

# RECLAMATION

*Managing Water in the West*

## Record of Decision

### Operation of Flaming Gorge Dam

### Final Environmental Impact Statement

February, 2006

Approved

  
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Director, Upper Colorado Region

2-16-06  
Date

**Record of Decision**  
**Operation of Flaming Gorge Dam**  
**Final Environmental Impact Statement**

**I. Summary of Action and Background**

The Bureau of Reclamation (Reclamation) has completed a final environmental impact statement (EIS) on the operation of Flaming Gorge Dam. The EIS describes the potential effects of modifying the operation of Flaming Gorge Dam to assist in the recovery of four endangered fish, and their critical habitat, downstream from the dam. The four endangered fish species are Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), razorback sucker (*Xyrauchen texanus*), and bonytail (*Gila elegans*). Reclamation would implement the proposed action by modifying the operations of Flaming Gorge Dam, to the extent possible, to achieve the flows and temperatures recommended by participants of the Upper Colorado River Endangered Fish Recovery Program (Recovery Program). Reclamation's goal is to implement the proposed action and, at the same time, maintain and continue all authorized purposes of the Colorado River Storage Project.

The purpose of the proposed action is to operate Flaming Gorge Dam to protect and assist in recovery of the populations and designated critical habitat of the four endangered fishes, while maintaining all authorized purposes of the Flaming Gorge Unit of the Colorado River Storage Project (CRSP), including those related to the development of water resources in accordance with the Colorado River Compact.

As the Federal agency responsible for the operation of Flaming Gorge Dam, Reclamation was the lead agency in preparing the EIS. Eight cooperating agencies also participated in preparing this EIS: the Bureau of Indian Affairs (BIA), Bureau of Land Management, National Park Service, State of Utah Department of Natural Resources, U.S. Fish and Wildlife Service, United States Department of Agriculture Forest Service, Utah Associated Municipal Power Systems, and Western Area Power Administration (Western).

The EIS was prepared pursuant to the National Environmental Policy Act of 1969 (NEPA), as amended; the Council on Environmental Quality's (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500-1508); the Department of the Interior's NEPA Implementing Procedures (516 DM 1-15); and Reclamation's NEPA Handbook.

Flaming Gorge Dam, located on the Green River in northeastern Utah about 200 miles east of Salt Lake City, is an authorized storage unit of the CRSP. Flaming Gorge Dam was completed in 1962 and full operation of the dam and reservoir began in 1967. The powerplant, located at the base of the dam, began commercial operation in 1963 and was

completed in 1964. Reclamation operates the dam and powerplant and Western markets the power.

The EIS describes and analyzes the potential effects of two alternatives. Under the No Action Alternative, operations under the conditions imposed by the 1992 Biological Opinion would continue. Under the Action Alternative, operations would be in accordance with the flow and temperature regimes described in the *Flow and Temperature Recommendations for Endangered Fish in the Green River Downstream of Flaming Gorge Dam* (2000 Flow and Temperature Recommendations) which were designed, developed, and published by the Upper Colorado River Endangered Fish Recovery Program (Recovery Program).

## **II. Reclamation's Decision**

It is the decision of the Bureau of Reclamation (Reclamation) to select the Action Alternative as presented in the Operation of Flaming Gorge Dam Final Environmental Impact Statement (EIS) issued on November 15, 2005. In making this decision, Reclamation has reviewed the alternatives and their predicted environmental, economic, and social impacts, and considered the comments submitted by the interested public. This decision includes the potential for refinement of the flow and temperature recommendations if relevant new information gained through adaptive management supports that possibility.

## **III. Alternatives Considered in the Final EIS**

**No Action Alternative** – Under the No Action Alternative, Flaming Gorge Dam would be operated to achieve the flow and temperature regimes recommended in the 1992 Biological Opinion. These flows were intended to mimic a more natural hydrograph than occurred under previous dam operations and to protect nursery habitats of endangered fishes downstream from the Green and Yampa River confluence.

Under normal operations, reservoir releases through Flaming Gorge Powerplant range from 800 to 4,600 cfs. These flows adhere to the interim operating criteria for Flaming Gorge Dam established by Reclamation in September 1974. Under these criteria, Reclamation agreed to provide (1) a minimum flow of 400 cfs at all times, (2) flows of 800 cfs under normal conditions and for the foreseeable future, and (3) flows exceeding 800 cfs when compatible with multipurpose operations of all CRSP reservoirs.

