Pueblo of San Felipe Bosque Restoration Project

Environmental Assessment and Finding of No Significant Impact

Prepared for

Bureau of Reclamation
Albuquerque Area Office
Environment Division
Albuquerque, New Mexico

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U.S. DEPARTMENT OF THE INTERIOR

BUREAU OF RECLAMATION
ALBUQUERQUE AREA OFFICE
ALBUQUERQUE, NEW MEXICO

ENVIRONMENTAL ASSESSMENT
AND
FINDING OF NO SIGNIFICANT IMPACT
NUMBER: AA0 - 07 - 015

PUEBLO OF SAN FELIPE BOSQUE RESTORATION

Lon Robertson

Manager, Environment Division

October 25, 2007

Date

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10/29/07

Date

AAO-07-015
FONSI Number

Finding of No Significant Impact
Pueblo of San Felipe Bosque Restoration

BACKGROUND

The Pueblo of San Felipe (Pueblo) is a federally recognized Indian Tribe located in the Middle Rio Grande Basin. Serious environmental issues in the Middle Rio Grande Basin have the potential to affect the deciduous riparian forest (bosque) adjacent to the river. The Pueblo proposes to clear and restore 10 acres of tribal land in the bosque on the east bank of the Rio Grande. Significant portions of the project area are heavily populated with non-native vegetation, especially saltcedar and Russian olive.

SUMMARY OF THE PROPOSED ACTION

The Proposed Action involves removal of approximately 10 acres of non-native vegetation in the abandoned riparian floodplain of the bosque. Although there is some native vegetation present on the site that would be left in place, approximately 90 percent of the standing trees and shrubs would be removed. No vegetation would be removed within 20 feet of the Rio Grande and the bankline would not be disrupted. Trees range in height from approximately eight feet to approximately 30 feet. Mature cottonwoods range from 15 to 20 feet tall and 15 to 20 inches diameter; Coyote willows are 8 to 10 feet tall and up to two inches in diameter; Russian olive ranged from ten to 20 feet tall and up to 12" diameter; Siberian elm range from 10 to 30 feet tall and 4 to 5 inches in diameter. Vegetation would be removed principally with mechanical means, and the area would be replanted with native vegetation acquired from a nursery. Saltcedar, Russian olive, elm, and other non-native trees in the 10-acre project area would be removed by a 20-ton 228 Komatsu tail-swing excavator with a custom built "extractor." The extractor has an open-back design that would pull the trees out of the ground with the root mass and would minimize root severing (which allows plants to resprout). The excavator has a 28-foot boom and clears a 50-foot-wide path at a time. Although there would be some surface disturbance in non-trees areas, the excavator has a ground pressure of less than six pounds per square inch (bossreclamation.com). Smaller trees would be cut either by hand or with a chain saw and the resprouts treated with a foliar application of the herbicide Garlon 4©. Extracted trees would be piled and allowed to air dry for 6 to 8 months and then burned by a qualified fire crew from the Bureau of Indian Affairs. Native vegetation would be left in place as much as possible.

After the area has been cleared, a subcontractor would provide and install native Rio Grande cottonwood (*Populus deltoides* var. *wislizenii*) poles and Gooding's willow (*Salix goodingii*) in the 10-acre site. The poles would be between 12 and 16 feet in length and be planted in a mosaic that will mimic natural seed regeneration in areas where groundwater is within eight feet of the soil surface. The number of cottonwood and Gooding's willow poles would be approximately equal. Some shrub species such as false indigo bush (*Amorpha fruticosa*) and New Mexico olive (*Forestiera pubescens*) would be planted under the canopy of the cottonwood and willow poles. Other species such as skunkbush sumac (*Rhus trilobata*), silver buffaloberry (*Shepherdia argentea*), and pale wolfberry (*Lycium palidum*) would be planted in more open areas. Coyote willow (*Salix exigua*) and box elder (*Acer negundo*) would be planted as appropriate. The entire site would be seeded with a native grass and forb seed mix. Poultry netting trunk guards would be placed around all pole plantings to protect them from beavers. Pole planting would take place during the dormant season, roughly from mid-January through the end of March. Native grass seeding would take place in the summer to allow germination to coincide with the monsoon season. Shrubs would be grown in deep pots (40 and 60 cubic inches), planted in the fall, monitored for growth and moisture, and watered as necessary until dormancy. Beginning in the spring, plants will be monitored and provided with supplemental water for up to three years following planting to allow the roots to reach the water table. Post-treatment monitoring would identify non-native trees and shrubs that resprout and resprouts would be

spot-treated with low concentrations of the herbicide Garlon 4©. The site would be monitored weekly for weeds, trash, damage, and plant stress, and these items remedied as appropriate.

The Pueblo would seek either tribal or grant funding to allow continued monitoring and maintenance of the site, including expansion of this project into other adjacent areas.

ENVIRONMENTAL IMPACTS RELATED TO THE RESOURCES OF CONCERN

There are no listed species likely to occur in the project area. The bald eagle has the potential to occur in the project area during the winter, but this species was recently de-listed. Other listed species that occur in Sandoval County are not likely present at the project site.

One of the goals of the project is reduce the presence and potential spread of two Class C noxious weeds, Russian olive and saltcedar. While any kind of heavy equipment and ground disturbance provides the opportunity for the spread of weeds, a monitoring program would be put in place to detect the presence of weeds and reduce them with herbicide.

ENVIRONMENTAL COMMITMENTS BY THE PUEBLO OF SAN FELIPE

The Pueblo will obtain all applicable permits prior to implementation of the project. The following environmental commitments to be undertaken by the Pueblo will be carried out as part of this project:

- No vegetation removal would occur within 20 feet of the Rio Grande and the bankline would not be disrupted.
- Best management practices would be enforced to minimize potential impacts to willow flycatcher.
- To protect aquatic habitat from spills or contamination, hydraulic lines would be protected from punctures. In addition, all fueling would take place outside the active floodplain, and all equipment would undergo high-pressure spray cleaning and inspection prior to operation. Equipment would be parked on pre-determined locations on high ground away from the project area overnight.
- The Pueblo would seek to avoid impacts to birds protected by the Migratory Bird Treaty Act (16 U.S.C. 703) by scheduling construction outside of the normal bird breeding and nesting season (approximately April 15 to August 15) for most avian species, or conduct preconstruction breeding surveys and monitoring nests during construction. In this case, nests would be marked and those trees protected until after the birds have fledged. Nests would continued to be monitored twice weekly during the time heavy equipment is working. Close coordination would take place between the equipment operators and the Pueblo environmental staff to reduce the possibility of destroying nests. The U.S. Fish and Wildlife Service would be consulted if bird nests are found.
- The Pueblo would comply with Section 106 of the National Historic Preservation Act as administered by the New Mexico State Historical Preservation Office. Should evidence of possible scientific, prehistorical, historical, or archaeological data be discovered during the course of this action, work shall cease at that location and the Bureau of Reclamation Albuquerque Area Office Archaeologist shall be notified by telephone immediately with the location and nature of the findings. Care shall be exercised so as not to disturb or damage artifacts or fossils uncovered during operations, and the Pueblo shall provide such cooperation and assistance as may be necessary to preserve the findings for removal or other disposition by the government. Traditional Cultural Properties would be evaluated as part of this process.

COORDINATION

Coordination was conducted with the U.S. Fish and Wildlife Service, Bureau of Indian Affairs, and the State Historic Preservation Office.

CONCLUSION

In accordance with the National Environmental Policy Act of 1969, 42 U.S.C. 4321-4347, and based on the analysis in this Environmental Assessment (EA), the Bureau of Reclamation has determined that implementing the Preferred Plan presented in this EA for the Pueblo of San Felipe bosque site would not result in a significant impact on the human environment and does not require preparation of an Environmental Impact Statement.

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ACRONYMS AND ABBREVIATIONS

Collaborative Program	Middle Rio Grande Endangered Species Act Collaborative Program
EA	Environmental Assessment
EPA	U.S. Environmental Protection Agency
FONSI	Finding of No Significant Impact
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
PSD	Prevention of Significant Deterioration
Pueblo	Pueblo of San Felipe
Reclamation	Bureau of Reclamation
Service	U.S. Fish and Wildlife Service
SHPO	State Historic Preservation Office
TCP	Traditional Cultural Property
U.S.C.	United States Code

1. PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION AND BACKGROUND

The Pueblo of San Felipe (Pueblo) is a federally recognized Indian Tribe with tribal lands along the Rio Grande floodplain. Serious environmental issues in the Middle Rio Grande Basin have the potential to affect the traditional way of life for the Pueblo, especially in the bosque, the deciduous riparian forest that borders the river. This area was once subject to frequent flooding, but changes in river hydrology have nearly eliminated the overbank flows and, as a result, the natural regeneration of many riparian plant species. There has also been a concurrent increase in non-native vegetation and loss of biological and hydrological diversity in this area.

