

FINAL ENVIRONMENTAL IMPACT STATEMENT

River Management Alternatives for the Rio Grande Canalization Project

Lead Agency:

**United States Section,
International Boundary and Water Commission**
El Paso, Texas



June 2004



Cooperating Agency:

**U.S. Department of the Interior
Bureau of Reclamation**
Albuquerque, New Mexico

Technical Support:

PARSONS
Austin, Texas

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Cover Sheet

River Management Alternatives for the Rio Grande Canalization Project

Draft Final

Lead Agency

United States Section, International Boundary and Water Commission, United States and Mexico (USIBWC) El Paso, Texas.

Cooperating Agency

U.S. Department of the Interior, Bureau of Reclamation, Albuquerque Area Office, Albuquerque, New Mexico.

Abstract

The USIBWC is evaluating long-term river management alternatives for the Rio Grande Canalization Project (RGCP), a 105.4-mile narrow river corridor that extends from below Percha Dam in Sierra County, New Mexico to American Dam in El Paso, Texas. The RGCP, operated and maintained by the USIBWC since its completion in 1943, facilitates water deliveries and provides flood control.

The No Action Alternative and three action alternatives are evaluated in the EIS. The alternatives were developed in a manner that enhances and partially restores the riparian ecosystem while maintaining the flood control and water delivery requirements of the RGCP. Alternatives formulation was the result of a 3-year public consultation process that included regulatory agencies, irrigation districts, and environmental organizations.

Measures under consideration as part of the alternatives include modifications to grazing leases, changes in floodway vegetation management, riparian restoration, and aquatic habitat diversification.

Following the public comment period on the Draft EIS, the Integrated USIBWC Land Management was identified as the preferred alternative for RGCP management.

Other Requirements Served

This Final EIS is intended to serve other environmental review and consultation requirements pursuant to: 40 CFR 1502.25(a)

Date Draft EIS was made available to EPA and the Public:

December 18, 2003

Date Final EIS was made available to EPA and the Public:

June 29, 2004

PREFACE

This document is an abbreviated Final Environmental Impact Statement (Final EIS) for long-term river management alternatives of the Rio Grande Canalization Project (RGCP). An abbreviated Final EIS is one that provides responses to comments provided by agencies and the general public, along with additions and modifications to selected Draft EIS sections. No modifications are needed in the remaining Draft EIS sections and, thus, are not reprinted with the Final EIS. Also provided are an Executive Summary and appendices with additional technical information. The Final EIS content is described below.

Executive Summary

The Executive Summary is an update of the version previously provided in the Draft EIS. It includes additional information on the Draft EIS review process, and USIBWC's selection of a preferred alternative for long-term management of the RGCP.

Draft EIS Additions and Modifications

Chapter I contains additions and modifications to the Draft EIS as follows:

- A more detailed subsection was included on USIBWC authority to adopt a modified management strategy for the RGCP (Subsection 1.1.3).
- Two new sections were added to incorporate information following release of the Draft EIS: Selection of a Preferred Alternative (Section 2.13), and Draft EIS Public Review Period (Subsection 5.1.4).
- Updated sections were included on water quality baseline conditions (Subsection 3.1.3); summary analysis of potential effects on water resources and land use (Subsections 4.1.2 and 4.8.2, respectively); a revised socioeconomic analysis, including potential effects by individual county (Section 4.9); and analysis of cumulative effects of regional plans (Subsection 4.15.1).

Responses to Draft EIS Comments

Chapter II of the Final EIS presents responses to comments from agencies and the public received during the Draft EIS review period (December 26, 2003 to March 1, 2004). Responses are presented sequentially by EIS section, following the numbering system used in the Draft EIS. The introduction to Chapter II describes the numbering system used to track comments, and to cross-reference those comments to the EIS section in which they are addressed.

Additional Appendices

The Final EIS contains six new appendices, as listed below. These appendices follow the numbering sequence presented in the Draft EIS.

Appendix J, Cross-Reference Index Between Comments and Responses. This appendix provides a cross-reference index to locate responses to individual comments previously discussed in Chapter II. The index lists commentator, comment tracking number, and EIS section in which each comment was addressed. The commentators sequence follows four main categories: Agencies, Organizations, Private Business, and Individual Stakeholders (Codes A, O, P and S, respectively).

Appendix K, Draft EIS Comments. This appendix presents copies of all correspondence submitted by agencies, organizations, and individual stakeholders during the Draft EIS review period. Individual comments identified are numbered in the correspondence for cross-referencing with responses provided (Appendix J).

Appendix L, Public Hearing Transcript. This appendix provides the official Public Hearing transcript. Individual comments made at the end of the hearing are also numbered for cross-referencing with responses provided (Appendix J).

Appendix M, Additional Cultural Resources Consultation. This appendix presents the USIBWC transmittal letter of the 2001 Cultural Resource Report, and comments received from the New Mexico Department of Cultural Affairs, Historic Preservation Division on May 10, 2004, following review of the document. These comments are also numbered for cross-referencing with responses provided (comments identified as A5b in Appendix J).

Appendix N, Socioeconomic Effects Analysis Support Documentation. This appendix presents additional support documentation for the socioeconomic effects analysis. This information was used on the update of Section 4.9.

Appendix O, Act of Congress Authorizing USIBWC to Construct, Operate and Maintain the RGCP. This appendix presents the text of Act of August 29, 1935 (49 Stat. 961) and Act of June 4, 1936 (49 Stat. 1463).

Appendix P, USFWS Letter of Concurrence with Findings of the RGCP Biological Assessment. This appendix presents the text of the June 28, 2004 letter from the U.S. Fish and Wildlife Service addressing issues identified in the Biological Assessment for the RGCP.

Appendix Q, Final EIS and Technical Support Documents. This appendix, provided in CD format, presents the electronic version of the Final EIS, the December 2003 Draft EIS, and the following technical documentation prepared in support of the EIS: January 2004 Biological Assessment; August 2003 Reformulation of River Management Alternatives; and March 2001 Alternatives Formulation Report (the last two reports were also provided in Appendix I of the Draft EIS).

EXECUTIVE SUMMARY

Purpose of and Need For Action

The United States Section of the International Boundary and Water Commission (USIBWC) is evaluating long-term river management alternatives for the Rio Grande Canalization Project (RGCP), a narrow river corridor that extends 105.4 miles along the Rio Grande, from below Percha Dam in Sierra County, New Mexico to American Dam in El Paso, Texas. The RGCP, operated and maintained by the USIBWC since its completion in 1943, was constructed to facilitate water deliveries to the Rincon and Mesilla Valleys in New Mexico, El Paso Valley in Texas, and Juárez Valley in Mexico, and provide flood control. A levee system for flood control extends 57 and 74 miles over the right and left stream banks, respectively. Figure ES-1 shows the RGCP location.

The USIBWC currently implements operation and maintenance procedures to enhance ecosystem functions within the RGCP. However, the river and floodway will remain highly altered from events pre-dating RGCP construction. Thus, the USIBWC recognizes the need to accomplish flood control, water delivery, and operation and maintenance activities in a manner that enhances or restores the riparian ecosystem.

River management alternatives under consideration address practices such as stream bank stabilization, erosion reduction, and flood control as well as environmental measures intended to support restoration of native riparian vegetation and diversification of aquatic habitats along the RGCP. Potential effects of the alternatives were evaluated in a Draft EIS released for agency and public review on December 18, 2003.

Alternatives Considered in Detail

Throughout an extended public consultation process, an interdisciplinary team considered several river management alternatives and selected four for detailed analysis. Features of these alternatives are described below. Alternatives were initially formulated in a March 2001 report issued following an 18-month stakeholder consultation period, and subsequently modified to address further input from representatives of regulatory agencies, irrigation districts, environmental organizations, and the general public. A Reformulation of River Management Alternatives Report documenting those modifications and the rationale for their adoption was completed in August 2003 as the basis for the Draft EIS.

Table ES-1 presents a comparison of measures by management category for the No Action Alternative and three action alternatives. Levee rehabilitation is the core action of the Flood Control Improvement Alternative, along with changes in grazing leases to improve erosion control. These two measures apply to all action alternatives. Most other measures under consideration are associated with floodway management under the Integrated USIBWC Land Management Alternative and Targeted River Restoration Alternative. The latter alternative also considers measures for aquatic habitat diversification such as modified dredging of arroyos and reopening of meanders, as well as riparian vegetation development by induced overbank flows.

No Action Alternative

The No Action Alternative would continue RGCP operation and maintenance activities as currently conducted by the USIBWC. Those activities are directed toward flood protection and water delivery, with some activities involving environmental improvements. Key features of this alternative are management of the levee system, floodway maintenance through mowing, grazing leases and recreational areas; maintenance of pilot channel and irrigation facilities; and sediment control and disposal.

Mowing of the floodway is conducted annually, or as circumstances warrant, to control weeds, brush, and tree growth, including salt cedar. The USIBWC administers a land lease program that covers approximately 43 percent of the RGCP floodway. Pilot channel maintenance is performed during non-irrigation periods when water levels are lowest by removing debris and deposits, including sand bars. The USIBWC is also responsible for maintaining five NRCS sediment control dams in tributary arroyos and associated access roads. The agency conducts dredging at the mouth of arroyos to maintain grade of the channel bed and ensure the channel conveys irrigation deliveries.

Flood Control Improvement Alternative

This alternative takes into consideration a potential increase in flood containment capacity. A 1996 hydraulic modeling study by the U.S. Army Corps of Engineers (USACE) identified a number of potential deficiencies in the RGCP in the event of a 100-year flood. Those findings were partially re-evaluated as part of the Draft EIS to include potential effects of environmental measures such as additional vegetation growth in the floodway. Most of the potential levee deficiencies were identified within urbanized reaches of the RGCP.

The assumption used for the Draft EIS was that existing levees would be raised as needed to meet a 3-foot freeboard design criteria, and new levees would be constructed in unconfined areas where flood levels could extend past the right-of-way (ROW) boundary. Based on this assumption, levee rehabilitation included 60.1 miles of levees needing a 2-foot average height increase, 6 miles of new levees, and a 2.8-mile long floodwall in the Canutillo area. As part of this alternative, the grazing lease management program would be modified to improve erosion control. The modified program would include a variety of vegetation treatments to control salt cedar in lease areas.

Integrated USIBWC Land Management Alternative

In addition to measures for flood control improvement and erosion protection, this alternative incorporates environmental measures within the floodway. All environmental measures would be limited to lands under USIBWC jurisdiction. A key feature of the Integrated USIBWC Land Management Alternative is development of a riparian corridor for bank stabilization and wildlife habitat by planting and stream bank reconfiguration at selected locations. Stream bank reconfiguration would allow overbank flows within the floodway to provide conditions suitable for establishment of native riparian species, particularly cottonwoods. Under this alternative, currently mowed floodway vegetation would be managed to promote native grass development in combination with salt cedar control treatments.

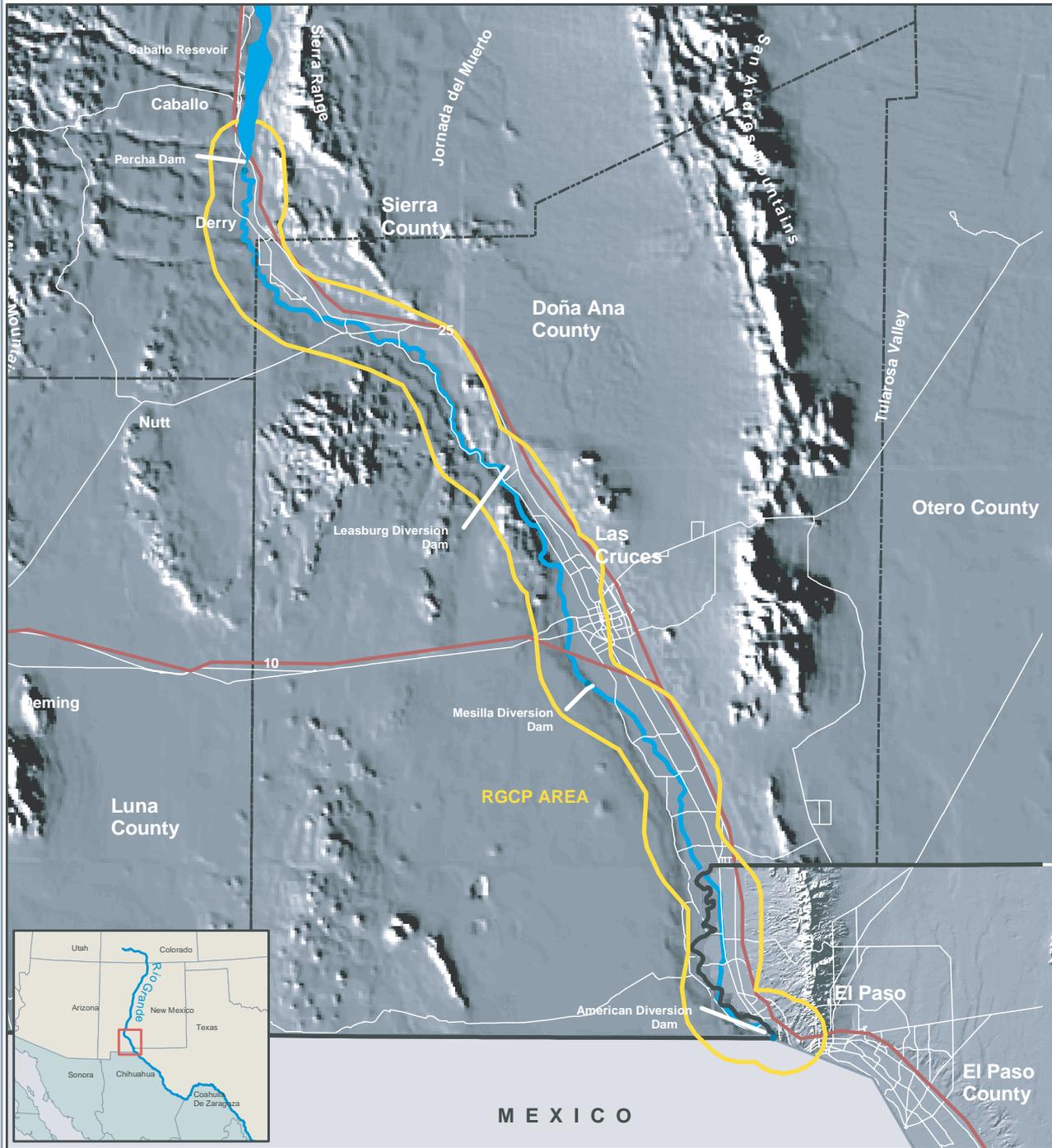


Figure ES-1
Location of the Rio Grande
Canalization Project (RGCP)

United States Section,
 International Boundary Water Commission
 December 2003



J:\736\736620\GIS-Mapping\USIBWC_location_map_fig1.mxd

Table ES-1 Comparison of Alternative Features

| Management Category | No Action Alternative | Flood Control Improvement Alternative | PREFERRED ALTERNATIVE: USIBWC Land Management | Targeted River Restoration Alternative |
|--|--|--|--|--|
| Levee System Management | Routine levee and road maintenance | No change | No change | No change |
| | n/a | Levee system improvements | Levee system improvements | Levee system improvements |
| Floodway Management | Unmodified grazing leases | Modified leases for erosion control (3,552 ac) | Modified leases for erosion control (3,552 ac) | Modified leases for erosion control (3,493 ac) |
| | Continue seasonal mowing (4,657 ac) | No change | Continued mowing (2,674 ac) | Continued mowing (2,223 ac) |
| | | | Modified grassland management (1,641 ac) | Modified grassland management (1,641 ac) |
| | | | Native vegetation planting (223 ac) | Native vegetation planting (189 ac) |
| | | | Steram bank reconfiguration (127 ac) | Seasonal peak flows / bank preparation (516 ac) |
| n/a | n/a | n/a | Voluntary conservation easements (1,618 ac) | |
| Channel and Irrigation Facilities Management | Debris removal and channel protection | No change | No change | No change |
| | America Dam and irrigation structures maintenance | No change | No change | No change |
| | n/a | n/a | n/a | Reopening of six former meanders (147 ac) |
| Sediment Management | NRS sediment dam maintenance | No change | No change | No change |
| | Sediment removal from arroyos / mitigation actions | No change | No change | Modified arroyo dredging for aquatic habitat (12 arroyos) |
| | Disposal from dredging channel within ROW* | Disposal mainly outside ROW* | Disposal mainly outside ROW* | Disposal mainly outside ROW* |
| | n/a | n/a | Disposal from environmental measure excavation inside ROW* | Disposal from environmental measure excavation inside ROW* |

*ROW of the Rio Grande Canalization Project (lands under USIBWC jurisdiction)

Targeted River Restoration Alternative

This alternative emphasizes environmental measures associated with partial restoration of the RGCP, such as induced overbank flows to promote riparian corridor development, and opening of meanders and modification of the mouth of arroyos to increase aquatic habitat diversification. This alternative includes measures previously identified for flood control improvement and grazing leases modification.

Vegetation management for this alternative includes planting and enhancement of existing native woody vegetation and modified grassland management, as previously indicated for the Integrated USIBWC Land Management Alternative. These measures would be complemented by use of seasonal peak flows to promote natural regeneration of riparian bosque, and the use of conservation easements.

Seasonal peak flows are controlled water releases from Caballo Dam during high storage conditions in Elephant Butte Reservoir to induce overbank flows. Environmental measures would extend beyond the ROW through use of voluntary conservation easements to preserve existing wildlife habitat and encourage native bosque development.

Partial reopening of six former meanders eliminated during construction of the RGCP would be conducted to diversify aquatic habitat required for breeding and spawning of native fish species. In addition, dredging of some arroyos would be modified to create backwaters for diversification of aquatic habitats.

Implementation Strategy

Program Management. Use of adaptive management is anticipated in implementing river management alternatives. Adaptive management is a science-based decision process that leads to better management through a systematic process of prediction, application, monitoring, feedback, and improvement.

It is envisioned that adaptive management would be implemented through coordination with the Paso del Norte Watershed Council established by the New Mexico-Texas Water Commission. The Council would serve in an advisory capacity regarding selection, planning, and implementation of environmental measures in accordance with the objectives of the Council, and within the limits of the available manpower and resources. It would also recommend policies for cooperation and sharing information concerning planning and management activities of other projects potentially affecting the operation and management of the RGCP. Guidance for future project needs and measures would be provided by an External Advisory Group to obtain impartial, scientifically informed evaluations based on a long-term monitoring and evaluation program.

Water Acquisition and Cooperative Programs. Because a number of environmental measures under consideration would result in water consumption, water rights acquisition and cooperation with the irrigation districts are critical elements in the viability and long-term sustainability of environmental measures. Given that the USIBWC does not have any water rights within the RGCP, options for acquisition were evaluated. Support of water conservation by financing on-farm water conservation

programs, was identified as the most viable strategy to secure water. Conservation programs would not only be consistent with stated interests and ongoing programs of the irrigation districts, but would also facilitate seeking funds from high-priority state and federal programs. Cooperation agreements would be established with other agencies for increased sediment control at a watershed level, and to secure and manage voluntary conservation easements.

Implementation Timetable. Levee rehabilitation, improvements in erosion control, establishment of a riparian corridor and diversification of aquatic habitats are envisioned as long-term processes that will evolve as the effectiveness of individual projects are documented. A 20-year timeline was adopted for implementation of alternatives under consideration. During an initial 5-year phase, implementation plans would be developed and funded, agreements would be reached for interagency cooperation and water acquisition, selected projects would be tested at a pilot scale, and monitoring would be conducted. Priority projects would be implemented during a second 5-year phase. A 10-year final phase would be used for implementation of the remaining projects.

Potential Effects of the Alternatives

Thirteen resource areas were evaluated to assess potential effects of the river management alternatives. For each resource area, evaluation criteria were identified and applied to the various measures under consideration. Table ES-2 presents a comparison of alternatives in terms of potential effects on resources most likely to be affected by changes in river management under consideration.

Preferred Alternative

The USIBWC selected the ***Integrated USIBWC Land Management Alternative*** as the agency's preferred approach for long-term management of the RGCP. In selecting the preferred alternative, the agency reviewed the predicted environmental, economic, and social impacts of three action alternatives and the No Action Alternative; their anticipated environmental and financial ability to be implemented, and quality of life performances; and the risks and safeguards inherent in them. It is believed that the Integrated USIBWC Land Management Alternative will bring actual results in the short and medium term as it:

- Allows the USIBWC to re-assess floodway management within the context of current functions;
- Gradually develops environmental improvements within its jurisdictional area with manageable water consumption;
- Puts in place some agreements with other agencies and, hopefully, water users and environmental organizations; and
- Would not be cost prohibitive.

A Record of Decision (ROD), indicating selection of a river management alternative for the RGCP and rationale for the decision, will be published in the Federal Register 1 month after the Final EIS release date for agency and public review.

Table ES-2 Summary Comparison of the Effects of the Alternatives

| Resource Area | No Action Alternative | Flood Control Improvement Alternative | Integrated USIBWC Land Management Alternative | Targeted River Restoration Alternative |
|-----------------|---|---|---|--|
| Water Resources | <p>No-mow zones would be maintained, with a potential consumption of up to 35.3 ac-ft/yr</p> <p>No effects on water delivery or water quality are anticipated as current practices would be maintained.</p> | <p>A potential 1,078 ac-ft/yr increase in water consumption due to environmental measures. Water consumption would increase.</p> <p>No effects on water delivery are anticipated for levee system rehabilitation, or changes in grazing leases in uplands.</p> <p>Water quality could decrease in terms of total suspended solids during construction, but it would improve in the long-term by a reduced sediment load and lower nutrient input from grazing areas with improved vegetative cover.</p> | <p>A potential water consumption increase of 2,203 ac-ft/yr at the completion of the 20-year implementation period. This represents 0.34% of EBID full diversion allocation, or 1.5% in severe drought conditions (as in 2003)</p> <p>Development of riparian vegetation on stream banks would have a long-term positive effect on water delivery by stabilization of stream banks. Short-term increases in debris and sediment in the river would be expected prior to establishment of vegetative cover.</p> <p>Water quality is likely to improve as more extensive vegetative cover on the RGCP floodway and uplands improve erosion control and nutrient release from grazing areas.</p> | <p>A potential for a water consumption increase of approximately 9,461 ac-ft/yr at the completion of the 20-year implementation period. This value would be equivalent to 1.91% of EBID full diversion allocation (releases would not be possible during drought conditions).</p> <p>Effects on water delivery and water quality would be similar to those of the Integrated USIBWC Land Management Alternative.</p> |
| Flood Control | <p>The risk of flooding and overtopping the levees from the 100-year flood would remain as currently quantified.</p> | <p>Additional protection would be provided to life and public and private property beyond that which is already provided by the existing levee system. The potential freeboard increase in levee deficient areas would be approximately 2 feet.</p> | <p>Similar to the Flood Control Improvement Alternative. There would also be a potential for a small reduction in flood containment capacity due to increased vegetation growth along the floodway. The potential freeboard increase in levee deficient areas would increase to approximately 2.5 feet.</p> | <p>Similar to the Flood Control Improvement Alternative. There would also be a potential for a small reduction in flood containment capacity due to increased vegetation growth along the floodway. The potential freeboard increase in levee deficient areas would increase to approximately 2.5 feet.</p> |
| Soils | <p>No change from baseline condition.</p> | <p>Levee rehabilitation would mobilize 898 ac-ft of soil for construction. Modified grazing leases would reduce uplands erosion 0.45 ac-ft annually and improved riparian conditions by reducing bank erosion and increasing ground cover.</p> | <p>Levee rehabilitation and modified grazing leases would result in similar effects as the Flood Control Improvement Alternative.</p> <p>An additional 157 ac-ft of soil would be displaced as a result of bank shave-downs. Mitigation procedures were established to reduce erosion.</p> | <p>Levee rehabilitation and modified grazing leases would result in similar effects as the Flood Control Improvement Alternative. An additional 300 ac-ft of soil would be displaced as a result of opening former meanders, excavating arroyos and scour during seasonal peak flows. Mitigation procedures were established to reduce erosion.</p> |

| Resource Area | No Action Alternative | Flood Control Improvement Alternative | Integrated USIBWC Land Management Alternative | Targeted River Restoration Alternative |
|-------------------------|------------------------------------|---|---|---|
| Vegetation and Wetlands | No change from baseline condition. | <p>Modified grazing in uplands and riparian zones would affect 3,552 acres increasing plant species, richness and structural diversity. Levee construction would have a minor effect on vegetation communities.</p> <p>Mowing by USIBWC would continue at the same level as the No Action Alternative.</p> | <p>Effects of modified grazing leases and levee construction would be similar to the Flood Control Improvement Alternative.</p> <p>Mowing by USIBWC would be reduced by 1,983 acres.</p> <p>Restoration of 350 acres of native bosque by bank shakedown and plantings, and development of native grasslands (1651 acres) would increase the amount of native vegetation within the ROW.</p> <p>Wetland areas would increase by 13 acres.</p> | <p>Effects of modified grazing leases and levee construction would be similar to the Flood Control Improvement Alternative.</p> <p>Mowing by USIBWC would be reduced by 2,434 acres.</p> <p>Restoration of 1,549 acres of native bosque by seasonal peak flows, opening meanders, plantings and development of native grasslands (1,029 acres) would increase the amount of native vegetation within and outside the ROW.</p> <p>Wetland areas would increase by 96 acres.</p> <p>Conservation easements would add 1,601 acres under management.</p> |
| Wildlife Habitat | No change from baseline condition. | <p>Wildlife habitat quality would increase 30% due to modified grazing in 3,552 acres of uplands and riparian areas. However, the majority of the ROW would continue to be considered as below average to poor wildlife quality due to mowing of vegetation.</p> <p>Construction associated with levee rehabilitation would be a short minor effect.</p> <p>Modification of salt cedar management in grazing leases methods would result in long-term beneficial effects.</p> | <p>Wildlife habitat quality would increase 51% due to modified grazing in 3,552 acres of uplands and riparian areas, and development of 350 acres of native bosque and 1,641 acres of native grassland.</p> <p>Construction associated with levee rehabilitation and environmental measures would be a short minor effect.</p> <p>Modification of salt cedar management in grazing leases methods would result in long-term beneficial effects.</p> | <p>Wildlife habitat quality would increase 72% due to modified grazing in 3,493 acres of uplands and riparian areas, and development of 1,549 acres of native bosque and 1,929 acres of native grassland. A total of 1,618 acres of conservation easements significantly increases the amount of high quality wildlife habitat.</p> <p>Construction associated with levee rehabilitation and environmental measures would be a short minor effect</p> <p>Modification of salt cedar management methods for grazing leases would result in long-term beneficial effects.</p> |

| Resource Area | No Action Alternative | Flood Control Improvement Alternative | Integrated USIBWC Land Management Alternative | Targeted River Restoration Alternative |
|---|---|--|---|--|
| Endangered and Other Special Status Species | No change from baseline condition. | <p>Levee construction activities would not affect endangered and other special status species .</p> <p>Modified grazing in uplands and riparian would benefit some species of concern (SOCs).</p> | <p>Levee rehabilitation and modified grazing leases would result in similar effects as the Flood Control Improvement Alternative.</p> <p>Development of native bosque using bank shavements could potentially create suitable southwestern willow flycatcher habitat and benefit some SOCs.</p> | <p>Levee rehabilitation and modified grazing leases would result in similar effects as the Flood Control Improvement Alternative.</p> <p>Development of native bosque along meanders could potentially create suitable southwestern willow flycatcher habitat and benefit some SOCs.</p> <p>Suitable habitat for listed species may exist within conservation easements outside the ROW.</p> |
| Aquatic Biota | No change from baseline condition. | <p>No significant change from baseline condition would occur.</p> <p>The RGCP would continue to be characterized as poor aquatic habitat, however modified grazing in the riparian area would beneficially effect stream bank stability, water quality and stream side vegetation.</p> | <p>No significant change from baseline condition would occur.</p> <p>The RGCP would continue to be characterized as poor aquatic habitat, however modified grazing in the riparian area in conjunction with bosque development would beneficially effect stream bank stability, water quality and stream side vegetation.</p> | <p>Aquatic biota would be beneficially affected as a result of diversifying aquatic habitat through modified dredging of arroyos and opening former meanders. A total of 59 acres of backwater habitat would be developed. In addition, modified grazing in the riparian area and bosque development would beneficially effect stream bank stability, water quality and stream side vegetation.</p> |
| Land Use | <p>Land use in the potential area of influence would remain unaffected relative to current conditions.</p> <p>Beneficial effects are expected from ongoing recreational initiatives.</p> <p>The RGCP operation and maintenance would not change from the current practices.</p> | <p>Levee rehabilitation would be the only action with potential effects on land use adjacent to the RGCP. Up to 50 acres of the approximately 149 acres of borrow sites would be likely located in agricultural areas. Land use change would not be significant relative to 19,020 acres of farmlands in the area adjacent to the ROW.</p> <p>Beneficial effects are expected from ongoing recreational initiatives.</p> | <p>Up to 50 acres of agricultural land would be needed as borrow sites. With implementation of an on-farm water conservation program, no other changes in land use are anticipated.</p> <p>With direct purchase of water rights, environmental measure implementation could result in 734 acres of cropland retirement (0.97% of EBID irrigated acreage).</p> <p>Beneficial effects are expected from ongoing recreational initiatives.</p> | <p>Conservation easements would affect up to 288 acres of cropland in addition to 50 acres of borrow sites (in combination, 1.8% of farmland adjacent to the ROW. Current use would be maintained for another 1,330 acres of remnant bosques.</p> <p>With direct purchase of water rights, measure implementation could result in 3,154 acres of cropland retirement (4.7% of EBID irrigated acreage).</p> <p>Beneficial effects are expected from ongoing recreational initiatives.</p> |

| Resource Area | No Action Alternative | Flood Control Improvement Alternative | Integrated USIBWC Land Management Alternative | Targeted River Restoration Alternative |
|--|--|--|---|--|
| Socioeconomics and Environmental Justice | No change relative to current conditions | Similar to the No Action Alternative, except there would be additional short-term jobs as a result of levee rehabilitation activities. | Similar to the No Action Alternative, with the addition of short-term jobs as a result of an increase in construction activities. With on-farm conservation, no adverse effects on agricultural communities are anticipated. For direct water acquisition, the potential annual loss in crop value would be approximately \$900,000, and \$1.6 million in indirect effects. | Similar to the No Action Alternative, except there would be additional short-term jobs by increase in construction activities. With on-farm conservation, no adverse effects on agricultural communities are anticipated. For direct water acquisition, the potential annual loss in crop value would be approximately \$4 million, and \$7.3 million in indirect effects. |
| Cultural Resources | No change relative to current conditions | The alternative will not adversely affect, any architectural resources, traditional cultural properties or archaeological resources. | Similar to the No Action Alternative, except there would be a potential for undiscovered sites at two locations near shavedown projects. | Similar to the No Action Alternative, except there would be a potential for undiscovered sites at three sites located near arroyo or meander projects. |
| Air Quality | Emissions generating activities would be the same as the current ongoing activities. | Criteria pollutant increases in the Air Quality Control Region (AQCR) would range from 0.05 to 0.93 percent and would not be regionally significant. | Criteria pollutant increases in the AQCR would range from 0.01 to 1.25 percent and would not be regionally significant. | Criteria pollutant increases in the AQCR would range from 0.12 to 1.62 percent and would not be regionally significant. |
| Noise | No change relative to current conditions | No change in noise levels from maintenance and operation activities. Noise from additional construction activities would be intermittent and short-term in duration. | No change in noise levels from maintenance and operation activities. Noise from additional construction activities would be intermittent and short-term in duration. | No change in noise levels from maintenance and operation activities. Noise from additional construction activities would be intermittent and short-term in duration. |
| Transportation | No change relative to current conditions | The existing level of service (LOS) of all listed roadways would not change from existing conditions. | The LOS of all listed roadways would not change from existing conditions. | The LOS of all listed roadways would not change from existing conditions. |
| Cumulative Impacts | No change relative to current conditions | No change relative to current conditions | A 1% increase in EBID irrigated land conversion above 18% anticipated for the El Paso-Las Cruces Regional Sustainable Water Project. | A 4.2% increase in EBID irrigated land conversion above 18% anticipated for the El Paso-Las Cruces Regional Sustainable Water Project. |

CHAPTER I ADDITIONS AND MODIFICATIONS TO THE DRAFT EIS

This chapter contains sections of the Draft EIS that were updated or modified to address reviewer comments, and two sections added to incorporate information following release of the Draft EIS.

