

AMISTAD

Cultural Resources Study



Amistad National Recreation Area CULTURAL RESOURCES STUDY

A Congressionally Directed Study In
Fulfillment of Requirements of the
Establishment Legislation for Amistad
National Recreation Area (Public Law 101-
628)

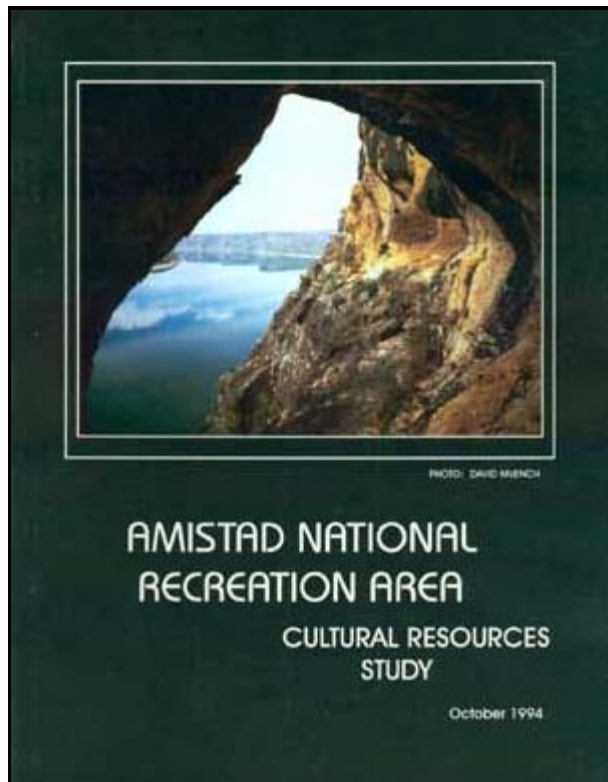
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NATIONAL PARK SERVICE
U.S. DEPARTMENT OF THE INTERIOR

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Cover Photo: Cave with rock art high above Lake Amistad. Close-up of the pictograph in the cave across from page 1. Source: David Muench

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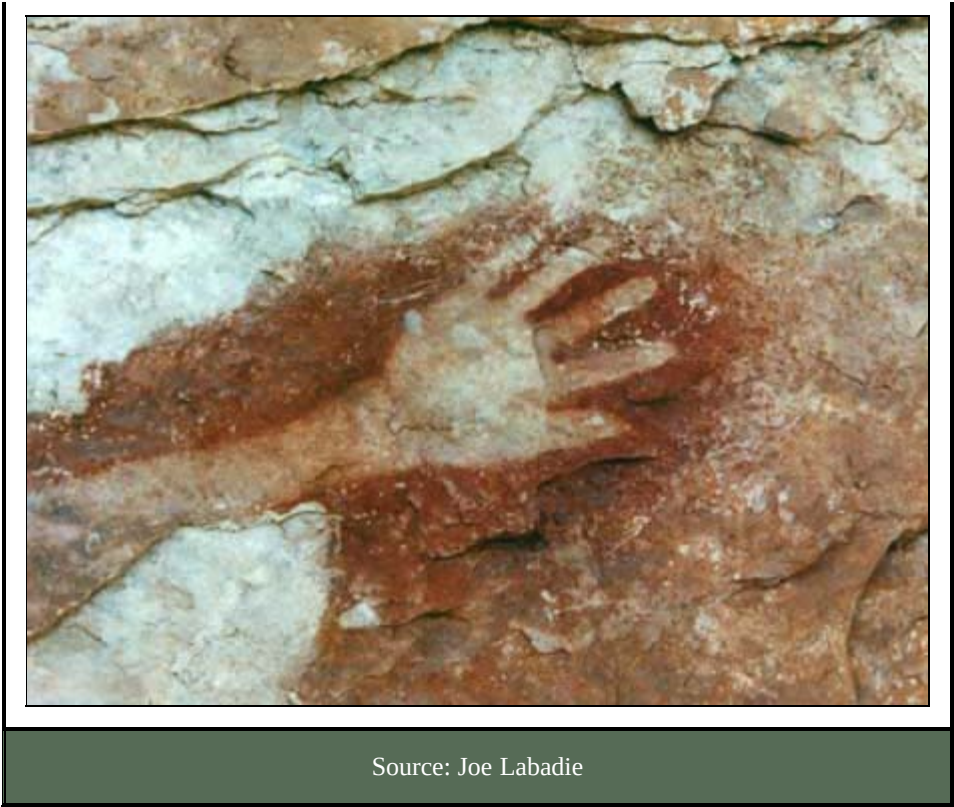
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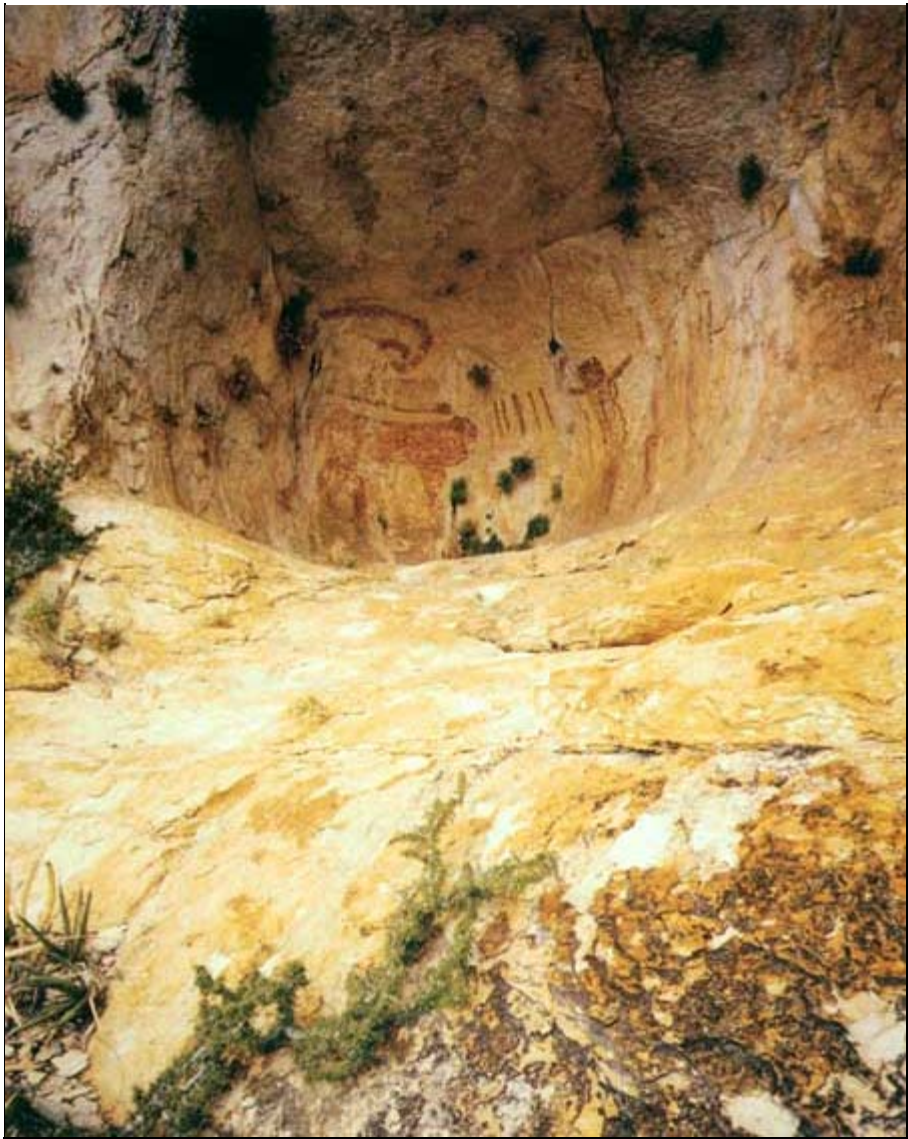
INTRODUCTION

A prime opportunity now exists for the American people to protect one of the richest and best-documented records of continuous human occupation in the New World. The prehistory and history of the Amistad Reservoir Basin, Lower Pecos River region, Texas, can only be described in superlatives: Experts consider Lower Pecos River Archeological Region rock art (paintings on rock faces called "pictographs," and carvings on rock faces called "petroglyphs") world class, and comparable to the rock art of Europe, Australia, and America's Baja California. The Lower Pecos River region also features some of the oldest dated, and best-preserved archeological deposits in North America. In addition, the region echoes with fascinating events and stories of the many people who passed through during historic times. Some of these outstanding resources are already protected by the National Park Service at Amistad National Recreation Area (NRA), but many either lie outside the authorized boundary of the NRA or remain in private ownership within the authorized boundaries.

To provide Federal protection for the nationally significant—and in some cases seriously imperiled—rock art and other archeological and historic resources of the Lower Pecos River region, Congress has authorized the National Park Service to make minor revisions to the authorized boundary, and to acquire lands and interests in land within this revised boundary up to a total of 58,500 acres. Currently, there are approximately 57,292 acres in Federal ownership, allowing for an additional 1,208 acres to be acquired. In support of this protection effort, Congress requested that the National Park Service prepare a study of the cultural resources integral to Amistad National Recreation Area, designed to identify the resources, indicate their locations, determine their integrity and condition, describe some of their characteristics, and evaluate their significance.

This study follows.





Devils River, large red-painted mountain lion, over 6 feet long. Source: David Muench

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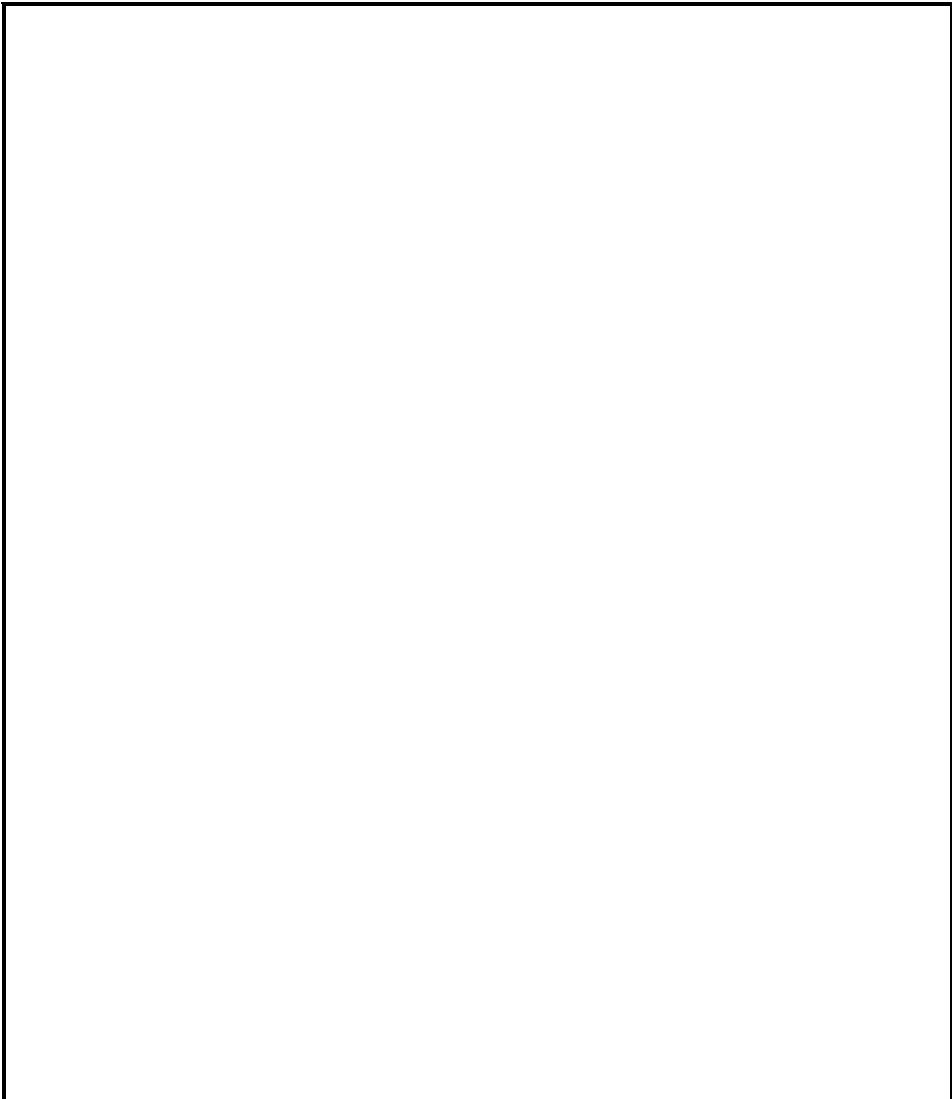


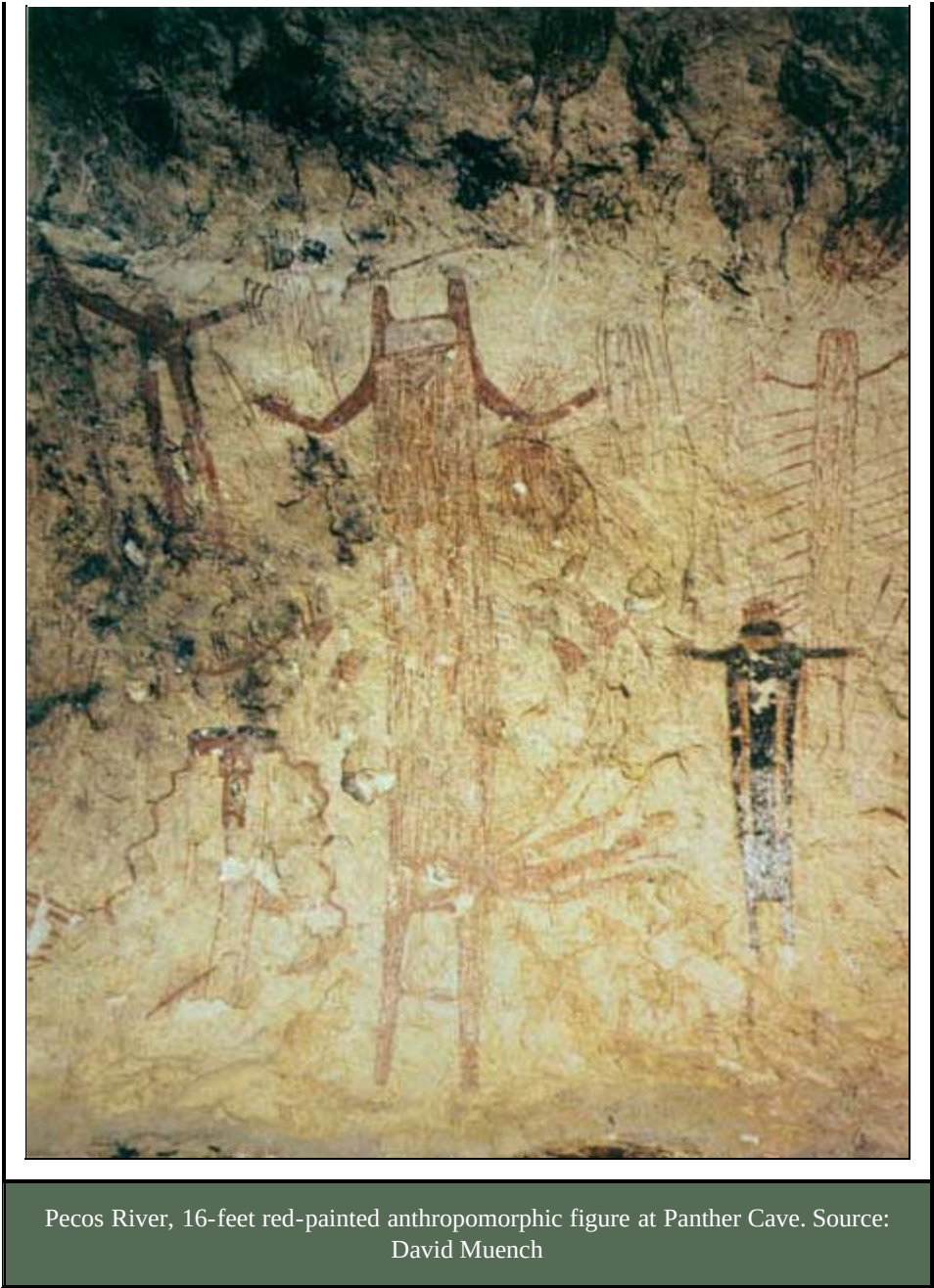
THE CULTURAL RESOURCES

INTRODUCTION

The following is an overview of the prehistoric and historic resources of the Lower Pecos River region. You will find detailed information in appendixes. Determinations of scientific significance are based upon significance criteria of the National Register of Historic Places; and NPS-28, the National Park Service guideline for cultural resources management.

Another important aspect of resource significance is the meaning these resources may have to contemporary American Indian groups. Consultation with Indian tribes who may have traditional associations with the resources of the Lower Pecos remains to be done. The National Park Service will begin an ethnographic study of West Texas, including the Lower Pecos, in 1995.





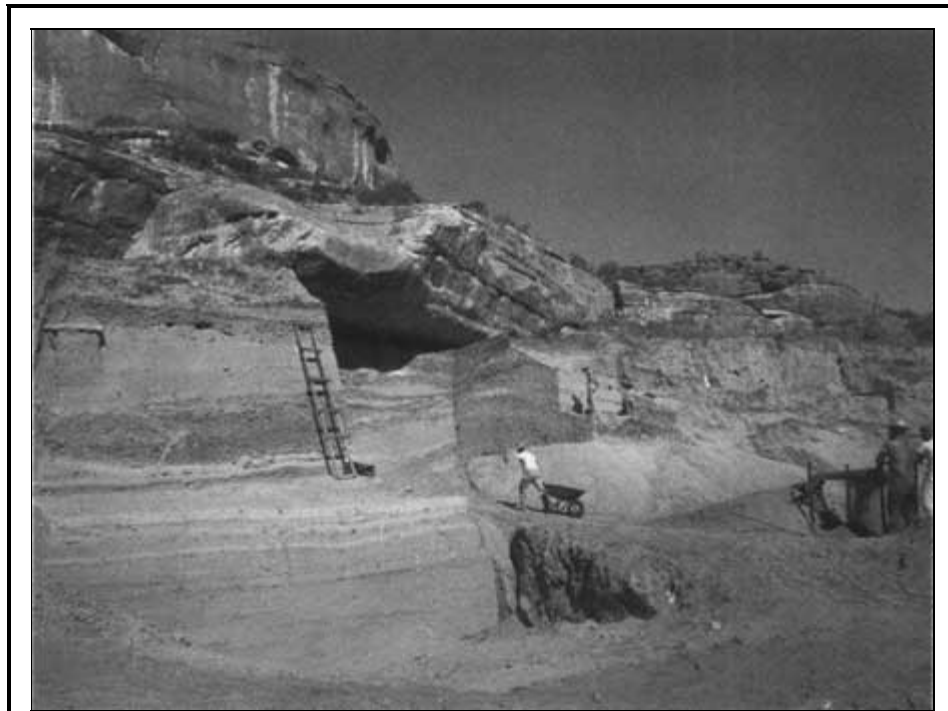
PREHISTORY

Significance

Lower Pecos River region rock art is considered by experts to be world class, and comparable in significance to sites in Europe, Australia, and America's Baja California. Additionally, the region contains some of the oldest dated, and best preserved archeological deposits in North America:

- 1. With 250-plus known sites within a 100-square-mile area, the Lower Pecos River region is among the densest concentrations of Archaic rock art in the New World.
- 2. The area's dry rockshelters harbor an unparalleled record of human prehistory that spans nearly 12,000 years.
- 3. Lower Pecos River region pictographs (paintings on rock faces) are among the largest

polychromatic (multicolored) images in North America: some reach more than 13 feet (4m) tall; some are clustered in panels extending over 100 feet (20m) along the rear walls of rockshelters.



Source: Texas Archeological Research Laboratory. Arehosa Shelter, Pecos River.

4. The remoteness of the Lower Pecos River region has kept vandalism of the pictographs to a minimum.
5. An experimental technique that is currently used to date rock art sites around the world was developed by Texas A&M University scientists at Amistad National Recreation Area, as part of the national recreation area's Volunteers-In-Parks (VIP) scientific research program.
6. Four major prehistoric styles and one historic pictograph style are represented in the Lower Pecos River region, with the oldest style tentatively dated as far back as 3,500-4,500 years before the present.
7. The quantity of the area's rock art sites, and the size, variety, and preservation of the paints used in Lower Pecos River region rock art have few parallels in the New World.





Source: Texas Archeological Research Laboratory. Bonfire Shelter Excavations.

8. The long, continuous occupation of the Lower Pecos River region may well have begun before 10,000 B.C., and continued in vary ing forms until the end of the 19th century.

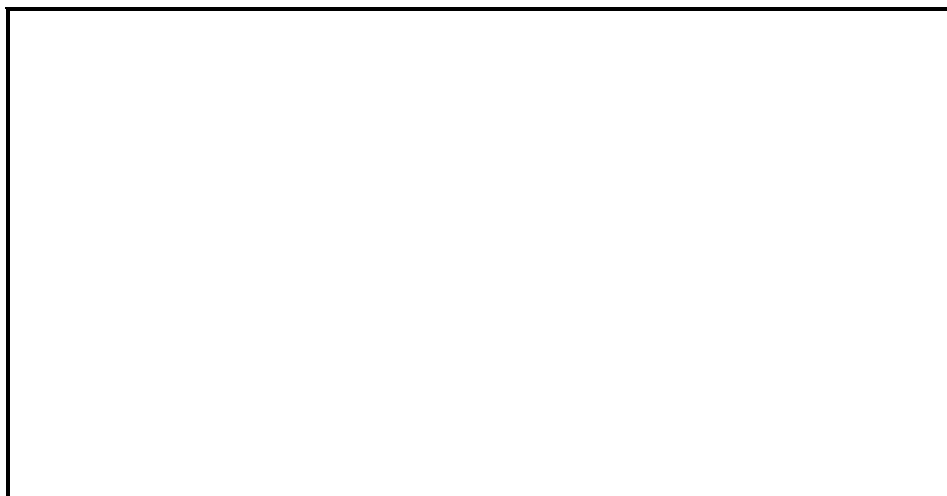
9. At Bonfire Shelter, the remains of 100-plus *bison antiquus* or *occidentalis* date back to nearly 9000 B.C., and represent one of North America's oldest known bison jump sites (sites where herds of bison were stampeded off cliffs as a killing method).

10. The preservation of archeological remains in the region's many dry rockshelters is astonishing. Preserved fiber materials allow researchers to study aspects of prehistoric material culture unavailable to most scientists in the United States.

11. Amistad National Recreation Area has a museum collection of artifacts from more than 200 sites and 22 major excavations that is estimated to contain more than 1 million objects.

12. The park's Federally-owned museum collection has one of the largest Archaic sandal assemblages in the National Park Service.

13. Evidence of the oldest known dated use of peyote in the New World (5000 B.C.) was found in a dry rockshelter in the Lower Pecos River region.

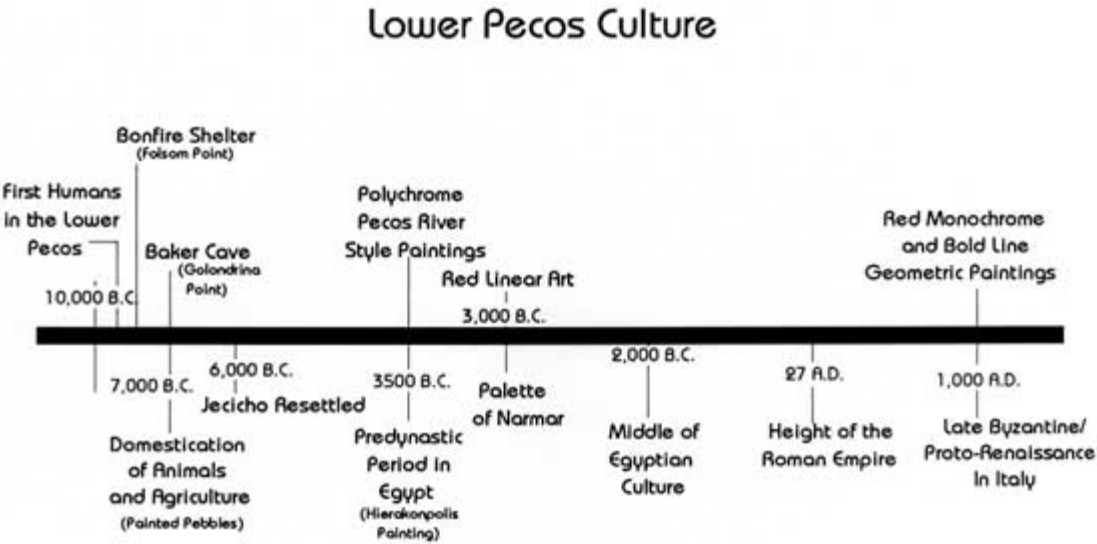




Source: *Ancient Texans*, Illustration by George Strickland. Lower Pecos, sandals.

Overview

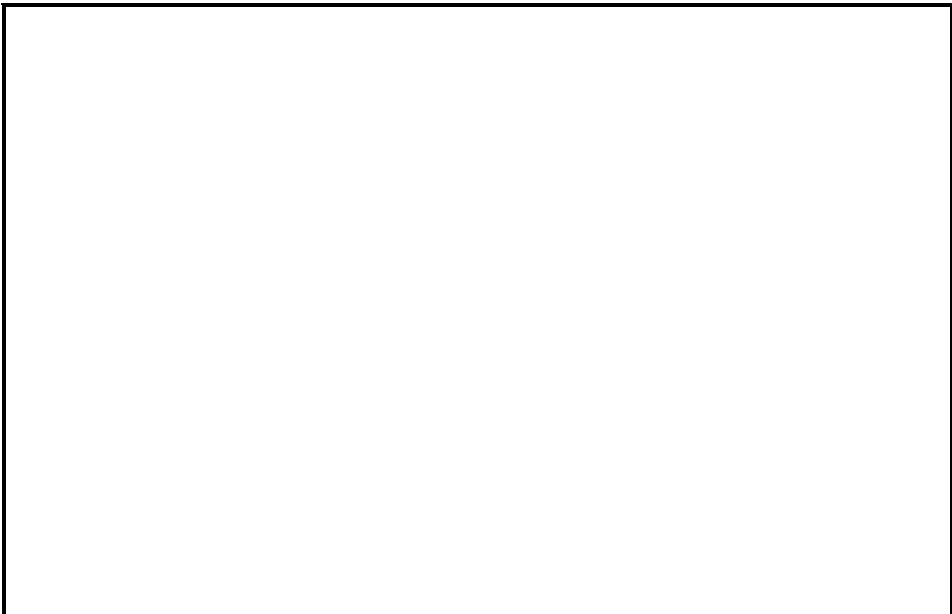
For convenience and presentation, Lower Pecos River region prehistory has been divided into four broad time periods, each characterized by a variety of traits ranging from economics, to projectile point styles (often considered time markers, because the age of common Lower Pecos River region point styles has been determined by radiocarbon dating), to pictograph styles. The exact beginning and ending dates assigned to these time periods are arbitrary, because the transition from one stage to the next was often slow and gradual: The PaleoIndian occupation (before 7000 B.C.) occurred at the end of the Pleistocene (Ice Age), when large game animals, now extinct, still roamed the Lower Pecos region. As the climate became more arid, the human populations adapted to a semi-desert environment, developing the cultural traits characteristic of the Archaic Period (7000 B.C. to A.D. 600). Sometime around A.D. 600 to A.D. 1000, changes such as the adoption of the bow and arrow signaled the advent of the Late Prehistoric Period (A.D. 600 to 1600). The coming of the first Europeans at the close of the 16th century marks the end of prehistory and the beginning of the Historic Period.