As non-native saltcedar (*Tamarix* spp.), Russian olive (*Elaeagnus angustifolia*), and other exotics spread along the Rio Grande, funding for the removal of these species and site restoration has increased. Many projects of the type and magnitude proposed for this area have been carried out and the environmental consequences have been well studied (Barrows 1993; Zavaleta et al. 2001). Overall, if carried out properly in terms of timing and avoidance of direct negative to impacts to wildlife, the results of restoring native trees and shrubs have been generally positive or neutral for wildlife, water quality, and water quantity (Shafroth et al. 2005). In addition, the Pueblo, which views the bosque as a cultural resource, would reap the benefits of having plants of cultural importance restored. The Pueblo has begun to work with several federal entities on restoration and other projects in order to help preserve and sustain the Rio Grande, the bosque, and Pueblo lands.

The Pueblo proposes to clear non-native vegetation from 10 acres of tribal land in the bosque on the east bank of the Rio Grande (Figure 1-1) and replant it with native species. The proposed project is described below.

1.2 PROPOSED ACTION

The Proposed Action involves removal of approximately 10 acres of non-native vegetation in the abandoned riparian floodplain of the bosque. Although there is some native vegetation present on the site that would be left in place, approximately 90 percent of the standing trees and shrubs would be removed. No vegetation would be removed within 20 feet of the Rio Grande and the bankline would not be disrupted. Trees range in height from approximately eight feet to approximately 30 feet. Mature cottonwoods range from 15 to 20 feet tall and 15 to 20 inches in diameter; coyote willows are 8 to 10 feet tall and up to two inches in diameter; Russian olive range from 10 to 20 feet tall and up to 12 inches in diameter; Siberian Elm range from 10 to 30 feet tall and 4 to 5 inches in diameter. Vegetation would be removed principally with mechanical means, and the area would be replanted with native vegetation acquired from a nursery. Saltcedar, Russian olive, elm, and other non-native trees in the 10 acre project area would be removed by a 20-ton 228 Komatsu tail-swing excavator with a custom built “extractor.” The extractor has an open-back design that would pull the trees out of the ground with the root mass and would minimize root severing which allows plants to resprout. The excavator has a 28-foot boom and clears a 50-foot wide-path at a time.

Although there would be some surface disturbance in areas without trees, the excavator has a ground pressure of less than six pounds per square inch. Smaller trees would be cut either by hand or with a chain saw and the resprouts treated with a foliar application of the herbicide Garlon 4©. Extracted trees would be piled and allowed to air dry for 6 to 8 months and then burned by a qualified fire crew from the Bureau of Indian Affairs. Native vegetation would be left in place as much as possible.

After the area has been cleared, a subcontractor would provide and install native Rio Grande cottonwood (*Populus deltoides* var. *wislizaenii*) poles and Gooding's willow (*Salix gooddingii*) in the 10-acre site. The poles would be between 12 feet and 16 feet in length and be planted in a mosaic that will mimic natural seed regeneration in areas where groundwater is within eight feet of the soil surface. The number of cottonwood and Gooding's willow poles would be approximately equal. Some shrub species such as false indigo bush (*Amorpha fruticosa*) and New Mexico olive (*Forestiera pubescens*) would be planted under the canopy of the cottonwood and willow poles. Other species such as skunkbush sumac (*Rhus trilobata*), silver buffaloberry (*Shepherdia argentea*), and pale wolfberry (*Lycium palidum*) would be planted in more open areas. Coyote willow (*Salix exigua*) and box elder (*Acer negundo*) would be planted as appropriate. The entire site would be seeded with a native grass and forb seed mix. Poultry netting trunk guards would be placed around all pole plantings to protect them from beavers. Pole planting would take place during the dormant season, roughly from mid-January through the end of March. Native grass seeding would take place in the summer to allow germination to coincide with the monsoon season. Shrubs would be grown in deep pots (40 and 60 cubic inches), planted in the fall, monitored for growth and moisture, and watered as necessary until dormancy occurred. Beginning in the spring, plants would be monitored and provided with supplemental water for up to three years following planting to allow the roots to reach the water table. Post-treatment monitoring would identify non-native trees and shrubs that resprout. Resprouts would be spot-treated with low concentrations of the herbicide Garlon 4©. The site would be monitored weekly for weeds, trash, damage, and plant stress, and these items remedied as appropriate.

The Pueblo would seek either tribal or grant funding to allow continued monitoring and maintenance of the site, including expansion of this project into other adjacent areas.

1.3 PURPOSE AND NEED FOR THE ACTION

This project is funded by the Bureau of Reclamation (Reclamation). The purpose of the project is to remove non-native invasive vegetation and restore native habitat in order to benefit the Southwestern willow flycatcher (*Empidonax traillii extimus*), yellow-billed cuckoo (*Coccyzus americanus*), and other riparian wildlife, an important component of the stated goals of the Middle Rio Grande Endangered Species Act Collaborative Program (Collaborative Program). The implementation of the Proposed Action would also satisfy the Pueblo's management goals to have native rather than non-native vegetation in the Rio Grande bosque.

The need for the Proposed Action is to satisfy federal requirements under the Biological Opinion (U.S. Fish and Wildlife Service 2003) for Reclamation's Water and River Maintenance Operations, the U.S. Army Corps of Engineers Flood Control Operations, and Related Non-Federal Actions on the Middle Rio Grande, New Mexico 2003 (U.S. Fish and Wildlife Service 2003). Specifically, there is a need to fulfill Element S in the Biological Opinion to establish 1,600 acres of native riparian habitat.

