

SECTION 1 PURPOSE OF AND NEED FOR ACTION

This section introduces the Draft Environmental Impact Statement (DEIS), discusses the purpose and need, gives the basis for preparing the DEIS, reviews prior environmental evaluations relevant to the DEIS, details the background organization and mission of the United States Section, International Boundary and Water Commission (USIBWC), describes the function and history of the Rio Grande Canalization Project (RGCP), and summarizes the permits and licenses under authority and institutional involvement for this proposal. It concludes by outlining the structural organization of the DEIS.

1.1 PURPOSE OF AND NEED FOR ACTION

1.1.1 Proposed Action and Need

The USIBWC is evaluating long-term river management alternatives for the 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 was constructed from 1938 to 1943 to provide flood control and facilitate water deliveries to the Rincon and Mesilla Valleys in New Mexico, El Paso Valley in Texas, and Juárez Valley in Mexico.

Since its completion the RGCP has been operated and maintained by the USIBWC based in El Paso, Texas. The agency is currently evaluating river management alternatives for future operation and maintenance of the RGCP to enhance ecosystem restoration while accomplishing its flood control and water delivery mission. Potential environmental effects of implementing these alternatives are evaluated in this DEIS.

The USIBWC currently implements operation and maintenance procedures to enhance ecosystem functions within the RGCP. Although current procedures will continue to improve ecological conditions, 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. Thus, the USIBWC recognizes the need to accomplish flood control, water delivery, and operations and maintenance activities in a manner that restores, if possible, and enhances the restoration of native habitat conditions in the RGCP.

The USIBWC proposes to implement expanded ecosystem enhancing river management strategies for its RGCP operation and maintenance activities, while continuing to deliver water and provide flood control in accordance with the existing convention, treaty, and agreements between the United States and Mexico. The potential for reestablishing native ecosystem conditions with actions that would be implemented under the new river management alternatives would be greater than that which can be achieved under the current operation and maintenance practices. The river management strategies being considered include measures such as in-stream structures and other river

alternatives to improve riparian wildlife habitat, and the use of watershed-oriented and non-structural operational practices that support restoration of riparian and aquatic habitats. The river management strategies also include construction activities such as raising and strengthening existing levees, and widening or armoring the channel. Under these expanded management strategies, the USIBWC would take a leadership role in promoting environmental enhancement of the Rio Grande corridor from Percha Diversion Dam to American Diversion Dam.

1.1.2 Criteria for Alternatives Formulation

The criteria for selecting this strategy would be based on opportunities and constraints dictated by the RGCP functional requirements and river conditions. Over a three year period the USIBWC formulated alternatives through extensive review of river restoration methods and techniques, modeling of river conditions, scoping and consulting with various stake holders and regulatory agencies. The compilation of these activities resulted in overall criteria used as guidance for alternative management strategies proposed in this DEIS. These criteria are described below.

- Consider ecosystem restoration and environmental improvements based on post Canalization project construction. The challenge is not restoring the river to historic conditions but to make environmental improvements to a river that now functions as a water conveyance and delivery system. Baseline conditions used for restoration considerations will be the 1938 time period.
- Develop environmental measures that would take advantage of existing hydrologic conditions and the ability to manage river flows from upstream reservoirs within certain reaches of the river. Management of river flows from upstream reservoirs would be constrained by infrastructure limitations, water delivery requirements and water availability. Partially restoring riparian ecosystem within these hydrologic constraints has been demonstrated in other reaches of the Rio Grande.
- Modify USIBWC management practices within the right-of-way (ROW) that would enhance ecosystem improvements for wildlife while allowing the USIBWC to meet proper flood control requirements. Past USIBWC vegetation management practices within the ROW may be changed to further improve ecosystem conditions within the RGCP.
- Evaluate flood control issues including non-structural methods in conjunction with river restoration potential. The effects of restoration or habitat improvements must be consistent with USIBWC mission requirements.
- Identify and evaluate environmental measures that would consider restoration within and outside of the USIBWC ROW. Opportunities for environmental improvements exist adjacent to the ROW on lands not managed by the USIBWC.
- Consider channel morphology changes that would enhance riparian and aquatic habitats. Meanders and arroyos entering the RGCP have been modified in the past to enhance water conveyance.

- Review the benefits of in-stream structures for improving aquatic habitat and consider expanding in-stream structures within the RGCP . In stream structures have been added to the RGCP as mitigation to improve aquatic habitats.

These criteria above were used to establish a suite of alternatives for evaluating in the DEIS. All alternatives are evaluated and given the same level of consideration. After comments have been received on the DEIS the USIBWC will then select a preferred alternative. The preferred Alternative will be identified in the final Environmental Impact Statement.

1.1.3 Authority

Changes under consideration for RGCP operation and maintenance and implementation of environmental measures constitute a major federal action requiring preparation of an Environmental Impact Statement 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, 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 (46 CFR 44083-44094).

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

1.2 BACKGROUND

1.2.1 USIBWC Organization and Mission

The International Boundary and Water Commission was created by the Convention of 1889 to apply the rights and obligations that the Governments of the United States and Mexico assumed under the numerous boundary and water treaties and related agreements. Application of the rights and obligations is to be accomplished in a way that benefits the social and economic welfare of the peoples on each side of the boundary and improves relations between the two countries. The agency, which before 1944 was known as the International Boundary Commission, consists of a United States Section and a Mexican Section.

The Convention of 1906 provided for the distribution between the United States and Mexico of waters of the Rio Grande above Fort Quitman, Texas for the 89-mile international boundary reach of the Rio Grande through the El Paso-Juárez Valley. This Convention allotted waters of the Rio Grande to Mexico in the amount of 60,000 acre-feet annually of the waters of the Rio Grande to be delivered in accordance with a

monthly schedule at the headgate to Mexico's Acequia Madre just above Ciudad Juárez, Chihuahua. To facilitate the water deliveries, the United States constructed the Elephant Butte Dam in its territory in 1916. The agreements include the provision that, in case of extraordinary drought or a serious accident to the irrigation system in the United States, the amount of water delivered to the Acequia Madre shall be diminished in the same proportion as the water delivered to lands under the irrigation system in the United States downstream of Elephant Butte Dam.

