RECORD OF DECISION
RIVER MANAGEMENT ALTERNATIVES FOR THE RIO GRANDE CANALIZATION PROJECT

A. INTRODUCTION

The United States Section of the International Boundary and Water Commission (USIBWC) completed evaluation of river management alternatives for the Rio Grande Canalization Project (RGCP), a 105.4-mile river corridor that extends along the Rio Grande, from below Percha Dam in Sierra County, New Mexico to American Dam in El Paso County, 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's Upper Valley in Texas, and Juárez Valley in Mexico, and includes a levee system for flood control. This Record of Decision identifies the proposed action for long-term operation of the RGCP.

Changes under consideration for long-term management of the RGCP constitute a major federal action requiring preparation of an Environmental Impact Statement (EIS) in accordance with provisions of the National Environmental Policy Act. Potential environmental effects of river management alternatives were evaluated in a Draft EIS released for agency and public review on December 18, 2003, and completed in final form on June 29, 2004. The Elephant Butte Irrigation District (EBID), World Wildlife Fund (WWF) and Environmental Defense Fund requested additional studies to further refine the major issues addressed in the Draft EIS. In August 2005, USIBWC completed a 2-dimensional flood routing model (FLO-2D) for the Rio Grande Canalization Project. In January 2006, USIBWC entered into an agreement with the United States Army Corps of Engineers (USACE) to conduct additional hydrologic, geomorphic, and biologic studies under Section 729 of the Water Resource Development Act. In August 2006, USIBWC entered into an agreement with EBID to formulate an administrative framework for transfer of surface water to restoration projects and evaluate legal options under the Endangered Species Act (ESA) should restoration result in an increase in distribution and population of Southwestern willow flycatchers. In 2006, the Bureau of Reclamation entered into a cooperative agreement with EBID under the authority of the Fish and Wildlife Coordination Act to fund complementary studies in partnership with WWF on enhancement of breeding habitat for the Southwestern Willow Flycatcher in the Rio Grande Canalization Project and legal options under the Endangered Species Act.

The No Action Alternative and the following three action alternatives were evaluated in the final EIS: Flood Control Improvement Alternative, Integrated USIBWC Land Management Alternative, and Targeted River Restoration Alternative. These alternatives were developed to enhance and partially restore the riparian ecosystem and floodplain function while maintaining the flood control and water delivery requirements of the

RGCP. Alternatives addressed practices such as flood control, channel maintenance and erosion reduction, as well as environmental measures intended to enhance river floodplain hydrologic connectivity, and support restoration of native riparian vegetation and diversification of aquatic habitats along the RGCP. Alternatives formulation was the result of an 8-year public consultation process that included regulatory agencies, irrigation districts, and environmental organizations. Alternatives were described in detail in a Reformulation of Alternatives Report completed in August 2003 and further refined in a Conceptual Restoration Plan and Cumulative Effects Analysis completed in March 2009. Additional studies including flycatcher surveys, soils surveys, evaluation of channel maintenance practices, and legal options under the ESA were also completed in December 2008.

B. THE PROPOSED ACTION (SELECTED ALTERNATIVE)

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

The Integrated USIBWC Land Management Alternative is the action selected by the USIBWC for long-term maintenance and operation of the RGCP. Some measures will be implemented directly by the USIBWC. A number of measures will be conducted through cooperative agreements with federal, state and local agencies, as well as organizations.

The Integrated USIBWC Land Management Alternative retains multiple operation and maintenance measures currently conducted for efficient water delivery and flood control within an adaptive management framework, while increasing flood containment capacity, improving soil erosion protection practices, and implementing several environmental measures within the floodway and river channel. These environmental measures are intended to enhance or rehabilitate a mosaic of native riparian habitats, restore river and floodplain connectivity where feasible, and, diversify the aquatic habitat. The majority of flood control improvement and environmental measures would be limited to lands under USIBWC jurisdiction. Some environmental measures, however, will occur on lands under the jurisdiction of partnering federal and state agencies or local governments, and, if there are willing landowners, through conservation and flood easements on private lands. An increase in flood containment capacity will be achieved primarily by raising sections of the existing levees to meet a 3-foot freeboard design criteria required by the Federal Emergency Management Agency. New levees would be constructed in unconfined areas where flood levels could extend past the right-of-way (ROW) boundary.

As part of this alternative, the existing grazing lease management program will be modified to protect water quality by reducing erosion and runoff of sediment, E. coli, and other potential pollutants and to promote bank stabilization. The modified program includes a ban on issuing new grazing leases to new lessees, and a ban on renewing existing leases that expire during the term of this management plan. If any grazing leases remain in effect during the term of this management plan, USIBWC will implement a

variety of vegetation treatments, fencing and infrastructure on existing lease areas to increase vegetation cover and streamside buffering, control saltcedar, exclude river access and develop watering alternatives.

