

Chapter 2. ALTERNATIVES

2.1 Introduction

This chapter describes the two alternatives analyzed in this EA: the No action Alternative and the Proposed Action Alternative. Other alternatives considered are also documented.

2.2 Description of the Alternatives

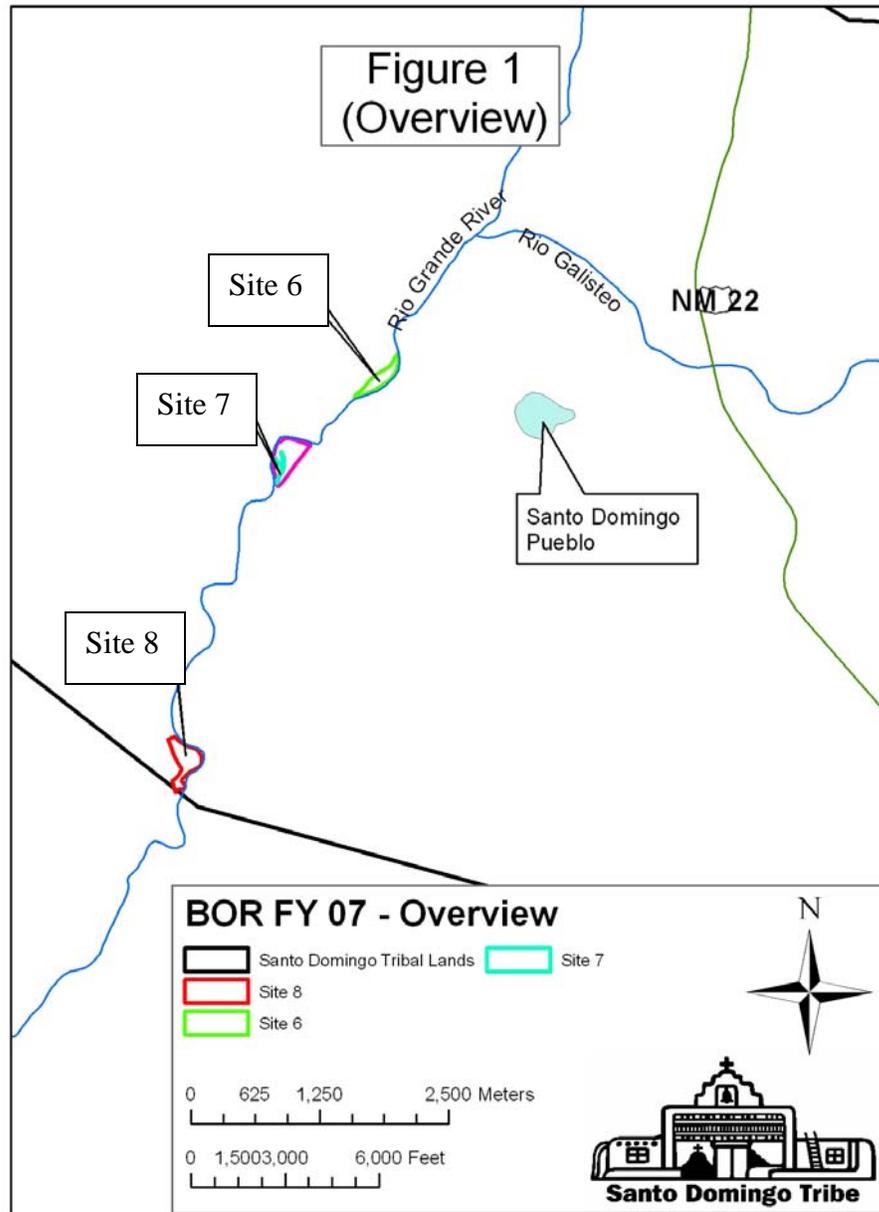
2.2.1 No Action Alternative

Without the proposed action, the Rio Grande in this reach will sustain high water velocities, continue channelizing within the floodplain, and maintain poor habitat quality for the silvery minnow.

