

**BIOLOGICAL ASSESSMENT  
FOR THE  
CARLSBAD PROJECT ACQUIRED LAND TRANSFER ACT**

**DEPARTMENT OF THE INTERIOR  
BUREAU OF RECLAMATION  
ALBUQUERQUE AREA OFFICE**

BIOLOGICAL ASSESSMENT

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### 1.0 INTRODUCTION

This Draft Biological Assessment (BA) considers the federally listed threatened and endangered species potentially affected by the transfer of certain real property, including interest and ownership of acquired lands and irrigation facilities within the Carlsbad Project in Eddy County, New Mexico, from the United States to the Carlsbad Irrigation District (CID) (Figure 1), associated with the “Carlsbad Project Acquired Land Transfer Act.” Reclamation has jurisdiction over approximately 43,000 acres of land owned by the United States. These are either acquired land or land withdrawn from the public domain by Reclamation. The proposed land transfer involves about 2,400 hectares (6,000 acres) in the area of Brantley and Avalon Reservoirs and approximately 480 hectares (1,200 acres) of fee and easement interests in a drainage and irrigation distribution system south of Carlsbad. The irrigation and drainage system includes 242 kilometers (151 miles) of laterals, 60 kilometers (37 miles) of canals, and 39 kilometers (24 miles) of drains. The system is used to irrigate about 10,022 hectares (25,055) acres of land between Avalon Reservoir and Malaga, along the west side of the Pecos River. The proposed action does not include Sumner, Brantley, or Avalon Dams, the transfer of any water rights, or changes to operations of any facilities that make up the Carlsbad Project. The land proposed for conveyance can be separated into two geographically defined areas. The north area comprises the acquired lands and interests associated with the watershed and storage facilities of the Carlsbad Project in Eddy County. This area is that portion upstream of the outlet works of Avalon Dam, and includes Avalon Reservoir, Brantley Dam and Reservoir. The south area contains the lands and interests acquired for the irrigation and drainage facilities of the Carlsbad Project. This area extends from the outlet works at Avalon Dam to the terminus of the project works, east of the town of Malaga.(Figure 2).

A reconnaissance-level survey of the southern project area was conducted September 18-21, 2000, with emphasis on the canals, ditches, and laterals below Carlsbad, otherwise, the primary source of information for this BA is the June 2000 *Brantley and Avalon Reservoirs Resource Management Plan Draft Environmental Assessment* prepared by the U.S. Bureau of Reclamation (Reclamation) Upper Colorado Region, Albuquerque Area Office. Other references such as field guides, rare and endangered species handbooks, and experience in the area from previous studies have also been used to supplement the existing information.

The project area lies in the southern portion of the north-south trending Pecos Basin, bounded to the west by the Guadalupe Mountains and to the east by the Querecho Plains and Bibley Basin (New Mexico

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Bureau of Mines & Mineral Resources, 1983). The elevation in the project area ranges from 945 meters (3,100 feet) at Carlsbad to 993 meters (3,260 feet) at Brantley Dam. Overall, the topography in the project area is relatively flat to gently sloping. The climate in the project area is semiarid with low precipitation, typical of the Chihuahuan Desert. Summers are usually hot, with high temperatures between 32 and 38 degrees Celsius (90 to 100 degrees Fahrenheit), while winters are sunny and mild with an average high of about 14 degrees Celsius (58 degrees Fahrenheit) (BOR, 2000). The average annual rainfall is approximately 31 centimeters (12 inches), occurring primarily May through October, and the average annual snowfall is about 9.4 centimeters (3.7 inches) (BOR, 2000).

### 2.0 THREATENED AND ENDANGERED SPECIES

Threatened and endangered species are those species recognized as having limited distribution, low numbers, or specific threats such as habitat loss and modification such that special consideration for the species is warranted. Species listed as either threatened or endangered by the U.S. Fish & Wildlife Service (Service) are protected by the Endangered Species Act (ESA). Some of these species have designated critical habitat, that which is necessary for the survival of the species. The ESA prohibits the “take” or unauthorized harm, harassment, or destruction of a Federally listed species, including its habitat. The current Eddy County threatened, endangered, and rare species (T&E) list maintained by the Service was reviewed to arrive at the project specific list of potentially occurring T&E species. A copy of the Eddy County list can be found in Appendix A. The project specific T&E list below was derived by a comparison of the habitat within the project area to the habitat requirements and distribution of the listed T&E species. Generally, those species removed from project area effects, found at a considerable distance outside the project area or in completely different habitat types were eliminated from consideration.

