION PLAN: YAMPA AND LITTLE SNAKE RIVERS

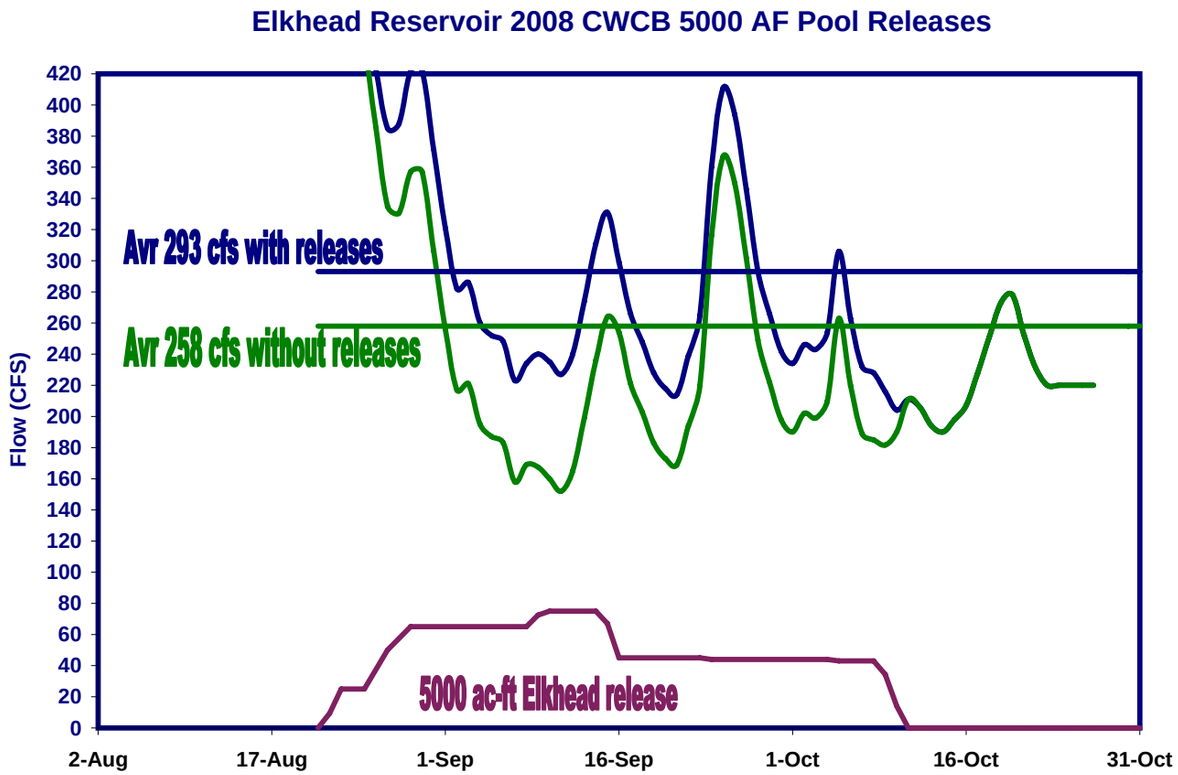
		ACTIVITY	WHO	STATUS	FY 09 10/08-9/09	FY 10 10/09-9/10	FY 11 10/10-9/11	FY 12 10/11-9/12	FY 13 10/12-9/13	OUT-YEARS	Assessment of significant accomplishments (!) and shortcomings (X), (Focused on March 1, 2008 - February 1, 2009)
	I.B.3.d	Five-year periodic review of progress under the PBO to determine if instream flow filings are necessary.	CWCB/FWS	Pending	X	X			X	X	Water Acquisition Committee is discussing the need/process for further instream-flow protection for the endangered fishes in the Yampa River.
	I.B.3.d.(1)	If necessary, evaluate how identified flows will be legally protected.	CWCB	Pending	X	X			X	X	
	I.C.	Little Snake River (Colorado and Wyoming)									
	I.C.1.	Evaluate importance of Little Snake to endangered fishes and develop management action plan. (Determine if habitat exists to protect under Colorado's instream flow program.)	BR/LFL	Complete	Hawkins et al. 2001; Hawkins and O'Brien 2001.						
	I.C.2.	Initially identify year-round flows needed for recovery (needed).									
	I.C.2.a.	Develop work plan.	BR/LFL	Complete	Hawkins et al. 2001; Hawkins and O'Brien 2001.						
	I.C.2.b.	Identify flows.	FWS-WR	Complete	Hawkins et al. 2001; Hawkins and O'Brien 2001.						
	I.C.3.	Evaluate need for instream flow water rights.									
	I.C.3.a.	Review scientific basis.	CWCB/CDOW	Complete							
	I.C.3.b.	Assess legal and physical availability of water.	CWCB	Complete	Colorado completed work on a water availability study in early 1995 & the work was used as the basis of the allocation of compact water between the						
	I.C.3.c.	Assess compact considerations.	CWCB	Complete	Colorado completed work on a water availability study in early 1995 & the work was used as the basis of the allocation of compact water between the						
	I.C.3.d.	Five-year periodic review of progress under the PBO to determine if instream flow filings are necessary.	CWCB/FWS Wyoming	Pending	X	X				X	See I.B.3.d.(1), above (but also includes Wyoming SEO).
	I.C.3.d.(1)	If necessary, evaluate how identified flows will be legally protected.	CWCB/ Wyoming	Pending	X	X				X	
	I.C.4.	Assess Wyoming's current and future water needs.	Wyoming	Complete	Assessment of Wyoming's future water needs is completed (see 2001 RIPRAP assessment)						
	I.D.	Yampa River below Little Snake River									
	I.D.1.	Initially identify year-round flows needed for recovery.	FWS-FR	Complete	Modde and Smith 1995.						
	I.D.1.a.	Modify based on revisions to environmental baseline.	FWS-WR	Complete	Modde and Smith 1995.						
	I.D.1.b.	Update flow recommendations to include flows from the Little Snake River.	FWS	Complete	Roehm 2004.						
	I.D.2.	Evaluate need for instream flow water rights.									
	I.D.2.a.	Review scientific basis.	CWCB/CDOW	Complete							
	I.D.2.b.	Assess legal and physical availability of water.	CWCB	Complete	Colorado completed work on a water availability study in early 1995 & the work was used as the basis of the allocation of compact water between the						
	I.D.2.c.	Assess compact considerations.	CWCB	Complete	Colorado completed work on a water availability study in early 1995 & the work was used as the basis of the allocation of compact water between the						
	I.D.2.d.	Five-year periodic review of progress under the PBO to determine if instream flow filings are necessary.	CWCB/FWS	Pending	X	X				X	See I.B.3.d.(1), above.
	I.D.2.d.(1)	If necessary, evaluate how identified flows will be legally protected.	CWCB	Pending	X	X				X	
	II.	**RESTORE HABITAT (HABITAT DEVELOPMENT AND MAINTENANCE)**									
	II.A.	Yampa River from Dinosaur National Monument to Craig, Colorado									
	II.A.1.	Restore native fish passage at instream barriers and reduce impacts of maintaining diversion structures.									
	II.A.1.a.	Inventory potential barriers.	CRWCD	Complete	Hydrosphere 1995.						
	II.A.1.b.	Determine threshold (passage) flows between Craig and Dinosaur National Monument (low- flow dependent).	CDOW/FWS	Complete	Modde et al. 1999.						
	II.A.1.c.	Develop guidelines to facilitate fish passage at new diversion structures.	PD/FWS-ES	Complete	Roehm 2003.						
	II.A.2.	Reduce/eliminate entrainment of Colorado pikeminnow at diversion structures.									
	II.A.2.a.	Identify and evaluate existing diversion structures for entrainment of Colorado pikeminnow	PD/FWS-ES	Ongoing	X						Draft report on 2007-2008 Maybell Ditch entrainment investigations completed and under review (PD's office to provide).
>*	II.A.2.b.	Develop and implement remedial measures, as necessary, to reduce or eliminate entrainment.	PD/CDOW/ FWS	TBD							
	II.A.2.c.	Develop guidelines to reduce or eliminate entrainment at new diversion structures, if necessary.	PD/CDOW/ FWS	Complete	Roehm 2003.						
	II.A.3.	Review NPS/USGS report to assess potential for negative impacts of elevated pH to endangered fish.	Program	Complete	PD's office reviewed Chafin 2002 and agreed elevated pH is a sampling artifact.						
	II.B.	Green River from Ouray to Jensen, Utah (see Green River Action Plan)									
	II.B.1	Acquire interest in high-priority flooded bottomland habitats between Ouray NWR and Jensen to benefit endangered fish (see Green River Action Plan : Mainstem II.A.2.)									
	II.B.2.	Implement levee removal strategy at high-priority sites (see Green River Action Plan : Mainstem II.A.3.).									
	III.	**REDUCE NEGATIVE IMPACTS OF NONNATIVE FISHES AND SPORTFISH MANAGEMENT ACTIVITIES (NONNATIVE AND SPORTFISH MANAGEMENT)**									
	III.A.	Develop guidance documents and revise as needed.									

GREEN RIVER ACTION PLAN: YAMPA AND LITTLE SNAKE RIVERS

		ACTIVITY	WHO	STATUS	FY 09 10/08-9/09	FY 10 10/09-9/10	FY 11 10/10-9/11	FY 12 10/11-9/12	FY 13 10/12-9/13	OUT-YEARS	Assessment of significant accomplishments (!) and shortcomings (X), (Focused on March 1, 2008 - February 1, 2009)
	III.A.1	Develop aquatic management plan (Colorado) to reduce nonnative fish impacts while providing sportfishing opportunities.- CDOW 1998.	CDOW	Complete; due for revision	X						Expected from CDOW May 1, 2009.
	III.A.2	Develop Yampa River Nonnative Fish Control Strategy (Program)	Program	Complete	Valdez et al. 2008.						! Valdez et al. 2008. Yampa River Nonnative Fish Control Strategycompleted June 2008. In 2008, the Nonnative Fish Sub-Committee assisted the BC with prioritizing recommendations from past Nonnative Fish Workshops. Those recommendations will serve as the basis for similar strategies for the Green and Colorado River sub-basins.
>*	III.B.	Implement CDOW Yampa Basin aquatic wildlife management plan and the Recovery Program's Yampa River Nonnative Fish Control Strategy. Each control activity will be evaluated for effectiveness and ther continued as needed. See also III.A.2.c.1.& 2. under General Recovery Program Support Action Plan.	*Program*/CDOW	Ongoing	X	X	X	X	X	X	! Yampa nonnative fish management program was modified for 2009 to match the Yampa River Nonnative Fish Management Strategy. Smallmouth bass removal expanded throughout critical habitat. CDOW outlined their strategy to manage northern pike in the drainage upstream of Hayden (full strategy due May 1, 2009).
	III.B.1.	Prevent nonnative fish introduction; reduce invasion and recruitment.									
	III.B.1.a.	Identify potential conflicts between present fisheries management in existing Elkhead Reservoir and endangered fishes and formulate Elkhead Lake Management Plan.	CDOW	Complete	CDOW 2007.						
	III.B.1.a.(1)	Evaluate nonnative fish escapement and control options at Elkhead Reservoir (during and after Elkhead expansion construction). See Miller et al. 2005.	FWS-FR/ CDOW	Ongoing	X						
>*	III.B.1.a.(2)	Implement control measures as needed to control escapement (during and after Elkhead expansion construction). Post-construction: monitor and maintain Elkhead screens (YS C-1).	Program	Ongoing	X	X	X	X	X	X	
	III.B.1.b.	Evaluate designation of Yampa River downstream of Craig, CO, as a native fish conservation area (YS B-3)	CDOW		X	X	X	X	X	X	
	III.B.1.c.	Remove northern pike and smallmouth bass above Craig, CO (YS C-3)	CDOW	Ongoing	X	X	X	X	X	X	
	III.B.1.d.	Target spawning areas (YS C-4)									
	III.B.1.d.(1)	Northern pike.	Program	Ongoing	X	X	X	X	X	X	Northern pike removal through 2007 shifted the population size structure to smaller individuals; in 2008, the overall abundance in critical habitat was near its lowest measured level. However, target population level of < 3 pike/mile has not yet been reached (currently ~8 pike/mile).
	III.B.1.d.(1)(a)	Identify and evaluate natural and artificial spawning/nursery habitats for northern pike in the Yampa River for exclusion devices.	CDOW	Complete	Hill 2004.						
>*	III.B.1.d.(1)(b)	Implement remedial measures to reduce pike reproduction in Yampa River.	CDOW	Ongoing	X	X	X				
	III.B.1.d.(1)(c	Develop guidelines for new structures to minimize creation of habitat suitable for pike spawning/nursery.	CDOW	Ongoing	X						
>*	III.B.1.(d)(2)	Smallmouth bass	Program	Ongoing	X	X	X	X	X	X	Results through 2007 indicated that adult smallmouth bass (>200mmTL) were in decline, but 2008 results indicate the population appears to have rebounded in the most heavily sampled reaches of Little Yampa Canyon and Lilly Park. Conversely, CPE values for the same size class declined in 2008, confounding those results. As in the Green River, researchers working on the Yampa observed a strong pulse of recruitment of smb produced in 2006 and 2007. Also simlar to observations on the Green River, smb reproduction in the Yampa River drainage was delayed in 2008 presumably due to the return to wetter hydrology. Unfortunately in the Yampa River large numbers of young of the year were eventually seen.
	III.B.2.	Control nonnative fishes via mechanical removal									
	III.B.2.a.	Estimate nonnative abundance, status, trends & distribution (YS I-3)	Program	Ongoing	X	X	X	X	X	X	
	III.B.2.b.	Develop and refine nonnative fish removal criteria (YS K-1)	Program	Ongoing	X	X	X	X	X	X	
	III.B.2.c.	Identify and evaluate gear types and methods to control nonnative fishes (YS I-5)	Program	Ongoing	X	X	X	X	X	X	
>*	III.B.2.d.	Remove and translocate northern pike from Yampa River. See Hawkins et al. 2005. (YS J-1)	CDOW/FWS	Ongoing	X	X	X	X	X	X	
>*	III.B.2.e.	Remove and translocate smallmouth bass. (YS J-1)	CDOW	Ongoing	X	X	X	X	X	X	
	III.B.2.f.	Control channel catfish									
>*	III.B.2.f.(1)	Remove channel catfish in Yampa Canyon. (Discontinued except for removal of very large individuals incidental to smallmouth bass removal)	FWS	Dis-continued							
>*	III.B.2.f.(2)	Remove and translocate channel catfish above Yampa Canyon.	CDOW	On hold							
	III.B.2.g.	Develop and refine native fish response criteria (YS K-2)	Program	Complete							See III.A.2 above
	III.B.2.h.	Monitor native and endangered fish response (YS L-2)	Program	Ongoing	X	X	X	X	X	X	
	III.B.2.i.	Remove bag and possession limits on warmwater nonnative sportfishes within critical habitat in Colorado.	CDOW	Complete	In Colorado fishing regulations.						
	IV.	**MANAGE GENETIC INTEGRITY AND AUGMENT OR RESTORE POPULATIONS (STOCKING ENDANGERED FISHES)**									