In addition to flood control improvement and erosion protection, the Integrated USIBWC Land Management Alternative incorporates environmental measures within the floodway. A key measure is the enhancement of a mosaic of native riparian habitats and increase in the diversity of in-channel topography, hydrology, and substrate at select locations. Riparian vegetation will function to stabilize banks, attenuate flooding, increase aquifer recharge, reduce sediment load, trap and remove nutrients, control saltcedar and other invasives, and provide wildlife and aquatic habitat. Approaches to riparian restoration include vegetation removal of invasives, native vegetation planting, earthwork to enhance river-floodplain hydrologic connectivity, application of supplemental water and environmental flows. Channel diversity will function to increase channel sinuosity, increase river-floodplain hydrologic connectivity and provide wildlife and aquatic habitat. Approaches to channel restoration include bank cutting, bank destabilization and cessation of dredging. Recreational use of some sections of the floodway will be continued or expanded under proposed cooperative agreements with local and state organizations or other interested stakeholder groups. The USIBWC will ensure that recreational use of the floodway does not foreclose riparian restoration potential.

C. DECISION

The Integrated USIBWC Land Management Alternative was developed for long-term management of the RGCP taking into account agency and public input received during an over 8-year consultation period. Its selection followed evaluation of potential environmental effects in the Final EIS.

Consultation Process

The USIBWC followed an extensive public consultation process for development of the alternatives to be evaluated in the EIS. 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.

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. A Reformulation of River Management Alternatives for the RGCP

was completed in August 2003 to document modifications to the alternatives since preparation of the Alternatives Formulation Report, and the rationale for these modifications.

Environmental effects of the No Action Alternative and 3 action alternatives were evaluated in a Draft EIS made available for public review and comment on December 18, 2003. The deadline selected for submittal of comments to the Draft EIS was March 1, 2004 (extended 21 days in response to several stakeholders' requests). Responses to comments were provided in the Final EIS issued on June 29, 2004. The Final EIS also indicated selection of the Integrated USIBWC Land Management Alternative for long-term management of the RGCP.

Following preparation of the Final EIS, the USIBWC in partnership with the Elephant Butte Irrigation District, World Wildlife Fund and Environmental Defense Fund conducted yet another round of additional stakeholder technical workshops with representatives of regulatory agencies, irrigation districts and environmental organizations. These additional meetings were conducted to address continuing concerns regarding the allocation of surface water for environmental measures, the scope, approaches and extent of environmental measures, and the potential for additional liability under the Endangered Species Act should the distribution and population of listed species increase at restoration sites.

A Conceptual Restoration plan and Cumulative Effects Analysis was completed in March 2009 to document modifications to the alternatives since preparation of the Reformulation of River Management Alternatives and the cumulative effects of these modifications were analyzed.

Basis for Alternative Formulation and Selection

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.

Following evaluation of environmental effects, and comments received on the Draft EIS, the USIBWC concluded that the Integrated USIBWC Land Management Alternative provided the best balance of flood control, water delivery, and habitat enhancement. This alternative was, 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 and addresses water consumption by such improvements;
- Puts in place some agreements with other agencies and, as needed for implementation, water users and conservation organizations; and
- Would not be cost prohibitive.

Major Issues Addressed

In selecting a preferred alternative the USIBWC took into consideration the following major issues identified during the agency and public consultation process:

Continued RGCP Mission. Water delivery and flood control constitute the core mission of the RGCP. However, when enhancement of river ecosystem process and function can improve ecosystem services without adversely impacting flood control or water deliveries and associated depletions can be offset through the institutional framework and administrative policies of the Rio Grande Project, Elephant Butte Irrigation District and the El Paso County Water Improvement District No. 1 (EPCWID), then USIBWC's mission will be to better integrate river ecosystem health, water deliveries and flood control in long-term river management planning. Riparian restoration and enhanced river-floodplain hydrologic connectivity can provide ecosystem services like attenuation of flood risk and damage, increase in groundwater recharge, sequestration of carbon, and capture and retention of sediment and nutrients. Consequently, the USIBWC has selected a river management alternative that is in compliance with this mission. This issue was a key consideration during scoping of the alternatives and their final formulation. To ensure efficient water delivery, the selected alternative allows for maintenance of the river, removal of obstructions from the river, and dredging under an adaptive management program.

Similarly, flood control improvements were adopted as a main component of the Integrated USIBWC Land Management Alternative. Potential improvements have been extensively evaluated since the USIBWC commissioned a U.S. Army Corps of Engineers (USACE) study in 1996. This evaluation has continued with an ongoing review by the USIBWC of the structural condition of the levees, and additional hydraulic modeling was conducted as part of the Draft EIS to determine potential reduction in flood containment due to vegetation increases in the floodway. The effects of the USACE 2008 proposed restoration projects on the 10- and 100-year floods were evaluated. The model results show that the proposed restoration projects would generally result in a reduction in the maximum water-surface elevation during both flood events. Those restoration projects that result in an increase in the maximum water-surface elevation during either or both floods will require mitigation measures if flood protection is compromised.