**Table 1**

**Potentially Occurring Federally Listed Threatened and Endangered Species**

<b>Common/Scientific Name</b>	<b>Federal Status</b>	<b>Typical Habitat</b>
Gypsum wild buckwheat ( <i>Eriogonum gypsophilum</i> )	Threatened w/critical habitat	Chihuahuan Desert scrub, gypsum outcrops
Southwestern willow flycatcher ( <i>Empidonax traillii extimus</i> )	Endangered	Perennial waterways with dense & diverse vegetation, including willow
Bald eagle ( <i>Haliaeetus</i> )	Threatened	Winters around rivers, lakes

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<i>leucocephalus)</i>		
Interior least tern ( <i>Sterna antillarum</i> )	Endangered	Salt flats, broad sandbars, barren shores along rivers
Pecos gambusia ( <i>Gambusia nobilis</i> )	Endangered	Main population exists at Blue Spring, 12 miles upstream of the Black River Diversion Dam

**Figure 1 Vicinity Map and Watershed for the Carlsbad Project Area**

Source: Brantley and Avalon Reservoirs RMP Draft EA, September 2000

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**Figure 2 Carlsbad Project Location Map**

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### 2.1 SPECIES DESCRIPTION

The effects of the proposed action on five Federally listed species will be analyzed in this biological assessment. The five species include the gypsum wild-buckwheat (*Eriogonum gypsophilum*), southwestern willow flycatcher (*Empidonax traillii extimus*), bald eagle (*Haliaeetus leucocephalus*), interior least tern (*Sterna antillarum*), and Pecos gambusia (*Gambusia nobilis*).

#### 2.1.1 Gypsum Wild-buckwheat

##### Status and Distribution

The gypsum wild-buckwheat was listed as threatened on January 19, 1981 (46 FR 5730) with critical habitat. Its historic distribution is unknown, and currently it exists at only three populations in Eddy County, New Mexico (USFWS, 1998). These are located 9 miles north of Carlsbad at Seven Rivers Hills, just south of Black River Village, and in the drainages of Ben Slaughter Draw and Hay Hollow (USFWS, 1998).

##### Life History/Ecology

The gypsum wild-buckwheat is a small, erect perennial about 8 inches in height that grows from a thickened woody root. Thick ovate leaves occur only at the base of the plant and bright yellow flowers are held on the ends of a many-branched flower stalk (USFWS, 1998). The plant flowers in May and June and is found on gypsum soils at 3,000-3,500 feet elevation in semi-desert areas of the Chihuahuan Desert (USFWS, 1998).

#### 2.1.2 Southwestern Willow Flycatcher

##### Status and Distribution

A final rule was published in the February 27, 1995 Federal Register to list the flycatcher as an endangered species under the ESA. Critical habitat was designated for the species in some areas of Arizona, California, and New Mexico, as published in the Federal Register on July 22, 1997, but did not include the Rio Grande or Pecos river drainages in New Mexico. The flycatcher is also classified as

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endangered (Group 1) by the State of New Mexico. It currently occurs in southern California, Arizona, New Mexico, southern portions of Nevada and Utah, western Texas, and possibly southwestern Colorado (Federal Register 1995).

In New Mexico, the species has been observed in the Rio Grande, Rio Chama, Zuni, San Francisco, and Gila River drainages. Available habitat and overall numbers of flycatchers have declined statewide. In recent years, breeding pairs have been found within the Middle Rio Grande above Elephant Butte Reservoir and between Espanola and Velarde, NM. There have been no sightings in the Cochiti and Angostura Reaches.

### **Life History/Ecology**

The flycatcher is a late spring/summer breeder that builds nests and lays eggs in late May and early June and fledges young in late June or early July (Sogge et al., 1993, Tibbitts et al., 1994). Birds may be present in breeding territories as early as the beginning of May and as late as August.

The flycatcher is an obligate riparian species occurring in habitats adjacent to rivers, streams, or other wetlands characterized by dense growths of willows (*Salix* sp.), *Baccharis*, arrowweed (*Pluchea* sp.), saltcedar (*Tamarix* sp.), or other species (Federal Register, 1995). This habitat is often associated with a scattered overstory of cottonwood (*Populus* sp.)(Federal Register, 1995).

Nesting habitat for the flycatcher varies greatly by site and includes species such as cottonwood, willow, tamarisk, box elder, and Russian olive. Species composition, however, appears less important than plant and twig structure. Slender stems and twigs are important for nest attachment. Nest placement is highly variable. Nest sites in New Mexico are nearly always over or adjacent to water. In rare cases in Arizona, birds have nested up to 100 meters (about 300 feet) from water. Nests have been observed at heights ranging from 0.6 m to 18 m and generally occur adjacent to or over water.