Without the diversification of habitat in this reach of the Rio Grande, the high water velocity and limited habitat availability will perpetuate poor quality conditions for flycatcher and silvery minnow.

2.2.2 Proposed Action Alternative

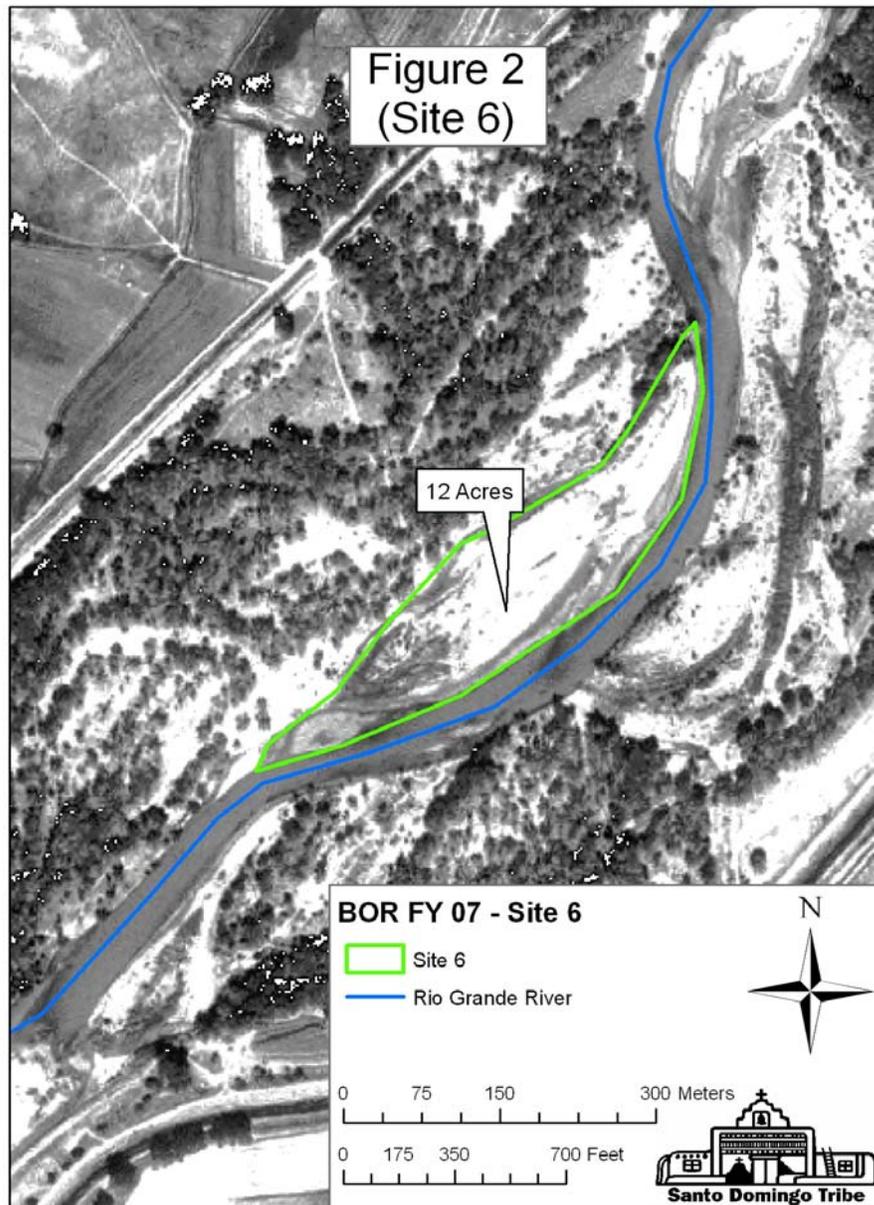
The proposed action is aimed at enhancing riverine features to accommodate the needs of the silvery minnow (Figure 1). Site Six will build upon a previously completed habitat restoration project directly across the river on Santo Domingo Tribal Lands. Sites Seven and Eight are located downstream of Site Six, in which excavation will permit water to flow into previously completed habitat restoration conducted by Reclamation in the early 1990s. These projects are designed to be low-flow velocity side channels, with constructed embayments. Site One is located approximately one mile north of Site Six, and is located on a naturally occurring island in which non-native trees will be thinned to enhance habitat for the flycatcher.