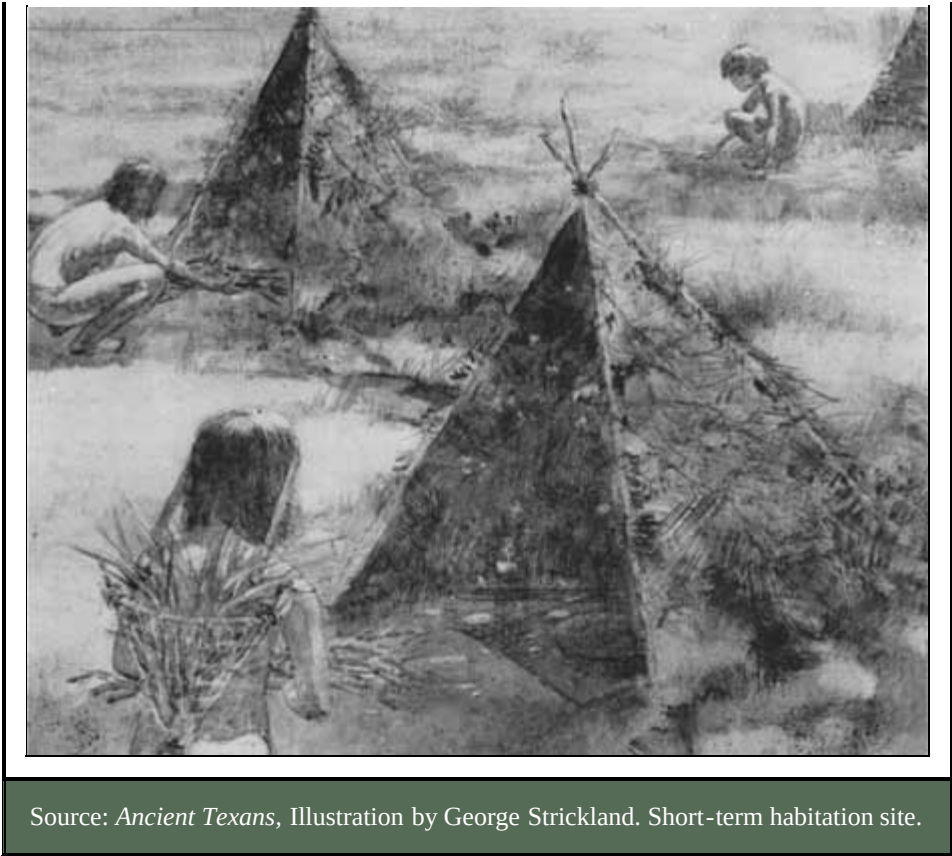


Western Civilization

Time Line Comparing the Development of Lower Pecos Culture and Western Civilization

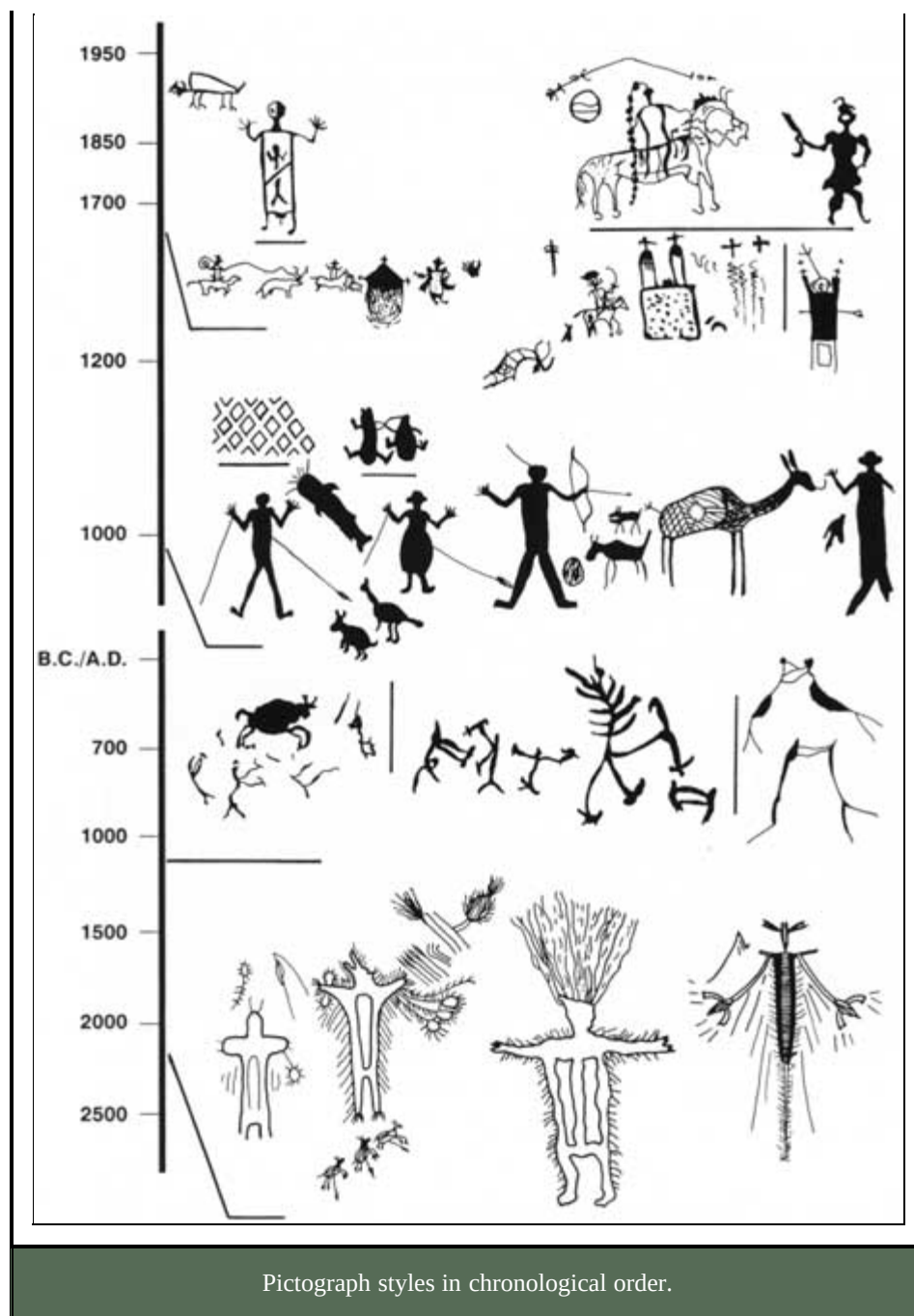
Archeology provides us with ways of understanding aspects of the lifeways of these prehistoric hunters and gatherers. For example, rockshelter refuse tells us much about their activities, technology, and diet. Mapping the distribution of known sites across the landscape tells us about preferences in choosing sites for open-air camps, and for one rockshelter over another. And from archeological evidence, we know that these prehistoric peoples were hunters and gatherers who appear to have had very little trade or contact with other contemporaneous groups in the U.S. or Mexico. Hunting and foraging were always the mainstays of the Lower Pecos economy, ranging in scale from mass kills of herd animals to trapping of small rodents, mammals, and lizards, and roasting of desert plants such as yucca and agave. All current information indicates that, throughout prehistory, the Lower Pecos people remained nomadic—moving from place to place according to the seasonal availability of food, water, and other resources.





Source: *Ancient Texans*, Illustration by George Strickland. Short-term habitation site.

The fascinating rock art of the Lower Pecos River region offers us glimpses into the cognitive, esthetic, and ideological worlds of native peoples. In terms of archeology, four major prehistoric pictograph styles have been defined, and several minor styles proposed. The styles can be arranged in chronological order, beginning with the elaborate, polychrome Pecos River style, which is generally thought to be between 3,000 and 4,000 years old. The miniature Red Linear pictographs are probably more recent, but their span may overlap with the older style. The two latest prehistoric styles—the Red Monochrome and the Bold Line Geometrics—are believed to be Late Prehistoric in age, dating sometime after A.D. 600 and before A.D. 1600. Some historic pictographs, painted in a style characteristic of the Plains Indians, can be more precisely dated, but many miscellaneous panels can not be assigned to any specific group, to any defined style, or to even the broadest time range. Nor is it likely that any exact translation of rock art symbols into our frame of reference will ever be within our reach—or that we will ever be able to completely understand the supernatural world of the aboriginal mind. The people and the culture that produced these pictographs are extinct; thus, the meanings, functions, and purposes of the images are lost forever.



Many other questions about Lower Pecos River region prehistory also remain unanswered. For instance, what were tribal identities, alliances, and enemies? And what did the people call themselves? No familiar American Indian names are mentioned in historic documents until the influx during historic times of Plains Indians, such as Apaches and Comanches, after the great Pueblo Revolt of 1680 in New Mexico. One name commonly used in the popular press—"Pecos Man"—simply refers to a geographic location. Archaic peoples in the Lower Pecos are often classified as "Coahuiltecans," based on similarities in lifeways and material culture, but this designation only implies that they probably belonged to the same language group as other hunter-gatherers encountered in southern Texas and northeastern Mexico at the time of first European contact.

One way we can make some inferences about the social structure of the Lower Pecos peoples, and the unwritten rules that made for orderly societies, is by comparing Lower Pecos hunting and gathering technology and subsistence with living or documented groups in similar arid environments. Such comparisons suggest that the populations of hunting and gathering

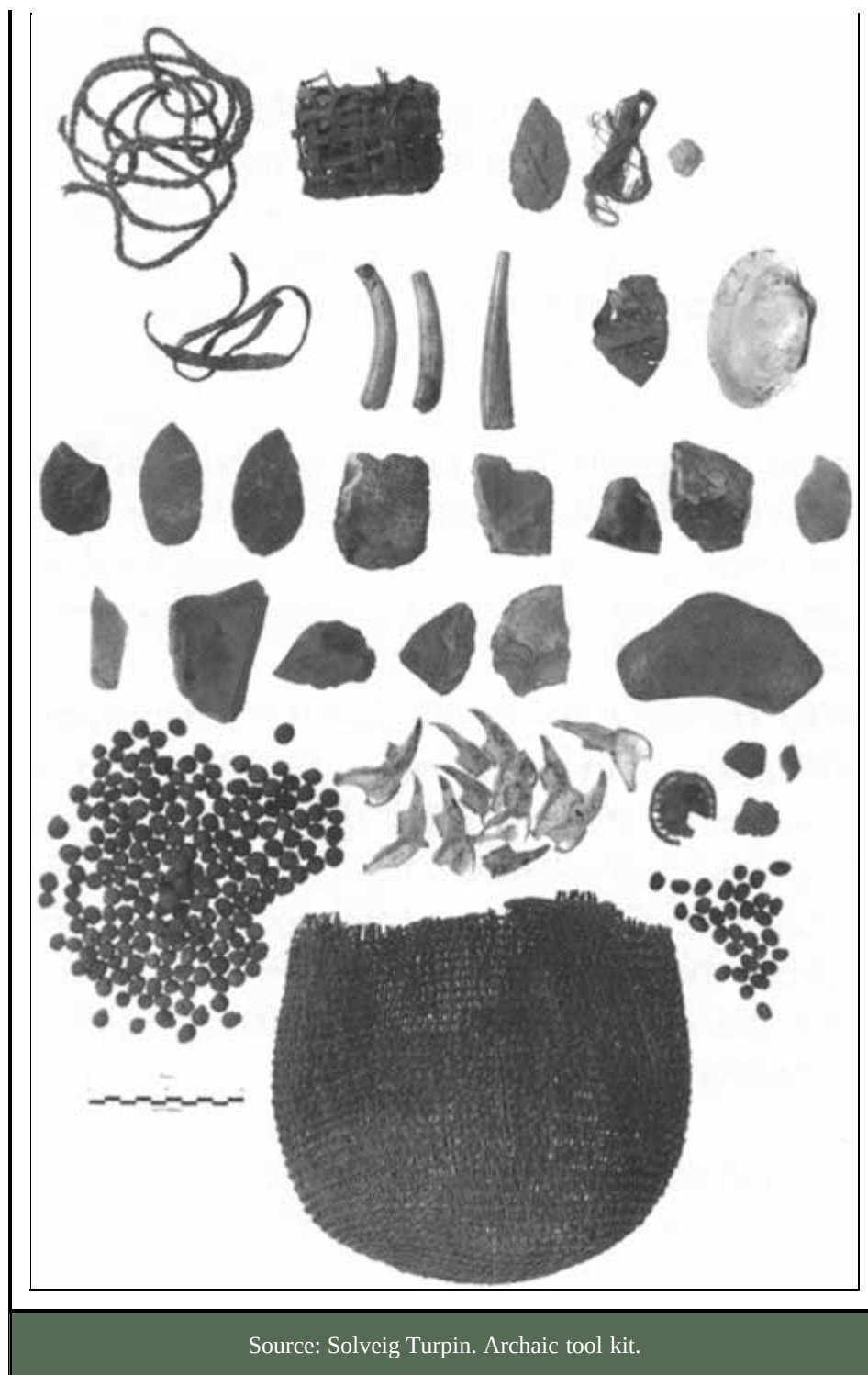
societies in the Lower Pecos—like most hunting and gathering societies in arid environments—must remain sparse and thinly distributed in order to exploit seasonal or geographic resources without seriously depleting them. The basic social unit would probably have been the extended family—a small, highly mobile group drawn together by ties of kinship. Familial relationships would serve to further the unity of the group, increasing cooperation through familiarity and affection. Other members might be attracted by the success of some individual or simple compatibility. Group composition would be fluid, permitting any friction to be resolved by members moving to another band. Practicing a nomadic life, these small groups could make seasonal rounds, harvesting plant foods as they ripened or moving when local supplies were diminished.

During times of relative plenty, for example, when desert fruits such as persimmons, mesquite beans, and pricklypear cactus ripened, the dispersed families could congregate for communal harvests and celebrations. The need for exogamy—the rule of marrying outside the group—could be satisfied at these meetings. A forum for the exchange of information could be provided, and political ties could be formed or cemented. It seems probable that much of the Lower Pecos River region's most elaborate pictographs were painted as part of rituals enacted during the periods when dispersed families congregated.

Marriages (probably highly informal by modern standards) contracted between members of different groups could serve a most useful function by providing ties with a larger segment of the population. The more links an individual could forge, the more options would be available during times of economic, social, and environmental stress. Thus, marriage would be a political alliance, with implications beyond the individuals concerned.

To keep the nuclear family small, within the limits imposed by the food supply and the need for mobility, some form of population control—sexual abstinence or infanticide—would be necessary to augment the high infant mortality rate. Life expectancy would be short; children would learn to perform their mature roles at an early age, and probably make a rapid transition to adulthood. The miniature weapons and domestic utensils that have been found in Lower Pecos River region rockshelter refuse might have served the dual purpose of amusement and education. Women, in an economy that emphasizes the gathering of plant foods, would be responsible for the bulk of the foodstuffs. Girls and young women would learn to harvest and process plant material for both consumption and the manufacture of clothing and utensils.





Source: Solveig Turpin. Archaic tool kit.

Traditionally, men would have controlled the hunting of larger animals and the manufacture of the more complex stone tools. The production of the finest projectile points found in the Lower Pecos River region would involve labor that goes far beyond that needed to produce an efficient weapon. Such an expenditure of time and effort to produce esthetically pleasing tools must have carried psychological or social rewards beyond that of sheer utility.

In all human societies, some able members of the group fulfill the need for leadership, although the degree to which power can be exercised corresponds to the population density and the resources to be controlled. In an area such as the Lower Pecos, where both people and basic commodities were sparse and dispersed, a leader would usually rise to the top during times when organization was needed for a specific task. Examples might include the

direction of a communal hunt by the most able hunter, or the leading of a raid or defending of a camp by the bravest warrior. It is interesting to note that many historic Southern Plains and Northern Mexican bands and groups had both war and peace leaders, based upon the principle that the one most qualified to fight may not have been the best advocate of reconciliation. Because the headman's power was simply a matter of acknowledged ability, high rank was not hereditary, nor was it endowed with much control over the rest of society. Often such a leader functioned only during his prime, to be later replaced by another, more competitive and able, man. The elderly were not without merit, their experience and wisdom often contributing to endurance through times of stress.

The oldest and most widespread form of religious thought in North America—shamanism—is found among hunter-gatherer societies throughout the world. In this tradition, the shaman—or "medicine man"—was charged with the general welfare of the group. The shaman was probably the most powerful single individual in a society. Shamans controlled the powers that permeated and affected every aspect of their physical and ideological worlds—which were often inseparable. As magician or conjurer, through their special relationship with the supernatural world, they were able to affect the success of a hunt or battle, cast spells to enchant people and animals, and communicate with the spirits. As the most learned person in the group, they served as a storehouse of oral tradition, stories, myths, and facts about the group's history, and about the order of the universe. Some researchers have speculated that pictographs may have functioned as mnemonic devices—images used by shamans and storytellers to recall or remember specific events, people, or myths that were part of the oral histories. In many respects, the shaman would have been a teacher, relating his accumulated knowledge to the youth. On an even more practical level, the shaman would have been an herbalist, curing disease through a combination of real and magical treatments. The most obvious evidence for the role of shamanism in Lower Pecos ideology is Pecos River style pictographs. These complex and elaborate artworks are considered by many to be shamanic works—perhaps visions achieved in trance, and then made permanent on the walls of the canyons.

The prehistoric peoples of the Lower Pecos were "primitive" peoples only in the sense that the dictionary defines "primitive" as "relating to the earliest age or period." Their lives could never be considered "primitive" in the sense of being inefficient or impoverished. The pictographs for which the area is most noted testify to a complex ideological or mythological world far more varied than their economic and technological remains suggest. Furthermore, by adapting to their environment, learning to utilize rather than drastically alter the natural resources, the native peoples of the Lower Pecos River region were able to endure for the impressive time-span of over 10,000 years.

HISTORY

Significance

The close of the 16th century marked the beginning of the Historic Period in the Lower Pecos River region. During historic times, settlement was scattered in this region, and there were no major towns. Nevertheless, the region is rich in the history of major political, economic, and military events, and in the stories of the long parade of people who sometimes stopped for water and forage at designated camps as they passed through the region.

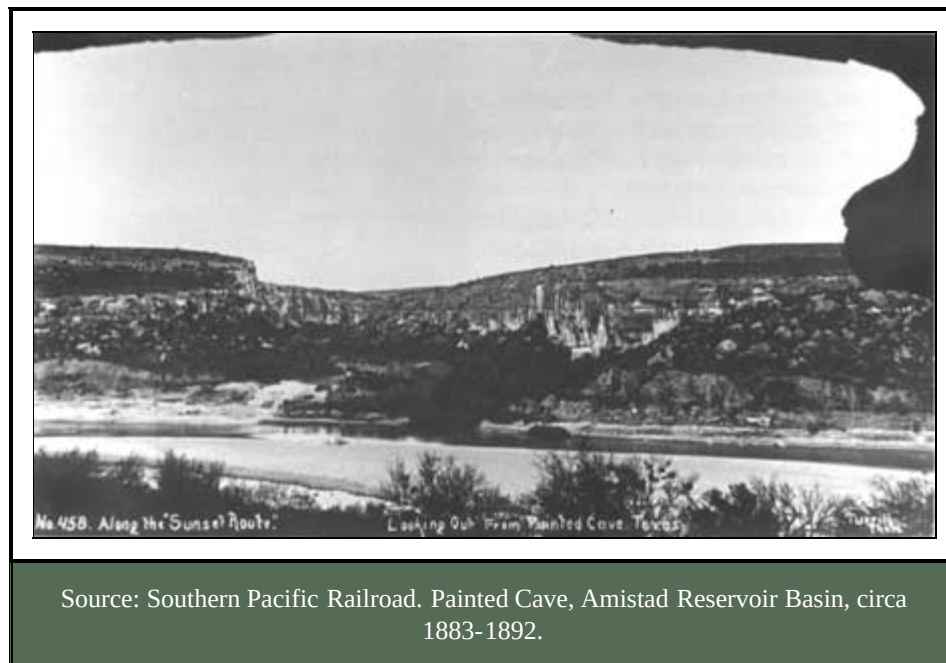
Overview

You will note that some of the following historical events (which are detailed in an appendix) have been described in greater detail than others—indicating that they offer the richest

sources of primary documentation for future research. A dearth of information exists for other events or time periods—suggesting what future researchers might uncover.

1. American Indian Period, from Late Prehistoric into Spanish Colonial Period:

Although the Coahuiltecan groups native to the Amistad area had been largely exterminated by European diseases, Spanish slave-raiding, and encroachment by other American Indians by 1680, several historic American Indian populations are associated with the region. Most—like the Comanche, Kickapoo, and Kiowa Apache—merely passed through the Lower Pecos area en route to Mexico. However, the Upan Apache, and to a lesser degree the Mescalero Apache, may have occupied the area, at least sporadically, from as early as 1680 to 1880. At present, only a handful of sites in Val Verde County are definitely associated with the Apache; however, such mobile populations are often archeologically "invisible," because much of their material culture is identical to that of many prehistoric groups.

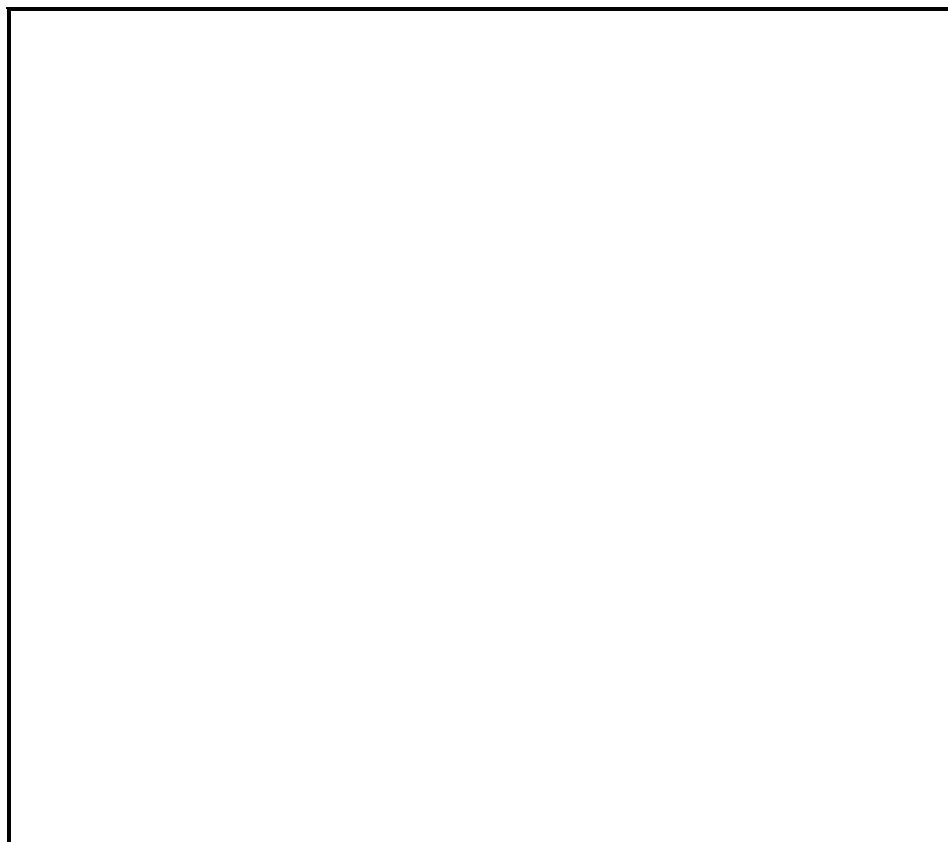


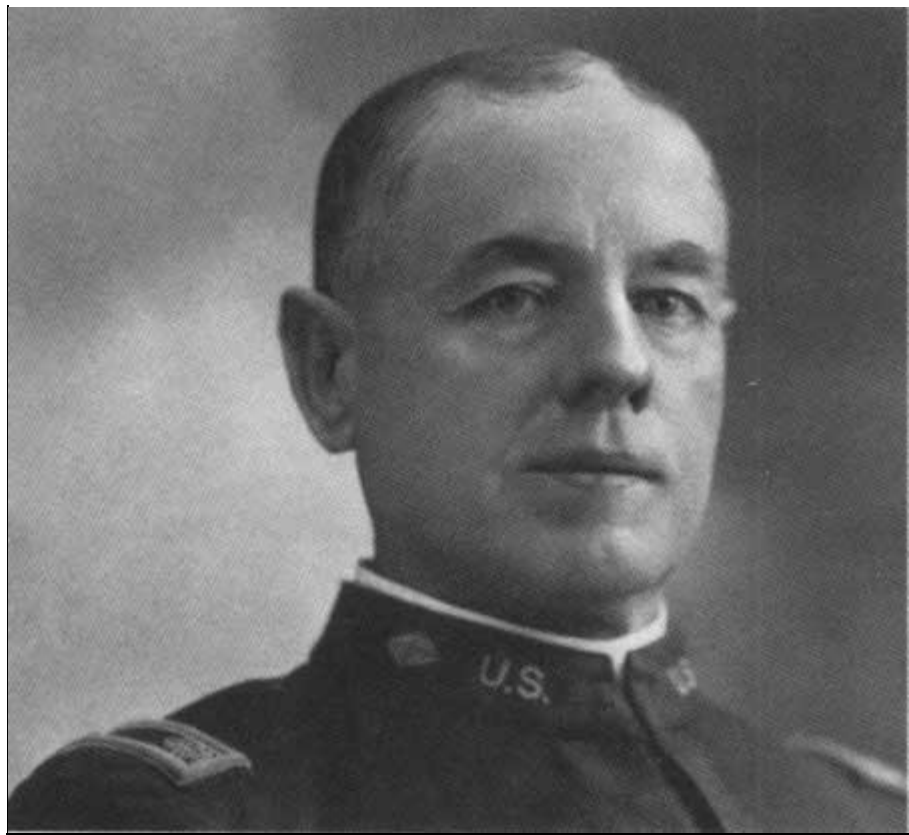
2. Spanish colonial Period, 1590-1821: In 1590-1591, en route to Pecos Pueblo, Castaño de Sosa became the first known European to travel through the Lower Pecos River region. Spanish expeditions traveled through the Amistad Reservoir basin, stopping only to make temporary camps and to forage their animals. The Spanish described the region as "despoblado," or unpopulated by indigenous pre-Spanish groups. A number of pictograph sites in the region, including the Vaquero Shelter, are attributed to Southern Plains Indian groups who traversed the region after the 1680 Pueblo Revolt in New Mexico. In 1821, the Treaty of Cordova granted Mexico independence from Spain; and the region became part of Mexico. Tangible remains representing this period include trails, campsites, graffiti, military artifacts, and structures. There are no Spanish Colonial Period cultural resources near the NRA's legislated boundaries, and none have been identified for possible acquisition.

3. Mexican Period, 1831-1836: The Mexican Period ended abruptly with Texas Independence following the Battle of San Jacinto (1836) near present-day Houston, Texas. Most of northeastern Mexico and southwestern Texas were at this time unsettled. There were few transportation links in the area, with ranching dominating most regional economies. Little in the region is known about or attributed to the Mexican Period. Potential tangible remains include trails, campsites, graffiti, military artifacts, structures, stock pens, and remains of small homesteads. Other than American Indian rock art, no archeological sites in or around Amistad NRA have been dated to this period.

4. Texas Republic Period, 1836-1845: On December 29, 1845, Texas joined the Union as the 28th state—bringing to an end the short-lived Republic of Texas. The Lower Pecos River region remained unpopulated by Europeans; during this time, no cities or towns were established by European immigrants in the area that is now the national recreation area. Southern Plains Indian groups and Northern Mexican Indians traversed the region, with no known groups apparently residing for more than short periods of time. The border between Mexico and the Republic of Texas was the Nueces River (80 miles east of the reservoir). The present NRA was part of Mexico during this period. Potential tangible remains include trails, campsites, graffiti, structures, stock pens, remains of small homesteads, and certain military artifacts. Other than American Indian rock art, no archeological sites in or around Amistad NRA have been dated to this period.

5. Texas statehood (before the civil War), 1845-1861: Shortly after Texas's admission to the Union in 1845, the U.S. Army Bureau of Topographic Engineers began an intensive program to identify potential locations for military posts and commercial transportation links between existing cities and the gulf coast. In 1848 seven major topographic expeditions were in the state, several of them traversing and mapping today's Amistad Reservoir Basin. The 1848 Treaty of Guadalupe Hidalgo (which ended the Mexican-American War) re-established the border between the two nations from the Nueces River to the Rio Grande, making today's NRA part of the U.S. for the first time. By 1854, Camp Blake was established at the confluence of the Devils River and the Rio Grande (now submerged under the waters of Lake Amistad) to protect traffic along the San Antonio-El Paso Road. By 1855, the San Antonio-El Paso Road had become a bustling commercial and military transportation route, which crossed the Amistad Basin at several locations. Camp Hudson (25 miles north of the reservoir) was established by 1856 to guard the road from roving Indian attacks. Several skirmishes occurred within today's park area. Attacks on wagon trains along the road through the basin continued unabated until the early 1870s. Tangible remains from this period include trails, temporary campsites, graffiti, military artifacts, and the remains of ranching activities such as stock pens, small homesteads, and associated rock structures. There are no cultural sites attributable to this period identified for acquisition.