Temperature requirements under the No Action Alternative, specified in the Reasonable and Prudent Alternative of the 1992 Biological Opinion (page 30), include the following:

*Releases from Flaming Gorge beginning July 1 and continuing until November 1 should be of the warmest water available, approaching 59 degrees F (15 degrees C) (highest lake levels). By releasing the warmest water available during this period, water temperatures in the upper Green River should not differ more than 9 degrees F (5 degrees C) in the Yampa River at Echo Park and should average*

*near 72-77 degrees F (22-25 degrees C) in Gray Canyon from July 1 to August 15.*

**Action Alternative** – Under the Action Alternative, releases from Flaming Gorge Dam would be patterned so that the peak flows, durations, and base flows and temperatures, described in the 2000 Flow and Temperature Recommendations for Reaches 1, 2, and 3 of the Green River, would be achieved to the extent possible.

- Reach 1 begins at Flaming Gorge Dam and extends 65 river miles to the confluence of the Green and Yampa Rivers. In this reach, the Green River extends 25 miles to the Colorado border and meanders about 10 river miles into northwestern Colorado and then flows southward for about 30 river miles. This reach is almost entirely regulated by releases from Flaming Gorge Dam.
- Reach 2 begins at the confluence of the Green and Yampa Rivers in Colorado and extends 99 river miles southwest to the White River confluence near Ouray, Uintah County, Utah. In this reach, tributary flows from the Yampa River combine with releases from Flaming Gorge Dam to provide a less regulated flow regime than in Reach 1.
- Reach 3 begins at the confluence of the Green and White Rivers and extends 246 river miles south to the confluence of the Green and Colorado Rivers in Canyonlands National Park at the boundary of Wayne and San Juan Counties in southeastern Utah. In this reach, the Green River is further influenced by tributary flows from the White, Duchesne, Price, and San Rafael Rivers.

Table 2 on page 25 of the EIS shows a summary of the recommended spring peak and summer-to-winter base flows from the 2000 Flow and Temperature Recommendations report for all three reaches of the Green River. Under the Action Alternative, Flaming Gorge Dam would be operated with the goal of achieving the 2000 Flow and Temperature Recommendations, while maintaining and continuing all authorized purposes of Flaming Gorge Dam and Reservoir.

The 2000 Flow and Temperature Recommendations for each reach are not integrated in such a way that a particular release from Flaming Gorge Dam could equally achieve the recommendations for all reaches simultaneously. The intent of the Action Alternative is first to meet the 2000 Flow and Temperature Recommendations for Reach 2 by timing releases to supplement the larger Yampa River spring peak flows and then, if necessary, make adjustments to releases so that the 2000 Flow and Temperature Recommendations for Reach 1 could also be met. The Flaming Gorge Model assumes that the 2000 Flow and Temperature objectives in Reach 3 are met whenever the flow objectives are met in Reach 2.

The 2000 Flow and Temperature Recommendations focus primarily on the flow regimes in Reaches 2 and 3, which include flows from the Yampa River. However, since these river flow criteria are based solely on upper Green River hydrology, the 2000 Flow and Temperature Recommendations in Reaches 1 and 2 would most likely be achieved to varying degrees. For example, in years when the upper Green River Basin is wetter than the Yampa River Basin, meeting the 2000 Flow and Temperature Recommendations in

Reaches 2 and 3 would most likely exceed the minimum target for the peak flow recommendations for Reach 1.

Conversely, if the Yampa River Basin is wetter than the upper Green River Basin, meeting the 2000 Flow and Temperature Recommendations for Reaches 2 and 3 could result in falling short of the peak flow target for Reach 1. Under this scenario, the Action Alternative might require Flaming Gorge Dam releases to be increased so that the 2000 Flow and Temperature Recommendations in Reach 1 could also be met. Flows in Reaches 2 and 3 would then exceed their respective minimum 2000 Flow and Temperature Recommendations. Since only one release pattern can be selected each year, depending upon how water is distributed between the upper Green River and Yampa River Basins, each reach would achieve or exceed its respective minimum 2000 Flow and Temperature Recommendations to varying degrees.