The rights and obligations established in the conventions, treaties, and agreements between the United States and Mexico include:

- Distribution between the two countries of waters of the Rio Grande and of the Colorado River;
- Regulation and conservation of waters of the Rio Grande for use by the two countries through joint construction, operation and maintenance of international storage dams and reservoirs and plants for generating hydroelectric energy at the dams; and regulation of the Colorado River waters allocated to Mexico;
- Protection of lands along the river from floods through levee and floodway projects; and solution of border sanitation and other border water quality problems;
- Preservation of the Rio Grande and the Colorado River as the international boundary; and
- Demarcation of the land boundary.

The mission of the United States Section of the International Boundary and Water Commission (referred to as the USIBWC in this document) is "... to provide environmentally sensitive, timely, and fiscally responsible boundary and water services along the United States and Mexico border region." The USIBWC "...pledges to provide these services in an atmosphere of binational cooperation and in a manner responsive to public concerns." By this, the USIBWC is committed to protecting and enhancing riparian and aquatic habitat in the RGCP.

To accomplish its mission in this reach of the Rio Grande, the USIBWC has: constructed, operated, and maintained the RGCP; implemented a Rio Grande Management Plan for Sediment Control; signed an agreement for improving the environmental quality of the RGCP; implemented environmental enhancement actions; and developed a river management plan for the overall management of the RGCP. Figure 1-1 depicts the RGCP location.

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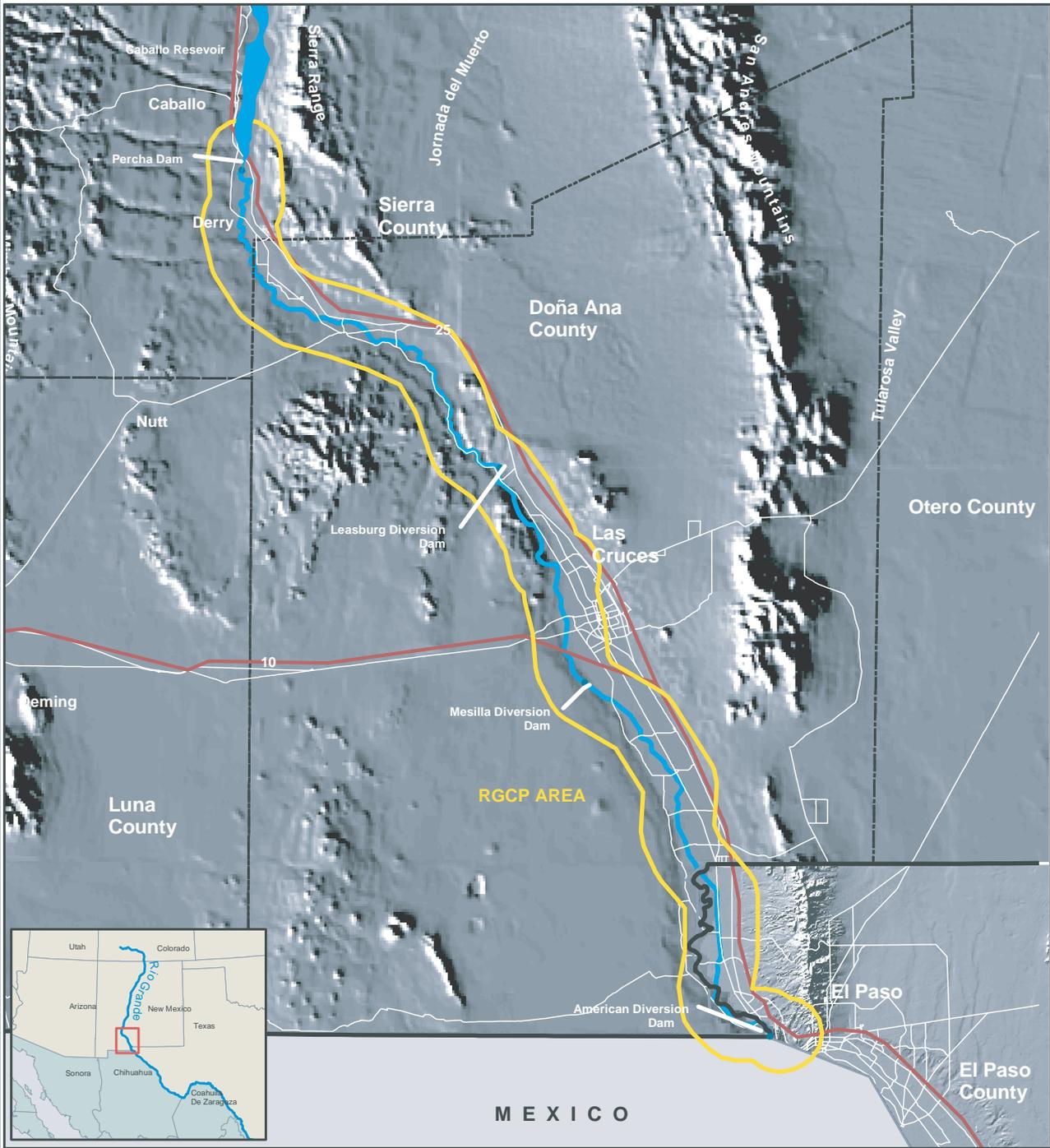


Figure 1-1
Location of the Rio Grande Canalization Project (RGCP)