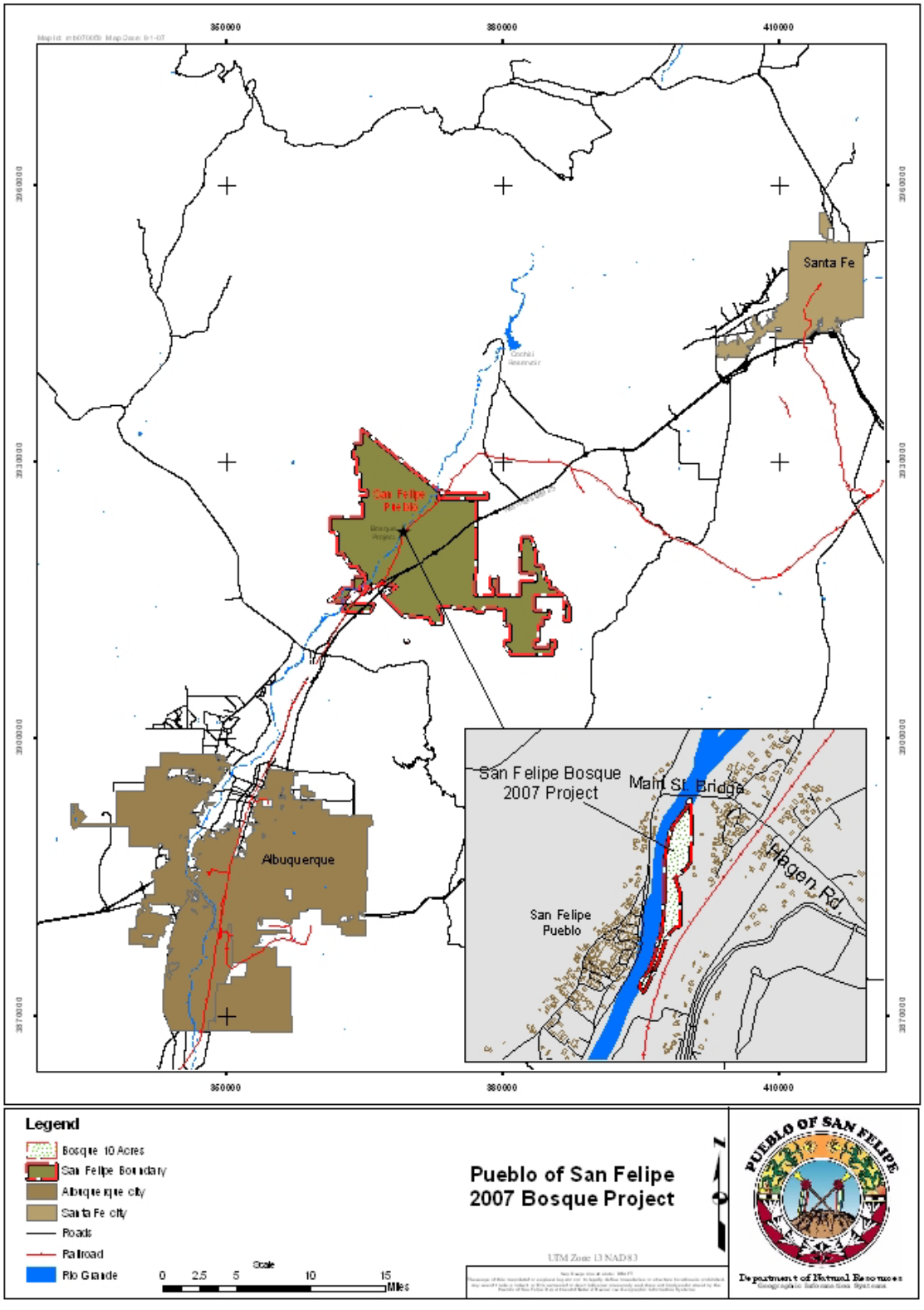

Figure 1-1. Project Site

The bosque has been a crucial ecological and cultural component for the Pueblo for thousands of years. The river and the vegetation communities it supports are important sources of plants and animals. However, this riparian ecosystem has undergone dramatic degradation in the past century due to flood control, water diversions, drought, and other human-caused and environmental factors. Changes have reduced flows in the Rio Grande and facilitated encroachment by non-native plants such as saltcedar, Russian olive, and other species, leading to a loss of wildlife habitat. In order to restore native species and native wildlife habitat to its portion of the bosque, the Pueblo has undertaken a program of invasive species removal.

1.4 RELEVANT STATUTES, REGULATIONS, AND OTHER PLANS

This Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) were prepared by the Pueblo and Parametrix. The funding and lead federal agency is Reclamation, in compliance with all applicable federal statutes, regulations, and Executive Orders, including the following:

- American Indian Religious Freedom Act of 1978 (42 U.S.C. 1996)
- Archaeological Resources Protection Act of 1979 (16 U.S.C. 470)
- Clean Air Act of 1972, as amended (42 U.S.C. 7401 et seq.)
- Clean Water Act of 1972, as amended (33 U.S.C. 1251 et seq.)
- Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.)
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, 1994
- Fish and Wildlife Coordination Act of 1958, as amended (16 U.S.C. 661 et seq.)
- Floodplain Management (Executive Order 11988)
- National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321 et seq.)
- National Pollutant Discharge Elimination System (NPDES), as amended (33 U.S.C. 1251 et seq.)
- Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500 et seq.)
- National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 et seq.)
- Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. 3001 et seq.)
- Protection and Enhancement of the Cultural Environment (Executive Order 11593)
- Protection of Wetlands (Executive Order 11990)
- Procedures for Implementing NEPA (33 CFR 230; ER 200-2-2)
- Secretarial Order 3206, American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act

This EA/FONSI also reflects compliance with applicable tribal regulations and statutes.

1.5 PUBLIC SCOPING ISSUES

The proposed site has been intentionally left in a natural, undeveloped state, and there is no grazing, hunting, or gathering that takes place in the area. The San Felipe Tribal Council and the tribal general public have expressed their support and the Pueblo has not experienced any controversy surrounding this project.

2. ALTERNATIVES

2.1 INTRODUCTION

Alternatives for removing non-native vegetation have been widely used and their success well documented along the Rio Grande (Shafroth et al. 2005). The Pueblo has considered several techniques for restoration of native vegetation at this site. The specific set of techniques proposed for this project is evaluated in this EA/FONSI and summarized in Table 2-1. These techniques conform to the goals of the Pueblo and the Collaborative Program. The Pueblo anticipates that this would be a long-term sustainable project and has elected to use techniques that work with the natural hydrology and biology of the area, although some maintenance of the site would be required, especially in the first few years.

Table 2-1. Summary of Techniques Considered for the Proposed Action

Technique	Description	Benefits
Mechanical Removal of Non-native Vegetation	An extractor would be used to remove the trees, including root balls. Trees would be piled for later burning.	Generally increases water availability; benefits native wildlife, reduces fire risk
Follow-up Treatment with Herbicide	Garlon 4© used to treat saltcedar and Russian olive resprouts.	Increases chances of success of native vegetation plantings
Re-planting of Native Vegetation	The site would be replanted with native vegetation such as cottonwoods, willows, New Mexico olive, and other species.	Provides better wildlife habitat; reduces spread of weeds; reduces fire risk
Burning of Piles of Dead Saltcedar and Russian Olive	Piles would be dried for approximately 6 to 8 months and burned.	No disposal or trucking costs; safe if done properly; reduced chance of seed spread

2.2 ALTERNATIVES CONSIDERED

Two alternatives, the Proposed Action and the No Action Alternative, are analyzed in detail in this EA/FONSI.

2.2.1 No Action Alternative

The No Action Alternative assumes that no human-caused changes would occur in the project area. No thinning or replanting would take place and the successional changes underway in the bosque would be allowed to continue without interference. Under this alternative, vegetation succession would be allowed to proceed untreated.

2.2.2 Preferred Alternative: The Proposed Action

The Proposed Action involves removal of approximately 10 acres of non-native vegetation in the abandoned riparian floodplain of the bosque. Although there is some native vegetation present on the site that would be left in place, approximately 90 percent of the standing trees and shrubs would be removed. No vegetation would be removed within 20 feet of the Rio Grande and the bankline would not be disrupted. Trees range in height from approximately eight feet to approximately 30 feet. Mature cottonwoods range from 15 to 20 feet tall and 15 to 20 inches in diameter; coyote willows are 8 to 10 feet tall and up to two inches in diameter; Russian olive range from 10 to 20 feet tall and up to 12 inches in

diameter; Siberian elm range from 10 to 30 feet tall and 4 to 5 inches in diameter. Vegetation would be removed principally with mechanical means and the area replanted with native vegetation acquired from a nursery. Saltcedar, Russian olive, elm, and other non-native trees in the 10-acre project area would be removed by a 20-ton 228 Komatsu tail-swing excavator with a custom built "extractor." The extractor has an open-back design that would pull the trees out of the ground with the root mass and would minimize root severing (which allows plants to resprout). The excavator has a 28-foot boom and clears a 50-foot-wide path at a time. Although there would be some surface disturbance in areas without trees, the excavator has a ground pressure of less than six pounds per square inch. Smaller trees would be cut either by hand or with a chain saw and the resprouts treated with a foliar application of the herbicide Garlon 4©. Extracted trees would be piled and allowed to air dry for 6 to 8 months and then burned by a qualified fire crew from the Bureau of Indian Affairs. Native vegetation would be left in place as much as possible.

After the area has been cleared, a subcontractor would provide and install native Rio Grande cottonwood poles and Gooding's willow in the 10-acre site. The poles would be between 12 and 16 feet in length and be planted in a mosaic that will mimic natural seed regeneration in areas where groundwater is within eight feet of the soil surface. The number of cottonwood and Gooding's willow poles would be approximately equal. Some shrub species such as false indigo bush and New Mexico olive would be planted under the canopy of the cottonwood and willow poles. Other species such as skunkbush sumac, silver buffaloberry, and pale wolfberry would be planted in more open areas. Coyote willow and box elder would be planted as appropriate. The entire site would be seeded with a native grass and forb seed mix. Poultry netting trunk guards would be placed around all pole plantings to protect them from beavers. Pole planting would take place during the dormant season, roughly from mid-January through the end of March. Native grass seeding would take place in the summer to allow germination to coincide with the monsoon season. Shrubs would be grown in deep pots (40 and 60 cubic inches), planted in the fall, monitored for growth and moisture, and watered as necessary until dormancy. Beginning in the spring, plants will be monitored and provided with supplemental water for up to three years following planting to allow the roots to reach the water table. Post-treatment monitoring would identify non-native trees and shrubs that resprout and resprouts would be spot-treated with low concentrations of the herbicide Garlon 4©. The site would be monitored weekly for weeds, trash, damage, and plant stress, and these items remedied as appropriate.