Site Six

Site Six is located on the west side of the Rio Grande, approximately 1.5 miles south of SP88 and Bridge No. M102. The NRB is proposing to reopen an isolated side channel to function as a low velocity, flow-through habitat for silvery minnow (Figure 2). Currently the site encompasses 12 acres and consists of a large sandbar located in the active channel of the Rio Grande and is inundated only at high water flows that are greater than 2,500 cubic feet per second (cfs). The isolated channel of the oxbow is approximately 1780 feet in length. The dominant vegetation in the project area is saltcedar,

intermingled with Russian olive and contains no cottonwood overstory. The soils in the side channel are of mixed composition, ranging from sand/silt to a sand/gravel on the sandbar. The groundwater in the project area is less than two feet below the surface.



The flow-through side channel will be constructed by excavating 12 to 24 inches of river bed materials in the side channel, which will permit conditions for a low-velocity side channel habitat. The inlet (upstream section) and outlet (downstream section) of the channel will remain unexcavated and silt fenced until the excavation of the side channel is completed. The channel will vary from 10 to 20 feet in width with one to three embayment features excavated and tiered into the river's banks to create silvery minnow nursery habitat. Woody debris will be placed in the newly constructed side channel to

enhance habitat variability and persuade invertebrate establishment. Special attention will be observed to engineer the project to accept water at desired flows, likely 800-1200 cfs, as done in the Santo Domingo Tribe's FY 2005 and 2006 restoration projects.

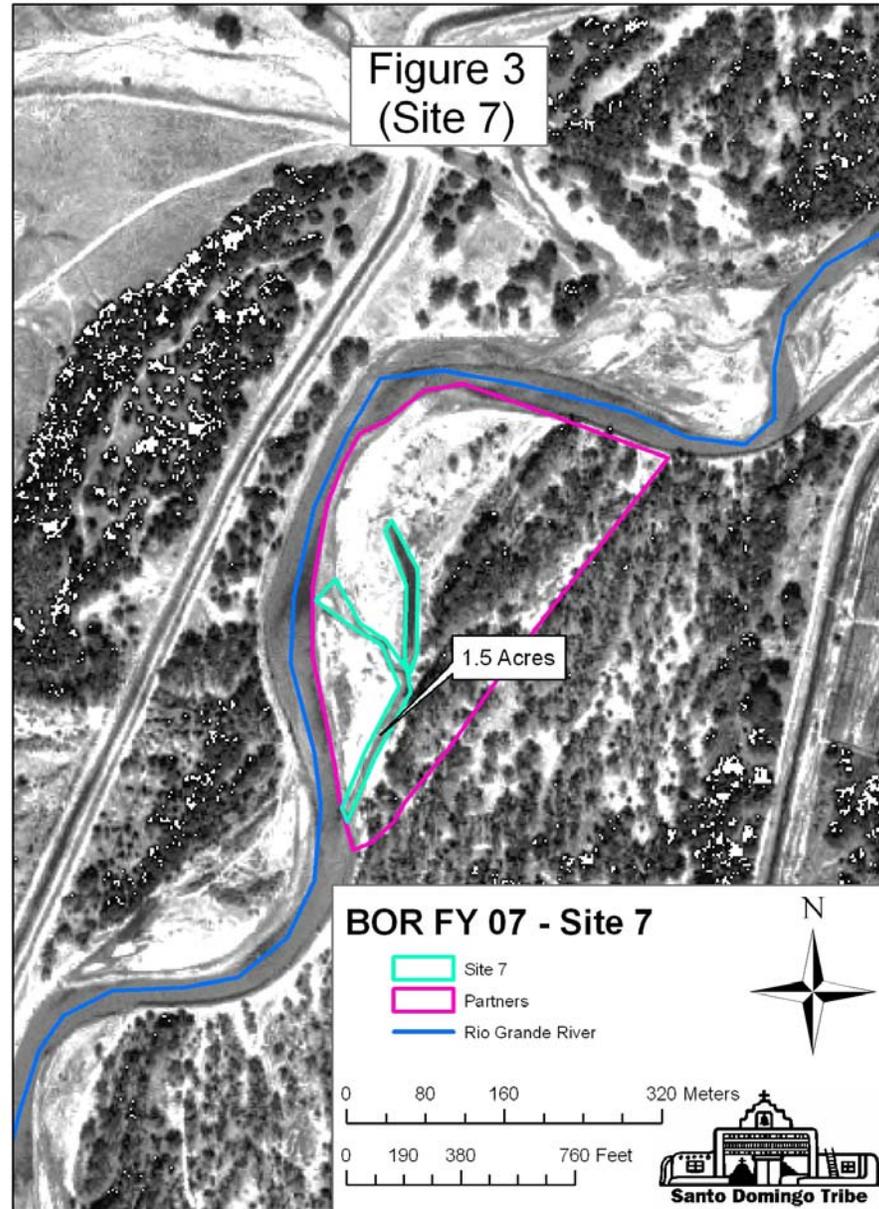
Adjacent to this project area on the sandbar, (within the active channel of the river), a four to five year old stand of saltcedar has emerged. The NRB intends to conduct a prescribed stump-cut treatment which will include the use of the herbicide, Habitat© (Imazapyr, approved for aquatic applications). Removal of the emerging saltcedar would help the proposed constructed habitat survive high flow events without potential scouring effects from water deflected from the saltcedar stand. Though the project area is 12 acres in size, the clearing will total approximately ten acres.