GREEN RIVER ACTION PLAN: YAMPA AND LITTLE SNAKE RIVERS

		ACTIVITY	WHO	STATUS	FY 09 10/08-9/09	FY 10 10/09-9/10	FY 11 10/10-9/11	FY 12 10/11-9/12	FY 13 10/12-9/13	OUT-YEARS	Assessment of significant accomplishments (!) and shortcomings (X), (Focused on March 1, 2008 - February 1, 2009)
	IV.A.	Yampa River in Dinosaur National Monument									
	IV.A.1.	Augment or restore populations as needed, and as guided by the Genetics Mgmt. Plan.									
	IV.A.1.a.	Develop integrated stocking plan for bonytail in the Yampa River.	CDOW	Complete	Nesler et al. 2003						
>	IV.A.1.a.(1)	Implement stocking plan.	FWS/CDOW	Ongoing	X	X	X	X	X	X	
	IV.A.1.b.	Research the survivability of young-of-year Gila species in transport and hatcheries.	FWS/CDOW	Complete							Survivability demonstrated in 2007-2008 at Ouray NFH and Mumma NASRF. (See also General, IV.'A.4.c.(4))
	IV.A.1.c	Evaluate stocking success as identified in monitoring plan for stocked fish.	LFL/FWS/ States/PD	Ongoing	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.	Conduct population estimate for humpback chub. (Estimate/trend information will be obtained via CPUE during nonnative fish removal passes.)	FWS	Ongoing	X	X	X	X	X	X	


Elkhead Reservoir 2008 CWCB 5000 AF Pool Releases
Flow (CFS)
420
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
2-Aug
17-Aug
1-Sep
16-Sep
1-Oct
16-Oct
31-Oct
Avr 293 cfs with releases
Avr 258 cfs without releases
5000 ac-ft Elkhead release

GREEN RIVER ACTION PLAN: DUCHESNE RIVER

		ACTIVITY	WHO	STATUS	FY 09 10/08 9/09	FY 10 10/09 9/10	FY 11 10/10 9/11	FY 12 10/11 9/12	FY 13 10/12 9/13	OUT-YEARS	Assessment of significant accomplishments (!) and shortcomings (X), (Focused on March 1, 2008 - February 1, 2009)
	I.	**PROVIDE AND PROTECT INSTREAM FLOWS (HABITAT MANAGEMENT)**									
	I.A.	Identify initial year-round flows needed for recovery.	FWS-ES	Complete	Initial year-round flow needs for recovery were identified & summarized in a letter to Program Director on 03/09/95 and included in 1998 biological opinion.						
	I.A.1.	Conduct hydrology/water availability study.	UT	Complete	CH2MHill 1997.						
	I.A.2.	Conduct follow-up study to evaluate and refine flow recommendations.	FWS/UT	Complete	Modde and Keleher 2003.						
	I.B.	State acceptance of initial flow recommendations (dependent on development of initial flow recommendations).									
	I.B.1.	Review scientific basis.	UT	Complete	Acceptance of Modde and Keleher 2003.						
	I.B.2.	Assess legal and physical availability of water.	UT	Pending	X	12/09					**!** In compliance with the amended 2005 BO, Duchesne River Work Group partners identified water temporarily available for test flows for the past 4 years. The DOI and Mitigation Commission dedicated available water and the CUWCD has managed and measured this water from Starvation Reservoir to the Randlette gage. Assistance in "shepherding" this water over ~70 miles has been provided through a cooperative effort between CUWCD, the Duchesne Water Conservancy District and other water users along the Duchesne River. The ability to measure these augmented flows and guarantee that they reach the Randlette gage is the main challenge in this effort of meeting target flows identified in the amended Biological Opinion. For the past 4 years, this cooperation has been successful. Myton Diversion rehabilitation (complete and will be operational this irrigation season, funded by UCRIP and a Water 2025 Grant), will greatly enhance the ability to meet target flows for endangered fish in the lower Duchesne River.
	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. (BR/CUWCD completed coordinated reservoir operations model in 2003. Task completion part of I.D.1) (This is part of the coordinated reservoir operation in I.D.)	USBR/DOI/PD/ Strawberry Water Users	Ongoing	X	12/09					See I.B.2., above.
	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. (BR/CUWCD completed coordinated reservoir operations model in 2003. Task completion part of I.D.1)	DOI/IBAT/FWS/ Mitig. Comm./ CUWCD/ UteTribe	Complete							
>*	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	Ongoing	X	12/09					See I.B.2., above.
	I.D.	Coordinate reservoir operation.									
	I.D.1.	Determine feasibility and benefits of coordinated reservoir operation.	BR/CUWCD/ DOI	Complete	Hansen 2004.						
>*	I.D.2.	Develop agreements if feasible to coordinate reservoir operations and protect flows to the Green River.	BR/CUWCD/ UT/Ute Tribe	Ongoing	X	12/09					See I.B.2., above.
>*	I.D.2.a.	Rehabilitate Myton Town diversion.	BR/CUWCD/ UT/Ute Tribe	Complete							Completed spring 2009.
	I.E.	Examine the feasibility of other options for obtaining water.	BR/DOI/PD/ UteTribe	Ongoing	X	X	X	X	X	X	
	I.F.	Determine need and feasibility of additional gaging.	BR/FWS/UT	Complete							
	I.F.1.	Construct additional gages, as needed.	TBD	Complete							
	I.G.	Evaluate and revise as needed, flow regimes to benefit endangered fish populations	FWS/Program	Ongoing	X	X	X	X	X	X	Data Series 409: Summary of Fluvial Sediment Collected at Selected Sites on the Gunnison River in Colorado and the Green and Duchesne Rivers in Utah, Water Years 2005–2008. http://pubs.usgs.gov/ds/409/
	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.									

GREEN RIVER ACTION PLAN: DUCHESNE RIVER

		ACTIVITY	WHO	STATUS	FY 09 10/08 9/09	FY 10 10/09 9/10	FY 11 10/10 9/11	FY 12 10/11 9/12	FY 13 10/12 9/13	OUT-YEARS	Assessment of significant accomplishments (!) and shortcomings (X), (Focused on March 1, 2008 - February 1, 2009)
	III.A.1.	Identify most damaging nonnative fishes.	UDWR	Complete	Hawkins and Nesler 1991, Lentsch et al. 1996b, Tyus and Saunders 1996.						
	III.A.2.	Assess options to control negative interactions from nonnative fishes from the Duchesne River to benefit Colorado pikeminnow and razorback sucker young-of-the-year.	UDWR	Complete	Tyus and Saunders 1996.						
	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.)									
	III.A.3.a.	Evaluate feasibility of screen on Bottle Hollow Reservoir to control nonnative fish escapement and explore alternative funding sources.	FWS-FAO/Ute Tribe/BOR	Complete	USFWS 2001.						
>*	III.A.3.a.(1)	If feasible and necessary, screen Bottle Hollow Reservoir	Ute Tribe	Complete	Elder's Pond screen (downstream of Bottle Hollow) completed in 2002 (Irving and Montoya 2002).						
	III.A.3.b.	Evaluate escapement of nonnative fishes from Starvation Reservoir and the feasibility of screening.	UDWR	Complete							
	III.A.3.b.(1)	If feasible and necessary, screen Starvation Reservoir	N/A	Complete							
>*	III.A.3.c.	Remove nonnative fish (smallmouth bass, channel catfish and northern pike). See III.A.2.c.1.& 2. under General Recovery Program Support Action Plan.	FWS-FR	Ongoing	X						The Ute Tribe and Vernal CRFP conducted two nonnative fish removal efforts (June and September) from Myton, Utah downstream to the Green / Duchesne confluence (43 river miles). Catch rates for smallmouth bass were highest in the lower reaches of the Duchense where abudnaces were similar to those found in Yampa Canyon and in the Uintah Basin of the Green River. Removal will continue in 2009 with the addition of electric seine surveys at 8 low-flow electrofishing sample sites.