Water Use and Environmental Water Transactions Program. Restoration measures associated with the Integrated USIBWC Land Management Alternative were evaluated to estimate the net change in water depletion on an annual basis resulting from an increase in evapo-transpiration, evaporation, infiltration, and floodplain storage losses. Supplemental water to irrigate some restoration sites is necessary to increase productivity

and sustain native plant communities over the long term. Other restoration sites may not require but could benefit from irrigation with supplemental water. Supplemental water would be applied to the sites through existing or modified irrigation canals, laterals, spillways and drains, river pumping and/or groundwater pumping. A periodic restoration flow release was also modeled for enhancing river-floodplain hydrologic connection during the historic spring run-off period.

After additional consideration and consultation with stakeholders, it was determined that environmental water will be leased or acquired through a cooperative environmental water transactions program with EBID or EPCWID and willing water rights holders. The use of EBID and EPCWID project water for restoration of native plants at restoration sites will be considered an agricultural use. In order for the EBID and EPCWID water to be delivered to the site, the land will need to be located within the irrigation district service boundaries. Irrigation district service boundaries may be expanded through an EBID and EPCWID Board approved boundary realignment process. Water will be leased or water rights permanently acquired and transferred from willing sellers through an EBID or EPCWID Board approved leasing or reclassification process. A periodic restoration flow would require the consent and approval of the Bureau of Reclamation in addition to the approval of the EBID and EPCWID Boards.

Maintaining Farmland in Production. Measures associated with the Integrated USIBWC Land Management Alternative were selected in part to minimize the conversion of farmland to non-agricultural uses. This issue had a high priority to the agricultural community along the RGCP, as indicated during the alternatives formulation process, and Draft and Final EIS review period. No significant impacts on prime farmland are anticipated as a result of the preferred river management alternative for two following reasons. First, nearly all measures under consideration will be conducted in non-agricultural lands currently owned and maintained by the USIBWC. Where restoration measures are feasible on non- USIBWC lands, measures will be implemented only with the consent and agreement of the non-USIBWC landowner. Where there are willing sellers, USIBWC may elect to acquire or hold easements on select properties that have high restoration potential. Second, the preferred implementation strategy to secure water is a cooperative environmental water transactions program with EBID or EPCWID and willing water rights holders. Consideration should be given to modifying EBID's existing Special Water Users Association (SWUA) provisions to include USIBWC as a potential SWUA.

Extent of Environmental Improvements. 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. Based on identified constraints and opportunities, partial river restoration was adopted as the objective for formulation of environmental measures. Within the partial restoration framework, the USIBWC has incorporated the recommendations of the 2008 USACE Conceptual Restoration Plan into the Integrated USIBWC Land Management Alternative. Those measures include restoring aquatic habitat and/or a mosaic of native plant communities—grasslands, riparian woodlands, riparian forests and dense shrubs—at 30 sites totaling 553.2 acres by vegetation removal, disposal of woody debris, native vegetation planting, overbank lowering, bank cuts, natural levee breaches, secondary channels, bank

destabilization, channel widening, arroyo mouth management, construction of inset floodplains, and use of supplemental water for on-site irrigation.

The 2008 USACE Conceptual Restoration Plan also evaluated enhancing the river-floodplain hydrologic connection within the Rio Grande Canalization Project through a periodic restoration flow release from Caballo Dam. A target flow release of 3500 cubic feet per second (cfs) from Caballo Dam was selected for planning purposes. The target flow release is comprised of both environmental water and irrigation releases. The target flow release was based on the number and extent of inundation at restored floodplain sites and recommendations as to the frequency, magnitude, duration, and timing of overbank inundation. Based on an analysis of historical flow records, the estimated average amount of environmental water needed to augment irrigation releases to achieve a 3500 cfs release is 9500 ac-ft per augmentation event. A periodic restoration flow would require the consent and approval of the Bureau of Reclamation in addition to the approval of the EBID and EPCWID Boards and willing sellers and/or lessors. Institutional constraints may introduce other agencies into the approval and planning for restoration flow releases.

Because the USACE Restoration Plan is a "conceptual" plan, the recommendations contained therein are intended to serve as guidelines to USIBWC and partners as they implement the plan. Additional on-site data collection like depth to groundwater and soils analyses are strongly recommended at the 30 sites to confirm assumptions about the feasibility and sustainability of suggested revegetation treatments and inform final site design. On-site data results and related investigations may justify the amendment of site locations, habitat targets, restoration methods, estimated net change in depletions, and application of supplemental water. Such investigations will be conducted during intermediate and final design phases of the restoration projects. USIBWC may work with stakeholders to consider alternative sites to the 30 sites identified in the USACE Conceptual Restoration Plan as opportunities arise provided that the sites do not appreciably impact RGCP's core mission and any increase in depletions is offset through a cooperative environmental water transactions program with EBID or EPCWID and willing water rights holders.