During the construction of the project, precautions include prohibiting heavy equipment from entering the water. Sediment removed from the river will be transported to a community borrow pit or placed next to the project area above the ordinary high water mark. The length and depth of the habitat is intended to promote higher water temperatures, provide shallow and low water velocity habitat, while complementing adjacent habitat restoration projects. Replanted cottonwoods and coyote willows will aid in stabilizing the banks of the constructed habitats without the redirection of the Rio Grande's flow.

Site Seven

In the early 1990s, Reclamation conducted a series of river maintenance activities in the Cochiti Reach aimed at controlling erosion which threatened the levee system. The dredging of the river bed and placement of rip rap increased water conveyance (i.e., water velocity) and channelized the river. Select backwater habitat features were constructed to enhance fisheries habitat, yet most features were destroyed by riverine flows.

In FY 2004, the NRB utilized funds from the USFWS - Partners for Fish and Wildlife Program to restore one of these constructed habitats (Figure 3). The 33 acre restoration site entailed the removal of non-natives, and replanting native grasses, shrubs and trees. In addition to the replanting efforts, the NRB also erected a fence to protect new vegetation from livestock. At this site, a backwater habitat was created by Reclamation. However, since its construction, the river bed has scoured, isolating the backwater and side channel from the active channel. The shallow backwater and side channel contain standing water year-round (mostly due to seepage), and are inundated at water flows greater than 1,500 cfs.



The NRB is proposing to excavate the inlet and outlet of the side channel and backwater to allow water flow into each site. Though the length of the side channel is approximately 980 linear feet and depending upon specific elevations in the side channel, the entire channel will not need excavation because of naturally existing low spots.

Excavation will take place in low flow conditions and is anticipated to last nearly two months. All excavated materials will be either transported to an existing borrow pit or scattered on the site, above the ordinary high water mark. Precautions will be taken during the construction of the project in the event that silvery minnow are located within

the project area, including preventing heavy equipment from entering the water and installing silt fences at the inlet and outlets during excavation.