GREEN RIVER ACTION PLAN: WHITE RIVER

		ACTIVITY	WHO	STATUS	FY 09 10/08 9/09	FY 10 10/09 9/10	FY 11 10/10 9/11	FY 12 10/11 9/12	FY 13 10/12 9/13	OUT-YEARS	Assessment of significant accomplishments (!) and shortcomings (X), (Focused on March 1, 2008 - February 1, 2009)
	I.	**PROVIDE AND PROTECT INSTREAM FLOWS (HABITAT MANAGEMENT)**									
	I.A.	Assess need for tributary management plan for the White River.	PD	TBD							
	I.A.1.	Estimate future water demands on the White River.	TBD	TBD							
	I.A.2.	Develop tributary management plan.	PD	TBD							
	I.A.3.	Conduct appropriate Section 7 and NEPA compliance to implement tributary management plan.	PD/FWS	TBD	X	X					Service will begin developing a programmatic biological opinion for the White River when the Gunnison PBO nears completion.
	I.B.	Initially identify year-round flows needed for recovery.									
	I.B.1.	Develop work plan.	FWS-FR	Complete	Lentsch et al. 2000.						
	I.B.2.	Identify flows. Initial report complete (Irving et al. 2004).	FWS-FR	Pending	X						***X*** Program Director's staff is revising the White River flow recommendations (Irving et al, 2004); expects to provide a draft to the Biology Committee by the end of April 2009.
	I.C.	Evaluate how identified flows will be legally protected.	CWCB	Pending							
	I.D.	State acceptance of initial flow recommendations (dependent on development of initial flow recommendations).									
	I.D.1.	Review scientific basis, dependent on development of flow recommendations by FWS.	UT/CO	Pending	X						
	I.D.2.	Assess legal and physical availability of water.	UT/CO	Complete	No work has been done in Utah on water availability. CO completed work on a water availability study for the White River in early 1995 & the work was used as the basis for developing depletion schedules for the White River.						
	I.D.3.	Assess impacts of depletions on Colorado's Compact allocations.	CWCB	Complete	CO completed work on a water availability study for the White River in early 1995 & the work was used as the basis for developing depletion schedules for the White River.						
	I.D.4	CWCB notice of intent to appropriate (in Colorado).	CWCB	On hold							
	I.E.	Legally protect identified flows (dependent on development of initial flow recommendations).									
	I.E.1.	Protect flows in Colorado.									
	I.E.1.a	Appropriate.									
	I.E.1.a.(1)	CWCB approval to appropriate.	CWCB	On hold							
>*	I.E.1.a.(2)	Colorado Attorney Generals Office file date.	CWCB	On hold							
>*	I.E.1.a.(3)	Water court adjudication (litigation dependent).	CWCB	On hold							
	I.E.2.	Protect flows in Utah.									
	I.E.2.a.	Hold public meeting to establish future appropriation policy.	UT	TBD							
	I.E.2.b.	Adopt and implement new policy (new appropriations subject to flow criteria).	UT	TBD							
>*	I.E.2.c.	Prepare and execute contracts with water users as required to subordinate diversions associated with approved and/or perfected rights.	UT	TBD, as required							
	I.F.	Evaluate and revise as needed flow regimes to benefit endangered fish populations.	FWS/Program	Ongoing	X	X	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	Taylor Draw fish passage recommendations completed in 1997 when Program determined costs exceeded benefits. Irving 1997.						
	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	TBD	Initial assessment completed. If fish stocked in the future, escapement will need to be monitored. Elmblad 1998.						
	III.B.	Reduce negative impacts to endangered fishes from sportfish management activities.									
	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	CDOW completed sportfish regulation/angling regulation changes in 1997 (See Colorado fishing regulations).						
	III.B.1.a.	If necessary, assess management options to reduce escapement of black crappie from Kenney Reservoir.	CDOW	Complete	CDOW completed assessment (CDOW 2001).						
	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 pikeminnow congregation below Kenney Reservoir.	FWS-FR	Complete	Elmblad 1997.						
	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	Elmblad 1997.						

COLORADO RIVER ACTION PLAN: MAINSTEM

		ACTIVITY	WHO	STATUS	FY 09 10/08 9/09	FY 10 10/09 9/10	FY 11 10/10 9/11	FY 12 10/11 9/12	FY 13 10/12 9/13	OUT-YEARS	Assessment of significant accomplishments (!) and shortcomings (X), (Focused on March 1, 2008 - February 1, 2009)
	I.	**PROVIDE AND PROTECT INSTREAM FLOWS (HABITAT MANAGEMENT)**									
	I.A.	Colorado River above Gunnison River									
>*	I.A.1.	Develop, issue and implement PBO.	FWS	Complete	USFWS 1999b.						
	I.A.2.	Initially identify year-round flows needed for recovery.									
	I.A.2.a.	Rifle to Roller Dam.	FWS-FR	Complete	Osmundson 2001.						
	I.A.2.b.	Roller Dam to 15-Mile Reach.	FWS-FR	Complete	Osmundson 2001.						
	I.A.2.c.	15-Mile Reach.	FWS-FR	Complete	Osmundson and Kaeding 1991.						
	I.A.3.	Provide a depletion accounting report as outlined in the 15-Mile Reach PBO.									
	I.A.3.a.	Collect data.	CWCB/FWS-ES/BR	Ongoing	X	X	X	X	*X*	X	
	I.A.3.b.	Develop consumptive use and losses report with CRDSS model to verify level of depletions.	CWCB	Complete							! CWCB completed depletion accounting report (Colorado Water Conservation Board 2008).
	I.A.3.c.	Calculate new depletions every 5 years (20*06-2010*~~16~~, etc).	CWCB	Pending			X	12/31/2011		X	
	I.A.4.	Evaluate need for instream flow water rights.									
	I.A.4.a.	Rifle to Roller Dam (Dependent on initial flow recommendations).									
	I.A.4.a.(1)	Assess legal and physical availability of water.	CWCB	Complete	Colorado completed work on a water availability study in early 1995 & the work was used as the basis for developing depletion schedules for the Colorado River.						
	I.A.4.a.(2)	Assess impacts of depletions on Colorado's Compact allocations.	CWCB	Complete	Colorado completed work on a water availability study in early 1995 & the work was used as the basis for developing depletion schedules for the Colorado Rive						
	I.A.4.a.(3)	Five-year periodic review of progress under the PBO to determine if instream flow filings are necessary.	CWCB/FWS	On hold							
	I.A.4.a.(3)(a)	If necessary, evaluate how identified flows will be legally protected.	CWCB	On hold							
	I.A.4.b.	Roller Dam to 15-Mile Reach (Dependent on initial flow recommendations).									
	I.A.4.b.(1)	Assess legal and physical availability of water.	CWCB	Complete	Colorado completed work on a water availability study in early 1995 & the work was used as the basis for developing depletion schedules for the Colorado River.						
	I.A.4.b.(2)	Assess impacts of depletions on Colorado's Compact allocations.	CWCB	Complete	Colorado completed work on a water availability study in early 1995 & the work was used as the basis for developing depletion schedules for the Colorado Rive						
	I.A.4.b.(3)	Five-year periodic review of progress under the PBO to determine if instream flow filings are necessary.	CWCB/FWS	On hold							
	I.A.4.b.(3)(a)	If necessary, evaluate how identified flows will be legally protected.	CWCB	On hold							
	I.A.4.c.	15-Mile Reach.									
	I.A.4.c.(1)	Instream flow water right secured - 581 cfs (July - September).		Complete	On September 2, 1997, instream flow water rights were decreed for 581 and 30 cfs to benefit endangered fishes in the 15-Mile Reach. These water rights have a priority date of the date file which is December 1992 and December 1994 respectively.						
	I.A.4.c.(2)	Irrigation season return flows legally protected - 300 cfs.		Complete							
	I.A.5.	Provide and legally protect instream flows pursuant to Colorado River PBO.									! Late summer flow augmentation for the 15-Mile Reach began in mid-August, with a flow target of 1,240 – 1,650 cfs. A total of 114,255 ac-ft was added to baseflow; this total included 73,024 af from Green Mountain (including Grand Valley Water Management), 20,423 af from Ruedi, 10,377 af from Williams Fork, and 10,431 af from Wolford Mountain Reservoir. These were the highest base flow augmentation releases to date. (See graph and table.) Closer coordination has been maintained by meeting twice a year with Grand Valley water users and conducting conference calls as needed to discuss river conditions prior to the weekly HUP calls. The focus should remain on taking full advantage of water savings brought about by operation of the Grand Valley Water Management project for late summer flow augmentation.
>*	I.A.5.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/CWCB	Ongoing	X	X	X	X	X	X	See I.A.5., above.
>*	I.A.5.b.	Execute long-term lease for 10,825 af from Ruedi Reservoir.	BR/FWS/ CWCB	Complete	2012 lease signed June 23, 2003.						
>*	I.A.5.b.(1)	Provide water annually pursuant to long-term lease.	BR/CWCB	Ongoing	X	X	X	X	X	X	
	I.A.5.c.	Execute 10-year agreement for delivery of 5,412.5 af by West Slope water users.	CRWCD/FWS	Complete	Pursuant to the 1999 PBO, in 2000, the Service signed a 10-year agreement with the CRWCD for delivery of 5,412 acre-feet of West Slope water from Wolford Mountain Reservoir (in addition to the original commitment of 6,000						

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		ACTIVITY	WHO	STATUS	FY 09 10/08 9/09	FY 10 10/09 9/10	FY 11 10/10 9/11	FY 12 10/11 9/12	FY 13 10/12 9/13	OUT-YEARS	Assessment of significant accomplishments (!) and shortcomings (X), (Focused on March 1, 2008 - February 1, 2009)
>*	I.A.5.c.(1)	Provide and protect water deliveries by West Slope water users. Contract to provide up to 5,000 af of back-up water from Ruedi when not available from Wolford due to shortage criteria signed December 28, 2007.	CRWCD/ CWCB	Ongoing	X	X	X	X	X	X	See I.A.5., above.
	I.A.5.d.	Execute 10-year agreement for delivery of 5,412.5 af by East Slope water users.	DWD/FWS	Complete	Pursuant to the 1999 PBO, in 2000, the Service signed a 10-year agreement with Denver Water to deliver of 5,412 acre-feet of East Slope water from Williams Fork Reservoir.						
>*	I.A.5.d.(1)	Provide and protect water deliveries by East Slope water users.	DWD/CWCB	Ongoing	X	X	X	X	X	X	See I.A.5., above.
	I.A.5.e.	Permanent delivery of 10,825 af of water in late summer/early fall to meet base flow needs.									
	I.A.5.e.(1)	Identify options.	CRWCD/ NWCD/ Denver Water	Complete	Denver Water and Colorado River Water Conservation District 2002.						
Δ	I.A.5.e.(2)	Select preferred alternative for delivery.	CRWCD/ NWCD/ Denver Water	Complete	Grand River Consulting 2009.						! After reviewing 25 alternatives, east and west slope water users reached consensus on the "Lake Granby-Ruedi" alternative.
	I.A.5.e.(3)	Sign agreement(s)	CRWCD/ NWCD/ Denver Water	Pending	X	X					Agreements are to be signed with the Service prior to December 2009 committing east slope and west slope water users to permanent sources of Ruedi replacement water, as required by the Colorado River PBO.
	I.A.5.e.(4)	Develop projects, if needed.	CRWCD/ NWCD/ Denver Water	Pending		X	X	X	X	X	
>*	I.A.5.e.(5)	Deliver and legally protect flows.	CRWCD/ NWCD/ Denver Water	Pending						X	
	I.A.5.f.	Evaluate options for use of uncommitted Ruedi Reservoir water following Round II sales.	BR	Complete	On May 25, 1995, FWS issued final amendment to BO for Round II water sales. Reclamation agreed to implement a 15-year contract for 21,650 af (in addition to the original 5,000 af + 5,000 af four out of five years). USFWS 1995.						
	I.A.5.g.	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	Complete	1999 amendment to 1995 Ruedi BO. USFWS 1999a.						
>*	I.A.5.h.	Pursuant to Wolford Mountain (Muddy Creek) Biological Opinion, deliver up to 6,000 acre-feet of water.	CRWCD/FWS/ CWCB	Ongoing	X	X	X	X	X	X	See I.A.5., above.
	I.A.5.i.	Coordinated reservoir operations.									
	I.A.5.i.(1)	Evaluate (final report). Implementation plan finalized 2/28/06.	BR	Complete	Identified as complete in 2000 version of RIPRAP.						
>*	I.A.5.i.(2)	If available, deliver additional peak flows, evaluate process & hydrology, and provide annual report.	BR	Ongoing	X	X	X	X	X	X	A minimal spring release of ~6,900 af was made (larger releases were not possible due to flooding concerns). (See table.)
	I.A.5.j.	Collbran Project.									
	I.A.5.j.(1)	Evaluate.	BR	Complete	Collbran contract could not be implemented as planned due to a number of water rights issues.						
	I.A.5.j.(2)	Make recommendations	BR	Complete							
	I.A.5.k.	Silt Project.									
	I.A.5.k.(1)	Evaluate.	BR	Complete	Not feasible due to water availability.						
	I.A.5.k.(2)	Make recommendations.	CDOP/BR	Complete							
	I.A.5.l.	Grand Valley Water Management Project.									
	I.A.5.l.(1)	Evaluate.	BR	Complete	1996						
	I.A.5.l.(2)	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	1997						
>*	I.A.5.l.(3)	Design and construct features of the Grand Valley Water Management Project.	BR	Complete							
	I.A.5.l.(4)	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	Complete	July 1999.						
	I.A.5.l.(5)	Execute agreement (municipal water contract) to deliver additional Orchard Mesa Check Settlement water and Grand Valley Water Management Plan water to benefit endangered fish.	BR/City of Grand Jct.	Complete; renewed in 2007	In 2000, Reclamation entered a 5-year contract to deliver Green Mountain surplus water to the city of Grand Junction for municipal/recreational purposes. Renewed on 8/29/2007 through 12/31/2012.						
	I.A.5.l.(6)	Assess options and legally protect only additional Orchard Mesa Check Settlement water and Grand Valley Water Management Plan water.	BR	Complete	1999						
	I.A.5.m.	Water Division 5 Coordinated Facilities Study.									
	I.A.5.m.(1)	Evaluate options for providing and protecting additional peak flows to the 15-Mile Reach.	CWCB	Complete	Brown and Caldwell 2003.						