Added and modified sections are presented in subchapters A through G, as follows:

| | <u>Page</u> |
|---|-------------|
| I.A Table of Contents: A revised version from the Draft EIS is provided, highlighting additions and modifications included in the Final EIS | I-1 |
| I.B Section 1: A more detailed description of USIBWC authority is provided (Subsection 1.1.3). | I-7 |
| I.C Section 2: A new section is included indicating selection of a preferred river management alternative for the RGCP, and the basis for USIBWC’s decision (Section 2.13). The summary comparison of alternatives and effects (2.12) is updated to reflect Section 4 modifications. | I-9 |
| I.D Section 3: An updated section on water quality baseline is provided (Subsection 3.1.3). | I-15 |
| I.E Section 4: Updated sections are provided on the summary of potential effects for water resources and land use (Subsections 4.1.2 and 4.8.2, respectively); revised socioeconomic analysis individually by county (Section 4.9); and updated analysis of cumulative effects of regional plans (Subsection 4.15.1). | I-17 |
| I.F Section 5: A new subsection is included documenting the Draft EIS review period, and the January 27, 2004 public hearing (Subsection 5.1.4). | I-33 |
| I.G An errata table is provided with editorial or non-substantial corrections to the Draft EIS text. | I-34 |

SUBCHAPTER I.A – ADDITIONS AND MODIFICATIONS TO THE DRAFT EIS, REVISED TABLE OF CONTENTS

Draft EIS sections that were added or modified in the Final EIS are highlighted in the revised Table of Contents below. The replacement text for each section is provided in subchapters I.B through I.G.

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SUBCHAPTER I.B – ADDITIONS AND MODIFICATIONS TO SECTION 1, PURPOSE OF AND NEED FOR ACTION

An expanded version was prepared on the USIBWC's authority for consideration of environmental improvements in the RGCP, and the agency's operational procedures for NEPA compliance (Subsection 1.1.3, page 1-3 of the Draft EIS).

1.1 NEED FOR ACTION

1.1.3 Authority

The USIBWC is the lead federal agency for preparation of this Environmental Impact Statement (EIS). The United States Bureau of Reclamation (USBR, Albuquerque Area Office, New Mexico) is a cooperating agency.

Compliance with the National Environmental Policy Act

Changes under consideration for RGCP operation and maintenance (O&M) and implementation of environmental measures constitute a major federal action requiring preparation of an EIS as stipulated by:

- The National Environmental Policy Act (NEPA) of 1969, as amended (Pub. L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub. L. 94-52, July 3, 1975, and Pub. L. 94-83, August 9, 1975);
- The Council on Environmental Quality (CEQ), Executive Office of the President, Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500-1508); and
- The USIBWC Operational Procedures for Implementing Section 102 of NEPA as published in the Federal Register on September 2, 1981 (Federal Register 46, No. 170: 44083-44094). These procedures identify actions that constitute categorical exclusions.

Authority to Accomplish Flood Control, Water Delivery, and Operation and Maintenance Activities In A Manner That Enhances Or Restores the Riparian Ecosystem

The USIBWC has the authority and responsibility to evaluate river management alternatives for future operations and maintenance of the RGCP to enhance ecosystem restoration while accomplishing its flood control and water delivery mission. The authority to construct, operate and maintain works for the canalization of the Rio Grande also includes a responsibility to consider environmental improvements in the project area. An Act of Congress authorized legislation for the USIBWC to construct, operate and maintain works for the canalization of the Rio Grande from the Caballo Reservoir site in New Mexico to the international dam in El Paso, Texas. See Appendix O for text of Act of June 4, 1936 (49 Stat. 1463), and Act of August 29, 1935 (49 Stat. 961). The canalization project was authorized in order to facilitate compliance with the Convention between the United States and Mexico concluded May 21, 1906, providing for the

equitable division of the waters of the Rio Grande, and to properly regulate and control the water supply for use in the two countries as provided by treaty. (TS 455; 34 Stat. 2953)

The USIBWC has the authority and responsibility to evaluate environmental benefits in relation to the operation and maintenance of the Rio Grande Canalization Project. The National Environmental Policy Act (NEPA) of 1969 mandates a USIBWC responsibility to evaluate environmental benefits of the project. Under NEPA it is the continuing responsibility of the federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may, among other things, attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences. 42 U.S.C. Sections 4331 (b)

SUBCHAPTER I.C – ADDITIONS AND MODIFICATIONS TO SECTION 2, DESCRIPTION OF ALTERNATIVES

Modifications to potential effects on water resources, land use, and socioeconomics were incorporated into Table 2.12-1 (Section 2.12, pages 2-49 to 2-52 of the Draft EIS). This modification simply summarizes Section 4 update, presented in Subchapter I.E.

Additional text is provided on selection of the Integrated USIBWC Land Management Alternative as the preferred alternative for long-term management of the RGCP (Section 2.13, following page 2-52 of the Draft EIS).

2.12 SUMMARY COMPARISON OF ALTERNATIVES AND EFFECTS

Table 2.12-1 summarizes alternatives and effects identified for each alternative and resource area. A detailed analysis of potential effects is presented in Section 4.

2.13 PREFERRED ALTERNATIVE

During preparation of the Draft EIS, an administrative decision was made not to select a Preferred Alternative. In making this decision, the USIBWC considered that a review of environmental effects and public comment were needed as key elements in selecting a river management alternative for the RGCP.

Having evaluated environmental effects, and comments received on the Draft EIS, the USIBWC concluded that the Integrated USIBWC Land Management Alternative provides the best balance of flood control, water delivery, and habitat enhancement. This alternative is, therefore, selected as the agency's preferred approach for long-term management of the RGCP.

In selecting the preferred alternative, the USIBWC reviewed the predicted environmental, economic, and social impacts of three action alternatives and the No Action Alternative; their anticipated environmental and financial ability to be implemented and quality of life performances, and the risks and safeguards inherent in them. The Integrated USIBWC Land Management Alternative was considered to be the alternative that could bring actual results in the short and medium term as it:

- Allows USIBWC to re-assess floodway management within the context of current functions;
- Gradually develops environmental improvements within its jurisdictional area with manageable water consumption;
- Puts in place some agreements with other agencies and, hopefully, water users and environmental organizations; and
- Would not be cost prohibitive.

A Record of Decision (ROD), indicating selection of a river management alternative for the RGCP and rationale for the decision, will be issued 30 days after the EPA notice that the Final EIS has been filed with the agency.

Table 2.12-1 Summary Comparison of the Effects of the Alternatives

| Resource Area | No Action Alternative | Flood Control Improvement Alternative | Integrated USIBWC Land Management Alternative | Targeted River Restoration Alternative |
|-----------------|--|--|--|---|
| Water Resources | No-mow zones would be maintained, with a potential consumption of up to 35.3 ac-ft/yr No effects on water delivery or water quality are anticipated as current practices would be maintained. | A potential 1,078 ac-ft/yr increase in water consumption due to environmental measures. Water consumption would increase. No effects on water delivery are anticipated for levee system rehabilitation, or changes in grazing leases in uplands. Water quality could decrease in terms of total suspended solids during construction, but it would improve in the long-term by a reduced sediment load and lower nutrient input from grazing areas with improved vegetative cover. | A potential water consumption increase of 2,203 ac-ft/yr at the end of the 20-year implementation period. This represents 0.34% of EBID full diversion allocation, or 1.5% in severe drought conditions (as in 2003) Riparian vegetation on stream banks would improve water delivery in the long-term by stabilization of stream banks. Short-term increases in debris and sediment would be expected prior to establishment of vegetative cover. Water quality is likely to improve as more extensive vegetative cover on the RGCP floodway and uplands improve erosion control and nutrient release from grazing areas. | A potential for a water consumption increase of approximately 9,461 ac-ft/yr at the completion of the 20-year implementation period. This value would be equivalent to 1.91% of EBID full diversion allocation (releases would not be possible during drought conditions). Effects on water delivery and water quality would be similar to those of the Integrated USIBWC Land Management Alternative. |
| Flood Control | The risk of flooding and overtopping the levees from the 100-year flood would remain as currently quantified. | Additional protection would be provided to life and public and private property beyond that which is already provided by the existing levee system. The potential freeboard increase in levee deficient areas would be approximately 2 feet. | Similar to the Flood Control Improvement Alternative. There would also be a potential for a small reduction in flood containment capacity due to increased vegetation growth along the floodway. The potential freeboard increase in levee deficient areas would increase to approximately 2.5 feet. | Similar to the Flood Control Improvement Alternative. There would also be a potential for a small reduction in flood containment capacity due to increased vegetation growth along the floodway. The potential freeboard increase in levee deficient areas would increase to approximately 2.5 feet. |
| Soils | No change from baseline condition. | Levee rehabilitation would mobilize 898 ac-ft of soil for construction. Modified grazing leases would reduce uplands erosion 0.45 ac-ft annually and improved riparian conditions by reducing bank erosion and increasing ground cover. | Levee rehabilitation and modified grazing leases would result in similar effects as the Flood Control Improvement Alternative. An additional 157 ac-ft of soil would be displaced as a result of bank shave-downs. Mitigation procedures were established to reduce erosion. | Levee rehabilitation and modified grazing leases would result in similar effects as the Flood Control Improvement Alternative. An additional 300 ac-ft of soil would be displaced as a result of opening former meanders, excavating arroyos and scour during seasonal peak flows. Mitigation procedures were established to reduce erosion. |

| Resource Area | No Action Alternative | Flood Control Improvement Alternative | Integrated USIBWC Land Management Alternative | Targeted River Restoration Alternative |
|-------------------------|------------------------------------|---|---|--|
| Vegetation and Wetlands | No change from baseline condition. | <p>Modified grazing in uplands and riparian zones would affect 3,552 acres increasing plant species, richness and structural diversity. Levee construction would have a minor effect on vegetation communities.</p> <p>Mowing by USIBWC would continue at the same level as the No Action Alternative.</p> | <p>Effects of modified grazing leases and levee construction would be similar to the Flood Control Improvement Alternative.</p> <p>Mowing by USIBWC would be reduced by 1,983 acres.</p> <p>Restoration of 350 acres of native bosque by bank shavements and plantings, and development of native grasslands (1651 acres) would increase the amount of native vegetation within the ROW.</p> <p>Wetland areas would increase by 13 acres.</p> | <p>Effects of modified grazing leases and levee construction would be similar to the Flood Control Improvement Alternative.</p> <p>Mowing by USIBWC would be reduced by 2,434 acres.</p> <p>Restoration of 1,549 acres of native bosque by seasonal peak flows, opening meanders, plantings and development of native grasslands (1,029 acres) would increase the amount of native vegetation within and outside the ROW.</p> <p>Wetland areas would increase by 96 acres.</p> <p>Conservation easements would add 1,601 acres under management.</p> |
| Wildlife Habitat | No change from baseline condition. | <p>Wildlife habitat quality would increase 30% due to modified grazing in 3,552 acres of uplands and riparian areas. However, the majority of the ROW would continue to be considered as below average to poor wildlife quality due to mowing of vegetation.</p> <p>Construction associated with levee rehabilitation would be a short minor effect.</p> <p>Modification of salt cedar management in grazing leases methods would result in long-term beneficial effects.</p> | <p>Wildlife habitat quality would increase 51% due to modified grazing in 3,552 acres of uplands and riparian areas, and development of 350 acres of native bosque and 1,641 acres of native grassland.</p> <p>Construction associated with levee rehabilitation and environmental measures would be a short minor effect.</p> <p>Modification of salt cedar management in grazing leases methods would result in long-term beneficial effects.</p> | <p>Wildlife habitat quality would increase 72% due to modified grazing in 3,493 acres of uplands and riparian areas, and development of 1,549 acres of native bosque and 1,929 acres of native grassland.</p> <p>A total of 1,618 acres of conservation easements significantly increases the amount of high quality wildlife habitat.</p> <p>Construction associated with levee rehabilitation and environmental measures would be a short minor effect</p> <p>Modification of salt cedar management methods for grazing leases would result in long-term beneficial effects.</p> |

| Resource Area | No Action Alternative | Flood Control Improvement Alternative | Integrated USIBWC Land Management Alternative | Targeted River Restoration Alternative |
|---|--|---|--|---|
| Endangered and Other Special Status Species | No change from baseline condition. | Levee construction activities would not affect endangered and other special status species . Modified grazing in uplands and riparian would benefit some species of concern (SOCs). | Levee rehabilitation and modified grazing leases would result in similar effects as the Flood Control Improvement Alternative. Development of native bosque using bank shavedowns could potentially create suitable southwestern willow flycatcher habitat and benefit some SOCs. | Levee rehabilitation and modified grazing leases would result in similar effects as the Flood Control Improvement Alternative. Development of native bosque along meanders could potentially create suitable southwestern willow flycatcher habitat and benefit some SOCs. Suitable habitat for listed species may exist within conservation easements outside the ROW. |
| Aquatic Biota | No change from baseline condition. | No significant change from baseline condition would occur. The RGCP would continue to be characterized as poor aquatic habitat, however modified grazing in the riparian area would beneficially effect stream bank stability, water quality and stream side vegetation. | No significant change from baseline condition would occur. The RGCP would continue to be characterized as poor aquatic habitat, however modified grazing in the riparian area in conjunction with bosque development would beneficially effect stream bank stability, water quality and stream side vegetation. | Aquatic biota would be beneficially affected as a result of diversifying aquatic habitat through modified dredging of arroyos and opening former meanders. A total of 59 acres of backwater habitat would be developed. In addition, modified grazing in the riparian area and bosque development would beneficially effect stream bank stability, water quality and stream side vegetation. |
| Land Use | Land use in the potential area of influence would remain unaffected relative to current conditions. Beneficial effects are expected from ongoing recreational initiatives. The RGCP operation and maintenance would not change from the current practices. | Levee rehabilitation would be the only action with potential effects on land use adjacent to the RGCP. Up to 50 acres of the approximately 149 acres of borrow sites would be likely located in agricultural areas. Land use change would not be significant relative to 19,020 acres of farmlands in the area adjacent to the ROW. Beneficial effects are expected from ongoing recreational initiatives. | Up to 50 acres of agricultural land would be needed as borrow sites. With implementation of an on-farm water conservation program, no other changes in land use are anticipated. With direct purchase of water rights, environmental measure implementation could result in 734 acres of cropland retirement (0.97% of EBID irrigated acreage). Beneficial effects are expected from ongoing recreational initiatives. | Conservation easements would affect up to 288 acres of cropland in addition to 50 acres of borrow sites (in combination, 1.8% of farmland adjacent to the ROW. Current use would be maintained for another 1,330 acres of remnant bosques. With direct purchase of water rights, measure implementation could result in 3,154 acres of cropland retirement (4.7% of EBID irrigated acreage). Beneficial effects are expected from ongoing recreational initiatives. |

| Resource Area | No Action Alternative | Flood Control Improvement Alternative | Integrated USIBWC Land Management Alternative | Targeted River Restoration Alternative |
|--|--|--|---|--|
| Socioeconomics and Environmental Justice | No change relative to current conditions | Similar to the No Action Alternative, except there would be additional short-term jobs as a result of levee rehabilitation activities. | Similar to the No Action Alternative, with the addition of short-term jobs as a result of an increase in construction activities. With on-farm conservation, no adverse effects on agricultural communities are anticipated. For direct water acquisition, the potential annual loss in crop value would be approximately \$900,000, and \$1.6 million in indirect effects. | Similar to the No Action Alternative, except there would be additional short-term jobs by increase in construction activities. With on-farm conservation, no adverse effects on agricultural communities are anticipated. For direct water acquisition, the potential annual loss in crop value would be approximately \$4 million, and \$7.3 million in indirect effects. |
| Cultural Resources | No change relative to current conditions | The alternative will not adversely affect, any architectural resources, traditional cultural properties or archaeological resources. | Similar to the No Action Alternative, except there would be a potential for undiscovered sites at two locations near shakedown projects. | Similar to the No Action Alternative, except there would be a potential for undiscovered sites at three sites located near arroyo or meander projects. |
| Air Quality | Emissions generating activities would be the same as the current ongoing activities. | Criteria pollutant increases in the Air Quality Control Region (AQCR) would range from 0.05 to 0.93 percent and would not be regionally significant. | Criteria pollutant increases in the AQCR would range from 0.01 to 1.25 percent and would not be regionally significant. | Criteria pollutant increases in the AQCR would range from 0.12 to 1.62 percent and would not be regionally significant. |
| Noise | No change relative to current conditions | No change in noise levels from maintenance and operation activities. Noise from additional construction activities would be intermittent and short-term in duration. | No change in noise levels from maintenance and operation activities. Noise from additional construction activities would be intermittent and short-term in duration. | No change in noise levels from maintenance and operation activities. Noise from additional construction activities would be intermittent and short-term in duration. |
| Transportation | No change relative to current conditions | The existing level of service (LOS) of all listed roadways would not change from existing conditions. | The LOS of all listed roadways would not change from existing conditions. | The LOS of all listed roadways would not change from existing conditions. |

| Resource Area | No Action Alternative | Flood Control Improvement Alternative | Integrated USIBWC Land Management Alternative | Targeted River Restoration Alternative |
|----------------------|--|--|--|--|
| Cumulative Impacts | No change relative to current conditions | No change relative to current conditions | A 1% increase in EBID irrigated land conversion above 18% anticipated for the El Paso-Las Cruces Regional Sustainable Water Project. | A 4.2% increase in EBID irrigated land conversion above 18% anticipated for the El Paso-Las Cruces Regional Sustainable Water Project. |

SUBCHAPTER I.D – ADDITIONS AND MODIFICATIONS TO SECTION 3, AFFECTED ENVIRONMENT

An update is provided on the water quality baseline information (Subsection 3.1.3, page 3-9, of the Draft EIS) on the basis of information provided by the New Mexico Environment Department (NMED).

3.1 WATER QUALITY

3.1.3 Water Quality

Water quality along the RGCP is defined by New Mexico and Texas on the basis of individual reaches for which designated uses have been defined. Both states submit a 305b surface water quality report and a 303d list of impaired segments to the USEPA on a biennial basis. In combination, these reports detail the degree to which designated uses are being attained, and identify potential concerns in terms of water quality.

State of New Mexico. The RGCP segment in New Mexico is contained within two New Mexico Water Quality Standards Segments:

Segment 20.6.4.101 Rio Grande Basin - The main stem of the Rio Grande from the USIBWC sampling station above American Dam upstream to 1 mile below Percha Dam.

Segment 20.6.4.102 Rio Grande Basin - The main stem of the Rio Grande from 1 mile below Percha Dam upstream to the headwaters of Caballo Reservoir, including Caballo Reservoir.

These two Water Quality Standards Segments are further subdivided into several assessment units for sampling and reporting purposes. For 2002, the NMED reported that both reaches were fully supporting the following state-designated uses (NMED 2002, www.nmenv.nm.us/swqb/305b):

- Irrigation;
- Wildlife habitat;
- Limited warmwater fishery;
- Secondary contact; and
- Livestock watering.

State of Texas. The Texas reach of the RGCP is contained in Segment 2314 of the Rio Grande Basin. The 21-mile segment is located in El Paso County, and covers from International Dam to the New Mexico State line. For the year 2002, the Texas Commission on Environmental Quality (TCEQ) reported five designated uses:

- Aquatic life use;
- Contact recreation;
- General use;

- Fish consumption; and
- Public water supply.

The state reported that these uses were fully supported with the exception of contact recreation (TCEQ 2002). The standard was not met in 2002 due to bacterial levels above the designated use. Concerns were also indicated for algal growth and nutrient enrichment (Table 3.1-3). Data for this determination were obtained from two monitoring stations located in the Rio Grande: Station 13276, located immediately upstream of the confluence with Anthony Drain east of La Tuna Prison, near the state line, and Station 13272, located at Courchesne Bridge, 1.7 miles upstream from American Dam. Table 3.1-4 provides a summary of Rio Grande monitoring data for nutrients and suspended solids at El Paso (USGS Station 08364000) from March 2000 to August 2002.

Table 3.1-3 Water Quality Concerns for Segment 2314 of the Rio Grande Basin (TCEQ 2002)

| Assessment Area | Concern | Description of Concern |
|--|--------------------------|------------------------|
| New Mexico State line to upstream of Anthony Drain | Algal Growth | Excessive algal growth |
| Upstream of Anthony Drain to International Dam | Algal Growth | Excessive algal growth |
| | Nutrient Enrichment | Ammonia |
| | Contact Recreational Use | Bacteria |

Source: TCEQ 2002 305b

Table 3.1-4 Monitoring Data From Station USGS 08364000 at El Paso (March 2000 to August 2002)

| Parameter | Number of Samples Reported | Average Concentration (mg/L) | Lowest Concentration (mg/L) | Highest Concentration (mg/L) |
|-------------------------------|----------------------------|------------------------------|-----------------------------|------------------------------|
| Total Kjeldahl Nitrogen, as N | 20 | 0.349 | 0.22 | 1.1 |
| Nitrite plus Nitrate, as N | 29 | 0.480 | 0.11 | 1.41 |
| Nitrite, as N | 29 | 0.030* | <0.006 | 0.162 |
| Ortho Phosphorus, as P | 20 | 0.069 | 0.008 | 0.171 |
| Total Suspended Solids | 29 | 481 | 34 | 2,350 |

* Nitrite values below the detection limit were not included in the average.

SUBCHAPTER I.E – ADDITIONS AND MODIFICATIONS TO SECTION 4, ENVIRONMENTAL CONSEQUENCES

Potential effect summaries were updated for the water resources, land use, and socioeconomics sections to address stakeholders' comments, as well as the analysis of cumulative effects. Those modifications are as follows:

- *Water resources: potential effects on water availability are presented individually based on water allocations for each irrigation district. In the Draft EIS, the combined value was used as a reference (Subsection 4.1.2, page 4-2 of the Draft EIS).*
- *Land use: clarifications are made on reference land use values, and potential applicability of the Farm Protection Policy Act (Subsection 4.6.2, page 4-50 of the Draft EIS).*
- *Socioeconomics: revised calculations are provided on the socioeconomic analysis to assess potential effects individually by county, and to adjust for modified assumptions on levee rehabilitation costs. Changes apply to the entire section (starting with Subsection 4.9.1 on page 4-53 of the Draft EIS).*
- *Cumulative effects: a revised evaluation is presented on regional plans (Subsection 4.15.1, page 4-86 of the Draft EIS).*

4.1 WATER RESOURCES

4.1.2 Summary of Potential Effects

Table 4.1-3 presents a comparative summary of potential effects of river management alternatives on water resources. Two reference values are used for potential changes in water consumption:

- A total of 645,000 ac-ft of total annual diversions along the RGCP. This is a combined value of average diversions of 181 cubic feet per second (cfs) at Leasburg Dam, 312 cfs at Mesilla Dam, and 397 cfs at American Dam (data from Figure 3-3).
- Because a large fraction of water consumption would be in the Elephant Butte Irrigation District (EBID) area, the annual supply diversion allocation of 495,000 ac-ft reported for the district (King and Maitland 2003) was also used as a reference.

For the alternative with the greatest potential for water consumption, the Targeted River Restoration Alternative, estimated use would represent approximately 2 percent of the EBID full-supply diversion allocation. Controlled discharges from Caballo Reservoir, the main water use component, would not be feasible during years with a less-than-full supply allocation.

For the Integrated USIBWC Land Management Alternative, estimated water use at full implementation (20-year timeframe) would represent approximately 0.5 percent of the EBID full-supply diversion allocation. During severe drought conditions, such as those prevalent in 2003, water use by environmental measures would represent a higher fraction of the EBID diversion allocation, up to 1.5 percent. This relative increase was calculated based on an allocation reduction to 34 percent reported by USBR for the Rio Grande Project.

Table 4.1-3 Summary of Potential Effects on Water Resources

| Evaluation Criteria | No Action Alternative | Flood Control Improvement Alternative | Integrated USIBWC Land Management Alternative | Targeted River Restoration Alternative |
|--|------------------------------|---|---|---|
| Potential increase in annual water consumption (ac-ft/yr) | 0 | 1,078 | 2,203 | 9,461 |
| Change in consumption relative to EBID full diversion allocation | No effect | 0.22% | 0.45% | 1.91% |
| Change in consumption relative to diversions along the RGCP | No effect | 0.17% | 0.34% | 1.47% |
| Potential effect on water delivery efficiency | No effect | No effect | Potential adverse short-term effects; long-term improvement | Potential adverse short-term effects; long-term improvement |
| Potential effect on water quality | No effect | Potential adverse short-term effects; long-term improvement | Potential adverse short-term effects; long-term improvement | Potential adverse short-term effects; long-term improvement |

4.8 LAND USE

4.8.2 Summary of Potential Effects

Table 4.8-1 presents a comparative summary of potential effects of river management alternatives under consideration on land use. Two land uses were evaluated for potential effects, farmlands, and recreational areas.

Farmlands

Three issues were analyzed relative to effects on farmlands: 1) potential cropland loss due to material borrow sites for levee rehabilitation and voluntary conservation easements; 2) potential loss due to acquisition of water rights to offset increased water consumption by environmental measures; and 3) applicability of the Farmland Protection Policy Act (FPPA).

Table 4.8-1 Summary of Potential Effects on Farmlands and Recreational Use

| Evaluation Criteria | No Action Alternative | Flood Control Improvement Alternative | Integrated USIBWC Land Management Alternative | Targeted River Restoration Alternative |
|--|---|---|---|---|
| <i>Changes in Agricultural Land Use</i> | | | | |
| Changes due to material borrow sites and easements | No change relative to current RGCP management | Up to 50 acres loss due to material borrow sites (0.3% of farmland adjacent to the ROW). | Up to 50 acres loss due to material borrow sites (0.3% of farmland adjacent to the ROW). | Up to 50 acres of borrow sites, plus 288 acres* of voluntary conservation easements. (1.8% of farmland adjacent to the ROW) |
| Changes due to water rights acquisition (without on-farm water conservation program) | No change relative to current RGCP management | Environmental measure Implementation could result in 359 acres of cropland retirement (0.54% of EBID irrigated acreage) | Environmental measure Implementation could result in 734 acres of cropland retirement (0.97% of EBID irrigated acreage) | Environmental measure implementation could result in 3,154 acres of cropland retirement (4.7% of EBID irrigated acreage) |
| <i>Changes in Recreational Use</i> | | | | |
| Ongoing cooperation agreements | Increased use as parks are developed | Same as No Action Alternative | Same as No Action Alternative | Same as No Action Alternative |

* Current use would be maintained in another 1,330 acres of easements corresponding to remnant bosques or fallow lands.

Farmland loss due to material borrow sites and voluntary conservation easements. Potential losses of irrigated farmlands are referenced to the corridor outside and adjacent to the ROW where borrow sites and easements would be located. This corridor, extending 0.25 mile on each side of the ROW, includes 19,020 acres of agricultural lands (Table 3.8-1). Potential retirement would represent up to 1.8 percent of farmland adjacent to the ROW. Most of this change would be due to the inclusion of 288 acres of voluntary conservation easements as part of the Targeted River Restoration Alternative.

Farmland loss due to direct water rights acquisition. Sponsoring an on-farm water conservation program is proposed in Section 2.9.2 to minimize farmland retirement potential. If direct water rights acquisition were required, however, it would require conversion of irrigated agricultural land. That conversion was estimated at 1 acre of land per 3 ac-ft of water (typical annual water allocation in the Rio Grande Project).

Since most environmental measures would be implemented in the New Mexico reach of the RGCP, it was assumed for potential effects evaluation that all farmland conversion would occur within this reach. Accordingly, a total of 67,000 acres of EBID irrigated lands was used as a reference for potential farmland loss (EBID data from Table 1, King and Maitland 2003).

At full implementation (20-year timeframe), the potential farmland retirement attributable to water acquisition under the Integrated USIBWC Land Management Alternative would represent approximately 1 percent of the EBID irrigated lands (Table 4.8-1). Potential retirement would increase to 4.7 percent for the Targeted River Restoration Alternative, largely due to the use of controlled water releases from Caballo Dam.

Applicability of the 1996 FPPA. The FPPA is intended to minimize the contribution of federal programs to the conversion of important farmland to non-agricultural uses. No effects on prime farmland, as defined by FPPA, are anticipated as a result of the modified river management alternatives for the following reasons:

- Most measures under consideration, other than voluntary conservation easements, would be conducted in non-agricultural lands currently owned and maintained by the USIBWC.
- The preferred implementation strategy to secure water, as described in Section 2.9-2, is funding on-farm water conservation programs to avoid farmland retirement. This goal was adopted not only to minimize socioeconomic effects, but also because farmlands provide supplemental wildlife habitat along the RGCP that would isolate the riparian corridor from urban expansion.
- Voluntary conservation easements, outside the ROW, would prevent conversion to urban uses, as they would remain as native grasslands or bosques.