The Pueblo would seek either tribal or grant funding to allow continued monitoring and maintenance of the site, including expansion of this project into other adjacent areas.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED

Several options were considered early in the planning process but eliminated from further study (Table 2-2). Concrete ditches were proposed for construction. However, these were eliminated from consideration because the concept of concrete lining did not follow the goals of the Collaborative Program. The ditches would not provide wildlife habitat and did not comply with the Pueblo's long-term goals.

Table 2-2. Alternatives Eliminated from Consideration

Technique	Description	Benefits of Technique	Reason for Elimination
Concrete Ditches	Concrete ditches constructed through the bosque for some aquatic wildlife	Most efficient for water transport	Did not follow intent of the Collaborative Program; costly; would not provide any habitat
Alternative Sites for Project	Other sites for this project were considered	Larger areas, further from Pueblo (less short-term disturbance)	These sites were not deemed to have the best access and potential
Herbicide Treatment Only	Foliar application of Garlon 4© on saltcedar and Russian olive	No heavy equipment needed; possibly less expensive	Pueblo opposed to amount of herbicide needed; proximity to Rio Grande

Alternative sites for this project were also examined, but the selected site provided the best access, potential for restoration, and visibility for tribal members. The project site was selected to continue the same type of work that had already been begun in an adjacent area. In 2006, the Bureau of Indian Affairs cleared approximately 50 acres of saltcedar, Russian olive, Siberian elm, and one-seed juniper from the east and west banks of the river immediately adjacent to the Hagen Road bridge. The purpose of the project was to reduce fire-prone fuels in the wildland-urban interface. The trees were removed with an extractor and piled, and will be burned in 2007 or 2008, depending on the weather and the moisture content of the fuel.

Large-scale herbicide treatments were considered, but the site is relatively small and so close to the Rio Grande that mechanical removal of vegetation was deemed less detrimental to the environment and more effective. Although there are herbicides that could be safely used close to water, the Pueblo preferred to use mechanical methods.

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION

This section describes the environmental consequences of the proposed action on various resources, including geology and soils; hydrology, water resources, and water balance; air quality and noise; vegetation and noxious weeds; threatened, endangered, and special status species; other wildlife; cultural resources; Indian trust assets; socioeconomic considerations; land use; and environmental justice.

The project would take place on 10 acres in the Pueblo of San Felipe bosque, the deciduous riparian forest that borders the east bank of the Rio Grande. The Pueblo encompasses 34,737 acres and straddles the Rio Grande in southeastern Sandoval County. Population of the Pueblo is approximately 2,080 members.

The bosque was once subject to frequent over-bank flooding from the Rio Grande, but changes in river hydrology have reduced or eliminated the presence of surface water. This has led to an increase in non-native vegetation, and a loss of biological and hydrological diversity. The environment of the bosque consists of physical and biological resources as described below.

As saltcedar, Russian olive, and other exotics have spread up and down the Rio Grande, funding has increased for removing these species and restoring the site. Dozens of projects of this type and magnitude have already been carried out and the environmental consequences have been well studied (Barrows 1993; Zavaleta et al. 2001). Overall, if carried out properly in terms of timing and avoidance of direct negative to impacts to wildlife (see Chapter 4), the impacts of restoring native trees and shrubs have generally positive effects for native wildlife, water quality, and water quantity (Shafroth et al. 2005). In addition, the Pueblo, which views the bosque as a cultural resource, would reap the benefits of having plants of cultural importance restored.

This EA/FONSI uses a scientific and analytical evaluation to compare the No Action and Proposed Action alternatives. This chapter describes several environmental constituents of the affected environment and evaluates the direct, indirect, and cumulative impacts to these resources.

3.2 GEOLOGY AND SOILS

The project area is located in the Rio Grande subsection of the Basin and Range Physiographic Province (Williams 1986). The land flanking the Rio Grande Basin on the east is predominantly mountainous, with colluvial-alluvial fans and stream terraces sloping westward toward the Rio Grande. The river channel flows in a wide valley with a fertile but narrow floodplain that has been cultivated for centuries. Historically, the river continuously changed course, redistributing sediments in the floodplain. However, since the mid-twentieth century, constriction and channel stabilization have altered the course of the river. Dams, levees, and jetty jacks have been used to control the channel, preventing flows from reaching the floodplain and changing the patterns of deposition and scouring. The present-day channel is composed of clay, silt, sand, and gravel, much of which is contributed by tributaries. The proposed project site is located in an area of highly stratified soils, composed of either sandy or clay-rich over-bank deposits, ranging from poorly to well drained.

Under the Proposed Action, all work would take place on the floodplain above the river terrace with no work in the Rio Grande itself. Care would be taken to minimize the chance that any sediment enters the river from activities on the floodplain. Some soil compaction may occur from the use of heavy equipment on the site. However, this is not expected to affect the site's ability to grow plants, or the ability to support riparian vegetation.

Under the No Action Alternative, there would be no direct impacts to soils. However, the continued presence of saltcedar often brings salts deep within the soil to the surface, thereby changing the soil surface chemistry.

3.3 HYDROLOGY, WATER RESOURCES, AND NET WATER DEPLETIONS

The project area is bordered by the Rio Grande, a perennial river. The riparian forest in the bosque is supported by the water table. None of the project activities would take place within the river itself or immediately adjacent to the bank, and there are no perennial or intermittent streams or arroyos in the project area. This project is expected to be depletion neutral as stated in the 2003 Biological Opinion.

Under the Proposed Action, water would continue to flow in the Rio Grande as before, and groundwater would continue to support riparian vegetation in the bosque. The use of water by native plants is expected to be no greater than that of the saltcedar and Russian olive trees that are currently on the site and the water balance in the Rio Grande would not be affected by this change.

Under the No Action Alternative, the increase of phreatophytes such as saltcedar and Russian olive would continue to deplete water via evapotranspiration.

3.4 AIR QUALITY AND NOISE

The project area is in a natural area in which air quality is good and ambient noise is generally low. The proposed restoration site is in the New Mexico Intrastate Region Two (Central New Mexico) for air quality monitoring. Region Two is considered Class II under the Prevention of Significant Deterioration (PSD) program as required by the Clean Air Act of 1972, as amended (42 U.S.C. 7401 et seq.). PSD Class II areas allow for moderate levels of development accompanied by the resulting air quality impacts.

Under the Proposed Action, noise and air quality would undergo short-term minor disturbances. The project area is relatively close to the village of San Felipe, though the dust and noise from the project is not expected to create a great disturbance to residents. There would undoubtedly be smoke during the burning of the piles in 2008. However, these impacts are expected to be minor and short term. The burn would be done by experienced Bureau of Indian Affairs Fire Management personnel, following the protocols established under their Fire Management (Bureau of Indian Affairs 2005). The proposed project would result in a temporary but negligible negative impact on air and noise quality.

Under the No Action Alternative, air quality and noise would remain the same.

3.5 VEGETATION AND NOXIOUS WEEDS

Mature Siberian elms (*Ulmus pumila*) dominate the project area along with a few mature cottonwoods, Russian olive, and a dense understory of coyote willow. Herbaceous vegetation density is generally correlated with the canopy cover: the more open the canopy, the greater the density of herbaceous vegetation. Margins between areas with a dense canopy and an

open canopy are clustered with weedy herbaceous debris from the previous year's growth. Hydrophilic plants, such as water sedge (*Carex aquatilis*) and spikerush (*Eleocharis* sp.), are found on the margin of the river. The upland environment near the road and away from the river supports species such as milkvetch (*Astragalus* spp.), gumweed (*Grindelia squarrosa*), one-seed juniper (*Juniperus monosperma*), rubber rabbitbrush (*Ericameria nauseosa*), four-wing saltbush (*Atriplex canescens*) and three awn (*Aristida* spp.). The northeastern segment of the project area contains some species that may have been influenced by nearby residential yards, based on their infrequency in the project area and their status as ornamentals, such as box elder and Southwest chokecherry (*Prunus serotina*). A complete list of species observed at the project site is in Appendix A.

The purpose of this project is to reduce the non-native vegetation, including weeds, that are dominating the site, and to re-establish native vegetation and promote conditions that favor a continued dominance of native plants over non-natives. The project would physically remove non-native trees such as Siberian elm, Russian olive, saltcedar, and others, and replace them with native cottonwoods, willows, and other shrubs and forbs.

Under the Proposed Action, the removal of non-native species would have a positive result by reducing noxious weeds and allowing native vegetation to flourish. The soil disturbance created by the heavy equipment may in the short term create conditions that favor the spread of fast growing annual weeds. However, vegetation would be closely monitored by tribal natural resources staff, and weeds eliminated before they dominate the site.