Replanting efforts will not be necessary because of the naturally occurring dense stand of willow and previously replanted cottonwoods poles. The final product of this project is a functioning backwater and side channel habitats which will provide shallow and low velocity habitat for silvery minnow.

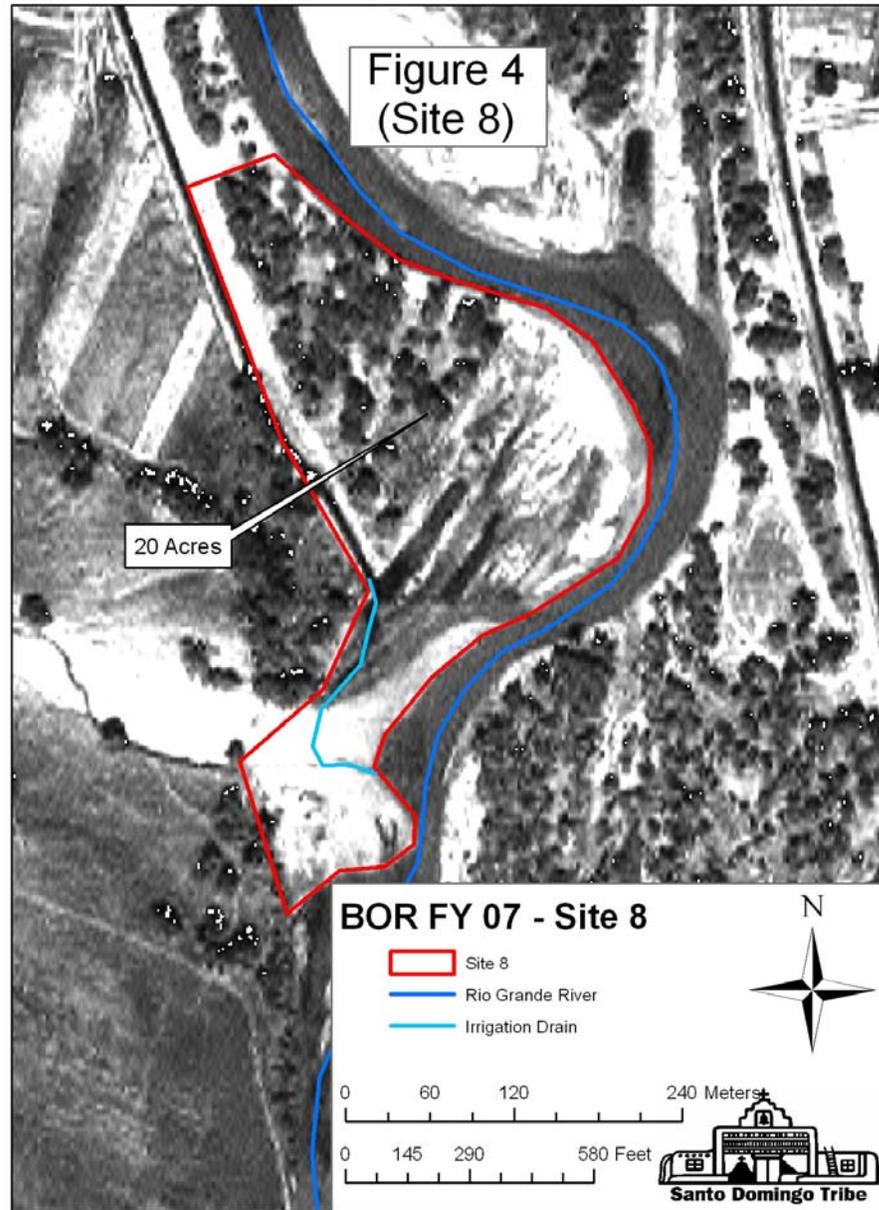
Site Eight

Site Eight is located 3.7 miles south of the SP88 and Bridge No. M102, on the west bank of the Rio Grande at the confluence of Borrego Canyon and the Santo Domingo west side irrigation return (Figure 4). The returning ditch water supports a small network of intermittently flowing channels that meander throughout the alluvial fan of the canyon's confluence. Incision in the active channel has isolated a side channel, created a backwater at the confluence.