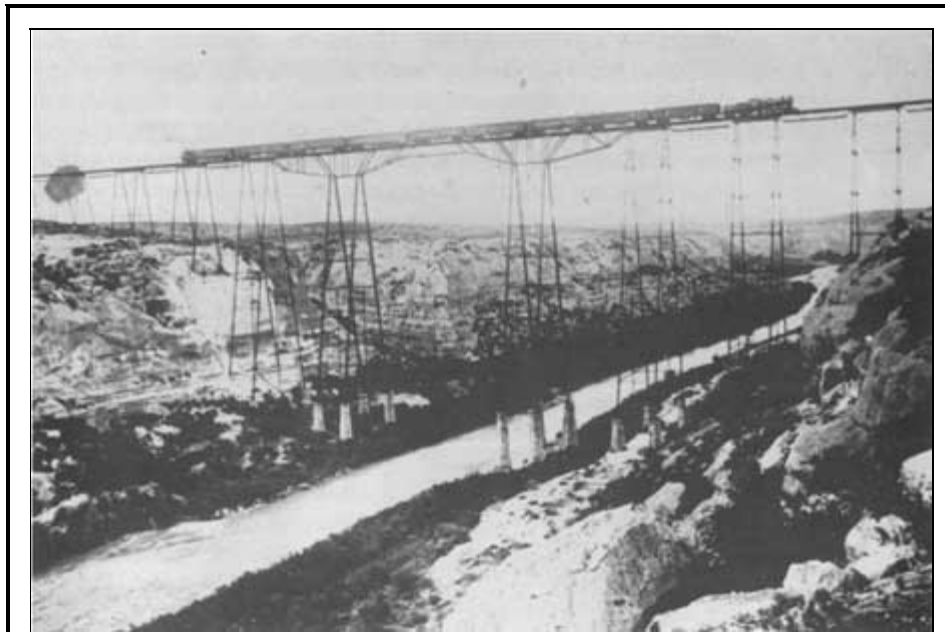


Source: Ft. John L. Bullis, Retirement, 1899. Lt. Bullis commanded the Seminole Negro-Indian Scout Troops at Ft. Clark, Texas.

6. Civil War Period, 1861-1865: On January 28, 1861, Texas seceded from the United States and joined the Confederate States of America. All Federal military installations in Texas were abandoned, as U.S. Army troops left Texas. There were no known engagements in the vicinity of Amistad NRA. Camp Hudson was abandoned by March, with Confederate troops occupying the post by October 1861. Post duties under the Confederacy at Camp Hudson changed little; troops guarded military wagon trains and commercial shipments on the road from attacks. Confederate troops abandoned Camp Hudson before the war ended, because they were needed elsewhere. Federal troops returned to Texas by late 1865, even though Texas was not re-admitted to the Union until March 30, 1870, following the period of Reconstruction. Extant or tangible remains from this period include trails, temporary campsites, graffiti, and military artifacts. There are no Civil War Period sites identified for possible acquisition.

7. Texas Statehood (post-Civil War) Period, 1865-1880: As the U.S. Army returned to Texas following the war, they did not re-occupy all the pre-war forts and military posts in southwest Texas along the Rio Grande, deciding instead to construct a new line of forts north and west of the Amistad Basin, as the Texas frontier moved ever westward. From 1865-1873, Indian raids and Mexican bandits had continually disrupted commercial and military traffic along the San Antonio-El Paso Road. In April 1873, Colonel Ranald S. MacKenzie and 400 heavily armed cavalry troops drawn from the commands at Fort Clark and Fort Duncan slipped across the Rio Grande under the cover of darkness and attacked three Indian villages (80 miles, or 128km, into Mexico) at Rey Molino, burning and killing Kickapoo, Lipan, and Mescalero Apache Indians. There was an initial reduction on Indian raids, but by 1876, several more incursions into Mexico had occurred. (The last documented Indian raid into Texas and through the area now within the NRA occurred on April 14, 1881.) In late 1880, the Southern Transcontinental Rail Road became a reality, forever changing the economic

base and land-use patterns for the Lower Pecos River region. Extant or tangible remains from this period include trails, temporary campsites, graffiti, military artifacts, and remains associated with early homesteads and ranching. There are no post-Civil War sites identified for possible acquisition.



Source: Southern Pacific Railroad. High railroad bridge, Pecos River.

8. Railroad Era (Southern Pacific RR), 1880-World War II: In 1881, the first surveys for the Southern Transcontinental Rail Road began in the Lower Pecos River region area. The Southern Pacific planned to build east from California and west from San Antonio, with the two lines destined to be joined at the confluence of the Pecos River and the Rio Grande. In 1881-1883, upwards of 6,000 people worked in the reservoir basin. The Western Division was made up of veterans from the building of the First Transcontinental Railroad, along with 6,000 Chinese workers. The Eastern Division comprised a mix of immigrant Irish, Germans, Mexicans, and Africans; it also hired numerous contractors to build grades, blast tunnels, and build trestles. The line opened in 1883, with the driving of a silver spike about 1 mile west of the confluence of the Pecos River and the Rio Grande (a site targeted for possible acquisition). The first and second railroad tunnels built in Texas are part of the system (the first is already within Amistad National Recreation Area; the second is targeted for possible acquisition). There were over 3,000 feet (914m) of wooden trestles and 14 metal spans—each between 100 and 300 feet (30 and 90m). (All that remains of these features today are cut-block footers and foundation remnants.) In 1892, the line was re-routed out of the Rio Grande canyon because of high maintenance costs and occasional flooding of the bridge, which was only about 40 feet (12m) above the river bottom. Eleven miles (17km) of track that had been blasted into the canyon walls were eliminated. (Some of the bed for the track is still visible today, with portions under water.) In 1893, the Pecos Viaduct bridge opened, at 322 feet (98m) above the Pecos River—the highest bridge in the United States, and the third-highest in the world. Tangible remains include tunnels, trestles, graffiti, construction camps, railroad grades, trash scatters, buildings, and other structures. Several significant railroad sites are targeted for possible acquisition.

9. Ranching Era, 1880-World War II: With the coming of the railroad, vast expanses of wilderness in west Texas and northern Mexico were opened to commercial purposes and European settlement. Sheep and goat ranching spread quickly across the region, with the railroad providing the transportation link to get the goods to market. By World War I, the

Lower Pecos River region was one of the Southwest's largest wool and mohair producers. Over-grazing, deep-well drilling for water, and the suppression of natural grass fires are responsible for the drastic environmental changes that the ranching industry set into motion. By World War II, ranching had transformed much of the region into the scrub and thorn brush countryside that characterizes it today. Ranching is still the economic cornerstone for the regional economy. Tangible remains include windmills, stock tanks, structures, trash scatters, and fence lines. A historic stock tank located along the Devils River is the only Ranching Era site identified for possible acquisition.

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THE STUDY

GOAL

This Cultural Resources Study is designed to identify the most significant and imperiled cultural sites in the three major river valleys and intervening side canyons on the United States side of Amistad International Reservoir. It establishes site locations, determines their integrity and condition, describes some of their characteristics, and evaluates their significance in relation to possible acquisition.



BACKGROUND

Amistad Dam / Reservoir

In 1944, the United States International Boundary and Water Commission (IBWC) and the government of Mexico signed a joint water treaty (see appendix) that affected the Rio Grande from El Paso to Brownsville, Texas. The treaty proposed to construct, operate, and maintain three international hydroelectric and flood control dams along the Texas/Mexico border. Two of these reservoirs have been built: Falcon Reservoir near Eagle Pass, Texas; and the 6-mile-long (9.6-km-long) Amistad Dam northwest of Del Rio, which was completed in 1969. The third reservoir is yet to be built.

At a normal pool level (1,117.0 feet, or 340m, above mean sea level) impounded waters behind the dam create a 64,860-acre reservoir that extends in the United States about 25 miles (40km) up the Devils River valley; 14 miles (22km) up the Pecos River Valley; and 73 miles (118km) up the Rio Grande Valley. The reservoir has an estimated shoreline of about 850 miles (1,368km), of which about 540 miles (869km) are in the United States. The International Boundary and Water Commission acquired the title to the land or flowage easements equal to the maximum flood pool for the lake (1,144.3 feet, or 349m, above mean sea level).

National Park Service Responsibility

The National Park Service operated Amistad Recreation Area primarily as a water oriented recreation unit of the National Park System under a cooperative agreement (appended) with the United States Section of the International Boundary and Water Commission from November 11, 1965, to November 27, 1990. Under this agreement, the National Park Service had the general responsibility for:

"Promulgating and enforcing such rules and regulations as necessary or desirable for the conservation of any historic or archeological remains, and control of all archeological excavation and historical or archeological research, or as may be needed for recreational use and enjoyment of the area." (Article II, No. 5)

Public Law 101-628 (November 28, 1990), passed by the 101st Congress of the United States, provided the recreation area with its first enabling legislation (see appendix), defining the role of the National Park Service at Amistad Reservoir, and mandating National Park Service protection and management of the area's cultural, natural, scenic, recreational, and scientific values. This legislation also authorized minor boundary revisions and acquisition of lands and interests in lands up to a total Federal ownership of 58,500 acres. In addition, it changed the area's name from "Amistad Recreation Area" to "Amistad National Recreation Area."

According to the 1990 legislation, the NRA consists of Federal lands, waters, and interests within an authorized boundary, which is defined on a July 1969 boundary map (appended). This authorized boundary comprises 62,452 acres; Federal ownership within this boundary comprises 57,292 acres. In general, the boundary of the Federally owned lands (57,292 acres) can be conceived as a sinuous, imaginary line extending some 540 miles (869km) along the shoreline (the 1,144.3 contour) on the U.S. side of the lake (the total shoreline is estimated at 850 miles, or 1,368km). In effect, Federal ownership extends roughly 30 feet (9m) above the normal pool level of the lake. In some areas, this means that the line between Federal and

private lands is located 30 feet (9m) up a 200-foot (61 m) vertical cliff face. This situation meets the basic needs of the International Boundary and Water Commission to manage the lake; however, it does not meet the mandate of the National Park Service to manage resources of national and international significance adjacent to Federally owned lands. The 1990 legislation authorized Federal acquisition of an additional 1,200 acres of land or interests in land.

THE SITE SURVEY

The vast majority of previously known cultural sites not inundated in 1967 by the Amistad Reservoir are located along a 10-mile stretch of the lower Pecos River and a 20- to 25-mile (32-40km) section of the upper Rio Grande. The time and funding constraints of the present Cultural Resources Study would not allow for a survey of the entire 540-mile (869km) shoreline of the lake, so a selected sampling of cliff and canyon walls that are known to contain the vast majority of all previously documented cultural sites was targeted. Fieldwork was purposely limited to locales situated between the national recreation area's current boundary (1,144.3 feet, or 343km, above mean sea level) and the canyon rim. Only a few upland areas with known historical sites were surveyed.

The level of investigation for the fieldwork was limited to an intensive, reconnaissance-level, pedestrian survey (as defined in NPS-28, it was conducted by walking, and looking for more than big caves) that did not involve subsurface testing, excavations, or the collection of any types of artifacts or samples for later analysis. Nearly all survey areas were reached by boat. Such reconnaissance-level documentation produces only the most basic information about a site; other National Park Service projects, such as the National Archeological Survey Initiative (NASI), acquire data sufficient for determinations of eligibility for the National Register of Historic Places, and meet the standards of the National Park Service's Cultural Sites Inventory (CSI).

The present Cultural Resources Study project has relied heavily on data produced by previous National Park Service archeological surveys and academic research accumulated over the last 60 years from other field studies in the Lower Pecos River region of southwest Texas and northern Coahuila, Mexico. Prior to the flooding of portions of the Pecos, Devils, and Rio Grande valleys, the National Park Service and the University of Texas at Austin conducted nearly 10 years of cultural resources inventory work that collectively documented more than 300 prehistoric archeological sites, including the excavation of 22 major sites, which produced a museum collection estimated to contain in excess of 1 million objects.

But the cornerstone of the present Cultural Resources Study is the data compiled during the National Archeological Survey Initiative Re-inventory project conducted by the National Park Service at Amistad National Recreation Area between December 1991 and April 1993 in response to the passage of Public Law 101-628. The survey re-investigated about 100 of the most significant sites around the lake shore, and identified more than 250 new sites overlooked during the pre-inundation research of the 1960s. Approximately 12 weeks of field-survey work were used to supplement existing information (derived principally from the NASI data) for selected geographic areas adjacent to current park boundaries for which little or no information previously existed.





THE SITES

Priorities

The following 298 archeological and historical sites are identified by this project for possible inclusion within the boundaries of Amistad National Recreation Area.

High-priority: 18, 19, 24, 26, 29, 30, 31, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 50, 51, 52, 54, 55, 56, 57, 59, 60, 61, 62, 63, 65, 66, 67, 69, 70, 78, 79, 80, 82, 87, 88, 90, 91, 92, 93, 94, 97, 98, 101, 103, 104, 105, 106, 109, 111, 112, 113, 114, 115, 116, 119, 120, 121, 122, 123, 124, 128, 129, 131, 132, 134, 136, 137, 138, 149, 151, 152, 153, 155, 156, 157, 158, 160, 161, 162, 163, 164, 165, 166, 167, 177, 180, 181, 182, 183, 184, 185, 186, 187, 189, 191, 193, 210, 218, 224, 225, 227, 234, 237, 238, 239, 240, 286, 314, 323, 324, 325, 344, 348, 419, 422, 447, 448, 573, 586, 595, 643, 644, 648, 650, 656, 673, 685, 729, 741, 753, 760, 765, 780, 786, 794, 796, 797, 820, 839, 850, 907, 911, 912, 914, 951, 952, 953, 954, 1190, 1201, 1204, 1205, 1206, 1207, 1215, 1219, 1280, 1310, 1312, 1362, 1372, 1373, 1389, 1392, 1398, 1399, 1404, 1422, 1424, 1428, 1432, 1435, 1438, 1439, 1440, 1441, 1456, 1457, 1459, 1462, 1465, 1466, 1468, 1470, 1472, 1476, 1477, 1479, 1484, 1487, 1488, 1495, 1501, 1502, 1505, 1511, 1519, 1524, 1534, 1541, 1542, 1547, 1550, 1551, 1553, 1560, 1561, 1565, 1570, 1573, 1575.

(Total=219)

Lower-priority: 32, 71, 86, 96, 117, 118, 127, 133, 148, 168, 173, 174, 175, 176, 204, 205, 206, 322, 345, 346, 421, 454, 628, 647, 740, 788, 816, 817, 819, 821, 837, 838, 1202, 1277, 1288, 1311, 1351, 1352, 1353, 1355, 1367, 1368, 1379, 1382, 1384, 1385, 1386, 1387, 1388, 1391, 1400, 1401, 1406, 1414, 1416, 1420, 1429, 1430, 1446, 1460, 1461, 1474, 1480, 1481, 1492, 1507, 1514, 1517, 1518, 1520, 1536, 1537, 1545, 1552, 1558, 1563, 1571, 1572, 1577.

(Total=79)

Total High-priority Sites:	219
Lower-priority Sites:	<u>79</u>
TOTAL:	298

A large number of these significant sites are located in four archeological districts listed on

the National Register of Historic Places—the Lower Pecos, Seminole Canyon, Rattlesnake Canyon, and Mile Canyon districts.

Classification

There are a variety of methods and classificatory systems used by archeologists to group artifacts, or to describe the cultural sites from which materials are collected or excavated. For the purposes of this report, site classifications are presented at a very general level, rather than delving into the more complex typologies and terms used commonly by researchers in the field. Further, the typologies used here (function and time) are intended to apply only to the Amistad Reservoir region.

In general, the specific typology chosen for an archeological report is dictated by the scope of the research design and amount of data generated during the project. For example, the simplest of reports often groups a large data base of cultural sites on the basis of the physical or topographic landforms on which they occur, such as terrace, rockshelter, or upland. However, such typologies have very limited interpretive applications, and do little to explain the past socioeconomic activities that produced the sites themselves. At the other end of the spectrum are complex typologies that utilize the type/variety system to extremes, often making such reports incomprehensible to general or non-academic readers.

More common is a typology that groups cultural sites by functional categories and by time periods of original deposition. Past site function(s) can be inferred collectively from the artifacts or feature(s) at the sites. The absolute dating for a specific cultural time period is determined by radiocarbon dating methods or by known temporal markers (artifacts or pictographs) within an established chronology. As a general rule, any of the prehistoric functional site types can occur during any of the cultural time periods.

All cultural sites investigated and evaluated by this project were assigned to the site types and cultural time periods listed below. Within each category, sites were then rank-ordered in terms of overall desirability. Where feasible, the most desirable sites within each category have been identified for acquisition, with emphasis placed on getting the widest possible range of sites.

Functional Typologies: There are essentially only two basic *site types* for the region throughout all *cultural periods* of American Indian prehistory. At the general level, occupational sites and ceremonial sites are differentiated by the type/variety of the archeological *features* and artifacts that may be (or may not be) present at particular cultural sites. Different feature (or artifact) types infer different site functions. For example, lithic debris on the ground surface infers that someone used the area to make tools used in subsistence activities; or prehistoric pictographs on a rockshelter wall infer that the area was used for ceremonial purposes rather than for ordinary subsistence activities; or prehistoric pictographs on a rockshelter wall infer that the area was used for ceremonial purposes rather than for ordinary occupational or subsistence activities. Some archeological features are usually identified through excavation (for example, burials, perishable deposits, or bison jump/drive sites); other feature types are discernible by simple observation (for example, pictographs or burned rock middens). Any cultural site can function differently over time, so that a particular site classification (occupational or ceremonial) applies only to a specific cultural period of time (with finite limits). The vast majority of sites contain more than one of these types and could be classified in either category.

Occupational Sites:

Lithic scatter (chipping debris from tool manufacture)

Quarry (locale where chert deposits were exploited)

- Burned rock scatter (scattered remains from campfires)
- Burned rock midden (concentration of burned rock)
- Midden (occupational remains without major concentrations of burned rocks)
- Perishable deposits (preserved plant materials)
- Bison jump/drives (deposit of bison bones below a cliff)

Ceremonial Sites:

- Pictograph (painted image on rockshelter walls)
- Petroglyph (carved or incised image on walls or in open-air locations)
- Burials (purposely placed human internments)

Cultural Time Periods: Sites are temporally classified as either prehistoric (10,000 B.C.-plus to A.D. 1590) or historic (after A.D. 1590). The past 10,000 years of human activities in the region are generally divided into five major prehistoric analytical units (periods), each of which is further subdivided into a number of minor phases. Each major prehistoric period was dominated by a particular type of subsistence pattern, diagnostic artifacts, mortuary pattern, and rock art style. Historic sites are classified by time period—that is, on the basis of the major historical (European) periods, and eras (shorter periods dominated by a single political, social, ethnic, or economic interest). Please note that the cultural chronology listed below applies only to the Amistad National Recreation Area region.

Prehistoric	
PaleoIndian	(10,000 B.C. to 7,000 B.C.)
Early Archaic	(7,000 B.C. to 4,500 B.C.)
Middle Archaic	(4,500 B.C. to 1,000 B.C.)
Late Archaic	(1,000 B.C. to A.D. 600)
Late Prehistoric	(A.D. 600 to A.D. 1590)
Historic	
American Indian Period	
Spanish Colonial Period, 1590-1821	
Mexican Period, 1831-1836	
Texas Republic Period, 1836-1845	
Texas Statehood (pre-Civil War), 1845-1861	
Civil War Period, 1861-1865	
Texas Statehood (post-Civil War), 1865-1880	
Railroad Era (Southern Pacific RR), 1880-World War II	
Ranching Era, 1880-World War II	

Selection criteria

For the present Cultural Resources Study, it was understood that all known sites adjacent to the 540-mile reservoir shoreline could not be acquired by the National Park Service without exceeding the authorized acreage limitation established by Public Law 101-628. Therefore, an evaluative method had to be devised that would target the most significant sites within each of the major site types present in the region. Evaluation also included management feasibility factors such as access, ability of the NPS to protect a given site, interpretive potential, and development costs.

There are all types of standards upon which to base evaluations of archeological sites, such as National Register of Historic Places (NRHP) standards, National Park Service standards, and the Texas Antiquities Code. Each of these established systems uses slightly different criteria

to determine the "significance" of a cultural property. The criteria used by this project represent a combination of established standards combined with administrative issues relevant to the day-to-day management and protection of a particular site.

A total of about 400 prehistoric and historic sites were ultimately selected for evaluation from an original pool of nearly 600-700 sites. The site pool was narrowed down using information from the NASI Project and archival information on record with the State of Texas. Archeological site data forms were obtained and reviewed for roughly 500 sites. For each site evaluated, a series of 15 questions were asked, with answers recorded on a Management Evaluation Form. The range of questions represents an attempt to balance the two major issues of (1) the significance of the sites (the scientific significance as defined by NRHP and NPS-28); and (2) the overall feasibility of National Park Service administration of the site (considering size, configuration, ownership, costs, and other management concerns). A numeric value of 1 (lowest) to 5 (highest) was assigned for each question; sites could then be numerically rank-ordered. This system, which required a number of subjective calls by the evaluators, quickly identified the "best/worst" sites in the pool, but was not of much help in evaluating sites between the two extremes. For sites ranked in the midrange, evaluators reviewed the files for each one, in an effort to decide the overall desirability of recommending it for possible acquisition. The Management Evaluation process should be viewed as a measure rather than as an absolute tool with which to gauge relative site significance.

The following 15 criteria were used:

1. Condition of the archeological deposits: This question sought to determine present site conditions. A site with intact archeological deposits greater than 90 percent received the highest rating; deposits of less than 10 percent were rated lowest. Whether the site was a single-component (one-time-period) or multiple-component (multiple-time-period) was also a factor. Determining the archeological potential of a site is rather subjective; it requires a detailed knowledge derived from fieldwork at many sites.

2. Condition of archeological features at the site: Archeological features are generally considered to be those archeological features at a cultural site that are not taken back to the laboratory or museum, such as prehistoric paintings (pictographs) on walls, and grinding holes (to grind seeds into meal) made into boulders within rockshelters. Subsistence-related features include grinding facets, mortar holes, and incised grooves. Ceremonial or religious activities can generally be inferred from the presence of pictographs, petroglyphs (designs produced by carving, rather than painting), and cupules (small holes pecked into a rock for ceremonial purposes, rather than normal food preparation). The condition of such features—ranging from pristine to badly deteriorated—makes a difference when evaluating the potential for research to provide scientific information.

3. Condition of pictographs: This question obviously applied only to sites with pictographs, but allowed for a general assessment of the quality, condition, and complexity of the pictographs in terms of scientific value. Many of the region's pictograph sites have suffered from graffiti and vandalism, in addition to the natural processes of deterioration.

4. Number of archeological features: This question sought to broadly define the complexity or number of prehistoric activities that could be inferred from the features still present at the site. Generally, the more complex a site is, the greater the research potential is for providing new or significant data about how the site may have been used.

5. Research or special-studies potential: Not all archeological sites were created equal; therefore, some sites are much more important for research than for public interpretation.

Sites were evaluated according to their archeological potential for providing significant data that can address current research questions.

6. Level of previous investigations: The amount or level of previous archeological research (or vandalism) has a direct bearing on the future potential of a site for providing significant new information. A small site that has been partially vandalized by relic hunters received a higher rating than a large site that has been thoroughly excavated. Sites that have produced Federally-owned artifact collections (from previous NPS surveys, excavations, and conservation projects) were rated higher than sites where no Federal collections have been made.

7. National Register of Historic Places status: Sites already listed as part of an existing National Register District, or in proximity to an existing National Register District, received the highest rating; sites that had previously been determined ineligible for nomination to the National Register of Historic Places received the lowest rating.

8. Location of site relative to standard park ranger patrols: This question sought some basic information about the national recreation area's ability to manage the site, given the size of the three NRA districts. In the Pecos River District, for example, there are roughly 75 miles (120km) of shoreline, some of which are nearly inaccessible to current ranger patrols. Sites located within the range of daily patrols were rated highest; sites requiring a special trip were rated lowest. If the site could be acquired as part of a larger geographic group or cluster of sites (versus an isolated acquisition), it was rated higher than isolated sites.

9. Time required For basic site monitoring during patrol: This question sought to establish the amount of time required to climb up to the site, examine it for vandalism or natural disturbances, and return to the boat. Sites requiring fewer than 10 minutes received the highest ratings; sites requiring more than 30 minutes received the lowest. Sites currently bisected by the 1,144.3-foot contour line (349m) were rated high. The farther away from lands currently managed by the NPS, the lower the rating.

10. Initial National Park Service investment for minimal site protection: This question sought to establish a basic dollar figure that would be needed to protect a site. Sites rated highest would need only boundary markers; those rated lowest would require costly electronic sensors as the only viable option for monitoring.

11. Potential for public interpretation: Not all sites lend themselves equally to public interpretation. An archeological site may have tremendous research potential but not be of much interest to the general public. Most park visitors seem to be more impressed by a small rockshelter with pictographs than by a large rockshelter that only has buried deposits.

12. Estimated cost for development as an interpretive site: Some archeological sites require a minimum investment for interpretive developments, while other sites are literally cost-prohibitive. Short-term costs to consider include signage, fencing, and trail construction. Long-term costs consist of security; control of public access; and conservation, stabilization, and research project costs.

13. Relative distance of site from recreational campsite: The closer a cultural site is to a designated camping area, the greater the likelihood that the site will be vandalized. This question sought to identify clusters of sites near campsites that could pose a future management problem if not addressed early in the planning process.

14. Visibility of site: The more visible an archeological site is, the greater the chances are that it will be vandalized. Sites that are hidden by trees or dense vegetation are less likely to be vandalized than those in the open. In recent years, the use of landscaping (with native

plants) to hide highly visible sites has become an accepted preservation technique.

15. Accessibility of the site: Public access to many sites selected for acquisition would be by boat. Less than 5 percent of the targeted sites are located on adjacent uplands that would require the acquisition of overland access. The more difficult the climb to a rockshelter, the less likely it is that it will be disturbed by casual park visitors. Sites with easy access are most often frequented by ordinary or physically impaired park visitors. Sites that are difficult to access or are off the beaten trail are generally the preferred target for relic hunters.

Evaluation

Revision, where necessary, of the authorized (62,452-acre) boundary and acquisition of some interest in these sites are the only feasible means of protecting pictographic rock art, rockshelters, and other prehistoric sites that are (1) in the immediate vicinity of the Federally owned lands of Amistad National Recreation Area and (2) have significance equal to or greater than the sites known to exist within the NRA.

Amistad National Recreation Area is divided into three administrative districts—the Pecos River District, the Rough Canyon District, and the Diablo East District.

Adjacent to the Pecos River District, there are 249 sites recommended for acquisition. Nearly all the sites are located in the cliff walls adjacent to the river, or in intervening side canyons. The most practical situation would be for the National Park Service to acquire the land from the lake level to the top of the cliff walls along stretches of the Pecos and Rio Grande where multiple sites exist.

There are 47 sites proximate to the Rough Canyon District that are recommended for acquisition. The primary reason for the low number of sites in comparison to the Pecos River District is that much of the topography adjacent to the Devils River does not lend itself to rockshelter formation. Most of the significant sites are located up side canyons at some distance from current Federal lands. Acquisition of these sites would also require the purchase of access to enable the National Park Service to effectively manage the sites. The most significant cluster of archeological sites is in the area commonly called Indian Cliffs. The National Park Service has been approached by the landowner in this area, and donation, rather than purchase, of the sites is now a possibility.

There are no sites in the vicinity of the Diablo East District recommended for acquisition. Generally, this district consists of low, rolling hills without any large or extensive stretches of cliff walls. There are no deep canyons or major intervening side canyons.

Most of the lands adjacent to park boundaries have been used for ranching activities for the past 100 years; however, during the past 25 years since the lake was built, traditional land use patterns have begun to change. Several large ranches have been sold or subdivided, with acreage being sold on a lot basis for private housing. There are now at least half a dozen subdivisions scattered around Lake Amistad, concentrated mostly on the Devils River. However, most of the pristine wilderness areas along stretches of the upper Rio Grande and lower Pecos River still remain virtually unimpaired by private development.

Private development of lands adjacent to the lake is not compatible with the long-term preservation of the many archeological resources at Lake Amistad. As more people begin to live near the lake, there will be a concomitant increase in illegal activities such as pot hunting, theft of artifacts, and vandalizing of the pictograph sites.

All land adjacent to the lake is privately owned except for a 5,000-acre parcel on the Rio Grande managed by the Texas Parks and Wildlife Division as Seminole Canyon State

Historical Park. With so much private land adjacent to the lake, future land use is unpredictable. Potential future land-use changes in the larger area surrounding the NRA include two toxic waste dumps and several more subdivisions.

If small areas containing significant cultural sites were acquired by the National Park Service, they would be managed in non-consumptive ways, primarily for archeological resource preservation, research, and interpretation.

There is a good chance that two important tracts of land may be donated, rather than sold, to the National Park Service by landowners in the Pecos River District. The Rock Art Foundation of San Antonio, Texas, has already entered into serious discussions with the Southwest Regional Office of the National Park Service concerning the donation of approximately 400 acres of land that include several major archeological sites. Texas Tech University has also raised the possibility of donating the Rattlesnake Canyon Archeological District (92.3 acres) to the National Park Service if legal issues concerning the transfer of land from a State entity to a Federal agency can be resolved. The Rattlesnake Canyon site is considered by most to be the second most important remaining pictograph site in the region. The most significant is Panther Cave, which is jointly managed by the National Park Service and the Texas Parks and Wildlife Division.