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		ACTIVITY	WHO	STATUS	FY 09 10/08 9/09	FY 10 10/09 9/10	FY 11 10/10 9/11	FY 12 10/11 9/12	FY 13 10/12 9/13	OUT-YEARS	Assessment of significant accomplishments (!) and shortcomings (X), (Focused on March 1, 2008 - February 1, 2009)
>*	I.A.5.m.(2)	Deliver additional peak flows as determined feasible in the evaluation.	TBD	Ongoing	X	X	X	X	X	X	**X** A detailed feasibility assessment was initiated in late 2007 and was expected to be completed in 2008. The ability of certain reservoirs to bypass storage as a means of enhancing spring peaks, with subsequent payback from USFWS pools, is to be identified. The assessment is expected to include legal and institutional review by the State Engineer and Colorado Water Conservation Board. Issues to be addressed include potential for downstream flooding and the related liability of releasing storage during high flows; and analysis of exchange possibilities. The 10,825 alternatives study (which has a PBO deadline) took priority over this work; it may be late '09 or early '10 before this can be reinitiated.
	I.A.6.	Review implementation of RIPRAP items to determine timely compliance with applicable schedules (every 2 yrs. Beginning in 2003).	FWS	Ongoing	X		X		X	X	
	I.B.	Colorado River from the Gunnison to the Colorado-Utah State line (Includes the 18-Mile Reach									
	I.B.1.	Initially identify year-round flows needed for recovery.	FWS-FR	Complete	McAda 2003.						
	I.B.2.	Evaluate how identified flows will be legally protected.	CWCB	On hold							
	I.B.3.	State acceptance of initial flow recommendations.									
	I.B.3.a.	Review scientific basis, dependent on development of flow recommendations by FWS.	CWCB/CDOW	Pending							
	I.B.3.b.	Assess legal and physical availability of water.	CWCB	Complete	Colorado completed work on a water availability study in early 1995 & the work was used as the basis for developing depletion schedules for the Colorado River.						
	I.B.3.c	Assess impacts of depletions on Colorado's Compact allocations.	CWCB	Complete	Colorado completed work on a water availability study in early 1995 & the work was used as the basis for developing depletion schedules for the Colorado River.						
	I.B.3.d.	CWCB notice of intent to appropriate (in Colorado).	CWCB	On hold							
	I.B.4.	Legally protect identified flows.									
>*	I.B.4.a.	Acquire (see Colorado River above Gunnison and Gunnison River).									
	I.B.4.b.	Appropriate.									
	I.B.4.b.(1)	CWCB approval to appropriate.	CWCB	On hold							
>*	I.B.4.b.(2)	Colorado Attorney Generals Office file date.	CWCB	On hold							
>*	I.B.4.b.(3)	Water court adjudication (litigation dependent).	CWCB	On hold							
	I.B.4.c.	Deliver and legally protect flows from Aspinall (see Colorado River above Gunnison and Gunnison River).									
>*	I.B.4.c.(1)	Operate Aspinall to provide test flows.	BR	Complete	Test flows provided through 1997; synthesis report and flow recommendations report completed in 2003 (McAda 2003).						
>*	I.B.4.c.(2)	Continue annual coordination (meeting 3 times/year) of Aspinall operation until the EIS, biological opinion and record of decision are complete.	BR	Ongoing	X	X	X	X	X	X	
	I.B.4.c.(3)	Operate Aspinall to provide flows pursuant to biological opinion and record of decision.									Program will need to conduct monitoring to determine if flows from Aspinall are sufficient for recovery in this section of the Colorado River.
	I.B.4.c.(3)(a)	Determine if change in water right and/or contract is needed.	BR	Pending							
	I.B.4.c.(3)(b)	Enter into contract if needed.	BR	Pending							
>*	I.B.4.c.(3)(c)	Deliver flows.	BR	Pending							
	I.C.	Colorado River from Colorado-Utah State line to Green River									
	I.C.1.	Initially identify year-round flows needed for recovery.	FWS-FR	Complete	McAda 2003.						
	I.C.2.	State acceptance of initial flow recommendations.									
	I.C.2.a.	Review scientific basis.	UT	Pending							
	I.C.2.b.	Assess legal and physical availability of water.	UT	Pending							
	I.C.3.	Legally protect identified flows.									
	I.C.3.a.	Hold public meeting to establish future appropriation policy.	UT	Pending							
	I.C.3.b.	Adopt and implement new policy (new appropriations subject to flow criteria).	UT	Pending							
>*	I.C.3.c.	Prepare and execute contracts with water users as required to subordinate diversions associated with approved and/or perfected rights.	UT	Pending							
	I.D.	Colorado River below Green River									
	I.D.1.	Initially identify year-round flows needed for recovery.	FWS	Pending							The Service still needs to determine if combination of Colorado and Green River flows below the confluence are adequate for recovery (pending completion of Aspinall biological opinion).
	I.D.2.	Assess adequacy of combined flows from Colorado and Green rivers to provide fish habitat (and meet recovery goals) in the Cataract Canyon reach of the Colorado River.	FWS	Pending							See above.
	I.E.	Evaluate and revise as needed flow regimes to benefit endangered fish populations.	FWS/Program	Ongoing	X	X	X	X	X	X	
	II.	**RESTORE HABITAT (HABITAT DEVELOPMENT AND MAINTENANCE)**									

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	II.A.	Restore and manage flooded bottomland habitat.									
	II.A.1.	29-5/8 Road Gravel Pit (became part of larger "Hot Spot Complex" in 2003.)									
	II.A.1.a.	Develop and approve management plans.	FWS-FR	Complete	Burdick 1994.						
	II.A.1.b.	Site design/complete environmental compliance.	BR	Complete	Levee initially breached in December 1995. To enhance post-runoff drainability site topography was re-contoured in March 1998.						
>*	II.A.1.c.	Construct.	BR	Complete							
>*	II.A.1.d.	Operate and maintain.	BR	TBD, revisit as needed	Burdick 2002. Operation, maintenance and evaluation of sites incorporated into Colorado River Subbasin Floodplain Management Plan (Valdez and Nelson 2004b) (IIA6).						O&M for floodplain sites is characterized as TBD pending evaluations. BOR did C-6 Hyd work (to determine connections, etc.) in '08; report forthcoming shortly (then we can update the status of these items).
	II.A.1.e.	Monitor and evaluate success; modify as needed.	FWS-FR	TBD, revisit as needed							
	II.A.2.	Adobe Creek.									
	II.A.2.a.	Develop and approve management plans.	FWS-FR	Complete	Earthen dikes and water control structures completed in spring 1995.						
	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	TBD, revisit as needed	Hamilton et al. 1996, 1997, 2003. Operation, maintenance and evaluation of sites incorporated into Colorado River Subbasin Floodplain Management Plan (Valdez and Nelson 2004b) (IIA6).						
	II.A.2.e.	Monitor and evaluate success; modify as needed.	FWS-FR	TBD, revisit as needed							
	II.A.3.	Walter Walker.									
	II.A.3.a.	Develop and approve management plans.	FWS-FR	Complete	1994						
	II.A.3.b.	Site design/complete environmental compliance.	BR	Complete	Initial construction was completed during FY 95.						
>*	II.A.3.c.	Construct.	BR	Complete	75 cfs inlet control structure to flush selenium was completed December 1996 (Hamilton et al. 2003).						
>*	II.A.3.d.	Operate and maintain.	BR/FWS/ CDOW	TBD, revisit as needed	Operation, maintenance and evaluation of sites incorporated into Colorado Rive Subbasin Floodplain Management Plan (Valdez and Nelson 2004b) (IIA6).						
	II.A.3.e.	Monitor and evaluate success; modify as needed.	FWS-FR	TBD, revisit as needed	Hamilton et al. 1996, 1997, 2003, Scheer 1998.						
	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	Complete	Burdick 2002. Levees breached at two sites (19.5 acres total). Levee removal completed and operation, maintenance and evaluation of sites incorporated into ColoradoRiver Subbasin Floodplain Management Plan (Valdez and Nelson 2004b) (IIA6).						
>*	II.A.4.b.	Construction (levee breaching) [NOTE: Subject to review and approval for depression wetlands.]	BR	Complete							
>*	II.A.4.c.	Operate and maintain.	BR/FWS	Complete							
	II.A.4.d.	Evaluation	FWS	Complete							
	II.A.5.	Acquire interest in high-priority flooded bottomland habitats.									
	II.A.5.a.	Identify and evaluate sites.	FWS	Complete	Acquired 10 sites (394 acres total). Operation, maintenance and evaluation of sites incorporated into Colorado River Subbasin Floodplain Management Plan (Valdez and Nelson 2004b) (IIA6).						
	II.A.5.b.	Pre-acquisition planning and identification of acquisition options.	PD	Complete							
	II.A.5.c.	Conduct appraisal/NEPA compliance.	PD	Complete							
>*	II.A.5.d.	Negotiate and acquire.	PD	Complete							
	II.A.5.e.	Evaluate effectiveness of land acquisition activities and provide recommendations	PD	Complete							
>*	II.A.6.	Develop and implement Colorado River Subbasin Floodplain Management Plan (Valdez and Nelson 2004b).	Program	Ongoing	X	X	X	X	X	X	
	II.A.6.a.	Validate and refine Colorado River Subbasin Floodplain Management Plan	Program	Ongoing	X	X	X	X	X	X	
	II.B.	Restore native fish passage at instream barriers.									! Meetings were held in May and December 2008 with Grand Valley irrigators, Reclamation, and Recovery Program staff to discuss operations of Grand Valley fish screens and passages, identify problems and solutions, and document operational expectations and plans. These biannual meetings will continue indefinitely.
	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	1997						
	II.B.1.a.(1)	Obtain landowner consent/agreement.	BR	Complete	Preconstruction activities complete 1997.						
	II.B.1.a.(2)	Site design/environmental compliance.	BR	Complete	Preconstruction activities complete 1997.						