This site is composed of a sandbar and a dynamic confluence that intermingles with an upland riparian ecotone. The soil is composed of sand and cobble (originating from upland runoff and erosion events). Downstream of the confluence is a riffle zone of 40 to 60 foot width; this type of habitat is not presently common in this reach of the Rio Grande. Upstream of the riffle zone, the water velocity is slow and maintains a shallow depth. Just across and upstream of this site, the NRB completed a restoration project (December 2007) such that nursery habitat and an abandoned oxbow were reopened to accommodate flowing water.

The NRB is proposing to excavate approximately four to twelve inches of sediment within the confluence in order to reconnect an isolated backwater to create nursery habitat. Excavation will allow water to flow into the backwater and side channel habitat year round and at higher water flows (>1000cfs). The NRB intends to enhance habitat in a tiered manner up the side channel toward the bosque which will provide a variety of habitats to accommodate various life stages of the silvery minnow. In addition to this excavation, the NRB is proposing to replant coyote willow whips throughout the project area. The replanting will extend the life of the restoration project, while providing future habitat for the flycatcher. A total of 5.2 acres are proposed to be excavated and 20 acres of adjacent bosque and sandbar will be thinned of non-natives trees.

Precautions will be taken during the construction of the project in the event that silvery minnow are located within the project area, including preventing heavy equipment from entering the water and installing silt fences when the mouth of the side channel is excavated. To prevent equipment from operating in the river, all excavation activities will occur during low flow conditions.



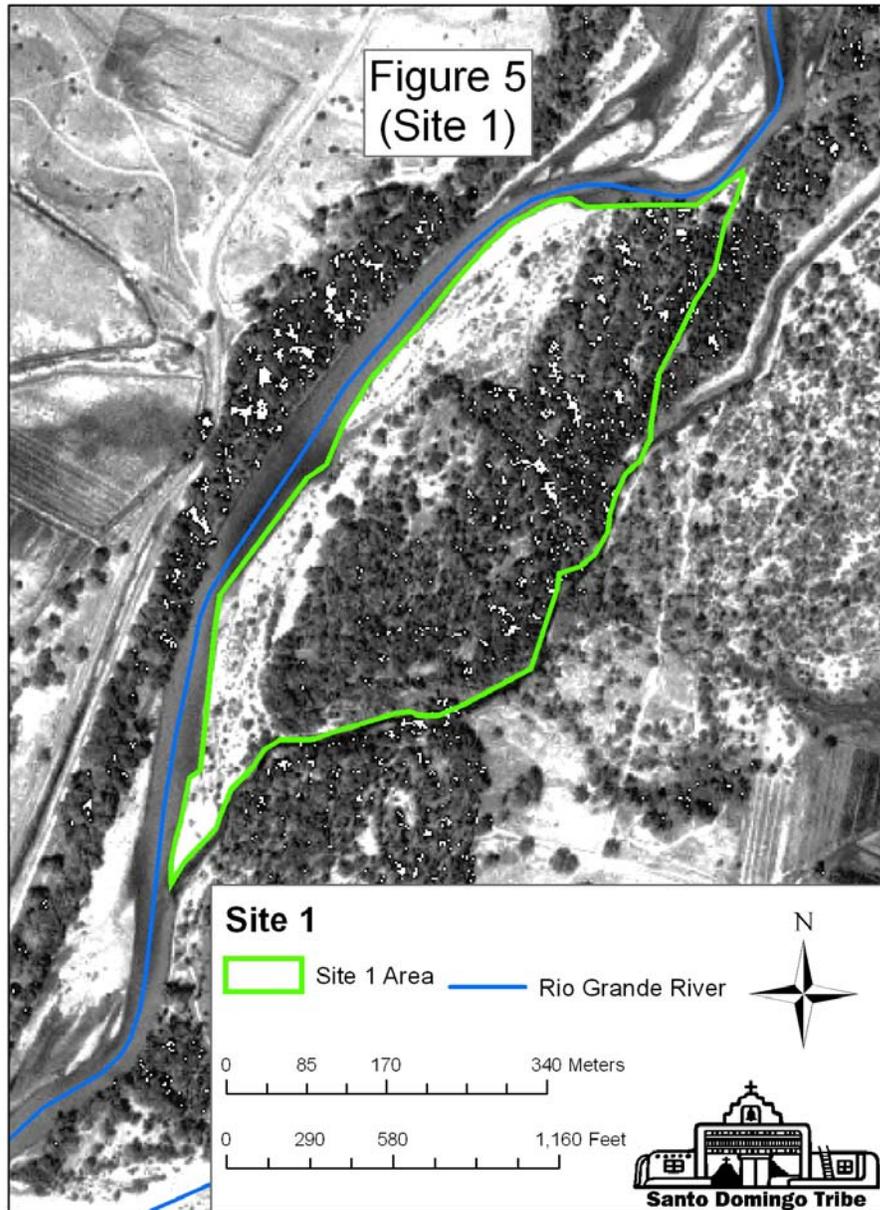
Site 1—Completion of an FY 2005 restoration project