If direct water acquisition resulting in loss of irrigated farmlands were eventually required, prior consultation with the Natural Resource Conservation Service (NRCS) will be conducted as required by FPPA. The consultation will ensure that identified water rights sources are not prime farmlands, and that a farmland conversion impact rating is assigned by the agency. This determination would be done by the NRCS once specific lands are identified as a potential water rights source (U.S. Department of Agriculture, Form AD-1006).

Recreational Land Use

Implementation of any of the modified river management alternatives would not result in adverse effects on recreational resources. The USIBWC, along with other agencies which manage and maintain projects along the RGCP, are currently participating in initiatives to create additional recreational opportunities and public access to natural areas within the Rio Grande floodway. As a result, projects currently underway and future ROW enhancements identified would result in the same beneficial effects to recreational resources under all alternatives, including the No Action Alternative (Table 4.8-1).

4.9 SOCIOECONOMIC RESOURCES AND ENVIRONMENTAL JUSTICE

The following evaluation criteria were used in the analysis of effects on socioeconomic resources and environmental justice:

- Changes in population and housing;
- Changes in employment;
- Changes in income and business volume;
- Disproportionate number of minority populations affected;
- Loss of irrigated farmland;
- Value of crop production lost; and
- Decrease in farm laborers

4.9.1 Method of Analysis

Region of Influence (ROI)

A Region of Influence (ROI) was defined to determine the geographic area impacted by construction activity, change in operations, or farmland retirement to secure water right. The ROI for levee construction impacts is considered to be Doña Ana County, New Mexico and El Paso County, Texas as all of the levee construction is within these two counties. The ROI for cropland reduction impacts is considered to be Doña Ana County as it was assumed that, without an on-farm water conservation program, most conversion of irrigated farmland would take place in this county.

Levee System Improvements

The Economic Impact Forecast System (EIFS) Model was used to project the short-term regional and local economic impacts of levee construction, and cropland reduction. The EIFS Model was developed by the U.S. Army Construction Engineering and Research Laboratory (CERL) to provide a systematic method for evaluating regional socioeconomic effects of government actions. Using employment and income “multipliers” developed with a comprehensive regional/local database combined with economic export base techniques, the model estimates the direct and indirect economic impacts of a construction activity and/or operations on changes in the regional/local population and housing; employment; business volume; and income.

A total construction cost of \$55.9 million over a period of 5 years was used as a primary input into the EIFS Model to determine local economic impacts of the construction activity. This total construction cost was distributed between Doña Ana County (63%) and El Paso County (37%) based on the length of levee construction in each county. In addition, an estimate of 62 and 36 construction workers was used, respectively, for Doña Ana and El Paso Counties as inputs into the model. The EIFS Model impacts represent annual impacts during the construction period. Table 4.9-1 summarizes the annual economic impacts of levee construction by county. Appendix N provides socioeconomic effects analysis support documentation.

The EIFS Model also includes a rational threshold value (RTV) profile that is used in conjunction with the forecast model to assess the significance of impacts of a construction activity for a specific geographic area or region. For each variable (e.g., population, housing, employment, business volume, income), the current time-series data available from the Bureau of Economic Analysis are calculated along with the annual change, deviation from the average annual change, and the percent deviation for each variable. This calculation defines a “threshold” for significant annual economic impacts for a variable. If the RTV for a particular variable associated with the impacts of the project exceeds the maximum annual historic deviation for that variable, then the economic impact is considered to be significant. If the RTV for a variable is less than the maximum annual historic deviation for that variable, the regional economic impact is then considered not significant.

Potential Reduction in Irrigated Farmland

The implementation and operational effects of the proposed river management alternative were analyzed using a different methodology. The objective of this analysis was to estimate the impacts on cropland reduction as a result of levee borrow sites, conservation easements, and farmland conversion due to direct water rights acquisition. These impacts include acreage of cropland lost, annual value of crop production lost, and associated decrease in farm laborers under each of the alternatives and associated components/scenarios.

This latter analysis was based on estimates of cropland distribution by type, and per acre value of annual production for the project area. Because of cropland similarities, the cropland distribution for the EBID was used and pro-rated for each alternative and associated component/scenario. Pecans were excluded as a high-value crop not likely to be considered for land conversion. Estimates of annual value of production per acre for each crop was obtained from the New Mexico Department of Agriculture, Agricultural Statistics Service; U.S. Department of Agriculture, U.S. Census of Agriculture, 1997; and Appendix B, Economic Worksheets accompanying the EIS for the El Paso-Las Cruces Regional Sustainable Water Project (CH2M-Hill 2000b). Crop distribution values used, and crop gross revenue are as follows:

- Alfalfa, 30 percent, \$630 per acre;
- Cotton, 28 percent, \$850 per acre;
- Vegetables, 19 percent, \$3,500 per acre;
- Forage, 18 percent, \$235 per acre;
- Grains, hay, and pasture, 5 percent, \$250 per acre.

In addition to loss in crop value, an estimate was made of the direct impact on farm labor as a result of the removal of cropland from production. This estimate was based on the average number of acres per farm worker in Doña Ana County according to the U.S. Census of Agriculture. This value was subsequently inflated to reflect the more labor-intensive character of some of the crops grown in the affected area.

4.9.2 Summary of Potential Effects

Levee System Improvements

Table 4.9-1 summarizes the effects of levee construction in Doña Ana County and El Paso County with respect to changes in population/housing, employment, business sales volume, income, and disadvantaged populations.

Table 4.9-1 Summary of Potential Effects on Socioeconomic Resources and Environmental Justice: EIFS Model Results for Levee Construction

| Evaluation Criteria | Doña Ana County | RTV | El Paso County | RTV |
|---|-----------------|------|----------------|------|
| Changes in Population and Housing | No Change | | No Change | |
| Direct Changes in Employment | 101 | | 55 | |
| Indirect Changes in Employment | 64 | | 38 | |
| <i>Total Change in Employment*</i> | 165 | 0.24 | 93 | 0.03 |
| Direct Changes in Sales Volume | \$ 6,730,885 | | \$ 3,943,158 | |
| Indirect Changes in Sales Volume | \$11,173,270 | | \$ 7,807,452 | |
| <i>Total Change in Sales Volume</i> | \$17,904,150 | 0.56 | \$11,750,610 | 0.06 |
| Direct Changes in Income | \$ 2,931,083 | | \$ 1,582,734 | |
| Indirect Changes in Income | \$ 2,390,379 | | \$ 1,351,582 | |
| <i>Total Change in Income</i> | \$ 5,321,462 | 0.20 | \$ 2,934,316 | 0.03 |
| Disproportionate number of low-income/ minority populations negatively affected. | No Effect | | No Effect | |

* Does not include work associated with environmental measures. It was assumed that USIBWC staff would perform environmental measure work over the 20-year implementation timeframe.

The socioeconomic effects of levee construction presented in Table 4.9-1 represent the outputs from the EIFS Model for both Doña Ana County and El Paso County. It was assumed that the majority of the expenditures associated with levee construction would be local expenditures. The EIFS Model estimates that a total of 165 direct and indirect jobs would be created in Doña Ana County, including the 62 construction jobs associated with construction of the levee. Other jobs created include those directly or indirectly associated with levee construction, including jobs in the various industry sectors such as retail/wholesale trade, construction, manufacturing and supplies. Other effects in Doña Ana County include an annual increase of \$17,904,150 in direct and indirect business sales volume, and an annual increase of \$5,321,462 in direct and indirect income. The RTV values generated from the EIFS Model for each of the economic variables associated with levee construction were significantly below the county's maximum annual historic deviation (RTV) for each variable. Thus, this construction activity is not considered to have significant regional/local economic benefits.

The EIFS Model estimates that a total of 93 direct and indirect jobs would be created in El Paso County, including the 36 jobs associated with construction of the levee. Other jobs created include those directly or indirectly associated with levee construction, including jobs in the various industry sectors such as retail/wholesale trade, construction, manufacturing, and supplies. Other effects in El Paso County include an annual increase of \$11,750,610 in direct and indirect business sales volume, and an annual increase of \$2,934,316 in direct and indirect income. The RTV values generated from the EIFS Model for each of the economic variables associated with levee construction were significantly below the county's maximum annual historic deviation (RTV) for each variable. Thus, this construction activity is not considered to have significant regional/local economic benefits.

There would be no changes in population or housing as it is assumed that all construction workers would come from the local or regional labor pool. There would be no disproportionate adverse effect on minority or low-income populations as minority populations constitute the majority of the population of each county. Rather, considering composition of the local and regional population, the effects on such disadvantaged populations would be beneficial as it is assumed that the majority of the construction workers would be minority and lower income.

Potential Reduction in Irrigated Farmland

Tables 4.9-2 and 4.9-3 provide summaries of the socioeconomic effect of the removal of irrigated cropland from production. It is assumed that, without implementation of an on-farm water conservation program, most irrigated farmland removed from production would be in Doña Ana County. Consequently, potential conversion of irrigated farmland was attributed entirely to the EBID.

As indicated in Table 4.9-2 the greatest adverse effects on cropland and production and farm labor would be for the Targeted River Restoration Alternative under Scenario 2 (without an on-farm water conservation program). Under this scenario, 3,492 acres of cropland with an annual production value of over \$4 million would be taken out of production. It is estimated that this decrease in cropland could result in a reduction of 35-40 farm workers. This would result in an adverse effect on minority/low income populations since the majority or all of the farm laborers represent this population group.

A lesser adverse effect would be associated with the Integrated USIBWC Land Management Alternative under Scenario 2 which accounts for additional irrigated farmland lost through direct water rights acquisition.

The socioeconomic effects of irrigated cropland reduction in Doña Ana County is presented in Table 4.9-3. The EIFS Model was used to estimate these effects under the Integrated USIBWC Land Management Alternative and the Targeted River Restoration Alternative (Scenario 2, Direct Water Rights Acquisition). Appendix N provides corresponding EIFS support data for each alternative.

Table 4.9-2 Summary of Potential Direct Effects on Socioeconomic Resources: EIFS Model Results for Cropland/Farm Labor in Doña Ana County

| Component/Scenario | No Action Alternative | Flood Control Improvement Alternative | Integrated USIBWC Land Mgmt. Alternative | Targeted River Restoration Alternative |
|---|-----------------------|---------------------------------------|--|--|
| Component A: Conservation Easements | | N/A | N/A | |
| Cropland Lost (acres) | No change | | | 288 |
| Value of Production (annual) | No change | | | \$331,230 |
| Decrease in Farm Workers | No change | | | 3-5 |
| Component B: Materials Borrow Sites | | | | |
| Cropland Lost (acres) | No change | 50 | 50 | 50 |
| Value of Production (annual) | No change | \$58,965 | \$58,965 | \$58,965 |
| Decrease in Farm Workers | No change | 1-2 | 1-2 | 1-2 |
| Component C: Water Rights Acquisition | | | | |
| <i>Scenario 1: With On-Farm Water Conservation Program</i> | No change | N/A | N/A | N/A |
| <i>Scenario 2: Without On-Farm Water Conservation Program</i> | | N/A | | |
| Cropland Lost (acres) | No change | | 784 | 3,492 |
| Value of Production (annual) | No change | | \$899,435 | \$4,003,605 |
| Decrease in Farm Workers | No change | | 7-9 | 35-40 |

Table 4.9-3 Summary of Potential Direct and Indirect Annual Impacts on Socioeconomic Resources and Environmental Justice: EIFS Results for Cropland Reduction in Doña Ana County

| Evaluation Criteria | Integrated USIBWC Land Mgt. Alternative | RTV | Targeted River Restoration Alternative | RTV |
|--|---|---------------|--|---------------|
| Changes in Population and Housing | No Change | | No Change | |
| Direct Changes in Employment | (16) | | (65) | |
| Indirect Changes in Employment | (10) | | (42) | |
| <i>Total Change in Employment</i> | <i>(26)</i> | <i>(0.04)</i> | <i>(107)</i> | <i>(0.16)</i> |
| Direct Changes in Sales Volume | (\$ 999,935) | | (\$ 4,405,605) | |
| Indirect Changes in Sales Volume | (\$1,659,892) | | (\$ 7,313,304) | |
| <i>Total Change in Sales Volume</i> | <i>(\$2,659,827)</i> | <i>(0.08)</i> | <i>(\$11,718,909)</i> | <i>(0.37)</i> |
| Direct Changes in Income | (\$ 317,423) | | \$ 1,356,520) | |
| Indirect Changes in Income | (\$ 355,113) | | (\$ 1,564,588) | |
| <i>Total Change in Income</i> | <i>(\$ 672,536)</i> | <i>(0.03)</i> | <i>(\$ 2,921,108)</i> | <i>(0.11)</i> |
| Disproportionate number of low-income or minority populations negatively affected. | No Effect | | No Effect | |

NOTE: Values in parenthesis indicate either a RTV reduction, or losses in employment, sales, or income.

Under the Integrated USIBWC Land Management Alternative, the EIFS Model estimates that a total of 26 direct and indirect jobs would be lost in Doña Ana County, which would include primarily farm laborers and those engaged in the provision of agricultural products and services. Other effects under this alternative include an annual decrease of \$2,659,827 in direct and indirect business sales volume, and an annual decrease of \$672,536 in direct and indirect income.

The negative RTV values generated from the EIFS Model for each of the economic variables associated with crop reduction were significantly below the county's maximum negative annual historic deviation for each variable. Thus, the economic effects from cropland reduction are not considered to have significant regional/local economic effects.

The EIFS Model estimates that a total of 107 direct and indirect jobs, primarily farm laborers and agricultural related, would be lost in Doña Ana County with farmland reduction under the Targeted River Restoration Alternative. Other effects under this alternative include an annual decrease of \$11,718,909 in direct and indirect business sales volume, and an annual decrease of \$2,921,108 in direct and indirect income.

The negative RTV values generated from the EIFS Model for each of the economic variables associated with crop reduction under this alternative were significantly below the county's maximum negative annual historic deviation for each variable. Thus, cropland reduction under this alternative is not considered to have significant regional/local economic effects.

4.9.3 No Action Alternative

Socioeconomic Effects

No additional equipment or personnel would be required if the current O&M practices were continued. Thus, the No Action Alternative would not result in any additional construction or operation costs. There would be no effect on cropland and production, or on farm labor.

Since there would not be a need for additional workers, there would be no effects on population or employment rates. Since the No Action Alternative would not result in relocations to or from the area, housing and community services would not be impacted. An EIFS analysis was not performed for this alternative.

Environmental Justice

There would be no change from the current maintenance practices under the No Action Alternative. Therefore, there would be no effect on minority and low-income populations.

4.9.4 Flood Control Improvement Alternative

Socioeconomic Effects

The Flood Control Improvement Alternative includes 6 miles of new levees, 2.8 miles of floodwalls, and 60.1 miles of raised levees. USIBWC would hire contractors to carry out these activities. The overall capital cost estimate for levee construction is \$59.9 million (March 2001 Alternatives Formulation Report), and the implementation period is 5 years. Based on the necessary equipment and materials for these tasks, a crew of approximately 98 workers was used for an estimate of construction activity requirements.

As a result of the proposed action, the local population would not change. Housing and community services would be unaffected since relocations are not expected. With an unemployment rate of 7.8 percent, the 98 workers required for levee construction could be hired within the community, making relocations unnecessary. Direct and indirect annual employment in the region of impact (Doña Ana County and El Paso County) would increase by 248, or less than 1 percent, significantly below the respective county maximum positive annual historic deviation (RTV) for this variable.

Total sales volume is defined as the total change in business volume due to the proposed action. The proposed action would result in an increase in direct and indirect annual total sales volume of \$17.9 million in Doña Ana County and \$11.7 million in El Paso County, significantly below the respective county maximum positive annual historic deviation (RTV) for this variable. The total direct and indirect annual income in Doña Ana County and El Paso County would increase by \$5.3 million and \$2.9 million respectively, again significantly below the respective county maximum annual historic deviation (RTV) for this variable.

There would be minor adverse effects on cropland as 50 acres, with an estimated annual production value of \$58,965, would be removed from production for the purposes of borrow sites for levee construction.

Environmental Justice

The Flood Control Improvement Alternative would not disproportionately affect low income or minority populations. An increase in business sales volume would contribute to the local economy, therein providing a positive effect for these populations. The increase in employment and income would also be beneficial. Business sectors that disproportionately employ low-income or minority populations would be beneficially affected by the implementation of this alternative.

As discussed in Section 3, colonias are dominated by minority and low-income populations. Approximately 24 percent of employed residents of border colonias are construction workers (Border Low Income Housing Coalition 2001). Any increase in employment due to project construction could benefit colonia residents. There would be no adverse effect on minority and low-income populations as a result of the small amount of cropland removed from production.

4.9.5 Integrated USIBWC Land Management Alternative

Socioeconomic Effects Due to Levee Rehabilitation

Assumptions and costs for this alternative match those of the Flood Control Improvement Alternative. The overall capital cost estimate for levee construction is \$59.9 million (March 2001 Alternatives Formulation Report), the assumed implementation period is 5 years, and the required number of full-time workers during that period is 98 (62 in Doña Ana County, and 36 in El Paso County).

This alternative would not result in a population change. Therefore, housing and community structure, including public protection, education and medical care, would not be affected. No relocations would be expected as the estimated 98 workers could be hired locally. The annual effects from levee construction on business sales volume, employment and income would be the same as under the Flood Control Improvement Alternative.

Socioeconomic Effects Due to Irrigated Farmland Conversion

Potential effects with implementation of a water conservation program (Scenario 1) would be similar to those effects under the Flood Control Improvement Alternative. However, a potential adverse effect would occur by direct water acquisition (Scenario 2), as 784 acres, with an estimated annual production value of \$899,435, would be removed from production. This cropland conversion would include 50 acres of borrow sites for levee material in rural areas. It is assumed all loss of irrigated cropland would occur in Doña Ana County. As a result of this cropland reduction, there would be associated adverse socioeconomic effects. These include a decrease in farm and agricultural related employment (26); a decrease in annual direct and indirect sales or business volume of \$2.6 million; and a decrease in annual direct and indirect income of \$673,000. Relative to Doña Ana County values, none of these effects would be considered significant as their RTV's are significantly below the respective county maximum negative annual historic deviation (RTV) for each variable.

Environmental Justice

The Integrated USIBWC Land Management Alternative would not disproportionately affect low-income or minority populations during the levee construction phase. The increases in sales volume, employment and income associated with construction activities could benefit low-income and minority populations. Also, an increase in construction employment could benefit colonia residents. No displacements would occur, and the business sectors that disproportionately employ low-income and minority populations could be positively affected.

There could potentially be some adverse effects on low-income and minority population as a result of the implementation and subsequent management operations under this alternative. Under Component C, Scenario 2, it is estimated that 7-9 farm labor jobs could be lost because of the removal of cropland from production.

4.9.6 Targeted River Restoration Alternative

Socioeconomic Effects Due to Levee Rehabilitation

Assumptions and costs for this alternative match those of the Flood Control Improvement Alternative. The overall capital cost estimate for levee construction is \$59.9 million, the assumed implementation period is 5 years, and the number of full-time workers during that period is 98 (62 in Doña Ana County, and 36 in El Paso County).

The local population is not expected to change as a result of this alternative. Since relocations are not expected, housing and community structure would remain unaffected. The annual effects from levee construction on business sales volume, employment and income would be the same as under the Flood Control Improvement Alternative.

Socioeconomic Effects Due to Irrigated Farmland Conversion

Adverse socioeconomic effects could be associated with this alternative under both scenarios evaluated due to farmland retirement (Table 4.9-3). With implementation of a water conservation program (Scenario 1), potential cropland conversion would be limited to 388 acres (50 acres of borrow sites and 288 acres of voluntary conservation easements), with an estimated loss in annual production value of \$390,195. With direct water rights acquisition, approximately 3,492 acres with an estimated annual production value of \$4,003,705 would be removed from production. This retired cropland would include 388 acres of borrow sites and voluntary conservation easements, as in Scenario 1, and 3,154 acres due to direct water rights acquisition. This conversion would represent the most adverse effect of all the alternatives under consideration. As a result of this cropland reduction, there would be associated adverse socioeconomic effects. These include a decrease in farm and agricultural related employment (107); a decrease in annual direct and indirect sales or business volume of \$11.7 million; and a decrease in annual direct and indirect income of \$2.9 million. Relative to Doña Ana County values, none of these effects would be considered significant as their RTV's are significantly below the respective county maximum negative annual historic deviation (RTV) for each variable.

Environmental Justice

Low-income and minority populations would not be displaced by the proposed alternative. This socioeconomic group, particularly colonia residents, could benefit from an increase in employment associated with levee construction. Though annual increases in sales volume, employment, and income fall below their respective RTVs, any increase could be potentially beneficial. Business sectors that disproportionately employ low income and minority populations could be positively affected.

There could be potentially adverse effects on low income and minority populations as a result of the implementation and subsequent management operations under this alternative. Under Component C, Scenario 2, it is estimated that 35-40 direct farm labor jobs and additional agricultural-related jobs could be lost as a result of the removal of cropland from production. This potential of farm labor jobs represents the most adverse effects of all the alternatives and associated components/scenarios.

4.15 CUMULATIVE EFFECTS

4.15.1 Regional Plans

El Paso-Las Cruces Regional Sustainable Water Project

The New Mexico-Texas Water Commission proposed securing future drinking water supplies from surface water sources for the El Paso-Las Cruces region through construction and operation of water treatment plants, aqueducts and diversion structures, aquifer storage and recovery, water acquisitions, water conservation, and water banking (El Paso-Las Cruces Regional Sustainable Water Project, or Sustainable Water Project). The USIBWC and El Paso Water Utilities/Public Service Board were co-lead agencies for project planning and evaluation of potential effects (USIBWC & EPWU/PSB 2000). The Sustainable Water Project has not entered the implementation phase because agreements concerning water acquisition have not been reached.

While viability of the Sustainable Water Project remains uncertain, loss of agricultural land will likely continue due to the increased development in the Cities of Las Cruces and El Paso. The cumulative impact analysis addresses potential loss of agricultural lands for water rights acquisition, and associated socioeconomic effects.

Two water rights acquisition water scenarios were considered for cumulative impacts, one with implementation of an on-farm water conservation program, as described in Subsection 2.9.2, and another with direct acquisition of water rights.

Scenario 1: With Adoption of an On-Farm Water Conservation Program

Under this scenario, any of the modified river management alternatives would require a maximum retirement of 338 acres of cropland. This value includes 50 acres of borrow sites for levee construction, and 288 acres for voluntary conservation easements in areas currently in agricultural production (Targeted River Restoration Alternative). This acreage is insignificant relative to the anticipated land conversion under the Sustainable Water Project. For this project, a conversion of 13,569 acres is anticipated in New Mexico, and 14,344 acres in Texas (Table 3.3-1 of USIBWC & EPWU/PSB 2000). These values apply to a 20-year horizon, equivalent to the RGCP implementation timeframe (Phases 1 and 2 of the Sustainable Water Project preferred alternative).

Scenario 2: Without Adoption of an On-Farm Water Conservation Program

Table 4.15-1 summarizes cumulative effects of a modified RGCP river management alternative without adoption of a water conservation program. Under this scenario, acquisition of water rights for environmental measures would require land farm retirement, estimated at a rate of 1 acre for each 3 ac-ft of acquired water rights. Only potential land conversion in New Mexico was used as a reference, since a large number of RGCP environmental measures under consideration would be located in Doña Ana and Sierra Counties.

For the Integrated USIBWC Land Management Alternative, potential water use would increase 5.4 percent relative to the Sustainable Water Project required supply in

New Mexico. In terms of land conversion, a 18 percent reduction of EBID’s irrigated acreage attributable to the Sustainable Water Project, would increase 1 percent with the Integrated USIBWC Land Management Alternative (Table 4.15-1). Potential farm job losses in New Mexico would increase from 7 to 9 over a total of 250 anticipated for the Sustainable Water Project.

A greater cumulative effect would result from long-term implementation of the Targeted River Restoration Alternative. Anticipated values for the Sustainable Water Project preferred alternative would increase by 23.2 percent in terms of required water supply, and 4.2 percent in terms of EBID’s irrigated acreage reduction. Farm job losses, in addition to 250 anticipated for the Sustainable Water Project, would increase by up to 40 as a cumulative effect of the Targeted River Restoration Alternative.

Table 4.15-1 Potential Cumulative Effects of Modified RGCP Management Alternatives and Sustainable Water Project (20-Year Horizon)

| Evaluation Criteria | RGCP Management Alternatives* | | Regional Sustainable Water Project** | |
|---|-----------------------------------|----------------------------|--------------------------------------|------------------------------|
| | Integrated USIBWC Land Management | Targeted River Restoration | Preferred Alternative, New Mexico | Preferred Alternative, Texas |
| WATER SUPPLY REQUIRED | | | | |
| Estimated supply required without conservation program (ac-ft/yr) | 2,203 | 9,461 | 40,706 | 123,664 |
| Increase over Sustainable Water Project estimates for New Mexico | 5.4% | 23.2% | N/A | N/A |
| POTENTIAL LAND CONVERSION | | | | |
| Acreage conversion | 734 ac | 3,154 ac | 13,569 ac | 14,344 ac |
| Conversion relative to 76,000 acres of EBID irrigated acreage*** | 0.98% | 4.2% | 17.9% | N/A |
| SOCIOECONOMICS | | | | |
| Potential loss in farm jobs | 7-9 | 35-45 | 250 | 262 |

* Data from Tables 4.1-3, 4.8-1, and 4.9-3 of the Draft EIS.

** Table 3.3-1 of USIBWC & EPWU/PSB (2000). A potential loss of 512 jobs, reported for the 20-year horizon (Phases 1 and 2), was allocated in proportion to land conversion.

*** Reference value from Table 1, King and Maitland (2003).

The potential for competing interests for water acquisition rights exists between the Sustainable Water Project and environmental measures under a modified RGCP management alternative. These potential competing interests were addressed by proposing a different water acquisition strategy for the RGCP. While the Sustainable Water Project would rely on direct purchase of lands for water rights acquisition in New Mexico, funding on-farm water conservation programs would be the management strategy for environmental measures in the RGCP (primarily installation of drip irrigation systems). This water conservation strategy would not only provide participating farmers with irrigation systems better suited for drought conditions, but support a goal adopted in the formulation of RGCP alternatives: retaining farmland in production to minimize socioeconomic effects, and as supplemental wildlife habitat and buffer areas from urban development.

Upper Rio Grande Basin Water Operations Model

A multi-agency task force is currently evaluating more reliable and effective management strategies for the Upper Rio Grande basin through comprehensive hydraulic and hydrological simulation of stream flows, storage, and water demands. As part of an ongoing EIS, alternatives have been developed and evaluated using for the Upper Rio Grande Basin Water Operations Model (URGWOM).

Evaluation of normal operational flows as part of URGWOM has been limited to the Rio Grande reach upstream of Elephant Butte Reservoir. Thus, URGWOM results will not modify the extent or timing of irrigation flows along the RGCP. For this reason, the URGWOM will not have a cumulative effect on modified RGCP management alternatives. The only foreseeable URGWOM effect on RGCP operations is a greater upstream storage and routing of flood peaks with a potential to improve flood control.

New Mexico State Water Plan

On December 23, 2003, the New Mexico Office of the State Engineer (NMOSE) released the 2003 State Water Plan, as adopted in final form by the New Mexico Interstate Stream Commission. Appendix A of this plan lists key water issues for the Rio Grande as well as other major basins [<http://www.ose.state.nm.us/water-info/NMWaterPlanning/state-water-plan.html>].

The State Water Plan lists four major issues for the Lower Rio Grande (defined as the river segment south of Elephant Butte to the Texas border) which includes most of the RGCP: two related to compliance with the Rio Grande Compact; effects of increased ground water pumping; and Texas' pursuit of water importation from New Mexico. Management alternatives for the RGCP would not be in conflict with these issues as, 1) the USIBWC is required to comply with the Compact provisions, and 2) neither increased ground water use, nor inter-state water transfer are under consideration for the RGCP.

Relevant water supply and demand initiatives listed in the State Water Plan for the Lower Rio Grande are the El Paso-Las Cruces Sustainable Water Project; projects by the Cities of Las Cruces and El Paso to secure water; and the Special District Act.

Potential cumulative effects of the Sustainable Water Project Water were discussed above. Similar effects would be associated with other water acquisition initiatives by the Cities of Las Cruces and El Paso. Those new initiatives, in fact, address a water supply need whose near-future solutions no longer appear viable under the Sustainable Water Project.

The 2003 Special District Act, enacted by the New Mexico State legislature, allows creation of special districts with administrative tools for effective water banking to allow efficient and timely transfer of water from one user to another. The legislation was promoted, according to the State Water Plan, by the EBID and communities in the Lower Rio Grande, and its effectiveness as a management tool will first be evaluated in the Lower Rio Grande. Water banking is an option under consideration for water acquisition as part of a modified RGCP management strategy that could facilitate a potential transfer of water saved through on-farm water conservation programs. Administrative regulations for Special Districts are under development by the NMOSE.

SUBCHAPTER I.F – ADDITIONS AND MODIFICATIONS TO SECTION 5, CONSULTATION AND COORDINATION

Additional text is provided on the Draft EIS public review process following its release on December 18, 2003 (New Subsection 5.1.4 following the end of Subsection 5.1.3 on page 5-5 of the Draft EIS).

5.1 DRAFT EIS PREPARATION OVERVIEW

5.1.4 Draft EIS Agency and Public Review Period

The Draft EIS was made available for public review and comment on December 18, 2003. The deadline initially selected for submittal of comments to the Draft EIS was February 10, 2004. In response to a stakeholder's request, this date was extended to March 1, 2004 to allow additional time for review and receipt of written comment.

The USIBWC held a formal public hearing on January 27, 2004. The hearing was held from 6:30 p.m. to 8:30 p.m. at the USIBWC offices in El Paso. A formal presentation of the Draft EIS was given by the USIBWC, followed by verbal comments by hearing attendees. Both the presentation text and comments were taken through transcription by a certified court reporter. Appendix L of the Final EIS provides a copy of the official transcript.

A total of 116 letters were received from commentators during the Draft EIS review period, including 7 from agencies, 10 from non-governmental organizations, and 23 from private business. Copies of all correspondence received during the review period are presented in Appendix K. After close of the review period, 51 additional letters were received, including two from state agencies, and 35 form letters previously submitted by other commentators. The USIBWC agreed to include responses to late submittals providing substantial comments not previously addressed by other reviewers.