Each year, Reclamation would work closely with the U.S. Fish and Wildlife Service and Western in developing a flow regime consistent with the 2000 Flow and Temperature Recommendations and CRSP purposes and would also consider input from the Flaming Gorge Working Group meetings. The overall effectiveness of implementing the Action Alternative would be measured by the long-term frequency of achieving flow thresholds described in the 2000 Flow and Temperature Recommendations. Consideration would be given to hydrologic conditions, operational limitations, past operational conditions, and the overall health of the endangered fish downstream from the dam. An administrative record of the operational decisionmaking would be maintained and available to the public. This record would include analysis of previous operations and the effectiveness of achieving desired targets on a year-by-year basis.

Water release temperatures at the dam would be regulated with the objective of achieving target temperatures for upper Lodore Canyon and the confluence of the Yampa and Green Rivers during the first 2 to 5 weeks of the base flow period and/or when Colorado pikeminnow larvae are present at this confluence.

Normal powerplant operations would continue to be adjusted on a daily basis to meet power system needs. Normal dam and powerplant operations would be altered temporarily to respond to emergencies. These emergencies may be associated with dam safety, power system conditions, or personal safety of individuals or groups associated with recreation or other activities on the river.

#### **IV. Environmentally Preferable Alternative**

The analyses in the EIS show the Action Alternative to be the environmentally preferable alternative. In comparison to the No Action Alternative, the Action Alternative is predicted to have a greater benefit for the four endangered fish species as well as the riverine community and riparian corridor which have declined in overall health and condition since the construction of Flaming Gorge Dam. In addition, fish communities in Flaming Gorge Reservoir, particularly kokanee salmon, are predicted to benefit from a decrease in reservoir fluctuations.

## V. Basis For Decision

The Action Alternative is selected for implementation because it best meets purpose and need, is the environmentally preferable alternative, and when compared to the No Action Alternative, does not result in unacceptable adverse impacts.

The following paragraphs describe the Department of the Interior's basis and authority for this decision and clarify language in the final EIS, particularly Section 1.4.1.1. The authority to implement an operations regime that is consistent with the 2000 Flow and Temperature Recommendations is found in section 1 of CRSPA. This section states:

*In order to initiate the comprehensive development of the water resources of the Upper Colorado River Basin, for the purposes, among others, of regulating the flow of the Colorado River, storing water for beneficial consumptive use, making it possible for states of the Upper Basin to utilize, consistently with the provisions of the Colorado River Compact, the apportionments made to and among them in the Colorado River Compact and the Upper Colorado River Basin Compact, respectively, providing for the Reclamation of arid and semi-arid land, for the control of floods and for the generation of hydroelectric power, as an incident to the foregoing purposes, the Secretary of the Interior is hereby authorized (1) to construct, operate, and maintain the following initial units of the Colorado River storage project, consisting of dams, reservoirs, powerplants, transmission facilities and appurtenant works [including] Flaming Gorge. . .*

The Colorado River Compact of 1922 established an upper basin and a lower basin within the Colorado River system and apportioned the exclusive beneficial consumptive use of Colorado River water in perpetuity to the Upper and Lower Basins. The Upper Colorado River Basin Compact of 1948 apportioned the Upper Basin's share of the Colorado River system among the states of Colorado, Utah, Arizona, Wyoming and New Mexico. CRSPA was enacted in 1956 to facilitate the development of the water and power resources of the Upper Basin consistent with the Compacts.

The Upper Colorado River Endangered Fish Recovery Program (Recovery Program) was developed in response to the request of Colorado, Wyoming, and Utah to facilitate the continued development of their Compact apportionments in light of Endangered Species Act concerns. The goal of the Recovery Program, therefore, is to recover the listed species of the Upper Colorado River to the point of de-listing, while allowing for the continued operation and development of the water resources of the Upper Colorado River Basin. All Recovery Program participants have signaled their agreement with the principles and goals of the Recovery Program through their participation and support in Recovery Program activities.<sup>1</sup> In addition to its recovery objectives, the Recovery program also includes an ESA Section 7 agreement, wherein program actions and

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<sup>1</sup> Final Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin, U.S. Fish and Wildlife Service, Sept. 29, 1989, pp. 1-1 and January 1988 Cooperative Agreement for the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin, including 2001 extension through Sept. 30, 2013.

sufficient progress toward recovery constitute a Reasonable and Prudent Alternative for those existing and future water depletion activities that may jeopardize the continued existence of endangered species or cause the destruction or adverse modification of critical habitat of those species.