Site One is on the east side of the Rio Grande, approximately 0.5 miles north of the Rio Galisteo confluence (Figure 5). The site consists of a side channel extending approximately 0.75 miles from its upstream beginning to its end. It is fully connected when the active channel of the Rio Grande flows at a volume of approximately 1000 cfs. The site is essentially an island and is approximately 44 acres, in which 30 acres are dominated by mature Russian olive and saltcedar.

In the spring and fall of 2006, the NRB conducted thinning activities at Site One with the intent of opening a densely wooded side channel and adjacent bosque to construct silvery

minnow habitat. It was originally intended for the entire island to be thinned of the invasive vegetation, however, due to the size and density of trees in the project area the thinning was not completed. This permitted tree thinning to only occur near the side channel, which allowed the NRB to construct the three intended embayments. In all, approximately 13 acres of non-natives were removed.

The NRB is proposing to complete the stump-cut prescription on the remaining invasive trees in the site. Thinned trees will be chipped and scattered on site or collected for other purposes.



2.3 Alternatives Considered but Eliminated from Further Study

Alternative Project Areas: Less desirable abandoned oxbows exist on Santo Domingo Tribal Lands; however, greater volumes of sediment would need to be removed to create the habitat conditions of the Proposed Action and therefore the study of these abandoned oxbows was not advanced.

Other sites were considered for restoration but were eliminated from further consideration for a number of reasons, including cost, accessibility and rank in priority. Dense stands of exotic vegetation and several rows of jetty-jacks surround several potential project sites, which would increase costs and time to complete a project.

Chapter 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

This section describes the environmental consequences of various resources, including geology and soils, hydrology, water resources and water balance, noxious weeds, threatened and endangered species and special status species, cultural resources, Indian Trust Assets, socioeconomic considerations, land use, and environmental justice. The description of the affected environment for these resources can be found in the document, Santo Domingo Tribe–Endangered Species Habitat Improvement Project- Phase II-Environmental Assessment April 2007, and is incorporated by reference in this document.

The affected environment is within the Cochiti Reach of the Middle Rio Grande. The Cochiti Reach extends from Cochiti Dam downstream to the Angostura Dam. This reach has been identified by Reclamation and the USFWS, as well as the Collaborative Program, as an area where habitat/ecosystem restoration projects would be highly beneficial to all life stages of the silvery minnow.

3.2 Description of Relevant Affected Resources

3.2.1 Geology and soils

During construction of the backwater and side channels, care will be taken to minimize sediment erosion. Excavated material will be stockpiled at pre-designated locations or transported to a community borrow pit, and silt fencing will be installed when working near the bank of the river. With these mitigating measures, no impacts are anticipated due to the Proposed Action.