Under the No Action Alternative, weeds would continue to dominate the site and would continue to increase their spread to adjacent areas.

3.6 THREATENED, ENDANGERED, AND SPECIAL STATUS SPECIES

No formal surveys were conducted for threatened or endangered species. Instead, research was conducted by reviewing previous reports and speaking with local experts (such as the Bureau of Indian Affairs and U.S. Fish and Wildlife Service [Service] biologists), and by obtaining a complete list of threatened and endangered species that occur in Sandoval County. The habitat was evaluated and a determination was made about the likely presence or absence of these species.

Southwestern Willow Flycatcher

Except where cited, information in this section is summarized from the Southwestern Willow Flycatcher Recovery Plan (U.S. Fish and Wildlife Service 2002).

The **southwestern willow flycatcher (flycatcher)**, a federally endangered species, is one of 11 flycatchers in the genus *Empidonax* (Family Tyrannidae) breeding in North America and is one of four subspecies of the willow flycatcher currently recognized. The historical breeding range for the species included southern California, southern Nevada, southern Utah, Arizona, New Mexico, western Texas, southwestern Colorado, and extreme northwestern Mexico, but the quantity of suitable habitat within that range is much reduced from historical levels. The flycatcher occurs from near sea level to over 8,500 feet, but is primarily found in lower elevation riparian habitats. As of the 2001 breeding season, there were approximately 1,200 pairs/territories.

The primary cause of the flycatcher's decline is loss and modification of its riparian nesting habitat, which tends to be uncommon, isolated, and widely dispersed. With increasing human populations and the related industrial, agricultural, and urban developments, these habitats have been modified, reduced, and destroyed by various mechanisms. Riparian ecosystems

have declined from reductions in water flow, interruptions in natural hydrological events and cycles, physical modifications to streams, modification of native plant communities by invasion of exotic species, grazing, and direct removal of riparian vegetation. Wintering habitat has also been lost and modified for this and other neotropical migratory birds.

The flycatcher usually breeds in patchy to dense riparian habitats along streams or other wetlands, near or adjacent to surface water or in areas underlain by saturated soil. General characteristics of flycatcher habitat usually consist of dense vegetation or an aggregate of dense patches interspersed with openings that create a mosaic. In almost all cases, slow-moving or still surface water and/or saturated soil are present at or near breeding sites during wet or non-drought years. Nest sites typically have dense foliage from the ground level up to approximately 13 feet above ground and have a dense canopy. The flycatcher nests in native vegetation such as willows or box elder, where available, but has also occasionally nested in non-native species. The flycatcher's riparian habitats are dependent on hydrological events such as scouring floods, sediment deposition, periodic inundation, and groundwater recharge for them to become established, develop, be maintained, and ultimately to be recycled through disturbance.

A neotropical migrant, southwestern willow flycatchers spend only 3 to 4 months on their breeding grounds. The remainder of the year is spent on migration and in wintering areas south of the United States. Southwestern willow flycatchers typically arrive on breeding grounds between early May and early June and establish breeding territories that range in size from approximately 0.5 to 1.5 acres. The flycatcher builds a small open cup nest, constructed of leaves, grass, fibers, feathers, and animal hair. In general, a new nest is built every year. Typical nest placement is in the fork of small-diameter vertical branches at a height of 1.6 to 60 feet., usually lower than 20 feet above ground. Incubation begins after the last egg is laid, and lasts 12 to 13 days. Most eggs in a nest hatch within 48 hours of each other and the female provides most of the initial care of the young. Nestlings fledge 12 to 15 days after hatching. Fledglings typically stay in the general nest area a minimum of 14 to 15 days. Second clutches within a single breeding season are uncommon if the first nest is successful. Most attempts at re nesting occur if the young fledge from the first nest by late June or very early July. Renesting is regularly attempted if the first nest is lost or abandoned due to predation, parasitism, or disturbance; a female may attempt as many as four nests per season. Replacement nests are built in the same territory. Adults that are successful in raising young may remain at breeding sites through mid-August to early September. Pairs with unsuccessful first and/or second nests sometimes abandon their territories midway through the breeding season.

The willow flycatcher is an insectivore, catching insects while flying, hovering to glean them from foliage, or capturing insects on the ground. Wasps and bees (*Hymenoptera*) are common food items, as are flies (*Diptera*), beetles (*Coleoptera*), butterflies/moths and caterpillars (*Lepidoptera*), and spittlebugs (*Homoptera*).

Predation of southwestern willow flycatcher eggs and nestlings is documented for several species of snakes and birds, raccoons, cats, and foxes. The species also experiences brood parasitism by the brown-headed cowbird (*Molothrus ater*), which lays its eggs in the nests of other species. The "host" species then incubate the cowbird's eggs and raise the young. Because cowbird eggs hatch after relatively short incubation and hatchlings develop quickly, they often out-compete the host's own young for parental care. Cowbirds may also remove eggs and nestlings of host species from nests or injure nestlings in nests, thereby acting as nest predators.

Although the entire San Felipe Reservation has not been surveyed for willow flycatchers, protocol surveys have been conducted in some areas, including the project site. No breeding birds have been found, although migrant willow flycatchers are present on occasion (L. Abeita, Wildlife Biologist, pers. comm.). There appears to be no suitable breeding habitat at the present time. It is hoped that this project would increase the potential for creating willow flycatcher habitat.

Under the Proposed Action, habitat would improve for this species, as willows are planted and eventually grow into thickets. The project may affect but is not likely to adversely affect this species.

Under the No Action Alternative, habitat would continue to degrade and conditions would remain unfavorable for this species.

Rio Grande Silvery Minnow

Except where cited, information in this section is summarized from the Rio Grande Silvery Minnow Draft Revised Recovery Plan (U.S. Fish and Wildlife Service 2007).

The Rio Grande silvery minnow (minnow) is a small, silvery-white, relatively heavy-bodied minnow of the family Cyprinidae. Historically, the minnow was one of the most abundant and widespread fishes in the Rio Grande basin, occurring from at least as far north as Española to the Gulf of Mexico. However, this fish has been extirpated from most of this area, mainly due to the construction of dams, poor water quality, de-watering of the Rio Grande by surface diversions, and the introduction of non-native fishes. Currently, the species is present in the Rio Grande between Cochiti Reservoir and the upper end of Elephant Butte Reservoir, an area representing less than 10 percent of its former range (Bestgen and Platania 1991). The Rio Grande silvery minnow was declared an endangered species in 1994.

Adults may reach 3.5 inches from the tip of the snout to the base of the tail. Fish spawn in open water and spawning is associated with high-flow events such as spring runoff, summer rainstorms, or artificially caused “spike” flow releases from reservoirs. This typically occurs over a relatively brief period in May or June. Spawning is also associated with high mortality in adults. Six months after spawning, more than 98 percent of surviving fish are those that hatched the previous summer. Maximum documented longevity in the wild is about 25 months but very few survive more than 13 months. Females produce thousands of semibuoyant, non-adhesive eggs that, after fertilization, drift with the current for 1 to 2 days. Egg hatching generally occurs in 24 to 48 hours. About 3 days after hatching, the fish begin feeding and actively seek low-velocity habitats. Larvae reach sizes of approximately 1.5 inches by autumn.

Studies in the Rio Grande have shown that the minnow uses only a small portion of the available aquatic habitat. Summer habitats include shallow pools and backwaters. In winter, preferred habitat is deeper areas, such as the slack water behind instream debris piles. In general, it prefers areas of water velocity less than 10 centimeters per second (cm/sec), in depths of less than 20 cm. It is most commonly found over silt or sand substrates and avoids main channels or areas of swift water.

During the larval stage, Rio Grande silvery minnow almost without exception use relatively shallow areas with low or no water velocity and a fine particulate substrate (silt or silt/sand mixture). Such conditions are most frequently encountered in habitats not directly associated with the main river channel (backwaters and secondary channel pools). As they grow larger, Rio Grande silvery minnow demonstrate an overall shift in velocity, depth, and substrate use that is reflective of habitat use shifts from low to moderate velocity areas.

The Rio Grande silvery minnow has an elongated and coiled gastrointestinal tract, which is typical of a herbivorous fish. The presence of sand and silt in the gut of wild-captured specimens suggests that algae that grow on the surface of sand is an important food. Laboratory-reared Rio Grande silvery minnow have been observed grazing on algae in the aquaria. Mark-recapture studies have demonstrated that the distance traveled by fish ranged from about 0.68 mile to more than 15.5 miles over 48 hours.