ESA Liability: A small population of the federal and state endangered Southwestern willow flycatcher is known to breed on non-USIBWC lands within the 105-mile reach of the Rio Grande Canalization Project. The USACE 2008 Conceptual Restoration Plan identified up to 192 acres for restoration of dense riparian shrub suitable for breeding flycatchers. Revegetation at some of these sites will increase evapo-transpiration rates or require irrigation. An increase in the distribution and population of flycatchers could help New Mexico satisfy the Lower Rio Grande recovery target and contribute to efforts to delist the species. Farmers, however, are concerned that delivery of Project water to these sites could give rise to potential liability under the federal Endangered Species Act (ESA) and restrict water deliveries for crop irrigation especially during low water years. Where restoration of flycatcher habitat will require EBID or EPCWID Board approved water transfers, it will be necessary for stakeholders to work with EBID or EPCWID and the US Fish and Wildlife Service to secure regulatory assurances for the irrigation districts and its customers about ESA liability. Such assurances may be available through Section

7 consultations on Elephant Butte Reservoir operations or individual or umbrella Safe Harbor Agreements.

Channel Maintenance: Trends in aggradation and degradation in the Rio Grande Canalization Project were evaluated. There is a slight aggradational trend (≤0.04 ft/yr) in three of the thirteen reaches including Rincon Siphon to Bignell Arroyo, Picacho Bridge to Mesilla Dam and Mesilla Dam to Vado Bridge. From the head of Selden Canyon to American Dam, the transport capacity is approximately in balance with the supply. The effect of channel maintenance activities including channel dredging, and removal of sediment plugs at and immediately below arroyo mouths, vegetated islands and sand bars on water deliveries (timing and water volume) and flood control was evaluated. Preliminary results indicate that historical channel maintenance practices generally have minimal impact on the water delivery efficiency in terms of volume and arrival of irrigation releases. The over-excavation currently practiced when removing sediment plugs is likely unnecessary and short-lived. The question of the overall necessity of channel dredging will be investigated through additional monitoring and modeling. An alternative management approach to maintaining or increasing the flood conveyance capacity of the channel is to enable the channel to expand or migrate where constrictions occur. Under this approach, rip-rap would be removed at the toe of the bank and channel stabilization activities would be curtailed, though levees in such reaches would have to be reinforced to ensure that the channel migration does not compromise the levee integrity. Supplementary erosion protection at the foot of the levee is advisable with this approach. Additional evaluation of future channel maintenance activities using an adaptive management program is warranted to justify annual maintenance expenditures.

USIBWC, in consultation with stakeholders, including EBID and EPCWID, will update the May 2004 USIBWC Rio Grande Canalization Project, River Management Plan (RMP). The purpose of the RMP will be to identify specific goals and objectives for channel management, establish a data collection and monitoring program in support of these objectives and goals, and provide recommendations or guidelines for channel management policy. The RMP policy recommendations will be based on the findings of the data collection and monitoring program, peer-reviewed literature, gray literature, and expert opinion. The RMP will be updated regularly incorporating any new data, findings and analyses and revise policy recommendations as needed. During RMP updates, if stakeholders cannot reach consensus on policy recommendations, the stakeholders will present their recommendations to the USIBWC and the USIBWC will exercise its authority to establish channel maintenance policy and implement channel maintenance activities.

The purpose of the USIBWC data collection and monitoring program will be to identify assumptions and gaps in current understanding, establish baseline conditions of the river, implement site-specific projects to test hypotheses, collect and analyze data, monitor site-specific projects and sensitive reaches, evaluate site-specific and cumulative impacts, and recommend any annual channel maintenance, channel stabilization or destabilization activities and in an iterative cycle, evaluate the effect of those activities in meeting the RMP goals and objectives. USIBWC will utilize the 145 cross-sections in the RGCP, resurveying the cross-sections on the average of once every four to five years and more frequently in local reaches following large flood events. USIBWC will monitor the cross

sections during high irrigation flows to determine the potential impacts on flood stage and to update the calibration of the existing FLO-2D and HEC-RAS models. The FLO-2D model will be utilized to evaluate the cumulative impacts on loss of flood conveyance capacity and efficiency of water deliveries. Arroyo confluences where sediment plugs occur and channel banks where islands develop will also be inspected for evidence of bank erosion and channel changes will be monitored after flooding. Findings from the data collection and monitoring program will be synthesized and summarized in writing on an annual basis and used to routinely update the RMP.

