Volume III

COMMENTS AND RESPONSES

I. Introduction

Chronology

The Draft Environmental Impact Statement (DEIS) for Navajo Reservoir Operations was filed with the Environmental Protection Agency (EPA) and made available to the public September 3, 2002. A DEIS summary was also distributed to individuals and organizations by the Bureau of Reclamation (Reclamation).

The public comment period on the DEIS opened September 3, 2002, and was scheduled to close November 4, 2002. The public comment period was extended 30 days to December 4, 2002, for inclusion of comments in the Final Environmental Impact Statement (FEIS). More than 300 oral and written comments were received.

Reclamation conducted three public hearings on the Navajo Reservoir Operations DEIS on October 1, 2, and 3, 2002, at Farmington, New Mexico; Durango, Colorado; and Bluff, Utah, respectively, to receive oral and written comments. Notice of the public hearings was announced in local media and published in the *Federal Register*. At the hearings, 34 people presented oral testimony and 6 submitted written testimony. Speakers represented Federal, State, and local agencies; American Indian (Indian) Tribes/ Nations; various organizations, industries, and businesses; and individuals.

Volume Organization

Oral, written, and electronic comments received during the public comment/ public hearing period are collectively termed "letters" and are arranged alphabetically throughout. General and/ or specific responses within the scope of the proposed action have been prepared according to points raised in each letter and, when appropriate, changes have been made in the text of the FEIS.

1. General comments are listed first, and responses are provided after each general comment. These are comments/ responses that address issues raised by a number of commentors and are addressed in common to (1) highlight issues important to significant numbers of people/ entities and (2) avoid repetition.

2. Individual letters and transcripts follow the general comments/ responses and are arranged in sections as listed below. Each of the sections is preceded by an introduction that lists the total number of letters included in that section and major concerns expressed (measured by the number of respondents citing particular issues).

    - ❑ Cooperating Agencies
    - ❑ States
    - ❑ Local Governments
    - ❑ Water/ Irrigation Districts
    - ❑ Industry/ Business
    - ❑ Environmental Organizations
    - ❑ Other Organizations
    - ❑ Individuals
    - ❑ Anglers
    - ❑ Transcripts
    - ❑ Form Letters

3. The general and individual comments/ responses sections are followed by a section citing letters requiring no response. These include letters simply expressing support or nonsupport or offering opinions or containing advice not pertinent to the DEIS. These letters are acknowledged, but written responses are not included.

Summary of Issues

Those who commented on the Navajo Reservoir Operations DEIS cited issues in at least 30 general areas. Overall, however, as shown in this volume, issues raised repeatedly during the public comment period tended to focus in the main areas summarized below:

- ❑ Alternatives formulation and selection, including use of the No Action Alternative as the project baseline, a perceived limited range of minimum/ maximum flows, alleged preselection of the Preferred Alternative, and other issues. A preponderance of respondents cited this as a concern, often in connection with a desire to implement the 500/ 5000 Alternative to maintain the existing trout fishery.

- ❑ Impacts to the trout fishery below Navajo Dam, with accompanying negative effects to the economies of surrounding communities and the tourism trade in general. Roughly the same proportion of commentors specifically cited this as a concern.

- ❑ Concern about potential water quality degradation in the San Juan River and accompanying effects on the trout fishery and other wildlife, as well as on the quality of life in general and on area industries. Concern was equally expressed about the effectiveness of the endangered fish conservation methods and measures represented by the Flow Recommendations[1] and as presented in the DEIS.

Format

Comments within letters are indicated as follows: specific and general comments and responses are denoted in the text of letters by a line in the margin, and responses are included in the "II. General Comments/ Responses" section as described above, or at the side and on the same page.

Content of Responses

Both general and specific responses include additional explanation or elaboration and, in some instances, have resulted in textual changes. Unelaborated criticism of agency mission or project initiation, analysis, methodology, or outcomes is noted, but more specific comments in those areas have received specific responses. If no substantive response is determined to be necessary, that decision has been explained.

II. General Comments and Responses

General Comment 1: The general planning process for the DEIS was flawed:

(a) The DEIS does not fully analyze impacts (including impacts after full water development).

Response: Chapter III of the environmental impact statement (EIS) identifies affected resources and impacts of alternatives using the best data available. To give an accurate

[1] *Flow Recommendations for the San Juan River* (Holden, 1999).

analysis of resource impacts, the hydrology studies have included all existing water uses and future water uses that are authorized and that are in compliance with the Endangered Species Act (ESA). This gives a more accurate picture of river and reservoir conditions in the future under the alternatives considered.

(b) The DEIS should specify more precisely the relationship among the Navajo Nation Irrigation Project (NIIP), the Animas-La Plata Project (ALP Project), and Navajo Reservoir Operations in the baseline(s), under the No Action Alternative, and elsewhere. Should the analysis for the modified operation of Navajo Reservoir be included within the EIS for the ALP Project and all negative impacts be included as costs of the ALP Project, instead of the ALP Project being a benefit to Navajo Reservoir reoperation?

Response: Operation of Navajo Reservoir is a connected action to the ALP Project and other water resource activities in the San Juan River Basin (Basin), such as the NIIP. These connections stem from:

- Past ESA consultations that established and relied upon the San Juan River Basin Recovery Implementation Program (SJRBRIP) and listed certain reasonable and prudent alternatives (RPA) to avoid jeopardy to the endangered species in question
- San Juan River flow recommendations developed and approved by the SJRBRIP in 1998 and the report finalized in 1999
- The 1999 ESA consultation for NIIP (Blocks 9–11), including operation of Navajo Reservoir, to meet these flow recommendations as a project element
- Reclamation's previous commitment to operate Navajo Reservoir for the benefit of endangered fish in the Basin below Navajo Dam as requested in the 1991 and 1995 Biological Opinions as part of the RPA for the ALP Project
- Conservation measures for the ALP Project listed in the 2000 ALP Biological Opinion

In chapter I, " V. Connected and Related Actions," Reclamation states that Navajo Reservoir Operations constitute a connected action to other water resource projects in the Basin, including the ALP Project and NIIP, and explains their connection.

The change in operation of Navajo Dam is not dependent upon completion of ESA consultations for the ALP Project and NIIP. However, full completion and operation of these projects is dependent on the reoperation of Navajo Dam to meet the Flow Recommendations.

The ALP Project EIS did discuss Navajo Reservoir reoperation as a connected action, but negative impacts were not considered a cost of the ALP Project because Navajo Reservoir reoperations will occur whether or not the ALP Project proceeds.

(c) The EIS fails to distinguish between effects of reoperation and future depletions.

Response: Reoperation may create immediate, short-term effects that would be offset by flexibility in release patterns before future development occurs. However, the long-term effects of future development are analyzed for each action alternative to analyze the worst-case scenario. Thus, the EIS does not distinguish between the short-term effects of reoperation, temporarily reduced by flexibility, and the long-term effects of future development. For example, impacts to the hydropower water supply result from additional water being diverted from the reservoir to complete the NIIP as well as from reoperation of reservoir releases. Reclamation believes the approach used gives the most accurate picture of future conditions under the alternatives considered. Also see the response to General Comment No. 11.

(d) An extensive analysis/ discussion is needed of irreversible/ irretrievable commitment of resources.

Response: Reclamation believes that the impacts stemming from changes under the action alternatives would not be irreversible or irretrievable and that future SJRBRIP adaptive management efforts may refine the Preferred Alternative. Refer to chapter III, "IV. Environmental Resources Summary."

(e) DEIS does not follow the mission statement of Reclamation.

Response: Reclamation's mission is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public. By issuing this EIS, Reclamation proposes to operate (manage) Navajo Dam and Reservoir to implement ESA-related flow recommendations on the San Juan River, or a reasonable alternative to those recommendations, in a manner that enables both current and future[2] water depletions to proceed in compliance with the ESA. Through this action, Reclamation is fulfilling its mission to manage and protect water and related resources.

General Comment 2: The DEIS proposes an inadequate level of mitigation. Comments included the following:

[2] Future water depletions include those that have obtained appropriate environmental compliance but are not yet implemented.

The commitments for fishery and other mitigation and monitoring are vague. Specific commitments should be made; for example, Reclamation should take the lead, including funding, in accomplishing mitigation. Would the potential mitigation offset losses of trout habitat? Instream habitat mitigation should be completed prior to lowering flows. Reclamation's role in mitigation is inadequate; why should those receiving authorized purposes pay for the mitigation of impacts on historic, other uses like hydropower? The costs of mitigation should not be passed on to SJRBRIP participants.

Mitigation for other resources and effects—such as water quality, lost jobs, recreation, irrigation diversions, and erosion—should be addressed.

Response: Reclamation has recognized in the EIS that the Preferred Alternative would have adverse impacts on certain resources, including the trout fishery, recreation, water quality, some riparian resources, and others. The Preferred Alternative, however, is designed to help conserve endangered fish species and their habitat and to have the overall effect of creating a more natural ecosystem.