In general, key issues expressed during the public comment period included the following:

- Support for the No Action Alternative, in some cases requesting exclusion of conditions contained in the 1999 Memorandum of Understanding between the USIBWC and SWEC;
- Preference for the Targeted River Restoration Alternative with additional measures; and
- Concern regarding the USIBWC's focus on environmental changes rather than the RGCP mission of water delivery and flood protection.

Responses to comments received during the public hearing and Draft EIS review period are provided in Chapter II of the Final EIS. A cross-referencing index is also provided in Appendix J to link detailed responses organized by EIS Section, as presented in Chapter II, with originally submitted comments (Appendix K).

SUBCHAPTER I.G – ADDITIONS AND MODIFICATIONS TO THE DRAFT EIS, TEXT CORRECTIONS

This section includes editorial changes and non-substantial clarifications to the Draft EIS. It does not list changes to updated sections provided in Subchapters I.A through I.F, as the modified text already incorporates any required changes or clarifications.

| Page | Item | Change* | Draft EIS Text | Modified Text |
|------|---|--|---|--|
| xiii | Acronyms and Abbreviations | Editorial correction | NOX; SOX; VOC: Volatile organic carbohydrates | NOx; SOx; VOC: Volatile organic compounds |
| 1-2 | Section 1.1.2, first bullet, last sentence | Rephrased in response to comment O8-19c | Baseline conditions used for restoration considerations will be the 1938 period. | Reference conditions for RGCP restoration potential are those at the beginning of project construction in 1938. |
| 2-10 | Last sentence, next to last paragraph | Web link updated in response to comment A6-2 | Environmental Impact Reduction Checklist for Grazing [http://es.epa.gov/oeca/ofa/pollprev/graze.html] | Environmental Impact Reduction Checklists for NEPA Reviewers [www.inece.org/EIA/3Resouce.htm] |
| 2-11 | 2 nd paragraph, end of 2 nd sentence | Updated citation in response to comment O7-04d | ...is consistent with current BLM guidelines (USDI, BLM 1991) | ...is consistent with current BLM guidelines (BLM 2000). <i>[Note: this reference is listed in Section 6.2]</i> |
| 2-16 | End of 2 nd paragraph | Corrected as indicated in comment A1-03 | ...and the Bosque del Apache National Wildlife Reservation. | ...and the Bosque del Apache National Wildlife Refuge. |
| 2-40 | Last paragraph, 2 nd sentence regarding the Paso del Norte Watershed Council | Modified as recommended in comment O4-2 | [The Council] would serve in an advisory capacity regarding selection, planning, and implementation of environmental measures. | [The Council] would serve in an advisory capacity regarding selection, planning, and implementation of environmental measures in accordance with the objectives of the Council, and within the limits of available manpower and resources. |
| 2-41 | Section 2.9.2, 1 st paragraph, last sentence | Editorial correction | Any <u>thrid</u> -party water conversion contracts... | Any third-party water conversion contracts... |
| 4-10 | Table 4.2-3, River Mile 78, Measure D | Errata | 83B* (highlighted text) | 78D (not highlighted) |
| 4-5 | Last sentence before Sub-section 4.1.6 | Modification | ... and lessen nutrient release from grazing areas | ... and lessen grazing areas' contribution to the stream nutrient load from agricultural lands and Publicly-Owned Treatment Works. |
| 6-12 | NMOSE citations in page 3-2, 1 st paragraph, and Figures 3-1 and 3-2. | Errata | References to New Mexico Office of the State Engineer (NMOSE) publications were not included in Section 6.2. | NMOSE 2001. White Paper, New Mexico's Water Supply and Active Water Resource Management. July 23, 2001. NMOSE 2003. Strategic Plan. May 5, 2003. |

* Comment numbers are referenced in Appendix J, and text is provided in full in Appendix K.

CHAPTER II RESPONSE TO DRAFT EIS COMMENTS

Chapter II of the Final EIS presents responses to comments submitted during the Draft EIS comment period (December 24, 2003 through March 1, 2004) and a public hearing conducted at the USIBWC offices in El Paso, Texas on February 27, 2004. Appendices K and L provide copies of all correspondence received during the review period, and the Public Hearing transcript, respectively.

Tracking of Individual Letters and Comments

Correspondence Received

A total of 116 letters were received during the review period, and 3 verbal presentations were made during the Public Hearing. Letters were organized into four broad categories: Agencies (Code A, 9 letters); Organizations (Code O, 10 letters); Private Business (Code P, 23 letters); and Individual Stakeholders (Code S, 76 letters). Verbal comments received during the public hearing were included in the individual stakeholder category (text from the official hearing transcript, Code ST). A sequential number was assigned to each entry within a category reflecting the chronological order in which correspondence was received by the USIBWC. The list of correspondence received, authors, and assigned correspondence codes is presented at the end of this section (Tables II-2, II-3 and II-4).

After closing of the review period, 54 additional letters were received, including two from state agencies (A8 and A9), and 34 form letters previously submitted by other commentators. The USIBWC agreed to include responses to late submittals which provided substantial comments not previously addressed.

Comment Tracking Number

To address questions, concerns, and recommendations raised, the text of each letter was subdivided into a series of individual comments. Each comment was assigned a tracking number for identification. For example, tracking number A1-02 refers to the 2nd comment identified in correspondence received from the Department of the Interior, the first agency to provide comments to the USIBWC. No tracking number was assigned to introductory remarks, some descriptive items not requiring a response, or summary statements described in more detail in another section of a letter.

In three instances where extensive comments were received (O7, O8 and S31), a number of global comments were first identified and assigned a tracking number. Each global comment was subsequently divided into individual items identified by an additional letter (e.g. comments O7-04a through O7-04e).

A reference list of tracking numbers assigned to each individual comment is included in Appendix J. Tracking numbers are also shown on the left margin of each letter, along with a vertical line identifying the extent of the comment (Appendix K). The reference list also includes a capsule summary entered in the database used to document responses to comments.

Response Organization by Draft EIS Section

To address comments, each one was assigned to a specific section in the EIS. Sections in which comments are addressed are identified in the cross-reference index presented in Appendix J.

A number of comments addressed similar issues. In this case, comments were combined into one issue. A summary description was then presented, along with the USIBWC response addressing the issue. This approach simplified presentation of responses, particularly when addressing multiple form letters with similar text. The description of each issue identifies applicable comment tracking numbers so they can be referred back to the commentator's original text, presented in its entirety in Appendices K and L. The number of comments and associated issues are presented in Table II-1. An index of issues identified during the analysis precedes the discussion by individual EIS section.

Table II-1. Number of Comments Received and Associated Issues

| Draft EIS Section in Which Comments are Addressed | Number of Comments* | Number of Issues |
|--|----------------------------|-------------------------|
| Section 1. Purpose of and Need for Action | 139 | 22 |
| Section 2. Description of Alternatives | 206 | 45 |
| Section 3. Affected Environment | 29 | 7 |
| Section 4. Environmental Consequences | 109 | 34 |
| Section 5. Consultation and Coordination | 8 | 3 |
| Appendix F | 14 | 2 |

* Comments repeated in form letters were tracked as a single entry in the database

Comments Related to the Draft EIS Public Comment Period

A number of comments requested clarification of the Draft EIS review process or the Public Hearing. Those comments are addressed in a new subsection added to Section 5, Consultation and Coordination: "Subsection 5.1.4, Draft EIS Public Consultation Process."

**Table II-2. Correspondence from Agencies, Organizations, and Private Business
(December 24, 2003 – March 1, 2004, Draft EIS Public Review Period)**

| Code | Date | Pages | Author | Affiliation |
|-------------------------|-----------|-------|--------------------------|--|
| AGENCIES | | | | |
| A1 | 6-Feb-04 | 3 | Stephen R. Spencer | U.S. Department of Interior |
| A2 | 9-Feb-04 | 1 | Michael P. Janski | U.S. Environmental Protection Agency, Region 6 |
| A3 | 9-Feb-04 | 2 | R.W. (Bob) Spain | Texas Parks & Wildlife Department |
| A4 | 10-Feb-04 | 1 | Nick Smokovich | New Mexico Forestry Division |
| A5 | 19-Feb-04 | 2 | Michelle M. Ensey | New Mexico Historic Preservation Division |
| A6 | 1-Mar-04 | 4 | Julie Maitland | New Mexico Department of Agriculture |
| A7 | 1-Mar-04 | 2 | Estevan R. López | New Mexico Interstate Stream Commission |
| A8 | 1-Mar-04 | 1 | Lisa Kirkpatrick | New Mexico Department of Game and Fish |
| A9 | 16-Mar-04 | 1 | Ron Curry | New Mexico Environment Department |
| ORGANIZATIONS | | | | |
| O1 | 23-Feb-04 | 2 | Phillip Arnold | Dona Ana County Farm and Livestock Bureau |
| O2 | 25-Feb-04 | 3 | Multiple Signatures | New Mexico Pecan Growers |
| O3 | 27-Feb-04 | 1 | S. Elizabeth Birnbaum | American Rivers |
| O4 | 27-Feb-04 | 2 | Michael P. Fahy | El Paso Water Utilities |
| O5 | 29-Feb-04 | 1 | Roger S. Peterson | New Mexico Natural History Institute |
| O6 | 29-Feb-04 | 2 | Saford D. Schemnitz | Southwest Consolidated Sportsmen |
| O7 | 1-Mar-04 | 42 | Kevin Bixby / Mary Kelly | The Alliance for the Rio Grande Heritage |
| O8 | 1-Mar-04 | 50 | Gary Esslinger | Elephant Butte Irrigation District |
| O9 | 1-Mar-04 | 3 | Sue Watts | Paso del Norte Watershed Council |
| O10 | 27-Jan-04 | 1 | John Kiseda | El Paso Zoo |
| PRIVATE BUSINESS | | | | |
| P01 | 5-Jan-04 | 1 | Herman E. Ortiz | Loma Parda Diary |
| P02 | 16-Feb-04 | 1 | Mike Dipp | Mike Dipp Farms |
| P03 | 18-Feb-04 | 1 | Leslie S. Fletcher | Fletcher Farms, Inc. |
| P04 | 19-Feb-04 | 1 | John B. Colquitt | Colquitt Company |
| P05 | 20-Feb-04 | 2 | Rosie Lack | Lack Farms, Inc. |
| P06 | 20-Feb-04 | 1 | Ted Cox | Ted Cox Farms |
| P07 | 23-Feb-04 | 1 | David P. Salopek | David Salopek Farms |
| P08 | 23-Feb-04 | 1 | Marion H. Salopek | David Salopek Farms |
| P09 | 24-Feb-04 | 1 | Paulina Salopek | Roadrunner Pecans/D. Salopek Farms |
| P10 | 24-Feb-04 | 1 | Frank A. Garcia | Garcia Pecan Farm |
| P11 | 24-Feb-04 | 1 | Hector Franco | Franco Farms |
| P12 | 24-Feb-04 | 1 | J.J. Ulmer, Jr. | Ulmer Inc. |
| P13 | 25-Feb-04 | 1 | Andrew L. Jacques | Jacques Farm |
| P14 | 26-Feb-04 | 1 | Bruno Carson | Rio Valley Chili Incorporated |
| P15 | 26-Feb-04 | 1 | Kit R. Carson | Rio Valley Chili Incorporated |
| P16 | 26-Feb-04 | 1 | Nick Carson | Rio Valley Chili Incorporated |
| P17 | 26-Feb-04 | 1 | Rory Carson | Rio Valley Chili Incorporated |
| P18 | 26-Feb-04 | 2 | Phil Harvey, Jr. | Harvey Farms, Ltd.Co. |
| P19 | 26-Feb-04 | 2 | A. Paul Mitchell | Beasley, Mitchell & Co |
| P20 | 27-Feb-04 | 1 | Mike Dutton | D&L Farms, Inc. |
| P21 | 27-Feb-04 | 1 | Mike Dutton | Dila Properties, Inc. |
| P22 | 27-Feb-04 | 1 | Mike McNamee | Argon |
| P23 | 27-Feb-04 | 1 | Joe A. Nelson | Nelson Farms |

**Table II-3. Correspondence from Individual Stakeholders
(December 24, 2003 – March 1, 2004, Draft EIS Public Review Period)**

| Code | Date | Pages | Author |
|------|-----------|-------|----------------------------|
| S01 | 8-Feb-04 | 1 | John Sproul |
| S02 | 17-Feb-04 | 1 | Geri Tillett |
| S03 | 17-Feb-04 | 1 | Robin Tillett |
| S04 | 19-Feb-04 | 1 | Michael D. Clelland |
| S05 | 19-Feb-04 | 1 | Joseph and Inga Groff |
| S06 | 19-Feb-04 | 1 | Cassandra Lockwood |
| S07 | 20-Feb-04 | 1 | Allen and Patsy Emery |
| S08 | 20-Feb-04 | 1 | L.E. Archer |
| S09 | 22-Feb-04 | 1 | Nubia Ortiz |
| S10 | 22-Feb-04 | 1 | Jerry Franzoy |
| S11 | 23-Feb-04 | 2 | Jess Alford |
| S12 | 23-Feb-04 | 2 | Josefina Alvarez |
| S13 | 23-Feb-04 | 1 | Helen Bigelow |
| S14 | 23-Feb-04 | 1 | John K. Clayshulte, Sr. |
| S15 | 23-Feb-04 | 1 | Marshall Clayshulte |
| S16 | 23-Feb-04 | 1 | Edward Provencio |
| S17 | 23-Feb-04 | 1 | Lorraine Schults |
| S18 | 24-Feb-04 | 1 | Robert Meyer |
| S19 | 24-Feb-04 | 2 | Paul E. Pirtle |
| S20 | 25-Feb-04 | 1 | Bob Bauman |
| S21 | 25-Feb-04 | 1 | Patricia Skykes Williams |
| S22 | 25-Feb-04 | 1 | Irma Skykes Wright |
| S23 | 25-Feb-04 | 1 | Pamela Hunt |
| S24 | 26-Feb-04 | 1 | John and Kay Adamek |
| S25 | 26-Feb-04 | 1 | John Clayshulte, Jr. |
| S26 | 26-Feb-04 | 1 | Daniel R. Darbyshire |
| S27 | 26-Feb-04 | 1 | Jack F. Darbyshire |
| S28 | 26-Feb-04 | 1 | Cynthia King |
| S29 | 26-Feb-04 | 1 | Stephen C. Klinger |
| S30 | 26-Feb-04 | 1 | Adrianus & Gertrud Konings |
| S31 | 26-Feb-04 | 32 | Rebecca Miller |
| S32 | 26-Feb-04 | 2 | Clifford L. Pelton |
| S33 | 26-Feb-04 | 1 | Anita Ortega |
| S34 | 26-Feb-04 | 1 | Enrique Ortega |
| S35 | 26-Feb-04 | 1 | Manual Ortega |
| S36 | 26-Feb-04 | 1 | Roy and Celestina Ortega |
| S37 | 26-Feb-04 | 1 | Albert and Gloria Polanco |
| S38 | 26-Feb-04 | 1 | Ken Stinnett |
| S39 | 26-Feb-04 | 1 | Thomas and Lois Wark |
| S40 | 26-Feb-04 | 1 | Chris Yarnes |

**Table II-3 (continued). Correspondence from Individual Stakeholders
(December 24, 2003 – March 1, 2004, Draft EIS Public Review Period)**

| Code | Date | Pages | Author |
|-----------------------|-----------|--------|---------------------------------|
| S41 | 26-Feb-04 | 1 | Unknown |
| S42 | 27-Feb-04 | 1 | Jonathan E. Davis |
| S43 | 27-Feb-04 | 1 | Jean M. Darbyshire |
| S44 | 27-Feb-04 | 1 | Garry Michael Dutton |
| S45 | 27-Feb-04 | 1 | Larry Hughes |
| S45 | 27-Feb-04 | 1 | Larry Hughes |
| S46 | 27-Feb-04 | 1 | Tim McKimmie |
| S47 | 27-Feb-04 | 1 | Lynn A. Mulholland |
| S48 | 27-Feb-04 | 1 | Linda and Doug Page |
| S49 | 27-Feb-04 | 1 | Jane E. Poss |
| S50 | 27-Feb-04 | 1 | Sarah Sisk |
| S51 | 27-Feb-04 | 1 | Geri Tillet |
| S52 | 27-Feb-04 | 1 | Gloria A. Villaverde |
| S53 | 27-Feb-04 | 1 | Ronald L. Wood |
| S54 | 27-Feb-04 | 1 | Sarah G. Wood |
| S55 | 27-Feb-04 | 1 | S.K. Wright |
| S56 | 27-Feb-04 | 1 | Barbara A. Furgason |
| S57 | 27-Feb-04 | 1 | Bill Furgason |
| S58 | 27-Feb-04 | 2 | David Madrid |
| S59 | 27-Feb-04 | 1 | Adrian Ogaz |
| S60 | 28-Feb-04 | 1 | Mary W. Blevins |
| S61 | 28-Feb-04 | 1 | Nancy J. Crider |
| S62 | 28-Feb-04 | 1 | Ann d'Olier |
| S63 | 28-Feb-04 | 1 | Billie Rose |
| S64 | 28-Feb-04 | 1 | Terry Rose |
| S65 | 29-Feb-04 | 2 | Chris Fields and Alison Tinsley |
| S66 | 29-Feb-04 | 1 | Daryl T. Smith |
| S67 | 29-Feb-04 | 1 | Nancy Stotz |
| S68 | 29-Feb-04 | 2 | Kevin von Finger |
| S69 | 1-Mar-04 | 1 | Nelson F. Clayshulte |
| S70 | 1-Mar-04 | 2 | Billie Hughes |
| S71 | 1-Mar-04 | 2 | Taylor Moore |
| S72 | 1-Mar-04 | 1 | Gary Schiffmiller |
| S73 | 1-Mar-04 | 1 | Martha Stephens |
| S74 | 1-Mar-04 | 1 | John H. Welch |
| S75 | 1-Mar-04 | 1 | Margaret Wilson |
| PUBLIC HEARING | | | |
| ST1 | 27-Jan-04 | Verbal | Kevin von Finger |
| ST2 | 27-Jan-04 | Verbal | Lori Rivera |
| ST3 | 27-Jan-04 | Verbal | Armando Vega |

Table II-4. Correspondence from Individual Stakeholders Submitted After Closing of Draft EIS Public Review Period (March 1, 2004)

| Author | Correspondence Description |
|--|--|
| R. Roy Johnson, Judith LaPointe, Harold K. Skramstad, Jr., James C. Smith, David Tenney | Recommendations to: <ul style="list-style-type: none"> • Delay River Management Plan • Conduct additional studies and hydraulic modeling • Convene stakeholder group • Return river to natural state |
| Bob Bauman, Carter Beckett, Helen Bigelow, Alicia A. Bixby, Stuart C. Brown, Theresa L. Churilla, Marcia Corl, L.A. Coutant, John Hamilton, Judith Hanson, Daniel Moga, Barbara Lee Myers, Robert Tafanelli. | Correspondence supporting an expanded restoration alternative, and/or requesting postponement of Final EIS |
| Judy Licht, Robert Meyer, Avis K. Payne, Linda Rabestraw, Susan Rossmann, Clarinda Watkins. | Form Letter #1 supporting an expanded restoration alternative (see S06 as an example) |
| Josefina Alvarez, Jean Apgar, Willard Beattie, Carter Beckett, Thea Beckett, Erasmus and Jeanne Brancato, Genevieve Chavez, Jean R. Clark, Margaret W. Freeman, Inga Groff, Joe Groff, Margaret Haddeman, Gregg A. Henry, Pamela Hunt, Julia Koontz, Barbara Mander, Andrea P. McEneny, Jeremy Mills, Reba Montera, Jean C. Ossorio, Dennis O'Toole, Maureen Pollack, Clifford L. Pelton, Barbara Sauter, Robert Tafanelli, Geri Tillett, Hollis Train, John C. White. | Form Letter #2 supporting an expanded restoration alternative (see S28 as an example) |

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RESPONSE TO COMMENTS: SECTION 1, PURPOSE OF AND NEED FOR ACTION

Comments relating to Section 1 of the Draft EIS mainly focused on USIBWC's authority to implement a modified river management alternative, and opportunities and constraints taken into account for development of a partial river restoration alternative. The following responses include only those subsections with specific issues raised by commentators, as listed in the preceding index.

1.1 PURPOSE OF AND NEED FOR ACTION

1.1.1 Proposed Action and Need

Subsection 1.1.1 - Issue A: Appropriateness of the purpose of and need for action

One reviewer stated that the need for action under consideration was incorrect because it did not identify two issues characterized as the most significant for the region: decreasing farmland and water supply [S31-3b]. The reviewer also indicated that, as a result, the scope of the Draft EIS was not clearly defined from the beginning [S31-1e], was too narrow in scope [S31-3d], focused on wildlife habitat rather than protection of human life [S31-5i], and was inconsistent with the region's historic and present environmental needs and objectives [S31-1c].

Response

The rationale for the USIBWC to evaluate a modified river management alternative was not correctly interpreted. As indicated in the Purpose of and Need for Action, the agency will continue to perform the RGCP mission—flood control and efficient water delivery functions—as it has done since completion of the RGCP construction in 1943. The Draft EIS evaluated potential effects of various river management alternatives to fulfill that mission while enhancing environmental conditions.

Multiple constraints and opportunities related to flood control and water use were taken into consideration in selecting environmental measures and developing river management strategies (see Tables 1.3-2, 1.3-3, 1.3-4, and 1.3-5 of the Draft EIS). In the reformulation of alternatives, completed in August 2003, a key consideration was the limited and fully allocated water supply. A second consideration was the benefit of maintaining farmlands in production, not only to minimize socioeconomic effects, but also as a supplemental wildlife habitat that would provide riparian vegetation a buffer from urban development. Major issues addressed in the analysis of alternatives were discussed in detail in Sections 2 and 4 of the Reformulation of Alternatives Report, provided with the Draft EIS as Appendix I (also included in Appendix Q of the Final EIS).

Alternatives formulation followed an extensive agency and public consultation process that included representatives of both the agricultural community and environmental organizations. This consultation process is summarized in Section 5.1 of the Draft EIS.

1.1.2 Criteria for Alternatives Formulation

Subsection 1.1.2 - Issue A: Threatened and Endangered (T&E) species as a criteria for habitat restoration.

Five comments noted that restoration was not justified without the presence of T&E species, or their habitat [O8-03h, S14-2, S22-2, S31-5f, S41-5]. The Elephant Butte Irrigation District (hereafter referred to as EBID) further indicated that no project should promote introduction of T&E species to the RGCP [O8-16c], and stated its opposition to the introduction of T&E species because such action would endanger the water supply [O8-03i].

Response

Presence or absence of T&E species in the RGCP are not grounds for implementation of measures to improve habitat. This EIS evaluates river management alternatives for future operation and maintenance (O&M) of the RGCP to enhance environmental conditions while accomplishing its flood control and water delivery mission. The USIBWC recognizes the need to accomplish flood control, water delivery, and O&M activities in a manner that restores, if possible, and enhances the restoration of native habitat conditions in the project area. The river and floodway will remain altered from the native riparian and aquatic conditions that existed before the RGCP was constructed unless additional ecosystem restoration actions are undertaken.

The USIBWC does not have a primary goal of introducing T&E species under the proposed action. However, the proposed action may result in conditions conducive to advancing the natural introduction of T&E species.

Subsection 1.1.2 - Issue B: Proposal for implementation of restoration projects at evenly distributed locations.

One organization, Alliance for the Rio Grande Heritage, recommended implementing restoration projects at evenly distributed locations throughout the RGCP as part of a proposed new alternative. The organization also suggested focusing on arroyos, spillways, and other water and sediment discharge points [O7-03c].

Response

Potential project locations identified during development of the alternatives were those identified as offering the best opportunity for riparian vegetation development (see Appendix P of the Final EIS for complete text of the August 2003 Reformulation of River Management Alternatives, and the March 2001 Alternatives Formulation Report). This selection process took into account specific site conditions such as topography, adjacent land

use, flood control, and feasibility considerations. The use of evenly spaced locations as criteria would neither respond to geographic site variation and opportunities, nor reflect the diversity of biological communities.

All arroyos along the RGCP, and numerous spillways, were included as point projects in development of the Integrated USIBWC Land Management Alternative, and/or Targeted River Restoration Alternative (Section 2.8 of the Draft EIS). A site-by-site analysis of 48 potential environmental enhancement locations was provided in Appendix H of the Draft EIS (Response to September 12, 2003 correspondence from the World Wildlife Fund, Question No. 3 regarding the Reformulation of Alternatives Report).

1.1.3 Authority

Subsection 1.1.3 - Issue A: USIBWC's mandate for actions under evaluation.

A number of comments stated that adoption of environmental measures is outside the USIBWC's responsibility for RGCP O&M, which is limited to flood control and water deliveries [O8-03a, O8-03e, P03-1, P07-2, P11-3, P13-3, P23-3, S14-4, S27-3, S31-1d, S31-2d].

Response

The authority to construct, operate and maintain works for the canalization of the Rio Grande also includes a responsibility to consider environmental improvements in the project area. An Act of Congress authorized legislation for the USIBWC to construct, operate and maintain works for the canalization of the Rio Grande from the Caballo Reservoir site in New Mexico to the international dam in El Paso, Texas. See Act of June 4, 1936 (49 Stat. 1463), Act of August 29, 1935 (49 Stat. 961), 22 U.S.C. Sections 277b, 277c and 277d-29. The canalization project was authorized in order to facilitate compliance with the Convention between the United States and Mexico concluded May 21, 1906, providing for the equitable division of the waters of the Rio Grande, and to properly regulate and control the water supply for use in the two countries as provided by treaty.

The USIBWC has the authority and responsibility to evaluate environmental benefits in relation to the operation and maintenance of the Rio Grande Canalization Project. The National Environmental Policy Act (NEPA) of 1969 mandates a USIBWC responsibility to evaluate environmental benefits of the project. Under NEPA it is the continuing responsibility of the federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may, among other things, attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences. 42 U.S.C. Sections 4331 (b).

The international body, or International Boundary and Water Commission, United States and Mexico (IBWC), is designated by Executive Order (E.O.) 12467 issued March 2, 1984 as a public international organization entitled to enjoy the privileges, exemptions, and

immunities conferred by the International Organizations Immunities Act (59 Stat. 669, 22 U.S.C. 288). Section 2 of the E.O. does not extend those rights and privileges to the USIBWC.

The USIBWC was established to carry out the work in the United States of the agreed upon actions of the IBWC. The USIBWC is a United States Government agency in every way similar to the United States Army Corps of Engineers, United States Bureau of Reclamation, United States Fish and Wildlife Service, and other federal agencies, and like any other federal agency, it is required to follow the laws of the United States, including the National Environmental Policy Act (NEPA) of 1969. It is NEPA and regulations of the Council on Environmental Quality that dictate the authority of USIBWC's environmental compliance.

Subsection 1.1.3 - Issue B: Basis to conduct restoration and consistency with RGCP Mission

A number of comments indicated that the primary mission of the USIBWC for the RGCP is water delivery and flood control [O8-01a, O8-03b, O8-03j, P10-3, P23-1, S04-1, S04-5, S08-1, S19-3, S19-9, S31-2a, S31-5a, S57-1] and that development of environmental measures, or environmental enhancements, is not consistent with that mission [O8-02d, O8-17a, P23-1, S19-1, S31-5a, S58-2]. Other comments indicated that no justification was given for the need for O&M changes to achieve environmental enhancements [S31-5g], and that NEPA regulations were not applicable to projects outside the agency's mandate [O8-03f, O8-05c].

Response

The USIBWC is fully aware of its mandate and very important part of its mission to foster efficient water delivery and flood control for the RGCP. However, the agency also realizes the need for environmental stewardship and need to stay in step with the nation on these important environmental matters. Sensitivity to improving the environmental conditions along rivers across the nation as well as the southwest is well recognized among the public, environmental groups, agricultural community, and federal agencies. The USIBWC is within its authority to also consider actions that result in environmental benefits, in addition to the RGCP flood control and water delivery mission.

Although O&M changes in terms of no mow zones and limited tree plantings were accomplished and resulted in environmental improvements, the potential for improvements had not been thoroughly explored through a holistic concept for the RGCP. This potential underwent a thorough examination of management strategies by comparing and examining a number of alternatives relative to a No Action Alternative.

Since actions to improve environmental conditions along the RGCP are within the mandate of the USIBWC, such actions are subject to the NEPA review process. Section 103 of NEPA requires all federal agencies to fulfill this procedural requirement. The USIBWC's proposal to consider long term river management alternatives is considered a major federal action subject to the NEPA process. The USIBWC considers that the EIS under the regulations of NEPA was the appropriate response.

Subsection 1.1.3 - Issue C: Consistency of environmental changes with international agreements and intent of Minute 129.

The EBID stated its position that proposed alternatives were not in keeping with the international agreements between the United States and Mexico [O8-17b], and environmental changes were not consistent with the intent of Minute No. 129 [O8-18].

Response

The EIS analysis of alternatives demonstrated that there are no alternatives proposed that would impact the USIBWC's ability to deliver water to downstream users, including Mexico. Furthermore, proposed actions do not affect the continuing obligations of IBWC Minute No. 129 (Report on Rio Grande Rectification Project); *i.e.* 1) continued IBWC jurisdiction over matters concerning the rectified Rio Grande channel; and 2) the United States and Mexico agreement to hold each other immune from private and national claims arising from construction and maintenance of the Rio Grande Rectification Project.

Subsection 1.1.3 - Issue D: Potential reductions in water supply.

The EBID stated that water supply reductions by the USIBWC are not authorized by the 1906 or 1944 treaties, the 1936 Rio Grande Canalization Project Act, or related documents, and that it is not authorized to take pro-environmental actions or do anything that would work against its core duties [O8-03d].

Response

The statement is in agreement with criteria adopted by the USIBWC in the formulation of alternatives. Environmental enhancements could only occur with no increase in river flow depletions. The USIBWC plans to support water conservation programs and minimize farmland retirement. The USIBWC's consideration of environmental improvements as part of its long term management strategy does not conflict with its core duties. The USIBWC has factored these core duties of water supply and delivery into the alternatives presented in the Draft EIS. The USIBWC's action in developing the Draft EIS is consistent with the requirements of NEPA to evaluate the environmental consequences of a project during the planning process.

Subsection 1.1.3 - Issue E: Statutory basis for flood control mandate.