Floodway Vegetative Management: USIBWC will restore up to 553 acres of riparian forest, woodland, dense shrubs, shrubs, screwbean mesquite, meadow and grassland and savanna habitat within the USIBWC floodway and a limited number of streamside non-USIBWC parcels with willing landowners. Mowing at these restored sites, if currently conducted, will be curtailed upon implementation of the restoration treatments.

Floodway vegetative treatment in the three "green zones" identified in the March 22, 1999 Memorandum of Understanding between the USIBWC and the Southwest Environmental Center will be made permanent. The USIBWC will perform vegetative surveys or utilize remote sensing data to evaluate changes in pre-MOU and post-MOU plant communities within the green zones. The USIBWC will use the best available information to estimate, in consultation with stakeholders and irrigation districts, the change in evapo-transpiration in these zones resulting from the change in plant community. USIBWC will offset any new depletions arising from these changes in floodway vegetative treatment through a cooperative environmental water transactions program with EBID or EPCWID and willing water rights holders. The environmental water transactions program will be a key feature of the RMP and will guide implementation of environmental measures within the RGCP. USIBWC will implement modified grassland management on additional select areas outside of the hydrologic floodplain. The modified grassland management would replace current mowing regime in selected areas to improve wildlife habitat by increasing vegetation diversity, develop native herbaceous vegetation, and improve the riparian corridor and upland/riparian interface. Implementation will include site preparation, seeding of native vegetation, and maintenance and monitoring including saltcedar and Russian thistle control. Study sites will be designated to monitor changes in vegetation plant communities and to estimate changes in evapo-transpiration. New depletions will be offset under the cooperative environmental water transactions program with EBID or EPCWID and willing water rights holders.

D. DESCRIPTION OF ALTERNATIVES

Integrated USIBWC Land Management Alternative

This alternative was selected as the preferred option for RGCP management after considerable consultation with stakeholders under the Rio Grande Canalization Collaborative Program. Preferred floodway, channel and sediment management activities have been expanded or modified to achieve better integration of river ecosystem function and processes with flood control and water deliveries. Increased communication and understanding between stakeholders has resulted in a framework that supports limited

utilization of measures that extend beyond USIBWC's jurisdiction, increase water use and target listed species.

The selected river alternative incorporates environmental measures within the floodway and river channel in addition to measures for flood control improvement and erosion protection. A majority of the environmental measures are located on lands under USIBWC jurisdiction. A key feature of the Integrated USIBWC Land Management Alternative is to better integrate healthy riparian function and natural riverine processes with flood control and water deliveries. Where feasible and in collaboration with stakeholders, irrigation districts and surface water rights holders, the objective is to produce enhanced channel dynamics, river and floodplain hydrologic connectivity and riparian cover and thereby improve habitat for fish and wildlife. Habitat improvements include saltcedar removal, native vegetative plantings, bank destabilization and channel widening, and arroyo mouth management. Native vegetation will be enhanced and planted on 553 acres. Channel diversity will be enhanced at three arroyo mouths and one bank location providing 50 acres of improved aquatic habitat.

Current mowing of the vegetation would cease on 368 acres at proposed restoration sites and be replaced by a mosaic of native riparian habitats including grasslands, meadows, dense riparian shrub, open woodland and forests. "Green zones" established and recognized under the 1999 MOU between the Southwest Environmental Center and the USIBWC will permanently become no-mow zones. The vegetation in the Shalem Colony to Picacho Bridge reach green zone will be surveyed and evaluated to identify plant species and density and to assess the effect of changes in vegetative management on succession of plant communities. Current mowing on the remaining floodway will be reduced by 1,983 acres and replaced by managed native grasslands. Establishment of dense riparian shrub habitat suitable for the federal and state endangered Southwestern willow flycatcher could occur at twelve (12) sites encompassing149 acres.

Water for restoration will be needed to offset associated increases in water depletion on an annual basis resulting from an increase in evapo-transpiration, evaporation, infiltration, floodplain storage losses, supplemental irrigation, and any periodic restoration peak releases. Increases in evapo-transpiration from changes in vegetation at proposed restoration sites are estimated at 450 ac-ft of water per year. Supplemental irrigation in the amount of 227 ac-ft per year is recommended for at least six (6) proposed restoration sites and may be advisable at an additional nineteen (19) proposed restoration sites especially if future periodic restoration peak flows are deemed not feasible. If deemed feasible by irrigation districts, the Bureau of Reclamation and other interested parties, a periodic restoration peak release could occur once every 3 to 10 years for a minimum of four days between April 24th and June 7th to enhance river-floodplain hydrologic connection at proposed restoration sites. It is estimated that the average volume of water needed to augment the irrigation release to achieve the target release of 3500 cfs from Caballo Dam is 9,300 ac-ft. To address the need for environmental water for restoration, USIBWC and partners will establish, in collaboration with the EBID and EPCWID, a voluntary water transactions program with willing water rights holders. Under this framework, willing water rights holders will sell their water rights or lease their water through an EBID or EPCWID Board approved leasing or reclassification process to USIBWC and partners to offset depletions, irrigate restoration sites or to

augment irrigation releases with environmental water to achieve overbank inundation at select restoration sites.