Reclamation will commit to working with the resource agencies responsible for management of particular resources to implement measures that would reduce adverse impacts of implementing the Preferred Alternative. However, Reclamation is unwilling to take the lead responsibility in terms of funding or implementation. Reclamation believes that any mitigation measures that require funding and that are in response to implementing the Preferred Alternative should be shared by all parties that benefit from implementation of the Preferred Alternative. Environmental commitments and mitigation measures are discussed in greater detail in chapter IV of the EIS.

General Comment 3: There is a need to emphasize that the No Action Alternative does not maintain the status quo and is not a "legally permissible" alternative. The No Action Alternative is not viable and has the most negative impacts of any alternative considered. It would endanger existing and future water uses, lead to possible litigation and job loss, interfere with Indian water right settlements, disrupt existing water deliveries, and adversely affect the NIIP and the ALP Project.

Alternatively, many people recommended keeping the present minimum release level of 500 cubic feet per second (cfs).

Response: Under the No Action Alternative, the Flow Recommendations would not be met. It is anticipated that this would require the Navajo Unit to undergo reconsultation under the ESA, and other projects—existing private and Federal water projects and such future projects as completion of the NIIP and the ALP Project—may also require new consultation under the ESA. This would endanger present water uses and could complicate the settlement of Indian Tribal/ National water resources. Estimated loss of benefits—which

would include losses of revenue from crops and jobs—was determined based on long-term impacts resulting from the nonrealization of full project development. It is recognized in the FEIS that this would lead to the problems identified in the comment.

Comments received suggested that the 500-cfs minimum release from Navajo Dam should be maintained. This would not be possible if Flow Recommendations and Navajo Unit authorized purposes are to be met and maintained; thus, the 500/ 5000 Alternative was not selected as the Preferred Alternative. It is recognized in the EIS that a minimum release of 500 cfs would better support the existing trout fishery and certain other resources as compared to the Preferred Alternative. However, Reclamation believes that the Flow Recommendations contain a certain amount of flexibility in dam releases that can be used to reduce impacts projected under the Preferred Alternative. See General Comment No. 11 for information on flexibility.

General Comment 4: Little, if any, difference appears to exist between the 250/ 5000 and the 250 Variable/ 5000 Alternatives and the 500/ 5000 and No Action Alternatives.

Response: Under the 250 Variable/ 5000 Alternative, future flows could be above 250 cfs more frequently than under the 250/ 5000 Alternative, even after full development occurred, in an effort to minimize impacts to downstream water users (i.e., minimum releases of 300, 350, 400, 450 cfs, etc., could be maintained). The 250/ 5000 Alternative meets Flow Recommendations; however, Flow Recommendations in the lower reaches of the San Juan River could not be met consistently under the 250 Variable/ 5000 Alternative, making that alternative not feasible.

The No Action Alternative is defined as representing, as nearly as possible, the historic operation of the dam after initial filling in 1973 until the beginning of test releases in 1991. Under this alternative, Navajo Dam and Reservoir would be operated with minimum releases of at least 500 cfs and maximum controlled releases up to about 5,000 cfs. There would be no allowances made for significant spring peak releases or spike releases at other times of the year. The operation goals between 1973 and 1991 were to store as much water in the reservoir as possible and to maintain uniform flows downstream from the dam. This is depicted in figure II-3 of the FEIS. Figure II-1 also illustrates the differences in release patterns between these alternatives. Consequently, this alternative does not represent a continuation of existing conditions.

Unlike the No Action Alternative, the 500/ 5000 Alternative does provide for higher spring peak releases and spike releases in an effort to mimic pre-dam riverflows and to comply with the ESA. Consequently, depletions under this alternative are greater than those realized under the No Action Alternative and represent another distinction between alternatives. For example, table II-1 in the FEIS shows the differences between annual depletions for these alternatives in the Basin. Total New Mexico depletions for the

No Action and the 500/ 5000 Alternatives are 481,716 and 615,401 acre-feet per year (afy), respectively. This is a difference of 133,685 afy of depletion. Total Colorado depletions for the No Action and the 500/ 5000 Alternatives are 174,557 and 218,088 afy, respectively. This is a difference of 43,531 afy of depletion. The difference between the total annual depletions (675,423 and 852,639 acre-feet, respectively) of these two alternatives is approximately 177,216 afy.

General Comment 5: A wider range of alternatives should have been considered:

(a) The DEIS does not present all feasible alternatives. An alternative that avoids flows that are too high or too low is needed to reduce adverse impacts. Further analysis using minimum releases ranging from 300 to 450 cfs should be completed prior to decisionmaking.

Response: The alternatives analyzed in the DEIS are intended to reflect minimum and maximum flow release parameters. Such parameters would provide Reclamation with flexibility to regulate releases from 250 cfs minimum to 5,000 cfs maximum in consultation with the U.S. Fish and Wildlife Service (Service), depending on variables inherent in the operation of Navajo Dam. During planning for the EIS, various minimum flows were hydrologically modeled. The results showed that only the 250 cfs minimum release allowed for the Flow Recommendations and Navajo Unit authorized purposes to be met.

(b) An alternative with a minimum flow of 500 cfs (reduced during severe droughts and possibly winter months) should be considered, and the 250 Variable/ 5000 Alternative needs to be given full consideration.

Response: An alternative with a minimum flow of 500 cfs was considered and analyzed under the 500/ 5000 Alternative. The 250 Variable/ 5000 Alternative was originally intended to be analyzed as a reasonable alternative to the Flow Recommendations (250/ 5000 Preferred Alternative), but was subsequently dropped from further consideration for reasons discussed in General Comment No. 4.

(c) Has the Bureau considered any alternatives that are outside its jurisdiction?

Response: Alternatives are designed to meet specified needs. However, the "need" identified in the EIS includes constraints that require Reclamation to establish operating criteria for the Navajo Unit to accommodate ESA-related requirements and, at the same time, to accomplish the purposes of the Navajo Unit within the agency's jurisdiction. Accordingly, all alternatives considered in detail in the EIS were designed to meet this need. Some alternatives (such as decommissioning Navajo Dam) that are outside the agency's jurisdiction were considered but eliminated.

General Comment 6: Because no other alternative than the Preferred Alternative is "legally permissible," no benefits can be realized from the other alternatives, and, accordingly, it is misleading to analyze their potential effects.

Response: As noted in the response to General Comment No. 5, the selected or Preferred Alternative must be compatible with the authorized purposes of the Navajo Unit, honoring senior water rights, and with the ESA. Within these parameters, the range of alternatives is limited. Any alternative that satisfied both would be legally permissible. The No Action and 500/ 5000 Alternatives carried through in the EIS do not meet the Flow Recommendations and, thus, would probably receive a "jeopardy" ruling from the Service under the ESA. However, analysis of the No Action Alternative is required under the National Environmental Policy Act (NEPA), and the 500/ 5000 Alternative is presented because much of the public input received centered on maintaining minimum releases at 500 cfs.

General Comment 7: The No Action and 500/ 5000 Alternatives are not treated at the same level of detail as the Preferred Alternative.

Response: Although the No Action and 500/ 5000 Alternatives did not fully meet the Flow Recommendations, they are described at a level of detail comparable to that of the Preferred Alternative. The No Action Alternative failed in 14 occurrences to meet the Flow Recommendations criteria, as shown in table II-3 of the FEIS, and the 500/ 5000 Alternative failed in 16 occurrences. However, these two alternatives were carried to a sufficient level of analysis in the NEPA process to project their impact on the resources of concern.

General Comment 8: Suggestions were made that impacts could be reduced if water from Navajo Reservoir's inactive pool were used or if future NIIP water was delivered down the San Juan River and pumped out of the river near Farmington rather than being delivered from the reservoir directly to NIIP facilities.

Response:

(a) Taking water from the inactive pool of Navajo Reservoir would increase adverse impacts to affected resources as follows:

- ❑ Operating the reservoir below 5990 feet will expose the unprotected areas of the dam to erosion by wave action.

- ❑ Pulling water from the inactive pool may jeopardize filling the reservoir in future years, which could lead to water shortages and hamper future reservoir operations.

- ❑ An 1,800-cfs pump would be required to meet NIIP demands from the reservoir, and there is no reasonable place to install a pump station of this size because the outlet works are located on a cliff.

- ❑ The NIIP inlet works is designed to operate while submersed in water. During operation between 5990 and 5975 feet, the tunnel would be exposed to a mixture of water and air flow that would likely cause cavitation damage to the lining of the tunnel.

- ❑ Boat ramps and marinas are not designed to operate at this low lake level.

- ❑ Spawning habitat and overall habitat availability for reservoir game fish would be impacted.

- ❑ Cultural resource sites within the reservoir basin could be exposed and damaged by wave action.

(b) Releasing 250 cfs of NIIP's daily diversions down the San Juan River and then intercepting and pumping it to the NIIP lands would require a diversion structure, a pumping plant, and a pipeline to transfer the water to some point on the existing NIIP distribution canals.