Regarding compliance with the 1999 MOU, the Alliance for the Rio Grande Heritage, stated that the statutory basis for a flood control mandate had not been identified in the Draft EIS. It also requested information on the document that details the origin of the 100-year design flood [O7-08a].

Response

The Rio Grande Canalization Project was authorized by the Act of August 29, 1935, 49 Stat. 961, and the Act of June 4, 1936, 49 Stat. 1463, to facilitate compliance with the convention between the United States and Mexico on May 21, 1906 (TS 455) providing for the equitable division of the waters of the Rio Grande, and to properly regulate and control, to the fullest extent possible, the water supply for use in the two countries, and also for protecting the lands along the project from floods. See also 22 U.S.C. Section 277s-29.

Protection against the 100-year flood is a widely accepted engineering criterion used for decades by the Federal Emergency Management Agency and other agencies. This criterion was used in design of the RGCP levee system, and the 1996 evaluation of potential improvements to the system by the U.S. Army Corps of Engineers (USACE).

1.3 DRAFT EIS PREPARATION

1.3.1 Memorandum of Understanding

Subsection 1.3.1 - Issue A: Objection to the March 22, 1999 agreement between the USIBWC and SWEC.

A number of comments objected to the MOU signed between the USIBWC and the SWEC on March 22, 1999 and requested it be set aside [P04-3, P18-3, S19-2, S33-2]. This request was also indicated in various comments stating a preference for the No Action Alternative (see Subsection 2.13).

Response

The March 1999 MOU is an agreement made between the USIBWC and SWEC; although, Section V indicates that either party may terminate the agreement by written notice within 30 days, the USIBWC has no reason, at this time, to terminate the agreement.

Subsection 1.3.1 - Issue B: Suggested need for an environmental review of measures in the 1999 USIBWC-SWEC agreement.

A number of comments stated the need for an environmental evaluation due to implementation of measures included in the MOU [O8-05a, P10-2, S15-2, S27-1, S31-6a, S31-6i, S41-3, S58-3, S69-2]. Two comments indicated that use of a categorical exclusion was not applicable [O8-05b, S31-6c].

Response

The Draft EIS for River Management Alternatives for the RGCP represents the combined input from past river management activities, such as the 1977 Draft Environmental Statement, the MOU with SWEC, and from a 3-year consultation and scoping process with

federal and state agencies, non-government organizations, farmers, and various other stakeholders. Where appropriate, an environmental review was conducted under NEPA. The MOU between the SWEC and the USIBWC did not require an environmental review under NEPA. However, certain provisions in the MOU when considered for implementation would be subject to NEPA and have been addressed in the EIS.

Regarding Categorical Exclusions, the September 2, 1981 USIBWC Operational Procedures for implementing NEPA, Section 102 [Federal Register 46, No. 170: 44083-44093] established 13 categories excluded from preparation of an EIS or an environmental assessment (Section 100.6). Included in the operational procedures is "Participation in research or study projects which do not cause significant environmental impacts." In the 1999 MOU, it was specifically indicated that establishment of study areas was categorically excluded from NEPA. No-mow zones and planting areas adopted as part of the MOU were evaluated in the Draft EIS and found to have minimal effect on both flood-carrying capacity and water use (see Table ES-2, Subsection 2.2.2, Subsection 3.4.5, Subsection 4.1.5, Subsection 4.4.1, and comments listed in Table 4.4-3).

1.3.3 Significant Issues by Resource Category

Subsection 1.3.3 - Issue A: Alternatives should not impede floodway management or contractual deliveries of water.

A number of comments indicated that USIBWC needed to focus on the RGCP flood control and water delivery mission [O2-1, O8-03c, P07-6, P14-3, P15-3, P16-3, P17-2, S07-1, S15-5, S31-1a, S31-2h, S31-5c, S31-6f, S41-7, S41-8, S41-9, S44-2], and stated no action should be taken which would compromise existing systems and reduce efficiency [O8-02b, O8-03c, P10-4, S56-3, S59-1, S63-1]. It was also stated that the USIBWC should commit only to those actions that would improve water quality, conserve water, preserve farmland, and improve flood control [O2-2, S31-5c].

Response

Flood control and water deliveries are, and will continue to be, the core actions conducted by the USIBWC in the RGCP. Environmental measures proposed in the Draft EIS were considered in light of not impeding efficient water flow. Increased vegetation growth in the floodway was evaluated for its effect on flood control. Such growth was shown to have very little negative effect on flood control. Implementation of any of the alternatives proposed would still allow for maintenance of the river, removal of obstructions from the river, and dredging when necessary to ensure efficient water delivery.

In the long term, implementation of environmental measures would improve overall water quality in the river. The USIBWC considers water conservation to be the major avenue for acquiring water to implement environmental measures. This action would preserve farmland by not taking land out of production to acquire water rights. All the above factors were considered in formulating the alternatives presented in the Draft EIS.

Alternatives development took into account constraints and opportunities for continued flood control and water issues as listed in Tables 1.3-2 and 1.3-3 of the Draft EIS, respectively. Opportunities and constraints used by the USIBWC as the basis for alternatives development were subsequently re-stated by the agency in the August 2003 Reformulation of Alternatives Report.

Subsection 1.3.3 - Issue B: Consideration of river restoration measures supports interests of environmental organizations.

A number of comments stated that adoption of environmental measures by USIBWC supported the interests of environmental organizations [O1-2, O8-03g, P03-6, S31-1b], and that the interests of farmers have become secondary to those of environmental groups [O1-2, S31-6g]. In one instance, it was argued that El Paso-Las Cruces Regional Sustainable Water Project set the precedent for adoption of environmental changes [S31-6e].

Response

In formulating its future management strategy for the RGCP through the alternatives presented in the Draft EIS, the USIBWC considered the interests of not only environmental groups but of all stakeholders along the RGCP. The USIBWC has tried to balance the need for environmental stewardship along with its mission of flood control and water delivery. The USIBWC responsibility with regard to the environment was discussed previously in Subsection 1.1.3.

While provisions of the MOU with SWEC have been considered, it is not the intent of the USIBWC to push its agenda or the agenda of any other environmental groups in addressing the Commission's management strategy for the RGCP. The NEPA process, which involved numerous opportunities for all RGCP stakeholders to have input into formulating this strategy, is the basis for achieving balance in the undertaking by USIBWC. The Draft EIS was not put forth as a response to the Endangered Species Act. However, the Act had to be considered in the NEPA process, along with the question of whether such species were in the project area and whether the alternatives proposed would have an effect on T&E species or their habitat. Potential effects were documented in the Draft EIS, and a Biological Assessment was submitted to the USFWS on January 26, 2004. The USFWS response is included in Appendix P of the Final EIS.

As with any major action in the RGCP, the El Paso-Las Cruces Regional Sustainable Water Project (Sustainable Water Project), if implemented, would have considered mitigation measures and provisions of permit requirements which would have required certain steps to protect the environment or offset adverse environmental effects. These activities were identified in the Final EIS for the Sustainable Water Project, and resulted from consultation with environmental groups and other stakeholders. Fundamental changes occurred in response to activities that required permit conditions for activities carried out by the USIBWC.

As early as 1991, long before the Sustainable Water Project, the USIBWC decided to comply with United States Army Corps of Engineers (USACE) requirements to apply for permits under the Clean Water Act on its flood control projects, something that had not been done on a regular basis prior to that time by the USIBWC. The Public Notice for permit NM/TX-91-50427 to perform channel maintenance on the RGCP was issued October 10, 1991 for a 30-day comment period.

As a result of public input and extensive coordination with USACE, the permit, now expired, was issued February 15, 1994 with many stipulations for permit compliance. These permit stipulations indicted that mitigation opportunities such as wetland creation, oxbow enhancement, riffle zone creation, tree planting, *etc*, would be identified. As a result of that permitting action, the USIBWC installed vortex weirs, groins, and embayments in the river channel and pole planted native trees (cottonwoods and willows) on the floodways.

Subsection 1.3.3 - Issue C: The Draft EIS examined a narrow range of alternatives.

Two comments disagreed with the emphasis placed on the various issues taken into consideration in development of the alternatives. The Alliance for the Rio Grande Heritage indicated that the analysis of alternatives was incomplete because the alternatives were too narrowly defined [O7-07a, O7-10c]. Another reviewer stated that significant issues were not adequately emphasized, and that the initial narrow scope prejudiced the alternative selection [S31-6d, S31-5h].

Response

Alternatives were developed following a 3-year process that took into consideration significant issues, as well as opportunities and constraints based on the RGCP mission (water delivery and flood control), and potential for development of the riparian corridor and diversification of aquatic habitat.

An open scoping and alternatives development process was followed to identify all significant issues. Public scoping meetings, scoping comments, technical workshops, and field studies were conducted, and over a period of 3 years (October 1999 to December 2002). Alternatives to be analyzed in the Draft EIS were formulated based on that public input. Each alternative balanced the need for accomplishing the USIBWC's flood control mission and United States treaty requirements with improving environmental quality of the river.

Significant issues identified during scoping and alternatives development process were documented in the August 2003 Reformulation of Alternatives Report. This report was provided in its entirety in the Draft EIS as Appendix I, and is also included in the Final EIS as Appendix Q (CD-ROM format).

1.3.4 Opportunities and Constraints

A number of comments were related to opportunities and constraints taken into consideration in the selection of measures and development of alternatives. In particular, a number of comments stated a need to expand the river restoration alternative scope and associated environmental measures.

Subsection 1.3.4 - Issue A: Recommendation to expand or modify restoration measures under consideration.

Interest in a modified river restoration alternative, and/or expansion of associated environmental measures, was expressed by the New Mexico Museum of Natural History, Alliance for the Rio Grande Heritage, and El Paso Watershed Council [O5-1, O7-1a and O9-3, respectively], as well as several individuals [S01-3, S05-2, S06-1, S06-3, S18-2, S20-1, S42-1, S42-2, S71-1, S74-1, S74-2]. This view was also expressed in comments provided in two form letters:

Letter #1, comments: O3-1, O6-1, S06-1, S09-1, S12-1, S13-1, S17-1, S23-1, S51-1, S62-1.

Letter #2, comments: P19-1, S02-1, S03-1, S28-1, S29-1, S30-1, S32-1, S38-1, S39-1, S40-1, S45-1, S46-1, S47-1, S48-1, S49-1, S50-1, S52-1, S53-1, S54-1, S55-1, S60-1, S61-1, S65-1, S66-1, S70-1, S72-1, S75-1, and S76-1.

Tables II-5 and II-6 list recommendations provided in Form Letters # 1 and #2, respectively.

After closing of the Draft EIS review period, additional support for an expanded restoration alternative was indicated in 15 self-styled letters, 6 copies of Form Letter #1, and 28 copies of Form Letter #2. Table II-4, previously presented in the Chapter II introduction, provides a content summary for this correspondence.

Response

Alternatives were developed during an extended consultation period in which input from diverse stakeholders was incorporated. Specifically, public scoping meetings, scoping comments, technical workshops, and field studies were conducted over a period of 3 years (October 1999 to December 2002).

The alternatives were formulated to balance the need for accomplishing the USIBWC's flood control mission and United States treaty requirements while improving the environmental quality of the river. To reach this goal, development of the alternatives took into account specific constraints and opportunities for flood control and water issues that were discussed in the Draft EIS, Subsection 1.3.4.

As a result of that analysis, partial restoration was the objective adopted for the Targeted River Restoration Alternative. The constraints and opportunities analysis and restoration approach were discussed in detail in Section 4.4 of the August 2003 Reformulation of Alternatives Report (Appendix I of the Draft EIS; also included in Appendix Q of the Final EIS).

Within the partial restoration framework, the USIBWC incorporated recommendations from stakeholders into the Targeted River Restoration Alternative and, as applicable, the Integrated USIBWC Land Management Alternative. Measures incorporated into the reformulated alternatives included planting of native vegetation, partial reopening of meanders, and riparian vegetation development by induced overbank flooding, either by lowering stream banks or with the use of controlled water releases (Subsections 2.4.2 and 2.5.2).

The concept that proposed restoration actions are not far reaching is incorrect. Despite the constraints on environmental improvements, numerous opportunities were identified for partial restoration of riparian and aquatic habitats. For example, the potential riparian corridor in the RGCP north reach would be comparable in length to that of the Bosque del Apache National Wildlife Refuge in the Middle Rio Grande. As formulated, alternatives under consideration include a suite of environmental actions that would enhance and partially restore river form and function.

River restoration issues that refer to opportunities and constraints used in development of the alternatives are addressed in Subsection 1.3.4. Responses to the remaining issues were considered applicable to other sections of the Final EIS, and are addressed as indicated in Table II-7.

Subsection 1.3.4 – Issue B: Recommendation to reshape the channel using flood pulses.

In general, comments anticipated those changes in channel configuration as a result of water releases from Caballo Dam, under consideration in the Targeted River Restoration Alternative [O5-2, O7-03b, O9-4, Tables II-5 and II-6 (6th and 1st recommendations, respectively)].

Response

Uncontrolled changes in channel configuration are contrary to the water delivery mission of the RGCP, and was a proposal specifically excluded during early development of the alternatives. Controlled configuration changes, on the other hand, were incorporated in the formulation of the Integrated USIBWC Land Management Alternative and/or Targeted River Restoration Alternative. Limited channel changes include lowering of stream banks at selected locations, and partial reopening of former meanders within the ROW.

Table II-5. Restoration Measure Recommendations Listed in Form Letter #1

[Comments O3-2, O6-2, S06-2, S09-2, S12-2, S13-2, S17-2, S23-2, S51-2, and S62-2]

- 1st. Aggressively restore the natural meanders and streamside habitats of the Rio Grande.
- 2nd. Acquire water rights from willing sellers to help restore streamside ecosystems.
- 3rd. Use innovative approaches, including purchase of land from willing sellers, or flood control, rather than traditional engineering approaches such as levees.
- 4th. Cease the grazing and curtail mowing of vegetation along the river that is inhibiting vegetation growth.
- 5th. Include more complete modeling and analysis to determine the true need for flood control works.
- 6th. Consider all the restoration options outlined in the scope of the 1999 agreement between the IBWC and the Southwest Environmental Center.

Table II-6. Restoration Measure Recommendations Listed in Form Letter #2

[Comments P19-2, S02-2, S03-2, S28-2, S29-2, S30-2, S32-2, S38-2, S39-2, S40-2, S45-2, S46-2, S47-2, S48-2, S49-2, S50-2, S52-2, S53-2, S54-2, S55-2, S60-2, S61-2, S65-2, S66-2, S70-2, S72-2, S75-2, and S76-2]

- 1st. Let nature do the work: use controlled releases of flood pulses every 2-3 years to shape the channel and inundate the area between the levees. This will allow the river itself to reestablish a mix of riparian and aquatic habitats, thus providing a basis for sustainable and meaningful restoration of the river ecosystem.
- 2nd. Assist nature by 1) removing channel armoring to let the river meander between levees; 2) lowering banks to maximize the area that can be flooded between levees; 3) planting native vegetation and controlling non-native species such as salt cedar; 4) phasing out all mowing and grazing unless these activities serve clear restoration and/or flood management purposes; 5) extending all restoration measures downstream of Mesilla Dam.
- 3rd. Establish a 20-year program to buy land adjacent to IBWC's right-of-way from willing sellers to acquire water rights for the river and additional floodplain space.
- 4th. Use the best available hydraulic modeling (two-dimensional) to determine if/ where current levees are inadequate. USIBWC is planning to do modeling later this year –the Final EIS should be delayed until this modeling is completed.
- 5th. Where additional flood protection is needed, give priority to river friendly “non-structural” measures, such as flood easements, wetlands, and levee setbacks. Raise levees or build new ones only as a last resort.
- 6th. Work with local governments to discourage additional development near the river.

Table II-7. Sections of the EIS Addressing Recommendations for a Modified Restoration Alternative

| Recommendation | Recommendation in Form Letter #1 | Recommendation in Form Letter #2 | Addressed in this Subsection | Addressed in Another Subsection |
|--|----------------------------------|--|------------------------------|------------------------------------|
| Expand restoration measures | Global | Global | Issue A | |
| Reshape the channel using flood pulses | 6 th | 1 st | Issue B | |
| Change channel configuration by allowing sediment deposition, bank armoring removal | - | 2 nd , #1 | Issue C | |
| Allow unmanaged vegetation development by phasing out or ceasing grazing and annual mowing | 4 th | 2 nd , #4 | Issue D | |
| Expand measures into the southern reach of the RGCP | - | 2 nd , #5 | Issue E | |
| Model flood containment capacity | 5 th | 4 th | | 2.3.1 Issue A |
| Use non-structural flood control measures as part of a restoration approach | - | 5 th | | 2.7.3 Issue A |
| Establish a program for water rights acquisition | 2 nd | 3 rd | | 2.9.1 Issue B |
| Purchase land and work with local governments to discourage development near the river as flood control options | 3 rd | 3 rd & 6 th | | 2.9.3 Issue A |
| Carry out measures included in the alternatives: planting, lowering stream banks, reopen meanders, extend streamside habitat | 1 st | 2 nd , #2 2 nd , #3 | | Draft EIS Sections 2.4 & 2.5 |

Subsection 1.3.4 - Issue C: Recommendation to change channel configuration by allowing sediment deposition and/or removal of bank armoring.

Some comments suggested discontinuation of sediment management to induce channel migration. Arroyos were identified as a particularly well-suited location alternative [O7-14b, O7-14c, S18-1, Table II-6 (2nd recommendation)]. It was also stated that losses in delivery efficiency could be offset by the purchase of water rights [O7-14d].

Response

Allowing sediment accumulation for uncontrolled changes in channel configuration would be contrary to the RGCP water delivery mission. Controlled changes, such as limited bank lowering and partial meander reopening, however, are measures incorporated into the formulation of the Integrated USIBWC Land Management Alternative and/or Targeted River Restoration Alternative. Limited bank armoring removal may be used in combination with those measures.

As to the suggestion that losses in delivery efficiency could be offset by the purchase of water rights, this is a basic premise used in evaluation of controlled channel modifications included in the Targeted River Restoration Alternative (see Table 1.3-5, Aquatic Habitat Diversification, constraint No. 1).

Subsection 1.3.4 - Issue D: Recommendation to phase out or cease grazing and annual mowing.

Various comments proposed phasing out or ceasing grazing and annual mowing to allow unmanaged vegetation development [O7-03f, Tables II-5 and II-6 (4th and 2nd recommendations, respectively)].

Response

Uncontrolled vegetation growth is not a desirable option, either from an engineering point of view –due to adverse effects on flood control– or the biological restoration point of view– as it would lead to proliferation of salt cedar and other invasive plant species. Managed native grasslands, on the other hand, were a core action evaluated and included in the Integrated USIBWC Land Management and Targeted River Restoration alternatives.

Extensive areas along the RGCP were identified where this measure could be implemented without interfering with the flood control function. Hydraulic modeling identified those areas, as well as potential problem areas. This analysis was presented in Appendix E of the Draft EIS.

Subsection 1.3.4 - Issue E: Recommendation to increase extent of measures in the southern reach of the RGCP.

A number of comments recommended an increase environmental measures along the southern reach of the RGCP [S01-3, Table II-6 (2nd recommendation)].

Response

Multiple environmental measures extend throughout the length of the RGCP, providing riparian habitat connectivity from Percha Dam to American Dam. Water release is the single action restricted to the upper reach due to the physical limitation imposed by the location of Caballo Dam.

Currently, increased vegetation potential is largely restricted by potential levee deficiencies, found mostly along urbanized areas. The potential for extensive river restoration has been identified within the ROW where most areas are susceptible to periodic flooding and, thus, are capable of supporting riparian vegetation. Flood easements outside the ROW do not offer such potential as they are seldom inundated (by definition once in 100 years) and, unlike conservation easements, remain in agricultural production. Several recreational initiatives, however, are underway in the southern reach of the RGCP, as indicated in Subsection 6.8.3. As suggested in one comment [S01-3], opportunities for additional projects may be identified as the modified river management approach is implemented.

1.5 SCOPE OF THE IMPACT ANALYSIS

Section 1.5 - Issue A: Draft EIS compliance with the requirements of NEPA.

Issue A. Some comments expressed a belief that the Draft EIS did not meet requirements of NEPA and was, therefore, illegal [P03-2, S31-2b, S31-3a]. It was further suggested that defining overall environmental quality to mean a river with more natural processes was not in compliance with NEPA [S31-3c]. A recommendation was made to rewrite the Draft EIS in accordance with the objectives of NEPA [S31-2e], and seven NEPA guidelines were listed [S31-2g].

Response

The USIBWC issued the Draft EIS and met its requirements under NEPA for federal actions that might have a significant impact on the human environment. While the Commission's mandate is for water delivery and flood control, management of the river encompasses other resources, factors, and interests that must be considered in carrying out this mandate. The value of rivers as a water source for farmers and the need to protect public health from flooding is a necessity and a long-standing goal. However, the more recent trend is to balance these values with other amenities such as recreation, environmental quality, and

ecosystem preservation or restoration where degradation of such systems has occurred. As the lead federal agency for the management of this river resource, the USIBWC has to consider all interests in meeting its mandate for the RGCP.

The basis for the river management strategy in considering ways to explore achieving this balance has been put forth as alternatives in the Draft EIS. This action is not illegal but follows the basic spirit and intent of NEPA. The USIBWC has complied with NEPA's basic mandates. NEPA has five basic mandates that must be followed to comply with this law:

1) **Supplemental** – adds to existing authority and responsibility of every Federal Agency to protect the environment when carrying out its mission.

2) **Affirmative** – requires every Federal Agency to make decisions that restore and enhance the environment.

3) **Substantive** – requires every Federal Agency to recognize that each person should have a healthful environment, and that as a trustee of the environment, contribute to the fullest extent possible protection of the environment for present and future generations.

4) **Procedural** – requires every Federal Agency to use its planning and decision making process to give “appropriate consideration to environmental value and amenities.”

5) **Balancing** - requires every Federal Agency “to the fullest extent possible consistent with other essential policy considerations” to make decisions to achieve “productive harmony” between people and nature.

In carrying out the above mandates, the USIBWC complied with another important requirement of NEPA, which is to involve the affected and interested public early in its environmental analysis process. The alternatives considered in the Draft EIS resulted from a 3-year process that involved two scoping meetings and over five additional public and special interest group meetings. This involvement influenced all elements of the Draft EIS, but was especially paramount for development of the Purpose and Need, Alternatives, opportunities, and constraints for narrowing the alternatives, permits and agency consultation requirements, and resource areas to be considered for evaluating environmental consequences of the alternative actions.

The FPPA (Farmland Protection Policy Act) did not surface as a major issue during the scoping process. However, the USIBWC revised the Final EIS to include a more comprehensive discussion of the provisions of the FPPA and identified the compliance requirements. The primary point of compliance would be for parcels of land that would be affected by implementation of certain environmental measures along the RGCP. The USIBWC fully intends to comply with the provision of the FPPA.

The Draft EIS follows the provisions of NEPA and CEQ guidelines. The format used in the Draft EIS is that suggested by the CEQ regulations. The technical and scientific basis for the alternatives are detailed in the Alternatives Formulation and Reformulations Reports. The scope of the environmental review was defined by the scoping and consultation process and contains the following 13 resource areas: water, flood control, soil, vegetation and wetlands, wildlife habitat, endangered and other special status species, aquatic biota, land use, socioeconomics and environmental justice, cultural resources, air quality, noise, and

transportation. Farmland is recognized as an important issue and is addressed under the resource categories of land use and socioeconomics.

The following guidelines were incorporated in implementing the NEPA process:

- a. Flood control and efficient water delivery was a primary factor stated in the purpose and need, alternatives development, opportunities and constraints analysis, and affected environment and environmental consequences.
- b. Significant issues were identified through the scoping process and numerous stakeholder meetings.
- c. Coordination took place with federal and state agencies as well as non-government agencies.
- d. Alternative formulation included input from agencies and stakeholders through numerous scoping and technical meetings and workshops.
- e. The existing environment (environmental resource areas) was identified from issues identified in the scoping process. Agriculture and farmland were addressed under land use. This issue has been expanded for the Final EIS.
- f. The environmental consequences section of the Final EIS examines all alternatives for each resource in terms of direct and indirect impacts. The environmental effects are described for the beneficial as well as adverse effects. A separate section in the Draft EIS addresses cumulative impacts. This section was expanded to include additional projects and land use plans in the Final EIS. While costs for the alternatives are provided in the Draft EIS, no cost-benefit analysis was made for the alternatives. For purposes of complying with NEPA, CEQ 1502.23 indicates that weighing of the merits and drawbacks of the various alternatives need not be displayed in a monetary cost-benefit and should not be when there are important qualitative considerations.
- g. A summary table is given to compare the effects for each resource area for the alternative being evaluated. Information in the summary table is then discussed in the text.

Section 1.5 - Issue B: Recommended need for a supplemental Draft EIS.

A reviewer suggested that a supplemental Draft EIS should be prepared [S31-4a]. The proposed document should change the purpose and need to flood control and water delivery efficiency for the proposed action for construction in the RGCP [S31-4b]; address improvements for normal O&M with mitigation that is not harmful and will enhance riparian/aquatic habitats [S31-4c]; and remove riparian habitat enhancements of the Integrated USIBWC Land Management and Targeted River Restoration Alternatives as inconsistent with USIBWC duties and impact region [S31-4f].

Response

The purpose and need is broadly defined in the EIS, and incorporates the RGCP mission of flood control and water delivery. The current EIS is inclusive of the ongoing

O&M activities for the RGCP. In fact, those activities were included in the No Action Alternative. The Draft EIS addressed sediment removal from the main channel and riparian habitat development. Water conservation was included as the basis for both the Integrated USIBWC Land Management and Targeted River Restoration Alternatives. Ensuring that there is no conflict and that the RGCP flood control and water delivery efficiency mandate can be met is a common denominator for establishing environmental measures and alternatives. This objective was stated at the beginning of the Draft EIS, in the Purpose of and Need for Action (Section 1.1).

Section 1.5 - Issue C: Required effort for Draft EIS review.

The EBID stated that the Draft EIS didn't comply with CEQ regulations CFR 1500.4 on reducing paper work [08-17e], and that the expenditures and time spent required for Draft EIS review were unreasonable [08-17c].

Response

The Draft EIS is in compliance with appropriate subparagraphs of CEQ 1500.4. The length and structure of the Draft EIS is in line with NEPA objectives in analyzing the proposed alternatives. The Draft EIS conforms to the requirements of the NEPA and the implementing CEQ regulations. The USIBWC is considering alternatives to management strategy for the RGCP. This is a major federal action requiring the USIBWC to consider in detail the environmental consequences of its action.

Section 1.5 - Issue D: Adequacy of description of affected environment and evaluation of environmental effects.

The Alliance for the Rio Grande Heritage stated that the Draft EIS was in violation of NEPA by indicating that some aspects of the environmental impacts analysis will be conducted in site-specific environmental assessments [O7-6d].

Response

The level of detail for analysis in the Draft EIS is sufficient to evaluate the environmental effects of alternatives and environmental measures. The hydraulic studies and model used for the Draft EIS used a conservative approach to estimate environmental effects. The analysis was applied for all alternatives and the No Action Alternative. The use of the model also allowed comparisons with a reference condition that had been established in the USACE 1996 study. The USIBWC plans to use a more refined model at a latter date to support planning for implementation for the levee rehabilitation program.

It should be noted that USEPA, the CEQ-delegated review agency, rated the Draft EIS in the "Lack of Objections" category [A2-1], indicating that no revisions are required in the Final EIS.

RESPONSE TO COMMENTS: SECTION 2, DESCRIPTION OF ALTERNATIVES

Comments related to Section 2 of the Draft EIS referred to each of the four alternatives under consideration, the proposed implementation strategy, and capital cost evaluation. No comments were assigned to summary Section 2.1 (issues discussed by alternative in Sections 2.2 through 2.5), and Section 2.12 (issues by resource area discussed in Section 4). The following responses include only those subsections with specific issues raised by commentators, as identified in the preceding index.

A new Section 2.13, Preferred Alternative, was added to the Final EIS indicating selection of an alternative for RGCP management, and rationale for its selection. A Preferred Alternative was not proposed in the Draft EIS because the USIBWC considered that assessment of environmental effects of all alternatives, and public and agency input, were needed as key elements in adopting a long-term river management alternative for the RGCP.

After review of environmental effects, and comments received on the Draft EIS, the USIBWC concluded that the *Integrated USIBWC Land Management Alternative* provides the best balance of flood control, water delivery, and habitat enhancement. This alternative is, therefore, selected as the agency's preferred approach for the long-term management alternative of the RGCP.

2.2 NO ACTION ALTERNATIVE

2.2.2 Floodway Management

Subsection 2.2.2 - Issue A: Recommended exclusion of MOU measures from the No Action Alternative.

The EBID stated that excluding those measures was required for the Draft EIS to evaluate a true No Action Alternative [O8-01c, O8-16a]. This request was also indicated in various comments supporting adoption of the No Action Alternative (see Section 2.13, Issue C).

Response

In compliance with CEQ regulations, 40 CFR 1504(d), the Draft EIS identified and analyzed a No Action Alternative. That alternative is the river management strategy currently in place for the RGCP. The No Action Alternative incorporated into the Draft EIS is in conformance to the CEQ definition (CEQ 40 Q&A, Q3, March 16, 1981). The No Action Alternative represents no change from current management and level of management intensity. This condition does include provisions in the MOU pertaining to no-mow zones. This action of no-mow zones was appropriately considered in a prior NEPA decision as a categorical exclusion. The categorical exclusion was executed in accordance with CEQ 1508.4 and USIBWC, FR vol. 48 no.170, 106.6 September 2, 1981.

The No Action Alternative in the Draft EIS is the current management strategy being implemented by the USIBWC. This does include no mow zones and tree planting that was a consideration in the MOU as well as the 1977 study. This baseline condition (current condition) does represent progressive conditions that result from activities considered in the 1977 Draft Environmental Statement. The Draft EIS evaluates the environmental consequences of the No Action Alternative compared to the three action alternatives. The Draft EIS does not consider a “stop action alternative” which seems to be equated with the “true no action alternative” referred to in several comments.

2.2.3 Maintenance of Pilot Channel and Irrigation Facilities

Subsection 2.2.3 - Issue A: Ongoing channel dredging operations.

A number of comments stated an erroneous belief that river dredging had been discontinued in recent years [O1-1, O8-14a, O8-20b, P03-4, P20-1, S24-2, S44-1], and indicated that channel maintenance needed to be resumed as part of the USIBWC responsibility to maintain the river [O1-3, P04-2, P04-4, P05-2, S07-2, S10-4].