SCALE = 1 : 1,000,000 or 1 INCH = 83,333 FEET
UTM Zone 13 N / NAD 83



United States Section,
International Boundary Water Commission
December 2003

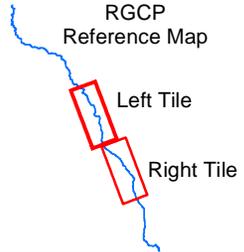
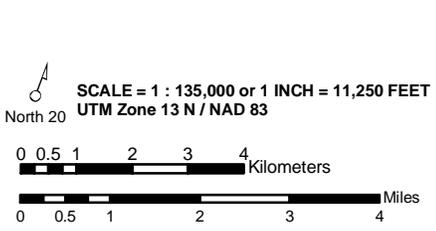
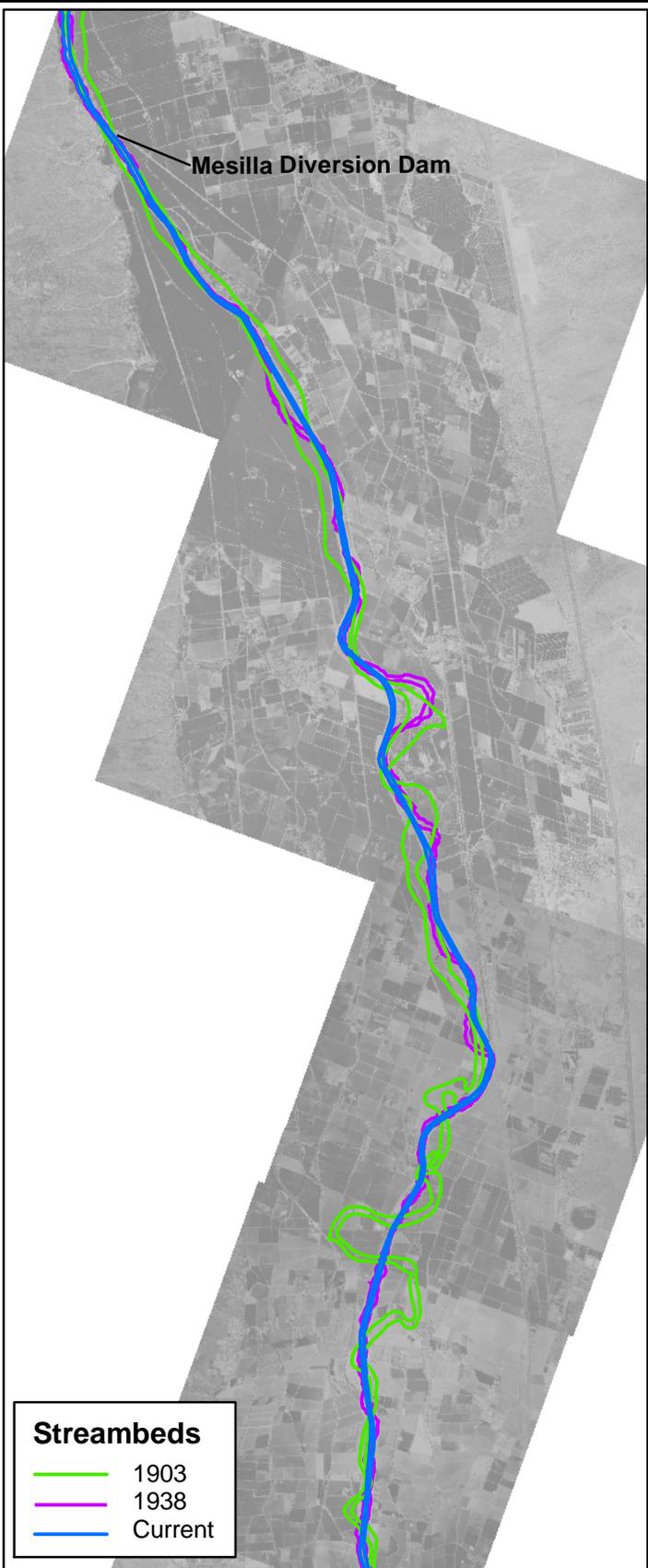
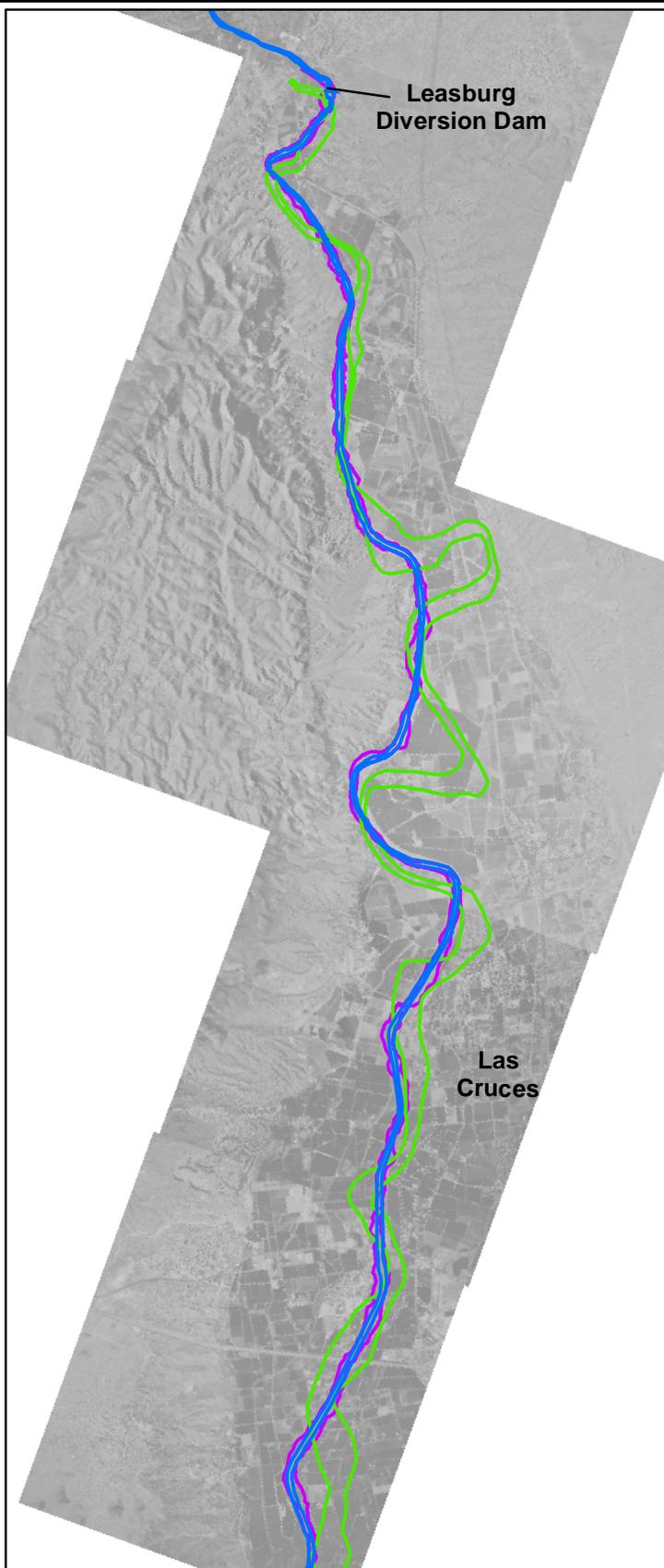