An appraisal-level analysis of this suggestion was performed. The pumping plant and pipeline were located where the NIIP Canal and the San Juan River reach their closest proximity to each other at Horn Canyon, below Bloomfield, New Mexico.

The analysis considered capacities for "Horn Pumping Plant and Pipeline" at 100 and 250 cfs capacities and approximately 550 feet of head. The intake structure for Horn Pumping Plant would be a side channel structure with trash and fish screens as required, eliminating the need for a diversion structure in the river. A reinforced concrete pressure pipeline of the appropriate capacity would be required for the discharge line from the pumping plant to the inlet/ bifurcation of the NIIP main canal. The total cost of Horn Pumping Plant and Pipeline is listed in the table on the following page for the appropriate capacity and includes the costs of the superstructure, pumps, motors, transformers, and transmission lines at January 2003 price levels.

Yearly operation and maintenance (O&M) and costs assumed that the pumping plant and system would only be in operation for a short duration (3 months) during the NIIP irrigation season from April through October. Colorado River

Horn Canyon Pumping Plant and Pipeline – construction and OM&R[1] costs ($ million)

Facility size	Pumping plant and intake	Pipeline	Inlet to NIIP Canal	Total capital cost	Annualized capital costs	Annual OM&R	Total annual costs (50 yrs @ 5.875%)
250 cfs	$72.0	$22.0	$1.0	$95.0	$5.9	$0.628	$6.50
100 cfs	$51.0	$14.0	$0.5	$65.5	$4.1	$0.282	$4.40

[1] Operation, maintenance, and replacement.

Storage Project (CRSP) power is available to the NIIP system and was used for estimating pumping power costs for this analysis. The estimated annual cost for O&M is approximately $628,000 for the 250 cfs option and $282,000 for the 100 cfs option.

Increasing minimum river releases from 250 cfs to 500 cfs during the irrigation season from April through October would benefit the trout fishery, normal operation of diversion structures that are affected by river elevations, and the hydropower plant at Navajo Dam. In addition, there would be no effect to reservoir content, and there would be no change to the riverflow below this proposed plant.

This system would not be used on a continuous basis. For example, it would be activated when dam releases drop below 450 cfs, which, according to hydrology modeling, would occur 37 percent of the time on an annual basis.

Projected economic impacts to the local economy of $1.83 to $6.16 million per year stemming from trout habitat losses as a result of 250 cfs releases during the irrigation season would be eliminated.

As a result of increasing the minimum releases out of Navajo Dam from 250 cfs to 500 cfs, hydropower generation impacts to the City of Farmington would be reduced from an annual average of $5.3 to $7 million to the estimated loss of $3.2 million annually. This amounts to a reduction or savings in annual impacts of between $2.1 to $3.8 million for the City of Farmington resulting from the construction of a pumping plant and pipeline at Horn Canyon.

Private diversion structure annual maintenance would be reduced from an estimated $14,000 under the 250/ 5000 Preferred Alternative to $7,000 under the 500/ 5000 Alternative—a savings of $7,000 to entities operating water diversion structures.

In total, an estimated $4.0 to $10.0 million reduction in annual impacts at an annual cost of $6.5 million could be achieved if the Horn Canyon Pumping Plant and Pipeline were constructed and operated to allow a 500-cfs minimum release from Navajo Dam during the irrigation season.

Under the concept of flexibility, this method of delivering water would not be used until full development occurs. At this time, Reclamation does not have the authorization or the funding to study this option.

General Comment 9: More alternatives that meet the Flow Recommendations should be presented. Reclamation has confused RPA (reasonable alternatives) under the ESA and reasonable alternatives under NEPA. RPAs other than the Flow Recommendations could be derived, so long as the Flow Recommendations were substantially met. The Flow Recommendations are not binding on Reclamation, and they should be interpreted in the least damaging way.

Response: Prior to public release of the DEIS, Reclamation modeled numerous hydrologic scenarios/ alternatives to determine if a release pattern other than the Flow Recommendations (250/ 5000 cfs) would provide necessary spring peaks and minimum flows in the endangered fish critical habitat below Farmington while allowing for completion of the NIIP and ALP Project. However, no other alternatives were found that would meet the Flow Recommendations while maintaining the authorized purposes of the Navajo Unit, which include enabling future water development to proceed in the Basin in compliance with applicable laws, compacts, decrees, and Indian trust responsibilities.

Reclamation not only has an obligation to protect endangered species but also an obligation to try to minimize adverse impacts on other resources while doing so. However, within the Flow Recommendations there exists some flexibility in reservoir releases until full development of NIIP and the ALP Project occurs because water committed for present or future development is not currently used.

Under NEPA, Reclamation compares the impacts of reasonable alternatives that meet the need of a project and the No Action Alternative. These alternatives are different from a "reasonable and prudent alternative" under the ESA. A reasonable and prudent alternative is developed when it is determined that a proposed plan will jeopardize a threatened or endangered species.

General Comment 10: Concerns were expressed that the goal of the Preferred Alternative is really to facilitate water development—completion of the ALP Project and NIIP and other water development—rather than endangered fish recovery. Political and/ or development interests have driven the present process. The SJRBRIP Biology Committee is staffed by consultants of the major water user groups. The Preferred Alternative was

selected in advance to enable development of these projects. Does the EIS have a predetermined outcome—the 250/ 5000 Alternative? Wider public involvement in alternatives formulation should occur.

Response: The goal of the Preferred Alternative is to develop operating criteria for the Navajo Unit that are in compliance with the ESA and that continue to meet the authorized purposes of the Navajo Unit. Authorized purposes include assisting the States of Colorado and New Mexico to develop their water supplies. The process has been driven by the need to meet Navajo Unit authorized purposes and the need to comply with the ESA. Thus, the Preferred Alternative has been developed to allow for both water development and to help conserve, in concert with other recovery actions, two endangered fish species.

Suggested operating criteria for the Preferred Alternative were largely developed by the SJRBRIP, a program which includes representatives from the Service, Bureau of Indian Affairs, the States of New Mexico and Colorado, Reclamation, and other agencies, along with those from Indian Tribes and Nations and water user organizations. Several of these parties have employed private consultants to represent their interests in the process. The operating criteria were developed to meet Flow Recommendations for endangered fish; water in excess of this need was identified for development.

Input on alternatives has been received at various public meetings from diverse interest groups. For example, it is recognized that a major concern expressed frequently was that the minimum release from Navajo Dam should not be reduced below 500 cfs. This was expressed by people interested in maintaining existing irrigation, the trout fishery, water quality, and rafting recreation.

General Comment 11: Comments included the thought that flexibility, as described in the DEIS, is at best an inadequate and/ or incomplete measure and at worst is a poorly conceptualized attempt to obscure planning flaws and shortcomings.

One commentor stated that such flexibility does not exist unless the Flow Recommendations are changed because the annual and daily releases are controlled by the criteria in the Flow Recommendations and there are no provisions for flexibility. Other commentors stressed that the flexibility could and should be used to reduce impacts to the trout fishery, irrigation, and water quality, at least in the short term. Some suggested that plans to use flexibility should be made clearer in the FEIS.

Commentors also asked what happens after water use increases and flexibility is gone. What are the effects on resources at that time, and can the 500 cfs minimum downstream from Farmington be met?

Response: The DEIS recognized significant impacts of a 250 cfs release from Navajo Dam, particularly during the irrigation season, on resources such as the trout fishery, water

quality, and recreation. Reclamation believes that flexibility exists to reduce these impacts in the interim period between the FEIS and future water development, particularly the completion of NIIP.

The FEIS provides more detail on this issue and states that flexibility in reservoir releases exists because water committed for present or future development is not currently being fully used. This may be a significant amount of water in many, but not all, years. The release of this water will be incorporated into operations to augment the 250 cfs minimum release during the irrigation season; the goal will be to maintain irrigation season releases above 350, while assuring the spring release as described in the Flow Recommendations will not be affected and ensuring recommended minimum flows within the critical habitat can be met downstream from Farmington and contracted water delivered. Water anticipated to be available for this flexibility will be identified and quantified to the extent possible for the spring Navajo Reservoir Operations meeting, and the scheduling of its release will be discussed.

In the long term, flexibility will diminish; in certain drought years, flexibility to go above 250 cfs may not exist at all. Because of this, the FEIS addresses long-term impacts as if flexibility were not available, and significant impacts are discussed.

Concerning Flow Recommendations criteria, the Preferred Alternative was designed to maintain a 500 cfs minimum flow downstream from Farmington, even after flexibility diminishes.

General Comment 12: Several comments were made that decommissioning Navajo Dam should not be presented as an alternative because it is beyond the scope of the EIS and does not meet the purpose of and need for the project. Others suggested that this alternative was the best way to recover the endangered fish species.