Some comments further suggested that an environmental evaluation was needed for the assumed reduction in water flow [O8-14b, P03-4], and its effects on agriculture [S31-4d, S31-7j, S31-7k].

Response

The USIBWC never relinquished its need to remove sediment to continue pilot channel maintenance. The channel and other features of the project are constantly monitored and surveyed to ensure that no critical conditions are developing as a result of sedimentation or erosion. Channel maintenance is not done annually, but conducted according to identified needs and within the short window of opportunity afforded by the non-irrigation season. With the exception of some areas, mowing of the floodway is done each year.

Prior to 1996, under a USACE Section 404 permit (NM/TX-91-50427), the mouths of several arroyos were cleaned of silt and gravel that had been transported into the pilot channel. Silt was removed in the reach upstream from Shalem Colony Bridge in 1996. Between 1997 and 1999, old wooden bridges on levees crossing lateral drains were removed and replaced by gated structures. In 1998 and 1999, structures were constructed in the channel in compliance with the Section 404 permit to provide aquatic habitat mitigation. Rip-rap was also obtained in 1998 and 1999 to be placed in certain reaches as erosion protection on reestablished channel banks. High flows in August 1999 scoured some of the accumulated silt in the Canalization Project and deposited it downstream in the Rectification Project between American Diversion Dam and Fort Quitman, Texas. Recently much of that silt was removed from the Chamizal Project located between El Paso and Ciudad Juarez.

Subsection 2.2.3 - Issue B: Stream bank protection using soft armor methods.

A recommendation was made to rely, whenever possible, on vegetation and soft armor for bank protection instead of permanent erosion-protection structures [A1-12, O9-6].

Response

The USIBWC agrees with the Department of Interior regarding use of soft armor methods for stream bank stabilization. This approach has been used whenever feasible, in agreement with USACE 1996 recommendations (see Appendix B of the Draft EIS, Recommended Improvements to the Rio Grande Channel). A combination of rock/vegetation is used when stabilization does not respond favorably to the use of vegetation alone. The use of vegetative protection along stream banks, such as bank willow, is also conducive to development of the riparian corridor under consideration for a modified river management strategy.

2.2.4 Sediment Management

Subsection 2.2.4 - Issue A: Need for mitigation structures as part of the USACE 404 dredging permit.

The EBID indicated that no record was found on the need for mitigation structures as part of the USACE 404 permit for dredging of arroyos [O8-20a].

Response

As previously indicated in Subsection 2.2.3, compliance with the Section 404 permit, the USIBWC constructed 13 pilot-scale structures in the channel to provide aquatic habitat mitigation (two vortex weirs, three small embayments, and eight “groins”). The record for this requirement is provided in the following Section 404 permit correspondence for Permit No. NM/TX-91-50427 (Canalization Project): 1) USACE Public Notice Permit Application dated October 10, 1991; 2) USACE February 15, 1994 transmittal letter signed Department of the Army; 3) USIBWC April 14, 1994 transmittal letter for Canalization Project mitigation assessment pursuant to Special Condition No. 2 for Permit No. NM/TX-91-50427; 4) USIBWC July 18, 1994 transmittal letter for management plan pursuant to Special Condition No. 1 for all USIBWC Rio Grande projects permits, including Permit No. NM/TX-91-50427; and 5) USACE October 14, 1997 transmittal letter of final Scope of Work for mitigation to be implemented as a condition of Permit No. NM/TX-91-50427.

Subsection 2.2.4 - Issue B: Recommendations for aquatic habitat improvement by modified sediment and debris management.

The U.S. Department of the Interior requested additional information on siltation around in-stream habitat structures [A1-02]. The agency also recommended leaving debris in the channel to diversify and improve aquatic habitat [A1-11].

Response

In a study sponsored by the USIBWC, the USFWS Albuquerque Field Office evaluated performance of in-stream structures over a 3-year period. Results of this study were documented in annual monitoring reports (e.g., USFWS 2000a). The USFWS indicated that a final report for the study will soon be available to the public. As for the recommendation of leaving debris in the channel, it is not considered feasible because it would conflict with the RGCP's flood control mission.

2.3 FLOOD CONTROL IMPROVEMENT ALTERNATIVE

2.3.1 Levee System Management

Subsection 2.3.1 - Issue A: Flood control analysis and desirability of additional hydraulic studies.

The Alliance for the Rio Grande Heritage stated that the Draft EIS did not give substantial treatment of the Flood Control Alternative [O7-02a]. Multiple comments by the organization pointed out the need or benefit of using a two-dimensional model to improve the flood control evaluation [O7-01c, O7-02d, O7-02e, O7-09a, O7-12a, O7-12b, O7-12c, O7-12e, O9-2, S67-1]. This point of view was restated in several form letters [Tables II-5 and II-6 in Subsection 1.3.4 (5th and 4th recommendations, respectively)].

Response

Flood control improvements have been extensively evaluated since the USIBWC commissioned the 1996 USACE study (see Appendix B of the Draft EIS). This evaluation continued with the ongoing review of the structural condition of the levees by the USIBWC, nearing completion. In addition, hydraulic modeling was conducted as part of the Draft EIS to determine potential reduction in flood containment due to vegetation increases in the floodway. Results of this analysis were discussed in Subsection 3.2.2, and presented in detail in Appendix I of the Draft EIS.

Further flood control analyses were conducted to evaluate potential use of non-structural methods in the RGCP to support restoration measures under consideration. The non-structural flood control analysis indicated that non-structural methods, such as levee relocation, would have a low potential to significantly expand environmental improvements already under consideration (Subsection 2.7.3 of the Draft EIS). The basis for this conclusion is reiterated in the response to Subsection 2.7.3 comments.

As to the flood containment simulation, current analysis is based on conservative estimates of levee deficiencies generated by a hydraulic model (HEC-RAS, a one-dimensional model). Use of this model was adequate for evaluation of environmental effects, as the flood control strategy was not a discriminate factor among river management

alternatives under consideration. The same flood control improvements would apply to any of the modified river management alternatives, including potential use of flood easements in two RGCP segments.

While use of a two-dimensional model was not warranted for environmental effects evaluation, the model may narrow the degree of levee deficiencies. For this reason, the USIBWC plans to perform two-dimensional modeling, in combination the levee structural condition study, to aid in levee rehabilitation planning.

Subsection 2.3.1 - Issue B: Need for the Flood Control Alternative as a proposed action.

The Alliance for the Rio Grande Heritage stated that discussion on this alternative was unclear [O7-02b], and not fully defined as a proposed action [O7-02c].

Response

Clarification on this issue was provided in Appendix H of the Draft EIS, response to question #19 of the September 12, 2003 letter from the World Wildlife Fund. In that response, two aspects of the question were answered: extent of the flood control evaluation as part of the EIS, and inclusion of this action as an alternative.

Extent of the Flood Control Evaluation in the EIS. A detailed evaluation of flood control system improvements was completed in 1996 by the USACE. The study encompassed detailed hydrology and hydraulic evaluations, sedimentation analysis from the Rio Grande tributary basins, and a scour and deposition analysis along the RGCP (See Appendix B, Draft EIS). Findings of the USACE 1996 study are not being reevaluated as part of the EIS. The specific issue evaluated in the EIS was that of potential effects of environmental measures on the flood control system given findings of the 1996 RGCP improvement study. To that effect, the same analytical tool used in the 1996 study was used to assess potential changes in flood control if environmental measures were incorporated as part of revised river management alternatives within a 20-year horizon.

Inclusion of the Flood Control Improvement Alternative. The USIBWC will implement a number of recommendations from the USACE 1996 improvement study for the RGCP and ongoing levee system structural evaluation according to priorities that will be determined for each fiscal year budget. Since it is possible for Congress to provide separate funding (and in different years) for measures associated with a modified river management strategy from those of a flood control improvement program, individual evaluation of potential effects of this program in the EIS is to the benefit of the USIBWC (and the taxpayers) benefit. Environmental evaluation of the flood control improvement program is particularly needed to assess effects from construction activities associated with potentially extensive levee rehabilitation activities on resources such as air quality, land use, soils, socioeconomics, noise and transportation.

Subsection 2.3.1 - Issue C: Need for improvements in system management.

Some comments questioned the need to modify management of the RGCP levee system, emphasizing that no changes are warranted since the system has historically proven to be effective [P12-1, P20-2, S15-6, S19-6]. The EBID stated that the only justification for flood control improvements was to provide sufficient additional channel capacity to allow vegetation planting in the floodway [O8-02c]. The organization concluded that, for this reason, the Draft EIS was misleading [O8-17f].

In contrast, a number of comments pointed out the need for additional flood protection [S63-2], quoting flood-related farm damage [P05-1, P14-1, P15-1, P16-1, P17-1]. One comment questioned the reason flood improvements identified in the U.S. Army Corps of Engineers 1996 Report, and the 1977 Draft EIS, had not been constructed [S31-5d].

Response

While the levee system has historically been successful in protecting adjacent properties against floods, there is a potential for improvements in various sections of the RGCP levee system. Potential deficiencies were indicated in the results of hydraulic modeling that simulate water elevation during a 100-year flood. This analysis, summarized in Subsection 3.2.2, applies to current floodway conditions without any vegetation increase.

Vegetation growth on the floodway, as proposed in two modified river management alternatives under consideration, has a low potential to significantly increase existing deficiencies. As indicated by modeling results presented in Table 4.2-3 of the Draft EIS, only four point project locations under consideration (river miles 48, 49, 76 and 83) had a potential to reduce freeboard elevation below 3 feet (safety factor for flood containment). Hydraulic model results are documented in the flood containment capacity analysis that compares freeboard elevation before and after vegetation increases under consideration (Draft EIS, Appendix E).

Flood protection is a core action conducted by the USIBWC that has been continued as required by the RGCP mission. The agency is currently evaluating improvements based on results of a study nearing completion on structural integrity of the levees. After completion of the levee geotechnical evaluations, all recommendations made by the USACE in 1996 will be taken into consideration. At that time, the USIBWC will develop an overall flood control improvement plan that will reassess the extent of required levee rehabilitation and potential use of flood easements. The plan will consider construction of a floodwall or flood gate installations at the openings along the railroad on the east bank in the Canutillo reach.

Subsection 2.3.1 - Issue D: Relation between levee system improvements and potential vegetation increase in the floodway.

A number of comments presented the argument that no improvements to the levee system would be needed if vegetation control were maintained [O1-4, O8-02d].

Response

This assumption is incorrect. Potential effects of vegetation increases were evaluated in the Draft EIS by hydraulic modeling. Results of this analysis, summarized in Table 4.2-1, indicated that vegetation increases under consideration would have a low potential to increase existing levee freeboard deficiencies. Only in four instances (at river miles 48, 49, 76 and 83 as shown in Table 4.2-3), could point projects reduce freeboard levels below the 3-foot design value, or significantly increase existing freeboard deficiencies. Detailed results of this analysis were presented in Appendix E, Flood Containment Analysis (Table E-2). In addition, some levee improvements are still required due to their deficient structural stability.

Subsection 2.3.1 - Issue E: Availability of Draft EIS references studies.

The EBID argued that EIS references studies were unavailable to the public and, thus, pertinent analysis for flood control was not disclosed [O8-17g].

Response

The reference study on levee rehabilitation cost, the March 2001 Alternatives Formulation Report, with all its attachments, was provided in Appendix I of the Draft EIS.

2.3.2 Floodway Management

Subsection 2.3.2 - Issue A: Changes under consideration for grazing leases.

The U.S. Department of Interior stated its support for development of effective grazing guidelines, compliance, and monitoring programs [A1-06], as well as reduction/termination of grazing in riparian areas and construction of grazing exclusion fences from wetlands and river banks [A1-14]. The agency also recommended excluding point project areas from grazing, and using best management practices for maintenance activities [A1-07].

An explanation in grazing lease changes was requested by the New Mexico Department of Agriculture and an individual commentator [A6-02, ST3-1].

Response

The USIBWC appreciates the support for its updated 2002 directive that will apply to all existing leases as they come up for renewal. The directive follows guidelines by the USEPA and Bureau of Land Management, and includes provision for riparian areas. Point project areas, as recommended, would be excluded from grazing, and best management practices would be used for maintenance activities.

Regarding the description of changes in the grazing regime, two actions will be implemented: development of a grazing management plan, and preparation of an allocation management plan for each lease.

Grazing Management Plan Development. The plan will emphasize promotion of forage production for the purposes of wildlife and watershed protection. Subsequent vegetative response would result in increased vegetative cover and reduced soil erosion. Upland grazing leases could require vegetative treatments such as seeding, prescribed burns, and mechanically thinning woody vegetation. Treatments are intended to increase species and structural diversity, reduce soil erosion, and increase cool-season grasses.

For upland and riparian areas, the plan will implement best management practices for erosion control that include reducing mowing frequency and/or increasing mowing height to allow some vegetation recovery, and mulching and seeding graded areas to minimize erosion. The grazing regime in the floodway would be adjusted based on site-specific conditions to achieve a desired plant community. Based on vegetation response, salt cedar control and/or mowing could be implemented to reduce recruitment of invasive vegetation. Renewal of floodway grazing leases could be suspended until the vegetation responds at the appropriate level at which it can manage forage production.

Grazing Allocation Management Plan for Each Lease. Leases will first be inventoried to determine range condition as compared to its ecological potential. Forage condition relates to aspects such as the quantity of forage available and its nutritional qualities (protein, energy, minerals, and palatability). Grazing allotment plans will then be developed that will be specific to each lease and consistent with the USIBWC directive for management of grazing leases and grazing. Components of each allotment plan will include location, grazing system, animals, season of use, vegetation treatments, range improvements, and monitoring.

2.4 INTEGRATED USIBWC LAND MANAGEMENT ALTERNATIVE

2.4.2 Floodway Management

Subsection 2.4.2 - Issue A: Recommendations for floodway vegetation management.

The Paso del Norte Watershed Council provided four recommendations for floodway vegetation management [O9-6]: natural regeneration of cottonwoods in combination with planting; use of dead standing cottonwoods as wildlife habitat; seeding of spoil areas with native grasses; and use of bank willow for bank stabilization

Response

The USIBWC appreciates the Council's recommendations. It should be noted that those recommendations are included, to various degrees, in development of the Integrated USIBWC Land Management and Targeted River Restoration alternatives.

Subsection 2.4.2 - Issue B: Use of data from other geographic regions.

The EBID stated that work done on vegetation management in other regions should not be used as fully applicable to the saline floodway of southern New Mexico [O8-23c].

Response

Regional studies and best available data were used in evaluation of potential changes in vegetation management. Four out of the six references listed by the reviewer are from the same geographic area as the RGCP, the Middle Rio Grande (Crawford 1996a and 1996b; Dresden 1999; and Wozniak 1995). Information obtained from the other two cited studies was neither quantitative, nor site-specific (Platts 1989 on erosion associated with grazing, and Stromberg 1991 on cottonwood seed viability). The implementation timetable in Section 2.10 specifies that an initial, 5-year phase will focus on site-specific pilot studies to evaluate not only project effectiveness, but also changes in water consumption by vegetation changes.

Subsection 2.4.2 - Issue C: Grassed areas as a historical major component of the Rio Grande vegetation.

Regarding riparian ecosystem restoration, the EBID stated that a 1904 report chronicle identifies grassed area as a major vegetation component along the Rio Grande north of Las Cruces [O8-19b].

Response

The statement is in agreement with criteria adopted by the USIBWC in formulating the alternatives. Native grasslands were incorporated as a major RGCP vegetation component in development of floodway management alternatives. Up to 1,641 acres of managed native grasslands were considered for the Integrated USIBWC Land Management Alternative, four times the acreage of riparian bosque development obtained by planting and lowering banks.

Subsection 2.4.2 - Issue D: Salinity management methods for grassland management.

The EBID stated that salinity management methods were not well articulated in the Draft EIS, and indicated drawbacks of two soil treatment methods: removal (ruled out as too costly), and leaching (concerns were expressed about downstream salt transfer) [O8-21b].

Response

Salinity management was addressed as an implementation issue related to establishing native grassland in the RGCP floodway. The relevance of this issue will be analyzed as part of pilot studies to be conducted during the initial 5-year implementation phase of a modified

river management alternative. In terms of impacts on the Rio Grande, however, it is not considered a significant issue. The 1,641 acres of native grasslands under consideration, unlike nearly 130,000 acres of croplands in the Rio Grande Project area that drain into the RGCP, will not be irrigated.

Subsection 2.4.2 - Issue E: Mowing operations potential to disrupt wildlife habitat.

An anecdotal example was provided on mowing operations disrupting meadowlark nest habitat [S05-5].

Response

Mowing is a required maintenance operation that represents current baseline conditions. It is conducted to ensure flood containment capacity and control of invasive plant species such as salt cedar. The Integrated USIBWC Land Management Alternative, as well as the Targeted River Restoration Alternative, incorporates a significant reduction in the extent of mowing as an environmental improvement measure.

2.5 TARGETED RIVER RESTORATION ALTERNATIVE

A number of issues related to a modified restoration alternative were previously discussed as they related to the Opportunities and Constraints Subsection 1.3.4 (see cross-reference of issues and Draft EIS section in Table DO-4). Additional issues are addressed in Subsection 2.5.2 (sustainability of restoration measures and pumping as an alternative overbank flood method), and Subsection 2.5.3 (in-stream habitat creation).

2.5.1 Levee System Management

Comments on levee system improvements apply to all action alternatives, and were previously addressed in Subsection 2.3.1.

2.5.2 Floodway Management

Four comments on floodway management applicable to this alternative were previously addressed in Subsection 2.4.2. Comments on flood pulse analyses are discussed in Appendix F.

Subsection 2.5.2 - Issue A: Potential for evaluated alternatives to achieve restoration.

The New Mexico Environment Department [A9-05], and the American Rivers organization [O3-1] commented that the Targeted River Restoration Alternative may not achieve restoration of physical and biological integrity along the RGCP. The concept of sustainability of measures under consideration was also addressed in Form Letter #2 (Subsection 1.3.4, Table II-6, 1st recommendation).

Response

Partial restoration is the objective adopted for the Targeted River Restoration Alternative, as allowed by the opportunities and constraints discussed in Subsection 1.3.4, not a comprehensive river restoration envisioned by the commentators. The basis for the partial restoration concept is discussed in Section 4.4 of the August 2003 Reformulation of Alternatives Report (Appendix I of the Draft EIS, also included in Appendix Q of the Final EIS). The view that partial restoration can be achieved within the current stream configuration and water availability was adopted in 2001 by the Bosque Hydrology Group (BHG) as the rehabilitation concept for various reaches of the Middle Rio Grande. The BHG, a multi-agency and multi-university cooperative effort dedicated to implementing the 1993 Bosque Biological Management Plan, characterized the future stream condition as “a scaled down mini Rio Grande.”

In practice, sustainability of measures along the RGCP relies on selection of actions that can be implemented with the current heavily regulated flows, and fully allocated land and water ownership. As pointed out in various Middle Rio Grande studies, the dynamic equilibrium of the river is no longer reflected in historic flows, native vegetation communities, nor potential channel migration patterns but rather, one which is defined by controlled releases and managed flows perturbed only by episodic flood events. The challenge for the USIBWC is not in restoring RGCP historic conditions, but improving the environmental conditions of a river that now functions as a water conveyance and delivery system. Those two RGCP functions are a Congress mandate assigned to the USIBWC which will be continued in the future.

2.5.3 Maintenance of Pilot Channel and Irrigation Facilities

Subsection 2.5.3 - Issue A: Proposal for in-stream habitat creation.

A comment suggested consideration of riverbed management techniques and in-stream habitat creation [A9-07].

Response

Use of in-stream habitat structures and extensive manipulation of the river channel were not incorporated into the reformulation of alternatives due to their high potential to reduce efficiency in water deliveries. This analysis was presented in the August 2003 Reformulation of Alternatives Report included in its entirety in the Draft EIS (Section 2.3 of Appendix I), as well as the Final EIS (Appendix Q, in CD-ROM format).

2.7 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD

2.7.1 RGCP Partial Decommissioning Alternative

Subsection 2.7.1 - Issue A: Water delivery efficiency in a non-maintained channel.

The Alliance for the Rio Grande Heritage stated that without channel maintenance the river would look better and still efficiently deliver water [O7-14a].

Response

The USIBWC disagrees that efficiency in water deliveries can be maintained without channel maintenance. Partial decommissioning of the RGCP by discontinuing maintenance was excluded as a viable option for further analysis due to, among other factors, the anticipated reduction in water delivery (Subsection 2.7.3).

Subsection 2.7.1 - Issue B: Need to evaluate a decommissioning alternative in the Draft EIS.

A comment indicated that effects of discontinued RGCP operation were assessed in a 1977 Draft Environmental Statement, but not in the Draft EIS [S31-5b]

Response

Discontinued RGCP operation was a non-viable option ruled out early in the alternatives formulation process as incompatible with the flood and water delivery functions of the project (see Subsection 2.7.1). There is no conceptual or practical justification to evaluate effects of non-viable alternatives in the EIS.

2.7.2 Multipurpose Watershed Management Alternative

Subsection 2.7.2 - Issue A: Consideration of in-stream flows

Two organizations suggested consideration of in-stream flows. One comment indicated that minimum flows should be specified to support aquatic and marsh wildlife [O5-3], and the second one recommended maintaining minimum winter flows to sustain native fish species [O7-03e].

Response

In-stream flows are a measure unrelated to the RGCP operation, as flow regime is not within the USIBWC jurisdiction. Stream flows along the RGCP are fully regulated by upstream reservoirs, and flow patterns are largely dictated by agricultural needs of the EBID and EPCWID#1 irrigation districts. That measure was excluded from analysis in the reformulation of alternatives.

2.7.3 Restoration Alternative Based on Non-Structural Flood Control

Subsection 2.7.3 - Issue A: *Evaluation of non-structural measures in the flood control analysis.*

The Paso del Norte Council expressed concerns about flood control improvements being premature, and not having taken into consideration non-structural measures [O7-02a, O9-1, Table II-6 in Subsection 1.3.4 (5th recommendation)].

Response

An analysis of non-structural control measures was performed to determine to what extent those measures could support river restoration. Results, summarized in Subsection 2.7.3 of the Draft EIS, indicated that use of measures such as levee relocation would be limited to a small fraction of the levee system with identified potential deficiencies. The analysis also concluded that consideration of non-structural measures would have a low potential to extend restoration measures already under consideration for the RGCP. The basis for this conclusion is as follows:

- Current stream configuration is primarily controlled by flow regulation, not flood events. Only a handful of significant flood events have been documented in the 60+ years of RGCP operation. Annual stream flow patterns are largely dictated by a series of upstream reservoirs in response to agricultural use.
- The levee system does not dictate the extent of the active floodplain. Narrowing of the floodplain was actually induced by upstream flow regulation, not by construction of levees as part of the RGCP several decades later. Most of the active floodplain is well within the levee system and, under the current flow regime, will retain its current configuration even if levees were repositioned farther away from the stream channel.
- Large floods do not create sustainable conditions for stream restoration. The 100-year flood used in levee height calculations is a rare and very disruptive event that would not lead to sustained establishment of riparian vegetation. For this reason, Reformulation of Alternatives focused on quantifying and mapping areas susceptible to limited overbank flows during more frequent, smaller magnitude floods.

2.8 PROJECTS AND ACTIONS WITH POTENTIAL CUMULATIVE EFFECTS

Section 2.8 - Issue A: *Suggested need for cumulative effects evaluation of existing projects.*

The Alliance for the Rio Grande Heritage indicated that effects on the river ecosystem should have been analyzed for two projects in operation: the RGCP itself [O7-07b], and the Rio Grande Project [O7-07c, S68-5]. One comment stated concern for historical damage done to the Rio Grande [S13-1], while another indicated that the Draft EIS failed to prove that the original O&M activities had not enhanced the RGCP ecology [O8-22]. One comment characterized interpretations of what the river might have looked like as highly questionable [S26-2].

Response

Evaluation of the RGCP itself, or the Rio Grande Project, was unwarranted as both projects have been in operation for several decades. As indicated by NEPA regulations, when updating a management plan that continues ongoing programs, effects are evaluated relative to current management practices (CEQ Q&A, Q3, March 16, 1981). Consequently, the Draft EIS evaluated potential effects of modified river management alternatives relative to baseline conditions (represented by the RGCP and Rio Grande Project as currently operated), not to hypothetical pre-existing conditions. In the formulation of river management alternatives under consideration, the potential for environmental improvements was analyzed based on today's river conditions and taking into account opportunities and constraints, and the flood control and water delivery mission of the RGCP.

Section 2.8 - Issue B: Additional projects and actions suggested for cumulative effects evaluation.

A reviewer listed other projects and actions believed to have potential cumulative effects: other SWEC proposals [S31-2c]; water depletions resulting from environmental measures [S31-3f]; and potential RGCP designation as a silvery minnow critical habitat [S31-8b].

Response

The evaluation of listed actions was considered applicable to the effects evaluation as follows:

- A single ongoing restoration initiative by SWEC along the RGCP is the Mesilla Valley Bosque Park at river mile 41, where bosque areas and wetlands are planned outside the ROW. In the Draft EIS, this initiative is part of the Targeted River Restoration Alternative conservation easements because it is co-located with an RGCP point project under consideration (see Subsection 2.6.2 for river mile 41 project description). The applicable analysis is for direct effects, as conducted in Subsection 4.8.6, not for cumulative effects.
- Water depletions resulting from increased riparian vegetation are not cumulative impacts, but direct effects of the modified river management alternatives. These are evaluated extensively in the Draft EIS for effects on water resources, land use, and socioeconomic effects (Sections 4.1, 4.8, and 4.9, respectively).
- The RGCP has not been included in a silvery minnow recovery plan, as this reach of the Rio Grande is not considered suitable for establishment of the species.

2.9 IMPLEMENTATION STRATEGY

2.9.1 Program Management

Subsection 2.9.1 - Issue A: Cooperation.

A number of comments pointed out potential agreements to implement a modified river restoration alternative. Coordination with Paso del Norte Watershed Council was supported by two organizations [O4-2, O9-7], while in another comment it was suggested that the agricultural community would not accept the Council in an advisory capacity [S31-8d]. The El Paso Water Utilities qualified the Council's potential participation [O4-2], indicating it would be "in accordance with the objectives of the Council, and within the limits of available manpower and resources." The EBID emphasized that no alternative could be implemented until an agreement with water users was in place [O8-16b]. Finally, a comment suggested partnering with other agencies to address measures for Rio Grande restoration [S67-3], while another comment pointed out the difficulty of reaching cooperative agreements [S25-3].

Response

While planning environmental improvements, the USIBWC will seek participation from governmental and non-governmental organizations capable of supporting the program and willing to foster its development. The potential role of the Paso del Norte Watershed Council in an advisory capacity has been qualified in the Final EIS text as suggested by the El Paso Water Utilities (Subchapter I-G).

Subsection 2.9.1 - Issue B: Funding source for environmental measures.

A number of comments proposed establishing long-term funding to purchase water rights and land to support restoration [O7-3d, O9-5, and Tables II-5 and II-6 in Subsection 1.3.4 (2nd and 3rd recommendations, respectively)]. Comments were received supporting [S71-3] and opposing [S25-2, S57-3] federal funding of Rio Grande Basin restoration.

Response

Regarding acquisition of water rights, the USIBWC does not have any record indicating that it owns water rights in New Mexico. The Legal office and Boundary and Realty Division are working on the process for acquiring water rights through the New Mexico State Engineer's Office. To secure water rights, the process will be similar to acquiring ROW, *i.e.* 1) USIBWC must have a specific need for water rights; and 2) USIBWC must seek Congressional approval and funding for the acquisition of water rights.

2.9.2 Water Acquisition

Subsection 2.9.2 - Issue A: Drought and adoption of collaborative water conservation programs.

Multiple comments expressed concerns about changes in river management in the face of the ongoing drought [O8-12, P07-4, P11-1, P13-1, S21-1, S22-4S58-4, S69-3], and indicated that water conservation should be the focus of USIBWC's initiatives [S10-3, S14-3, S41-6, S69-3]. One comment questioned the reasoning for planting trees when the Natural Resources Conservation Service (NRCS) was sponsoring salt cedar eradication for water conservation [P05-3].

The Department of the Interior supported the use of collaborative water conservation programs [A1-05], and recommended canal lining and working with irrigation districts to convert water intensive crops to crops requiring less water [A1-10]. The EBID did not consider sponsoring on-farm conservation measures or water banking as feasible measures [O8-04a]. A comment suggested that on-farm conservation programs are not an option the farmers would support [S31-8c].

Response

Given the limited water supply and full allocation, the USIBWC placed strong emphasis on sponsoring water conservation programs. On-farm programs, such as drip irrigation systems, were considered the most viable conservation option. Such programs would provide farmers with application systems more suitable for drought conditions, and capture water that would be lost during application. Crop substitution and canal lining, while valuable for the agricultural community, offer little potential to reduce evaporative losses. A key step in implementing a modified river management alternative will be the resolution of practical issues of the conservation program, including system suitability, to local soil conditions and quantification of potential yield.

The New Mexico State Water Plan indicates that in 2003 the state legislature allowed creation of special districts where administrative tools for effective water banking are in place for the efficient and timely transfer of water from one user to another. The plan indicates that the legislation was promoted by the EBID and communities in the Lower Rio Grande. This region is expected to be a proving ground for the effectiveness of this management tool as discussed in the updated Subsection 4.15.1, Chapter I of the Final EIS. The New Mexico Office of the State Engineer is currently developing administrative regulations for those special districts.

Subsection 2.9.2 - Issue B: Legal, regulatory, and institutional issues of water acquisition.

Not compromising New Mexico's ability to meet Interstate Compact obligations was a concern expressed by the New Mexico Interstate Stream Commission [A7-1], indicating that no net increase in water depletions should occur as a result of the modified river management alternatives [A7-2]. The El Paso Water Utilities emphasized the need to establish accurate, reliable, and defensible water accounting methods for water rights acquisition [O4-3].

The EBID stated its belief that Interstate Compact obligations would be compromised by a modified river management, favoring the interests of one state over another [O8-13a], and harming the State of New Mexico [O8-13b]. The organization also indicated that acquisition of water rights within EBID, or transfers under New Mexico law, would not be appropriate [O8-04b], and pointed out legal impediments regarding water rights acquisition and transfers [O8-4c]. EBID also indicated its preference for a grass-roots approach to restoration policy development [O8-24a], and that a critical point in developing such policy, the institutional-building step, was missed in the Draft EIS [O8-24b].