Figure 1-2
Comparison of Current Channel and Pre-RGCP
Conditions in Rincon and Mesilla Valleys



United States Section,
International Boundary Water Commission
December 2003

1.2.2 Rio Grande Canalization Project

The RGCP was constructed between 1938 and 1943, as authorized by an Act of Congress approved June 4, 1936 (49 Stat. 1463) to facilitate compliance with the 1906 Convention and to properly regulate and control, to the fullest extent possible, the water supply for use in the two countries as provided by the treaty. The RGCP includes the river channel and adjoining right-of-way for which the USIBWC has legal control. The RGCP extends for about 105.4 miles along the Rio Grande from the Percha Diversion Dam, located downstream from Caballo Dam in Sierra County, New Mexico, to the vicinity of the American Diversion Dam in El Paso County, Texas (Figure 1-1).

The 1936 Act authorized the construction and operation and maintenance (O&M) of the RGCP in agreement with the Engineering Record Plan of December 14, 1935 (Baker 1943). Major elements of the plan were acquisition of ROW for the river channel and adjoining floodways; improvement of the alignment and efficiency of the river channel conveyance for water delivery; and flood control measures that extend through the Rincon and Mesilla Valleys of New Mexico and El Paso Valley in Texas.

Channel Construction

As part of the RGCP, a deeper main channel was dredged for a length of 95 miles to facilitate water deliveries for irrigation. The river varies in width from 175 to 300 feet with a depth of 2 to 3 feet in the lower reaches and 7 to 10 feet in the upper reaches. Sections of the river bank are armored with rock revetment to reduce erosion and help maintain a consistent channel alignment. The canalization process removed a number of meanders, reducing the overall RGCP length by approximately 10 miles due to channel cutoffs (Baker 1943). Figure 1-2 illustrates current river alignment in the Rincon and Mesilla Valleys relative to the 1938 configuration at the beginning of the RGCP construction (New Mexico Resource Geographic Information System data, <http://rgis.unm.edu/intro.cfm>). Stream alignment in 1903 is also presented to illustrate extensive changes in stream configuration, largely associated with upstream flow control, that preceded by several decades construction of the RGCP.

Improvement in the river channel conveyance efficiency was required to deliver irrigation waters both to Mexico, in compliance with the Convention of 1906, and to the USBR Rio Grande Project in the Las Cruces and El Paso region. The USBR Rio Grande Project is a regional water initiative that furnishes irrigation water for about 178,000 acres of land, and electric power for communities and industries in south-central New Mexico and west Texas. Elephant Butte Reservoir, constructed from 1912 to 1916, provides most of the storage for the USBR Rio Grande Project, while three diversion dams route stored water to the irrigation canals: Leasburg Dam, completed in 1908, and Percha and Mesilla Dams, constructed between 1914 and 1919 (USBR 2002).

Flood Control

Flood control levees were placed along 131 miles of the RGCP, nearly two-thirds of its length. Associated flood control activities included clearing and leveling of approximately 3,400 acres on the floodplain, diverting arroyo outlets, and construction of

sediment control dams. The total sediment volume moved during the original canalization project was over 13 million cubic yards (Baker 1943). Additional features included installation of pipe culverts and drainage gates, removal and construction of bridges, building of access roads, and placement of miles of fence revetment to prevent erosion and create new channel banks.

Since completion of the RGCP, a significant operational change was the construction of sediment/flood control dams in tributary arroyos in the early 1970s by the United States Natural Resources Conservation Service (NRCS). A combination of flood control dams at Broad Canyon, Green Canyon, Arroyo Cuervo, and Berrenda Arroyo, controls discharges over 300 square miles of the RGCP tributary basin, and reduce the flood peak by an estimated 40 percent (USACE 1996).

Operations and Maintenance

The USIBWC has been responsible for maintaining the flood control and water delivery capabilities of the RGCP since its completion in 1943. To accomplish this mission the agency performs O&M activities that include sediment removal from the channel and lower end of the arroyos; leveling of the floodway; vegetation management along channel banks, floodway, and levees; replacement of channel bank riprap; care of dams on arroyos; and maintenance of infrastructure such as levee roads, bridges, and gates at the American Diversion Dam.

Throughout the years, the USIBWC has strived to incorporate environmental measures and operate and maintain the RGCP to enhance ecosystem restoration while complying with the Congress-mandated mission of flood control and efficient water deliveries to the States of New Mexico and Texas, and to Mexico. Environmental measures included limited planting of cottonwood trees, selective mowing to retain native vegetation and control salt cedar, test areas of limited mowing, and use of artificial in-stream structures to diversify aquatic habitat as required by a Section 404 dredging permit issued by the USACE.

1.3 DEIS PREPARATION

1.3.1 Memorandum of Understanding

In 1998 the Southwest Environmental Center (SWEC), an environmental advocacy organization based in Las Cruces, New Mexico, stated its belief that an updated, comprehensive Environmental Impact Statement was required for continued operation and maintenance of the RGCP, and alleged violations of the Endangered Species Act and NEPA in correspondence addressed to the USIBWC Commissioner, the U.S. Secretary of State, and the U.S. Secretary of the Interior. On March 22, 1999 the USIBWC and SWEC signed a Memorandum of Understanding that established the terms for the preparation of the Environmental Impact Statement and called for continued flood control while improving the environmental quality of the RGCP. The Memorandum of Understanding also established provisional green zones where mowing would be minimized, a limited tree-planting program, and the Rio Grande Citizens' Forum, a

quarterly public meeting that provides interested stakeholders the opportunity to learn and discuss Environmental Impact Statement developments.