Response: Decommissioning Navajo Dam is an alternative that was suggested during the public scoping meeting process by enough members of the public that Reclamation, as lead agency, included it in the DEIS, in accordance with NEPA guidelines. This alternative is included as one of several alternatives considered and eliminated from further discussion because they did not meet the purpose of and need for the proposed action. Chapter II, "VI. Alternatives Considered but Eliminated," includes a discussion of how this alternative would affect endangered fish.

General Comment 13: The alternatives and the Flow Recommendations do not address actions needed in a severe drought such as occurred in 2002. In addition, the Bureau's high releases from Navajo during the drought of 2002 were irresponsible. Also, how will climate change affect water availability and the Preferred Alternative.

Response: In response to the severe drought conditions in the Basin in 2002, Reclamation informally consulted with the Service to modify reservoir operations. As a result, reservoir releases in 2002 were 60 percent of average releases since 1991. Even though releases in 2002 were the lowest since 1991 (when Reclamation first began operating the reservoir to mimic a more natural hydrograph), all irrigation, municipal, and industrial users received a full supply of water. In effect, the reservoir provided a full water supply during a dry year. The historical conditions that were used to develop the Flow Recommendations did not include 2002 (the driest year on record); however, the resulting modifications in 2002 to reservoir operations indicate that Navajo Dam operational flexibility in the short term is available during drought conditions depending on storage availability, etc. Additional information has been included in chapter II of the EIS to address extreme hydrologic conditions.

Climatic changes that differ greatly from the historic conditions (1929–93) would have an effect on water availability. However, while suggestions have been made regarding climatic changes, Reclamation cannot predict with certainty when climate changes will happen and to what extent. As a result, Reclamation could not analyze what effects climate changes would have on the Preferred Alternative.

General Comment 14: Alternatives should allow for development of New Mexico's and Colorado's compact apportionment water; the EIS implies that only certain future water uses would occur.

Response: Meeting the Flow Recommendations is the best way to assist New Mexico and Colorado to fully develop their compact apportionment. The RiverWare hydrology model representation of the future conditions expected in the Basin is required to establish the "baseline" against which impacts of alternatives are measured. The depletions associated with the baseline condition include all current depletions, all depletions that are reasonably likely to occur in the foreseeable future without further Federal action, and all future depletions for which favorable biological opinions have been issued through the ESA Section 7 consultation process.

The presently defined reservoir operating rules and model configuration do not indicate availability for substantial additional depletions in the Basin associated with implementing the currently proposed Flow Recommendations. Further modification of the operating rules, projected future depletions, and/ or improvement in the simulation of the San Juan River would be required to demonstrate the possibility of further development within the limits of the present Flow Recommendations. Chapter II, "VII. Preferred Alternative," in the FEIS describes provisions for future water development. Also, see General Comment No. 18.

General Comment 15: Several comments addressed the monitoring of the base flows (targeted at 500–1,000 cfs downstream from Farmington). The method needs to be clarified—will base flows be met under the proposed monitoring methods?

Response: The goal of the Flow Recommendations is to maintain San Juan River base flows downstream from the Animas River confluence at Farmington between 500 and 1,000 cfs. Because of variable inflows from the Animas River; occasional high inflow from intermittent tributaries, diversions, and return flow; and water travel time from Navajo Dam, this goal is difficult to consistently meet.

The Flow Recommendations call for using a moving average of two of the four downstream gages to monitor whether flows are kept between 500 and 1,000 cfs. This monitoring plan was presented in the DEIS. There can be significant variability in these gage readings, and the selective use of any two gages could give results above or below the intent of the Flow Recommendations. Because of this, in 2002, the Biology Committee of the SJRBRIP suggested that flows be monitored by the following: "Use the lesser of the average of Bluff, Four Corners, and Shiprock (gages) and the average of Farmington, Shiprock, and Four Corners (gages). . .extreme conditions (low or high flows) identified by. . .Reclamation will be handled on a case-by-case basis with recommendations of the Biology Committee." The Service has provided written support of this approach to monitoring.

Reclamation's intent, which is documented in the FEIS, will be to maintain the recommended base flows in the critical habitat reaches by using the best available gage information. In practice, Reclamation and the Service will discuss flows routinely during the irrigation season and as needed the remainder of the year to determine the operations needed to meet the base flows. Reclamation, in consultation with the Service, will use the lesser of the weekly moving average of the Bluff, Four Corners, and Shiprock gages and the average of the Farmington, Shiprock, and Four Corners gages as the guide in meeting this intent. In periods of severe drought, Reclamation will work with the Service to arrive at operating criteria to respond to these conditions.

General Comment 16: The DEIS should recognize that Reclamation has the right to operate the dam in such a way as to minimize negative impacts, even if operations may not be in strict accord with Flow Recommendations. Flow Recommendations should be applied with some common sense to mitigate devastating impacts on the economy and environment.

Response: Reclamation not only has an obligation to protect endangered species but also an obligation to try to minimize adverse impacts on other resources while doing so. During the planning process for the EIS, Reclamation looked at various minimum releases between 250 and 500 cfs in an effort to minimize negative impacts. It was determined that only the 250/ 5000 Alternative (Preferred Alternative) met the Flow Recommendations. However, within the Flow Recommendations there exists some flexibility in reservoir releases until full development of NIIP and the ALP Project occurs because water committed for present

or future development is not currently used. Reclamation intends to use this flexibility to minimize negative impacts while complying with the Flow Recommendations. However, Reclamation would consult with the Service before implementing any modifications to the Flow Recommendations or before implementing any proposed changes to dam operations (proposed changes would be discussed at any of the three annual Navajo Reservoir Operations meetings.) See General Comment No. 11 for additional information.

General Comment 17: The adaptive management process for the SJRBRIP mentioned in the DEIS needs to be more detailed. The process must make it clear that the States anticipate full development of their compact entitlement.

Response: As stated in the Flow Recommendations, adaptive management is a process through which lessons learned are used to adjust and refine an ongoing process. The SJRBRIP intends to use this process to meet the goals of the program.

Elements of the SJRBRIP adaptive management program include a long-range plan, a monitoring and research program, and scheduled reviews of the monitoring program.

The FEIS provides more detail on this issues. It also states that the Navajo Reservoir Operation meetings held three times yearly will also provide a forum for all interested parties to discuss Navajo Unit operations and recovery program progress and recommendations.

General Comment 18: Various entities would like the EIS to take positions they advocate or to include material they would like to see included, as follows:

(a) The San Juan River is over-appropriated, and there are competing claims. The EIS needs to identify all claims. Current uses based on senior water rights may not be protected at 250 cfs, and the administration of diversions and shortages has not been spelled out.

Response: The New Mexico State Engineer is responsible for administering water rights within the State and has committed to measurement and administration of ditch diversions within the Basin. The Preferred Alternative minimum release of 250 cfs would meet downstream water right bypasses between Navajo Dam and the Animas River confluence. The operation of the Navajo Unit will honor senior water rights; however, the Navajo Unit is not obligated to provide storage water to supplement the water supply of these senior rights.

(b) The hydrologic model and environmental baseline are inconsistent and include incompatible, inequitable uses. The baseline does not include full NIIP allocation or the largest part of the Jicarilla settlement.

Response: The RiverWare hydrology model representation of the future conditions expected in the Basin is required to establish the "baseline" against which impacts are measured. The depletions associated with the baseline condition include all current depletions, all depletions that are reasonably likely to occur in the foreseeable future without further Federal action, and all future depletions for which favorable biological opinions have been issued through the ESA Section 7 consultation process. The depletions that could occur without further Federal action are primarily private water rights that are not presently used but that are likely to be put to use in the foreseeable future. The States of Colorado and New Mexico have identified these rights.

There may be inconsistences in the determination of baseline depletions, but these are based on the nature of the depletion, such as depletions for NIIP versus unajudicated water rights for the Navajo Nation's Hogback and Fruitland Projects, or differing methods used by the States of Colorado and New Mexico to identify their rights.

The Navajo Nation has been issued a concurrence letter (may affect but not likely to adversely affect) on their 1999 Biological Assessment on completion of construction of NIIP, and the depletion value of NIIP completion is included in the EIS depletion table. Not all of the Jicarilla Apache Nation use of their legislated right of 25,500 acre-feet of depletions per year has been consulted on under the ESA. Therefore, some of their water does not meet the test of inclusion in the depletion table for this analysis. Table II-1 provides a summary of all San Juan River depletions included in the EIS.

(c) Because Navajo Nation claims are unresolved, Reclamation cannot allocate water from Navajo Reservoir for NIIP completion.

Response: NIIP's use of Navajo Reservoir water was authorized by Congress, and its depletions have been included in the environmental baseline and in Reclamation's depletion table.

(d) Indian Tribes/ Nations in the area have only water claims, not rights, and the dates of these claims are in dispute.