All of the possible acquisitions listed in this report would be administratively feasible to manage in terms of access, protection, and operational and development costs. Additional park staff would be required for law enforcement, interpretation, and maintenance. Exact numbers would be dependent upon the total number of sites acquired by the National Park Service, with estimates currently ranging between three and five fulltime employees.

THE NEXT STEP

Based on continuing land status research, the National Park Service will prepare a Land Protection Plan. This plan will (1) recommend minor boundary revisions as authorized in Public Law 101-628; (2) identify lands or interests in land required to meet the Congressional mandate for Amistad National Recreation Area; and (3) develop priorities for acquisition. Landowners and other interested publics will be involved in the preparation of the Land Protection Plan.

AMISTAD

Cultural Resources Study



APPENDIX A: PREHISTORY SUMMARY

THE PREHISTORY OF THE LOWER PECOS RIVER REGION

Summarized by Joseph H. Labadie
from Solveig Turpin's
An Overview of the Prehistory in the Lower Pecos River Region

September 1993

INTRODUCTION

The Lower Pecos River region has one of the best documented records of continuous human occupation in the New World. The area surrounding the confluences of the Pecos and Devils Rivers with the Rio Grande also claims a diverse and complex body of Native American rock art, painted on or carved into the hard limestone by successive different ethnic groups. The boundaries of the region are most often defined by the extent of the distinctive Pecos River style pictographs, and by a commonality of items found in dry rockshelter deposits. In terms of modern political divisions, the region includes Val Verde County, and adjacent areas of Terrell, Crockett, and Sutton Counties in Texas.

HABITAT

One measure of civilization is the degree to which humankind devises buffers between itself and the environment. In modern society, technology moderates the effect of climate; creates artificial environments through light, heat, and air conditioning; and accelerates food production to the point where the everyday citizen is remote from nature. Hunters and gatherers, such as those who inhabited the Lower Pecos throughout prehistory, present the opposite extreme. Their relationship to their habitat was more intimate. Rather than drastically modifying their physical world, the people adapted to the available resources, and much of this adaptation was through cultural means. Thus, it seems only reasonable to assume that environment played a significant role in influencing the course of their cultural development.

The natural landscape of the Lower Pecos region is rolling hills and rocky flats dissected by drain-ways that become increasingly deep and entrenched as they near the three major rivers—the Pecos, the Devils, and the Rio Grande. To the casual visitor, these barren hillsides and steep canyons seem bleak and inhospitable. However, the semi-desert of today in part results from a century of overgrazing by domestic livestock, which, in turn, accelerated the effects of an increasingly drier climate. The past environment, reconstructed from plant and pollen studies, animal remains, flood sequences, and the debris left by human populations, was one of deeper soils, more effective moisture, and more plentiful native foodstuffs. Within the living memory of longtime ranchers, erosion has claimed the sediment cover; floods have eradicated stands of oak, walnut, and pecan trees; and thorny shrubs, unpalatable to livestock,

have expanded their hold on the remnant rocky soil. In historic times, since weather conditions have been recorded, the climate has vacillated, alternating between wet and dry years and decades. Similar cycles—some of which lasted for centuries—affected the everyday life of the aboriginal people, and the development of their culture.

More than 12,000 years of environmental history can be reconstructed from the plant parts, animal remains, and flood sequences preserved in Lower Pecos archeological sites. At the end of the last Ice Age, the region was a parkland savannah, composed of grasslands dotted with trees and bushes. This habitat in turn supported herds of large game animals, such as bison, camel, horse, and elephant (Dibble and Lorrain 1968; Bement 1986). By 9,000 years ago, dramatic changes in world climate forced the Lower Pecos people to adapt to an increasingly arid environment through the exploitation of desert plants and animals. This drying trend probably experienced a number of ups and downs over the next 6,000 years. The most dramatic change was an interlude of moister climate 3,000 years ago, which permitted grasslands to re-colonize the region (Dibble and Lorrain 1968; Bement 1986). A return to aridity forced the retreat of the prairie, and the herd animals it supported. Semidesert conditions prevailed until some time shortly before European contact and colonization, when cooler, wetter weather transformed the American West into the "sea of grass" known in frontier history. Extreme droughts are recorded in northern Mexico between 1640 and 1645, and in the Lower Pecos in the 1880s, but short-term climatic fluctuations such as these are usually not discernible in the archeological record.

PREHISTORIC LIFEWAYS IN THE LOWER PECOS REGION

The long, continuous occupation of the Lower Pecos River Region has been reconstructed from the information accumulated over 60 years of formal archeological study (Labadie 1991). Native American occupation of the region may well have begun before 10,000 B.C., and it continued in varying forms until the end of the 19th century—comparatively late in historic times. A considerable amount is known about the technology and diet of the prehistoric hunters and gatherers of the Lower Pecos because the refuse from hunting and gathering activities forms a significant portion of the rockshelter deposits. Factors that motivated the selection of certain localities for open-air camp sites or a preference for one rockshelter above another can be inferred from the distribution of known sites across the landscape. The unwritten rules that made for an orderly society are only assumable by analogy to living or recorded hunting and gathering people who lived in similar environments. The notable rock art affords a view into the esthetic or ideological world of the native people, but the exact translation of their symbols into our frame of reference is probably beyond our reach. Although the art conveys considerable detail about prehistoric lifeways, it is doubtful if modern man can ever completely understand the supernatural world of the aboriginal mind.

Other questions about Lower Pecos prehistory are also no longer answerable. The tribal identity of the aboriginal populations, and what they called themselves are unknown. The common name given them in the popular press—"Pecos Man"—simply refers to their geographic location. Based on similarities in lifeways and material culture, the Lower Pecos Archaic people are often classified as Coahuiltecan, implying only that they probably belonged to the same language group as other hunter gatherers encountered in southern Texas and northeastern Mexico at the time of first European contact. Not until the influx during historic times of Plains Indians, such as Apaches and Comanches, are familiar Native American names mentioned in historic documents.

Similarly, although four major prehistoric pictograph styles have been defined and several minor styles proposed, it is difficult to attribute any of them to a specific group. The styles can be arranged in chronological order, beginning with the elaborate, polychrome Pecos

River style, which is generally thought to be between 3,000 and 4,000 years old. The miniature Red Linear pictographs are probably more recent, but their span may overlap with the older style. The two latest prehistoric styles—the Red Monochrome and the Bold Line Geometrics—are believed to be Late Prehistoric in age, dating sometime after A.D. 600 and before A.D. 1600. Some historic pictographs, painted in a style characteristic of the Plains Indians, can be more precisely dated, but many miscellaneous panels cannot be assigned to a defined style, or to even the broadest time range.

For convenience, the long span of prehistory has been divided into four broad time periods. Each is characterized by a variety of traits, ranging from economics to art styles, but projectile point styles are often considered the hallmark of the period. The age of the more common Lower Pecos point styles has been determined by radiocarbon dating (Turpin 1991a), so they can be considered time markers for the sites where they are found. The beginning and ending dates assigned to the various time periods are arbitrary in the sense that the transition from one stage to the next was often slow and gradual.

The PaleoIndian occupation (before 7000 B.C.) is set in the habitat as it was at the end of the Pleistocene (Ice Age), when large game animals, now extinct, still roamed the Lower Pecos region. As the climate became more arid, the human populations adapted to a semi-desert environment, developing the cultural traits characteristic of the Archaic Period (7000 B.C. to A.D. 600). Sometime around A.D. 600 to A.D. 1000, changes such as the adoption of the bow and arrow signaled the advent of the Late Prehistoric Period (A.D. 600 to 1600). The coming of the first Europeans at the close of the 16th century marks the end of prehistory, and the beginning of the Historic Period. By 1880, the Native American presence in the Lower Pecos region had been virtually eliminated.

THE PALEOINDIANS: THE EARLIEST PEOPLE

Tentative evidence for the region's earliest human occupation is in the form of scattered and burned bones—fragments of now-extinct animals such as camel, horse, and elephant, found buried at two sites: Cueva Quebrada (41VV162A), and Bonfire Shelter (41VV126A). Both sites were first excavated as part of the National Park Service program of study. No formal tools made of flint or bone, and no features, such as hearths or pits, have been detected with these skeletal fragments. The burning of the bones at Cueva Quebrada (Lundelius 1984) and the cut marks and breakage pattern on specimens at Bonfire Shelter suggest that the animals were butchered and brought into these shelters by man. Radiocarbon assays of charcoal intermingled with the bones of extinct animals date these episodes to the range from 12,000 to 14,000 years ago.

More definitive is a second bone deposit at Bonfire Shelter (Dibble 1970; Dibble and Lorrain 1968). This bone bed is composed of the remains of an estimated 120 bison of the extinct species *Bison antiquus*, who were stampeded over the cliff, falling to their death on the rocks below. The animals who tumbled over the cliff struck the massive roof fall below, and rolled back into the shelter, where they could be butchered under the protecting overhang. Layering within the mass of bone cast aside after the meat was stripped suggests that at least three separate drives or stampedes over the cliff above took place within a relatively short period of time. Considering that this extinct form of bison was about one-third again as large as the modern species, this method of hunting was certainly effective. Butchering of the carcasses and the recovery of stone tools demonstrate that the drives were the work of humans and not accidents of nature. Among the stone artifacts are the distinctive Folsom and Plainview dart points—time markers of the PaleoIndian Period. Radiocarbon dating of charcoal from small hearths in this level places these events at about 10,000 years ago (Bement 1986). Lesser amounts of bone from these extinct bison were recovered from the lowest level of Arenosa Shelter (Dibble 1967) and the intermediate zone at Cueva Quebrada, both approximately the

same age as the Bonfire bone bed.

Although Bonfire Shelter is the only mass animal kill site known this far south of the Southern Plains, some information on the lifeways of the PaleoIndian in the Lower Pecos can be gathered from this 10,000-year-old bone level. The economy obviously relied to some degree upon the hunting of big game, although undoubtedly this highly mobile food supply was supplemented by smaller game and plant foods. Human groups whose economy relies on following migratory herds generally develop cooperative hunting techniques. Although a bison stampede may be easy to start, it is difficult to control unless a pre-arranged plan is followed and each hunter plays his role correctly. Based on the assumption that hunting is primarily a male skill, handed down from father to son, the big-game hunter is seen as a member of a small band, related to the other members through the male line of descent. The question of whether this pattern can be applied to the Lower Pecos PaleoIndian is as difficult to answer as the second question, that of whether these people were permanent residents of the region or merely transitory passersby. It is often thought that the scarcity of sites from this time period indicates a sparse population, or one that passed through the region, leaving few remains at their temporary camp sites. Nomadic hunters, constantly on the move in pursuit of game, would leave few perceptible traces behind. In addition, the great length of time that has passed since these people lived has to be taken into account. The environmental changes discussed earlier would have worked to eliminate much of the evidence for their occupation of the region. Finding sites of this stage in prehistory may often be more an accident of preservation than a reflection of the intensity of use. However, the big game hunting strategy and the carefully crafted projectile points are similar to those found across great expanses of North America during this time period. Thus, the Lower Pecos economy may have been part of a widespread tradition of exploiting the soon-to-be-extinct large game animals of the last Ice Age.

THE ARCHAIC PERIOD: CLASSIC FORAGERS IN A CHANGING ENVIRONMENT

Introduction

By about 9,000 years ago, a different way of life began to be reflected in cultural deposits left by the Lower Pecos people. Although the characteristic tools, such as Golondrina and Angostura dart points, are still called Late PaleoIndian by many, the term "Pre-Archaic" has been suggested by some researchers as a more appropriate description of the economic adaptation to the changing environment. Reconstruction of past environments, derived from the analyses of pollen and other plant remains, animal bones, flood-deposits, and human excrement, indicates that a warming, drying trend began at the end of the Pleistocene, and continued through time. Interrupted only cyclically by wetter periods, the increasing aridity altered the natural resources, and influenced the lifeways of the Lower Pecos inhabitants. At present, it is difficult to say whether the local population adapted to changing conditions or whether they were replaced by people conditioned to the increasing aridity.

Projectile points characteristic of this transitional time, such as Golondrina, are similar to PaleoIndian types, but they are found in contexts little different from those of the later Archaic Period. Sites such as the Devils Mouth (Johnson 1961, 1964; Sorrow 1968) and Baker Cave provide radiocarbon assays and tool types indicative of a 9,000-year-old occupation, but the dietary emphasis is on small game and vegetal foods. One hearth excavated in Baker Cave (Word and Douglas 1970; Chadderdon 1983; Brown 1991), and dated to this time period by both radiocarbon assays and Golondrina projectile points, contained fragments of 12 species of mammals; 23 species of reptiles; six species of fish; and 16 different types of plants, 11 of which are edible. This reliance on the widely varied resources of a semi-desert environment was to characterize the subsistence pattern of the

Lower Pecos throughout the remainder of prehistory.

The long span of the Archaic Period is often described as a stable adaptation to the varied and variable resources of a semi-desert environment. Stability, when discussed in the archeological sense, takes on a very broad meaning. Many of the short-term intermittent stresses that affected everyday life are simply not discernible in the physical remains left after thousands of years. Additionally, much of the interpretation of past lifeways must be based on the more permanent artifacts—those that survive in the refuse dumps, burials, and living areas of prehistoric people. The abstract concepts that governed attitudes toward such social practices as marriage, inheritance, line of descent, and religion can only be inferred from analogy to living or recorded groups. Thus, stability in the Lower Pecos Archaic is a generality most appropriately applied to subsistence—the basis of human life; and technology—the means by which subsistence is guaranteed.

The 7,600 years of the Archaic Period are divided into three sub-periods: Early (7000 to 4500 B.C.); Middle (4500 to 1000 B.C.); and Late (1000 B.C. to A.D. 600). (These sub-periods are discussed individually, in more detail, later in this appendix.) The material culture and basic economy remained very much the same throughout the Archaic Period, but significant changes are apparent in other arenas. Two of the defined pictograph styles—the Pecos River and the Red Linear—are of Archaic age. Both are products of a culture economically based in hunting and gathering, but the two styles are markedly different in form and content. Much of the interpretation of preliterate art depends upon placing it in the context of the culture that produced it—in this case, perhaps two different ethnic groups that occupied the same territory, but at different times in the long time span we call the Archaic Period.

Stable Elements in the Archaic Life Style

Housing was provided by the numerous rockshelters common in this region. Generations of fires in many shelters produced the deep, ashy deposits; massive accumulations of burned rock; and blackened ceilings. The discarding of burned rock and other garbage by throwing it out of the shelter mouth resulted in the talus cone—or V-shaped rock slides—which are so visible a trademark of an inhabited shelter. Some evidence suggests that partitions may have been erected to screen parts of the shelter, but domestic life must have been largely communal. The grass-lined pits found in some sites may have been sleeping nests, perhaps made to protect infants from the all-pervasive dust and dirt. The dead were often buried in the shelter deposits left by the living.

Open-air sites representing the Archaic Period are burned rock accumulations or middens on the upland flats and gentler slopes of the canyons. These mounds of burned limestone are the debris from earth ovens, where desert plants were baked. A second type of Archaic upland site is hearth fields, where numerous smaller, sparser rock hearths fan out across the caliche flats. Hearth fields usually contain much more debris from stone tool manufacture and many more utilitarian implements than the burned rock mound sites, suggesting they were open living areas where many varied activities took place. No remains of structures or temporary shelters have been found on these sites, but some sort of rudimentary hut or lean-to may have been constructed of perishable building materials that would not survive in these exposed locations.

By far the majority of information on Archaic lifeways comes from the dry shelter deposits where normally biodegradable materials were preserved. Extensive study of seeds, leaves, pollen, bone, and the contents of human excrement reveals a most varied and eclectic diet. The staple plant foods were pricklypear, lechuguilla, and sotol, augmented by seasonally available nuts, seeds, fruit, and flowers. Although deer and other large mammals were probably prized, the bulk of the meat was supplied by rodents, rabbits, snakes, lizards, and

other small animals. Birds, fish, turtles, and insects were eaten. It is noteworthy that many of the protein sources were trapped, netted, or scavenged rather than hunted.

The spear-thrower—atlatl—was the most powerful weapon, used to add force to propelling a dart or lance, this object was not replaced by the bow and arrow until Late Prehistoric times, after A.D. 600. The presence of atlatls in both Pecos River and Red Linear art panels is the major basis for their broad assignment to the Archaic Period.

The large chipped stone projectile points, or dart points, vary in style throughout the Archaic, but their function remained much the same. Other stone tools included scrapers and gouges used in hide and plant processing. Knives, naturally serrated by the flaking technique, were employed in butchering, wood cutting, and plant harvesting. Drills for perforating bones, shell, stone, and leather were finely flaked from flint. The sharp edges of waste flakes—debris from the manufacture of formal tools—were often expediently used for the task at hand. Smooth, fist sized rocks—manos—served as grinding implements to pound nuts, tubers, and seeds into a type of flour, and to powder naturally colored pebbles into pigment for paints. Mortars ranged from the enlargement of natural concavities in the bedrock to slabs of more portable limestone—metates. Often the re-use of bedrock mortars deepened these pits beyond the reach of the normal person. It has been suggested that these extremely deep holes may have been used to store water and food, or to ferment beverages.

Although Pecos River style art seems to show elaborate costumes, only a few items of clothing have been identified in shelter deposits. Rabbit skin robes, woven vegetable fiber loin coverings, fringed skirts, and sandals made of wooden frames padded with fiber make up the entire known wardrobe (Schuetz 1956, 1961, 1963). Plaited or twilled baskets, nets, matting, and cordage were manufactured from fibrous plants (McGregor 1992). Pouches made of split pricklypear may have been carrying containers. No water bags or flasks have been recovered, but it is possible that containers were made of pricklypear pads, the internal organs of animals, leather, or tightly woven baskets. Wooden implements include the atlatl, fending or rabbit sticks, snares and traps, digging sticks and fire tongs, drills, and hearths. A wooden mortar and pestle, cached in a rockshelter near Pandale (Collins and Hester 1968), had been used most recently to grind pricklypear seeds; some were stuck in cracks in the mortar. A second similar mortar from near Dryden was radiocarbon-dated to about A.D. 900. Both of these specimens were of piñon pine—a tree no longer common to the Lower Pecos—suggesting that they may have been hidden because of their rarity and value. Bone and antler were fashioned into ornamental beads, pressure flakers for stone tool manufacture, awls for weaving or sewing, and other tools. Perforated mussel and snail shell, bone, wood and stone beads, deer hoof and mussel shell rattles, and long strings of rattlesnake vertebrae may have been worn as jewelry.

The pictographs—the most spectacular of Archaic-age art forms—are not the only esthetic expressions found in the shelters. Painted pebbles and clay figurines—technically called "art mobileur," or portable art—were produced over a long time span. Smooth, water-worn rocks, usually painted on both sides with black pigment, bear designs ranging from abstract geometrics to reproductions of the human face and body. There are some indications that styles changed over time, but few specimens have been found in contexts that could be accurately dated (Parsons 1986). The most interesting proposition is that painted pebbles were amulets or charms, possibly used by the women as ritual objects (Mock 1987).

Clay figurines are rarer (Shafer 1975), but these simple lumps of pinched or shaped, unfired clay have been found at several sites. Some of the fragments have conical appendages—perhaps breasts—and only those female figures have incised or punctated designs. The object seems to have been to reproduce the human body; rarely is the head shown. These figurines have been interpreted as ritual paraphernalia, perhaps used in fertility rites, witch craft, or

curing ceremonies as a substitute for the human subject.

With the possible exception of pictographs, the material culture of the Archaic Period was simple and expedient. The raw material for the most common items—stone tools—was so abundant that a suitable implement could be easily fashioned, used, and discarded. The wooden and bone tools were not only more perishable, but the raw material was less easily acquired, and required more labor to convert to a suitable form. The mobile lifestyle inhibited the size of a tool kit to items easily carried or difficult to replace. Although simple by our standards, this technological level was highly adaptive, in that it was sufficient to maintain the Archaic population for thousands of years. Changes in tool forms, such as projectile points, are one trait used to differentiate between the Archaic sub-periods.

Sub-periods

The Early Archaic Period, 7000 to 4500 B.C.: Deposits representing this time period have been found at several sites. The dietary pattern that was to characterize the majority of the Archaic stage has been well established by studies of plant parts, animal bone, and human feces recovered from these sites. The most informative caves about the overall lifeways of the Early Archaic are Baker, Hinds (Shafer and Bryant 1977), and Eagle (Ross 1965). A heavy reliance on the desert succulents, such as lechuguilla, sotol, and pricklypear, which are high in bulk and low in nutritional values, was supplemented by all manner of fruits, roots, seeds, and leafy plants. Virtually every animal and reptile was consumed, but desert plants were soon the major dietary component.

Early Archaic-age skeletal remains found below the vertical shaft of a deep sinkhole bear some marks of the types of dietary stress experienced by the human population at this time. Several of the individuals interred in this cavern showed extreme tooth wear; bone pitting caused by iron-deficiency; and arrested growth lines indicative of severe nutritional strain during childhood. However, the overall health of the people was better than that of most early agriculturalists and many other hunting and gathering populations.

In the Lower Pecos region, Early Archaic dart point styles are generally lumped under the broad descriptive names "Early Barbed," "Early Stemmed," or "Early Corner Notched." Names borrowed from other regions, such as Martindale, Uvalde, or Gower, are sometimes used; and new type names, such as Baker and Bandy, have been proposed. Few tools, other than the projectile points popular during this time period, set the Early Archaic apart from the general Archaic technology. If the lithic technology remained constant, it can be presumed that many of the more perishable items found in Middle and Late Archaic contexts were also in use in earlier times.

At present, the only features recognized in Early Archaic deposits are refuse pits and burned rock accumulations. Indicative that much of the technology that was the mainstay of Archaic life was developed by Early Archaic times were the few painted pebbles; the surviving fragments of baskets, nets, and sandals; rare wooden and bone artifacts; and the stone tools.

The Middle Archaic Period, ca. 4500 to 1000 B.C.: Although cultural deposits of the Middle Archaic Period predominate in the majority of the rockshelters excavated in the last 30 years, it remains a time the material culture of which is well known, while the underlying social mechanisms are poorly understood. About 4500 B.C., the cultural sphere of the Lower Pecos appears to contract. No longer are the characteristic projectile point styles shared with adjacent cultural areas. The distinctive Pandale point—a beveled dart point with a highly recognizable twisted blade—is considered as the horizon marker for the Middle Archaic. The very names given to the most popular dart points of this time period—Langtry and Val Verde—reflect the core area in which they are found. Although a few specimens turn up in other

areas of the State, the widespread shared styles of the earlier and later periods stand in marked contrast to the localized distribution of the Middle Archaic tool forms.

Another purely regional phenomenon—the Pecos River Style pictographs (Grieder 1966a, b; Kirkland and Newcomb 1967; Turpin 1990a)—has been dated to the Middle Archaic Period by experimental radiocarbon assay (Russ, Hyman, and Rowe 1992). These multi-colored cave paintings are considered by some people to be one of the earliest religious art styles of the Americas. The central figures are large, faceless, costumed humans, which are called shamans because they give the distinct impression that they are religious practitioners. The figures are armed with a set of objects, such as fending sticks, atlatls (spear throwers), and pricklypear pouches—all found in the dry shelter deposits.

Smaller figures include other humans, animals, and strange geometric forms. The positioning of many of groups of these forms suggests dominance of the central character over other humans, shamans, or game animals. The one animal in these scenes that exudes power akin to that of the shaman is the "panther," or mountain lion, which still lives in the region today. Deer are a favored topic, as are snakes, fish, turtles, and an occasional bird.

The massive amount of over-painting at some sites, such as Panther Cave and Rattlesnake Canyon (see Zintgraff and Turpin 1991), suggests recurring ceremonial events, perhaps carried out during times when the scattered populace came together for harvest celebrations. Ethnohistorically, such aggregations took place when desert fruits, such as pricklypear, ripened. Congregating for such social events gave small groups the opportunity to exchange information and goods, make political alliances, and marry outside their immediate family.

What motivated the painting of these enigmatic figures and how art served a function in their society can only be inferred from living groups. Often wall painting is part of rituals conducted for events such as puberty celebrations or initiation into select societies. The mystical nature of Pecos River style art has given rise to speculation that it originated as an expression of hallucinogenic visions (Campbell 1958) induced by eating mescal beans—a known practice in historic times. The skill with which many of the Pecos River style scenes were drawn suggests that at least a part-time specialist was at work. In a hunting and gathering society, the artist may well have been the shaman, the magician thereby placating the supernatural to ensure the welfare of the group as a whole. There can be little doubt that the Pecos River style of art was drawn by indigenous hunters and gatherers at a very elemental level of social organization, but with a highly varied and imaginative view of the natural and supernatural world.

The consistency of themes and style in Pecos River style art suggests that a unified belief system prevailed over an area extending some 90 miles north and south of the mouth of the Pecos River, including the mountains of Mexico—visible on a clear day from Lake Amistad. The question then becomes why the Middle Archaic people developed such unique characteristics. One avenue of research now being followed by prehistorians is the scattered and tentative evidence for widespread erosion during the early Middle Archaic Period. Both the Devils Mouth site and Arenosa Shelter show marked discontinuities in strata bearing projectile points of this age. Radiocarbon dates from Black Cave (Turpin 1982)—a major Pecos River style pictograph site—show that a lengthy Early Archaic occupation was almost completely washed away sometime in the Middle Archaic. One explanation for such erosion and massive flooding is an episode of extreme aridity—possibly a widespread drought—that seared the uplands, dried the water-holes, reduced plant cover, and forced human and animal populations to concentrate on the major river courses. There, the people may have found new ways of responding to the difficulties imposed by proximity, elaborating their religious ceremonies, and developing their own brand of material culture.

The Late Archaic Period, ca. 1000 B.C. to A.D. 600: The beginning of the Late Archaic Period coincides with a brief interval of wetter, cooler climate, which in turn promoted an increase in grassland vegetation. This environmental change is most clearly shown in the archeological record by the re-use of Bonfire Shelter, after a period of about 7,500 years, for mass bison kills in which herds of bison were stampeded over the cliff above, probably on several different occasions. Their carcasses fell and were butchered; then, portions were dragged into the shelter and stripped of meat, and the bones were broken and discarded. The remains of an estimated 800 animals form a massive bone layer 3 feet thick. The rotting meat scraps, bone, and grease apparently ignited spontaneously (much as oily rags left in a pile may), thereby reducing much of the deposit to brittle fragments and ash, and obscuring any possibility of detecting layers that might reflect different hunting episodes. Radiocarbon dates were derived from this burned bone and charcoal taken from two small hearths, remnants of fires lit during the butchering process. The most reliable assays—those run on charcoal samples—average 2,645 years ago (Turpin 1991).

The large dart points found in this bone bed are similar to those defined as Montell, Castroville, and Marshall—types that are more common on Late Archaic sites in Central Texas. Interestingly, these specimens are also very much like forms found on some Archaic bison kills in the Texas Panhandle. However, similar styles are found in quantity at the Devils Mouth Site and Arenosa Shelter, in numerous other excavations, and on open sites. In all of these contexts, they are considered as time markers for the period. Because Bonfire Shelter is the only site where mass hunting techniques were clearly employed, the excavator came to the conclusion that for a very brief time the bison of the Great Plains expanded their range to include the Lower Pecos. There they were followed by their human predators, bearing their characteristic weapons. When the trend to aridity was reinstated, the herds and their attendant hunters retreated with the grasslands, leaving only these slightly perceptible traces of their intrusion.

A second change possibly coincides with the advent of the bison herds and hunters. In the miniature monochrome art style called Red Linear (Turpin 1984), scenes of combat, hunting, and ritual include one representation of a herd of bison racing toward a crack in the shelter wall. Although no concrete radiocarbon dates or associated cultural deposits can be related to this art style, the uncanny resemblance of this scene to the events at Bonfire Shelter seems more than coincidental.

The Red Linear style pictographs differ from the earlier Pecos River style in size, color, location, and themes. Despite their almost-cartoon-like simplicity, these stick figure drawings are much more representative of everyday life among hunter-gatherers. Scenes of hunting, warfare, ritual, and procession brim with a vivacious energy foreign to the other Lower Pecos pictograph styles. However, the underlying themes are more solemn, with their concern for basic survival in the form of conquest, hunting success, and human reproduction. Red Linear is the one style that deals with sexuality and gender. The emphasis on pregnancy and erect phalluses in this style hint at fertility as a dominant factor in ritual painting. The secluded location of some Red Linear panels and the male-oriented activities portrayed suggest ritual painting, perhaps for puberty ceremonies or initiation rites.

As was the case in the Pecos River Style, the weapons pictured are of Archaic age, but their relative age is demonstrated in the few sites that contain examples of both types. Red Linear artists often incorporated elements of the older paintings into their compositions, just as they often used natural features of the shelter walls as a backdrop for their vignettes. The consistency in Red Linear art and the lack of a developmental sequence may result from its origin in another medium, such as hide painting, and it may be that it was brought into the region by the bison hunters, who mimicked the earlier occupants by leaving their own artistic tradition on the walls.