Under the Proposed Action, work would take place only in the abandoned floodplain of the Rio Grande and would not affect Rio Grande silvery minnow or its habitat. The removal of non-native phreatophytes may negligibly increase the availability of water in the river. The project may affect but is not likely to adversely affect this species.

Under the No Action Alternative, conditions would remain the same for this species.

Other Species

The **yellow-billed cuckoo** is a federal candidate species that inhabits woods, orchards, and streamside willow and alder groves, generally with a thick, multi-storied complex of vegetation. The species is unlikely to be present due to lack of habitat.

Under the Proposed Action, habitat would eventually improve for this species. Under the No Action Alternative, habitat would continue to degrade and conditions would remain unfavorable for this species.

The **bald eagle** (*Haliaeetus leucocephalus*), until recently classified as threatened, was recently de-listed and is not addressed in this EA/FONSI.

In addition to the federally listed threatened and endangered species, habitat for and the likely presence of federal **Species of Concern** (Appendix B) was examined. Although the designation as a Species of Concern carries no legal standing, they are included for planning purposes. None are likely to occur in the project area.

There are no federally threatened or endangered plants in Sandoval County. However, Appendix B lists a few species of concern, and several species listed by the New Mexico Native Plant Society as rare. None occur on the project site.

3.7 OTHER WILDLIFE

Potential impacts to a variety of federal Species of Concern are listed in Appendix B.

Wildlife in the bosque and adjacent riparian area are typical for the Middle Rio Grande Valley. No current information exists about previous bird or other wildlife surveys on the Pueblo, but the habitat is similar to areas to the north and south in which extensive bird surveys have been conducted. In some areas of similar size and habitat composition, more than 60 bird species have been identified. In addition, numerous species of mammals, reptiles, and amphibians are present.

Other wildlife, such as small mammals, reptiles, insects, and other songbirds would be affected in the short term because they would be displaced from habitat in the non-native vegetation that is removed. However, the displacement is likely to be temporary, because the animals would likely move to adjacent areas and, when the area has been replanted, return to the restoration site. In the long term, the project is expected to have positive impacts to most types of native wildlife.

The No Action Alternative would allow the continued encroachment of non-native trees and shrubs, and the continued degradation of the habitat. While this would have minimal or no impact in the short term to other types of wildlife, it is expected that the long term

degradation of bosque habitat and the spread of saltcedar and Russian olive would have negative impacts.

3.8 CULTURAL RESOURCES

Cultural resources include archaeological sites, sites eligible for the State Register of Cultural Properties and/or the National Register of Historic Places, and properties of traditional religious or cultural importance (Traditional Cultural Properties or TCPs).

No cultural resources or TCPs have been identified in the project area. The probability is very low that any artifacts that might once have existed in the floodplain of the Rio Grande are still present, due to the nature of the meandering Rio Grande and habitat modifications.

Under the Proposed Action, it is anticipated that no cultural resources or TCPs would be affected.

Under the No Action Alternative, conditions would remain the same, and there would be no impacts to cultural resources or TCPs.

3.9 INDIAN TRUST ASSETS

Indian Trust Assets are legal interests in assets held in trust by the United States government for Indian Tribes or individuals. Some examples of trust assets include lands, minerals, hunting and fishing rights, and water rights. Indian Trust Assets cannot be sold, leased, or alienated without the express approval of the United States government. The United States has a trust responsibility to protect and maintain rights reserved by or granted to Indian Tribes or individuals by treaties, statutes, Executive Orders, and rights further interpreted by the courts. This trust responsibility requires that all federal agencies take all actions reasonably necessary to protect such trust assets.

The project occurs on Pueblo of San Felipe land, an Indian Trust Asset. However, the Pueblo supports the project, which is expected to have beneficial results for the Pueblo. There are no Indian Trust Assets that will be adversely affected by the Proposed Action or the No Action Alternative.

3.10 SOCIO-ECONOMIC CONSIDERATIONS

Under the Proposed Action, the amount of money ($174,550) spent on the project would have a very minor economic impact for the Pueblo and within Sandoval County. The total population of the County was estimated in 2006 to be 113,772, mostly White, Hispanic, and Native American. The median income in the County is $47,745, with a median family income of $48,984 and a per capita income of $19,174 (U.S. Census Bureau 2007). The two largest employers in the County are Intel Corporation in Rio Rancho and J.C. Penney (New Mexico Department of Labor 2007). Total land area of the County is 3,714 square miles.

Under the Proposed Action, a few short-term and relatively low-paying jobs would be created to complete the project, including the hire of subcontractors and tribal employees. This amount is low in comparison with federal, state, and local expenditures, and the overall economy of the County. The overall socioeconomic impact is not expected to be very large.

Under the No Action Alternative, there would be no socioeconomic impact to the area.

3.11 LAND USE

The project site is located in an area that has no current formalized land use. No grazing is allowed in the area, and tribal members do not use the area for hunting, fishing, gathering, or recreation. However, the proximity to the river means that tribal members do use the area for unspecified cultural activities.

Under the Proposed Action, land use would not change. The increase in desirable native vegetation would likely enhance the experience of tribal members that frequent the area.

Under the No Action Alternative, undesirable non-native vegetation would continue to increase and thus reduce the appeal of the area for tribal members.

3.12 ENVIRONMENTAL JUSTICE

Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority and Low-Income Population; February 11, 1994) was designed to focus the attention of federal agencies on the human health and environmental conditions of minority and low-income communities. It requires federal agencies to adopt strategies to address environmental justice concerns within the context of agency operations and proposed actions. In an accompanying memorandum, President Clinton emphasized that existing laws, such as NEPA, should provide an opportunity for federal agencies to assess the environmental hazards and socioeconomic impacts associated with any given agency action upon minority and low income communities. In April of 1995, the U.S. Environmental Protection Agency (EPA) released a guidance document titled Environmental Justice Strategy: Executive Order 12898. This document defines the approaches by which the EPA would ensure that disproportionately high environmental and/or socioeconomic effects on minority and low-income communities are identified and addressed. Further, it establishes agency-wide goals for all Native Americans with regard to environmental justice issues and concerns.

The proposed project is located on Pueblo of San Felipe tribal land, a minority (Native American) community. This project is supported by the Pueblo and would have beneficial effects for the Pueblo, including possible short-term employment, the reduction of unwanted non-native vegetation, reduction of fire hazard, and increased wildlife habitat (a culturally important resource).

Under the Proposed Action, the Pueblo would benefit by having an important cultural and biological resource enhanced. The project was initiated by the Pueblo, and it supports the project.

Under the No Action Alternative, the project area would remain unchanged in the short term, and there would be no effects on environmental justice.

3.13 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES OF THE PROPOSED ACTION

The implementation of this project would result in the commitment of resources such as fossil fuels, construction materials, and labor. In addition, federal funds would be expended for the construction of the proposed project.

3.14 CUMULATIVE IMPACTS

NEPA defines cumulative effects as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably

foreseeable future actions regardless of what agency or person undertakes such other actions" (42 U.S.C. 4331–4335). Several other projects of similar type and scale are occurring at the present time as described below.

The **Pueblo of Santo Domingo**, approximately 10 miles upstream from the Pueblo of San Felipe, is undertaking a project aimed at enhancing riverine features to accommodate the Rio Grande silvery minnow. The Pueblo is removing non-native vegetation and constructing a low velocity side channel with constructed embayments on the east bank of the Rio Grande in an old oxbow. Additional similar projects are also planned to be completed within the next year.

The **Pueblo of Sandia**, approximately 15 miles downstream, is also restoring habitat along the Rio Grande. The Pueblo has already removed approximately 40 acres of non-native phreatophytes and is replanting native willows and cottonwoods. The next phase of this project would involve constructing a low-flow channel on the east bank of the Rio Grande to benefit the silvery minnow, especially during spawning and rearing.

The **Pueblo of Santa Ana**, approximately 8 miles downstream of San Felipe, has completed numerous projects along the west bank of the Rio Grande. Most of these projects have involved the removal of saltcedar, Russian olive, elm, and other species, and the restoration of native riparian areas and grasslands.

Ohkay Owingeh (formerly the Pueblo of San Juan) has planned a project that would result in restoration of over 100 acres of riparian woodland on the east side of the Rio Grande floodplain. Thirty to 40 acres of habitat specifically designed for willow flycatchers would be created along a restored natural watercourse. The project would also result in enhancement of 10 to 15 acres of existing restored wetland with the woody vegetation density required by flycatchers.