Response: In general, Indian water claims are often established under the Winters Doctrine rights (*Winters* v. *United States*). The Supreme Court upheld that the establishment of an Indian reservation carries with it an applied amount of water necessary to satisfy the purposes of the reservation. A water right granted to a Tribe under the Winters Doctrine is given a priority date no later than the time when the reservation was established. Unlike water rights permitted, licensed, or adjudicated under State statutes, such rights under the Winters Doctrine cannot be lost through nonuse. Additional information is available in chapter III, the "Indian Trust Assets" and "Environmental Justice" sections of the EIS.

(e) There are unresolved conflicts among treaty/ settlement rights, Indian Trust Assets (ITAs), and compact protections; Indian Tribes/ Nations, "States' rights," and Federal mandates; unexercised but adjudicated senior water rights under Section 7; the interests of local water users and the general public; and, generally, inter-locking disputes among Tribes, States, and the Federal Government as to who holds supremacy and when.

Response: For purposes of this EIS, Reclamation has defined existing depletions to include those private depletions that are occurring, all existing federally authorized depletions, and future depletions that have completed the NEPA and ESA Section 7 process. A summary of the Basin depletions can be found in chapter II, table II-1, "IV. Alternatives Description."

There is obviously competition for the limited water resources in the Basin. Resolving this competition is not a purpose of the EIS; however, Navajo Reservoir will be operated in accordance with State water laws and various compacts, treaties, and settlements.

(f) A subset of the above is the position that Reclamation should state that Tribal claims must fit within a State's compact apportionment and are subject to interstate compacts.

Response: A discussion on Tribal water claims and State compact apportionments is beyond the scope of and not pertinent to this EIS.

(g) The Jicarilla Apache settlement is an authorized project purpose. Reclamation is in violation of NEPA in failing to consider it in a reasonable range of alternatives.

Response: The Jicarilla Apache Nation's Settlement Act provides that the Secretary of the Interior is authorized to enter into a Settlement Contract with the Jicarilla Apache Nation. This legislation, however, does not amend the Navajo Unit's authorization to supply water to the Jicarilla Apache Nation as an authorized purpose of the Navajo Unit. Portions of Jicarilla water that have undergone ESA consultation are included in the EIS depletion table (chapter II, table II-1); however, not all of the Jicarilla water has been through this process.

(h) What are the impacts of full compact development?

Response: The impacts of full compact development were not analyzed as part of this EIS. The EIS analyzed future water uses that were reasonably expected to occur. It should be noted that full development of State compact water and Indian trust water is not included in the San Juan River water depletion table used in the hydrology analysis of EIS alternatives. Reclamation has defined existing depletions to include those private

depletions that are occurring, all existing federally authorized depletions, and future depletions that have completed the NEPA and ESA Section 7 process. The EIS does discuss future water development beyond that included in the EIS depletion table.

(i) New Mexico State permits held by Reclamation for reserved rights are in question.

Response: Reclamation acknowledges that its reserved rights need to go through the adjudication process. However, discussion on New Mexico State permits held by Reclamation is beyond the scope of and not pertinent to this EIS.

(j) There are restrictions on the export of water from one basin to another, and there are limitations on the marketing of water.

Response: Water use and diversion restrictions and limitations exist pursuant to State water law and to the interstate compacts that divide the use of the waters of the Colorado River and its tributaries among the Colorado River Basin States. The Navajo Unit is operated in accordance with the various laws and compacts that govern the river.

(k) The authorized purposes of the Navajo Unit do not include ESA compliance, recreation, fish and wildlife, and hydropower generation, which are simply incidental benefits. Recreation interests often have relied on hitherto-unused Navajo Unit water, prior to construction of other projects meant to develop the compact apportionment. This is not acceptable at the point in time when doing so would impair Navajo Unit purposes.

Response: The Navajo Unit is operated in accordance with the CRSP Act and applicable Reclamation and other Federal laws. The FEIS has added clarifying language. The authorities and functions of the Navajo Unit are listed in chapter I, "VI. Responsibilities and Compliance," of the EIS. It is not the intent or purpose of this EIS to differentiate or define Navajo Unit initial purposes and subsequent uses.

It is recognized that recreational users have benefitted from water stored and released by Navajo Reservoir. As this water is used in the future in accordance with the Navajo Unit purposes, these benefits may decline.

General Comment 19: For various reasons, a new draft EIS needs to be prepared and circulated to the public. A basin-wide programmatic EIS should have been prepared or cumulative impacts thoroughly assessed. The DEIS only analyzes a small part of a much larger connected action, and the economic and environmental effects from a broader area need to be assessed, including those associated with ITAs.

Response: The connected action and cumulative impacts that exist among implementation of the Flow Recommendations, the ALP Project, and other proposed

actions, are discussed in the EIS, and additional information is provided at the end of chapter III in the FEIS. Impacts are arrayed for both Indian and non-Indian interests (see the "Impacts Analysis," "Indian Trust Assets," "Environmental Justice," and "Other Impacts Considered" sections of the EIS). Long-range impacts are summarized in the EIS as follows:

> A failure to develop the ALP Project, to complete the NIIP, to fulfill the Jicarilla Apache Nation third-party water contract with Public Service of New Mexico, and to implement other water projects could put future development and use of water rights in the Basin, particularly in Colorado and New Mexico, to be at risk to Indian senior water right claims.
>
> In addition, an accounting of the economic impacts of not constructing the ALP Project is addressed in the "Indian Trust Assets" and "Environmental Justice" sections of the EIS. For these and other reasons, Reclamation does not believe that a new draft EIS needs to be prepared before the EIS is finalized.

General Comment 20: The issue of "recovery" of endangered species and their critical habitat is contentious:

(a) Such recovery is incompatible with the cumulative effects of diversions and depletions for new or existing uses.

Response: The SJRBRIP collected data on the San Juan River between 1991 and 1997 to determine the response of endangered fish and their habitat to riverflows. The research involved quantification of several relationships, including flow/ geomorphology, fish habitat/ geomorphology, and flow/ habitat availability relationships. Based on these studies, flow recommendations were developed. These recommendations could be met while existing water uses and some level of future water uses occurred. Thus, the cumulative effects of existing and certain future diversions and water uses have been taken into account when recommending riverflows for fish recovery.

(b) Such recovery is at the expense of the sport fishery, recreation interests, and economic interests.

Response: Implementation of the Flow Recommendations is expected to adversely affect the trout fishery in the San Juan River, as reported in the DEIS and FEIS. Recreational use of this fishery will be harmed, and the DEIS also reported a lowering of the quality of downstream rafting in certain years. This would have an adverse economic effect. However, the implementation of the Flow Recommendations also protects existing water uses in terms of ESA compliance as well as providing the greatest likelihood of future water development; these effects would result in positive economic effects, as noted in the DEIS.

(c) The Flow Recommendations may not in fact lead to recovery of endangered species and their habitat, and they could take place in an isolated, artificial environment that could not be sustained except at great expense. Other alternatives to the Flow Recommendations could be formulated that would be equally effective in conserving the endangered species.

Response: There is no guarantee that the Flow Recommendations will lead to recovery of the endangered fish in the San Juan River. Flow Recommendations are only one aspect of the SJRBRIP; other aspects or elements of the program include providing fish passage around migration barriers, control of non-native fish that compete with endangered fish, and stocking of endangered fish. The program also includes an adaptive management element. The response of the endangered fish and their habitat to new flow regimes will be monitored by the SJRBRIP and flow regimes modified if determined necessary.

(d) There is no guarantee that the flows recommended would be protected from intervening appropriators.

Response: Responsibilities of regulating diversions downstream from Navajo Dam lie with the New Mexico State Engineer's Office in New Mexico and the Navajo Nation on Navajo Nation Lands. Authorized diversions are anticipated in the Flow Recommendations; excessive diversions not authorized by the State of New Mexico could hinder meeting the Flow Recommendations and thus the recovery of the fish.

(e) High releases may have caused the river channel to deepen, and they have not contributed to the formation of sand bars, which aid in fish recovery.

Response: The effect of the high spring flows on habitat is being monitored by the SJRBRIP. There are provisions in the SJRBRIP to adjust flows in reaction to habitat changes (adaptive management); long-term monitoring will be needed to determine if desired effects on habitat actually occur.

(f) Low releases result in an increased concentration of pollutants and may adversely affect endangered fish in related ways.

Response: The SJRBRIP has studied, and continues to study, water quality in the San Juan River. In the studies performed to date, it was concluded that "concentrations of contaminants in biota inhabiting the mainstem of the San Juan River were not consistently correlated with instream flow discharges. Therefore, incorporating a contaminant-related component into the Flow Recommendations for recovery of San Juan River endangered fish is not advised." (Environmental Contaminants in Aquatic Plants, Invertebrates, and Fishes of the San Juan River Mainstem, 1990–96, SJRBRIP). In a Program Evaluation Report (2000) it was also stated, "The extensive information collected during the 7-year research period

suggested that contaminants would not limit the recovery of the two endangered fish species." Studies continue on the San Juan River to monitor water quality conditions and their relationship to the health of the endangered fish.