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>*	II.B.1.a.(3)	Construct.	BR	Complete	GVIC passage construction completed in 01/98.						
>*	II.B.1.a.(4)	Operate and maintain.	FWS-FR/BR	Ongoing	X	X	X	X	X	X	Obermeyer gate continues to facilitate passage operation.
	II.B.1.a.(5)	Monitor and evaluate success.	FWS-FR/BR	Complete	Burdick 1999.						
	II.B.1.b.	Screen GVIC diversion to prevent endangered fish entrainment, if warranted.									
	II.B.1.b.(1)	Design.	BR	Complete	1999						
>*	II.B.1.b.(2)	Construct.	BR	Complete	GVIC diversion canal fish screen completed in 05/02, modifications completed March 2004.						
>*	II.B.1.b(3)	Operate and maintain.	FWS-FR/BR	Ongoing	X	X	X	X	X	X	GVIC screens were operated through most of the 2008 irrigation season. Fish were salvaged from the canal by USFWS in November 2008.
	II.B.2.	Restore fish passage at Price Stubb.									
	II.B.2.a.	Evaluate and implement viable options.									
	II.B.2.a.(1)	Obtain landowner consent/agreement.	BR	Complete							
	II.B.2.a.(2)	Site design/environmental compliance.	BR	Complete							
>*	II.B.2.a.(3)	Construct.	BR	Complete							! Price-Stubb passage completed in April 2008.
>*	II.B.2.a.(4)	Operate and maintain.	BR	Pending	X	X	X	X	X	X	
	II.B.2.a.(5)	Monitor and evaluate success.	FWS-FR/BR	Pending	X						Operation of Grand Valley selective fish passage will help evaluate success of Price-Stubb; passive PIT-tag monitoring feasibility evaluation in 2009. A new boat ramp near Grand Valley Project fish screen is planned to allow access for monitoring fish above Price-Stubb.
	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	Complete	2003						
>*	II.B.3.a.(2)	Construct.	BR	Complete							
>*	II.B.3.a.(3)	Operate and maintain.	BR	Ongoing	X	X	X	X	X	X	
	II.B.3.a.(4)	Monitor and evaluate success.	FWS-FR/BR	Ongoing	X						! Passage operated continuously May 2 - Oct. 15; 10,788 fish used the passage, including 9,663 native fishes, one of which was a stocked razorback sucker.
	II.B.3.b.	Screen Government Highline diversion to prevent endangered fish entrainment									
	II.B.3.b.(1)	Design.	BR	Complete	2002						
>*	II.B.3.b.(2)	Construct.	BR	Complete	August 2005.						
	II.B.3.b.(3)	Operate and maintain.	FWS-FR/BR	Pending	X	X	X	X	X	X	! O&M contract executed in June 2008; screen operated on a trial basis and all necessary corrections completed. Full operation expected in 2009.
	II.C.	Support actions to reduce or eliminate contaminant impacts. [NOTE: Contaminants remediation (in all reaches) will be conducted independently of and funded outside of the Recovery Program.]									
	II.C.1.	Support actions to reduce or eliminate comtaminant impacts ofselenium in the Grand Valley.	FWS-ES	Ongoing	X	X	X	X	X	X	
	II.C.2.	Support remediation of groundwater contamination at the Atlas Mill tailings site.	FWS-ES	Ongoing	X	X	X	X	X	X	
	II.C.3.	Identify measures to minimize risk of hazardous materials spills in Black Rocks and Westwater Canyon from transport along the adjacent railway to protect humpback chub populations.	FWS-ES	Ongoing	X	X	X	X	X	X	
	III.	**REDUCE NEGATIVE IMPACTS OF NONNATIVE FISHES AND SPORTFISH MANAGEMENT ACTIVITIES (NONNATIVE AND SPORTFISH MANAGEMENT)**									
	III.A.	Develop and implement control programs in reaches of the Colorado River occupied by endangered fishes. Each control activity will be evaluated for effectiveness and then continued as needed. See III.A.2.c.1.& 2. under General Recovery Program Support Action Plan.									
	III.A.1.	Determine relationship between Aspinall test flows and nonnative fish abundance.	UDWR/ FWS-FR	Complete	McAda & Ryel 1999.						
>*	III.A.2.	Reclaim ponds in critical habitat.	CDOW	Complete	Martinez 2004.						
	III.A.2.a.	Evaluate and make recommendations.	CDOW	Complete							
	III.A.3.	Nonnative cyprinids and centrarchids in nursery habitats.									
	III.A.3.a.	Remove small nonnative cyprinids from backwaters and other low velocity habitats.	CDOW/UDWR	Complete	Trammell et al. 2002. Report completed; development and implementation of control program on hold.						
	III.A.3.b.	Remove nonnative centrarchids from backwaters and other low velocity habitats.	FWS	Complete	Osmundson 2003. Report completed; development and implementation of control program on hold.						
	III.A.4.	Preclude escapement from ponds in critical habitat as needed and feasible.									
	III.A.4.a.	Evaluate sources of nonnative fishes and make recommendations.	CDOW/FWS	Ongoing	X	X	X				See General, III.C.
>*	III.A.5.	Develop and implement program to identify required level of channel catfish control.	FWS	On hold	Smallmouth bass considered higher priority (2004).						

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		ACTIVITY	WHO	STATUS	FY 09 10/08 9/09	FY 10 10/09 9/10	FY 11 10/10 9/11	FY 12 10/11 9/12	FY 13 10/12 9/13	OUT-YEARS	Assessment of significant accomplishments (!) and shortcomings (X), (Focused on March 1, 2008 - February 1, 2009)
>*	III.A.6.	Develop and implement program to identify required level of smallmouth bass control.	FWS	Ongoing	X	X	X	X	X	X	Smallmouth bass abundance declined during 2004-2008; more removal passes added in 2007 to increase captures. Largemouth bass and some other species of sunfish are an emerging problem; catch of young fish has steadily increased since 2004.
	III.B.	Reduce negative impacts to endangered fishes from sportfish management activities.									
>*	III.B.1.	Evaluate control options and implement measures to control nonnative fish escapement from Highline Reservoir.	CDOW/ CRWCD	Complete	Fish barrier net installed in Highline Reservoir 8/99; replaced in 2005.						
	III.B.1.a.	Operate and maintain Highline Reservoir net.	CDOPR	Ongoing	X	X	X	X	X	X	
	III.B.1.b.	Evaluate Highline Reservoir net.	CDOW	Complete	Martinez 2002.						
	III.B.2.	Remove bag and possession limits on warmwater nonnative sportfishes within critical habitat in Colorado.	CDOW	Complete	See Colorado fishing regulations.						
	III.B.4.	Develop basinwide aquatic management plan to reduce nonnative fish impacts while providing sportfishing opportunities.	CDOW	Complete	CDOW 2003a.						
>*	III.B.4.a.	Implement CDOW's Colorado River Aquatic Management Plan.	CDOW	Ongoing	X	X	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.									
	IV.A.1.	Razorback sucker.									
	IV.A.1.a.	Develop experimental augmentation plan and seek Program acceptance.	FWS-FR	Complete	Burrdick et al. 1995.						
	IV.A.1.b.	Implement experimental augmentation plan.									
>	IV.A.1.b.(1)	Stock fish.	FWS-FR	Complete	Burdick 2003.						
	IV.A.1.b.(2)	Monitor and evaluate results; make recommendations regarding further augmentation.	FWS-FR	Complete	Burdick 2003.						
	IV.A.2.	Monitor the fish community in the upper Colorado River (above Palisade) and develop management action plan, including recommendations for Colorado pikeminnow and razorback sucker augmentation.	CDOW	Complete	Anderson 1997.						
	IV.A.3.	Develop integrated stocking plan for razorbacks in the Colorado River in Colorado.	CDOW/PD	Complete	Nesler et al. 2003.						
	IV.A.3.a.	Program acceptance.	CDOW/PD	Complete	Nesler et al. 2003.						
>	IV.A.3.b.	Implement razorback sucker integrated stocking plan.	CDOW/PD	Ongoing	X	X	X	X	X	X	
	IV.A.3.b.	Evaluate stocking success as identified in monitoring plan for stocked fish.	Program	Ongoing	X	X	X	X	X	X	! 471 sub-adult or adult razorbacks captured in Colorado River as part of Colorado pikeminnow estimate.
	IV.A.4.	Develop integrated stocking plan for Colorado pikeminnow in the Colorado River in Colorado	CDOW/PD	Complete	Nesler et al. 2003.						
	IV.A.4.a.	Program acceptance.	CDOW/PD	Complete	Nesler et al. 2003.						
>	IV.A.4.b.	Implement Colorado pikeminnow integrated stocking plan.	CDOW/PD	On hold							
	IV.A.4.c.	Evaluate stocking success as identified in monitoring plan for stocked fish.	Program	Ongoing	X	X			X	X	
	IV.A.5.	Develop integrated stocking plan for bonytail in the Colorado River from Palisade to Loma	CDOW	Complete	Nesler et al. 2003.						
	IV.A.5.a.	Program acceptance.	CDOW/PD	Complete	Nesler et al. 2003.						
>	IV.A.5.b.	Implement bonytail integrated stocking plan.	FWS/CDOW	Ongoing	X	X	X	X	X	X	
	IV.A.5.c.	Evaluate stocking success as identified in monitoring plan for stocked fish.	Program	Ongoing	X	X	X	X	X	X	
	IV.A.6.	Develop integrated stocking plan for the four endangered fish in the Colorado River in Utah.									
	IV.A.6.a.	Prepare plan.	UDWR	Complete	Nesler et al. 2003.						
	IV.A.6.b.	Program acceptance.	UDWR	Complete	Nesler et al. 2003.						
>	IV.A.6.c.	Implement plan.	UDWR	Ongoing	X	X	X	X	X	X	
	IV.A.6.d.	Evaluate stocking success as identified in monitoring plan for stocked fish.	LFL/FWS/ STATES	Ongoing	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.	Conduct research to acquire life history information and enhance scientific techniques required to complete recovery actions.									
	V.A.1.	Determine Colorado pikeminnow larval drift into Lake Powell.	NPS	Complete	Muth and Wick 1996, 1997.						
	V.B.	Monitor populations per requirements in the 15-Mile Reach PBO.									
	V.B.1.	Determine initial baselines and indices for Colorado pikeminnow and humpback chub.	PD	Complete	Appendix to biological opinion (USFWS 1999a) and recovery goals (USFWS 2002a, 2002c).						
	V.B.1.a.	Evaluate population response, per 15-Mile Reach PBO (every 5 years beginning in FY 05).	FWS	Ongoing	X	X	X	X	X	X	
	V.B.2.	Determine initial baselines and indices for razorback sucker and bonytail.	PD	Complete	See recovery goals, USFWS 2002b, 2002d.						
	V.B.2.a.	Evaluate population response, per 15-Mile Reach PBO (every 5 years beginning in FY 05).	FWS	Ongoing	X	X	X	X	X	X	
	V.B.3.	Revise population indices to conform to recovery goals.	FWS	Complete	2003 PBO evaluation (in concert with 2003 RIPRAP assessment).						
	V.B.4.	Monitor incidental take.									

COLORADO RIVER ACTION PLAN: MAINSTEM

		ACTIVITY	WHO	STATUS	FY 09 10/08 9/09	FY 10 10/09 9/10	FY 11 10/10 9/11	FY 12 10/11 9/12	FY 13 10/12 9/13	OUT-YEARS	Assessment of significant accomplishments (!) and shortcomings (X), (Focused on March 1, 2008 - February 1, 2009)
	V.B.4.a.	Develop plan to monitor incidental take of endangered fishes in diversion structures.	FWS	Complete	"Plan" completed in that fish are being retrieved from canals until the canals are screened and screens are fully functional (anticipated in FY 05). Screens will prevent entrainment of adult, subadult, and juvenile fish (preventing entrainment of adult and subadult fish required is by recovery goals) because they are 3/32 mesh.						
	V.B.4.b.	Implement plan to monitor incidental take of endangered fish in diversion structures.	FWS	Ongoing	X						Fish salvage conducted in canals when screens not operated.
	V.C.	Estimate humpback chub populations. (Sampling occurs in September and October, overlapping fiscal years.)									
	V.C.1.	Black Rocks. See McAda 2002.	FWS	Ongoing			X	X		X	
	V.C.2.	Westwater. See Hudson and Jackson 2003.	UDWR	Ongoing			X	X		X	
	V.C.3.	Cataract Canyon	UDWR/Valdez	Ongoing			X	X		X	
	V.D.	Estimate pikeminnow populations in the upper Colorado River (including Gunnison River). Three years sampling (e.g., FY 03, 04, 05) followed by two years no sampling; data analysis and report write-up in first year of no sampling (e.g., FY 06).	FWS	Ongoing	X	X			X	X	! Estimated average abundance of adult Colorado pikeminnows in the upper Colorado River system increased from 440 in 1992 to 890 in 2005; final report in review.. Fish movement information in this report supports the metapopulation concept for Colorado pikeminnow identified in the Recovery Goals.