In terms of levee rehabilitation, the Integrated USIBWC Land Management Alternative would improve flood control and have short-term impacts on air quality, noise, transportation and employment (temporary increase) as previously listed for the Flood Control Improvement Alternative. At locations where channel mobility is increased, levees may require additional erosion protection.

In terms of channel maintenance, USIBWC, in consultation with stakeholders, will update the 2004 USIBWC RMP for the RGCP. The RMP will provide recommendations and guidelines for channel management policy. USIBWC will consult the RMP in taking channel management activities to reduce flood risk, maintain channel capacity or increase efficiency of water deliveries. Channel management and maintenance activities could include dredging, island removal, arroyo realignment, arroyo mouth management, inset floodplains, bank destabilization and removal of rip-rap at the toe of the bank. Additional studies and investigations will also be necessary to ensure that the levees are capable of providing flood protection in such reaches as flood levels may increase and river channel migration may present a scour threat to the levees.

Targeted River Restoration Alternative

This alternative emphasized environmental measures to achieve restoration of the RGCP conditions. Those measures include induced overbank flows to promote riparian corridor development, and aquatic habitat diversification. This alternative also includes measures previously identified for flood control improvement and grazing lease modification.

Vegetation management for this alternative included planting and enhancement of existing native woody vegetation and modified grassland management, as previously indicated for the Integrated USIBWC Land Management Alternative, complemented by use of seasonal peak flows to promote natural regeneration of riparian bosque. Peak flows would be induced by controlled water releases from Caballo Dam during high storage conditions in Elephant Butte Reservoir. Environmental measures would extend beyond the ROW through use of voluntary conservation easements to preserve existing wildlife habitat and encourage native bosque development.

To diversify aquatic habitat, six (6) former meanders eliminated during construction would be partially reopened, and dredging of arroyos would be modified to create backwaters during the irrigation season.

In terms of levee rehabilitation, the Targeted River Restoration Alternative would improve flood control and have short-term impacts on air quality, noise, transportation and employment (temporary increase) as previously listed for the Flood Control Improvement Alternative.

Current mowing of the vegetation would be reduced by 2,434 acres and replaced by managed native grasslands, tree planting areas, and riparian bosque in overbank flow areas. Up to 1,618 acres of conservation easements would be developed. Habitat suitable for endangered species could be created.

Water use would be significant due, primarily, to the use of induced flood pulses for overbank flows. Such increase would be partially offset by sponsoring on-farm water conservation programs. If water conservation programs could not be implemented along with environmental measures, an estimate of up to 3,154 acres of agricultural land could be retired, with associated losses in crop value and agricultural labor.

This alternative was not selected for future RGCP management because a number of measures extend beyond USIBWC's jurisdiction, its implementation has a potential for significant increase in water use, and potential conflicts with the RGCP water delivery mission. Costs of the Targeted River Restoration Alternative were also considered prohibitive high.

E. ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The Targeted River Restoration Alternative was identified as the environmentally preferable alternative as it: (1) best promotes NEPA, Section 101 by causing the least damage to biological and physical environment, and; (2) best protects, preserves, and enhances natural resources. The revised Integrated USIBWC Land Management Alternative, however, incorporates many of the management practices included in the Targeted River Restoration Alternative, albeit to a lesser degree. The revised Integrated USIBWC Land Management Alternative, unlike the Targeted River Restoration Alternative, is also based on enhanced hydrologic and flood routing modeling increasing the likelihood that restoration measures identified within can be achieved under existing conditions or proposed changes.

Among the four river management alternatives considered, the Targeted River Restoration Alternative offers the greater potential to enhance natural resources development within the RGCP, and surrounding areas. In the floodway, this alternative would result in an increase in native riparian bosque of 705 acres by planting, and induced overbank flows. This bosque increase would represent an increase of 202 acres over the riparian bosque development under the Integrated USIBWC Land Management, the selected alternative. Native grasslands would also be developed, up to 1,641 acres, a coverage similar to that anticipated for the selected alternative.

Unlike the other action alternatives, the Targeted River Restoration Alternative offers a potential development of conservation easements in areas adjacent to the floodway, up to 1,648 acres. This increase in conservation easements would represent an increase in 1,398 acres over the land acquisition/easement program under the Integrated USIBWC Land Management, the selected alternative. This acreage largely represents remnant bosques and other lands not currently under agricultural production.