Implementation of the Recovery Program's 2000 Flow and Temperature Recommendations, in concert with other Recovery Program actions, is intended to avoid jeopardy and assist in recovery. By implementing the 2000 Flow and Temperature Recommendations, Reclamation is taking the steps necessary to avoid jeopardizing the continued existence of the endangered species from the operation of Flaming Gorge Dam and to voluntarily and cooperatively take steps to facilitate recovery of the fish, which, in turn, will support the continued and further utilization of the Federal facilities to aid in the development of the states' Compact apportionments. Thus, consistent with the authorized purposes of CRSPA, implementation of the 2000 Flow and Temperature Recommendations supports the States of the Upper Basin in the utilization of their Compact apportionment while assisting in the recovery of endangered species. Moreover, that specific authorized purposes of the Unit may not be fully maximized for limited durations in certain year types does not invalidate the actions of the Secretary, as long as the overall purposes of CRSPA are met. And we expect in this instance, these purposes will be met.

This action is limited to the proposition that avoiding jeopardy and making progress toward recovery of listed fish facilitate the ability of the Upper Basin states to continue utilizing and further develop their Colorado River apportionments. It is not a decision that reads CRSPA as generally authorizing the release of water for fish and wildlife purposes. In these particular and unique circumstances, therefore, we conclude the implementation of an operations regime that is consistent with the 2000 Flow and Temperature Recommendations is deemed to be within the authorization contained in section 1 of CRSPA. Reference to the 1968 Colorado River Basin Project Act language in Section 1.4.1.1 of the final EIS neither claims nor provides authority in implementing the proposed action, but is included to inform the public that consideration of fish and wildlife purposes is required under the Criteria for Coordinated Long-Range Operation of Colorado River Reservoirs.

The EIS shows that the negative effects of the Action Alternative are minimal and insignificant and that there is considerable potential to further reduce undesirable effects through adaptive management. In particular, the hydrology analysis shows that the greatest potential for negative effects to several resources, including land use, recreation, mosquito control, and power generation are associated with one particular flow recommendation, specifically a spring peak release of at least 18,600 cubic feet per second (cfs) in Reach 2 for two weeks or more in at least one of four average hydrological years. Reclamation recognizes that the 2000 Flow and Temperature Recommendations represent the best available science and affirms its intent to meet those recommendations to the extent possible. At the same time, because of the potential economic effects of powerplant bypasses, Reclamation intends to work through the Upper Colorado Endangered Fish Recovery Program, along with the cooperating

agencies on the EIS and the interested public, to assess the possibility of improving connectivity of floodplain habitats, identifying ways to improve entrainment of larval razorback suckers into floodplain habitats, maintain the river channel, restore natural variability of the river system, and meet other goals of the Flow and Temperature Recommendations at lower peak flow levels where feasible. Such additional knowledge gained through the adaptive management process may result in future refinement of the 2000 Flow and Temperature Recommendations that would maintain or improve conditions for the four endangered fish species while minimizing negative effects to the authorized purposes of Flaming Gorge Dam.

## **VI. Summary of Comments Received on the Final EIS**

Reclamation has received 17 comment letters since the final EIS was published. Several of these letters were received after the 30-day waiting period ended on December 27, 2005, but were nevertheless reviewed prior to finalizing the Record of Decision. No new issues were raised that would require further analysis in the EIS.

This Record of Decision has been edited for clarity in response to comments received on the final EIS. Conflicting opinions were expressed on the authority to implement the proposed action, as well as on the purpose of the technical working group.

Concern was expressed that a technical working group, as recommended by the 2000 Flow and Temperature Recommendations, might be duplicative of the efforts of the already established Flaming Gorge Working Group and Recovery Program. The purpose of a technical working group would be limited to proposing specific flow and temperature targets for each year's operations. This is the informal process that has historically occurred to propose dam operations each year during spring peak and base flow seasons. Reclamation, Western, and the U.S. Fish and Wildlife Service are specified as participants in this group because they are the three agencies involved in compliance with the Endangered Species Act. The Flaming Gorge Working Group remains the appropriate forum for addressing public input, other resource concerns or research flows. The Recovery Program remains the appropriate forum for discussion of endangered fish response to Flaming Gorge Dam operations and for identification of endangered fish research needs. The environmental commitments listed below clarify Reclamation's intentions in establishing this process.