1.3.2 Agency and Public Participation

The USIBWC issued a Notice of Intent for preparation of the Environmental Impact Statement in August 1999, and conducted two public scoping meetings during October 1999 in Las Cruces, New Mexico, and El Paso, Texas. Preliminary alternatives were then developed and presented for stakeholder review during two technical workshops conducted in September 2000 in El Paso, Texas, and a public meeting in Las Cruces, New Mexico in October 2000. An Alternatives Formulation Report was issued in March 2001 as the basis to determine potential effects associated with river management alternatives for the RGCP (Parsons 2001a).

Following preparation of the Alternatives Formulation Report, the USIBWC conducted additional meetings and focused workshops with representatives of regulatory agencies, irrigation districts, and environmental organizations. These additional meetings were conducted to address comments and concerns expressed to the USIBWC by stakeholders after review of the Alternatives Formulation Report posted on the USIBWC website. Based on input from additional stakeholder contacts, river management alternatives and associated environmental measures were modified to further address stated concerns and recommendations. The Reformulation of River Management Alternatives for the RGCP (Reformulation Report) was completed in August 2003 to document modifications to the alternatives since preparation of the Alternatives Formulation Report, and the rationale for these modifications (Parsons 2003a).

The USIBWC followed an extensive public consultation process for development of the alternatives to be evaluated in the DEIS, and subsequent reformulation. The consultation process followed in the development of alternatives for the DEIS is described in detail in Section 5, Consultation and Coordination. Key issues raised during the consultation process are described below.

1.3.3 Significant Issues by Resource Category

Issues identified during the scoping process and formulation of alternatives were organized by resource category. Key concerns are discussed below and a summary is presented in Table 1.3-1. This table also provides cross-references to sections of this DEIS where those issues are addressed.

Water Resources

A number of issues associated with water resources were presented during the scoping meetings, and were a major consideration in the formulation of alternatives. Concerns were stated by the EBID and EPCWID#1 on the effects of modified river management alternatives on water rights and water availability. A particular concern to the irrigation districts was the possibility that environmental measures such as increased vegetation growth in the floodway, would further reduce water availability during

drought conditions. Questions were also raised on effects on water delivery efficiency and changes in water quality that would affect downstream uses.

Flood Control

Evaluation of changes in flood control management approach were suggested by environmental organizations during scoping to emphasize overall floodway management. This approach would include levee relocation as non-structural flood control measure that would support river restoration by expanding the floodway and allowing reopening of meanders. This recommendation was based on the expectation that potential solutions to RGCP levee deficiencies could be coupled with those environmental improvements. Another suggested measure was the control of developments in the floodplain outside the USIBWC jurisdiction by changes in land use planning. A flood control concern expressed by the irrigation districts was the potential for a significant reduction in RGCP flood containment capacity by increased riparian vegetation growth.

Soils

A key issue identified during scoping was the control of erosion, and thus sediment load to the river. Some stakeholders recommended erosion control by increased vegetative cover and watershed management as opposed to the use of structural measures such as construction of sediment dams in tributary basins.

Vegetation

Development of native riparian vegetation along the RGCP was a central issue in the scoping and alternatives formulation. Cottonwood-willow bosque establishment by planting and lowering of stream bank (shavedowns) were recommended. Controlled releases from upstream reservoirs were also suggested to induce over-bank flows. Other measures proposed during scoping were the reestablishment of wetlands and control of salt cedar and other invasive plant species in the floodway. A key issue discussed during alternative formulation was the adoption of reference conditions for stream restoration

Wildlife Habitat and Endangered and Special-Status Species

The need to promote wildlife habitat and monitor overall improvement of biological conditions, as well as Fish and Wildlife Coordination Act Report preparation, was stated during scoping meetings. Concerns were also expressed on potential effects on state and federal listed endangered and threatened species.

Aquatic Biota

Aquatic habitat and biota improvements were identified as key issues during scoping and development of alternatives. Promoting meandering for habitat improvement was suggested, including land acquisition to promote stream widening (move back or breach levees) and other changes in channel structure and geometry. Targeting the mouth of arroyos for habitat improvement was also suggested during scoping, as well as establishment of in-stream flows.

Table 1.3-1 Summary of Issues Identified During Public Scoping and Alternatives Formulation

<i>RESOURCE CATEGORY</i>	<i>RELATED ISSUES</i>	<i>SECTION CROSS-REFERENCES</i>
Water Resources	Effects on water rights and water availability Promotion of more efficient water usage and water conservation Effects on water quality Potential loss in water delivery capability Concern of implementation during drought conditions	4.1.1 – 4.1.6 2.9.2 4.1.5, 4.1.6 4.1.1 – 4.1.6 2.9.2, 3.1.1
Flood Control	Effects of riparian vegetation growth on flood control Change emphasis from flood control to floodplain management Expand floodplain to manage floodwaters and sediment: and non-structural flood control	4.2.5 2.7.3, 2.9.3 2.7.3, 2.9.3
Soils	Watershed management to reduce erosion Control erosion through vegetative rather than the use of structural methods	2.3.2, 2.9.3 2.3.2
Vegetation	Riparian habitat restoration by development of a native forested strip along the river Remove salt cedar and other invasive species Overbank flooding to restore historic habitat and fluvial processes Re-establish wetland systems for water quality and habitat	2.4.2, 2.5.2, 4.4 2.4.2, 2.5.2, 4.4.1 2.5.2, 4.4.6 4.4
Wildlife Habitat	Promote environmental protection and enhancement Monitor improvements in overall ecosystem health	4.5 2.9.1, 2.10
Endangered Species	Consider the potential effects to state and federal listed endangered and threatened species	4.6
Aquatic Biota	Target arroyo mouths for channel and riparian improvements Need for modification of channel structure/geometry Promote meandering and habitat improvement; acquire adjacent property to promote widening Establish in-stream flows	2.5.4 2.5.3 2.5.3, 2.7.1 2.7.2, 3.7.2
Land Use	Floodplain widening could be incompatible with existing land uses Effects of management changes on recreation opportunities Need to expand recreational areas and improve access for hunting	4.8 4.8 3.8, 4.8
Socioeconomics and Environmental Justice	Adverse effects in local communities, including water supply Need to protect vulnerable capital improvements	4.9 4.2, 4.9
Cultural Resources	Potential effects to cultural resources	4.10
Transportation	Potential adverse effects on transportation facilities in the area	4.13