The **City of Albuquerque** is undertaking restoration activities which incorporate active and passive restoration methods that would be applied at three sites within the Rio Bravo Subreach of the Rio Grande, approximately 30 miles downstream of San Felipe. A total of 58.3 acres of habitat would be created, including 6,647 linear feet of low-flow and ephemeral channels, 1.5 acres of low-velocity scalloped habitat, and 2 acres of surface water catchments.

The **City of Albuquerque Open Space Division** has been conducting extensive clearing of non-native vegetation from within the Rio Grande Valley State Park bosque. The thinning process is intended to reduce fuel loading within the bosque, thus reducing the risk of future catastrophic wildfire. Much of the City's thinning has been completed in support of the Collaborative Program.

The **New Mexico Interstate Stream Commission** has implemented various habitat restoration/rehabilitation techniques intended to enhance, restore and/or create aquatic habitat for the benefit of the silvery minnow in the Albuquerque Reach of the Middle Rio Grande. Phases I and II involve testing the river's ability to mobilize sediment from riverbanks, bars, and islands in order to create low velocity habitat for the Rio Grande silvery minnow. Phase I, which was completed in April 2006, took place at three locations, each approximately 1.5 miles long: the North Diversion Channel, the Interstate 40 to Central Avenue-area, and the South Diversion Channel. Phase II, which is still on-going, is occurring at the following four locations: (1) from U.S. Highway 550 to approximately 1,200 m downstream; (2) from Paseo del Norte to Montaño Road; (3) from I-40 to approximately 1,015 m downstream of Central Avenue; and (4) from the South Diversion Channel to I-25. These projects are part of a four-phase Project. Phase I began in 2006 and Phase IV will continue through 2009. Approximately 75–90 acres will be treated during Phase II, with treatment areas that include

islands, bars, banks, and a diversion structure. A phased approach will be applied to future restoration activities, with monitoring and evaluation of the outcomes utilized in subsequent phases.

In the context of the other work that is occurring in this reach of the Rio Grande, and the generally small size of this project (10 acres), the cumulative impacts upon the biological and cultural resources of this proposed project would be negligible. The proposed project would substantively restore a small but significant area of ecological value to the Pueblo of San Felipe and provide long-term benefits to wildlife and to the tribal members who make use of this resource. The cumulative impact of all of these on going projects would need to be evaluated and monitored as the projects mature, but overall cumulative impacts are expected to be positive for wildlife, native plants, and other resources.

4. ENVIRONMENTAL COMMITMENTS BY THE PUEBLO OF SAN FELIPE

The Pueblo will obtain all applicable permits prior to implementation of the project. The following environmental commitments will be carried out as part of this project:

- No vegetation removal would occur within 20 feet of the Rio Grande and the bankline would not be disrupted.
- Best Management Practices would be enforced to minimize potential impacts to willow flycatcher.
- To protect aquatic habitat from spills or contamination, hydraulic lines would be protected from punctures. In addition, all fueling would take place outside the active floodplain, and all equipment would undergo high pressure spray cleaning and inspection prior to operation. Equipment would be parked on pre-determined locations on high ground away from the project area overnight.
- The Pueblo would seek to avoid impacts to birds protected by the Migratory Bird Treaty Act (16 U.S.C. 703) by scheduling construction outside of the normal bird breeding and nesting season (approximately April 15 to August 15) for most avian species, or conduct preconstruction breeding surveys and monitoring nests during construction. In this case, nests would be marked and those trees protected until after the birds have fledged. Nests would continue to be monitored twice weekly during the time heavy equipment is working. Close coordination would take place between the equipment operators and the Pueblo's environmental staff to reduce the possibility of destroying nests. The Service would be consulted if bird nests were found.
- The Pueblo would comply with Section 106 (Appendix C) of the National Historic Preservation Act as administered by the New Mexico State Historic Preservation Office (SHPO). Should evidence of possible scientific, prehistorical, historical, or archaeological data be discovered during the course of this action, work shall cease at that location and the Reclamation Albuquerque Area Office Archaeologist shall be notified by telephone immediately regarding the location and nature of the findings. Care shall be exercised so as not to disturb or damage artifacts or fossils uncovered during operations, and the Pueblo shall provide such cooperation and assistance as may be necessary to preserve the findings for removal or other disposition by the government. TCPs Properties would be evaluated as part of this process.

5. CONSULTATION AND COORDINATION

The Service was notified about the Proposed Action and concurred with the determination concerning project impacts on federal endangered and threatened species potentially occurring in the project area described in Chapter 3 of this document.

Because no work would take place within waters of the United States, it has been determined that no Clean Water Act Section 404 permits would be required.

The Bureau of Indian Affairs was contacted in regard to the possible presence of endangered species.

The SHPO was consulted about the project and determined that no historic properties would be affected.

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APPENDIX A

Plant Species Found at the Project Site During Field Visit, May 2007

APPENDIX A

Plant Species Found at the Project Site During Field Visit, May 2007

Table A-1. Species Observed Within Project Area

Common Name	Scientific Name	Category*	Abundance*	Comments
Forbs				
Wild Onion	*Allium* sp.	F	R	
Western Ragweed	*Ambrosia psilostachya*	F	U	
Dogbane	*Apocynum cannibum*	F	U	
Missouri Milkvetch	*Astragalus missouriensis*	F	C	
Milkvetch	*Astragalus* spp.	F	C	Not *A. feensis;* habitat not that of *A. knightii*.
Burningbush	*Bassia scoparia*	F	C	
Mare's Tail	*Conyza candensis*	F	A	
Smooth Horsetail	*Equisetum laevigatum*	F	C	
Rubber rabbitbrush	*Ericameria nauseosa*	F	R	One specimen
Spreading fleabane	*Erigeron divergens*	F	C	
Velvetweed	*Gaura mollis*	F	C	
Wild Licorice	*Glychorhizza lepidopta*	F	U	
Curlycup Gumweed	*Grindelia squarrosa*	F	C	
Prickly Lettuce	*Lactuca serrulata*	F	C	Weedy biennial
Hoary tansyaster	*Machaeranthera canescens*	F	C	
Lacy tansyaster	*Machaeranthera pinnatifida*	F	C	
Sweet Clover	*Melilotus officinalis*	F	A	
Curly Dock	*Rumex crispus*	F	C	
Russian Thistle	*Salsola tragus*	F	C	Weedy annual
Threadleaf Ragwort	*Senecio flaccidus*	F	C	
Tall Tumblemustard	*Sisymbrium altissimum*	F	A	Weedy biennial
London Rocket	*Sisymbrium irio*	F	A	Weedy biennial
Canada Goldenrod	*Solidago canadensis*	F	C	
Copper Globemallow	*Sphaeralcea angustifolia*	F	C	
Scarlet Globemallow	*Sphaeralcea coccinea*	F	C	
Rattlesnake Weed	*Sphaerophysa salsula*	F	C	Non-native perennial
Common Dandelion	*Taraxacum officinale*	F	C	
Jack-go-to-bed-at-noon	*Tragopogon lamottei*	F	C	Non-native biennial
Cocklebur	*Xanthium strumarium*	F	C	

Table A-1. Species Observed Within Project Area (continued)

Common Name	Scientific Name	Category*	Abundance*	Comments
Grasses				
Indian Ricegrass	*Achnatherum hymenoides*	G	C	
Threeawn	*Aristida* spp.	G	U	
Brome	*Bromus* spp.	G	U	
Cheat Grass	*Bromus tectorum*	G	A	Non-native weedy annual
Water Sedge	*Carex aquatilis*	G	C	
Spikerush	*Eleocharis* spp.	G	C	
Mouse Barley	*Hordeum murinum*	G	A	Non-native spring annual
Alkali Muhly	*Muhlenbergia asperifolia*	G	C	
Western Wheatgrass	*Pascopyrum smithii*	G	C	
Plains Bristlegrass	*Phragmites australis*	G	C	Non-native perennial
Alkali Sacaton	*Sporobolus airoides*	G	C	
Shrubs				
False Indigo	*Amorpha fruticosa*	S	C	
Fourwing Saltbush	*Atriplex canescens*	S	U	
Tree cholla	*Cylindropuntia imbricata*	S	R	
Snakeweed	*Gutierrezia sarothrae*	S	C	
Tulip Pricklypear	*Opuntia phaeacantha*	S	R	
Woodbine	*Parthenocissus vitacea*	S	U	
Coyote Willow	*Salix exigua*	S	A	
Canyon Grape	*Vitis arizonica*	S	U	
Trees				
Box Elder	*Acer negundo*	T	R	One individual
Russian Olive	*Elaeagnus angustifolia*	T	A	
One-seeded Juniper	*Juniperus monosperma*	T	C	
R.G. Cottonwood	*Populus deltoides* var. *wislizeni*	T	U	
SW chokecherry	*Prunus serotina*	T	R	two individuals
Saltcedar	*Tamarix chinensis*	T	C	
Siberian Elm	*Ulmus pumilla*	T	A	