Although the bison and their hunters were probably not in the Lower Pecos for more than a few decades or centuries, their very presence suggests that a different way of life may have been practiced for this short period, at least by the followers of the herds. The driving and mass slaughter of large, untamed herd animals depend on cooperation between the hunters. Accounts of Plains Indian communal hunts prior to their acquisition of the horse describe methods of positioning the herds for stampede. In one approach, a V-shaped drive line was built of piled stones, arranged much like a funnel whose opening was the cliff or bluff selected for the jump. Hunters lay behind the piled stones hidden beneath brush or hides. A human decoy dressed in a bison costume wandered between the animals and the jump location. Curious bison would drift toward this runner until he had attracted them to the head of the drive line. Then, at the appropriate moment, hidden hunters would leap up waving brush or hides to start the stampede. The decoy would jump into a hole dug for that purpose, or dart out of the way as the herd began to run. If the lead animals saw the danger and tried to stop, the mass of panicked animals behind pushed them over the edge. This technique reportedly required considerable coordination and timing so that the herd did not turn from the chosen path. Discipline was imposed so that an over-anxious hunter did not prematurely start the stampede or frighten the animals before they were in the proper position. The shooting of individual bison was discouraged because it was detrimental to the success of the mass kill. This, and the efficiency of this killing technique, perhaps explain why so few projectile points are found in many kill sites. Another possible technique, known from historic times, was the judicious use of grass fires to force the herds to run in the chosen direction. It is not known what methods were used to stampede the bison of Bonfire Shelter, but it is certain that they were successful.

If we can continue analogy with historic American Indians here, we can assume that the bison was highly prized for a number of uses. The large quantities of meat obtained were probably dried on racks in the sun, or over low fires. The mixture of powdered dried meat with fat or bone marrow and various berries or fruits formed a storable staple. Bones were shattered to get to the nutritious marrow, and boiled for bone grease. Tools were made from some of the bones. Bison hides were preferred for robes, and in later times were used to make war shields. Bison horn headdresses were also prized. Very few parts of the animal could not be used to advantage. However, at Bonfire Shelter, waste is apparent in the number of skeletal parts that were not dismembered, and in the paucity of butchering tools recovered. It seems that the hunters were too successful, and that the overkill exceeded the labor force available to fully process all the carcasses.

The meat and hides garnered from the mass slaughter seemingly would require immediate processing at a nearby camp. There are several likely shelters and open camp sites close by, but only Eagle Cave, half a mile down the canyon, shows any evidence of bison or the characteristic projectile point styles. In addition, bison bone has been found in deposits of this time period at Arenosa Shelter (Dibble 1967), Skyline Shelter (Turpin 1990b), and at the Devils Rockshelter. Piedra del Diablo, an open burned rock midden site, reflects heavy use during this time, based on the quantity of Marshall points and one radiocarbon date of 3,000 years ago. The primary feature associated with these characteristic points was a large accumulation of burned limestone. This site, and the similar projectile points found on other open burned rock middens suggest that the bison hunters used rock ovens to process meat or desert vegetation, much as did their predecessors and the following Late Prehistoric residents.

With the return to arid conditions came the retreat of the bison and their hunters, and the apparent revival of the old way of life. Whether or not the resident Archaic people were displaced, exterminated, or co-existed with the bison hunters during the short span of this intrusion is not clearly shown in the archeological record.

Ensor and Frio dart points are the hallmarks of this late phase of the Late Archaic. These

time markers are found in upper shelter deposits, and on open sites. They are the most common styles associated with the circular or crescent-shaped burned rock middens described in the following section. Their use continues well into the Late Prehistoric Period, after the first signs of adoption of the bow and arrow.

By far the majority of the burials recovered from shelter deposits are of Late Archaic age (Turpin 1988a, 1990b; Turpin, Henneberg, and Riskand 1986; Powell 1991). Thus, our knowledge of Archaic burial practices is greatest for this time period (Turpin 1992). The general mortuary pattern consists of flexed or semi-flexed burial—usually close to the shelter wall. These burials are often wrapped in matting or overlain with basketry, and the pit covered with limestone slabs. Very rarely, the grave holds remnants of clothing, ornaments made of shell and bone, or tools used by the person during a lifetime. Infants, wrapped in deer or rabbit skin robes and matting, are interred with their broken cradle boards (Banks and Rutenberg 1982). That some ceremony or ritual for the dead was performed is indicated by the traces of ochre (powdered hematite) found in some graves. The magical properties of ochre are suggested by the projectile points stained with red pigment, and the use of ochre as paint for the pictographs. Skeletons have been found interred under rock falls, in smaller clefts, and in sinkholes. Based on the number of individuals represented by skeletal remains and the absence of household debris, some small shelters may have been specifically set aside as burial locations. Cremation, with the burned bones and ashes buried in pouches, is another approach to disposal of the dead. It has been suggested that cremation was afforded only to individuals who had some special status in the group, such as shamans. However, considering the long human occupation of the region, burials reported from formal excavations are relatively few.

The number of upland sites bearing Late Archaic points, coupled with an increase in the proportionate number of unifaces—usually considered as vegetal material processing tools—has led to speculation concerning an escalating reliance on desert plants. At the same time, a higher recovery of fish bones and scales in shelter deposits suggests exploitation of food sources that were previously less important. The analysis of the stomach contents of one adult male who died about 1,150 years ago, late in the transition from the Late Archaic to the Late Prehistoric Period, shows a remarkably eclectic last meal or meals: represented were parts of bat, snake, fledgling birds, small whole fish, bone elements, fur of white-tail mice, pocket gopher, and pricklypear, grass, and other plants—but the main course was grasshopper parts. It has been proposed that either a population increase or a deteriorating environment forced the people to rely upon food sources they had not fully utilized previously. This point must be reconciled, in order that the transition from the Late Archaic to the Late Prehistoric period can be understood.

THE LATE PREHISTORIC PERIOD: THE BEGINNINGS OF CHANGE

The Late Prehistoric is the period most marked by changes that affected many of the basic patterns established during the long Archaic stage. The first sign of change—and the one used as a time marker for the period—is the adoption of the bow and arrow. Arrow points are found in the upper level of sites mixed with dart points of Late Archaic age. The earliest radiocarbon date associated with arrow points—A.D. 510 to 630—comes from the top stratum of Arenosa Shelter (Dibble 1967), now under Lake Amistad. This date is difficult to interpret because this level was highly mixed, containing items ranging in age from Late Archaic Ensor and Frio dart points to historic trash. Arrow point types include Scallorn, Sabinal, Perdiz, Toyah, Clifton, and Harrell. Few good dates have been obtained to clarify the sequence of arrow point types, but evidence from outside the region suggests that the earlier expanding-stem Scallorn was replaced by the contracting-stem Perdiz. Toyah and Harrell arrow points are considered to be later.

The drawing of human figures with bow in hand in the Red Monochrome pictographs places this style in the Late Prehistoric Period. The contrast between the realistic humans and animals characteristic of Red Monochrome art and the mythic qualities of the earlier Pecos River pictographs is so strong that the Red Monochrome is recognized as intrusive, brought into the region as a fully developed art form. The close similarity to rock art of the Big Bend region and the western Plains points to a possible origin with the nomadic hunters who traveled the Southern Plains in late prehistory and early history.

The most recent prehistoric pictographs—Red Monochrome—are definitely of Late Prehistoric age, painted after A.D. 600 and before European contact in 1590 (Turpin 1986a). This can be assumed from the frequent drawing of the bow and arrow, which were introduced into the Lower Pecos at that time. This style is also markedly different from the preceding styles, which indicates a break in art, and possibly cultural, traditions. Life-size and life-like human figures are posed frontally, with arms and legs outstretched. Realistic animals of many economically useful species such as deer, turkey, rabbit, and catfish—as well as panther and coyote—are clearly shown. Hostility is prominently displayed in figures riddled with arrows. However, this characteristic is not limited to this style. The rarity of Red Monochrome pictographs and the strong similarities between the sites lead to the conclusion that this style was brought into the region in fully developed form but lasted only a short time. The strongest resemblance to other art styles is with certain figures in the Big Bend region of Texas.

A fourth prehistoric style, the Bold Line Geometrics (Turpin 1986b), are abstract designs, usually painted in thick, glossy, red pigment. The artists used various combinations of straight lines and blank spaces to form zigzag, triangular, and diamond-shaped patterns. The only variation on this theme is an occasional four-legged, insect-like figure. Geometric designs are the most common form of prehistoric art, and their abstract nature makes them very difficult to interpret. However, the Bold Line Geometrics are very similar to pictographs found in northern Mexico, and may be another example of radical change brought about by the movement of people across the Rio Grande.

A new form of mortuary custom—burial under low mounds of rock—may also have come into use during the Late Prehistoric Period (Turpin 1992). The only cairn excavated to date contained four projectile points: two dart points similar to Late Archaic forms—a Perdiz, and a Scallorn arrow point; and one smooth stone in the heart of the feature. No skeletal material was recovered, but chemical tests of the fill show a high phosphate concentration, indicating the decomposition of large quantities of bone or other organic material. Similar features are common higher on the Pecos River and along the margins of the Southern Plains, where their function as burial cairns has long been known.

Among the upland sites attributable to this time period are several locations with the structural remains of a different type of housing. Stone circles, popularly called "tipi rings," or "wickiup rings," made of six to eight paired blocks, probably held up pole frameworks for grass- or hide-covered huts much like those used by the historic Comanche. Some of these structural remnants are found adjacent to burned rock middens, and bear a mixture of Archaic and Late Prehistoric stone tools. On the later ring sites, artifacts such as small, triangular arrow points, steeply bitted end scrapers, and a few fragments of plain brown pottery are more characteristic of sites on the fringes of the Southern Plains than any earlier Lower Pecos tool kits. Similar ceramics are informally called "Abilene Brown," indicative of their common occurrence in that area. A few potsherds in the collection from the Lipan Apache mission of San Lorenzo de la Cruz indicate the late date of this pottery type. The stone circle sites and their characteristic artifact assemblage are probably of very late or proto-historic age, and could very well represent early Apache occupation of the Lower Pecos. Alternatively, Spanish documents refer to the practice of several tribes along the Rio

Grande gathering at the mouth of the Pecos for winter bison hunting. These upland camps would be appropriately suited for such a temporary occupation.

No change in the basic subsistence during the Late Prehistoric Period has yet been detected, but because most of the analyses have centered on rockshelters with very sparse late deposits, this may be simply a matter for re-direction of study. Based on the number of Ensor and Frio dart points found on ring- or crescent-shaped burned rock middens, these sites have generally been considered as Late Archaic. However, radiocarbon assays of charcoal from many of these features indicate that they were used from A.D. 700 until historic times. This places them within the Late Prehistoric Period, as defined here. Stone circles found adjacent to burned rock middens contain both arrow points and Late Archaic points.

The distinctive shape of the ring middens has been explained by drawing analogy with documented historic Apache baking ovens. A circular pit is lined with stones, filled with dry wood, and ignited. When the coals burn down, the hearts of sotol or agave are thrown in, covered with wet grass and twigs, and blanketed with earth; and a second fire is lit above. The tubers bake for 1 or 2 days, making them suitable for storage and later consumption. The burned rock, when scraped away to expose the pit oven, forms the crescent or circle characteristic of these sites. These features reflect a continued reliance on desert plants such as sotol and agave, but the shape of the remnant rock pile is distinctive.

Mussel shell is often found on the burned rock midden sites, indicative of a secondary food source. Faunal remains have not been recovered from these upland sites in quantities sufficient to determine the full range of game animals. Species recovered from shelter deposits of this time period do not differ from those of earlier times. The animals shown in the rock art are those known from Archaic deposits, and all are still found in the region today. The spread of bison late in prehistory is known from many sites on the Southern Plains, in central and south Texas. A bison-hide-lined pit in one shelter, a few very late pictographs showing bison, and comments in Spanish documents from Northern Mexico suggest that bison were available to the Lower Pecos residents; however, no strong evidence for a heavy reliance on these large herd animals has been found.

The Late Prehistoric Period has only recently come under intensive study, and much remains to be learned. These dramatic changes in fundamental cultural patterns, such as burial customs, art, weaponry, and structures, are usually attributed to an influx of new people, but until an accurate assessment of the age of each of these traits can be gained, their sequence and origin will remain debatable.

THE HISTORIC INDIANS: THE LATECOMERS

Technically, the historic period begins with the first Spanish expedition to cross the Lower Pecos: Gaspar Castaño de Sosa's journey from Monclova, Mexico, to the Pecos Pueblo in 1590-1591. In reality, repercussions from Spanish colonization probably touched the lives of the native population before this date. One possible source of information about the approaching Europeans was the native tribesmen of northern Mexico, who reportedly retreated across the Rio Grande, eluding slavery and epidemic diseases. Spanish documents also refer to the northern Mexican practice of traveling to the Rio Grande for winter bison hunts and trade. Here they met with the nomadic hunters of the Southern Plains, called the "Cibolos" and "Jumanos" in the Spanish records. The arid lands and rugged terrain presented no significant barrier to these people long before the horse granted them mobility. The Spanish considered their desert opponents savage and ferocious—a natural response to the collision of two such very different cultures. To what extent the natives of the Lower Pecos warred among themselves is unknown, but the Spanish threat to their traditional lifeways was clear. It seems probable that some form of alliance made it possible for the northern and

southern native groups to co-exist at a temporary meeting ground along the Rio Grande. At least, by 1693, La Junta—a Spanish campaign to the Conchos-Rio Grande area—found that the camps of allies of the southern tribes lined the Rio Grande to the mouth of the Pecos. Thus, the Lower Pecos may have served as a refuge long before the Spanish scribes recorded the movements of the 17th and 18th centuries.

The second possible source of unrecorded contact may have come in the form of illicit commerce in slaves. As Lieutenant Governor of Nueva Leon, Gaspar Castaño de Sosa was allegedly involved in widespread slave trade, sending out expeditions to garner labor for the mines and fields of Northern Mexico. His ill-prepared and hasty expedition in 1590 was to be financed in part by capture of Indian slaves along the route. His knowledge of the location of the mouth of the Pecos may well have come from slaves or slavers. His ignorance of the rough terrain beyond would suggest that the Rio Grande may have been the upper limit of his information. However, he was aware that the Pecos was the same river that flowed by the pueblos described by the Espejo expedition of 1582. Slavers kept no records of their illegal operations, and no tales of the Indians are preserved by a written language. Thus, in that sense, Castaño's travels provide us with the first sketchy description of the Lower Pecos in historic times. When his wagon train—composed of 160 to 170 people, eight or 10 two-wheeled ox-carts, cattle, goats, horses, and dogs—left Monclova without permission from the Spanish crown, he became a fugitive, eventually apprehended and returned to Mexico. Exiled to the Philippines, he died in a revolt by his Chinese galley slaves. The court reversal of the verdict of exile came too late. His later adventures are a topic for historians; only the casual facts noted as he passed through the Lower Pecos are of interest here.

His caravan crossed the Rio Grande beneath present-day Del Rio, and headed west to a camping ground on Seminole Canyon. From there, with an ultimate destination of the Pecos Pueblo, his wagon train wandered between the Pecos and Devils Rivers for 26 days, searching for a crossing, and for water sufficient for the needs of such a large group. The stony terrain reportedly cost them 25 dozen pairs of horseshoes. In the midst of all the complaints about difficult terrain and the inaccessibility of the rivers, it is perhaps significant that at no time was a shortage of feed for the numerous domestic animals mentioned. This, coupled with other ethnographic references to bison hunting at the mouth of the Pecos, gives the impression that the Lower Pecos was marginally included in the great expansion of grasslands that turned much of the American West into a savannah parkland for a few centuries.

Yet another clue—this time to the nature of the native population—is the complete absence of any reference to encounters with Indians from the Rio Grande until the wagon train finally came to the Pecos River below the present-day ruins of Fort Lancaster, several weeks into the journey. A scouting party reported that they came upon a great number of people of the Tepelguan (or Depesguan) nation, who gave them buffalo and antelope meat and skins, and offered to take them to a place of settlements and abundant maize. "Tepelguan" is probably derived from the Nahuatl words "tepetl" (mountain) and "guan" (at the junction of), implying the geographic origin of this group rather than their tribal identity. The translators of Castaño's journal suggest these may have been members of the poorly known Jumano—buffalo hunters of the Southern Plains who had wide-ranging contacts with settled tribes to the east and west. In some reports, the Jumano are settled agriculturalists of the Rio Grande; in others, they are nomadic hunters of the Plains, or traders with the Caddo of East Texas.

Such mobility is not uncommon among hunters and gatherers, but the discrepancies in these reports lead some authors to suggest the name "Jumano" was applied indiscriminately to any tattooed or body-painted Indians. This difficulty in determining exactly who the Spanish encountered is only the first in a long series of ambiguities. Dozens of tribes are named by various expeditions to other parts of the Southwest, but whether the names are those by

which the people called themselves or those stuck on by the explorers because of some characteristic is generally impossible to determine. The names of individual leaders were often applied to the group as a whole, and any one group could be called by several names. Even if the tribal identification of these people is correct, the Jumano remain one of the least known of Texas tribes. Thus, this identification does little to clarify the true identity of the "Tepelguan" met by Castaño's scouts.

The apparent de-population of the area immediately north of the Rio Grande could be more easily understood if the natives had experienced the effects of contact with the Spanish slavers, or if Castaño was, in fact, capturing them for shipment to Nuevo Leon. If the former were true, at the first sight and sound of Europeans, the people would be well advised to take refuge in the many hiding places afforded by the rugged terrain. In the latter case, no records would be kept as evidence. Thus, it is possible that Castaño's first recorded encounter with Indians, north of the Rio Grande, high on the Pecos River near present-day Sheffield, more accurately reflects the range of their experience with the white man than any population distribution.

Eighty years passed before Spanish missionary expeditions again penetrated the canyon country north of the Rio Grande. There, they encountered native groups with such little-known, exotic names as the Boboles, Guyquachales, Tiltitqui, Yoricas, Bacoras, and Mayhuam—peoples who were moving north ahead of the Spanish tide. The Great Pueblo Revolts of 1680 turned the brunt of Apache force southeastward, catching the remnants of earlier populations between them and the Spanish Colonial frontier. By this time, smallpox, measles, and other imported contagious diseases had afflicted the indigenous populations, who had no natural immunity. Whether the few survivors became stragglers in lower Rio Grande missions or refugees in northern Mexico, the fate of these people is unknown.

During the 18th century, Spanish exploration of the Lower Pecos gave way to retaliatory expeditions responding to Apache depredations. Military communiques record the demise of the Cibolos and Jumanos—long-time allies of the Spanish—at the hands of the Apaches, who reportedly dominated the Rio Grande by 1729. The Spanish line of defense depended upon small, poorly equipped garrisons that were ineffective against the mobile guerrilla warfare characteristic of the Plains Indians. The base closest to the Lower Pecos—the Presidio Aguaverde, on the San Diego River, in the modern town of Jimenez—lasted from 1773-1780—a bare 7 years. The Apache threat was only extinguished by the arrival of their traditional enemies, the Comanches, in a classic example of a cure that was worse than the illness.

The general inability of the colonial power to pacify the frontier was disrupted by revolution and wars on both continents. Distracted by the internal throes of independence, the various Mexican governments were forced to abandon their northern colonists to the depredations of the united Comanche Kiowa raiders who annually came south to garner slaves and booty.

When the Mexican American war ended with the Treaty of Guadalupe Hidalgo in 1848, the hostile Indians were quick to recognize the advantages of an international boundary, crossing the Rio Grande—and political jurisdiction—with impunity. The American government's immediate concern was linking east and west. In 1849, the famous Texas Ranger, Jack Hays, was charged with exploring the road that came to be known as the Lower Route to El Paso and on to California. Crossing the river that the Spanish called the San Pedro, Hays declared that it more likely belonged to the Devil—a name it bears to this day. In 1852, Fort Clark was established squarely athwart the Comanche Trace, one of the major Indian trails that led from the Red River to the settled communities of Coahuila. A year later, a major crossing of the Devils River was selected as the site of Camp Hudson, a garrison charged with protecting the road between Fort Clark and Fort Lancaster, higher on the Pecos River. A number of notable

battles were fought on the bluffs of the Devils River before the Civil War intervened, redirecting the efforts of the military, and allowing the Comanches and Kiowas to grow in power.

The Civil War also served as a pretext for the Massacre of Dove Creek, near San Angelo—an event that was to have far-reaching implications. When the Texas Rangers ambushed a camp of peaceful Kickapoo Indians who were in the process of moving to Mexico, they started an undeclared war that was to ravage south Texas, supply the Mexican army with horses and cattle, raise animosity between Mexico and the U.S., and cause the U.S. military to violate international law. The surviving Kickapoos and their Mexican relatives protected Mexican towns and citizens from border raids, and were, in turn, provided with a haven from which they wreaked revenge on Texas. Allied with the Apaches, the Kickapoos were formidable warriors, feared by even the most ferocious of their enemies, the Comanches. Finally, after negotiations with the Mexican government reached stalemate, in 1873, the U.S. Army crossed the Rio Grande and attacked the Kickapoo village at Rey Molino in the mountains north of modern-day Musquiz. Capturing women and children and holding them hostage succeeded where open combat had not. When the Kickapoo warriors surrendered, they and their families were transported back to the Middle West, taking a route that circumvented the mountains south of Del Rio to avoid encountering outraged citizens of Texas.

Fort Clark, in Brackettville, was the headquarters of the Seminole Indian Black Scouts, ably led by John Bullis—romantically known as "the Lightning Bolt of the Frontier." Bullis and his men were famous for their bravery, a reputation earned by the four Congressional Medal of Honor winners buried in the Seminole cemetery just outside Brackettville. Bullis also blazed the military road west, dynamiting a passage across the Pecos River canyon not far from the modern bridge. Always on the move in search of their elusive targets, the Seminole scouts are credited with digging wells and building camps at sites that were later to become famous: Howard's Well, for one of the bloodiest massacres in Texas history; and Meyers Springs, the largest historic rock art site on record.

Under pressure from the military, their routes to Mexico cut off, their population dwindling, and the bison herds decimated, the Comanches and Kiowas retreated north, consolidating their forces around their home territory. The last major battle fought in the Lower Pecos region took place at Kickapoo Springs, in Edwards County north of Fort Clark, in 1872.

Historic Indian encampments are the rarest of Lower Pecos archeological sites. Forrest Kirkland, the noted recorder of the rock art, published an account of a rockshelter (Kirkland 1942) near Pandale where glass beads, glass, metal bells, scrap metal, scissors, and brass buttons were found. A local resident claimed that the buttons were from soldiers stationed nearby in 1879 following a request to Fort Clark for help in controlling the Apaches, but this date seems contradictory in the light of regional history. The only other recorded historic Indian camp site consists of a series of tipi rings adjacent to a historic pictograph site that produced an arrow point and a ceramic fragment, both commonly attributed to the Mission era. The scarcity of historic Indian remains is understandable when we take into account the short duration of their occupation of the Lower Pecos and the mobility of their lifestyle. If the Comanche camp is typical, the meager possessions would leave little trace once camp was broken and moved.

Fourteen pictographs and one petroglyph panel convey some of the world view of the transient groups that sequentially dominated the Lower Pecos River, protected by the white man's discomfort with the terrain and his temporary contempt for settling the region. Until such time as more occupational sites are located, these murals provide the best evidence of the historic American Indian presence in the region. Changes in subject matter and style

chronicle the attitude of indigenous people to their new experience with European culture. Curiosity gives way to overt hostility until the warrior ethic of the Plains becomes the dominant theme.

The Spanish era is represented by detailed pictures of mission churches, missionaries, horses, and domestic animals (Turpin 1988b). Creeping hostility appears at Missionary Shelter (Turpin 1989), where the composite figure of a church and priest is impaled by a lance. Bison, tipis, guns, white riders pierced by lances, and mounted warriors reflect both the warrior ethic and the biographical style of the Plains Indians, and were probably painted by Comanche or Kiowa artists during the 19th century (Turpin 1988c).

Who, then, were the native people of the Lower Pecos region? Although the Spanish called the arid lands of southwestern Texas and northern Mexico the "despoblado," which means unpopulated, their documents provide the names of a number of groups who were apparently already displaced persons who had moved north ahead of the conquest. "Despoblado" was probably partly a value judgement, indicating that the area was unfit for Christian Europeans, and also partly a reflection of the decimation of the local people by disease and warfare. The distinction is of consequence only in the myth currently circulated that "Pecos Man" vanished into the air, leaving only a mysterious legacy of art and artifacts. In fact, the original inhabitants were the victims of hostile expansion, which began before the advent of the white man, and their displacers met the same fate as they. No chroniclers traveled with the native peoples, and few white men ever penetrated their rugged refuge. However, if the history of other Indian nations can be extended to this area, the few hundred years between contact and eradication were centuries of displacement by other native cultures, retreat, bloodshed, starvation, and disease. Thus, a 12,000-year history of native life in the Lower Pecos ebbed away, leaving only scattered traces in the genetic pool of northern Mexico and lower Texas.

All the later people—the ones with recognizable names—were intruders. The Apaches moved into the Lower Pecos after the Great Pueblo Wars of 1680, only to be caught in a vise between the Spanish and Comanches, their traditional enemies. The "Norteños"—as the Comanches, Kiowas, and their allies were known—maintained their camps on the Red River, riding south through the Lower Pecos to raid the settled communities of Coahuila, but returning home with their captives and booty. The Kickapoos migrated from the U.S. to the mountains of Mexico, from whence they ravaged south Texas. The Seminole scouts stationed at Fort Clark were Black-Indian imports from Florida, who achieved hero status in the frontier war. All these people, friends and foes alike, fell victim to the Anglo-American—the bearer of civilization, whose iron horse was the railroad. Completed in 1881, the railroad linked east and west and opened the area to settlement and commerce.

THE SOCIAL STRUCTURE OF LOWER PECOS ABORIGINAL LIFE

Each of the broad time periods in Lower Pecos prehistory is characterized by a variety of cultural traits, most obviously those reflected in the material objects that have survived over time. However, despite shifts in emphasis—for example from hunting to gathering—much of the basic lifeways remained the same. By comparing the information on Lower Pecos technology and subsistence with living or documented groups in similar arid environments, some inferences about the social structure of the people can be made.

Although the emphasis may have ranged from mass killing of herd animals to trapping of rodents or roasting of pricklypear pads, hunting and foraging were always the mainstay of the Lower Pecos economy. Slight differences in social attitudes probably prevailed during times when hunting had priority, but those are also the periods about which we know the least.

The diversity and distribution of food resources called for a nomadic life, in which moving

from place to place was dictated by the availability of food, water, and other resources. Sedentism—that is, living in permanent settlements—is usually prompted by a surplus food supply that can be stored for use throughout the year. Although some hunting and gathering groups are granted such a surplus by an abundant nature, all current information indicates that the Lower Pecos people were nomadic throughout prehistory.

As another form of human adaptation, the structure of society can be inferred from the conditions imposed by a hunting-gathering lifeway in an arid environment. The population must remain sparse and thinly distributed in order to exploit resources without seriously depleting them. Thus, the basic social unit would be the extended family—a small, highly mobile group drawn together by ties of kinship. The familial relationships served to further the unity of the group, increasing cooperation through familiarity and affection. Other members may have been attracted by the success of some individual, or simple compatibility. Group composition was fluid, permitting any friction to be resolved by moving to another band. Practicing a nomadic life, these small groups could make seasonal rounds, harvesting plant foods as they ripened, or moving when local supplies were diminished. In anthropological terms, the social structure of the Lower Pecos remained at the band level of organization.

During times of relative plenty, for example, when desert fruits such as pricklypear ripened, the dispersed families congregated for communal harvests and celebrations. The need for exogamy—the rule of marrying outside the group—could be satisfied at these meetings. A forum for the exchange of information was provided, and political ties were formed or cemented. It seems probable that much of the most elaborate rock art was painted as part of rituals enacted during these periods of aggregation.

Marriages contracted between members of different groups served a most useful function by providing ties with a larger segment of the population. The more links an individual could forge, the more options would be available during times of stress. Thus, marriage was a political alliance, with implications beyond that of the individuals concerned. However, the union was probably highly informal by modern standards.

By necessity, some form of population control—sexual abstinence, or infanticide—would augment the high infant mortality rate to keep the nuclear family small, and within the limits imposed by the food supply and the need for mobility. Life expectancy was short, and children probably made a rapid transition to adulthood, learning to perform their mature roles at an early age. Miniature weapons and domestic utensils found in shelter deposits would serve the dual purpose of amusement and education.