Reduced releases from Navajo Reservoir will not "add" pollution, but will cause an increase in the concentration of some water quality parameters due to the reduction of good quality water released from the reservoir. The area of most concern, identified in San Juan River low flow tests, is the reach of river between Navajo Dam and Farmington. As seen in the low flow tests, this reach had changing concentrations of several parameters, like temperature, dissolved oxygen, and salinity, which are directly related to changes in flow. Several other parameters also exceeded New Mexico's water quality standards, but the majority of parameters remained within the standards. Historic data indicate some parameters occasionally exceeded State standards in this reach.

The reach of the San Juan River below Farmington—the reach occupied by the endangered fish—should not experience a decrease in minimum flows, but an increase in base (minimum) flows through most of the year due to the requirement for a base flow between 500 and 1,000 cfs for the endangered fish. Based on historic water quality data, these flows will keep most water quality parameters above the States' and Tribes' water quality standards. Historic data indicate some water quality standards have been exceeded in the past, and this trend will likely occur in the future, but it is not anticipated to be significantly greater than the historic records.

For additional water quality issue responses, see General Comment No. 23.

General Comment 21: Several comments were received on the validity of the baseline (existing depletion estimations) used in the DEIS analysis.

(a) The RiverWare Hydrology Model contains a number of errors. The RiverWare model is currently under review by the SJRBRIP and others; Reclamation should respond to model improvements through adaptive management, etc.

Response: RiverWare was the simulation model selected for use in this analysis. It has been implemented in the Basin since 1998 in support of assessing the relationship between flow recommendations for endangered fish in the San Juan River and water development. The model, in its present configuration, represents the best science available to assess the impacts of water development on the ability to meet Flow Recommendations for the endangered fish and to test operating rules designed for that purpose. The presently defined operating rules and model configuration do not indicate availability for substantial additional depletions in the Basin with the present Flow Recommendations. Future water development is addressed in chapter II, "VII. Preferred Alternative," of the FEIS.

(b) The environmental baseline leaves out projects with unexercised but adjudicated senior rights and is otherwise inconsistent.

Response: Reclamation has included existing projects and planned projects with ESA compliance in the baseline. There may be inconsistencies in the determination of baseline depletions, but these are based on the nature of the depletion (i.e., legislated depletions for NIIP versus unajudicated water rights for the Navajo Nation's Hogback and Fruitland Projects) or on ways in which the States of Colorado and New Mexico have identified their rights.

(c) The hydrology model supplies water for baseline depletions that exceed actual current and anticipated future depletions.

Response: The hydrologic model included all current depletions, all depletions that could occur without further Federal action, and all other projects with completed ESA consultations.

General Comment 22: A more thorough Summer Low Flow Test needs to be completed prior to completion of the EIS. The summer test was too short and occurred during a period of significant rainfall and during haying when water demands were low, and, thus, the effects were moderated.

Response: A Summer Low Flow Test was conducted by Reclamation from July 9–15, 2001. The purpose of this test was to assess the effect of low summer riverflows on various resources. This test, along with results of the 1996–97 Winter Flow Test (Reclamation, 1998), provided data to be considered during preparation of the EIS.

The 7-day test period allowed for physical changes to be observed and extrapolated to approximate long-term conditions. A shorter length of time would not have permitted the river to reach equilibrium after flow changes were initiated, and a lengthier period could have resulted in significant impacts to affected resources.

The Summer Low Flow Test provided enough information to analyze impacts for the DEIS, and Reclamation believes no significant new data would be derived by conducting another low flow test prior to finalization of the DEIS.

Reclamation recognizes that potential limitations of the Summer Low Flow Test included the following: its duration, the unpredictability of riverbank storage, sporadic localized rainfall that augmented riverflows, mechanical equipment limitations preventing the release of exactly 250 cfs, and lower rates of water diversion than anticipated. These limitations were taken into consideration when the impacts were analyzed and extrapolated in the EIS.

The data gathered from the Summer and Winter Flow Tests constitute a small portion of the overall resource impact analysis. Specialists from State agencies and Tribes/ Nations were consulted regarding the long-term impacts of low flows on various resources. When it was not possible to fully measure impacts, models (such as those relating to hydrology and physical habitat [trout] simulation) were developed to estimate impacts from both Navajo Reservoir fluctuations and downstream flow changes.

General Comment 23: With the lower minimum release, lowered dilution of pollutants in the river will make it increasingly difficult to comply with Clean Water Act discharge permits, such as permits for municipal sewage treatment plants (e.g., Bloomfield's). This is particularly true because of EPA's move towards permitted discharge levels based on Total Maximum Daily Loads (TMDL).

The DEIS needs more information on water quality impacts and the effects on people, including the effects on their water supply. Increased concentration of fecal coliforms and other pollutants would cause health and other problems. Is mitigation proposed for water quality impacts? Pollutants in agricultural runoff and also heavy metal and selenium pollutants will cause problems at lower flows. Fish and wildlife will be affected by water quality exceedences.

Response: In general, reoperation of Navajo Reservoir would affect water quality by either the addition or reduction of high-quality reservoir water released to the river. When releases are lowered, the river has less ability to dilute pollutants. Water quality concerns are related to these low releases.

For a more detailed water quality assessment of the Basin, refer to the water quality assessments and resource reports written for the ALP Project, SJRBRIP, and NIIP. These projects have included studies of the San Juan River water quality and the impacts to the San Juan River in detail. In addition, the U.S. Geological Survey (GS) has completed several reports on the water quality conditions in the Basin.

At the present time, water releases from dams are not regulated as pollution point sources. Under the Clean Water Act, the State of New Mexico assesses water quality within the State every 2 years and reports it to the EPA (this document is commonly referred to as a Section 305(b) report). This report includes the degree of use support, causes (pollutants and other stressors), and sources of impairment. If a reach of river is impaired, then it is placed on the State's list of water quality-limited waters requiring TMDL, commonly referred to as the Section 303(d) list. For the San Juan River, several reaches are on the Section 303(d) list, and the State is in the process of evaluating these reaches as well as the entire Basin within New Mexico.

Reclamation has supplied the State with its sample results as well as other water quality documents. If reaches are found to be impaired and TMDL are determined, sources of

contaminants would also be identified, and a program to reduce the loading would be implemented. This regulatory process has been set up by the EPA; Reclamation does not have regulatory control of water quality pollutants or programs.

As identified in the EIS, the San Juan River reach from Navajo Dam to Farmington would be most affected by any decrease in flows. Concentrations of several water quality parameters would increase, and exceedences could occur more often than historical data indicate. Fecal coliform is listed as one of the parameters on the State's 303(d) list for the river segment from the Highway 64 Bridge in Blanco to the confluence of the San Juan and Animas Rivers. Fecal coliform has exceeded the standards enough times that the State placed it on the Section 303(d) list. The State is in the process of evaluating whether or not a TMDL will be determined. The Section 303(d) list also states it is not an acute public health concern. If a TMDL is determined, a program will be developed to identify and lower sources of this pollutant.

The municipal sewage treatment plant's discharge permit at Bloomfield could be impacted by changes in flow. Some improvements to the Bloomfield plant have been made in anticipation of stricter New Mexico water quality standards.

Concerning the treatment of raw water for drinking purposes, in general, the water quality of the mainstem of the San Juan River is good. Historical data indicate most parameters do not exceed State or Tribal standards. Water quality studies from future projects indicate the number of exceedences will continue near the present number. Water quality in the river will continue to be monitored and evaluated by Federal, Tribal, and State agencies. For example, the Bureau of Land Management monitors the San Juan River for polycyclic aromatic hydrocarbons (PAHs) and has found little indication that PAHs are present at significant levels in the river. No mitigation for water quality is planned.

The Preferred Alternative may have an impact on the cost of treating water for human consumption. Communities that derive their drinking water from the San Juan River above Farmington include Navajo Dam, Blanco, Turley, Lee Acres, and West Hammond. Reclamation representatives contacted managers at the Blanco Water Users Association (BWUA), Navajo Dam Water Users Association (NDWUA), and West Hammond Domestic Water Association (WHDWA) to determine the potential for the magnitude of this impact. During these discussions, it became apparent that there could be an increased cost to treat water because of a reduction in the dilution rate when releases from Navajo Dam are lowered to 250 cfs.

Water treatment issues of greatest concern are E. coli and turbidity. The increased rate of their occurrence is directly related to runoff from storm events, especially during spring and summer months, when storm events flush contaminants into the river. These contaminants

come from domesticated animals' waste, sewer lagoons/ ponds, and other sources of E. coli contamination (i.e., improper disposing of waste from recreational vehicles/ campgrounds). Increased turbidity results from soil erosion.

NDWUA and BWUA water supplies realize the greatest impacts from storm events due to their limited amount of storage—110,000 gallons and 80,000 to 90,000 gallons, respectively. Each of these facilities has approximately 1 to 1½ days of user demand storage. The WHDWA has greater flexibility with a storage facility (pond) that impounds 75 acre-feet of water (approximately 24,500,000 gallons). This storage allows WHDWA to meet daily user demand for approximately 15 days. It also has the ability to use the larger storage facility to dilute contaminants, reduce associated treatment costs, and shorten the "recovery rate" (to the point at which water treatment returns to normal).