*Abbreviations: F=Forb, G=Graminoid, T=Tree, S=Shrub; A=Abundant, C=Common, U=Uncommon, R=Rare

APPENDIX B

Species of Concern and Rare Plants of Sandoval County

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Table B-1. Species of Concern and Rare Plants of Sandoval County

Species Name	Common Name	Distribution & Abundance in Sandoval County	Habitat and Diet Notes	Service or Other Status	Presence / Absence at Project Site
Birds					
Empidonax traillii extimus	SW Willow Flycatcher	Uncommon in Spring, Summer, and Fall	Riparian or lacustrine habitats, esp. those with thick willows or other vegetation, permanent water, and a multi-layered canopy.	Endangered	Present during migration only
Charadrius montanus	Mountain Plover	Uncommon in Spring and Summer	Lowland grasslands, especially with heavy grazing; agricultural fields; short veg. and bare ground; playas; eats ground-dwelling insects.	Species of Concern	Absent
Strix occidentalis lucida	Mexican Spotted Owl	Rare year-round resident	Upper elev., mature, closed-canopy forests, riparian areas, esp. with multi-storied canopy, cliffs, and water; feeds on small–med. sized mammals, birds.	Threatened	Absent
Falco peregrinus tundrius	Arctic Peregrine Falcon	Rare during migration only	Mountain cliffs and river gorges. Preferred hunting habitats include croplands, meadows, river bottoms, marshes and lakes.	Species of Concern	No habitat at project site. Unlikely during migration
Falco peregrinus anatum	Amer. Peregrine Falcon	Rare year-round resident	Open habitats including wetlands, riparian, montane, lowlands; nests on ledges, usually near water, preys almost exclusively on live birds.	Species of Concern	No habitat at project site. Migration only
Ammodramus bairdii	Baird's Sparrow	Rare	Chihuahuan desert grasslands, shortgrass (breeding)/tallgrass prairie, mountain meadows up to 3,600 m.; agricultural lands, and croplands. Eats seeds (esp. grass) and insects.	Species of Concern	Absent
Accipiter gentilis	Northern Goshawk	Uncommon year-round resident	Mountain forests, esp. with dominant ponderosa pine component.	Species of Concern	Absent
Athene cunicularia	Western Burrowing Owl	Uncommon year-round resident	Prairie dog towns or other burrows in open areas with sparse vegetation and bare ground. Feeds on arthropods and small mammals.	Species of Concern	Absent
Coccyzus americanus	Yellow-billed Cuckoo	Rare year-round resident	Associated with lowland deciduous woodlands, willow and alder thickets, second-growth woods, deserted farmlands, and orchards.	Candidate	No habitat at project site. Possible during migration

Table B-1. Species of Concern and Rare Plants of Sandoval County (continued)

Species Name	Common Name	Distribution & Abundance in Sandoval County	Habitat and Diet Notes	Service or Other Status	Presence / Absence at Project Site
Mammals					
Mustela nigripes	Black-footed Ferret	Extirpated in County, though it historically occurred here.	Inhabits large prairie dog colonies nearly exclusively and feeds on variety of mammals, especially prairie dogs.	Endangered	Absent
Ochotona princeps nigrescens	Goat Peak Pica	Known to occur in Sandoval County	Alpine meadows and rocky areas.	Species of Concern	Absent
Zapus hudsonius luteus	NM Meadow Jumping Mouse	Known to occur in Sandoval County	Often associated with a grass perennial forb community with at least 65% vegetative cover. Usually found in marshes, moist meadows, and riparian habitats in open prairie.	Species of Concern	Absent
Corynorhinus townsendii	Townsend's Big-eared Bat	Known to occur in Sandoval County	Xeric to mesic habitats, including desert scrub, sagebrush, chaparral, deciduous and coniferous forests. Roosts/breeds in caves or abandoned mines; feeds on insects.	Species of Concern	Absent
Fish					
Hybognathus amarus	Rio Grande Silvery Minnow	Year-round resident in suitable habitat	Larger Southwestern rivers that typically exhibit flashy or unpredictable flow, and seasonal (spring) spikes.	Endangered	Possibly present in river at project site
Catostomus plebeius	Rio Grande Sucker	Known to occur in Sandoval County	Small to large, middle elevation streams, over gravel/cobble, or backwaters and pools below riffles. Rarely in waters with heavy silt and organic detritus. Periphyton common.	Species of Concern	Absent
Oncorhynchus clarki virginalis	Rio Grande Cutthroat Trout	Known to occur in Sandoval County	Large generally cool, clear, streams and rivers. Opportunistic feeders on terrestrial insects, aquatic invertebrates, zooplankton and crustaceans.	Species of Concern	Absent
Other Animal Taxa					
Plethodon neomexicanus	Jemez Mountains Salamander	Known to occur in Sandoval County	Mixed conifer, spruce-fir forests > 7,200 feet with high humidity and soils with specific rock structure.	Species of Concern	Absent
Speyeria nokomis nitocris	New Mexico Silverspot Butterfly	Known to occur in Sandoval County	Uncertain	Species of Concern	Absent

Species Name	Common Name	Distribution & Abundance in Sandoval County	Habitat and Diet Notes	Service or Other Status	Presence / Absence at Project Site
Plants					
Astragalus knightii	Knight's Milkvetch	Present in the County	Rimrock ledges of Dakota Formation sandstone in piñon-juniper woodland; 1,750-1,800 m (5,700-5,900 ft).	Species of Concern	Absent
Puccineliia parishii	Parish's Alkali Grass	Present in the County	Alkaline springs, seasonally wet areas at the heads of drainages or on gentle slopes at 800-2,200 m (2,600-7,200 ft) range-wide.	Species of Concern	Absent
Townsendia gypsophila	Gypsum Townsend's Aster	White Mesa in the Nacimiento Mts.	Weathered gypsum outcrops of the Jurassic-age Todilto and overlying Morrison formations.	Species of Concern	Absent
Abronia bigelovii	Tuften Sand Verbena	Present in the County	Hills and ridges of gypsum in the Todilto Formation, 1,750-2,250 m (5,700-7,400 ft).	Not listed but is rare	Absent
Astragalus feensis	Santa Fe Milkvetch	Present in the County	Sandy benches and gravelly hillsides in piñon-juniper woodland or plains-mesa grassland; 1,550-1,830 m (5,100-6,000 ft).	Not listed but is rare	Absent
Dalea scariosa	La Jolla Prairie Clover	Present in the County	Open sandy clay banks and bluffs, often along roadsides, at about 1,450-1,500 m (4,750-4,900 ft).	Not listed but is rare	Absent
Delphinium robustum	Robust Larkspur	Present in the County	Canyon bottoms and aspen groves in lower and upper montane coniferous forest; 2,200-3,400 m (7,200-11,200 ft).	Not listed but is rare	Absent
Delphinium sapellonis	Sapello Canyon Larkspur	Present in the County	Canyon bottoms and aspen groves in lower and upper montane coniferous forest; 2,450-3,500 m (8,000-11,500 ft).	Not listed but is rare	Absent
Heuchera pulchella	Sandia Alumroot	Present in the County	Limestone cliffs in lower and upper montane coniferous forest; 2,450-3,260 m (8,000-10,700 ft).	Not listed but is rare	Absent
Mentzelia springeri	Springer's Blazing Star	Present in the County	Volcanic pumice and pyroclastic ash in piñon-juniper woodland and lower montane forest; 2,150-2,450 m (7,000-8,000 ft).	Not listed but is rare	Absent
Muhlenbergia arsenei	Tough Muhly	Present in the County	Limestone rock outcrops in piñon-juniper woodland; 1,400-2,000 m (4,600-6,500 ft).	Not listed but is rare	Absent
Silene plankii	Plank's Campion	Present in the County	Igneous cliffs and rocky outcrops; 1,500-2,800 m (5,000-9,200 ft).	Not listed but is rare	Absent
Phacelia sp. Nov.	Gypsum Phacelia	Present in the County	Gypsum soils.	Species of Concern	Absent