Women, in an economy that emphasizes the gathering of plant foods, would be responsible for the bulk of the foodstuffs. Girls would learn to harvest and process plant material for both consumption and the manufacture of clothing and utensils. Traditionally, men would control the hunting of larger animals and the manufacture of the more complex stone tools. The production of the finest projectile points involves labor that goes far beyond that needed to produce an efficient weapon. Such an expenditure of time and effort to produce esthetically pleasing tools must have carried psychological or social rewards beyond that of sheer utility.

In all human societies, some able members of the group fulfill the need for leadership, although the degree to which power can be exercised corresponds to the population density and the resources to be controlled. In an area such as the Lower Pecos, where people and basic commodities were sparse and dispersed, a leader would usually rise to the top during times when organization was needed for a specific task. Examples might include the direction of a communal hunt by the most able hunter, or the leading of a raid or defense of the camp by the bravest warrior. Many Texas tribes had both war and peace leaders, on the principle

that the one most qualified to fight may not have been the best advocate of reconciliation. Because the headman's power was simply a matter of acknowledged ability, high rank was not hereditary or endowed with much control over the rest of society. Often such a leader functioned only during his prime, to be later replaced by another, more competitive and able man. The elderly were not without merit, with their experience and wisdom often contributing to endurance through times of stress.

The oldest and most widespread form of religious thought—shamanism—is found among hunter-gatherer societies throughout the world. The most obvious evidence for its role in Lower Pecos ideology is Pecos River style pictographs. These complex and elaborate artworks are considered to be shamanic works, perhaps visions achieved in trance and made permanent on the walls of the canyons. Traditionally, the shaman, or medicine man, was charged with the general welfare of the group. Through their special relationship with the supernatural world, shamans were able to ensure the success of a hunt or battle, cast spells to enchant man and animal, and communicate with the spirits. In addition to the shaman's role as magician or conjurer, as the most learned person in the group the shaman also served as a storehouse of oral tradition, stories, myths, and facts about the group's history, and about the order of the universe. In many respects, the shaman would have been a teacher, relating his accumulated knowledge to the youth. On an even more practical level, the shaman was an herbalist, curing disease through a combination of real and magical treatments. The shaman was probably the most powerful single individual in society; one can only speculate upon his fate if he were ineffectual in performing these many tasks.

If we take the dictionary interpretation of the word primitive as meaning "relating to the earliest age or period," the Lower Pecos aborigines can be considered primitive. However, in no way can their lifestyle be considered as inefficient or impoverished for all time. The pictographs for which the area is most noted testify to a complex ideological or mythological world far more varied than their economic and technological remains suggest. Furthermore, by adapting to their environment, learning to utilize rather than drastically alter the natural resources, the native peoples were able to endure for over 10,000 years. Only 400 years have passed since the first European set foot in the Lower Pecos, and only time will tell how long our culture will survive.

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AMISTAD

Cultural Resources Study



APPENDIX B: HISTORY SUMMARY

AN OVERVIEW OF EUROPEAN HISTORY IN THE AMISTAD BASIN

by
Joseph H. Labadie
September 1993

INTRODUCTION

What follows is a cursory look at the major European political, economic, and military events that shaped the land now encompassed by Amistad National Recreation Area (hereafter called "The Amistad Basin"). Some events have been described in greater detail than others—an indication of the richest sources of primary documentation for future research. A dearth of information exists for other events or time periods—suggesting what future researchers might uncover.

There are a number of historical events—and in some cases archeological remains—relevant to those events associated with European history in the Amistad Basin area. Most previous historical research has focused on particular people, or specific places or events. The use of primary documentation by researchers has varied greatly, producing a rather sketchy view of the larger picture for social and economic change over time.

THE U.S. MILITARY

The story of the U.S. Army in the Amistad Basin is part of the larger history involving the settlement of Texas and the western United States. From 1846-1890, the U.S. Government built or occupied 35 forts (Wooster 1987:10) and numerous other temporary camps across Texas. Some posts, such as Stockton, Concho, and Worth, served as the forerunners for permanent civilian settlements; the local communities near Army outposts in the vicinity of the Amistad Basin, such as Hudson, Lancaster, and Blake, did not survive after the Army left.

The 1848 Treaty of Guadalupe Hidalgo between the United States and Mexico set the course for Texas as part of the United States. Under this agreement, Mexico gave up all claims to lands in Texas, and established the Rio Grande as the border between the two nations. The United States agreed to accept responsibility for the actions of Indians living in Texas, and to use force to prevent Indian incursions into Mexico for the purpose of raiding or taking slaves. Not surprisingly, the fiercely independent Apache, Kiowa, Kickapoo, and other southern Plains Indian groups living in the vicinity or traveling great distances to raid across the border saw little reason to abide by or respect the political boundaries defined by the two alien governments.

The U.S. Army came to Texas and faced an unusual situation in terms of American Indian

policy. Normally, when a territory entered the Union, American Indians had already been rounded up, reservation lands had been established, and Indian agents had been appointed to administer government treaties. Indian agents were Federal civil magistrates whose business it was to execute the terms of Indian treaties. However, in reality, Indian agents had no power stronger than persuasion with which to control their legal charges. Army soldiers were there to protect the peace, and could not kill Indians because of their mere presence; on the contrary, it was the Army's duty to protect them (Webb 1935:128-130).

The Army's plan to stop American Indian incursions both into and out of Mexico, relied on building a series of forts and inter-connecting roads along the border in advance of Anglo settlements. The idea was to separate the Indians from settlers along a line that ran from the Gulf Coast in the south to the Red River and the Indian Territory in the north. Actually, a total of three lines of forts were ultimately established: one along the frontier extending from Eagle Pass to the Red River; another extending along the Rio Grande from its mouth to Eagle Pass; and a final group of forts to protect the San Antonio-El Paso road.

From border locations such as Fort Brown, Fort McIntosh, Fort Duncan, Fort Clark, Camp Hudson, and Ringgold Barracks, the U.S. Army would launch small- and large-scale punitive operations, in addition to routine patrols, to include incursions across the border into Mexico in an attempt to eliminate the problem. Most actions were punitive occasions or chance encounters with routine patrols along established military or commercial roads connecting the forts with one another. Much of the Army routine in the area consisted of escort duty for mail carriers, freighters, cattle drives, wagon trains, and gold miners and settlers heading to California.

Nearly all of the early border forts and military camps were garrisoned with infantry soldiers. Many Texans—especially the Texas Rangers—were impatient with the U.S. Army and Indian agents, and constantly accused the Federal Government of protecting Indian behaviors, shielding Indians from justice after their raids, and lacking sufficient means or experience necessary to subdue their adversaries. It is hard to imagine that the U.S. Army would regularly pursue (with wagon loads of Infantry soldiers) highly mobile, horse-mounted Indians, and expect any meaningful engagements. As Mrs. William L. Cazneau wrote in 1852 (Cazneau 1852), after witnessing just such an event near Fort Duncan (Eagle Pass, Texas), "Unless the Indians were polite enough to come up to the soldiers' muskets and ask to be shot, I do not see how the infantry were to hurt them."

There were a number of pre-Civil War U.S. Army/Indian encounters in what is today the Amistad Basin. However, most of the skirmishes took place after the Civil War, between 1870 and 1880. Many of the engagements were the direct result of attacks on wagon trains traveling the San Antonio-El Paso Road. This road was the only commercial link between Texas's Gulf Coast ports and El Paso. The roadway, opened by the U.S. Army topographic engineers in the late 1840s, was intended to be the major arterial link connecting remote military posts in southwest Texas, such as Forts Clark, Hudson, Lancaster, and Davis. However, at this time very little was known about the territory west of the Devils River.

"A few months before I came to Texas, troops were pushed out from Fort Duncan, and camps were established on the Devils River and at Lancaster on the Pecos. In 1854, the 8th Infantry moved up the country from [Forts] Chadbourne, McKavett, etc., where they had been stationed and established Fort Davis. Two companies went to Fort Bliss and two to New Mexico.

"As no troops had ever been that far out before, all the country west of Fort Clark had been almost been given to the Indians, and a scout had never been made west of Devils River. As may be supposed, it was pretty wild dangerous place,

and entirely unknown, except for within a mile or two of the road."
(*Reminiscences of Zenas R. Bliss, Major General, U.S. Army*, two vols., n.d., in Perkins 1954:43)

For all their efforts, the U.S. soldiers garrisoned along the Rio Grande frontier during the 1850s were never able to achieve more than temporary successes in eliminating the highly mobile Indians, horse and cattle thieves, and revolutionaries who frequently crossed the Rio Grande into Texas. Among the major reasons for Army policy failure was the fact that the forts were too far apart, and were poorly supplied; and garrisons were too small, and often composed of infantry useless in pursuit of mounted warriors (Webb 1935:128). Additionally, the U.S. and Texas State governments never seemed completely willing to respond to Mexico's call for cooperation; Texans at least had not forgotten the Mexican Army's conduct at the Alamo or at Goliad less than 20 years earlier. The net effect of such problems was that the border between the United States and Mexico was little more than a line on a map until after the Civil War.

With the evacuation or abandonment of all borderland forts during the Civil War, the little progress made during the 1850s had completely evaporated by 1865, when the U.S. Army began returning to the Rio Grande. (Texas was not officially re-admitted to the Union until March 30, 1870.) The Federal Government did not permanently reoccupy all the forts that were part of the original 1850 line of borderlands defense, choosing instead to open a series of new forts farther west. Fort Clark was re-occupied by Federal troops on December 12, 1866—by Company C, 4th Cavalry, under the command of Captain John E. Wilcox (Carter 1935:471). Camp Hudson was re-occupied in 1867 by several companies of the 10th Cavalry under the command of Major Boyard, but was abandoned for the last time in April 1868. By 1870, Federal troops were again assigned to Fort Lancaster, but by the mid-1870s, the Indian threat had diminished to such a level that the fort was closed for good.

Border raiding had increased to such levels by the early 1870s that the U.S. Army began planning to eliminate the problem. Not only were groups of Lipan, Comanche, and Kickapoo raiding across the areas from around Rey Molino, Mexico, but groups from the Indian Territory were sweeping down across Texas and finding sanctuary and ready markets for their stolen goods across the border in Mexico. Indian groups living along the northern frontier in Mexico would raid up the Nueces Valley and sell their booty near Fredericksburg, Texas.

On April 12, 1873, a meeting of top U.S. Army officers took place at Fort Clark, Texas. The outcome of this meeting would produce a plan to eliminate the border problems once and for all. In attendance at this meeting were The Secretary of War (William W. Belknap), Generals Sheridan and Meritt, and Colonel Ranald Mackenzie. Colonel MacKenzie and the 4th Cavalry were ordered to relieve Fort Clark's General Maraud and the Ninth Cavalry. MacKenzie was given wide latitude and the authority to plan a course of action that would produce the results desired by the Secretary of War and General Sheridan. The following night, MacKenzie would detail his plan in confidence to his adjutant Captain R. G. Carter.

"He then, in strictest confidence, informed me that through some renegade Mexicans and half-breeds he was possessed of certain knowledge with reference to the Indians who, just previous to our arrival at Fort Clark, had raided up the Nueces Valley, and committed the massacre at Howard's Wells in which an officer of the Ninth Cavalry had been killed. He [MacKenzie] had ascertained their exact locality, number, etc., their trail, with stolen stock, led back across the Rio Grande, and he should immediately commence preparations for an expedition against them. He proposed to punish them for the past, and check their raids in the future. At this interview, he gave me in detail all that had

passed between the Secretary of War, General Sheridan, and himself. Relying upon General Sheridan's declaration of absolute support, Mackenzie said he should not hesitate to take the risk. It was make or break." (Captain R. G. Carter 1935:424).

Colonel MacKenzie was proposing to raid the Indian villages at Rey Molino, Mexico—roughly 80 miles (129km) into Mexico from the Texas border. U.S. Army troops had always stopped at the banks of the Rio Grande. In effect, MacKenzie proposed to invade Mexico with an armed military force of 400 troops drawn from the commands at Fort Clark and Fort Duncan. MacKenzie's proposal was not a spur-of-the-moment action; he made detailed preparations to ensure success. He sent three civilian spies (Ike Cox, Art McClain, and Green Van) to reconnoiter the villages at Rey Molino before ever crossing the Rio Grande. He spent nearly a week drilling his troops on the maneuvers that would be used as each company of horse-mounted troops systematically attacked the villages.

On the evening of May 17, 1873, Colonel MacKenzie and his troops slipped across the Rio Grande after dark. Covering some 160 miles (257km) in 32 hours, Mackenzie's 400 troops and 25 Seminole Negro-Indian Scouts burned Kickapoo, Lipan, and Mescalero Apache villages at Rey Molino, Mexico, returning virtually unscathed on May 19th. His command captured "40 women and children and Costilietos the Principal Chief of the Lepans [sic] and 65 ponies" (MacKenzie, May 23, 1873, Fort Clark, Texas, in Wallace 1967:167-171).

Although MacKenzie's raid was not "officially" ordered by his superiors, they were quick to endorse his report of the action as it made its way up the chain of command to the headquarters of the U.S. Army, Washington D.C. General P. H. Sheridan, Headquarters Military Division, Missouri, endorsed the action, noting:

"I have for a long time been satisfied that it is the only course to pursue to bring to life and property on our side of the border of the Rio Grande. There should be no boundary line when we are driven to the necessity of defending our lives and property and our side of the Rio Grande. If the government will stand by this action of Colonel MacKenzie the troubles on the Rio Grande will soon cease. (Letter, General Sheridan to General Sherman, June 5, 1873, in *ibid.*:171)

General Sherman, Headquarters U.S. Army, in correspondence to the Secretary of War Belknap, wrote:

"The invasion of the Territory of a neighboring Friendly power in hot pursuit of an aggressive or robber force would be warranted by the Laws of nations. Until the Mexican Government complains formally of the invasion of their Territory, I suppose there is no need of making further enquiries on this point." (Letter, Sherman to Belknap, June 9, 1873, in *ibid.*:171-172)

After the initial repercussions from MacKenzie's actions had died down, large-scale border raiding ceased. However, by 1876, the frequency of raiding had again increased to such a level that Department of Texas Commander E. O. C. Ord sent Lieutenant Colonel William R. Shafter's 24th Infantry (from Fort Duncan) back across the border in "hot pursuit" of raiders from Mexico. Although the Army's doctrine of hot pursuit was controversial, President Rutherford B. Hays formally recognized it on June 1, 1877 (Wooster 1987:145). Ord's sanctioning of such punitive actions resulted in additional raids by Mackenzie and Shatter, and several actions by Lieutenant John L. Bullis and his company of Seminole Indian Scouts before President Hays rescinded the "Ord Order" in 1880 (*ibid.*:145). By this time, however, U.S. Army incursions into Mexico had produced their intended results.

The last Indian raid into Texas and the Amistad Basin from Mexico occurred on April 14,

1881, and resulted in the death of a settler named Mrs. McLauren near the Frio River (Kinney County). Lieutenant Bullis and his Seminole Negro-Indian Scouts (Porter 1952) pursued the raiders. An account of the chase as told by Sergeant Ribbits appeared in the *San Antonio Daily Express* newspaper on May 14, 1881.

THE OPENING OF THE SAN ANTONIO-EL PASO ROAD

The Republic of Texas was annexed to the United States as the 28th state on December 29, 1845. The Treaty of Guadalupe Hidalgo (1848) established the Rio Grande as the Texas/Mexico border. The need to survey and develop transportation links between San Antonio, the Gulf Coast, El Paso, and Chihuahua, Mexico, became a high priority for the U.S. Army. With the discovery of gold in California a year later (1849), the need for immigrant roads and commercial freighting routes from Texas's Gulf Coast to El Paso and points west provided additional impetus for the Army to establish and protect transportation routes across Texas.

During the early years of Texas statehood, the U.S. Army experienced numerous difficulties in establishing and protecting an efficient supply system—particularly for the mobile horse-mounted cavalry. Normally, a cavalry trooper's horse carried a maximum of 250 pounds (113 kg), including the rider, which normally limited supplies to 250 rounds of ammunition, a change of clothing, bedsack, 2 days' rations, and 1 day's supply of grain (Cooke 1862:15-16). All other equipment and supplies were transported by pack or wagon trains following the expedition. The ordinary two- and four-mule escort wagons carried 1,200 to 2,400 pounds (544-1,089 kg) of cargo. The largest of wagons—a six-mule jerk-line wagon weighing 1,950 pounds (885 kg)—was capable of carrying from 3,000-3,300 pounds (1,360-1,497 kg) of cargo. In contrast, a single pack mule could carry a maximum of 250 pounds (113 kg); and an average pack-mule train of 50 animals could transport 12,500 pounds (5,670 kg) (Essin 1970:53). In short, although wagons could transport greater amounts of supplies using fewer mules, they were generally limited to flat terrain, they were slower, and they were difficult to hide. For terrain such as the Pecos and Devils River valleys, pack-mule trains proved to be the most efficient.

In 1848, Colonel John Coffee Hayes organized one of the first expeditions from San Antonio to El Paso to determine whether a practicable and convenient route for military and commercial purposes existed. Among the individuals accompanying Colonel Coffee were several Delaware Indian scouts, Richard S. Howard (San Antonio businessman and ex-Texas Ranger), 35 Texas Rangers under the command of Captain Samuel Highsmith, and several dozen private citizens and businessmen from San Antonio (Bender 1933:118). The group left San Antonio, following the Llano river to its source on the South Fork, and crossed the Divide, arriving at the San Pedro (Devils) River. After spending 3 days trying to cross it (at a location now submerged under Amistad Reservoir), the Hayes expedition re-named it the Devils River, as it is known today (letter, Col. J. C. Hays to Col. P. H. Bell, Commander Texas Frontier, December 28, 1848, in *ibid.*). Portions of the modern-day roadbed for Texas Highway 163 from Comstock to Ozona follow the route originally mapped by the Hays Expedition.

On December 10, 1848, the Secretary of War reassigned Brevet Major General William J. Worth to Texas. With the arrival of General Worth, the U.S. Army established a major presence in what had been just a few years earlier the Republic of Texas. Worth was ordered to station troops along the Rio Grande below San Antonio and along the frontier settlements in Texas. He was also directed to examine the country on the left bank (U.S. side) of the Rio Grande, and the area west from San Antonio to Santa Fe, New Mexico. In the following year, the U.S. Army made at least seven official reconnaissances in western Texas, the Rio Grande valley, and the gulf coastal plain in an effort to establish reliable routes for the movement of

troops, as well as for commercial purposes. Most of these expeditions were commanded by officers from the Bureau of Topographical Engineers, who carefully mapped the routes of march, as well as locations and distances between watering holes, campsites, and major stream crossings.

With Texas firmly in the grip of California's gold fever, the need for the U.S. Army to establish protected routes from Texas to California became ever more pressing. In January 1849, before the first of the engineering surveys by the Army for the San Antonio-El Paso Road, a party of 25 men, led by a Mr. Peoples, followed the Hays Expedition route through Val Verde County (and the Amistad Basin) to become the first group from Texas to reach California (Perkins 1954:24). The following month, a group of 32 men calling themselves "The Kinney Rangers" made the trip to California over the same route (*ibid.*).

The first of the Bureau of Topographic Engineering ventures was the Whiting-Smith Expedition of 1849. Under the joint leadership of Lieutenant W. H. C. Whiting and Lieutenant William F. Smith—both topographic engineers—the expedition left San Antonio on February 12, 1849, to explore a route of march to El Paso for military and commercial purposes (Whiting 1850). With them went a large number of emigrants bound for California (Perkins 1954:25). The expedition began along the upper route, which followed the San Saba River to its sources, then turned west to the Pecos River, and went on to El Paso. At several locations along the San Saba and the Pecos Rivers, the party encountered friendly groups of Lipan Apaches. West of the Pecos River, they were surrounded by a group of several hundred hostile Apaches, who eventually allowed them to continue unmolested to arrive in El Paso on April 12, 1849 (Whiting 1850).

For the return trip, the Whiting-Smith Expedition followed a more southerly route, primarily because of a lack of water between the Pecos and San Saba Rivers. They traveled down the Rio Grande valley from El Paso for about 100 miles (161km), then turned eastward to the Pecos, went down the right bank of the Pecos River valley for about 60 miles (96.5 km), and then continued on to the Devils River, which they followed to within a few miles of its junction at the Rio Grande (Bender 1933:122). (The mouth of the Devils River at the Rio Grande and the "first crossing" are now submerged under Amistad Reservoir.)

This location was not actually the first crossing; rather, it was the first good location with adequate approaches for wagons to cross the river above its confluence with the Rio Grande. The second crossing was at Bakers Crossing, 20 miles (32km) north of present-day Comstock, Texas. From April 2 to October 25, 1854, the first crossing on the Devils River was protected by Camp Blake under the command of Lieutenant Samuel H. Reynolds and members of Company K, 1st Infantry (National Archives Memo NNMO-2732 JLM, 1-27-76). Established shortly after the Mexican-American War, Camp Blake was named for Lieutenant J. E. Blake, a topographical engineer who distinguished himself in the Battle of Palo Alto—the first battle of the Mexican-American War, fought at Palo Alto, Texas, May 8, 1846 (Webb 1952, vol. 2:327). There were 18 more crossings of the Devils above Bakers Crossing before reaching Horsehead Crossing—the last crossing before the San Antonio-El Paso road headed west to El Paso.

Lieutenant Smith felt that the return route was the more practical of the two followed by the expedition, and estimated that the existing trail could be widened and made passable for Army freight trains in less than 3 weeks (Whiting 1850). At that time, road building consisted of clearing trees and brush; putting logs in creek bottoms and low-water crossings to prevent wagon wheels from bogging down in mud; and cutting and grading the approaches to embankments and stream beds. In actuality, much of the proposed lower route up the Devils and Pecos River valleys coincided with the traditional trails through this wilderness area; thus, what the U.S. area; thus, what the U.S. Army was proposing to do amounted to

upgrading the existing trail to accommodate larger military and commercial freight-hauling wagon trains.

Lieutenant Whiting notes in his report (Whiting 1850) that security along the lower route could only be maintained through the establishment of a chain of forts at strategic points along the road. This recommendation led to the establishment of Fort Clark in 1852, Fort Davis in the fall of 1854, Fort Lancaster in the summer of 1854, and Camp Hudson in the summer of 1857. However, even with this line of forts, it was not until after the Civil War, in the 1870s, that relatively safe passage was assured along this route. The expedition maps established that water holes were few and far apart west of the Pecos River. In 1853, Jefferson Davis, U.S. Secretary of War, put Captain John Pope in charge of digging water wells in locations where water sources were 40 miles (64km) or more apart. Although some wells were successful, they seldom produced water in sufficient quantities to meet needs; consequently, the project ended in failure (Rowland 1923: vol. 3:71-73, in Bender 1933).

In March 1849, the U.S. Army and a group of ordinary citizens from Austin, Texas, organized a freight train, intent upon establishing direct commercial relations with El Paso. The group, under the joint direction of U.S. Army Major Robert S. Neighbors and Doctor John S. Ford, consisted mainly of Austin citizens with commercial interests and a few "friendly Indians." The friendly American Indians consisted of John Harry, a Delaware; Joe Ellis and Tom Coshatee, Shawnees; Mo-po-cho-co-po and Buffalo Hump, both Comanche Chiefs; Patrick Gowin, a Choctaw (letter, R. S. Neighbors to W. S. Hardy, June 24, 1849, in Bender 1933:120). Striking out westward at the North Bosque near Austin on March 23, 1849, the Neighbors-Ford Expedition reached Horsehead Crossing on the Pecos River on April 17th, and arrived in El Paso on May 2nd. (The expedition traversed only the northernmost part of Val Verde). They began the return journey 4 days later, traveling eastward back over the Guadalupe Mountains to Horsehead crossing on the Pecos River, across the Concho and Bradys Creek, then on to the San Saba and Llano Rivers, and southeasterly on to San Antonio, arriving on June 2nd (Neighbors 1954:36-59).

The routes taken to and from El Paso were mapped by the Neighbors-Ford Expedition, even though it was not one of the "official" expeditions involving the Bureau of Topographical Engineering. Nonetheless, it was part of the Federal Government's larger exploration policy in Texas, and therefore should not be interpreted as a purely commercial venture on the part of Austin businessmen attempting to be the first to establish regular commerce with El Paso (letter, R. S. Neighbors to W. S. Hardy, June 4, 1849, in Bender 1933:119).

The Neighbors-Ford and Whiting-Smith Expeditions generally followed the same outbound route all the way to El Paso. The major difference between the two expeditions was their return routes: That of the Neighbors-Ford Expedition soon became known as the "upper road," while the return route of the Whiting-Smith Expedition became known as the "lower road." The lower road, from San Felipe Springs (present-day Del Rio) to Horsehead Crossing on the Pecos River, would eventually be known as the "Military Road," or "Government Road," connecting Fort Lancaster, Fort Hudson, the community at San Felipe Springs, Fort Clark, and Fort Inge. To others, the road was known as the lower immigrant road for settlers heading to California from Texas gulf ports such as Galveston and Indianola. Portions of the route would also become known as the Chihuahua road. Present-day Texas Highway 163 from Comstock to Ozona, Texas, follows sections of the original government road up the Devils River valley to Horsehead Crossing.

To test the practicality of the Whiting-Smith Expedition's recommendation to establish the lower road through Val Verde County (and the Amistad Basin) as the principal route from San Antonio to El Paso, the U.S. Army organized a large freight train to travel the route. Under the command of Brevet Major Jefferson Van Horn, the wagon train departed San

Antonio, heading due west through the Texas settlements of Castroville, Quihi, and Vandenburg, en route to crossing the Rio Frio (Frio River) near Sabinal, Texas. At the Frio River, a small train of wagons under the command of Lieutenant Colonel J. E. Johnston and Lieutenant William F. Smith set out in advance of the main group to reconnoiter the general area and make improvements to the existing trail. The main body of the group continued west to the first crossing on the Devils River (now submerged under Lake Amistad), stopping briefly on the Leona River at Fort Inge (south of Uvalde, Texas) to pick up additional men and equipment.

By this time, Van Horn's group included six companies of the Third Infantry; 275 wagons; and 2,500 animals (Bender 1933). From a modern perspective, it is difficult to imagine a group this size traveling together through the wilderness canyon lands of Val Verde County and the Amistad Basin. Van Horn's group probably stretched out over a mile (1.6km) in length as the wagon train snaked its way up the sinuous Devils River valley and its 18 river crossings before reaching Horsehead Crossing on the Pecos River. Van Horn's expedition arrived in El Paso, with no major incidents on the trail, on September 8, 1849. The 650-mile (1,046km) trip took exactly 100 days to complete.

Van Horn's wagon train demonstrated, beyond any shadow of doubt, that the route was viable, and that it should be relied upon in the future as a major transportation link for the settlement of Texas and the western United States. As the lands along the Rio Grande in New Mexico and the Arizona Territory opened up for U.S. commerce and settlement, the Federal Government was laying the foundations for continued expansion ever westward.

President Pierce wanted to ensure United States possession of the Mesilla Valley in New Mexico near the Rio Grande; at the time, the area was considered to be the most practicable route for a southern transcontinental railway to the Pacific coast. The U.S. Government therefore entered into negotiations with Mexico to better define the exact border west of El Paso, which had been vaguely defined in the 1848 Treaty of Guadalupe Hidalgo. The negotiations concluded in the Gadsden Purchase (1853), with the United States paying \$10 million for about 30,000 square miles (77,700 sq km) of land. The area today forms the southern border of New Mexico, and the Arizona border south of the Gila River Valley.

The legacy of the San Antonio-El Paso road is the opening of the American West. From the 1850s to the early 1880s, this road through the Amistad Basin was a crucial link in the rate at which the west developed. Then, in 1883, everything changed abruptly with the completion of the southern transcontinental railroad. The railway instantly signaled the end of the government's reliance on wagon trains. Troops, equipment, and messages could move faster, farther, and cheaper by rail and telegraph. Within a few years, the old wagon trail that had helped to open west Texas was used mainly as a thoroughfare for regional traffic. Gone were the mail riders, stagecoaches, and government wagon trains, as the steam engine and rail cars replaced the mule and wagon train.

THE SOUTHERN TRANSCONTINENTAL RAILROAD

Introduction

At the end of the Civil War, 90 percent of all railroad tracks in the United States lay east of the Mississippi River. As a result, President Lincoln signed into law the Pacific Railroad Act in 1862 (Briggs 1974:7). And on January 1, 1863, ground was broken at Sacramento, California, for the building of the first transcontinental railroad: the Central Pacific from Sacramento, and the Union Pacific from Omaha Nebraska (Elliot 1928:2). On May 8, 1869, these two rail lines were joined with a gold spike at Promontory Point, Utah, creating the first transcontinental railroad.

The driving force of the "Big Four" (Potter Huntington, Leland Stanford, Charles Crocker, and Mark Hopkins) who made the first transcontinental railroad a reality was also responsible for the completion of the southern transcontinental line in 1883 (Elliot 1928:3), which passed through today's Amistad Basin. Several miles of old grades, foundations for trestles and spans, and railroad tunnels are seen by today's visitors to Amistad National Recreation Area. However, many of these historic features are located on private property within 100 feet (30m) of the park's current boundary.