Water Year 2008 Coordinated Reservoir Operations

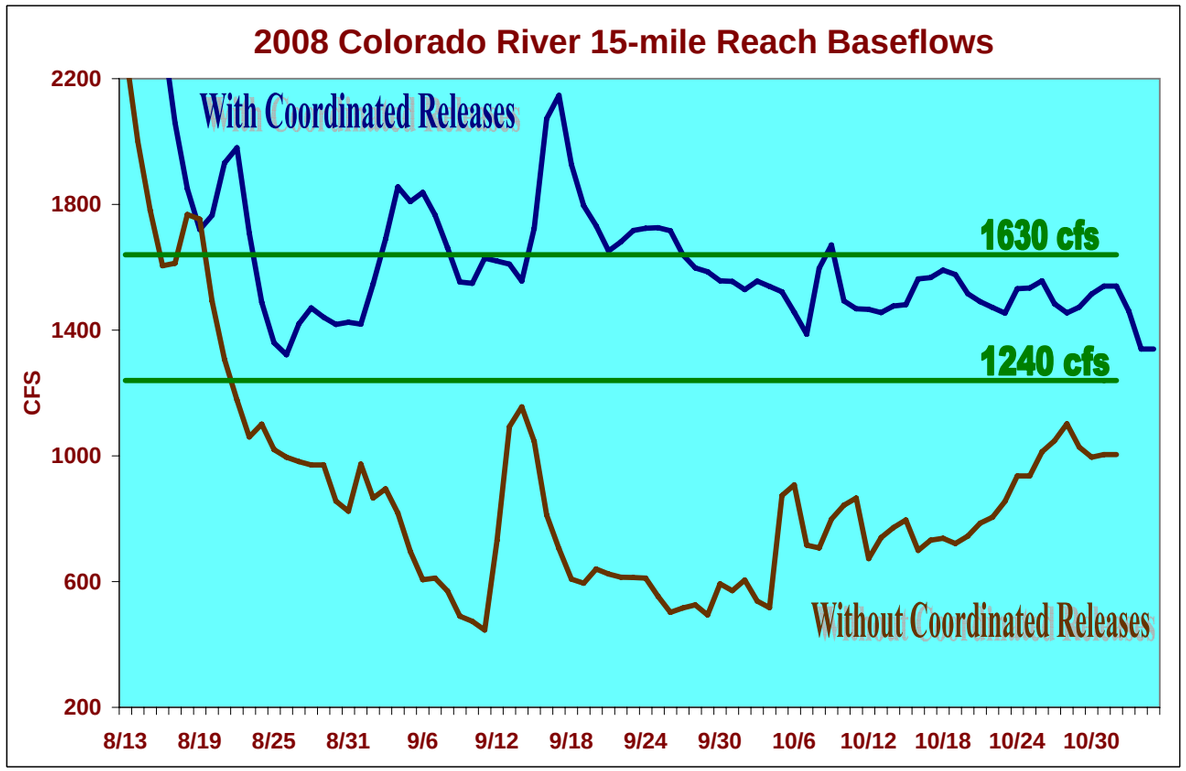
	1997	1998	1999	2006	2008
Green Mou	3,568	12,482	11,010	6,788	2,101
Ruedi	693	5,106	3,602	6,297	4,848
Williams F	946	1,672	1,543	6,625	
Granby			8,515		
Willow Creek			6,631		
Wolford	10,635	4,431	8,555	9,007	
Total Ac	**15,841**	**23,691**	**31,301**	**28,717**	**6,949**

Water Year 2008 Historic Users Pools

SOURCE	2000	2001	2002	2003	2004	2005	2006	2007	2008	FWS Agreed Volume	Discretionary water for Shoshone
Ruedi Reservoir	20,296	20,825	15,825	20,825	13,825	17,163	18,284	14,273	20,423	**20,825**	
Wolford Mountain Reservoir	11,412	8,490	0	0	0	1,000	9,580	4,339	10,431	**9,732**	**699**
Williams Fork Reservoir	3,857	4,871	3,788	3,757	3,788	3,814	4,871	2,523	10,377	**8,112**	**2,265**
Green Mtn. Reservoir (incl. Grand Valley Water Manage	10,000	33,578	0	47,526	0	31,200	22,822	32,749	73,024	**66,000**	**7,024**
TOTALS	**45,565**	**68,305**	**19,613**	**72,108**	**17,640**	**53,177**	**55,477**	**53,884**	**114,255**	**104,669**	**9,988**

1990 - 2008 WY
Avr Annual CFS
Colorado R. at Cameo
Percentage for 75 yrs

2002	1751	1%
2004	2266	7%
1990	2269	8%
1992	2571	13%
2003	2652	17%
2001	2679	19%
1994	2860	24%
1991	3003	28%
2000	3212	32%
2007	3223	33%
2005	3544	43%
2006	3628	52%
1999	3821	56%
1998	4229	69%
1993	4667	80%
1996	4772	81%
2008	4800	83%
1995	5312	88%
1997	5738	93%


2008 Colorado River 15-mile Reach Baseflows
With Coordinated Releases
1630 cfs
1240 cfs
Without Coordinated Releases
CFS
2200
1800
1400
1000
600
200
8/13
8/19
8/25
8/31
9/6
9/12
9/18
9/24
9/30
10/6
10/12
10/18
10/24
10/30

COLORADO RIVER ACTION PLAN: GUNNISON RIVER

		ACTIVITY	WHO	STATUS	FY 09 10/08 9/09	FY 10 10/09 9/10	FY 11 10/10 9/11	FY 12 10/11 9/12	FY 13 10/12 9/13	OUT-YEARS	Assessment of significant accomplishments (!) and shortcomings (X), (Focused on March 1, 2008 - February 1, 2009)
	I.	**PROVIDE AND PROTECT INSTREAM FLOWS (HABITAT MANAGEMENT)**									
	I.A.	Identify fish habitat and flow needs.									
	I.A.1.	Initially identify year-round flows needed for recovery (Flow recommendations will be provided upon completion of Aspinall Unit studies.)									
	I.A.1.a.	Complete draft technical synthesis report.	FWS	Complete	McAda 2000.						
	I.A.1.b.	Complete draft biological assessment.	BR	Complete							
	I.A.1.c.	Complete final technical synthesis report.	FWS	Complete	McAda 2003.						
	I.A.1.d.	Complete final biological assessment.	BR	Complete							! Programmatic biological assessment completed December 23, 2008 and submitted to FWS January 15, 2009.
	I.A.1.e.	Complete draft NEPA document .	BR	Pending							! Draft EIS completed February 15, 2009.
		Complete final NEPA document.	BR	Pending							
	I.A.1.h.	Complete ESA Section 7 consultation resulting in a programmatic biological opinion (PBO) for the Gunnison Basin.	FWS/BR/WAPA	Pending							
	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	Complete	Complete with acceptance of McAda 2003.						
	I.B.2.	Assess legal and physical availability of water.	CWCB	Complete	Colorado completed work on a water availability study in early 1995 & the work was used as the basis for developing depletion schedules for the Colorado River.						
	I.B.3.	Assess impacts of depletions on Colorado's Compact allocations.	CWCB	Complete	Colorado completed work on a water availability study in early 1995 & the work was used as the basis for developing depletion schedules for the Colorado River.						
	I.B.4.	CWCB notice of intent to appropriate (in Colorado).	CWCB	On hold							
	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	On hold							
	I.C.2.	Appropriate (flow recommendations will be provided upon completion of Aspinall Unit studies.)									
	I.C.2.a.	CWCB approval to appropriate.	CWCB	On hold							
>*	I.C.2.b.	Colorado Attorney General's Office file date.	CWCB	On hold							
>*	I.C.2.c.	Water court adjudication (litigation dependent).	CWCB	On hold							
	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	Through 01							
	I.C.3.b.	Flows from Aspinall Unit for research studies.									
>*	I.C.3.b.(1)	Deliver flows.	BR	Complete							
>*	I.C.3.b.(2)	Protect research flows.	FWS/BR/ CWCB	Complete	An interim contact is in place between Reclamation, Service & CWCB. Long term legal protection of Gunnison River flows will occur after completion of Aspinall biological opinion (BR 04/95-FY96).						
>*	I.C.3.c.	Continue annual coordination (meeting 3 times/year) of Aspinall operation until biological opinion complete.	BR	Ongoing	X						
	I.C.3.d.	Flows from Paonia Reservoir in accordance with FWS Horsethief Biological Opinion.									
>*	I.C.3.d.(1)	Deliver flows.	BR	Ongoing	X	X	X	X	X	X	
	I.C.3.e.	Flows from Aspinall Unit pursuant to Aspinall Biological Opinion and record of decision..									
	I.C.3.e.(1)	Determine if change in water right and/or contract is needed.	BR	Pending							
	I.C.3.e.(2)	Enter into contract if needed.	BR	Pending							
>*	I.C.3.e.(3)	Deliver flows.	BR	Pending							
	I.C.3.e.(3)(a)	Study Gunnison River return flows to determine consumptive use to be charged against flow deliveries.	USGS	Complete	Kuhn and Williams 2004.						
	I.D.	Evaluate and revise as needed flow regimes to benefit endangered fish populations.	FWS/Program	Ongoing	X	X	X	X	X	X	Data Series 409: Summary of Fluvial Sediment Collected at Selected Sites on the Gunnison River in Colorado and the Green and Duchesne Rivers in Utah, Water Years 2005–2008. http://pubs.usgs.gov/ds/409/
	I.E.	Initiate investigations of the feasibility of modifying releases from Aspinall Unit dams to increase water temperatures that would allow for upstream expansion of Colorado pikeminnow in the Gunnison River.	BR/Contract	Complete	Boyer and Cutler 2004.						
	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	Burdick 1994.						

COLORADO RIVER ACTION PLAN: GUNNISON RIVER

		ACTIVITY	WHO	STATUS	FY 09 10/08 9/09	FY 10 10/09 9/10	FY 11 10/10 9/11	FY 12 10/11 9/12	FY 13 10/12 9/13	OUT-YEARS	Assessment of significant accomplishments (!) and shortcomings (X), (Focused on March 1, 2008 - February 1, 2009)
	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	Complete	Construction completed at Escalante State Wildlife Area (200 acres) in January 2001; Butch Craig's (Unaweep Charolais Ranch) (98.7) was completed October 2003. Levee removal completed and operation, maintenance and evaluation of sites incorporated into ColoradoRiver Subbasin Floodplain Management Plan (Valdez and Nelson 2004b) (IIA4).						
>*	II.A.2.b.	Construction (levee removal)	BR	Complete							
	II.A.2.c.	Operate and maintain.	BR/FWS	Complete							
	II.A.2.d.	Evaluation.	FWS	Complete							
	II.A.3.	Acquire interest in high-priority flooded bottomland habitats.									
	II.A.3.a.	Identify and evaluate sites.	FWS	Complete	Three sites acquired (198 acres total). Floodplain acquisition completed and operation, maintenance and evaluation of sites incorporated into Colorado River Subbasin Floodplain Management Plan (Valdez and Nelson 2004b) (IIA4).						
	II.A.3.b.	Pre-acquisition planning and identification of acquisition options.	PD	Complete							
	II.A.3.c.	Conduct appraisal/NEPA compliance.	PD	Complete							
>*	II.A.3.d.	Negotiate & acquire.	PD	Complete							
	II.A.3.e.	Evaluate effectiveness of land acquisition activities and provide recommendations.	PD	Complete							
>*	II.A.3.	Develop and implement Colorado River Subbasin Floodplain Management Plan (Valdez and Nelson 2004b).	Program	Ongoing	X	X	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	Burdick and Kaeding 1990.						
	II.B.1.b.	Implement viable options to restore fish passage.									
	II.B.1.b.(1)	Design passage, conduct NEPA compliance.	BR	Complete	1996 RR; Passage under construction as of 11/20/95, to be completed by 04/96 96status.ast						
>*	II.B.1.b.(2)	Construct fish ladder.	BR	Complete	Construction completed in June 1996 (Burdick 2001).						
>*	II.B.1.c.	Operate and maintain fish ladder.	FWS-FR/BR	Ongoing	X	X	X	X	X	X	Ladder not operated 5-6 weeks in May-June due to the need to conduct considerable on-site maintenance due to high flows and resulting sediment. 3,699 fish used the ladder in 2008; of those 2818 were native fishes, including one stocked razorback sucker. Twenty-five razorback sucker have used the ladder since summer 2001.
	II.B.1.d.	Monitor and evaluate success.	FWS-FR/BR	Complete	Burdick 2001.						
	II.B.1.e	Identify minimum flows below Redlands Diversion Dam.	FWS-FR	Complete	Burdick 1997.						
>*	II.B.1.f.	Deliver flows below Redlands.	BR	Ongoing	X	X	X	X	X	X	
	II.B.1.g.	Screen Redlands diversion structure to prevent endangered fish entrainment									
	II.B.1.g.(1)	Design.	BR	Complete	2003						
>*	II.B.1.g.(2)	Construct.	BR	Complete	August 2005.						
>*	II.B.1.h.	Operate and maintain fish screen.	Redlands	Ongoing	X	X	X	X	X	X	Full-time maintenance person hired to assure smooth operation.
	II.B.2.	Restore passage at Hartland.									
	II.B.2.a.	Assess and make recommendations for fish passage. (Passage at Hartland not identified as necessary for recovery in species' recovery goals).	FWS-FR	Complete	Burdick and Pfeifer 1996.						
	II.B.2.b.	Evaluate viable options to restore fish passage.	BR	Complete	Burdick and Pfeifer 1996. Tetra Tech 2000 (evaluated 3 design options for passage and 3 options for screens).						
	II.B.2.c.	Support local interests in efforts to pursue removal of the Hartland Diversion dam. [NOTE: These efforts will be conducted independently of and funded outside of the Recovery Program]	BR/FWS/PD	Ongoing							FWS suggested this as part of their stimulus package proposal; no confirmation yet, but FWS moving forward with design.
	II.B.2.d.	Screen Hartland diversion to prevent endangered fish entrainment, if warranted.									
	II.B.2.d.(1)	Assess need.	BR/FWS/PD	Complete							
	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.	Reclaim ponds in critical habitat	CDOW	Complete	Martinez 2004.						
	III.A.1.a.	Evaluate and make recommendations.	CDOW	Complete							
	III.A.2.	Develop basinwide aquatic management plan to reduce nonnative fish impacts while providing sportfishing opportunities.	CDOW	Complete	CDOW 2003b.						
>*	III.A.2.a.	Implement CDOW's Gunnison River Aquatic Management Plan.	CDOW	Ongoing	X	X	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.									
	IV.A.1.	Razorback sucker.									
	IV.A.1.a.	Develop experimental augmentation plan and seek Program acceptance.	FWS-FR	Complete	Burdick et al 1995.						
	IV.A.1.b.	Implement experimental augmentation plan. (Goal: 10 adults/river mile.)									
>	IV.A.1.b.(1)	Stock fish.	FWS-FR	Complete	Burdick 2003.						
	IV.A.1.b.(2)	Monitor and evaluate results; make recommendations regarding further augmentation	FWS-FR	Complete	Burdick 2003.						
	IV.A.2.	Develop integratedstocking plan for Colorado pikeminnow in the Gunnison River.									