Response

The USIBWC agrees with the statement that the alternatives will not compromise Interstate Compact obligations, as indicated in response to the New Mexico Interstate Stream Commission. Addressing legal, regulatory and institutional issues will be the initial focus of modified river management alternatives, as discussed in Section 2.10. Agreements with the agricultural community and other stakeholders will be sought during the initial years of program implementation.

Subsection 2.9.2 - Issue C: Water transfer from current agricultural use.

Some comments questioned the potential source of water [P03-3, P05-4, S15-3]. In two instances, it was pointed out that, given the full allocation of the Rio Grande Basin, new water uses can only occur through transfer of water from existing beneficial uses [O8-02a, S41-2]. Objections to environmental measures such as planting that would use substantial amounts of water, were expressed [O1-5, S07-3, S08-3], because they would hurt farmers by depleting the water supply [P13-2, P14-2, P15-2, P16-2], and/or affect water flow without water rights purchase [S19-5, S56-1]. The EBID suggested the district would bear the burden of water losses associated with the modified river management alternatives [O8-24c].

Response

The extent of potential transfers is evaluated in Section 4.8 of the Draft EIS (summarized in Table 4.8-1). Under any scenario, the USIBWC intends to quantify potential water use,

and acquire use of water rights to support environmental measures that represent significant water use. This view is emphasized throughout Subsection 2.9.2 of the Draft EIS. Under these conditions no net flow depletions would occur.

2.9.3 Cooperation Agreements

Subsection 2.9.3 - Issue A: Recommendation of land purchases and other non-structure methods as flood control options.

A number of comments favored purchase of land to increase floodplain habitat as well as working with local government to discourage development near the river [O5-5, O7-03h, and Table II-5 (3rd recommendation) and Table II-6 (3rd and 6th recommendations) in Subsection 1.3.4].

Response

Land purchases are viable to the extent that such acquisitions are justified to improve RGCP operation. Currently, some easements in Seldon Canyon are in place for flood control. The need or desirability of additional easements beyond the ROW has not yet been identified. If flood easements are incorporated in the future into a modified flood control strategy, the USIBWC will need Congressional approval and funding for the acquisition of real estate. Land acquisitions are viable within the 20-year implementation timeframe under consideration.

Discouraging development near the river is a measure not only difficult to implement but, in the case of the RGCP, one with a low potential to extend native riparian vegetation beyond current limits dictated by upstream flow regulation. This issue is discussed in detail in Subsection 2.7.3 of the Draft EIS, Restoration Alternative Based on Non-Structural Control Measures, and previously reiterated in the response to comments (Subsection 2.7.3 – Issue A).

The assumed need for a much wider floodway—an assumption valid for other areas of the country with significant rainfall and recurrent flood problems—is an erroneous conclusion for the RGCP. Two misconceptions have led to this conclusion:

First, the levee system does not dictate the extent of the active floodplain in the RGCP, as only a handful of significant flood events have been documented during its 60+ years of operation. These floods have seldom reached the levees, and have never led to failures along the RGCP. This is in stark contrast with the Midwest, where sections of the Mississippi and Missouri Rivers have suffered levee failures and flooding at 5 to 10-year intervals.

Second, large floods are very disruptive and rare episodes that are not conducive to establishment of riparian vegetation. For this reason, the modified RGCP management alternatives focused on limited, controlled overbank flows within the currently active floodplain. Most of this active floodplain is, by RGCP design, entirely within the USIBWC ROW.

Subsection 2.9.3 - Issue B: *Lands identified for potential use as voluntary conservation easements.*

The New Mexico Department of Agriculture expressed a concern that lands had already been targeted for voluntary conservation easements [A6-03].

Response

Land currently not in agricultural production represents more than 80 percent of the 1,618 acres of potential voluntary conservation easements under consideration as part of the Targeted River Restoration Alternative. The distribution of conservation easements by current use, presented in Table 4.4-10 of the Draft EIS, is 288 acres of croplands; 559 acres of remnant bosques outside the floodplain; and 771 acres of existing bosque enhancements. Most enhanced bosques would be located within Seldon Canyon, and would be associated with incorporation of controlled water releases into a river management alternative.

2.11 CAPITAL COST EVALUATION

Section 2.11 - Issue A: *Estimates of O&M costs.*

With regard to O&M costs, comments were received indicating that no description was provided [S05-4], and that no maintenance costs for native vegetation were considered in the Draft EIS [O8-25b]. The New Mexico Department of Agriculture recommended presentation of detailed cost estimates as an appendix [A6-10].

Response

The capital cost evaluation mainly determines the difference among alternatives, as shown in the March 2001 Alternatives Formulation Report. Since differences between alternatives are largely dictated by capital costs, rather than O&M costs, no update was made on the data originally provided in March 2001. Detailed data were provided in Appendix I of the Draft EIS (Attachment C, March 2001 Alternatives Formulation Report, Table 9.9, Capital vs. Life Cycle Costs). The Alternatives Formulation Report is also provided in the Final EIS (Appendix Q, in CD-ROM format).

Section 2.11 - Issue B: *Applicability of levee system cost estimates.*

A comment suggested that levee improvement costs were speculative and should be removed from all the alternatives [O7-02f].

Response

The same cost of levee improvement is as applicable to all action alternatives and, thus, was not used as a basis for selection of a preferred alternative. Levee system improvement

costs represented the best available estimates in March 2001, when they were prepared for the Alternatives Formulation Report (Information provided in Draft EIS Appendix I, Attachment C). The USIBWC Engineering Department will continue to update those estimates as additional data on levee integrity and flood containment become available.

Section 2.11 - Issue C: Reference values for cost estimates.

Two organizations commented on reference values for cost estimates. The Alliance for the Rio Grande Heritage indicated that cost estimates should have been provided for the No Action Alternative [O7-02a]. The EBID, in turn, indicated that the Draft EIS does not provide the ability to compare benefits versus costs of alternatives implementation [O8-09c].

Response

Because the EIS compares potential effects on current river management practices versus modified practices under three action alternatives, cost estimates presented in Table 2.11-1 represent increases relative to the No Action Alternative. Current costs represent a baseline condition used for effects evaluation.

Environmental benefits are not directly comparable to other resource areas on a cost basis. For that reason, multiple evaluation criteria were identified in Section 4 as the basis for potential effects. As stated in CEQ regulations in 40 CFR V, 1502.23, *[F]or the purposes of complying with the Act, the weighing of the merits and drawbacks of the various alternatives need not to be displayed in a monetary cost-benefit analysis, and should not be when there are important qualitative considerations.* As shown throughout the analysis of various resource areas in the Draft EIS, multiple economic and non-monetary considerations were an integral part of the analysis.

Section 2.11 - Issue D: Water acquisition cost estimates.

The New Mexico Department of Agriculture pointed out the need to look closely at water conservation financing costs, because other costs are involved besides the irrigation system itself. Examples listed included the need for land preparation, limitations of canal water use in drip irrigation, and changes in surface water-groundwater interaction [A6-5].

The Alliance for the Rio Grande Heritage stated that capital cost estimates were inflated due to sole use of on-farm water conservation estimates [O7-04a], and suggested that lower costs would result from the purchase of water-righted lands [O7-04b], and from water rights purchase (banking) [O7-04c]. It further suggested that the Draft EIS table should be amended to present alternative bases for estimating cost [O7-04d].

Response

Costs are expected to vary widely among locations and acquisition methods, and will be evaluated in greater detail as the implementation program progresses. Since water costs are expected to vary widely among locations and acquisition methods, use of a conservative value was preferred for comparison of alternatives in the Draft EIS. Cost estimates were developed based on data recently compiled by King and Maitland (2003, Table 30) for the Rio Grande Project area. Estimates for the selected river management alternative will be refined as the institutional framework for water acquisition is established, and water rights are negotiated. As the 20-year program is implemented, the most efficient water acquisition method will be adopted according to feasibility.

Among the various options available for water acquisition, sponsoring on-farm water conservation was considered the most viable. This approach not only minimizes farmland retirement, but also has the potential to benefit farmers by providing water application systems better-suited for drought conditions. Capital costs presented in Table 2.11-1 and Appendix G of the Draft EIS represent a long-term investment that extends throughout the useful life of an irrigation system, not annual costs. Capital costs are not directly comparable to water banking, as quoted by the reviewer, as those values are cost per year. The useful life for drip irrigation systems is typically 12 to 15 years.

2.13 PREFERRED ALTERNATIVE

The USIBWC has selected the *Integrated USIBWC Land Management Alternative* as the agency's preferred approach for long-term management alternative of the RGCP. In selecting the preferred alternative, the USIBWC reviewed the predicted environmental, economic, and social impacts of three action alternatives and the No Action Alternative; their anticipated environmental and financial ability to be implemented, quality of life performances; and the risks and safeguards inherent in them. The rationale for selection of this alternative was previously presented in Subchapter I.C.

Comments related to selection of a preferred alternative were organized into three issues: basis for selection, rationale for not including a preferred alternative in the Draft EIS, and statements of support for a preferred alternative. Those comments are addressed below.

Section 2.13 - Issue A: Basis for Preferred Alternative selection.

The New Mexico Interstream Commission indicated its support for any action alternatives providing that no net increase in water depletion would occur [A7-2].

El Paso Water Utilities emphasized that any river management alternative must maintain reliable water deliveries, not impact water quality, and remain "water rights neutral" to current users [O4-1].

Response

The USIBWC concurs with those criteria and took them into consideration, both in formulating the alternatives and selecting a preferred alternative. No net increase in water depletion is a criterion adopted in implementation strategy for a modified alternative, as discussed in Subsection 2.9.2. Efficient water deliveries and no adverse effects on water quality were also important considerations, as indicated in responses to comments in Section 4.1.

Section 2.13 - Issue B: Rationale for not including a preferred alternative in the Draft EIS.

The EBID indicated that the Draft EIS should have included a preferred alternative [O8-01b, O8-05d].

Response

A range of alternatives (four), including the No Action Alternative, was presented in the Draft EIS and were all analyzed at the same level of intensity. The Draft EIS indicated that a preferred alternative would be selected after public comments and included in the Final EIS as allowed by CEQ 1502.14 and CEQ 40 Q&A, Q 4b, March 16, 1981.

Section 2.13 - Issue C: Statements of support for alternatives under consideration.

Support for each alternative under consideration is summarized below. In almost all cases, comments supported one of two river management options:

- The No Action Alternative, retaining management practices as historically conducted; and
- The Targeted Restoration Alternative, with an increase in the number and extent of measures under consideration.

1. No Action Alternative. Several comments stated support for the No Action Alternative [O8-24f, P04-1, P07-1, P13-4, S08-4, S21-2, S22-1, S58-1, S69-1]. In two instances, it was indicated that alternatives other than the No Action Alternative were too costly [O8-09a, P18-4].

In addition, multiple comments recommended the No Action Alternative with removal of the 1999 MOU [P02-1, P06-1, P10-1, P18-1, P18-4, P20-3, P22-2, P23-4, S04-3, S14-11, S15-1, S19-7, S24-1, S25-1, S26-1, S27-2, S33-1, S41-1, S43-1, S44-3, S69-1]. This issue was previously addressed in Section 1.3.1.

2. Flood Control Improvement Alternative. The Pecan Growers Association indicated this was the only alternative justified based on cost, if combined with sediment buildup control and water conservation measures [O2-4]. An individual reviewer indicated that the alternative included riparian habitat enhancements that were

consistent with the region's water conservation objectives and local wildlife conditions [S31-4e].

3. Integrated USIBWC Land Management Alternative. The El Paso Water Utilities indicated support for this alternative [O4-4]. The New Mexico Department of Game and Fish indicated that, while their preference would be the Targeted River Restoration Alternative, it would support adoption of the Integrated USIBWC Land Management Alternative [A8-1].
4. Targeted River Restoration Alternative. A number of agencies and other commentators stated that this alternative would provide the greater environmental benefit, and indicated their support for the concept of high flows, opening former river meanders, salt cedar removal, cottonwoods restoration, and elimination of streamside grazing for vegetation manipulation [A1-04, A3-1, A4-1, A8-1, O5-4, O9-3, S01-2, S68-7, S73-1].

Multiple other comments also supported the river restoration concept, but considered that features included in the alternative were not extensive enough, warranted further evaluation, relied too heavily on direct intervention, or did not reflect their Rio Grande restoration vision [O5-1, O6-4, O7-1a, O9-3, P19-1, S01-1, S05-1, S18-2, S20-1, S42-1, S42-2, S67-2, S71-1, S71-2, S73-2, S74-1, S74-2, Tables II-5 and II-6 in Subsection 1.3.4]. These issues were previously addressed in Subsection 1.3.4, Opportunities and Constraints for Alternatives Formulation.

Response

The USIBWC acknowledges the effort by agencies, organizations and individual reviewers to provide detailed commentary, and appreciates their contribution throughout the 3-year consultation process to develop and evaluate river management alternatives under consideration for the RGCP.

RESPONSE TO COMMENTS: SECTION 3, AFFECTED ENVIRONMENT

Comments related to Section 3 of the Draft EIS refer to baseline conditions on four resource areas: water, wildlife habitat, land use, and cultural resources (Sections 3.1, 3.5, 3.8, and 3.10, respectively). The following responses include only those subsections with specific issues raised by commentators, as listed in the preceding index.

3.1 WATER RESOURCES

3.1.1 Water Consumption

Subsection 3.1.1 - Issue A: Water availability data provided in the Draft EIS

The EBID suggested that the most optimistic data on precipitation were used, from 1959 to 2002, as this period did not include the 1950 drought [O8-23a]. Another reviewer stated that the Draft EIS fails to mention region's critical water situation [S31-3e].

Response

Precipitation data reflect the most current data available, as listed in the NRCS website. Data for Elephant Butte Reservoir, the most relevant for EBID, covered the period from 1948-2002, and included nearly three decades of low precipitation and drought conditions. In any case, precipitation data were provided, not as the basis for any calculations, but precisely to emphasize the very limited water availability in the RGCP region.

Drought information is presented in the Water Resources baseline analysis (Subsection 3.1.1), including the USBR 2003 report for the Rio Grande Project. This report indicates that Elephant Butte Reservoir storage is at its most critical condition since 1978. Data from the New Mexico Office of the State Engineer are also provided (NMOSE 2001) indicating that, based on the long-term historical record, relatively high precipitation events during the 1980s and 1990s were unusual occurrences.

3.1.3 Water Quality

Subsection 3.1.3 - Issue A: Need for water quality information update

Two agencies pointed out a need to update water quality data. The Department of Interior provided a USGS web site address to research additional water quality information, and indicated that the leading zero was missing from monitoring station #08364000 [A1-09]. The New Mexico Environment Department indicated that clarifications were needed on Water Quality Segments along RGCP [A9-02], and referred to the NMED web site for updates on the CWA Section 303(d) list for New Mexico [A9-03].

Response

An updated Water Quality Section is provided in Subchapter I.D of the Final EIS.

3.5 WILDLIFE HABITAT

3.5.1 Quantification of Habitat Value

Subsection 3.5.1 - Issue A: Extent of faunal surveys conducted

The El Paso Zoo requested information on faunal surveys used in the Draft EIS [O10-1].

Response

A spring survey and a fall survey were conducted to characterize terrestrial vegetation and wildlife habitat along the RGCP. Detailed information is provided in the January 2004 Biological Assessment (a copy in electronic format is provided in Appendix Q of the Final EIS). A survey summary is provided below.

Spring T&E Habitat Survey, April 24 through 28, 2000

A survey was conducted to identify vegetation communities present within the RGCP, assess the presence or absence of potentially suitable habitat for threatened or endangered (T&E) species. Surveyed locations included wetlands and riparian zones along the Rio Grande, and representative sample sites within major vegetation communities. Locations were selected from preliminary vegetation maps, species distribution information, and habitat preference data. Sites most likely to contain potential T&E species habitat were emphasized. Pedestrian surveys for vegetation characterization were conducted at selected locations to provide more detailed descriptions of the vegetation (such as dominant vegetation species, and vegetation structure). These characterizations were conducted at 42 sites along the river.

Fall/Winter Vegetation Survey, November 27 through December 1, 2000

An additional habitat survey was conducted at 148 vegetation locations to develop detailed vegetation classification maps, assess wildlife habitat value, and conduct additional wildlife species pedestrian surveys. The wildlife habitat appraisal procedure (WHAP) was used for habitat characterization. The following information was obtained at each survey location: vegetation and species diversity; position of species associations; vegetation condition and apparent utilization by wildlife; site potential in terms of uniqueness and relative abundance; vertical stratification of vegetation; other structural diversity components; and any wildlife species observed.

3.8 LAND USE

3.8.1 Land Use Analysis

Subsection 3.8.1 - Issue A: Farmland contribution to environmental conditions along the RGCP.

The Pecan Growers Association stated that agriculture is undervalued in government projects and described the benefits that six pecan orchards have on the local economy, the environment, and wildlife [O2-3]. Another reviewer indicated that no mention is made of benefits to air quality and wildlife associated with orchards, and suggested that a specific study for pecan orchards be conducted [S31-7e]. It was further stated that the Draft EIS ignores the importance of farmland contribution to the environment and its value to natural and socioeconomic environments [S31-7c, S31-2f], and that environmental benefits from agriculture should be identified (Agriculture Handbook No. AH 722 is referenced) [S31-7f]. The need to recognize the importance of farmland preservation in achieving NEPA goals was also emphasized [S31-7i].

Response

Not retiring farmlands was adopted as a main goal for river management alternatives, not only to minimize socioeconomic impacts (see responses to Section 4.9), but because farmlands adjacent to the RGCP provide environmental benefits such as wildlife habitat, and vegetated areas that would buffer restoration areas from urban development (see responses to Section 4.5).

3.8.2 Land Use Corridor

Subsection 3.8.2 - Issue A: Land ownership in the Upper Rincon Valley

Land ownership along the west ROW was incorrectly reported for Jaralosa, Berrenda, Sibley, and Tierra Blanca arroyos [P01-1].

Response

The USIBWC will take note of this observation in any future updates of land uses adjacent to the ROW. As indicated in Section 3.8.1 for the Draft EIS, inconsistencies in land use maps can be expected since the main information source, land use database obtained in digital format, include lands identified as “vacant” and unclassified. To address this information gap, current land use of these lands was determined through aerial photograph interpretation and limited field surveys. In addition, BLM and other government lands simply reflect ownership, and do not identify current use of leased areas (largely grazing areas).

3.10 CULTURAL RESOURCES

3.10.2 Traditional Cultural Properties

Subsection 3.10.2 - Issue A: Consultation on traditional cultural properties.

The New Mexico Department of Cultural Affairs, Historic Preservation Division, indicated that additional consultation should be conducted with the Comanche Indian Tribe, Kiowa Tribe, Navajo Nation, and Hopi Tribe [A5-2, A5b-4]. It also indicated that evaluation of effects would be made after the agency reviews the 2001 Cultural Resources report [A5-1, A5-3]. Consultation with the Tigua, and results documented in the Final EIS, were also suggested [S68-6].

During the public hearing, a commentator stated the cultural affiliation of Ysleta del Sur Pueblo with known Puebloan groups [ST2-2], and pointed out that written contacts made with various pueblos did not constitute a formal government-to-government consultation [ST2-1].

Response

Continued Native American consultation will be conducted as part of a programmatic agreement, as suggested by the New Mexico Department of Cultural Affairs [A5-5, A5b-5]. The Final EIS will be sent to Ysleta del Sur Pueblo, as well as Comanche Indian Tribe, Kiowa Tribe, Navajo Nation, and Hopi Tribe. The programmatic agreement will specify requirements for formal government-to-government consultation for specific projects.

3.10.3 Archaeological Resources

Subsection 3.10.3 - Issue A: Extent of archaeological resources in the RGCP area.

Following review of the 2001 Cultural Resources report prepared for the EIS, the New Mexico Department of Cultural Affairs determined that consultation under Section 106 of the National Historic Preservation Act [A5b-5] needs to be conducted. A recommendation was also made to consider a Programmatic Agreement for potential mitigation of cultural resources [A5-5]. Another comment suggested that formal determination of eligibility of the prehistoric and historic sites should be pursued from the State Historical Preservation Officer [O4-8].

Response

As recommended by the New Mexico Department of Cultural Affairs, Section 106 consultation will be continued through a programmatic agreement [A5-5]. The need for a programmatic agreement will be specified in the Record of Decision for selection of a preferred RGCP management alternative as requested by the agency in their May 10, 2004 letter [A5b-5].

RESPONSE TO COMMENTS: SECTION 4, ENVIRONMENTAL CONSEQUENCES

Comments related to Section 4 of the Draft EIS addressed specific resource areas, particularly water, land use, and socioeconomic resources (Sections 4.1, 4.8, and 4.9, respectively). Some comments referred to the general effects assessment approach, while others indicated a need to further assess cumulative impacts (Section 4.15). The following responses include only those subsections with specific issues raised by commentators, as listed in the preceding index.

Section 4.0 - Issue A: General approach for environmental consequences evaluation.

A number of comments were submitted on the general approach followed for evaluation of environmental effects. In one case, it was indicated that the Draft EIS omitted significant environmental effects [O8-06]. In another, it was indicated that more certainty was needed in the analysis of levee improvements and water availability [O7-10b], that “conclusory remarks” were made [O7-06a], and that a greater analysis of environmental consequences was needed [O7-06b].

Response

The Draft EIS addressed all significant direct, indirect, and cumulative effects of the No Action and the three action alternatives. This discussion included both adverse and beneficial, as well as significant, adverse effects if such effects were predicted. While such effects were not always labeled to meet the categories above, the discussion context clearly identified the nature of the impact. The evaluation criteria and resource areas used in the evaluation were based on scoping and consultation as to the issues needing to be addressed in the Draft EIS. Some examples are cited below to clarify this explanation.

Resource area Water Delivery and Water Quality under the Integrated USIBWC Land Management Alternative. Effects - Development of riparian vegetation along the stream banks is likely to have a positive long-term effect on cottonwoods and willows, once established, and would provide stability to stream banks (beneficial). On the short-term, bank preparation and seedling establishment could result in a greater release of plant debris into the channel and the need for additional channel maintenance (adverse).

Soil preparation, prior to establishment of the vegetative cover, could result in short-term increases of sediment release into the river (adverse). This effect would not be considered significant in terms of water quality given that a potential sediment contribution from 127 acres of shave down areas would be negligible compared to the RGCP tributary watershed that extends over several hundred square miles.

Section 4.0 - Issue B: Extent of the potentially affected area.

The Alliance for the Rio Grande Heritage suggested it was unclear from the Draft EIS what is the project area, or potentially affected area [O7-05a]; that the affected area should focus on location of impacts, not activities [O7-05b], and that there was a need to define the lateral extent of the ROW controlled by USIBWC [O7-05c].

Response

The area of influence for changes in RGCP management alternatives was defined by resource area and was based on potential impact location. This area was identified for each resource area in the method of analysis section. The extent of the ROW is shown, in its entirety, in Appendix Q of the Final EIS (August 2003 Reformulation of Alternatives Report, Appendix G, color infrared photographs of the RGCP). An area of influence summary by resource area is provided below.

- Water resources: the Rio Grande Project, the potential water source (total diversions of water along RGCP);
- Flood control: the entire length of the RGCP levee system and enclosed floodway;
- Soils: extent of excavation areas and soil improvement areas;
- Vegetation, and wildlife habitat: ROW and potential conservation easement areas;
- Aquatic biota: Stream segment along the RGCP;
- Land use: 0.5-mile wide corridor adjacent to the ROW; irrigated Rio Grande Project farmland;
- Socioeconomics: County data for population and labor;;
- Cultural resources: floodway of the RGCP and adjacent, 1-mile wide corridor;
- Air quality: County for rural areas, regional for urban, non-attainment areas;
- Noise: impact distance, as defined by USEPA; and
- Transportation: access roads to the RGCP.

Section 4.0 - Issue C: Reference data used for effects evaluation.

The EBID stated that potential effects were minimized in the Draft EIS by the reference data used to evaluate effects. Examples are given for water effects (comparison to Rio Grande Project) [O8-23d], air emissions during levee construction (comparison to county data) [O8-23e], and potential farmland retirement (comparison to 0.5-mile corridor along the RGCP) [O8-23f]. Similarly, another reviewer indicated that the Draft EIS source documents understated complex water and agricultural issues [S31-6h].

Response

A full analysis was conducted using standard or widely accepted methods, and best available data. The three examples listed by the EBID illustrate this point. It should also be noted that USEPA, the CEQ-delegated review agency, rated the Draft EIS in the “Lack of Objections” category [A2-1], indicating that no revisions are required in the Final EIS.

- Because only Rio Grande Project water flows through the RGCP, and it is anticipated to be the main water rights source for increases in water consumption. This is the correct reference value for effects evaluation.
- Air quality analysis was conducted in compliance with USEPA, New Mexico, and Texas requirements for each type of pollutant. A full methodology description is provided in Subsection 4.11.4 of the Draft EIS. As specified by those requirements, county data were used as a reference for rural zones. That was not the case for Las Cruces, as the city is a limited attainment area with far more stringent compliance levels for various pollutants. In that case, local data were used as a reference (Tables 4.11-8 and 4.11-10).
- Potential farmland retirement by conservation easements and water rights acquisition were both referred to as the 0.5-mile corridor adjacent to the RGCP (19,020 acres). This reference value is directly applicable to the easements since they would be adjacent to the ROW, but it actually overestimates potential retirement due to water acquisition. In this case, a more applicable value would be 130,000 acres of irrigated land, the total extent of the water source in terms of potential acquisition (76,000 acres in EBID, and 53,000 acres of EPCWID#1). The more conservative reference value of 19,020 acres was used in the Draft EIS to express potential retirement on a percent basis, both for conservation easements and for water rights acquisition.

4.1 WATER RESOURCES

4.1.1 Method of Analysis

Subsection 4.1.1 - Issue A: Estimates of potential water consumption.

The EBID stated that water use in various alternatives was understated, as well as effects on water removal from productive to nonproductive applications [O8-10a]. Specific issues listed were the use of the most optimistic data on water reduction by salt cedar eradication (1.48 ac-ft/ac) [O8-23b]; use of combined diversions along the RGCP as a reference for water use [O8-23d]; consumptive loss estimates characterized as inaccurate [O8-25a, O8-25c]; and estimates as poorly documented [O8-25d].

Response

Best available water use estimates were used. There is, however, a wide variation of water use estimates in technical literature. Results vary with the type of species, test conditions, growth density and developmental stage, and other factors. For example, a compilation of 13 studies for salt cedar reported a wide range of annual consumption, from 2.3 to 11.2 ac-ft/ac. Since various water consumption estimates are found in the literature, from multiple studies under diverse test conditions, the decision was made to adopt the USBR's AWARDS System and ET Toolbox as the single, widely accepted data source for effects evaluation. The annual value from the U.S. Bureau of Reclamation ET-Toolbox quoted in the Draft EIS, 4.96 ac-ft/a, falls in the middle of the reported range.

Water diversion along the RGCP is a valid reference for water use by RGCP vegetation (see previous response to Section 4.0, Issue C). To address this comment, however, potential effects listed in Table 4.1-3 are referenced separately for the EBID in Subchapter I.E, updated Section 4.1.2.

As to the documentation of data provided in the Draft EIS, all information sources are identified in Section 6, References.

Subsection 4.1.1 - Issue B: Potential effects on ground water.

Two comments indicated that potential impacts associated with ground water use to establish riparian vegetation are not discussed [A6-04, S31-8b]

Response

Ground water use is not anticipated other than a small-scale supplemental use. New Mexico ground water laws prohibit USBWC from using ground water for riparian vegetation.

4.1.3 No Action Alternative

Subsection 4.1.3 - Issue A: Water delivery efficiency remains within the RGCP historical values.

The EBID reported a 93 percent water delivery efficiency (Project Delivery/Project Release) for 2003, indicating it was within the bounds of historical efficiency for the level of release [O8-24d]. The organization suggested it could have been better.

Response

As stated in the comment, efficiency is within historical limits for the level of release. Current RGCP operation continues to meet its design goals.

Subsection 4.1.3 - Issue B: Potential water use by no-mow zones and test planting areas.

With regard to the no-mow zones and planting areas, the EBID indicated that a Takings Implications Assessment was needed for water use [O8-08], and characterized cottonwood planting in the ROW as significant in terms of water use [O8-20c].

Response

A minimum effect of both measures was expected, given the small extent, and the fact that no irrigation is provided. Reference values presented in the Draft EIS are for potential consumption at full development, and would not apply to grasses developing under severe drought conditions. For the planting areas, 800 trees would consume a maximum of 10 ac-ft/yr at a typical planting density of 100 trees/ac (based on Table 4.1-2), and assuming full survival and development will be achieved without irrigation.

4.1.5 Integrated USIBWC Land Management Alternative

Subsection 4.1.5 - Issue A: Effects of vegetation growth on water supply.

Various comments indicated that measures under consideration would take water out of productive and beneficial use [P07-3, P11-2, P18-2, P22-1, S04-4, S19-8, S22-3]. In two cases, it was suggested that habitat restoration would threaten water rights by introducing endangered species, and cited the Middle Rio Grande as an example [S08-2, S33-4]. The Texas Parks and Wildlife Department (TPWD) pointed out that vegetation management would promote removal of water consumptive invasive species that would augment water [A3-7].

Response

Sponsoring water conservation methods is proposed as a method to benefit the agricultural community. Retaining farmland in production was a goal adopted in the reformulation of alternatives (discussed in Subsection 2.9.2). The likelihood that actions taken by USIBWC would make conditions conducive to advancing the natural introduction of T&E species is remote. Unlike the Middle Rio Grande, the RGCP reach is not considered suitable for establishment of the silvery minnow due to channelization and presence of several diversion dams.

4.1.6 Targeted River Restoration Alternative

Comments on water consumption apply to both the Integrated USIBWC Land Management and Targeted River Restoration alternatives. These comments were previously addressed in the Subsection 4.1.5. Additional issues are discussed below.

Subsection 4.1.6 - Issue A: Potential effects on water quality.

Potential beneficial effects on water quality were pointed out by two agencies. The Department of Interior indicated that, due to existing high salinity, flushing with high flows could benefit soil and floodway [A1-01]. The TPWD indicated that the Targeted River Restoration Alternative would promote improved water quality by reducing erosion and nutrient input from grazing and agriculture [A3-2], and water conservation irrigation practices could be beneficial for fish and wildlife [A3-4].