### **2.1.3 Bald Eagle**

#### **Status and Distribution**

On a seasonal basis, the bald eagle is located throughout the conterminous United States. The bald eagle was listed under the ESA (Public Law 93-205) on March 11, 1967.

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In the Southwestern United States, wintering bald eagles from the northern US and Canada arrive in October and November, depending on climatic conditions, and normally migrate north by March and April (Ohmart and Sell, 1980). In New Mexico, bald eagles winter from the northern border of the state southward to the basins of the Gila, Rio Grande, Pecos and Canadian rivers.

From December 1989 through March 1990, the US Army Corps of Engineers (Corps) undertook an aerial survey of the upper Pecos River system, in the vicinity of Santa Rosa Lake, to identify overwintering bald eagle habitat. Ground observations by Corps personnel at Santa Rosa Lake were also recorded in the aerial survey summary. Survey results indicate both adult and sub-adult bald eagles use Santa Rosa Lake between December and March. New Mexico Department of Game & Fish (NMDGF) aerial surveys between 1982 and 1990 from the headwaters of the Pecos River to the vicinity of Fort Sumner, New Mexico, show an upward trend in overwintering populations over those 8 years and comprise an average of 11.3% of the New Mexico bald eagle winter total.

### **Life History/Ecology**

Wintering bald eagles in New Mexico are associated with unfrozen lacustrine, riverine, and riparian habitats. Distribution appears dependent on prey density, suitable perch and roost sites, weather conditions, and lack of human disturbance (Ohmart and Sell, 1980).

Bald eagle numbers fluctuate considerably during sequential winters due to weather conditions and prey availability at the wintering sites as well as weather conditions further north.

Bald eagles are opportunistic feeders, and their diet varies regionally in the southwest. Important food items include warmwater fish species, particularly common carp (*Cyprinus carpio*) and channel catfish (*Ictalurus punctatus*), waterfowl, carrion, and smaller mammals. The construction of mainstem dams has had a major influence on eagle distribution as the birds take advantage of newly created food sources at impoundments.

#### **2.1.4 Interior Least Tern**

##### **Status and Distribution**

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The interior least tern was listed under the ESA as a threatened species on May 28, 1985. New Mexico is located on the extreme southern and western periphery of the interior least tern's historic range. The first recorded sightings of the interior least tern in New Mexico occurred in 1949 on the Bitter Lake National Wildlife Refuge (BLNWR), located northeast of Roswell, New Mexico (Jungleman, 1988). This refuge was established adjacent to the Pecos River in 1939. A small population of least terns has utilized this area for the past 51 years; the number of terns sighted at BLNWR during peak abundance fluctuates annually, with 60 sighted on September 5, 1961 and no birds sighted for several years following that date. The average number of interior least terns sighted at the BLNWR on the peak use day and number of nests during the period of record indicates tern populations have remained low and production of young terns has been minimal. While most of the past research has centered in and around Roswell, New Mexico, other sightings have been documented near Las Cruces, New Mexico (1980), in the Rio Grande Basin, White Sands (1981), Holloman Lake near Alamogordo (1980/1982), Bottomless Lakes State Park, and Wade's Bog (prior to 1973). There are no additional sightings in the Pecos River Basin.

### **Life History/Ecology**

Interior least terns may utilize areas within the Pecos River basin for both nesting and feeding. Throughout the interior least tern's range the nesting period starts in mid-June and may last through August.

Interior least terns typically nest in colonies. There are two factors required for successful interior least tern nesting. Nesting sites, the first factor, normally occur on broad, unvegetated sand bars. The nest is scraped in sand and/or gravel and is normally unlined. Two to four eggs (usually three) are laid in the nest, and incubation takes 20-22 days. The peak of hatching is generally during the first week of July. Chicks leave the nest after 1 to 2 days and are fully-fledged at 2 to 3 weeks. There is a great deal of variability between the maximum nesting densities in tern colonies throughout its range. In recent years, the least tern's preferred nesting habitat in the Roswell area has been salt flats. This is probably due to the fact that salt flats are one of the few habitats with substrates that lack vegetation. The disadvantage of salt flats for nesting habitat is the inability of precipitation to infiltrate the clay/silt soils, causing flooding of nest sites during rain events.

The second factor for successful interior least tern nesting is the adequacy of the food base. The primary food source of the interior least tern consists of non-spiny rayed fish less than 9.9 cm (3.9 in) in length

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and with a body depth diameter less than 1.5 cm (.0.6 in) (USFWS, 1990). The food base for interior least tern chicks consists of fish less than 1.5 cm (0.6 in) in length. The type of fishery associated with providing an adequate food base for both adult and young-of-the-year appears to be common in the Pecos River.