COLORADO RIVER ACTION PLAN: GUNNISON RIVER

		ACTIVITY	WHO	STATUS	FY 09 10/08 9/09	FY 10 10/09 9/10	FY 11 10/10 9/11	FY 12 10/11 9/12	FY 13 10/12 9/13	OUT-YEARS	Assessment of significant accomplishments (!) and shortcomings (X), (Focused on March 1, 2008 - February 1, 2009)
	IV.A.2.a.	Program acceptance.		Complete	Nesler et al 2003.						
>	IV.A.2.b.	Implement Colorado pikeminnow integrated stocking plan.	CDOW/FWS	On hold							
	IV.A.2.c.	Evaluate stocking success as identified in monitoring plan for stocked fish.	FWS/CDOW	On hold							
	IV.A.3.	Develop integrated stocking plan for razorback sucker in the Gunnison River.									
	IV.A.3.a.	Program acceptance.		Complete	Nesler et al 2003.						
>	IV.A.3.b.	Implement razorback sucker integrated stocking plan.	CDOW/FWS	Ongoing	X	X	X	X	X	X	
	IV.A.3.c.	Evaluate stocking success as identified in monitoring plan for stocked fish.	LFL/FWS/STATE S/PD	Ongoing	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.	Conduct research to acquire life history information and enhance scientific techniques required to complete recovery actions.									
	V.A.1.	Conduct Colorado pikeminnow and razorback sucker inventory in Gunnison River above Redlands.	FWS-FR	Complete	Burdick 1995.						
	V.A.2.	Identify additional spawning sites of endangered fishes on the Gunnison River.	FWS-FR	Ongoing	X						
	V.A.3.	Conduct survey for endangered fish	FWS-FR	On hold							

COLORADO RIVER ACTION PLAN: DOLORES RIVER

		ACTIVITY	WHO	STATUS	FY 09 10/08 9/09	FY 10 10/09 9/10	FY 11 10/10 9/11	FY 12 10/11 9/12	FY 13 10/12 9/13	OUT-YEARS	Assessment of significant accomplishments (!) and shortcomings (X), (Focused on March 1, 2008 - February 1, 2009)
	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	McPhee Reservoir management plan was prepared by CDOW & accepted by the Service on 05/25/95.						
	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	McPhee Reservoir management plan was prepared by CDOW & accepted by the Service on 05/25/95.						
	V.	**MONITOR POPULATIONS AND HABITAT AND CONDUCT RESEARCH TO SUPPORT RECOVERY ACTIONS (RESEARCH, MONITORING, AND DATA MANAGEMENT)**									
	V.A.	Survey native and nonnative fish in Dolores River (UDWR funding outside of Program).	UDWR	Complete							

Recovery Actions in 15-Mile Reach PBO	RIPRAP Item #	Status	PBO Page #
Define Existing Depletions/Calculate New Depletions			
a). Develop consumptive use and losses report with CRDSS model to verify level of depletions.	Colorado: IA3b	CWCB completed depletion accounting report in 2008.	Apx. B, #6
b). Calculate new depletions as a 10-year moving average as determined by CWCB and reported to FWS & CRRIP every 5 years.	Colorado: IA3c	Reporting of depletions as a 10-year moving average begins in 2011.	7
Habitat Protection Element			
General Protection			
Enforcement Agreement between FWS and CWCB.	General: IC1	Completed in 1993.	8
Late Summer and Fall Base-Flow Period Augmentation		See also "Base Flow Aug" worksheet.	
a). Instream flow decree for 581 cfs in 15-mile reach during July, August, and September.	Colorado: IA4c1	Completed in 1997.	8
b). 300 cfs instream flow right for water accretions in 15-mile reach.	Colorado: IA4c2	Completed in 1997.	8
c). 5,000 acre-feet (af) annually + 5,000 af 4 out of 5 years from Ruedi.	Colorado: IA5a	Ongoing since 1989 (except second 5,000 af was not available in 2002).	8
d). 21,650 af/year split evenly between Ruedi and water users.	Colorado: IA5b,c,d	Ongoing since 1997. Ruedi long-term agreement for 10,825 af through 2012 signed in June 2003. 5,412.5 af from Williams Fork for east slope water users commitment and 5,412.5 af from Wolford for west slope water users commitment through 2010 (extendable for an additional 5 years). *Note: due to drought conditions, little water was available from Wolford in 2002-2004 (1,000 af was provided in 2005), and only 70% of the Williams Fork water was available in 2003-2004. The River District secured a 5,000 af contract for water from Ruedi as a backup to Wolford water (signed December 28, 2007).	8
e). After 2009, the water users must have agreements with the Service to provide a permanent source of the 10,825 af (divided equally between east and west slope).	Colorado: IA5e3	In January 2007, Colorado River water users initiated a study of water supply alternatives to provide a permanent source of water to replace the Ruedi 10,825 AF/year. After reviewing 25 alternatives, consensus was reached on the "Lake Granby-Ruedi" alternative. Agreements will be signed with the Service prior to December 2009 committing east slope and west slope water users to permanent sources of Ruedi replacement water, as required by the Colorado River programmatic biological opinion (agreements will identify temporary sources prior to 2012 and permanent sources from 2012 forward).	8-9
f). 6,000 af from Wolford.	Colorado: IA5h	Ongoing since 1996 (actual amount of water available each year is based on 10% of the storable inflow to Wolford, **up to** 6,000 af). 6,000 af provided in 2000; 3,078a f in 2001; 300 af in 2002; 286 af in 2003; 0 af in 2004 and 2005 (to allow the reservoir to recover from the 2002 drought), and 5,233 af in 2006; 0 af in 2007 and 3,189 af in 2008. See Wolford worksheet.	10
g). Grand Valley Water Management - 9,000 af to 15-mile reach through Palisade Pipeline and up to 19,400 af to surplus HUP pool in Green Mt. Reservoir.	Colorado: IA5l	Construction and automation of check structures and Palisade pipeline and Highline Lake pump station complete and operational. Water provided for fish from Green Mtn. Reservoir (including GVWM): 2000 - 10,000 af; 2001 - 33,578 af; 2002 - 0 af; 2003 - 47,526 af; 2004 - 0 af; 2005 - 31,200 af; 2006 - 22,822 af; 2007 - 32,749 af; 2008 - 73,024 af. The Municipal/Recreation contract for Green Mountain Reservoir water was originally signed in 2002 and renewed on 8/29/07 through 12/31/12.	10
Spring Peak Enhancement		See also "Peak Flow Aug" worksheet.	

Recovery Actions in 15-Mile Reach PBO	RIPRAP Item #	Status	PBO Page #
a). Coordinated Reservoir Operations - in all but extremely dry or wet years.	Colorado: IA5i2	Ongoing since 1997. Spring peak flows were augmented in 1997, 1998, ~~and~~ 1999, 2006 and 2008. Spring peak flows in 2000, 2001, 2002, and 2004 were below the 12,900 cfs threshold for implementing coordinated reservoir operations under CROS. Spring peak flows in 2003 and 2005 exceeded the 12,900 cfs threshold, but other CROS operating criteria were not met and therefore flows were not augmented. CROS implementation plan completed 2/28/06 in advance of 2006 runoff season. Snow pack in early 2006 was very good but fell off in March and April as drier conditions set in. Snow pack conditions were monitored closely and the coordinated reservoirs program was implemented in preparation of coordinated releases. Releases began in mid May and a total of 28,460 acre feet of water were released from upstream reservoirs. The releases added about 1,800 cfs to the peak and resulted a maximum peak of over 18,000 cfs. In 2008, a minimal spring release of ~6,900 af was made (larger releases were not possible due to flooding concerns). 2009 may be an excellent year for CROS; previously reported concerns about floodin	11
b). Coordinated Facilities Operations Program - provide up to 20,000 af.	Colorado: IA5m2	Phase II report & recommendations of the Executive Committee completed in 2003, but no additional water provided under CFOPS. Implementation linked to CROS (see above). With assistance of the State Engineer's Office, CWCB, and reservoir owners, FWS identifingreservoirs that could participate in CFOPS. The amount of water that could be released would depend on the size of an insurance pool that would be designated by FWS ~May 5 of each year from existing base flow environmental pools in Ruedi and the water users' 10,825 pool. In years where augmentation could be expanded through use of CFOPS, Service will review antecedent conditions, determine if additional augmentation is needed, and level of augmentation based on the size of the "insurance pool." The insurance pool reviews will take time; water not likely available in 2007. CFOPS put on hold to work on 10,825 (see item e under "Late Summer and Fall Base-Flow Period Augmentation," above); work will resume and is expected to be completed in 2010, but a specific schedule needs to be developed by October 1, 2009.	11
Habitat Development and Maintenance Element Floodplain Restoration and Selenium Remediation		Colorado subbasin floodplain management plan completed 3/06.	
a). Gardner Pond (29-5/8 Road Gravel Pit).	IIA1	Construction complete; currently being used as a growout pond. Restoration of this "Hot Spot Complex" on hold pending identification of suitable growout pond alternatives.	
b). Jarvis.	None	Construction complete; operation ongoing.	12
c). Adobe Creek.	IIA2	Construction for the research study complete, but no funding available through NIWQP to complete selenium remediation. The need to pursue restoration of this site for razorback sucker recovery may be revisited in the future.	13
d). Walter Walker.	IIA3	Construction complete; operation ongoing. More levee was removed in 2004. Habitat enhancements at the Audubon and Walter Walker sites were evaluated over a range of flows during 2006 spring runoff and performed well (i.e., as per design and construction).	13