Railroads came into existence in Texas in 1851 with the formation of the Buffalo Bayou, Brazos, and Colorado Railway (Patterson 1980:81. Several earlier attempts to construct lines had failed due to lack of support by the government of the Republic of Texas (Elliot 1928:30). In time, the Texas legislature would approve giving railroad companies 16 sections of land per mile of completed track as an incentive (Comstock Study Group 1976:22).

In 1870, the Buffalo Bayou, Brazos, and Colorado Railway was purchased by Thomas Pierce and Associates, who changed its name to the Galveston, Harrisburg, and San Antonio Railway Company (GH&SA). The GH&SA completed a line from Houston to San Antonio in 1877, and gained additional charter rights to extend its lines to the Rio Grande (Labadie 1987:10). However, Pierce lacked the financial resources to continue the line to the Rio Grande. Meanwhile, because it had ample finances, the Southern Pacific was trying to obtain a charter to construct lines in Texas. By late 1877, Pierce's charter and Huntington's finances produced an agreement that allowed the Southern Pacific to lay track in Texas (Briggs 1974:13).

Survey work for the proposed railroad route in the vicinity of the Pecos River was well under way by the summer of 1880. Captain Hood was in charge of the Southern Pacific survey, and of engineering crews working between the mouth of the Devils River and the mouth of the Pecos at the Rio Grande. Hood and his survey crews were equipped with five boats and several dozen horses. Their job was to select, survey, and prepare construction estimates for each foot of the route between the two rivers (*San Antonio Daily Express*, August 26, 1880). M. J. Ripps, a member of one of the 1880-1881 survey crews, wrote (Hunter 1925:125) of his experience:

"From there on we did not see any more Indians until we came to Eagle's Nest [near present-day Langtry, Texas], on the Rio Grande. We were camped some 350 feet (107m) above the level of the river bed, and were cutting out a trail wide enough for a burro to pass with a cask, or small barrel on either side, to transport water from the river. We had stopped for the noon hour when we noticed nine Indians, seven bucks and two squaws. They had evidently descended to the river bottom some miles above and were winding their way to a point directly in front of us, where they could get water. They were coming in single file, some 10 feet (3m) apart, and were in full war paint, the Indian in the rear being the guard. The eight went to water to satisfy their thirst, while one stood guard. Then the guard went to drink while one of the squaws stood guard, and she spied us, as we could tell from her gestures. When she gave the alarm they took to their horses and disappeared up the river. As we were not looking for trouble, we did not fire at them, but doubled our guards to protect against an attack.

"Our next camp was at Paint Cave (present-day Parida Cave). One night we sent our mules and horses out to grass with two guards in charge. Indians crept up and tried to scare the animals. One of the guards, finding something was not right, gave the alarm, and the fireworks started. We fired some 30-40 shots, and one of the guards claimed he got an Indian. This Painted Cave is worth a trip to

see. It is a big opening under a protruding boulder, large enough for 14 men to ride into on horseback at one time. Its inner walls are decorated with Indian paintings of wild animals, lions, tigers, buffaloes, etc., and all the sign language on the walls, some of which we would not understand if they were played on a phonograph" (*ibid*:125).

In 1881 Huntington's Southern Pacific—the Western Division—began work eastward from El Paso; and Pierce's GH&SA—known as the Sunset, or Eastern, Division—started westward from San Antonio. The plans were to meet Southern Pacific crews somewhere near the Pecos River (Elliot 1928:21-22). The route was surveyed about 2 years before actual construction began. From San Antonio to Del Rio, the survey crew generally followed the San Antonio-El Paso road, which had been in use by military and commercial freight haulers since the early 1850s. From Del Rio to Fort Davis, the route roughly paralleled Bullis's 1875 military road, which crossed the Pecos River near its junction with the Rio Grande. Construction of the line from San Antonio to El Paso was conducted under the administrative auspices of the GH&SA and the Southern Development Company (a company set up by Huntington's Southern Pacific). Each of these divisions had its own management, utilized different construction procedures, and relied on different sources of supply.

Divisions

Western: The Western Division was responsible for construction and track-laying from El Paso to the mouth of the Pecos River—the point where railway officials decided west and east sections of tracks would be joined with a silver spike. James H. Strobridge, a seasoned veteran of Southern Pacific Railroad construction in California and Arizona, supervised the work of the Western Division from Sierra Blanca, Texas, to the Pecos River. Strobridge, while a construction superintendent for the Central Pacific in the 1870s, had supervised Chinese crews involved with shoveling, surfacing, grading, hauling fill, driving carts, and digging on softer excavations (Rhodes 1977).

At peak construction in January-February 1882, Strobridge's Western Division was pushing to complete the last 20 miles (32km) of track, and employed upwards of 7,000 people—6,000 of whom were reported to have been Chinese laborers (*San Antonio Daily Express*, March 14, 1882). Once the line was complete (1883), most of the Chinese laborers eventually went back to California after working in the Mojave Desert on a branch line to tap the Arizona and Pacific Lines (*San Antonio Daily Express*, October 10, 1882). Only a handful of Chinese workers remained in Texas.

At this time, much of the construction work on the U.S. rail system was done by Chinese immigrants. But most of what we know about their contributions is restricted to period literature about areas in California, Nevada, and Utah. Except for a few comments in regional newspaper articles in Texas from 1881-1883, very little first-hand information exists about the Chinese crews that worked for Strobridge's Western Division. What information we do have on such crews in the Lower Pecos area comes primarily from archeological investigations of railroad construction camps (Briggs 1974), which located Chinese artifacts.

Strobridge's Western Division was modeled after the Central Pacific's operations in central California, Nevada, and Utah, which had been part of the larger Central Pacific-Union Pacific Transcontinental network. Due to a reported inability to secure Anglo laborers on the Central Pacific lines, Chinese laborers, by default, became an integral part of the first transcontinental, often out-numbering non-Chinese construction crews by more than a 3-to-1 ratio (Reed 1870). E. W. Reed, Superintendent of the Utah Division wrote, in 1870:

"I have on my two divisions about 250 Chinamen. I never saw a better working

gang of men than they are. They are a class of people that do not drink and you can depend on them every day unless they are sick. The only place that I see that they are not equal to white labor is in the loading and handling of iron on cars. But for shoveling, surfacing, track-spiking, loading ties or making embankments, they are equal to Anglos. We pay them \$31.00 per month for 26 days work and they board themselves and pay freight that is shipped over the road to them" (Reed 1870).

There is every reason to believe that the 1881-1883 Chinese labor crews that worked in today's Amistad Basin were nearly identical in work composition, eating habits, camp organization, and daily administration to the Chinese crews that worked on the first transcontinental railroad in California, Nevada, and Utah during the 1870s. Briggs's research (1974) at the Langtry Construction site (41VV585) clearly indicates that Chinese crews were among the residents of this temporary construction camp. His research identified the presence of four separate double-hearth features—something he attributes to traditional Chinese food preparation. Briggs believes the double hearth was used strictly by ethnic Chinese, with one side for steaming rice, and the other for frying meats and vegetables. From analysis of the historic artifacts in association with the four double-hearth features, Briggs makes a conjectural population estimate of 17 Chinese to one Anglo at this site where perhaps 550-665 construction workers lived for a brief period in 1882.

Chinese laborers usually lived and worked in isolation from other railroad employees. They were restricted, by railroad policy, from jobs associated with surveying, supervision, and machinery operations—activities traditionally given to Anglo workmen. A typical Chinese crew might contain between 12 and 30 members. Each crew usually had an individual assigned whose sole job was to maintain the 30- to 40-gallon whiskey barrels full of lukewarm tea used by thirsty crew members. A mess attendant replenished the barrels several times a day with fresh tea carried in old powder kegs suspended from each end of a bamboo pole balanced on the shoulders (Kraus 1969:114).

The railway company supplied Chinese work crews (at a cost of course) with most of the basic necessities, such as tents, clothing, and food, to live and work in remote or wilderness areas. During the early 1870s, the Central Pacific Railway Company provided Chinese workmen daily rations of 1 pound of rice; 1 pound of fish, pork, or beef; 1/4 pound of vegetables; 1/2 ounce of tea; and a small amount of lard or cooking oil (Reed 1870). Waterproof lodging and all tools and equipment for work were supplied by the railway company or contractor; each worker provided his own bedding.

Chinese crews began work at sunrise and quit at sunset, working 6 days per week, with monthly wages ranging between \$30 and \$35. Days lost to sickness or injury were deducted from wages, with contractors providing free medicines and medical care (when available). Anglo construction foremen would meet with the Chinese "head man" for each work gang on a daily basis to settle up payroll. The head man, who bought and paid for all provisions used by his crew, would divide the payroll evenly among them after deducting the cost of individual purchases he had made on their behalf. Kraus (1969:211) describes one of the few first-hand accounts of wage payments to Chinese laborers working in Nevada in the 1870s:

"Sisson and Crocker Company had an interpreter named Sam Thayer and also a Chinese interpreter. When they came up to these gangs of Chinese, the money due to them would be already counted out and they would dump the money in one of the Chinese' hats for that gang with a statement written in Chinese. There would be no time for explanations. They had to take it whether they liked it or not. (*Ibid.* 1969:211).

In October 1882, *San Antonio Daily Express* newspaper correspondent Fred Locker visited Strobridge's construction camp near Langtry (site 41VV585, noted above), and reported that "the Chinese are treated more like slaves than anything else, they are drove [sic] around and sometimes used severely if they don't work to suit the bosses."

Following Strobridge's Chinese grading crews were Black Jack Higgins's track layers, who numbered about 1,000 strong. The majority of Higgins's track crews were recent immigrants to the United States, and included Irish, Italians, and Germans. As long as the track-laying crews kept up with the graders, daily supply or work trains from El Paso were able to provision the entire operations of the Western Division (Dolan 1979:6-10).

Eastern: The Galveston, Harrisburg, and San Antonio (GH&SA) Railway selected Major James Converse to oversee construction operations for the Eastern Division. Converse was a veteran of the first transcontinental railroad construction through the High Sierras, and would later become General Superintendent and Chief Engineer of the line in Texas. The overall operation of Converse's Eastern Division sharply contrasts with the Western Division in terms of the makeup of the work force and the organization of construction activities. The Eastern Division contracted out all construction activities, except track-laying, with the contractors providing the labor force and the railway company the materials. Contracts were made for rock work, tunnel construction, and grading between San Antonio and the Pecos River. Each contractor established his own temporary construction camp, and worked independently from other contractors. This meant that construction and grading were taking place simultaneously at non-contiguous points along the route, which sharply contrasts with the orderly grading and track laying of the Western Division.

The work force of the Eastern Division was much more heterogenous in ethnic makeup than the Western Division. Among the work force could be counted immigrant Italians, Irish, and Germans, alongside Mexican-Americans, ex-African slaves, Anglos, and Mexicans. A number of the contractors came from the San Antonio area, although much of the labor force was brought in from other areas. Several contractors recruited a large group of workers from Illinois who even brought their wives and children with them and lived in several different camps in the vicinity of the construction work at the Devils River crossing (*San Antonio Daily Express*, February 2, 1882). Three wagon loads of African-Americans (probably ex-slaves) and supplies joined the Devils River camps in January, 1882 (*ibid.*, January 21, 1882). By February 1882, the *San Antonio Daily Express* newspaper (*ibid.*, February 19) was reporting that there were between 2,700 and 3,000 workers constructing the line between the Pecos and Devils River, and that 45-60 new workers were arriving daily.

Some of the newly arrived German and Italian immigrants may have learned of the employment opportunities with the railroad through immigrant newspapers published in Europe, such as the *Weltpost* in Leipzig, Germany; or through stateside newsletters from companies such as the Southwestern Immigration Company. The literature often reports that the majority of the Eastern Division workers were Irish immigrants (Wilson 1923:10). However, newspaper accounts on the progress of activities in the Devils and Pecos River areas fail to mention Irish workers. Therefore, if Irish immigrants were working on the line, they were most probably hired directly by the GH&SA in San Antonio to lay track from San Antonio to the contract area (Briggs 1974:34).

The U.S. Army provided initial security for the Eastern Division by temporarily assigning a detachment of horse soldiers from the Eighth Cavalry of the Pecos. Railway officials had been concerned about the potential threat of Indian depredations on such a large work force operating in a remote area away from any towns or settlements—and they had just cause to be concerned. Between 1873 and 1881, U.S. Army Lt. John L. Bullis and his companies of Seminole-Negro Indian Scouts from Fort Clark had been involved in 26 different Indian

campaigns (Porter 1952:27) in Texas and northern Mexico. On at least three separate occasions, Bullis's engagements with nomadic, horse-mounted Indian groups had occurred at locations within the future Southern Pacific railroad right-of-way: two different engagements at the mouth of the Pecos River at the Rio Grande; and one at Eagle Nest Canyon—future site of the railroad town of Langtry, Texas. But initial fears of Indian attacks never materialized, and the U.S. Army soon replaced the mobile horse soldiers with a group of infantry and Seminole-Negro Indian Scouts presumably from Fort Clark, 30 miles (48km) east of Del Rio; or Fort Duncan, 50 miles (80km) south at Eagle Pass; under the command of Lieutenant Jones (*San Antonio Daily Express*, April 20, 1882).

The Eastern division began road construction (building of the grade) west from San Antonio on March 1, 1881. The Western Division did not begin work east from El Paso until mid-April. Both divisions advanced at a rapid pace, due mainly to the relatively flat topography, until reaching the canyon lands of Devils and Rio Grande valleys. Here, the deeply incised limestone walls rose nearly vertically 300 feet (91m) above the river bottom below. Crossing the intervening side canyons further slowed construction, as both divisions inched towards the Pecos. By the time the lines were finally joined, completing the line through the canyon-lands, engineers had designed two tunnels; 3,000 feet (914m) of wooden trestle; and 14 metal spans, each between 100-300 feet (30-91m) in length.

Tunnels

Captain William N. Monroe worked for the Southern Pacific in California in the late 1870s. He contracted with the Southern Pacific to construct two tunnels and 3 miles (5km) of rock-work near the mouth of the Pecos River at the Rio Grande (Patterson 1980:11). Monroe had 500 men in his employ in March 1882, paying between \$2 and \$2.50 daily to workers. It took roughly 500 kegs of black powder (50-pound, or 23kg, kegs, which cost \$3.50 each) per mile of rock-work construction. Dynamite was tried, but insufficient quantities were available for use (1979:10).

Construction of Railroad Tunnel No. 1 began in December of 1881; it was completed on July 21, 1882, becoming the first railroad tunnel built in Texas (*San Antonio Weekly Daily*), August 24, 1883). An entrepreneur named Mr. Meyers established a saloon and store in the immediate vicinity of Captain Monroe's construction camp. The remains of Meyers's store and saloon are designated as site 41VV586.

Stations

Shumla: The Shumla Station was used by the Southern Pacific from 1883 to 1893. In 1893, the Shumla cut-off, which began just east of the town, was completed as far as the new Pecos River High Bridge, eliminating the treacherous descent of the Rio Grande Valley to the crossing of the Pecos at its mouth.

The remains of Shumla Station are located about 8 miles (13km) west of the Pecos River, adjacent to the modern tracks that parallel U.S. Highway 90. There are several old limestone-block buildings within the highway right-of-way in this area, but they were not part of the Shumla Station. These buildings were built after World War II by Mr. Parkie Wade, who owned and operated them as a gas station, store, and small motel until the early 1970s. The old Shumla Station is located about 300 feet (91m) northwest of the limestone buildings, and situated on the north side of the modern Southern Pacific track. Several large trees denote the former location of Shumla Station. The actual Shumla Station depot was moved by Mr. Bill Zuberbueeler, Sr., using a sled and wagon, to a new location 1/2 mile (0.8km) south. Today, the old Shumla Station depot is located adjacent to a sheep shearing pen, and is used as a barn.

Flanders: Flanders Station was located at a mile marker 433, as measured in miles from Houston. The old station was situated on the west side of Seminole Canyon, roughly 1/4 mile (0.4km) north of U.S. Highway 90. The historic artifact scatter in the vicinity of where Flanders Station once stood has been designated as site 41VV415.

In the 1920s, Pat Sullivan leased land from Patty Moorehead Wilkins for ranching on the Rio Grande. The lease was along the Rio Grande from the mouth of the Pecos River to Seminole Canyon on the east, and to the Pecos River High Bridge on the north. During the summers, when their children were not in school in Comstock, the Sullivans (and frequently their neighbors, the Holcombs and Moores) would spend extended periods on the ranch. "The historic old depot was used for the kitchen and dining area and a separate building served as the sleeping quarters" (Comstock Study Club 1976:155).

The old depot and associated buildings stood at their original location until the mid-1920s, when Mrs. Fate Moorehead Bell moved the depot building on skids and by wagon to a new location about 1/2 mile south of its original location. The land with the building was leased to, and eventually homesteaded by, Perry Brotherton. The land and the original Flanders depot are now part of Seminole Canyon State Historic Park.

Painted Caves: The Southern Pacific station between the Pecos River crossing and Flanders Station was called Painted Caves Station. The station began operation in 1883, and closed after the opening of the Pecos High Bridge in 1892. In 1892, Simon Shaw, Sr., was the section foreman at Painted Caves; and Travis Brown, Sr., was the telegraph operator (La Hacienda 1976:117).

Today, nothing remains of Painted Caves Station. What had survived into the 20th century was covered up by the waters of Amistad Reservoir. The nearby rockshelter with prehistoric Indian paintings that was the station's namesake is now known as Parida Cave. The site is operated by the National Park Service as an interpretive site for visitors to Amistad National Recreation Area (Labadie 1989).

Pecos Viaduct (1893-1944)

The Pecos High Bridge may be the most famous of all the historic bridges in Texas. In 1892, it held the distinctions of being not only the highest bridge in the United States, but also, at 322 feet and 10-3/4 inches (98m) in height, the third highest bridge in the world. Strengthened in 1910 and 1929, this bridge was in continuous service as part of the Nation's first southern transcontinental railroad, until it was replaced by a newer one during World War II. Known to railway historians as the Pecos Viaduct, this bridge was the second across the Pecos, and was designed to solve a host of problems that had plagued the Galveston, Harrisburg, and San Antonio Railway since the line opened in 1893.

The crossing of the Pecos River had been the biggest single engineering obstacle to construction along the Texas leg of the route forming the first southern transcontinental railroad. The first crossing of the river was accomplished by the use of a simple iron-truss bridge at the bottom of the canyon and the confluence of the Pecos at the Rio Grande.

The track winding down into and out of the canyon to the first bridge left the flat uplands 5-6 miles (8-10km) distant from either side of the bridge. Following the sinuous canyon rim in a series of curvy and steep grades crossing numerous deep intervening side canyons, the track descended to the bridge. In some sections, the grade consisted of no more than a narrow ledge blasted into the towering cliff walls. So prone were these to rock-falls that the railway company had to employ "track-walkers" both night and day to prevent derailments caused by obstacles on the road bed.

The first crossing of the Pecos River had been incredibly expensive to construct, and was proving to be quite costly to operate and maintain. Steep grades and degrees of curvature combined to impose severe length and weight restrictions on all trains using this section of track. This section required the construction of two tunnels, both in excess of 1,500 feet (457m) in length, blasted through solid rock; 3,600 feet (1097m) of wooden trestle; and 2,730 feet (832m) of iron trestle works. Most significantly, it involved 2,926.2 degrees of curvature, and a total of 902.27 feet (275m) of rise and fall in elevation (Wilson 1923). Perhaps most important (to the owners, at least) was the fact that the original configuration of the route effectively limited future profitability at a time when trains were getting longer and larger, and carrying greater weights.

In 1890, Major James Converse, General Superintendent and Chief Engineer of the line, made several reconnaissances along the Pecos River valley to identify potential locations for a new crossing. Converse is generally credited with first envisioning the Pecos canyon crossing on a high viaduct, and with preparing the initial designs for the bridge about 5 miles (8km) up river from the first one. By late 1890, Julius Kruttschnitt, General Manager and Chief Engineer of the Texas and Louisiana lines of the Southern Pacific System, approved the designs, with minor changes, for the Pecos Viaduct. Kruttschnitt contracted with the Phoenix Bridge Company to provide bridge materials and crews for the construction of Converse's designs. When completed, the new crossing would eliminate 11 miles (18km) of steep and curvy grades in and out of the Rio Grande canyon, as well as close the station houses at Helmut, Painted Caves, and Flanders Stations.

By February 1891, Ricker, Lee, and Company received the contract for pier and footer construction, and for building the approaching grading to the new bridge. The piers supporting the bridge were made from concrete and local limestone cut from the canyon bottom and floated into place. Seven of the most important footings had copings cut from Texas pink granite from the Granite Mountain Quarry in Burnet County, more than 200 miles (322km) from the construction site. All piers and footings were constructed on bedrock. But it was often difficult for the engineers to determine its exact location, due to the accumulations of river deposits and boulders in the bottom of the canyon. Pier number nine was the most difficult to construct because of these deposits. Although the pier was 55 feet (17m) in overall height, only about 5 feet (1.5m) of it was visible at the surface. By the end of October 1891, the footers and piers were completed; and Ricker, Lee, and Company then turned their attention to constructing the grades and new track leading to the east and west sides of the canyon rim.

The Phoenix Bridge Company of Phoenixville, Pennsylvania, began work on the bridge's iron and steel towers and spans on November 3, 1891, under the direction of Chief Engineer J. T. Mahl. No heavy locomotive cranes existed at this time, so engineers designed an apparatus called a "traveler" to lower the heavy iron beams into place. This strange-looking device utilized an overhanging arm that was 124.6 (38m) feet in length—greater than any traveler ever used before (Wilson 1923:29)—to lower bridge sections into place. This arm was counter-balanced by the 57-foot (17m) wheelbase of the traveler, clamped to the completed section of bridge during operation. The various sections of bridgeworks were assembled on both sides of the river adjacent to the track, and then lowered into place by the traveler. The bridge sections included two cantilever arms, 85 feet (26m) in length; four tower spans, each 35 feet (11m) in length; two lever arms, 52.6 feet (16m) in length; one suspended lattice span, 80 feet (24m) in length; eight lattice spans, 65 feet (20m) in length; one plate girder span, 45 feet (14m) in length; and 34 plate girder spans, each 35 feet (11m) in length (*ibid.*).

The traveler began work from the east canyon rim, lowering sections of bridge-works down into the canyon. When the machine reached the approximate midpoint of the future bridge, it backed up and returned to the east canyon rim, and was dismantled, loaded on a rail-car, and

hailed via the old rail route across the bridge at the mouth of the Pecos, and on to the west canyon rim, where it was re-assembled and put to work again building towards the span that had been completed from the east side. Using a daily work crew that averaged 67 people, the bridge was completed in just 103 days, at a cost of \$250,108. The completed construction was 2,180 feet (664m) long, consisting of a combined cantilever and a 185-foot (56m) section of "suspended" lattice over the actual watercourse. The ironwork alone weighed 1,820 tons. With its completion, all that remained to bring the structure into service was the installation of the electrical signaling equipment on both approaches to it. Trains approaching from either direction would be required to stop and inspect the bridge prior to crossing. On March 31, 1892, a special train carrying railroad dignitaries officially opened the Pecos Viaduct to regular rail traffic.

The railway company assigned a full-time watchman at the bridge once regular service began. His duties included patrolling the bridge at night for reasons of safety, and performing regular maintenance and safety checks of the towers and superstructure. The watchman lived in a small, two-room wooden house located just north of the tracks on the east side of the Pecos canyon. From 1893 to 1924, the watchman was W. A. Clare; the last watchman and pump operator to live in the house in the 1940s was a Mr. Carter, whose widow still lived in Comstock, Texas, in 1992.

The Pecos Viaduct was rapidly becoming obsolete by 1910, due to an ever-increasing amount of traffic, and the demands of heavier loads. The railway company substantially reinforced the original bridge design with an additional 2,268,786 pounds (1,029,121kg) of steel—the total amount of steel then estimated at 5,497,063 pounds (2,493,468kg). The grades approaching the bridge from both sides were shortened a total of 665 feet (203m) by adding fills at each end. In 1929, additional structural changes were made that significantly increased the load capacity for trains crossing the viaduct.

In 1922, the Southern Pacific built a station on the east side of the Pecos River adjacent to the bridge. Although it has received scant attention in the literature, this facility was considered at the time to be a remarkable piece of engineering. The station consisted of a residence, pumping station, and one oil and two water storage-tanks. The pumphouse was located near the watchman's residence in the canyon bottom at the base of the bridge. Water for drinking and boiler purposes was pumped up from the canyon bottom to storage tanks on the east canyon rim. The brackish waters of the Pecos were not suitable for the railroad's needs, so a natural spring was used as the sole water source.

The watchman's two-room residence and the pumphouse were all located on the canyon floor, well below the floodplain, adjacent to the east side of the canyon. It is estimated that the elevation of the floodplain on which these structures were built was roughly 1,070-1,080 feet (326-329m) above mean sea level (AMSL). These structures were inundated by flash-flood waters on at least three different occasions between 1922 and 1960. There is a U.S.G.S brass monument adjacent to an abandoned pipeline associated with the pumphouse that runs up the cliff face on the east canyon wall. The brass monument commemorates the June 1954 flash-flood on the Pecos, when waters rose over 80 feet (24m) above normal flow to an elevation of 1,154.56 feet (352m) AMSL. Small wonder that the railroad used reinforced concrete structures in the canyon bottom. Since 1969, the waters of Amistad Reservoir have permanently flooded this section of the Pecos River Valley to an elevation that averages 1,117.0 feet (340m) AMSL. During a severe reservoir draw-down in 1988, the lake level dropped nearly 30 feet (9m) (1,090 feet, or 332m AMSL), exposing the upper portions of the pumphouse.

The Pecos Viaduct was built almost entirely of metal—purposely done to reduce the risk of fire. What little wood existed, such as the ties and decking, was covered with galvanized iron

plating; and to further reduce the risk of fire, the railway company in 1922 added 13 fire hydrants, evenly spaced, on the bridge decking. The water source for the fire hydrants was a separate line, which was part of the pumping system described above. If water could not be pumped from the canyon bottom, there were two large water storage tanks (described above) to draw from.

The Japanese attack on Pearl Harbor on December 7, 1941, had repercussions that were felt as far away at the Pecos River Viaduct. Because of the bridge's strategic importance as part of the southern transcontinental railroad, the U.S. Army stationed troops at the Pecos River to provide security for the bridge and the increase in military rail traffic following the Japanese attack. During World I, the U.S. Army had stationed troops for a similar purpose; and, during the Mexican Revolution of 1917, Texas Rangers patrolled the bridge, looking for saboteurs. Railways officials and the Office of Defense Transportation soon realized that the 48-year-old bridge might be unable to carry all the weight it could be called on to bear, thus creating a bottleneck when the Nation was rapidly mobilizing for war.

Topographic studies by the U.S. Army Corps of Engineers in 1942 identified a suitable site for a new bridge located less than 1/4 mile (0.4km) south of the existing Pecos River Viaduct. The War Production Board placed a high priority on building a new structure, thus enabling the railway company to obtain the needed steel at a time when it was in short supply. By the end of 1942, the Southern Pacific had successfully applied to the Office of Defense Transportation and received construction materials for the new bridge, which was to consist of a number of continuous cantilever and plate girder spans perched on top of two huge concrete towers anchored in the river bottom. Work began on the piers in August 1943; and on December 21, 1944, the \$1.2-million bridge was completed and in service as the first regular freight train crossed the 1,390-foot-long (424m) structure. Still in operation today, it is commonly known as the Pecos High Bridge.

During the war years, the U.S. Army leased roughly 30 acres of private land on both sides of the Pecos River adjacent to the bridge. The Army established a military police camp, and the police patrolled the bridge and canyon below both day and night. The remains of foundations for several small buildings and several limestone block machine-gun nests are all that remains of the Army's World War II presence at the bridge.

The 1890s Pecos Viaduct was kept as a standby for nearly 5 years following the completion of the new bridge. In 1949, the Southern Pacific contracted with the Robinson Erection Company (St. Louis, Missouri) to dismantle the historic bridge. Initially, the Southern Pacific had made plans for the purchase of the entire structure by the government of Guatemala for use in that country. Current literature on the subject provides conflicting stories on the fate of the old bridge. The *Odessa News* (October 15, 1978) states that the bridge was in fact sold to Guatemala, and is still in operation in that country today. A postcard of the 1892 bridge (Old West Collectors Series no. 46, Pecos River Viaduct, n.d.—ref. added) states that, "Because it was so well engineered the West Texas bridge was dismantled after 56 years [1948] and rebuilt across the Wabash River in Indiana." Baker (n.d.) notes that, initially, the Southern Pacific had made plans to sell the bridge to the government of Guatemala; however, the deal fell through, resulting in the piecemeal sale of individual spans from the bridge to several different states and local governments for use as shorter bridges across streams within their political jurisdictions. Most of the other pieces and parts were sold to scrap metal dealers (*ibid.*).