Land Use

Concerns were expressed on the potential encroachment of an expanded floodplain on existing land uses, particularly agriculture. A number of suggestions were made on the desirability to expand recreational areas and facilitate access to the RGCP for recreational purposes.

Other Resources

Concerns were expressed that changes in the river management approach could have adverse socioeconomic effects in local communities and water supply. Concerns were also expressed during scoping on potential effects on cultural resources and transportation facilities in the area.

1.3.4 Opportunities and Constraints

Opportunities and constraints were identified for changes in river management to develop realistic goals for development of environmental measures. Tables 1.3-2 and 1.3-3 list opportunities and constraints associated with RGCP functionality (continued flood control and water issues, respectively); those related to river restoration potential are summarized in Tables 1.3-4 and 1.3-5. Restoration potential addresses two key objectives used in the formulation of alternatives: development of a riparian corridor along selected reaches of the RGCP, and diversification of aquatic habitats.

Table 1.3-2 Opportunities and Constraints Related to RGCP Continued Flood Control

Issues	Opportunities	Constraints
Potential deficiencies in flood containment capacity	Increase in containment capacity could include non-structural measures such as levee relocation and flood easements in addition to levee construction or rehabilitation.	Most potential deficiencies are located in Las Cruces-El Paso reaches where easements or levee relocations are not desirable or feasible. Bridges and irrigation infrastructure limit the potential use of non-structural measures.
Management of recurrent flooding	Coupling of flood control and riparian habitat improvements has been achieved in riverine systems with recurrent floods that overtop or damage the levee system.	Recurrent floods are fully contained within the RGCP levee system due to prevalent semi-arid conditions and extensive upstream flow control.
Floodway vegetation	Best restoration conditions exist within the hydrological floodplain which is largely within the ROW. Riparian vegetation stabilizes stream banks and increases erosion control.	Vegetation development decreases flood containment capacity. Current mowing of the floodway controls salt cedar.
Structural integrity of the levees	Additional opportunities for use of non-structural flood control in non-urbanized reaches of the RGCP might be identified by the ongoing structural condition evaluation.	Levees represent a sizable federal investment that will be rehabilitated and maintained unless alternative actions are warranted by technical or economic reasons.

Table 1.3-3 Opportunities and Constraints Related to Water Issues

Issues	Opportunities	Constraints
Flow regime	Changes in flow regime (i.e. controlled pulse releases from reservoirs) could support development of riparian habitats.	Irrigation needs, and to a lesser extent flood storage capability, dictate the timing and extent of flow releases. The USIBWC does not have control over those releases.
Water rights	Water can be acquired using various strategies that include water banking and financing on-farm water conservation. Rio Grande Project water uses other than irrigation are allowed under the 1920 "Sale of Water for Miscellaneous Purposes Act."	The USIBWC does not own any water rights within the Rio Grande Project. A water acquisition strategy must be developed in concert with the USBR, irrigation districts, and New Mexico Office of the State Engineer.
Water availability	Water losses by evaporation can be reduced by on-farm water conservation programs. Financing these programs addresses a pressing need of the farming community, and is supported by state and federal incentive programs.	The Rio Grande Project water is fully allocated; farmers do not receive a full allocation during drought conditions. Upgraded on-farm irrigation systems are costly.
Water delivery	Riparian vegetation stabilizes stream banks, reducing erosion potential.	There is a potential for increase in plant debris into the channel.

Table 1.3-4 Opportunities and Constraints for Riparian Corridor Development

Issues	Opportunities	Constraints
Increase vegetative structural diversity (patch and edge habitat)	Reduced vegetation control (mowing) would have positive effects for wildlife habitat throughout much of the floodway. In addition, 3,552 acres of ROW are leased for grazing.	Flood control must be maintained throughout the RGCP, requiring floodway maintenance activities. Potential levee deficiencies in urban areas are a limitation to changes in floodway management.
Increase riparian corridor width (Buffer zone)	Lands adjacent to RGCP are available for conservation easements or interagency cooperative management. Some privately owned lands are potentially available for cooperative management.	RGCP adjacent lands are predominantly cropped or urbanized. Concern has been expressed by the agriculture community concerning the conversion of productive farm lands.
Improve upland and floodplain connectivity	35 linear miles of floodway and uplands are adjacent to lands owned by other agencies.	Land use adjacent to the ROW corridor is only 18% government owned.
Increase native woody vegetation component	Land within the ROW cover 8,332 acres, the majority of which (89%) is considered below average to poor quality habitat.	Invasive species are prevalent throughout the RGCP and complete eradication is not feasible.
Increase amount of riparian habitat	More than 350 acres of ROW are within hydrologic floodplain.	Potential deficiencies in the levee system limit allowable vegetation growth.
Maintain a sustainable native riparian community	Work at the Bosque del Apache and Middle Rio Grande Bosque Restoration Project suggests techniques are available for sustainment of riparian restoration.	Requires acquisition of water and/or agreements with New Mexico and Texas irrigation districts.
Mimic the natural hydrograph	Modeling of various flow releases from Caballo Dam shows opportunities for overbank flows throughout the Rincon Valley. In addition, periodic storm events in conjunction with irrigation flows occur every 2-3 years and increase flow rates during early spring.	Flows are tightly controlled by upstream dams, which release water primarily in response to irrigation demands. Water delivery regimes must convey normal irrigation flows to the EBID, EPCWID#1, and Mexico. Flow increases over irrigation rates could cause flooding in lands outside USIBWC jurisdiction (Seldon Canyon).