When managers of these treatment plants were asked what cost increases would be realized when releases were reduced to 250 cfs under the Preferred Alternative, they stated that it would be difficult to determine. Increased treatment costs are a function of storm events (severity and duration), dilution factors, and recovery time of treatment plants to provide treated water to their user areas. Therefore, without an extensive study over an extended period, increased treatment costs are indeterminate.

General Comment 24: The negative impacts of increased flooding due to 5,000 cfs releases combined with tributary inflow or due to increased risk of reservoir spills include inundation of septic systems, damage to diversions, contamination of drinking water, and release of seepage into the river. Reclamation should install and maintain gages on the tributaries to reduce this problem.

Response: Maximum releases of 5,000 cfs from Navajo Dam do not exceed the safe channel capacity of the San Juan River as established by the U.S. Army Corps of Engineers (Corps). Peak releases of 5,000 cfs are usually timed to coincide with natural peak flows of the Animas River—generally during May or June of each year. Downstream from the Animas River, the safe channel capacity increases substantially. Historically, major cloudburst or precipitation events in the area occur during late summer or early fall, but may occur in the spring. During scheduled peak releases, Reclamation has monitored, and will continue to monitor, weather conditions and will continue to coordinate with the National Weather Service and the Corps. When possible, releases from Navajo Dam are/ will be adjusted when weather conditions and tributary drainage inflows indicate possible flooding. Flash floods occur in this region and San Juan River tributaries can contribute large volumes of water from those events.

The amount of reservoir space allocated for flood storage is based on historic inflow data coupled with required free storage space and time of year. This information is used to determine needed storage space for potential water inflow coupled with the time of year

and projected seasonal inflows. Because of these operational criteria that reserve appropriate water storage, the risk of reservoir spills should not change under any of the action alternatives.

Gages are presently maintained by the GS at several locations along the San Juan River. Gages on the tributaries would not provide sufficient lead time concerning flash floods to make operational changes at Navajo Dam practical.

General Comment 25: Negative impacts on air quality should be addressed because hydropower losses will have to be offset by coal-fired powerplants.

Response: Hydropower losses could be replaced by other hydropower, nuclear, or fossil fuel plants. The loss of hydropower from the powerplant at Navajo Dam would be on the order of 15–16 megawatt hours annually. Since this is a relatively small amount of energy compared to the generating output of the local coal-fired powerplants, such as the Four Corners and San Juan Powerplants, any significant effect on air quality is unlikely. However, if the hydropower losses were replaced by coal-fired power generation, then an increase in emissions would occur.

This effect could occur because coal-fired powerplants release many byproducts into the air. At the present time, the effect of these releases on the local environment is not clear, and local studies have not been done. Air quality parameters are being monitored, and exceedences are reported to the State and EPA (they have control over the powerplant's emissions). (The EPA publishes Toxic Release Inventory reports for each State and is a source for powerplant emission records.) No mitigation is proposed for any indirect air quality impacts.

General Comment 26: Some comments indicated that impacts to the City of Farmington's hydropower plant at Navajo Dam were understated and also that operating costs could increase. Other comments indicated that the hydropower impacts could be mitigated by modifications in the powerplant's design, and, thus, the losses shown in the DEIS are too high.

Response: The DEIS and FEIS assess impacts under a worst-case scenario based on information provided by the City of Farmington. Both reduced minimum flows and the higher spring flows under the Preferred Alternative would reduce the water supply to the powerplant. The analysis in the EIS anticipated increased operating costs and a hypothetical shutdown of the powerplant under prolonged low flows. Part of the problem would be less water going through the powerplant to actually produce power, and part of the problem could be operational problems at low flows. The latter problem could possibly be offset by modifications in the powerplant. A decision to modify the powerplant itself to mitigate these losses would be the responsibility of the City of Farmington.

General Comment 27: Numerous comments centered on a loss of or reduction in the San Juan River trout fishery below Navajo Dam. Both recreation and economic losses were cited.

Response: Reclamation acknowledges that reductions in releases below 500 cfs from Navajo Dam would adversely impact trout habitat and trout populations. As a result, adverse effects on recreational trout fishing, including reduced angler success rates and angling satisfaction, would occur. Ultimately, fewer recreational users would frequent the area, causing a decline in generated economic revenue.

Impacts would also occur downstream below Citizen's Ditch, where water quality problems related to lower flows would increase. For additional information, see General Comment No. 28 and chapter III of the EIS.

General Comment 28: The analysis of trout fishery impacts is inadequate, particularly since it was extrapolated from two limited low flow tests. Under the low flow conditions, the effects of predation and aquatic insect losses on the trout fishery are not adequately addressed. The Summer Low Flow Test was not adequate to determine impacts; for example, high summer temperatures will be a problem for the trout fishery.

Response: Impacts to the trout fishery were based on direct and indirect assessments from numerous studies that were developed to better understand the effects of reduced releases from Navajo Dam. These studies included an assessment of trout health, a study of the effects to macroinvertebrates, water quality sampling, and application of a physical habitat (trout) simulation model.

To more accurately predict impacts, two low flow tests were conducted—a 4-month test in the winter of 1996–97 and a 7-day test in the summer of 2001. Both tests provided an opportunity to evaluate actual impacts associated with low flows, to extrapolate findings to approximate long-term conditions, and to support data obtained from other studies and analyses.

Reclamation concluded, based on the physical habitat simulation model, that the effects of long-term dam releases of 250 cfs would result in an estimated 34-percent reduction in trout habitat in the Quality Waters section as compared to 500 cfs releases. Losses to aquatic insect habitat were also acknowledged; however, it was concluded that these macro-invertebrate losses were not significant in terms of their measurable effect on trout. It is stated in the EIS that Reclamation believes that the trout population is below the carrying capacity in terms of insect prey.

The quality of trout habitat downstream of Citizen's Ditch was identified in the DEIS as a concern. The long-term effects of reduced summer flows coupled with worst-case

conditions (i.e., higher ambient air temperatures, higher diversion rates, reduced oxygen content, and other factors) could result in very significant impacts on trout. (Also, see response to General Comment No. 11.)

General Comment 29: Economic losses from reduced quality of the trout fishery need to be better addressed.

(a) The reduction in dory fishing will be a significant impact. Economic losses from a reduced number of in-State anglers are not addressed, and other counties that are impacted are not addressed in the DEIS.

Response: Dory fishing losses were not specifically estimated, but are included in Reclamation's analysis of out-of-State angler losses. Although information is not available that identifies total dory angling, the EIS acknowledges that dory use will become difficult during periods of low releases; dory fishing is a favorite method of fishing on guided trips.

In-State angler economic impacts were not estimated based on the assumption that these recreationists would still make their recreation expenditures—but on other recreation activities within the region.

Regional and national economic conditions, the availability or lack of availability of other fisheries, and angler attitudes all will influence the number of anglers on the San Juan River. The EIS does estimate losses and also points out that low flows will lead to more conflict among anglers; the lower water level will increase the interference between dory fishing and wade fishing. (Also, see responses to General Comment Nos. 27, 28, and 31.)

Indirect and direct employment losses were based on estimates for counties in which the direct recreation expenditures would occur and would have the most significant impact. The counties identified were the primary destination points. Recreation-related expenditures in other counties would include fishing activities at other sites or locations specific to that county.

(b) Correlating angler losses with habitat reductions or surface area reductions may underestimate losses.

Response: The EIS points out habitat losses for trout associated with dam releases less than 500 cfs; these losses are significant in the Quality Waters downstream from the dam, with losses increasing downstream from the Citizen's Ditch Diversion. The EIS also identifies that the actual effect on angler numbers is difficult to predict. Some commentors believed Reclamation's estimates were too low, and some felt they were too high. Factors affecting angler numbers would include trout population losses, quality of the angler experience, and other factors as discussed in the "Recreation" section in chapter III of the EIS.

(c) Angler losses downstream from Citizen's Ditch need to be presented.

Response: Angler losses downstream from Citizen's Ditch were not quantified because of the lack of specific angler use data due to the limited public access and the preponderance of private land. It is acknowledged that losses of use would occur in this area.

General Comment 30: The EIS presents a trout habitat loss of 30–37 percent with a reduction in releases from Navajo Dam. This is not supported, nor are habitat losses credibly correlated with associated recreation losses. Both may be overstated.

Response: The predicted loss of 30–37 percent of physical trout habitat was based on the results of a physical habitat (trout) simulation model applied within the Quality Waters section of the trout fishery. This model, which has been in use for over 20 years, has both a hydrologic and biologic component and basically assumes that an aquatic organism has varying preferences for useable habitat provided as compared to riverflow. While the application of any model involves some subjective assumptions, Reclamation believes the best available information to predict the effects of reduced flow on the trout fishery was used. Accordingly, Reclamation believes that the associated 30–37 percent reduction in adult trout habitat resulting from a comparison of a 500 versus a 250 cfs dam release is reasonably accurate.