Recovery Actions in 15-Mile Reach PBO	RIPRAP Item #	Status	PBO Page #
e). Land acquisition and levee removal.	IIA4&IIA5	PBO estimate of acquiring interest in up to 3,500 acres in the Grand Valley and along the Gunnison was quite high based on landowner response. Restoration more expensive than anticipated; few landowners willing to participate. Program acquired 592 acres of floodplain/wetland habitat in the upper Colorado River subbasin (393.5 acres along the Colorado River and 198.2 acres along the Gunnison River), and is working to best manage the floodplain currently available. Restoration completed at Butch Craig property & Escalante SWA on the Gunnison, and the Audubon property on the Colorado. Until it is determined that there is enough habitat to support a self-sustaining population of razorback sucker in the upper Colorado River subbasin, Program participants will continue to consider using additional Federal, State, and other parcels for this purpose when additional areas become accessible following restoration of passage at Price-Stubb.	13
Fish Passageways			
a). PBO states passage to be completed at Price-Stubb in 2000 (or 2002 if dam removal alternative selected).	Colorado: IIB2a3&4	Completed in April 2008.	13
b). GVIC fish passage.	Colorado: IIB1a3&4	Completed in 1998, but operated sporadically due to various problems. Obermeyer gate installed in 2006; has been open in 2007 and full operation is expected to continue.	13
c). Grand Valley Project (Government Highline) fish passage.	Colorado: IIB3a3	Completed in 2004 (construction was delayed due to regulatory and landowner issues and overall budget/construction priorities). Trial operations conducted in 2005 & 2006 and continued in 2006. Full operation began in 2008 (with completion of Price-Stubb passage). Passage operated continuously May 2 - Oct. 15, 2008; 10,788 fish used the passage, including 9,663 native fishes, one of which was a stocked razorback sucker.	13
Native Fish Stocking Element		See also "Stocking" worksheet	
Raising native fish in hatcheries and grow out ponds, and stocking them in the riverine habitat.	Colorado: IVA3, IVA4, IVA5	Ongoing. The integrated stocking plan for the Upper Colorado River Basin was completed in March 2003. Annual stocking targets for subadults in the upper Colorado River subbasin are being met. Under the 2003 integrated upper basin stocking plan (Nesler et al. 2003), 5,074 hatchery-produced subadult Colorado pikeminnow were stocked in 2003 and 2004 in unoccupied reaches above diversions.	14
Nonnative Fish Control Element			
Regulations and Agreements			
a). 1996 Nonnative Stocking Procedures.	General: IIIB3	Complete; revised in 2008 with signatures pending in April 2009.	15
b). 1999 Restriction of stocking of private ponds in Colorado.	General: IIIB4	Complete; report on evaluation of Colorado's nonnative fish stocking regulations completed in July 2004.	15
c). Bag limits removed for nonnative warm-water sportfishes in critical habitat in Colorado.	Colorado: IIIB2	Complete.	15
d). Close river reaches to angling where and when angling mortality determined to be significant to native fish.	General: IIIA2d	CDOW agreed to do when and where necessary (to date, not deemed necessary).	15
e). CDOW Colorado River fisheries management plan.	Colorado: IIIB4	December 2003 plan completed in 2005.	16
Removal Efforts			

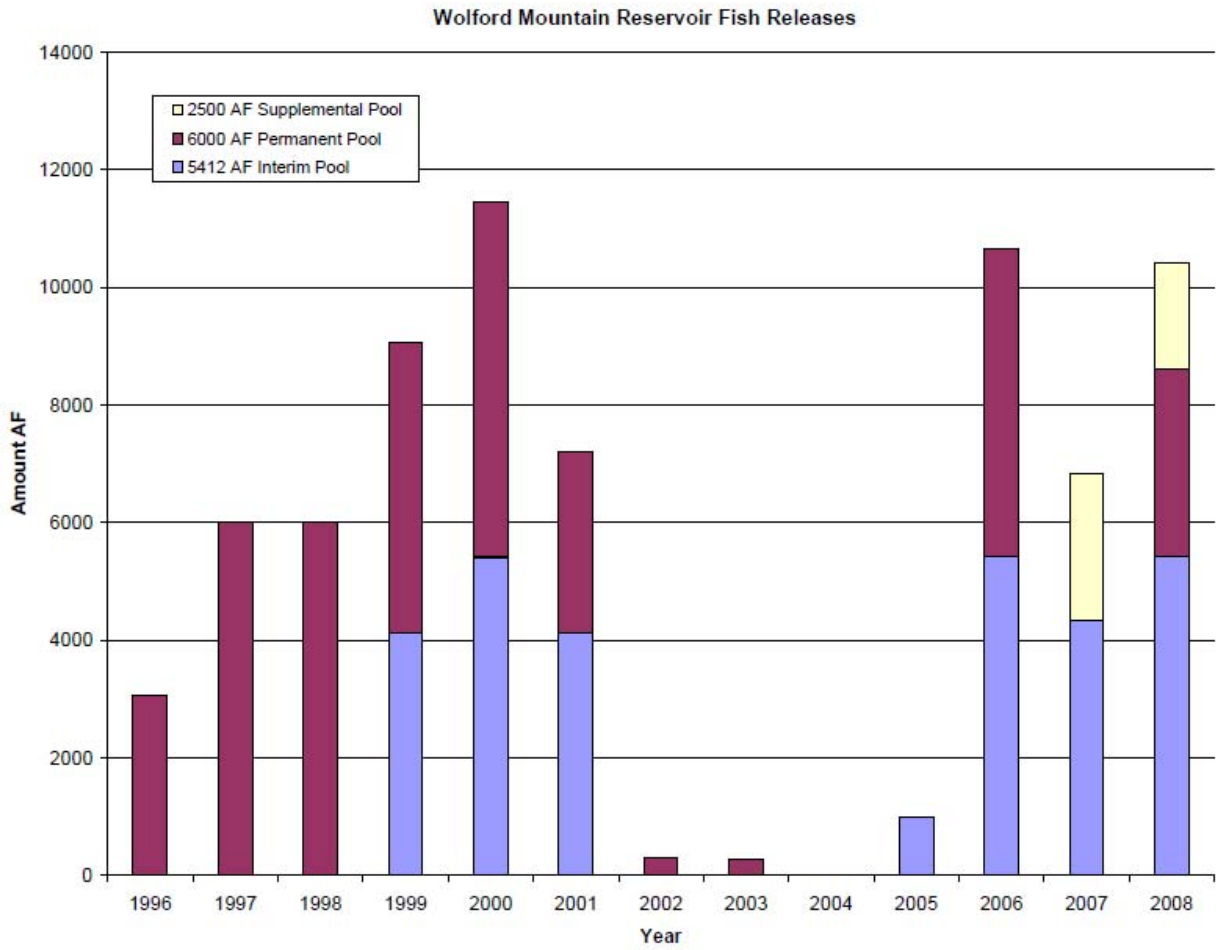
Recovery Actions in 15-Mile Reach PBO	RIPRAP Item #	Status	PBO Page #
a). Pond Reclamation.	Colorado: IIIA2	Pond reclamation accomplished, but proved ineffective. Research initiated to document sources of nonnative fish so Program can determine if they can be controlled at the source. Final report completed February 2004.	15
b). Removal of nonnative fishes from back waters.	Colorado: IIIA3	Pilot program to remove small cyprinids and centrarchids complete; techniques and level of effort produced some short-term depletions, but provided no solutions to long-term control. Final reports completed in 2002 and 2003. Preliminary results of research on sources of nonnative fish (which may provide another avenue of control) indicate most younger centrarchids (age-0 to age-3) were produced in main channel habitats, as opposed to having escaped from floodplain ponds. However, almost 50% of age-4+ centrarchids escaped from ponds, likely during years when higher flows connected the ponds with the river. Additional isotope studies to determine if basin reservoirs are sources of problematic nonnative fishes are being conducted through FY 11.	16
c). Management of nonnative fish populations	Colorado: IIIA5&6	Management of bass and other centrarchids in the Colorado River ongoing since 2004; management of channel catfish on hold pending development of effective management techniques. Centrarchid removal efforts were increased beginning in 2007; Smallmouth bass catch rates have been dropping since 2005; however catch rates for other centrarchids, including largemouth bass, have increased. Targeted control of smallmouth bass 2007 year-class continues.	16
Research, Monitoring, and Data Management Element			
a). Population estimates will be used to determine if Recovery Actions result in a positive population response.	Colorado: VB; VB3	Wild adult Colorado pikeminnow estimates ranged from ~440 in 1992 to ~890 in 2005 (next set of estimates '08-'10). Estimates of wild adult humpback chub in Black Rocks Canyon varied from ~800 in 1998, 900 in 1999, and 500 in 2000 and 2003 (next set of estimates '07-'08); estimates of wild adult humpback chub in Westwater Canyon ranged from ~4,700 in 1998 to 2,500 in 1999, 2000, and 2003 (next set of estimates '07-'08). Population estimates workshop held in August 2004. FWS needs to determine first reliable estimates to initiate tracking of population trends. Stocking of razorback sucker and bonytail continues; A draft report on survival estimates of stocked razorback sucker is in review and the evaluation is being extended to razorback sucker data collected from 2004 through 2008.	16
b). Recovery goal development. If population meets or exceeds recovery or Apx. D goals, it will be considered to exhibit a positive population response.	General: VIIA5d	Recovery goals complete. Revision underway.	16-17
Long-term Funding and Annual Appropriations.	General: VIIB	Complete and ongoing.	17
Recovery Agreements			
a). With consultations.	N/A	Ongoing	18
b). By water users controlling a majority of existing depletions above the Gunnison River.	N/A	Complete	18
Depletion Charges on New Depletions	N/A	Ongoing	19
Incidental Take			

Recovery Actions in 15-Mile Reach PBO	RIPRAP Item #	Status	PBO Page #
a). Develop plan to monitor incidental take of endangered fish in diversion structures.	Colorado: VB4a	"Plan" complete in that fish are retrieved from canals whenever canal sreens cannot be fully operated. 3/32" mesh screens on Grand Valley Project, and GVIC diversion dams prevent entrainment of adult, subadult, and juvenile fish (preventing entrainment of adult and subadult fish required is by recovery goals).	71
b). Estimate amount of incidental take of young razorback and pikeminnow in the 15-Mile Reach.	Colorado: VB4b	Service believes screening of diversion structures has resolved entrainment issues; anytime screens are not fully operationed, the Service conducts fall sampling in the canals to retrieve any endangered fish (and very few have been found under these circumstances).	71
Fish Screens (Reasonable & Prudent Measures)			
a). GVIC.	Colorado: IIB1b	Complete.	71
b). Grand Valley Project Gov't Highline.	Colorado: IIB3b	Complete.	71
Reinitiation			
a). Review RIPRAP implementation.	Colorado: IA6	This is it (begun in 2003 and done every 2 years thereafter).	p.74, c.

Water Year 2008 Historic Users Pools

SOURCE	2000	2001	2002	2003	2004	2005	2006	2007	2008
Ruedi	20,296	20,825	15,825	20,825	13,825	17,163	18,284	14,273	20,423
Wolford Mountain	11,412	8,490	0	0	0	1,000	9,580	4,339	10,431
Williams Fork	3,857	4,871	3,788	3,757	3,788	3,814	4,871	2,523	10,377
Green Mtn & Grand Valley Water Management	10,000	33,578	0	47,526	0	31,200	22,822	32,749	73,024
TOTALS	45,565	68,305	19,613	72,108	17,640	53,177	55,477	53,884	114,255

Wolford Fish Pools	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
5,412 Interim Pool (until 10,825)	0	0	0	4,133	5,409	4,133	0	0	0	1,000	5,412	4,339	5,412
6,000 Permanent Pool (West Slope Pool)	3,064	6,000	6,000	4,939	6,056	3,078	300	286	0	0	5,233	0	3,189
2,500 Supplemenal Pool (West Slope Pool)												2,500	1,829
Total Supplied	**3,064**	**6,000**	**6,000**	**9,072**	**11,465**	**7,210**	**300**	**286**	**0**	**1,000**	**10,645**	**6,839**	**10,430**



Water Year 2008 Coordinated Reservoir

Reservoirs	1997	1998	1999	2006	2008
Green Mtn	3,568	12,482	11,010	6,788	2,101
Ruedi	693	5,106	3,602	6,297	4,848
Williams Fork	946	1,672	1,543	6,625	
Granby			8,515		
Willow Creek			6,631		
Wolford	10,635	4,431	8,555	9,007	
Total Ac-Ft	15,841	23,691	31,301	28,717	6,949

Fish produced and stocked by facility in 2008

Facility	Species	Target	Stocked	Percent
Grand Valley	Razorback	14,895	16,729	112%
Ouray	Razorback	14,895	18,058	121%
Wahweap	Bonytail	10,660	10,729	101%
Mumma	Bonytail	5,330	8,144	153%

Razorback sucker stocked by River

Facility	River	Taget	Stocked	Percent
Grand Valley	Upper Colc	6,620	8,574	130%
	Gunnison	3,310	4,375	132%

Bonytail stocked by River

Facility	River	Taget	Stocked	Percent
Wahweap	Colorado	2,665	2,652	100%
Ouray	Colorado	2,665	3,244	122%