**Table 1.3-5 Opportunities and Constraints for Aquatic Habitat
Diversification**

Issues	Opportunities	Constraints
Increase river sinuosity, provide for lateral migration, and increase channel width	A total of eight meanders were cut off during RGCP construction and are currently within the ROW. Extensive floodway ROW is found in the Rincon Valley and Upper Mesilla Valley. Some bank incision and erosion is occurring in sections of the RGCP suggesting some lateral migration is occurring under current flow regimes.	Decreases in water delivery efficiencies would require compensation for water use. Several significant meanders were severed before project construction (i.e. Vinton cutoff) and are currently in private ownership and/or developed. Current or future induced bank erosion would likely result in transport and accumulation of sediment at diversion dams and could require periodic dredging to assure water delivery functions.
Increase streambed diversity such a pools, riffles and backwaters	Multiple arroyos are present in the Upper Rincon Valley.	Infrastructure such as bridges, irrigation flumes, siphons, and utilities must be maintained. Use of artificial structures have shown little environmental benefit.
Diversify river/terrestrial edge	Modifications to current vegetation control (mowing and grazing leases) would have positive effects to wildlife habitat.	Potential deficiencies in the levee system and need to control salt cedar limit allowable vegetation growth, particularly in urban areas.
Enhance surface water quality	The majority of 1,891 square miles of contributing watershed are managed by federal and state government.	The vast majority of the contributing watershed is not controlled by the USIBWC.
Create conditions for a connected river and floodway	The RGCP is characterized by a disconnected floodplain rarely extending beyond the ROW. Approximately 350 acres of floodway are located within the hydrologic floodplain and present opportunities for overbank flows.	The amount of sediment "nourishing" the Rio Grande has been greatly modified and has altered the current and potential river form. The narrow channel and incised banks reflect RGCP construction, but more importantly the overriding influences of hydrologic modifications.

1.3.5 Prior Environmental Evaluations and Support Documents

Environmental Evaluations

The USIBWC recognizes the need to accomplish flood control, water delivery, and operation and maintenance activities in a manner that improves and, if possible, partially restores the native ecosystem conditions in the RGCP. To support this goal, the agency previously prepared an environmental evaluation document for operation and maintenance of the RGCP (USIBWC 1977), as well as evaluations of potential effects associated with proposed structural improvements (USIBWC 1975, 1985) and dredging activities (USIBWC 1994).

As a result of these evaluations the USIBWC implemented a number of operation and maintenance procedures to enhance ecosystem conditions both in the river channel and the floodway. Some of these procedures are:

- Limited planting of cottonwood and willows at selected locations to increase riparian habitat for wildlife. This effort was initiated in the early 1970s using nursery stock, and has been continued in recent years using pole plantings.
- Partially modifying annual mowing of the floodway at some locations to selectively retain saplings of native tree species while controlling development of salt cedar and other invasive species of high-water consumption.

- Sediment removal, when required, is conducted according to the guidelines and mitigation requirements specified in the Section 404 permits issued by the United States Army Corps of Engineers (USACE). Dredging of the main channel has not been required since 1996.
- Conduct a 3-year monitoring program to determine the effectiveness of artificial in-stream structures such as groins, vortex weirs and embayments in enhancing fish habitat.
- Encourage development of park areas within the RGCP ROW, but without compromise to flood control purposes, through cooperative efforts with local interests and long-term lease contracts.

Support Documents

Three types of technical documents were prepared in support of the alternatives formulation and the DEIS:

- Analysis of threatened, endangered, and special-status species along the RGCP based on field surveys conducted during the spring and fall of 2000 (Parsons 2000a, 2001c).
- Mapping and analysis of suitability of terrestrial and aquatic habitats along the RGCP using USFWS-approved field methods habitat evaluation procedures and wildlife habitat appraisal procedures) (Parsons 2001b)
- Assessment of cultural resources from literature search, field reconnaissance, and a geo-archaeological study at selected locations (EMI and Parsons, 2001).

Environmental and technical information for the RGCP relevant to the Environmental Impact Statement was also obtained from the following documents:

- Environmental evaluation documents regarding RGCP operation and maintenance (USIBWC 1977), proposed improvements (USIBWC 1975, 1985), and dredging activities (USIBWC 1994; USFWS 2000a).
- River management plan for sediment control (USIBWC 1994).
- Engineering reports for the RGCP construction (Baker 1943) and improvement of the levee system (USACE 1996).
- Technical documentation prepared in support of the Environmental Impact Statement for El Paso-Las Cruces Regional Sustainable Water Project (USIBWC & EPWU/PSB 2000).

1.4 AUTHORITY AND INSTITUTIONAL INVOLVEMENT

Permits and licenses that may be required to implement the alternatives are summarized in Table 1.4-1 for federal agencies and Table 1.4-2 for state agencies and local agencies or organizations. These requirements are necessary to complete the NEPA process and to obtain project approval before action can be initiated.

1.5 SCOPE OF THE IMPACT ANALYSIS

The resource areas selected for effects evaluation in Sections 3 and 4 of this DEIS correspond to those previously identified by significant issues in Section 1.3.3. This issue analysis served as the basis for selecting the resource categories. Air quality and noise are also considered in the effects evaluation due to emissions caused from construction-related activities.

1.6 DOCUMENT ORGANIZATION

This DEIS contains the following sections:

Section 1 introduces the USIBWC and provides background information; states the purpose of and need for action; discusses scoping and issues of concern; and lists the potentially required federal permits, licenses, or entitlements.

Section 2 describes the alternatives under consideration and presents those alternatives considered in detail; describes the alternatives eliminated from detailed study; presents the implementation plan; and summarizes potential effects of all alternatives.

Section 3 is a general description of the affected environment. It includes biophysical resources that the alternatives could potentially affect.