## **VII. Environmental Commitments**

(1) The Flaming Gorge Working Group, which meets two times per year, will continue to function as a means of providing information to and gathering input from stakeholders and interested parties on dam operations.

(2) The adaptive management process will rely on ongoing or added Recovery Program activities for monitoring and studies to test the outcomes of modifying the flows and release temperatures from Flaming Gorge Dam. It will rely on the Flaming Gorge Working Group meetings for exchange of information with the public.



(3) Reclamation will develop a process for operating the selective withdrawal structure consistent with the objective of improving temperature conditions for the endangered native fish. This process will include identification of lines of communication for planning and making changes to selective withdrawal release levels, coordination with other agencies, recognition of equipment limitations that may affect the ability to release warmer water, and the costs and equipment impacts associated with operating at higher temperatures.

(4) Reclamation will continue to annually coordinate the peak flow releases from Flaming Gorge Dam with the appropriate Federal, State, and county officials. This will include continued communication with county officials to assist in their mosquito control activities.

(5) As recommended by the Wyoming State Historic Preservation Office, Reclamation will periodically inspect eligible historic properties around Flaming Gorge Reservoir to determine whether there are any effects from the Action Alternative.

(6) Reclamation will consult with Federal, State, and local officials and the interested public to determine whether additional signage or other means of public notification of higher spring river flows are needed.

(7) A Ute ladies'-tresses recovery team geomorphology working group, consisting of the National Park Service, Reclamation, and several independent researchers, is currently in place. As part of Reclamation's efforts to monitor and understand the effects of the proposed action on Ute ladies'-tresses this group will be expanded to include interested Federal and State agency geomorphologists, riparian ecologists, and botanists who choose to participate on a voluntary basis. This group could assist in designing and implementing a monitoring program to gain additional knowledge about Ute ladies'-tresses. Reclamation will oversee the Ute ladies'-tresses working group and insure that the working group meets regularly to discuss and prioritize monitoring, assist with data interpretation, and prioritize any needed research. When appropriate, this working group will also provide recommendations to the technical working group discussed in item 10 below.

(8) Reclamation will continue to participate in the Recovery Program efforts.

(9) Reclamation will support the Recovery Program, in coordination with the U.S. Fish and Wildlife Service and Western, in developing and conducting Recovery Program studies associated with flood plain inundation. Such studies would include improving connectivity of floodplain habitats, identifying ways to improve entrainment of larval razorback suckers into floodplain habitats, maintain the river channel, restore natural variability of the river system, and analyze possibilities for meeting the goals of the Flow and Temperature Recommendations at lower peak flow levels where feasible.

(10) In coordination with the Recovery Program, a technical working group, consisting of biologists and hydrologists from Reclamation, Western and FWS, will annually propose an initial flow regime to the existing Flaming Gorge Working Group. This process will concurrently fulfill informal consultation and coordination requirements of ESA for the action agencies. The Flaming Gorge Working Group will then provide comments and input on the proposed flows relative to all resource concerns. Reclamation will then make a determination on how to incorporate the additional information into the annual operational plan.

(11) As agreed during consultation in 2004, Reclamation will notify the Ute Indian Tribe of the Uintah and Ouray Reservation and BIA annually of the onset of high spring flows.

### **VIII. Implementation**

Implementation of the Action Alternative will begin with the spring 2006 runoff season. The process for implementation of the Action Alternative is described in Section 2.5.3 of the EIS (page 31) and Section 4.20 of the EIS (page 251). The administrative record referenced in Section 2.5.3 of the EIS and on page 4 above will include an annual report to document the technical working group's recommendations and discussions, Reclamation's target flow regimes on a season by season basis, analysis of previous operations as related to recommendations and targets, as well as a long term analysis of the frequency of achieving the flow thresholds described in the 2000 Flow and Temperature Recommendations.

In order to provide for proper implementation, the technical working group should meet not later than 30 days after signature of this Record of Decision in order to develop the recommended spring peak and base flow and temperature targets. To facilitate proper consultation and coordination within the context of the adaptive management process, preliminary recommendations should be shared with the Flaming Gorge Working Group at least one month prior to its next scheduled meeting on April 13, 2006. It must be recognized that due to the uncertain nature of forecasting, a preliminary recommendation may be subject to drastic revision based upon forecast changes. To prepare for such suggested changes, the technical working group should give consideration to providing for more than one target recommendation, with each recommendation linked to a possible or predicted hydrology scenario.