### **2.1.5 Pecos Gambusia**

#### **Status and Distribution**

The Pecos gambusia was listed as endangered under the Endangered Species Conservation Act of 1969, on October 13, 1970. No critical habitat has been designated. The Pecos gambusia is endemic to the Pecos River basin. It once occurred in the Pecos River system from just below Ft. Sumner, New Mexico downstream to Fort Stockton, Texas, including small tributaries of the Pecos River and isolated springs with outflows.

At present, their habitat has been greatly diminished. Pecos gambusia have been restricted to ponded habitats, heads and runs of springs, and gypsum sink holes associated with aquatic vegetation located on Bitter Lake National Wildlife Refuge (BLNWR). Most of these habitats are spring fed with constant temperatures. They can also be found in these type habitats at Blue Spring and Salt Creek Wilderness Area in New Mexico, as well as being introduced to artificial pools at the Living Desert State Park just West of Carlsbad, New Mexico. There are 12 known populations of Pecos gambusia located within the vicinity of Roswell, New Mexico. Sublette, et. al. (1990), shows no mainstem populations of Pecos Gambusia presently existing in the Pecos River basin throughout New Mexico. In Texas, they can be found in several spring areas near Balmorhea and in the Leon Creek drainage near Fort Stockton.

They are frequently abundant where found in these locations. In 1975, the population at Blue Spring was estimated at just less than one million and the population at BLNWR was estimated to be between 26,000 and 29,000.

Conditions that limit or reduce these populations are introduced non-native fish species that are predators or compete for space and food, as well as species that are congeneric competitors. The introduction of

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the western mosquitofish (*Gambusia affinis*), used as a biological mosquito control, into Pecos gambusia habitats is such a competitor and has contributed to the failure of some of these populations. Pecos gambusia exhibited lower fecundity rates than western mosquitofish. When these two species occurred sympatrically, Pecos gambusia survival was reduced. Where habitats were large enough to accommodate both species, such as at Blue Spring, hybrids do exist, but the diversity of habitat offers a partial isolation preventing the complete mixing of both species.

### **Life History/Ecology**

The Pecos gambusia belongs to the family of live-bearers. Females give birth to their young alive and average about 38 embryos per reproductive period. Pecos gambusia are small, not reaching more than 60 mm in length and have a lower protruding jaw which causes the mouth to be up-turned (described as superior). As a result the species feeds at the surface or in the upper portion of the water column. It is a carnivore and is also an opportunistic feeder. It will eat any small insect, aquatic or terrestrial. Its preferred prey are mosquito larvae and water boatman larvae.

The Pecos gambusia live in conditions of shallow, alkaline waters with aquatic vegetation for cover. The species has a limited thermal range. Reported temperature tolerances for a Texas population ranged between 21-30° C. Its upper temperature limit can go as high as 39° C. Pecos gambusia are intolerant to cold temperatures for long periods. This is a factor which limits the distribution of New Mexico populations. The species can tolerate high salinities but is also intolerant of total hardness above 5,000 milligrams/liter CaCO<sub>3</sub>, conditions which sometimes exist in various sinkholes. Critical habitat has not been established for the Pecos gambusia.

## **3.0 FINDINGS**

### **3.1 GYPSUM WILD BUCKWHEAT**

The gypsum wild buckwheat is the only T&E plant species that has been currently found within or near the area of analysis (BOR, 2000). One population of gypsum wild buckwheat is located

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approximately 1.5 miles northwest of Brantley Lake at Seven River Hills, on the west side of US 285, and two others are found in the drainages of Ben Slaughter Draw and Hay Hollow (USFWS, 1998). In 1998, a thorough search was also conducted on Reclamation land in similar habitat just east of US 285, and no plants were found (BOR, 2000). About one square mile of land around the Seven River Hills population was designated as critical habitat in 1984 (USFWS, 1998). According to the Figure 1 of 1984 Recovery Plan for the species, critical habitat does not occur on Reclamation lands (USFWS, 1984). About 50 gypsum wild buckwheat individuals are present on Reclamation lands, west of US 285 on the Seven Rivers Hills escarpment (BOR, 2000), but these lands are not part of the proposed title transfer. Other gypsum outcrops in the northern project area do provide potential habitat for this species, however no gypsum wild buckwheat plants have been located there (BOR, 2000).