In terms of aquatic habitat diversification, a very limited natural resource in the RGCP, the Targeted River Restoration Alternative would also be the environmentally preferable alternative as it incorporates two (2) measures that are not included or included to a lesser degree: partial reopening of meanders cut during canalization, and modified arroyo dredging at twelve (12) arroyos to increase backwater habitat. The increase in backwater habitat would represent an increase in nine (9) arroyos over the arroyo management program under the Integrated USIBWC Land Management, the selected alternative. The Integrated USIBWC Land Management Alternative will implement three (3) arroyo

mouth projects and an inset floodplain project as prototypes evaluating their benefits to aquatic diversity and effects on the longstanding goals of flood control and water deliveries. If the impacts are negligible, enhancement of additional arroyos and inset floodplains will be considered.

The Targeted River Restoration alternative would also partially modify the hydraulic regime to simulate limited spring floods to create riparian vegetation re-establishment conditions. This measure, however, was projected to require extensive use of water, a fully-allocated and scarce resource in the region. The revised Integrated USIBWC Land Management Alternative, like the Targeted River Restoration Alternative, also contemplates modifying the hydraulic regime to simulate controlled spring flooding and enhance the river-floodplain hydrologic connection. The revised Integrated USIBWC Land Management Alternative, however, contemplates a smaller and less frequent restoration peak release and only if further consultations with stakeholders and federal and state agencies deem such a release would be feasible and consistent with federal and state law and regulations.

F. MITIGATION AND MONITORING

The USIBWC will implement the mitigation measures, and conceptual restoration plan, to offset or decrease the environmental effects of implementing the Integrated USIBWC Land Management Alternative. Measures for protection of Threatened and Endangered species and wildlife habitat respond to requirements specified by the U.S. Fish and Wildlife Service (USFWS) as part of the Endangered Species Act Section 7 consultation. These requirements were specified in a June 28, 2004 letter provided by the USFWS in response to USIBWC submittal of the RGCP Biological Assessment. USFWS also completed a Fish and Wildlife Coordination Act Report in April 2005, which includes management actions to improve riparian habitats and diversify aquatic habitats while maintaining water delivery efficiencies and expanding flood control capacity.

A summary of typical mitigation actions is presented below for implementing the Integrated USIBWC Land Management Alternative. Mitigations by resource area are presented separately for construction activities (Table 1), and for vegetation treatments used to control invasive species and establish desired vegetation (Table 2). Several of these mitigations have been included in the design of individual projects incorporated in the 2004 River Management Plan and will be updated prior to implementation. All practical means of avoiding environmental harm from the selected alternative have been adopted.

Table 1. Typical Mitigation Measures for Construction Activities

Water Resources Protection
• During construction near the river, best management practices and spill control procedures will be used to prevent contamination and increased erosion to the river. Servicing of heavy equipment will be done out of the riparian zone. • Sediment will be moved to nearby floodway locations and stabilized by revegetation during shavedowns and bank preparation. Shavedowns will be designed to promote backflow inundation and reduce the possibility of sediment entering the river.

- The USIBWC will create an accounting system to quantify water removal from the river as a result of environmental measures.

Soil Protection

- For bank destabilization activities that enhance channel migration, levees will be reinforced if migration threatens levee protection.
- Temporary materials and equipment-staging areas for construction areas will be reclaimed and revegetated with suitable native woody trees and shrubs. The USIBWC will monitor performance of these environmental measures.

Threatened and Endangered Species Protection

- No construction activities will be conducted in known habitats of listed or sensitive species. Where construction will be necessary in proximity to known listed or sensitive species' habitats, construction will occur outside of breeding season and treatment will be selected to minimize the effect.
- No potential bald eagle winter roosting trees will be disturbed during construction. Presence/absence of bald eagles will be monitored during construction in the fall and winter. If bald eagles are consistently found in the immediate project area during the construction period, the USIBWC will contact the USFWS to determine if formal consultation under the ESA is necessary.

Aquatic Habitat Protection

- During construction near the river, best management practices and spill control procedures will be used to prevent contamination and discharge of suspended sediments into the Rio Grande. When equipment is operating in the river, or arroyo tributaries, if fish are stranded, they will be salvaged and put into the main river channel.

Land Use and Socioeconomics

- Existing road and utility rights-of-way will be used as much as possible to reduce permitting and land-acquisitions cost and to reduce disruptions to commercial facilities. The USIBWC will adhere to project work-hour restrictions within 500 feet of residences, hospitals, and schools.
- Where possible local construction personnel will be hired to build the project. Local professional or service personnel will be hired and trained to operate and maintain facilities so direct and secondary spending remains in the local economy.

Cultural Resources

- A programmatic agreement will be prepared and made final through consultation with the New Mexico and Texas State Historical Preservation Offices prior to the beginning of construction. Any cultural resources found during construction will be documented and evaluated as to their eligibility for listing on the National Register of Historic Places.
- Before ground-disturbing construction, a preconstruction conference will be held with construction crews to inform them of the potential for disturbing subsurface cultural resources, and the procedures involved in the event that this occurs. Precautions will be taken to ensure that archaeological assistance is promptly available in case of a discovery.