The 30–37 percent reduction in trout habitat was also presented as one way to project possible impacts to angling use. There was no specific way to predict the effects of lower riverflow on angling use because of the many factors involved. The quality of the angling experience is the single most important factor in determining angling use. Influences on this factor include fish caught per hour, size of fish caught, cost associated with the experience, and overall number of anglers using the same resource area. Overcrowding is currently identified as the single biggest concern within the Quality Waters section.

For a variety of reasons, it is difficult to predict future angler numbers. However, Reclamation believes that trout habitat will be significantly reduced, resulting in a reduction of trout numbers as well as a reduction in the quality of wade angling and dory fishing. Wade fishing will be easier, as more shallow water will be available; however, overall, the quality of the fishery will decline. The 30–37 percent reduction in overall angler use was believed to be a logical way of predicting impacts.

General Comment 31: Various comments on socioeconomic issues were received:

(a) The overall economic analyses in the DEIS should be clarified. The net economic effects should be presented clearly. For example, the economic impacts of each alternative should be compared using impacts that can be quantified and those that cannot. Commentors stressed that the positive impacts of over $100 million under the Preferred Alternative should be clearly compared to the losses of up to

$13 million. However, other commentors indicated that economic benefits are inflated because NIIP irrigated lands lose money and because ALP Project water is not needed.

Response: The DEIS contains information on significant economic impacts in the study area. The FEIS has been revised to more clearly present an economic comparison of the alternatives.

Impacts that lend themselves to monetary evaluation were considered. However, Reclamation believes that the information developed pursuant to a traditional benefits/ cost ratio is not a factor that is solely considered in determining what alternatives should be used in meeting ESA requirements and settlement of Indian water right claims.

Gross revenues were used to represent impacts resulting from the Federal action; these gross revenues were used in the IMPLAN model to derive the secondary impacts of employment and income at the county level. Economic models that estimate local impacts on small rural communities were not available.

(b) Area businesses and anglers believe that some fishing and rafting businesses will have to close if the Preferred Alternative is implemented. In addition, socioeconomic impacts have been grossly underestimated; for example, losses of guided fishing trips are underestimated.

Response: This EIS recognizes impacts to local businesses; however, it does not estimate closing of local businesses. Good-faith efforts were made to collect economic data from local guides and outfitters; however, due to their lack of response regarding requested business revenue/ expenditures, impacts to area businesses were difficult to estimate. As a result, recreational impacts were based on a 30–37 percent loss of trout habitat.

(c) Was the IMPLAN model modified to show local economic effects?

Response: No, the IMPLAN model is a regional economic input-output model, and data are only available at the county level.

(d) Agricultural losses would occur due to high flow damage to diversion structures and low flow problems with diverting water.

Response: Potential agricultural and other industry losses due to any inability of diversion structures to divert the needed water supplies for crops and other uses during low flow periods were not addressed since all alternatives would be operated in compliance with State water rights. The cost of repairing or maintaining diversion structures due to high or low flows was identified in the EIS, and water shortages as a result of diversion structure problems were not considered significant or long-term impacts.

(e) The DEIS provides an overly conservative economic analysis. The benefits from the Preferred Alternative are consistently undervalued, while the loss of benefits from adverse impacts is consistently overstated.

Response: The benefits of the Preferred Alternative relate to the protection of existing and future water uses. Economic losses are associated with such uses as recreation and hydropower. The EIS has attempted to present both benefits and losses in an impartial manner.

All benefits to resources cannot be measured monetarily. Benefits to the endangered species were not quantified for that very reason. Thus, to compare only those market-valued resources against those that do not have market value can lead to erroneous conclusions. Monetarily quantified benefits were identified for marketable goods and used as a measure of magnitude of impact.

(f) More information on job losses and other economic problems associated with the No Action Alternative should be included.

Response: It is recognized that there are significant economic impacts with the No Action Alternative. Additional information has been provided in the FEIS.

General Comment 32: It is not clear from the EIS whether flows of 500 cfs will be maintained in downstream rafting areas—this affects the analysis of rafting impacts. Impacts on rafting are understated. How will downstream flows be monitored and maintained?

Sedimentation effects on rafting on the lower river should be discussed.

Also, beneficiaries should not pay for mitigation since a minimum flow of 250 cfs is consistent with the Navajo Unit's project authorization. There is no legal basis for beneficiaries of the project to pay for mitigation.

Response: Under the 250/ 5000 Alternative (Preferred Alternative), average weekly San Juan River flows at Bluff, Utah, are projected to remain above 500 cfs during any month. However, as in the extremely dry summer of 2002, this goal will be difficult to maintain. Under shortage-sharing periods, the base flows may be reduced as explained in the FEIS. General Comment No. 15 provides information regarding how this 500 cfs will be monitored. See table II-7 in the FEIS for detailed monthly flow information from 1929–93 under the alternatives.

Under the 250/ 5000 Alternative (Preferred Alternative), positive effects will be realized at the Clay Hills takeout because of more frequent and higher spring flows that flush accumulated sediments further into Lake Powell, thereby making the river more conducive to rafting.

For a response on mitigation, refer to General Comment No. 2.

General Comment No. 33: Concern is expressed about effects on wetlands and riparian areas that are associated with riverflows. How was a "no adverse effect" conclusion reached? What is the effect on wildlife, such as southwestern willow flycatcher and bald eagle, that use these riparian areas?

Response: Based on information collected by Reclamation, it was determined that current maximum releases of 5,000 cfs from the dam would have inconsequential effects on the riparian zone to the confluence of the Animas River. This determination was based on the fact that a channel has been formed and maintained with a 5,000 cfs maximum flow since the dam became operational in 1965. Springtime releases greater than 5,000 cfs would allow for more natural recruitment of riparian vegetation; however, they would also result in significant flood damage.

Reductions in reservoir releases below the current 500 cfs minimum during the irrigation season were identified as potentially having significant adverse effects to associated riparian vegetation by reducing groundwater levels. Of primary concern were the effects of reduced flows from the dam to Citizen's Ditch since the river provides nearly 100 percent of the groundwater supporting the wetland/ riparian vegetation in this reach.

This section of river was surveyed during the Winter Low Flow Test to determine river elevation changes, and the results of this study are summarized in the 1998 *Navajo Dam Winter Flow Test Report*. The water surface elevation reductions measured when comparing a 500 to 250 cfs release were minor, especially within sections of the river that supported higher densities of riparian vegetation. The area of greatest concern was the wetland complex and associated waterfowl nesting area existing within the first 0.5 mile below the dam, which was discussed in the DEIS in more detail, and for which possible mitigative measures were identified.

Below Citizen's Ditch, riparian habitat is supported by more factors, including irrigation return water, ditch seepage, and riverflows. This complex source of groundwater makes it difficult to determine or project the effects of reduced riverflows on the riparian zone. Reclamation does not believe that irrigation season riverflow reductions would significantly impact the width of the riparian area or the vegetative species present because irrigation sources of groundwater would remain.

Reclamation funded aerial photography from the dam to the confluence of the Animas River in July 2001 to provide a baseline from which to assess possible changes in the riparian zone over time.

Reclamation believes that the riparian zone downstream from Farmington would benefit by returning flow regimes below the confluence of the Animas River to a more natural hydrologic condition and by maintaining higher summer minimum flows.

Effects on wildlife habitat are similar to those on riparian vegetation. The effects on threatened or endangered species, such as the southwestern willow flycatcher and bald eagle, are addressed in the biological assessment in volume II of the FEIS. No adverse effects are predicted, and the Service has concurred with this determination.

General Comment 34: The EIS was not distributed in time to permit an adequate review before the public comment period ended or it was not received at all.

Response: On August 16, 2002, a Summary of the Navajo Reservoir Operations Draft Environmental Impact Statement (Summary DEIS) was priority mailed to more than 450 individuals, businesses, agencies, and organizations listed on Reclamation's mailing list for this activity. The majority of recipients reside in the southern Colorado and northern New Mexico area.

Besides providing the public hearing schedule, the cover letter for the Summary DEIS stated that the DEIS would not be automatically distributed. If recipients wanted copies of the document, which was scheduled to be made available after September 1, 2002, they would need to contact Reclamation directly. The letter also provided contact names, telephone numbers, and e-mail and office addresses.

During the DEIS public hearings (held the first week in October 2002), Reclamation received several requests to extend the public comment period for 6 months. Several individuals indicated they had not received a copy of the DEIS. Others expressed concern that the DEIS contained too much information to adequately address within 60 days (September 4 to November 4, 2002). After careful consideration, Reclamation determined that a 6-month extension was not warranted. However, Reclamation was concerned about those individuals who, for whatever reason, did not receive a copy of the DEIS in a timely manner. Consequently, Reclamation extended the comment period an additional 30 days (to December 4, 2002).