Three comments indicated that water quality would be affected by environmental measures under consideration [O8-21c, S33-3, S41-4]. The EBID further stated its belief that meanders, bank shavedowns, and surge flooding would significantly impact water quality by salinity increases [O8-21c], and vegetation increase on the floodway that would increase salt deposits by evapotranspiration [O8-21a].

Response

Potential beneficial or adverse changes in water quality would not be significant considering that the ROW is not irrigated, and is a minor component of the tributary basin. Up to 2,346 acres of modified vegetation management within the ROW under consideration (from mowed grasses and salt cedar to non-irrigated native grasslands and bosques) are not significant relative to return flows into the river from nearly 130,000 acres of irrigated lands (Rio Grande Project), and over 900 square miles of uplands in the tributary basin.

Subsection 4.1.6 - Issue B: Proposal of pumping as an overbank flood option.

The El Paso Water Utilities pointed out that controlled releases as part of the Targeted River Restoration Alternative would be a very inefficient use of Rio Grande Project water [O4-5]. Pumping of stream water was proposed as a far more efficient overbank flow method, if upstream releases were adopted as a measure by the USIBWC [O4-7].

Response

Controlled water releases were evaluated as part of the Targeted River Restoration Alternative suggested by various environmental organizations. It was intended to simulate “natural” peak spring flow discharges, and a means to destabilize and re-shape the channel (see Subsection 1.3.4 for discussion). The elevated water use required for implementation was one of the factors considered by the USIBWC in its decision not to adopt the Targeted River Restoration Alternative (see Section 2.13 on Selection of a Preferred Alternative). The USIBWC appreciates the input by El Paso Water Utilities, and will consider pumping of stream water as a supplemental overbank flow method to be used in conjunction with bank shavings.

4.2 FLOOD CONTROL

4.2.5 Integrated USIBWC Land Management Alternative

Subsection 4.2.5 - Issue A: Concerns regarding planting trees within the levees and restricting water flow.

A number of comments indicated that the USIBWC should not consider developments that would impede flow of water [O8-09b, S10-2, S10-5, S15-4, S16-1, S57-2]. The EBID further indicated that increased vegetation in the floodplain would endanger diversion structures [O8-09b]

Response

The USIBWC will comply with requirements of Directive Volume IV, Chapter 315, July 27, 2000. Maintenance forces continually monitor the river channel for fallen trees that need to be removed.

4.4 VEGETATION AND WETLANDS

4.4.1 Method of Analysis

Subsection 4.4.1 - Issue A: Reference communities for riparian ecosystem restoration.

The New Mexico Environment Department suggested a more holistic approach to riparian restoration that promotes a larger variety of plant species, including grasses [A9-08]. The EBID requested definition of the time period (1870, 1904 or 1935) used in the Draft EIS as a reference for ecosystem restoration [O8-19c], and indicated that the Draft EIS was unspecific regarding conditions on native vegetation in 1935 [O8-19a].

Response

While the project descriptions focus on cottonwood-willows as the core riparian vegetation, the Integrated USIBWC Land Management and Targeted River Restoration Alternatives are intended to result in development of a variety of plant species that have, as a predominant component, native grasses. A description of reference communities anticipated as a result of the measures under consideration was presented in Subsection 4.4.1.

Environmental improvements will not be based on recreating historical conditions before the RGCP construction, as discussed in Subsection 1.1.2, Criteria for Alternatives Formulation. Instead, reference communities described in Subsection 4.4.1 were selected as indicative of those communities that would develop under improved conditions.

Reference conditions for RGCP restoration are those at the beginning of the project construction in 1938. Those conditions refer to the physical changes in the river and floodway that resulted from the canalization action, *e.g.*, closing of meanders, clearing or mowing, dredging, *etc.* Reversing these conditions or modifying practices as a result of canalization were considered as opportunities or constraints when evaluating river management alternatives. The No Action Alternative was continuation of the management activity and the environmental condition that existed at the time the EIS started in 2001.

Reference conditions for RGCP restoration were, unfortunately, referred to as “baseline conditions used for restoration considerations” in Section 1.1.2 of the Draft EIS (first bullet). Use of the word “baseline” in that context could have led to misinterpretation with baseline conditions as used in subsequent Draft EIS sections for current management. This clarification was made in Subchapter I.G.

4.4.3 No Action Alternative

Subsection 4.4.3 - Issue A: Potential adverse effects of no-mow zones.

Some comments indicated that no-mow zones have become a nuisance, rather than fostering native vegetation, by developing tumbleweeds and other undesirable, non-native species [O8-15, O8-28, S10-1].

Response

Tumbleweeds represent a problem to farmers throughout the Rincon and Mesilla Valleys, particularly during the winter. By mowing over 3,500 acres of RGCP floodway, the USIBWC helps control this problem. The potential contribution of approximately 50 acres of no-mow zones to this regional problem is minimal. If no-mow zones were identified as a nuisance atypical of prevalent conditions in the region, the USIBWC has the prerogative to discontinue them. The language in the MOU indicates that “These green zones are provisional, pending the outcome of the Canalization EIS, and may or may not be permanent. In addition, in emergency situations (*i.e.*, experience in a flood event shows that the green zones, or a portion of them, causes or threatens damage to flood protection or an Act of God,

such as fire, requires USIBWC to take action), USIBWC retains authority to conduct maintenance in all these areas after notifying the citizens' environmental forum.”

A more relevant consideration is the potential effect of up to 1,641 acres of managed native grasslands under consideration as part of a modified river management strategy. The need for those areas to be managed was a key consideration in development of the alternatives, not only to ensure an adequate cover of native, rooted grasses, but to control salt cedar development in the absence of annual mowing.

4.4.5 Integrated USIBWC Land Management Alternative

Subsection 4.4.5 - Issue A: Extent of floodway vegetation for alternatives under consideration.

A comment requested clarification of the total acreage of restoration areas [S68-1], acreage derived from salt cedar removal [S68-2], extent of planting areas [S68-3, ST1-1], and extent of bosque enhancement [ST1-2].

Response

Locations, calculation methods, and size of restoration projects were discussed in the August 2003 Reformulation of Alternatives Report (Appendix I of the Draft EIS, also included in Appendix Q of the Final EIS). Numerous data sources were used to assess current conditions, historical characteristics (bosques, previous meanders before RGCP construction), and potential restoration locations throughout the 106-mile project. Criteria used in considering restoration projects included, among others, site elevation in relation to various river flow regimes, current vegetation community, width of ROW, and levee condition.

Implementing environmental measures could result in a net decrease in the acreage of salt cedar and other invasive species. In some areas with established salt cedar, implementing environmental measures would require removal of the salt cedar in order to promote native vegetation communities. Assumptions concerning the amount of salt cedar control as a result of implementing each environmental measure are found within Table 4.4-2 of the Draft EIS. In many cases, no net decrease of invasive species was assumed because mowing controls salt cedar within the ROW, and the majority of the ROW is currently mowed.

Where possible, natural regeneration was preferred over pole plantings. Some areas identified for planting under the Integrated USIBWC Land Management Alternative would be inundated by seasonal peak flows under the Targeted River Restoration Alternative, and would potentially not require plantings. The location and extent of plantings were assigned as a function of several criteria including floodway elevation in relation to various river flow regimes, ROW width, levee condition, location of former meanders (from historical maps), location of the hydrologic floodplain and current landcover. Historical data on water elevation and GIS analyses was used to identify potential restoration project locations.

Increases in bosque under the Targeted River Restoration Alternative would result from combination of seasonal peak flows, vegetation planting, partial reopening of meanders, and

management of conservation easements. A total of 1,549 acres of native bosque would be developed inside and outside the ROW from the following components: 189 acres of native vegetation planting; 516 acres inundated by seasonal peak flows; 73 acres resulting from reopening meanders; and 771 acres from voluntary conservation easements. Easements targeted for development of riparian bosque (from a total of 1,618 acres) were located in the hydrologic floodplain (Table 4.4-2 of the Draft EIS).

4.5 WILDLIFE HABITAT

4.5.1 Method of Analysis

Subsection 4.5.1 - Issue A: Farmlands provide wildlife habitat.

The value of farmland as wildlife habitat was pointed out by the New Mexico Pecan Growers organization [O2-3], and was reiterated by two other commentators [P23-2, S31-7e].

Response

The USIBWC fully agrees, because the agency considers farmlands along the RGCP a complement to environmental improvements. Farmlands not only provide supplemental wildlife habitat along the riparian corridor, as pointed out by the reviewers, but also represent managed buffer areas that isolate the corridor from urban expansion. This is one of the main reasons why not retiring farmland was adopted as a key goal in development of the alternatives. These criteria were expressed in the Reformulation of Alternatives Report, emphasized to document reviewers (Draft EIS, Appendix H: response to November 14, 2003 EBID letter, page 7, Issue II Concerns, Bullet #2), and reiterated in the Draft EIS (Subsection 2.9.2, Water Acquisition).

4.5.6 Targeted River Restoration Alternative

Subsection 4.5.6 - Issue A: Potential for habitat enhancement.

Two agencies emphasized the potential of this alternative for habitat development. Potential habitat for the southwestern willow flycatcher, yellow-billed cuckoo, and species was noted [A1-08, A3-6].

Response

Noted. A Biological Assessment describing all alternatives under consideration was submitted to the U.S. Fish and Wildlife Service. A response from the agency regarding findings is presented in Appendix P of the Final EIS.

4.6 THREATENED AND ENDANGERED SPECIES

4.6.1 Method of Analysis

Subsection 4.6.1 - Issue A: Additional assessment of effects on T&E species.

The Department of Interior recommended that project-related effects to the yellow-billed cuckoo be addressed in the Final EIS [A1-13].

Response

Information on T&E species in the RGCP was requested from federal and state agencies (USFWS, TPWD, and NMGF). Although the Yellow-billed cuckoo is considered a species of concern, it is not afforded the status of threatened or endangered. As such, it was not included in the T&E analyses.

A Biological Assessment on potential effects on T&E species was completed and submitted to USFWS on January 26, 2004. A USFWS letter of concurrence that the proposed action would not affect the continued existence of T&E species in the RGCP is presented in Appendix P of the Final EIS.

Subsection 4.6.1 - Issue B: Need for evaluation of T&E species.

An organization indicated that data provided on T&E species were excessive as environmental benefits to endangered species had little chance of attainment [O8-23g]. Another comment indicated that a BA by itself would have brought the USIBWC into compliance with the Endangered Species Act [S31-6b].

Response

Evaluation of T&E species and their habitat was a significant issue identified during the scoping of the alternatives, and a required EIS element. Data provided in the Draft EIS were a summary of the BA submitted to the USFWS (see USFWS response in Appendix P).

4.7 AQUATIC BIOTA

4.7.1 Method of Analysis

Subsection 4.7.1 - Issue A: Evaluation of habitat conditions.

The Alliance for the Rio Grande Heritage indicated that environmental effects on native fish species, attributed to the RGCP construction and operation, should have been analyzed in the Draft EIS. To illustrate its view, six native fish species were listed as no longer found in the RGCP reach [O7-07d]. The organization also indicated that RGCP effects on habitat condition for native fish species needed to be addressed [O7-05d].

Response

As indicated in Subsection 1.1.1, and further discussed in Section 2.8 (Issue A), the purpose of the EIS is to compare effects of current river management (No Action Alternative) practices to potential modifications of those management practices to enhance environmental conditions. Existing habitat conditions represent the reference baseline, described in detail in Section 3.7, and Appendix C of the Draft EIS.

Regarding the cited report indicating that six native species are no longer found in the reach below Caballo Dam, it should be noted that the author (Stotz 2000) does not attribute those losses to canalization. In fact, for the silvery minnow, speckled chub, Rio Grande bluntnose shiner, and Rio Grande shiner, it is specifically indicated that dispersal and recolonization is “[s]everely impacted by diversion structures, reservoirs, and changes to natural flow regimes.” Those conditions pre-date the RGCP, and are unrelated to changes in a river management strategy by the USBWC.

The habitat suitability analysis, based on water velocity and depth considerations, included both endemic and non-native species in the (Table 3-5). For both types of species, the limiting condition for fish reproduction was scarcity of low-velocity waters during the spring and early summer irrigation season. For this reason, providing backwaters for fish reproduction became the focus of habitat diversification measures incorporated into the river management alternatives under consideration.

4.7.6 Targeted River Restoration Alternative

Subsection 4.7.6 - Issue A: Potential for aquatic habitat development.

The TPWD indicated that Targeted River Restoration Alternative measures, such as reestablishing meanders, had the potential to establish aquatic macrophytes and improve instream habitat [A3-3], and potentially promote useable habitat and spawning for the Rio Grande silvery minnow [A3-5]. The EBID, in contrast, stated that it is unlikely that a sustainable population of fish can be developed unless greater allocations of water are made for this objective [O8-23h].

Response

The input is noted. Changes incorporated into the the preferred alternative focused primarily on the floodway, and will have a lesser potential for aquatic habitat diversification.

4.8 LAND USE

4.8.1 Method of Analysis

Subsection 4.8.1 - Issue A: Scope of the land use analysis.

The New Mexico Department of Agriculture pointed out a need to evaluate the management alternatives with regard to conflicts with local land use policies [A6-06].

Response

Because changes in river management alternatives were largely restricted to USIBWC jurisdictional lands with managed vegetation, few conflicts with local land use were anticipated. Compatibility with land use plans was emphasized in the recreational aspects of the RGCP, as city and county cooperative initiatives have been proposed for parks within the ROW. Only voluntary conservation easements were considered outside the RGCP, and for the most part referred to remnant bosques not in agricultural production.

4.8.4 Flood Control Improvement Alternative

Subsection 4.8.4 - Issue A: Watering easements.

A comment pointed out that the Draft EIS does not address how the alternatives will affect perpetual watering easements [P01-2]. Opposition was expressed to any proposal that impairs property rights and use of easements [P01-3].

Response

The right to cross USIBWC property to water livestock in the river was granted pursuant to and as a stipulation in a few deeds within the RGCP. This right is perpetual in nature, and the USIBWC does not anticipate any action ultimately taken by any of the modified river management strategies that will impact this right. If changes were eventually required for water quality improvement considerations, alternative watering methods that meet the deed holders' long-term needs and requirements will be proposed as part of the river management implementation.

4.8.5 Integrated USIBWC Land Management Alternative

Subsection 4.8.5 - Issue A: Economic impacts to the agriculture industry.

One comment indicated that farmland should be considered in the Draft EIS as an impacted resource [S31-7a]; other comments indicated that economic impacts to the agriculture industry in Doña Ana County were minimized in the Draft EIS [O8-23f, P03-5, P07-5]. The EBID indicated that retiring 3.9 percent and 16.6 percent of farmland out of production (in the 0.5-mile corridor along the RGCP) was a significant impact. With regard to farmland retirement estimates, a clarification was requested as to how they relate to much smaller percent values listed for water consumption [S20-2].

Response

Potential effects on farmland were an important consideration in the evaluation of alternatives, and were addressed in three separate resource areas: water, land use and socioeconomics. Effect on agricultural land use was, in fact, the primary criterion used in effects evaluation in Section 4.8.

In general, changes to farmlands as a result of modified river management practices were not extensive because they were largely limited to USIBWC lands. Only in the case of the Targeted River Restoration Alternative, was significant retirement of farmland anticipated relative to the 0.5-mile corridor (16.6 percent due to water rights acquisition and conservation easements). Regardless of the estimated values, an adopted goal in developing the alternatives was to minimize farmland retirement. For that reason, sponsoring on-farm conservation programs was given a high priority in the implementation of a modified river management alternative (see Subsection 2.9.2).

Potential farmland retirement based on the 0.5-mile corridor adjacent to the RGCP does exceed the value calculated on the basis of water use. The discrepancy, as discussed at the beginning of Section 4, Issue C, is due to the reference value used for water resources (water diversions along the RGCP, the potential source of water rights).

Subsection 4.8.5 - Issue B: Effects on retired farmland.

The New Mexico Department of Agriculture recommended discussing the fate of lands potentially retired from agricultural production [A6-07].

Response

To minimize farmland retirement, the preferred implementation strategy to secure water is funding of water conservation programs, as described in Subsection 2.9.2. If farmland retirement were required, conservation easements would be the preferred land use as part of the Targeted River Restoration Alternative. This option is limited, as only 288 acres of irrigated cropland are currently considered for voluntary conservation easements.

4.8.6 Targeted River Restoration Alternative

Subsection 4.8.6 - Issue A: Recreational use of the ROW.

Two comments were received regarding recreational use of the ROW. The first comment questioned who will be responsible for park cleanliness and safety [P05-5], while the second mentioned that enhanced recreational opportunities would result from the Targeted River Restoration Alternatives [S20-3].

Response

Each cooperating organization is responsible for park O&M according to terms agreed by the USIBWC. Public use of managed riparian bosques or grasslands is not currently anticipated; however, the USIBWC would consider proposals for educational/recreational use of native vegetation areas.

4.9 SOCIOECONOMIC RESOURCES AND ENVIRONMENTAL JUSTICE

4.9.1 Method of Analysis

Subsection 4.9.1 - Issue A: Use of the Economic Impact Forecast System (EIFS).

The New Mexico Department of Agriculture indicated that the EIFS was not properly documented, and support data were not readily available [A6-08]. The agency recommended that detailed cost estimates be included in appendices, including the Rational Threshold Value (RTV) model data [A6-10]. Two comments stated that the socioeconomic analysis did not analyze repercussions in the local economy [O8-10c, S31-7h], and that use of annual figures as a reference was incorrect [O8-10c].

Response

A new Appendix N, with additional EIFS and RTV support documentation, has been included in Chapter I of the Final EIS. Regarding the lack of analysis of repercussions to the local economy, the comment is incorrect. The purpose of the EIFS is to account for indirect and cumulative effects on the economy based on direct costs. As to the use of annual figures, this is a correct input for comparison to the local economy. Use of multi-year comparisons would simply add the same multiplier to the anticipated change, and to the local economy used as a reference.

Subsection 4.9.1 - Issue B: Reference data for effects evaluation.

The New Mexico Department of Agriculture indicated that socioeconomic impacts should be discussed separately for each county affected [A6-09]. The EBID questioned the crop value used in potential farmland retirement due to water rights acquisition [O8-10b]. A reviewer stated that the Draft EIS misrepresents the importance of agriculture in the three counties affected by the project [S31-7d].

Response

A tabulated summary by county has been added in Chapter I of the Final EIS. Crop production values were obtained as indicated in Subsection 4.9.1. Crop distribution, as reported in CH2M-Hill 2000b, reflects EBID values excluding pecans. This high-value crop was excluded as it would not be a likely candidate for land conversion. Crop distribution values used, and crop gross revenue (from NMDA, Agricultural Statistics Service, 2001; USDI, U.S. Census of Agriculture, 1997), are as follows:

- Alfalfa, 30 percent, \$630 per acre;
- Cotton, 28 percent, \$850 per acre;
- Vegetables, 19 percent, \$3,500 per acre;
- Forage, 18 percent, \$235 per acre;
- Grains, hay, and pasture, 5 percent, \$250 per acre.

With regard to the importance of agriculture in the three counties potentially affected by a modified RGCP management alternative, it must be pointed out that the socioeconomic analysis covered two separate issues: 1) socioeconomic changes (labor, housing, income) due to levee rehabilitation and construction, and 2) potential farmland retirement due to environmental measures for one of two scenarios analyzed, with and without implementation of an on-farm water conservation program. In Section 4.9 of the Draft EIS, each issue was analyzed using different criteria and reference values, as described below.

- Levee construction is an economic input of federal funds, and would represent an overall benefit to the region. This input was compared to the region of influence, the combined values for labor, housing, and income in Sierra, Doña Ana, and El Paso Counties. This approach actually tends to under-represent potential benefits at the local level. An updated analysis is presented by individual county in Subchapter I-E.
- For farmland, a very different analysis approach was used considering that lands in the RGCP vicinity are primarily agricultural. It was also considered that these lands would be the likely source of water rights. For analysis of potential effects of farmland retirement, no county-wide reference data was used as erroneously indicated by the reviewer; instead, the Rio Grande Project irrigated land acreage was used as a reference. In response to an EBID comment, indicating that environmental measures would be located largely in New Mexico, the analysis was modified in the Final EIS to assume that only EBID would be the source of water rights. This revised analysis is also presented in Subchapter I-E of the Final EIS.

Subsection 4.9.1 - Issue C: Farmland Protection Issues.

A reviewer indicated that farmland protection issues were not adequately addressed, and that requirements pursuant to Farmland Protection Policy Act (FPPA) should be incorporated early into the process [S31-7b].

Response

The FPPA is intended to minimize the contribution of Federal Programs to the conversion of important farmland to non-agricultural uses. No impacts on prime farmland, as defined by the FPPA, are anticipated as a result of the modified river management alternatives for the following reasons:

- Nearly all measures under consideration would be conducted in non-agricultural lands currently owned and maintained by the USIBWC.
- The preferred implementation strategy to secure water, described in Subsection 2.9.2, is funding of water conservation programs to minimize farmland retirement.
- Voluntary conservation easements, outside the ROW, would not be converted to urban uses, but remain as native vegetation areas (grasslands or bosques).

If direct water acquisition resulting in loss of irrigated farmlands were eventually required, prior consultation with the NRCS would be conducted as required by the FPPA. The consultation would ensure that identified water rights sources are not prime farmlands,

and that those sources are assigned a farmland conversion impact rating. This determination can be done by the NRCS once specific lands are identified as potential water rights sources (U.S. Department of Agriculture, Form AD-1006).

4.9.5 Integrated USIBWC Land Management Alternative

Subsection 4.9.5 - Issue A: Environmental justice effects evaluation.

A comment pointed out that mostly minority populations would be affected, and indicated that this is not mentioned in the Draft EIS [O8-11]. Another comment indicated that additional water uses could increase unemployment [S56-2].

Response

Environmental justice baseline data documented the predominance of minority populations in Doña Ana and El Paso Counties (Table 3.9-6). Subsection 4.9.5 indicates that potential job losses by minority groups due to farm retirement would be coupled with potential job increases by levee rehabilitation. This issue was quantified in Table 4.9-2.

Subsection 4.9.5 - Issue B: Other considerations related to land use.

Two comments stated a need to evaluate increased vegetation effects on public health, as environmental projects were believed to increase disease vectors along populated areas [O8-27, S31-7g]. Another comment suggested adding to the EIS analysis that environmental measures would provide benefits to farmers and the general public, such as salt cedar management, and shade and reduced evaporation by the new trees [S05-3].

Response

Environmental measures under consideration would not be irrigated, and largely limited to the areas surrounded by extensive irrigated agriculture. Under those conditions, the contribution of a modified ROW management, if any, would be minimum.

4.14 MITIGATION MEASURES

Section 4.14 - Issue A: Proposed mitigation measures.

Two agencies commented on proposed mitigation measures. The Department of Interior concurred with mitigation measures for biological resources, as listed in Table 4.14-3 [A1-15]. The New Mexico Department of Cultural Affairs indicated that listed measures were a discovery protocol [A5-4], and recommended a programmatic agreement with New Mexico and Texas State Preservation Offices (SHPO) as part of the Implementation Strategy [A5-5].

Response

The USIBWC appreciates the input of the agencies. A programmatic agreement with the New Mexico SHPO and Texas SHPO will be accomplished as part of the Implementation Strategy.

Section 4.14 - Issue B: Considerations for construction activities.

The New Mexico Environment Department pointed out the Clean Water Act requirements for various actions such as excavation sites, dredging, and prevention of refuse disposal in streams [A9-09, A9-10, A9-11, respectively]. The need to protect native riparian vegetation and wetlands during construction in stream banks was also indicated [A9-12].

Response

Anticipated institutional involvement for changes in river management (at the federal, state, and local level) are described in Section 1.4 of the Draft EIS. Permits and requirements are also listed.

4.15 CUMULATIVE EFFECTS

Projects and actions not considered applicable for cumulative impacts were previously discussed in Section 2.8 [comments O7-07b, S31-2c, S31-8b]. Other applicable issues are listed below.

4.15.1 Regional Plans

Subsection 4.15.1 - Issue A: Cumulative impacts of regional plans.

Multiple comments indicated a need to further evaluate cumulative impacts associated with two projects listed in Section 4.15, the El Paso-Las Cruces Regional Sustainable Water Project [A9-04, O8-07b, O8-26, S31-3g, S31-5e, S31-8a], and an ongoing study to optimize flow regulation in the Upper Rio Grande [O7-13b]. Regarding the latter study, the EBID pointed out that Middle Rio Grande flow regulation will not affect irrigation flows along the RGCP, as erroneously stated in Subsection 4.15.1 of the Draft EIS [O8-24e]. The EBID also indicated a need to include the 2003 New Mexico Water Plan in the cumulative effects evaluation [O8-07a].

Response

Revised text has been included in Chapter I of the Final EIS which provides a more detailed evaluation of potential cumulative effects due to regional plans. In the revised text, the statement indicating that “more water would be available for measure implementation as a result of flow regulation” in the Upper Rio Grande was removed. As indicated in

Subsection 2.8.1 of the Draft EIS, flow regulation assessment will not extend south of Elephant Butte Reservoir; only flood routing will be evaluated for the RGCP segment.

The State Water Plan was published by the New Mexico Office of the State Engineer on December 23, 2003, after the release date of the Draft EIS for RGCP management alternatives. A review of the plan and potential implications for modified RGCP management alternatives has been added to Subsection 4.15.1, Chapter I of the Final EIS.

4.15.2 Analysis of Structural Condition of the Levees

Subsection 4.15.2 - Issue A: Impact evaluations related to levee system improvements.

The Alliance for the Rio Grande Heritage indicated that potential effects of flood control improvements were interrelated to restoration initiatives, and required joint analysis [O7-03g, O7-06c, O7-08b, O7-13a].

Response

The potential interaction between a revised flood control strategy and restoration potential along the RGCP was discussed in detail in Subsection 2.7.3 of the Draft EIS. Changes to the levee system, such as those resulting from the structural condition study, are not anticipated to offer significant opportunities for restoration beyond those already analyzed and incorporated into the Targeted River Restoration Alternative.

RESPONSE TO COMMENTS: SECTION 5, CONSULTATION AND COORDINATION

Comments related to Section 5 referred to preparation and public review of the Draft EIS (new Subsection 5.1.4 added to the Final EIS).

Subsection 5.1.4 - Issue A: Location of public hearing.

A public hearing was not held in New Mexico - [A6-01, O8-17d]. An extension to receive comments was only extended for a few days [O8-13c]. One comment indicated that a public hearing was not advertised or conducted in New Mexico where the greatest impact will occur [S19-4]

Response

An administrative decision was made to have one public hearing in an effort to be a fiscally responsible agency and hold costs down based on the fact that an additional stakeholder meeting was unnecessary considering all of the meetings that have taken place over the many years of document preparation since 1999 (see also, response to comment O8-13c). The public hearing was held on January 27, 2004 at the United States Section, International Boundary and Water Commission in El Paso, Texas as scheduled. There was ample advance notification of the public hearing, and 35 people signed the attendance sheet. Of those, three provided verbal comments. The official transcript of the Public Hearing is presented in Appendix L of the Final EIS.

An additional stakeholder meeting was deemed unnecessary considering all the meetings that have taken place over the many years of EIS development, not to mention that an additional public hearing would have resulted in additional costs for transcription (see also, response to comment A6-01). Regarding the public review period for the Draft EIS, the original review period was 45 days which is 15 days more than the 30-day minimum review period required by CEQ regulations. The 15 days above the minimum were given in consideration of the holiday release of the Draft EIS. On top of the 45 days, an additional 20 days were added to provide a total review period of 65 days. This was considered a reasonable amount of time to review the Draft EIS.

Subsection 5.1.4 - Issue B: Comment submittal

A comment questioned the decision not to accept e-mail comments [S71-4].

Response

Based on comments received during the Regional Sustainable Water Project Draft EIS public review period, the e-mail system was used largely by special interest groups to send form comment letters. There was very little substantive commentary provided by e-mail; therefore, an administrative decision was made when preparing the cover letter for the

availability of the Draft EIS to only accept written comments sent by United States Postage. It was believed that this would encourage substantive comments and discourage the influx of block mailings; this proved to be true. The December 18, 2003 “Dear Reviewer” letter reflects that decision by only providing the United States Postage mailing address to send comments.

Subsection 5.1.4 - Issue C: Proposal to delay issuance of Final EIS

Delay Final EIS, revise Draft EIS, when the proposed “cooperative hydraulic study” is complete [O7-01b, O7-09b]. More refined restoration estimates are anticipated [S68-4, ST1-3].

Response

There is no basis or need to delay or revise the Draft EIS to include the results of a “Cooperative hydraulic study.” The modeling effort for the Draft EIS provided conservative estimates for environmental effects and environmental conditions across all alternatives for the USIBWC, and the public, to have an understanding of the environmental consequences and to make an informed decision on selection of an alternative for implementation. The USIBWC realizes that as implementation proceeds, more detailed information will be needed to refine cost estimates, restoration site dimensions, and levee improvements locations. The use of a 2-dimensional hydraulic model, as well as other site specific information, may be used to enhance our planning of environmental measures, flood control and other activities associated with implementing the preferred alternative. These tools will be applied at that time.

RESPONSE TO COMMENTS: DRAFT EIS APPENDICES

Comments related to Draft EIS Appendices were limited to Appendix F, Controlled Water Releases. The following responses include two general issues raised by commentators.

Appendix F - Issue A: Combined evaluation of Caballo Reservoir releases and river restoration options.

A recommendation was made to consider multiple reservoir releases and river restoration options [A9-06] as a basis to assess viability of the Targeted River Restoration Alternative [O7-02g], and sustainability of restoration projects [O7-02h].

Response

The evaluation was made for the theoretical maximum floodable area, which represents best-case scenario for restoration, and most conservative for potential effects of vegetation development (for example, potential reduction in flood containment capacity). Further analysis would be warranted for actual implementation of controlled water releases, once legal, regulatory, funding, and water rights issues were addressed. Controlled water releases are not part of the preferred alternative selected in the Final EIS, the Integrated USIBWC Land Management.

Appendix F - Issue B: Method of analysis of controlled water releases.

An alternative approach for controlled releases was described, modifying the theoretical analysis provided in the Draft EIS by incorporating variability in reservoir stage and storage [O7-11a], as well as pulse frequency and volume [O7-11b and O7-11c]. It was concluded that such analysis would be needed to better define restoration areas [O7-11d, O7-11e], and would improve impact analysis [O7-10a, O7-11f].

Response

A conservative analysis approach was used, as indicated in the previous response. Further refinement would have been justified as part of an implementation strategy if controlled water releases had been adopted.