Section 4 is an analysis of the environmental consequences of the alternatives. A summary of this analysis is provided in tabular form at the end of Section 2.

Section 5 provides information on the consultation and coordination for preparation of this DEIS, contributors to the document, and distribution list.

Section 6 contains a glossary and the references cited in this DEIS.

Appendices A-H provide support technical information. Appendix I (CD attached to the inside cover of this DEIS) is a copy of the Reformulation of Alternatives Report (Parsons 2003a) that is provided here as a reference.

Table 1.4-1 Potentially Required Federal Permits, Licenses or Entitlements

Agency or Organization	Actions, Permits and Licenses Required	Description
United States Section, International Boundary and Water Commission (USIBWC)	National Environmental Policy Act (NEPA)	USIBWC is lead agency for preparation of the Environmental Impact Statement, will approve the alternative selected, and sign a Record of Decision (ROD) for the project.
	Upholding provisions of applicable conventions and treaties between the United States and Mexico	USIBWC is the designated federal agency responsible for meeting the United States obligation to annually deliver 60,000 acre-feet of water to Mexico.
	Archaeological Resources Protection Act (ARPA) permit	USIBWC issues an ARPA Permit for any excavation and/or removal of archaeological resources from Federal land it administers.
U.S. Department of the Interior - Fish and Wildlife Service (USFWS)	Endangered Species Act (ESA) Section 7 consultation	Consultation under Section 7 of the ESA is required to determine if the project will affect threatened or endangered species. The USFWS will prepare a Biological Opinion based on the Biological Assessment.
	Fish and Wildlife Coordination Act (FWCA) Report	The USFWS must prepare a FWCA Report that evaluates the effects on fish and wildlife and recommends ways to avoid or mitigate effects.
U.S. Army Corps of Engineers (USACE)	Section 404 of the Clean Water Act (CWA) Permit	A 404 Permit will be required for excavation in, or discharge of fill material into waters of the United States, including wetlands.
	CWA Section 401 Water Quality Certificate	The USACE coordinates the water quality certification process with the states of New Mexico and Texas.
	Wetland Mitigation Plan	USACE must approve the delineation, impact analysis, and wetland mitigation plan for jurisdictional wetlands impacted by the project on nonagricultural lands for the 404 permit.
Natural Resources Conservation Service (NRCS)	Wetlands delineation on agricultural lands	NRCS will delineate wetlands on agricultural lands, if needed, in accordance with the Food Security Act
U.S. Environmental Protection Agency (USEPA)	Oversight authority for Section 404 Permit	USEPA will review 404 permit applications and recommend approval or denial of permits. EPA has authority to veto USACE permit approvals.
	Stormwater runoff from construction sites	The USEPA regulates discharge of water from construction sites pursuant to the National Pollutant Discharge Elimination System (NPDES) phase I and II stormwater permits.
U.S. Bureau of Reclamation (USBR)	National Environmental Policy Act (NEPA)	The USBR is the cooperating agency that will participate in the NEPA process and assist in preparation of the DEIS.
	Approval of water use conversion and third-party contracts	The USBR approves project-related changes in operating procedures for the delivery of water pursuant to the 1920 Sale of Water for Miscellaneous Purposes Act in coordination with the appropriate irrigation district.
U.S. Bureau of Land Management (BLM)	Right-of-ways for use of BLM-administered lands	The BLM will issue a ROW and ARPA permit for any activities on its land.

Table 1.4-2 Potentially Required Permits, Licenses or Entitlements from State and Local Agencies or Organizations

Agency or Organization	Actions, Permits and Licenses Required	Description
New Mexico Department of Game and Fish (NMDGF)	Fish and wildlife consultation	Managing and consulting on fish and wildlife in New Mexico. Review of Fish and Wildlife Coordination Act Report.
Texas Parks and Wildlife Department (TPWD)	Fish and wildlife consultation	Managing and consulting on fish and wildlife in Texas. Review of Fish and Wildlife Coordination Act Report.
New Mexico Historic Preservation Division, State Historic Preservation Officer (SHPO)	New Mexico Antiquities Permit	Approval of survey and recovery of any cultural resources prior to project construction. The SHPO and the Advisory Council on Historic Preservation will determine if the proposed action will impact culturally or historically sensitive sites, or if sites are eligible for listing on the National Register of Historic Places.
Texas Historical Commission (THC)	Texas Antiquities Permit	Approval of survey and recovery of any cultural resources prior to project construction. The SHPO and the Advisory Council on Historic Preservation will determine if the proposed action will impact culturally or historically sensitive sites, or if sites are eligible for listing on the National Register of Historic Places.
New Mexico Environment Department (NMED)	Section 401 Water Quality Certificate	NMED will work with the USACE to issue Water Quality Certificates., and will also coordinate and have review authority for any Section 404 Dredge and Fill Permits.
	Stream alteration permit	Issues permits for any work in river beds within the state.
Texas Commission on Environmental Quality (TCEQ)	Section 401 Water Quality Certificate	TCEQ will work with the USACE to issue Water Quality Certificates. The agency will coordinate and have review authority for any Section 404 Dredge and Fill Permits.
	Stream alteration permit	TCEQ issues permits for any work in river beds in the state.
	Water rights and uses	TCEQ is responsible for Texas water rights issues.
New Mexico Office of the State Engineer (NMOSE)	Water rights and uses	The State Engineer is responsible for New Mexico water rights issues.
Governments of Las Cruces, Hatch, Doña Ana County and El Paso County	ROWs, miscellaneous permits and approvals	Coordination and input concerning construction, operation and maintenance activities for affecting local roads, drainage structures and utilities in their communities.
Elephant Butte Irrigation District (EBID)	Cooperative agreements for water acquisition	EBID operates and maintains irrigation division through contract with USBR.
El Paso County Water Improvement District No. 1 (EPCWID#1)	Cooperative agreements for water acquisition	EPCWID#1 operates irrigation division through contract with the USBR.
El Paso Water Utilities/Public Service Board (EPWU/PSB)	Facility construction and operation in Texas	Responsible for operation and maintenance of its facilities, including any agreements with water management agencies.