### **3.2 SOUTHWESTERN WILLOW FLYCATCHER**

The southwestern willow flycatcher has not been found in the vicinity of the project; surveys conducted by Reclamation in 1996 failed to locate this species along the Pecos River from the headwaters of Lake McMillan to Avalon Dam (BOR 1996). In addition, Kevin Hamann of Tetra Tech EM Inc. conducted surveys for the flycatcher along the Pecos River two miles north of Carlsbad during the nesting season of 1997. No willow flycatchers were detected during the 1997 surveys either.

### **3.3 BALD EAGLE**

The bald eagle has historically been known to winter in the Pecos Valley in the general vicinity and may hunt and roost around the reservoirs and Pecos River. Eagles usually perch and roost in large trees, which are rather limited in the project area.

### **3.4 INTERIOR LEAST TERN**

There have been very few areas where the Interior least tern (tern) is found in New Mexico. The primary area for terns is the Bitter Lake National Wildlife Refuge (NWR) just northeast of Roswell. Based on the best information to date, the Bitter Lake NWR has the only known nesting colony in New Mexico (Montgomery, 2000), though terns have been observed on the west shore of Avalon Reservoir and on exposed mud flats along the Pecos River in May 1998 (BOR, 2000).

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In New Mexico, the tern is a spring/summer resident. They do not reach their breeding sites until late April/early May and are usually gone by the end of September. These were most likely transient individuals, but their nesting status was undetermined (BOR, 2000). Potential nesting habitat for the interior least tern within the study area exists on the shoreline of the reservoirs.

### **3.5 PECOS GAMBUSIA**

Since Pecos gambusia require slow moving water and stable temperatures, the Black River offers somewhat limited habitat. Gambusia that possibly find their way to the mainstem of the Black River may find some habitats there, but because of the extreme shallowness of the habitat, it is likely that they do not survive any freezing temperatures in the winter or possibly drying conditions in the summer. If they do survive the winter, high flows in the spring would flush them downstream to less suitable habitats and awaiting predators. The presence of these fish in the river would be an indication that they came from off-river sites, such as connected springs and pools and are secondary to the Black River because of the flow conditions and lack of suitable habitats and temperatures.

The Pecos gambusia is primarily found in off-channel, spring habitats, such as Blue Spring, approximately 12 miles west of the Black River Diversion Dam. A survey was conducted in the Black River proper in September 1996 by New Mexico Department of Game and Fish (Bob Larson, personal communication). No Pecos gambusia were found at any of the sample locations. Off-channel, spring habitats to Black River were sampled for presence/absence in August 2000 and were found to contain low numbers of Pecos gambusia<sup>1</sup>.

## **4.0 DETERMINATION OF EFFECT**

### **4.1 GYPSUM WILD-BUCKWHEAT**

The known population of the gypsum wild buckwheat on Reclamation lands northwest of Brantley Lake, west of US 285, is outside the area proposed for title transfer and no changes to existing land use or water operations will occur under this proposed action. In addition, designated critical habitat for this species does not occur on lands to be transferred or on any Reclamation land in the project area. This proposed

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<sup>1</sup> Low numbers were reflective of the sampling equipment, seines, which were a less efficient method for sampling weed-choked habitats preferred by Pecos gambusia.

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action is not likely to adversely affected the species or result in the destruction or adverse modification of its designated critical habitat.

### **4.2 SOUTHWESTERN WILLOW FLYCATCHER**

The southwestern willow flycatcher was not found along the Pecos River during surveys conducted in 1996 and 1997. Regardless, since no changes to existing land use or water operations will occur under this proposed action, this species is not likely to be adversely affected.

### **4.3 BALD EAGLE**

The bald eagle may winter around Brantley and Avalon Lakes and the Pecos River, but active nests for this species have not been found or documented within the project limits. The land transfer is not likely to adversely affect wintering bald eagles in the project area.

### **4.4 INTERIOR LEAST TERN**

If the tern is not nesting around Avalon Reservoir its long-term success should not be affected, however if the species is nesting around the reservoir human activity could affect its reproductive success.

The interior least tern was observed on the west shore of Avalon Reservoir and on exposed mud flats along the Pecos River in May 1998 (BOR, 2000), however it was not determined if this species is nesting in the area. Since no changes to existing land use or water operations will occur under this proposed action, this species is not likely to be adversely affected.

### **4.5 PECOS GAMBUSIA**

It is likely that individuals of Pecos gambusia that enter the Black River proper do not survive. Although water operations are not part of the proposed title transfer, water operations presently conducted on the river have no adverse affect on the local populations (namely Blue Spring) from which displaced individuals came, nor will their primary habitats be destroyed or adversely modified. This species is not likely to be adversely affected by the proposed action.

## **5.0 REFERENCES**

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**APPENDIX A**

**EDDY COUNTY THREATENED AND ENDANGERED SPECIES LIST**