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AMISTAD

Cultural Resources Study



APPENDIX C: LEGISLATION / AGREEMENTS

Public Law 86-605, Storage Dam—U.S. and Mexico

P.L. 86-605 LAWS OF 86TH CONG.—2ND SESS.

July 7

STORAGE DAM—U. S. AND MEXICO

PUBLIC LAW 86-605; 74 STAT. 360

(H. R. 12263]

An Act to authorize the conclusion of an agreement for the Joint construction by the United States and Mexico of a major international storage dam on the Rio Grande in accordance with the provisions of the treaty of February 3, 1944, with Mexico, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That:

The Secretary of State, acting through the United States Commissioner, International Boundary and Water Commission, United States and Mexico, is hereby authorized to conclude with the appropriate official or officials of the Government of Mexico an agreement for the joint construction, operation, and maintenance by the United States and Mexico, in accordance with the provisions of the treaty of February 3, 1944, with Mexico, of a major international storage dam on the Rio Grande at the site and having substantially the characteristics described in minute numbered 207 adopted June 19, 1958, by the said Commission, and in the "Rio Grande International Storage Dams Project—Report on Proposed Dam and Reservoir" prepared by the United States Section of the said Commission and dated September 1958.

Sec. 2. If agreement is concluded pursuant to section 1 of this Act for the construction of a major international storage dam the Secretary of State, acting through the United States Commissioner, International Boundary and Water Commission, United States and Mexico, is authorized to conclude with the appropriate official or officials of Mexico an agreement consistent with article 7 of the treaty of February 3, 1944, for the construction, operation, and maintenance on a self-liquidating basis, for the United States share, of facilities for generating hydroelectric energy at said dam.

If agreement for the construction of separate facilities for generating hydroelectric energy is concluded, the United States Commissioner, International Boundary and Water Commission, United States and Mexico, is directed to construct, operate, and maintain such self-liquidating facilities for the United States.

Sec. 3. If a dam is constructed pursuant to an agreement concluded under the authorization granted by section 1 of this Act, its operation for conservation and release of United States share of waters shall be integrated with other United States water conservation activities on the Rio Grande below Fort Quitman, Texas, in such manner as to provide the maximum feasible amount of water for beneficial use in the United States with the understandings that (a) releases of United States share of waters from said dam for domestic, municipal, industrial, and irrigation uses in the United States shall be made pursuant to order by the appropriate authority or authorities of the State of Texas, and (b) the State of Texas having stipulated that the amount of water that will be available for use in the United States below Falcon Dam after the proposed dam is placed in operation will be not less than the amount available under existing conditions of river development, and to carry out such understandings and said stipulation the conservation storage of said dam shall be used, and it shall be the exclusive responsibility of the appropriate authority or authorities of said State to distribute available United States share of Waters of the Rio Grande in such manner as will comply with said stipulation.

Sec. 4. There is hereby authorized to be appropriated to the Department of State for the use of the United States Section, International Boundary and Water Commission, United States and Mexico, such sums as may be necessary to carry out the provisions of this Act.

Approved July 7, 1960.

An Act To provide basic authority for the performance of certain functions and activities of the National Park Service, approved August 7, 1946 (60 Stat. 885)

Be it enacted by the Senate and Rouse of Representatives of the United States of America in Congress assembled, That appropriations or the National Park Service are authorized for—

(b) Administration, protection, improvement, and maintenance of Recreational areas, under the jurisdiction of other of the devoted to areas.
recreational agencies the Government, devoted use pursuant to cooperative agreements...

Public Law 101-628. Establishment of Amistad National Recreation Area.

PUBLIC LAW 101-628—NOV. 28, 1990 **104 STAT. 4495**

SEC. 505. ESTABLISHMENT OF AMISTAD NATIONAL RECREATION AREA. Mexico.
16 USC 460fff.

(a) In order to—

(1) provide for public outdoor recreation use and enjoyment of the lands and waters associated with the United States portion of the reservoir known as Lake Amistad, located on the boundary between the State of Texas and Mexico, and

(2) protect the scenic, scientific, cultural, and other value contributing to the public enjoyment of such lands and waters, there is hereby established the Amistad National Recreation Area (hereafter in this section and section 506 referred to as the "recreation area").

(b) The recreation area shall consist of the Federal lands, waters, and interests therein within the area generally depicted on the map entitled "Boundary Map, Proposed Amistad National Recreation Area", numbered 621/20,013-B, and dated July 1969. The map shall be on file and available for public inspection in the offices of the National Park Service, Department of the Interior. The Secretary of the Interior (hereafter in this Act referred to as the "Secretary") may from time to time make minor revisions in the boundary of the recreation area, but the total acreage of the recreation area may not exceed 58,500 acres. Within the boundary of the recreation area, the Secretary may acquire lands and interests in lands by purchase with donated or appropriated funds, exchange, or transfer without reimbursement from any Federal agency.

SEC. 506. ADMINISTRATION.

16 USC 460fff—1.

(a) The Secretary shall administer the recreation area in accordance with applicable provisions of this Act and the provisions of law generally applicable to units of the national park system, including the Act entitled "An Act to establish a National Park Service, and for other purposes", approved August 25, 1916 (39 Stat. 535; 16 U.S.C. 1, 2—4), and the Act of August 7, 1946 (60 Stat. 885). In the administration of such recreation area, the Secretary may utilize such statutory authority as may be available to him for the protection of natural and cultural resources as he deems necessary to carry out the purposes of this Act. Nothing in this Act shall be construed to amend or alter the responsibilities of the International Boundary and Water Commission, United States and Mexico, under any applicable treaty.

(b) The administration of the recreation area by the Secretary shall be subject to and in accordance with all applicable treaties, including the treaty between the United States and Mexico relating to the utilization of waters of the Colorado and Tijuana Rivers and the Rio Grande, entered into force November 8, 1945 (59 Stat. 1219), and in accordance with the Act of July 7, 1960 (Public Law 86—605; 74 Stat. 360), and any commitment or agreement entered into pursuant to such treaty or Act, including (but not limited to) commitments or agreements relating to—

(1) the demarcation and maintenance of

boundaries;

(2) the use, storage, and furnishing of water;

(3) control of floods;

(4) investigations relative to the operation of the Amistad Dam; and

(5) the production of hydroelectric energy.

(c) The Secretary shall conduct a survey of the cultural resources in the immediate vicinity of the recreation area. The Secretary is authorized to enter into cooperative agreements with public or private entities, including landowners, for the purpose of conducting the survey required by this subsection. Not later than two years after the date of enactment of this Act, the Secretary shall submit a report to the Committee on Interior and Insular Affairs of the House of Representatives and the Committee on Energy and Natural Resources of the Senate on the results of the survey required by this subsection.

(d)(1) The Secretary shall permit hunting and fishing on lands and waters under the Secretary's jurisdiction within the recreation area in accordance with applicable Federal and State law. The Secretary may designate zones where, and establish periods when, hunting or fishing will not be permitted for reasons of public safety, administration, fish and wildlife management, or public use and enjoyment.

(2) Except in emergencies any regulations issued by the Secretary under this subsection shall be put into effect only after consultation with the appropriate State agencies responsible for hunting and fishing activities.

(e) For purposes of administering the recreation area, the Secretary may enter into cooperative agreements with any Federal agency, the State of Texas, or any political subdivision thereof, for the rendering, on a reimbursable basis, of rescue, firefighting, and law enforcement and fire preventive assistance.

SEC. 507. AUTHORIZATION OF APPROPRIATIONS.

16 USC 460fff-2.

There are authorized to be appropriated such sums as may be necessary to carry out the purposes of sections 505 and 506 of this Act.

1944 United States International Boundary and Water Commission / Government of Mexico Joint Water Treaty Cooperative Agreement.

The following is a copy of the original.

Water Treaty of 1944: Among other things the treaty established that the international boundary between the two countries—i.e., the centerline of the Rio Grande—will remain unchanged after it is obscured by the impoundment, and that public use of the reservoir surface is to be "free and common to both countries, subject to police regulation of each country in its territory." The international boundary is also the southerly, or water-side, boundary of the proposed national recreation area.

The treaty provides that the flow of water into the reservoir be measured and credited to each country in accordance with ownership of such inflows and that each country is free, at any time, to utilize its share of water for direct beneficial use or for storage in other reservoirs. While this might imply an unfavorable outlook regarding stability of the lake for recreational use, the treaty further stipulates that storage shall be maintained at the maximum possible water level consistent with flood control, irrigation use, and power requirements. As a guide, the treaty also specifies the following "order of preference" for joint use of international waters:

1. Domestic and municipal uses
2. Agriculture and stock raising
3. Electric Power generation
4. Other industrial uses
5. Navigation
6. Fishing and hunting
7. Any other beneficial use which may be determined by the commission.

MEMORANDUM OF AGREEMENT

between

THE UNITED STATES SECTION,
INTERNATIONAL BOUNDARY AND WATER COMMISSION

and

THE NATIONAL PARK SERVICE

RELATING TO THE DEVELOPMENT AND ADMINISTRATION OF
RECREATION ON THE UNITED STATES SIDE OF
AMISTAD INTERNATIONAL DAM AND RESERVOIR

THIS MEMORANDUM OF AGREEMENT, made and entered into this 11th day of November 1965, between the UNITED STATES SECTION of the INTERNATIONAL BOUNDARY AND WATER COMMISSION, hereinafter referred to as the Section, and the NATIONAL PARK SERVICE, hereinafter referred to as the Service, as agencies of the United States of America, pursuant to the Treaty of February 3, 1944 between the United States and Mexico (Treaty Series 994), the Act of July 7, 1960 (74 Stat. 360), and the Act of August 7, 1946 (60 Stat. 885)

WITNESSETH THAT:

WHEREAS, the Section is proceeding jointly with the Mexican Section of the International Boundary and Water Commission with the construction of the Amistad Dam and Reservoir as contemplated in the Treaty with Mexico relating to the utilization of waters of the Colorado and Tijuana Rivers and of the Rio Grande, signed at Washington, February 3, 1944 (59 Stat. 1219), and in accordance with subsequent agreements between the two Governments, and as authorized by the Act approved July 7, 1960 (74 Stat. 360) insofar as the United States Section is concerned; and

WHEREAS, lands in the United States are being acquired for the purposes of the project, as authorized by the aforesaid Water Treaty with Mexico, February 3, 1944, and the Act approved July 7, 1960; and it is contemplated that additional lands may be acquired for the United States; and

WHEREAS, a large number of persons are expected to use the United States lands and waters of the acquired area for the purposes of recreation; and

WHEREAS, the Service is experienced in administering areas devoted to recreation; and

WHEREAS, Section 1(b) of the Act of August 7, 1946 (60 Stat. 885) authorizes the use of appropriated funds by the Service for the administration, protection, improvement, and maintenance of areas under the jurisdiction of other agencies of the Government when such areas are devoted to recreational use pursuant to cooperative agreements; and

WHEREAS, it is the belief of both agencies that the best interests of the public may be better served through administration of certain portions of the lands and the surface of waters within the United States side of the project area, and the provision of recreation therein, by the Service:

NOW, THEREFORE, the Section and the Service do hereby mutually agree as follows:

ARTICLE I GENERAL PROVISIONS

1. The Section shall retain complete authority over and responsibility for the construction, operation, and maintenance of the United States portion of Amistad Dam and Reservoir, together with all engineering works in connection therewith, in accordance with the Treaty of February 3, 1944 (Treaty Series 994) and the Act of July 7, 1960 (74 Stat. 360). Except for the areas required by the Section for construction, operation, and maintenance of the portion of the dam and reservoir allocated to the United States, the Service shall, subject to understandings set forth hereinafter, administer all lands and the surface of the waters within the project area and on the United States side, thereof, providing for recreation therein. The agreed areas of authority between the Section and the Service include all those lands acquired by the Section for project purposes under the authority of the aforesaid Act of July 7, 1963, the surface of the waters on the United States side, and such other related lands as may hereafter be acquired by the United States under future authority. These lands, to the extent now acquired, are generally depicted on the enclosed Exhibit "A" entitled Proposed Amistad Recreation Area, SA-AMI-7104, dated August 1965, which is expressly made a part hereof, with the understanding that the same may be revised at any time to illustrate changes in the project area as a result of land acquisition.

2. The parties to this agreement acknowledge: (a) that Amistad Dam and Reservoir are being jointly constructed and will be jointly operated and maintained by the United States and Mexico, in accordance with the provisions of the Water Treaty with Mexico, in accordance with the provisions or the Water Treaty with Mexico, February 3, 1944, and subsequent

agreements between the two Governments; (b) that the ownership and control of the waters stored therein are determined pursuant to said Treaty; (c) that requirements in the United States for domestic and irrigation use of the waters therein belonging to the United States are determined by the authorities of the State of Texas and the waters belonging to Mexico are controlled by Mexican authorities; and (d) that insofar as the United States portion thereof is concerned, the project was authorized and is being constructed for the Treaty purposes of flood control, water conservation, and the generation of hydroelectric power; and such other beneficial purposes as recreation and fish and wildlife conservation, as determined by the Section. This agreement shall not be construed to (a) conflict with said Treaty purposes of the project; (b) alter or in any way interfere with the Section's control over storage and release of the United States share of water pursuant to orders of the State of Texas; or (c) conflict with the construction, operation, and maintenance of Amistad Dam and Reservoir by the International Boundary and Water Commission, United States and Mexico, pursuant to the provisions of the Treaty of February 3, 1944, and any agreement thereunder or the operational mandate for the Section contained in Sec. 3 of the Act of July 7, 1960. However, subject to said Treaty and statutory requirements for operation of the project for the primary purposes for which it is being built, the Section will at all times conduct its operations with consideration for the best possible use of the Reservoir and the adjacent areas for recreational enjoyment by the public. The Service shall determine the optimum and minimum pool levels desirable for public recreational use and will provide the Section with this information for its consideration in carrying out the purposes of this paragraph.

3. The Service shall obtain the concurrence of the Section prior to making any new development or granting any concession, lease, license, or permit which, because of its nature or location, could affect the Section's activities at the area under its administration. The Section shall obtain the concurrence of the Service before making any new development or granting any concession, lease, license, or permit at the Amistad Dam and Reservoir which could affect the recreational and tourist facilities on the remainder of the project area, with the exception of those works required for effecting said Treaty purposes of the project. The Section shall when practical advise the Service beforehand of works to be installed for said Treaty purposes.

4. The parties to this agreement acknowledge and understand that the fulfillment of the agreement is contingent upon the availability of funds for the purposes thereof.

ARTICLE II FUNCTIONS OF THE NATIONAL PARK SERVICE

Subject to the primary purposes of the project, area limitations, and other provisions contained in Article I hereof, the Service in its administration of the project area for recreation shall be responsible for:

1. Preparing plans for, obtaining appropriations for, and constructing recreational facilities, including roads and trails, within the United States project area. The preparation and implementation of such plans will be coordinated with the Section and other concerned Federal, State, and local agencies.
2. Advertising for, evaluating, and approving or rejecting bids and negotiating contracts for the installation or construction of recreational facilities.
3. Negotiating and executing contracts with private individuals, partnerships, or corporations for supplying necessary visitor services related to recreational use of the project area, including, but not limited to, use of the waters for boating, canoeing, bathing, and sightseeing; and prescribing and enforcing reasonable rates and standards for the Supplying

of such services, with the understanding that any consumptive uses of waters will be arranged for with appropriate authorities of the State of Texas and that such uses will be measured and reported to the State and to the Section.

4. Establishing and enforcing policies, rules and regulations regarding the recreational use of lands and waters in the project area, including those required to prevent pollution or contamination of the international waters. It is understood that grazing activities, if any, will be confined to that portion of the area administered by the Service and will be controlled and supervised by the Service after consultation with the Texas Parks and Wildlife Department.

5. Promulgating and enforcing such rules and regulations as are necessary or desirable for the conservation of any historic or archeological remains, and control of all archeological excavation and historical or archeological research, or as may be needed for recreational use and enjoyment of the area and for the public health, safety, and welfare of visitors.

6. Establishing and maintaining protective, interpretive, and other facilities and services as may be necessary for the safe and full use and enjoyment of the area for recreational purposes. Public information activities and services shall be provided by the Service in coordination with the Section in order to facilitate public understanding of the interrelated programs of these agencies within the area.

7. Control of transportation in the area under its administration, whether by land, water, or air, to the extent consistent with Federal law, but such control shall not affect transportation the Section may require for the performance of its functions or transportation governed by Article III, paragraphs numbered 3 and 4.

8. Extending to the Section technical assistance in the planning and development of exhibits and interpretive devices oriented toward visitor understanding and enjoyment of the project and related resources.

9. Negotiation of agreements or coordination of activities with State and Federal wildlife agencies as desirable for the conservation and protection of wildlife consistent with applicable law.

10. Such other functions as are reasonably related to, or necessary for, its administration of the project area.

11. Ensuring that no recreational use of Amistad Dam and Reservoir Project areas within the United States shall be permitted which is inconsistent with the laws of the State of Texas for the protection of fish and game and the protection of the public health, safety, and welfare. The Service, after consultation with the Texas Parks and Wildlife Department, may issue regulations designating zones where and establishing periods when no hunting, fishing, or trapping shall be permitted for reasons of public safety, use, or enjoyment.

ARTICLE III FUNCTIONS OF THE UNITED STATES SECTION. INTERNATIONAL BOUNDARY & WATER COMMISSION

Subject to the area limitations and provisions contained in Article I hereof, the Section shall be responsible for:

1. Construction, operation, and maintenance of the United States portion of Amistad Dam and Reservoir and all engineering works incidental thereto or in connection therewith, together with all appurtenances thereof for the proper storage, release, protection, and utilization of water under the provisions of the Water Treaty with Mexico, February 3, 1944,

and the Act approved July 7, 1960.

2. Consultation with the Service on matters involving the development or administration of recreational facilities or public information services to be provided in the area required by the Section for construction, operation, and maintenance of the United States portion of Amistad Dam and Reservoir.

3. Establishment and enforcement of rules and regulations governing public access to Amistad Dam and the engineering works appurtenant thereto, and the control of traffic on the roads providing immediate access to the dam and its appurtenant engineering works, including meteorological and hydrological stations.

4. Establishment and, in cooperation with the Service, enforcement of such limitations governing approach to the dam and appurtenant works by water as may be necessary either for their efficient functioning or for the safety of the public.

5. Consulting with and advising the Service so that recreational development and administration of the project area will be coordinated with construction and operation of Amistad Dam and Reservoir.

ARTICLE IV REVISION OR TERMINATION

This Memorandum shall remain in force as written unless the parties thereto mutually agree to its revision or termination, or unless termination is directed by the Secretaries of State and Interior, or until enactment by the Congress of inconsistent or superseding legislation.

UNITED STATES SECTION, INTERNATIONAL
BOUNDARY AND WATER COMMISSION

Dated OCT 22, 1965

By J. F. Friedkin

United States Commissioner

NATIONAL PARK SERVICE

Dated OCT 18, 1965

BY George B. Hartzog, Jr.

APPROVED NOV 11, 1965:

Jack H. Vaughn

Assistant Secretary for Inter-
American Affairs, Department
of State

APPROVED 5 NOV. 1965:

Stanley A. Cain

Assistant Secretary of the Interior

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AMISTAD

Cultural Resources Study



APPENDIX D: STUDY TEAM

Project Coordinator: Douglas D. Faris, Assistant Regional Director, Planning and Professional Services, Southwest Region, Assisted by Joan Mitchell, Senior Project Coordinator, Planning and Professional Services

Park Coordinator: Eldon Kohlman, Park Management Assistant, Amistad NRA

Principal Investigator: Joseph H. Labadie, Park Archeologist, Amistad NRA

Principal Author: Joseph H. Labadie, Park Archeologist, Amistad NRA

Editing: Jane Harvey, Writer-Editor, Office of the Assistant Regional Director, Planning and Professional Services, Southwest Region; copy-editing assistance—Dr. Patricia B. Labadie, Professor Emeritus, University of Dayton; Barbara Flippo, Amistad NRA; Faye Piekarski, Amistad NRA.

Graphics: Linda Lutz-Ryan, Visual Information Specialist, Office of the Assistant Regional Director, Planning and Professional Services, Southwest Region; Dr. John A. Labadie, graphics advisor. Cover photograph by David Muench. Additional photographs by Jim Zintgraff, and Joseph H. Labadie.

Field Crew: NPS Seasonal Archeologists Tom Dureka, Frank Garcia, Ann Mesrobian, and Debra Wozinak. The field crew was assisted for short periods of time by numerous Volunteers-in-the-Park (VIPs), including Kathy A. Labadie, Jason Ford, Santos Sanchez, Lisa DeHoyos, Steve Nichols, Bob Goebel, Patsy Goebel, William J. Warren, Jackie Nichols, Caroline Christi, Larry Beaman, Skip Kennedy, Susan Burch, Francie Wylie, Robert Frazier, Skip Kennedy, Robert Schmitt, Henry Krusekopf, Judy Ing, Laurel Freeman, Donna Huff, Mark Herman, Dan Ricks, Albert Bianci, D. Hull, John MacGee, Arlene MacGee, Curt Harrell, Debra Beene, and Kenny Wright.

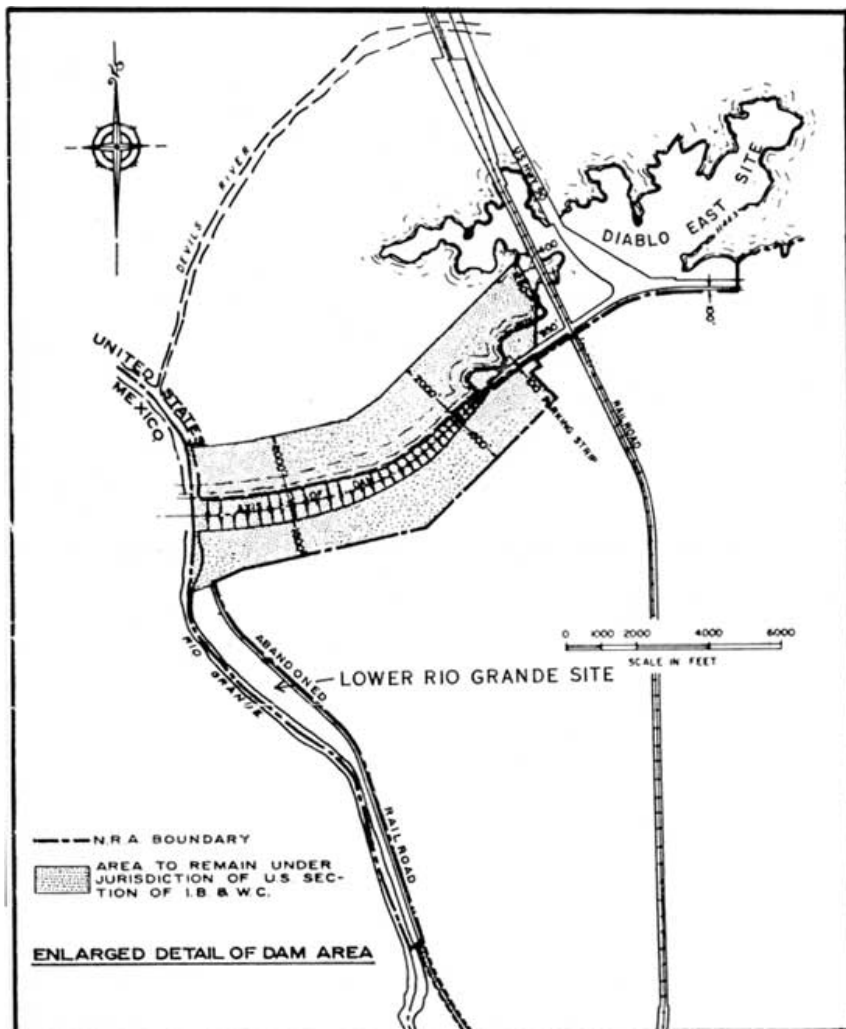
Prehistoric-research Assistance: Dr. Solveig A. Turpin (principal contributor), University of Texas at Austin; Dr. Marvin Rowe (pictograph dating), Texas A&M University; Dr. Jon Russ and Dr. Russ Palma (pictograph deterioration), Sam Houston State University; Dr. Karl Rheinhard (phalontology and plant macrofossils), University of Nebraska at Lincoln; Dr. John A. Labadie (art history), Miami Trace Elementary School, Dayton, Ohio; and Jim Mayberry (Archeologist, Division of Anthropology, Southwest Region).

Historic-research Assistance: Anne Gault, Library, Val Verde County, Texas; Ron Buckles, Fort Clark Museum, Brackettville, Texas; Lee Lincoln, Museum, Val Verde County, Texas; Pancho Brotherton, Seminole Canyon State Historical Park; Kathy A. Labadie, Secretary, Val Verde County Historical Commission; Anne Fox and I. Wayne Cox, University of Texas at San Antonio, Center for Archeological Research; Daughters of the Texas Republic Research Library at the Alamo, San Antonio, Texas; and the University of Texas at San Antonio Institute of Texan Cultures Research Library.

Local Informants: Glen E. Brown (deceased), Quemado, Texas; Edward McCarson (deceased), Comstock, Texas; Floyd Brockwell (deceased), Sanderson, Texas; Jack Skiles, Langtry, Texas, John Stein, Del Rio, Texas; Pancho Brotherton, Comstock, Texas; John Stockly, Quemado, Texas; Dr. Herbert Walker (deceased), Del Rio, Texas; and Emory "Smokie" Lehnert, NPS retired, Del Rio, Texas.

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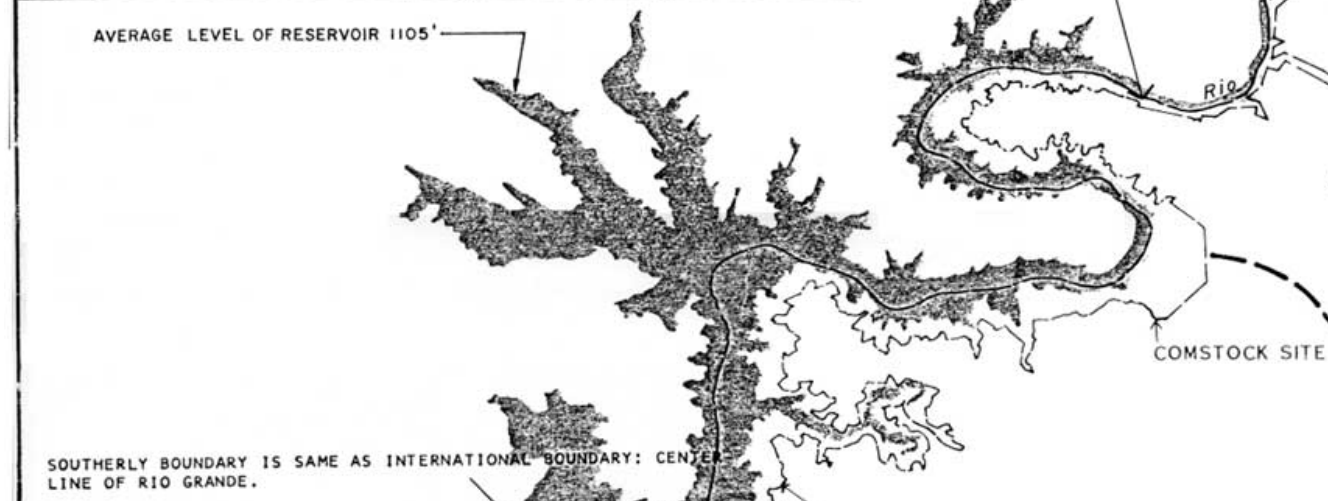
SHEET 2 WAS NOT REPRODUCIBLE AT A SIZE APPROPRIATE FOR THIS DOCUMENT.
SHEET 2 IS AVAILABLE FROM THE SUPERINTENDENT, AMISTAD NATIONAL RECREATION AREA.

WHERE NOT THE INTERNATIONAL BOUNDARY:

DOWNSTREAM FROM THIS POINT THE BOUNDARY IS THE 1144.3-FOOT CONTOUR EXCEPT WHERE ENLARGED AT DEVELOPMENT SITES AND DAM AREA. SEE DETAIL OF LATTER.

UPSTREAM FROM THIS POINT SOME SEGMENTS OF THE BOUNDARY FOLLOW THE 1144.3-FOOT CONTOUR BUT GENERALLY THE BOUNDARY IS A SERIES OF TANGENTS ENCLOSING TOPS OF CANYON WALLS AND DEVELOPMENT SITES. (SEE SHEET 2)

MEXICO



SOUTHERLY BOUNDARY IS SAME AS INTERNATIONAL BOUNDARY: CENTERLINE OF RIO GRANDE.