Air Quality

- Dust control measures, such as sprinkling/irrigation, mulch, vegetative cover, and wind breaks, will be used in construction sites where there is the potential for air and water pollution from dust transport by high winds.
- Contractors will be made responsible for assuring that construction equipment is in good operating condition so that exhaust emissions are kept to a minimum. Excavation, grading, and surface-disturbance permits will be secured that specify BMPs to minimize particulate and dust emissions from construction work sites.

Noise and Traffic

- Contractors will adhere to project work hour restrictions within 500 feet of residences, hospitals, schools, churches, and libraries. Traffic protocols and travel routes will be developed and implemented for major project work.

Table 2. Typical Mitigation Measures for Vegetation Treatments

Water Resources Protection
• Herbicide will be applied directly to targeted plants in a manner to minimize runoff to surface water. Herbicides will not be aerially applied over open water. • Prescribed burns will incorporate BMPs to limit runoff into the river. Manual, rather than mechanical, removal of salt cedar will be used during maintenance or fuel reduction on the river margin. Woody debris as a result of salt cedar reduction will be mulched, burned or removed from the floodway.
Soil Protection
• Heavy equipment used for brush reduction will typically be wheeled and not tracked. Oversized wheels will be used to minimize soil compaction and rutting. Mechanical treatment will be conducted in the late summer and fall, which typically provide for dryer soil conditions. • Signage will indicate that riparian use is limited to designated trails to limit erosion, minimize damage to vegetation, and provide refuge areas away from trails where wildlife remain undisturbed.
Vegetation Protection
• Herbicides will be sprayed by hand application to targeted species, whenever feasible. Herbicides will not be aerially applied on areas where sensitive riparian vegetation such as cottonwoods, willows and screwbean mesquite are extensively intermingled with salt cedar. Vegetation will be monitored (species, composition, abundance and distribution) before and after vegetation treatments. Saturated and ponded areas will be avoided during mechanical and chemical treatments. • Prescribed burns will be conducted in accordance to techniques identified in a plan to be developed by the USIBWC with guidance from federal and state resource management agencies. Degraded or burned areas will be inter-seeded with native grasses and forbs to further enhance the establishment of desirable browse and forage species.
Wildlife Protection
• Vegetation treatments will occur outside the nesting season. If treatments must occur during the migratory bird-nesting season, surveys will be conducted and active nests will be marked and avoided.
Land Use
• Herbicides will not be aerially applied in populated areas or within 500 feet of residence. Prior to any treatments, notices and signage will be placed to assure any nearby communities are aware of upcoming treatments.
Air Quality
• The amount of vapors will be minimized by dispensing herbicide in a vegetable oil solution limiting airborne particulates. Application of this treatment will not occur during high-wind conditions. Smoke management techniques will be used to determine smoke dispersion prior to prescribed burns.

G. IMPLEMENTATION

A 10-year timeframe was selected for implementation of the Integrated USIBWC Land Management Alternative. It is envisioned that during an initial 5-year phase, on-site data will be collected, breeding surveys for Southwestern willow flycatchers and Yellow-billed cuckoos will be undertaken (during the initial 2 years), implementation plans will be developed and funded, agreements will be reached for interagency and irrigation district cooperation, applications to expand irrigation district service boundaries will be submitted, voluntary land transactions will be undertaken with willing landowners, a water transaction program will be developed and voluntary leases or acquisition of water and water rights will be undertaken with willing water right holders within a District approved lease or reclassification program, and selected projects will be tested at a pilot scale and monitored. Priority projects and additional water transactions will be then identified and implemented. The remaining projects will be completed during the final

5-year phase. Six percent (6%) of funds made available to USIBWC for rehabilitation of its Rio Grande Flood Control levees will be programmed to implement the environmental measures outlined in this Record of Decision, as well as, annual appropriations to USIBWC for construction and operation and management.

Program Management. An adaptive management strategy will be used 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 will be implemented through coordination with stakeholders including EBID and EPCWID. The adaptive management strategy will help guide selection, planning, and implementation of environmental measures and channel maintenance activities as outlined in the RMP. USIBWC may at is discretion create technical workgroups, or enter into public-private partnerships, to further assist with project planning, selection, and implementation. Public input and information sharing for future project needs and measures will be provided at the regular meetings of the Rio Grande Citizen's Forum.

Water Acquisition and Cooperative Programs. Because a number of environmental measures under consideration will 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. After additional consideration and consultation with stakeholders, it was determined that environmental water will be leased or acquired through a cooperative environmental water transactions program with EBID or EPCWID and willing water rights holders. Water will be leased or water rights permanently acquired and transferred from willing sellers through an EBID or EPCWID Board approved leasing or reclassification process.

C.W. Ruth
Commissioner

June 4, 2009
Date

United States Section
International Boundary and Water Commission
United States and Mexico