Texas Parks and Wildlife Department
2006 Annual Report
to the Texas Historical Commission

TEXAS PARKS AND WILDLIFE DEPARTMENT 2006 ANNUAL REPORT TO THE TEXAS HISTORICAL COMMISSION

Submitted to:

The Texas Historical Commission
Archeology Division
Austin, Texas

Texas Antiquities Permit No. 4011

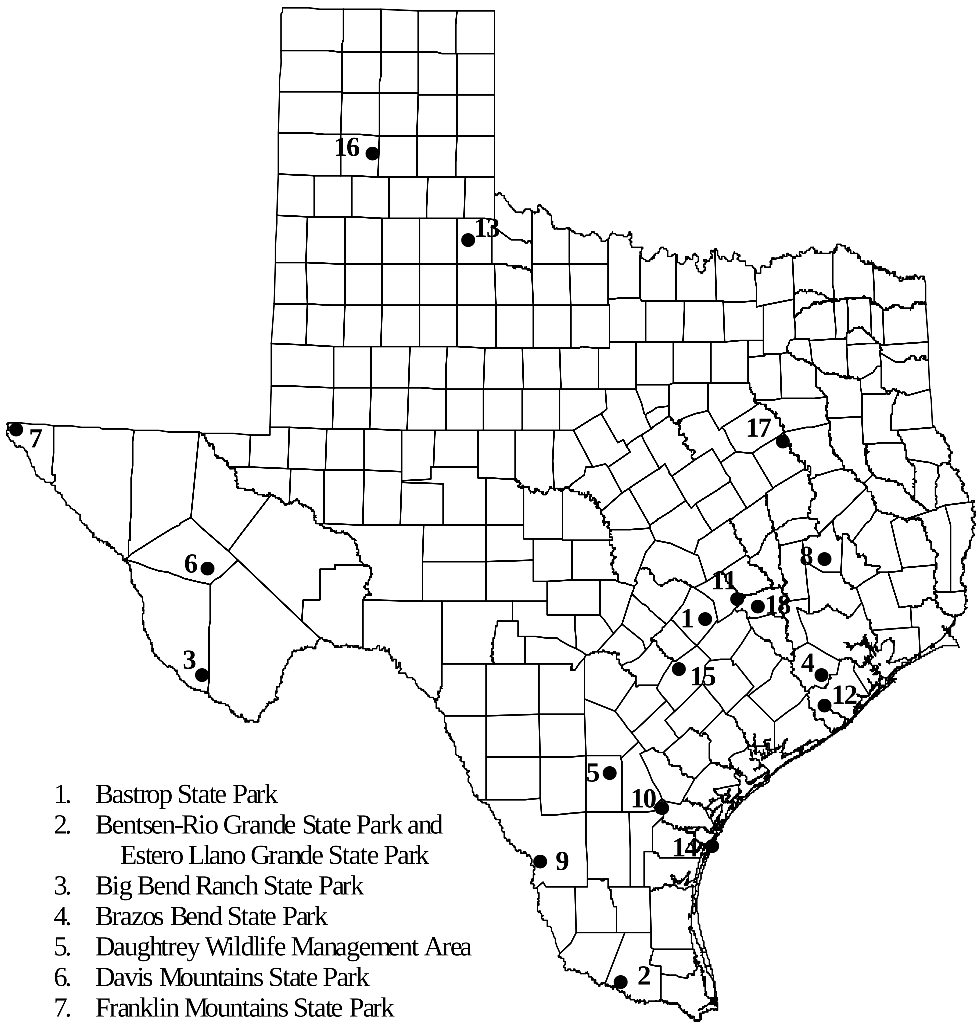
Principal Investigator
Michael Strutt

Submitted by:

Texas Parks and Wildlife Department
Cultural Resources Program

August 2007

Project Areas in the 2006 Annual Report to the Texas Historical Commission



1. Bastrop State Park
2. Bentsen-Rio Grande State Park and Estero Llano Grande State Park
3. Big Bend Ranch State Park
4. Brazos Bend State Park
5. Daughtrey Wildlife Management Area
6. Davis Mountains State Park
7. Franklin Mountains State Park
8. Huntsville State Park
9. Lake Casa Blanca State Park
10. Lake Corpus Christi State Park
11. Lake Somerville State Park
12. Levi Jordan State Historic Site
13. Matador Wildlife Management Area
14. Mustang Island State Park
15. Palmetto State Park
16. Palo Duro Canyon State Park
17. Richland Creek Wildlife Management Area
18. Washington County Hunter Education Center

Table Of Contents

Acknowledgments

The 2006 Annual Report to the Texas Historical Commission (THC) was made possible through contributions from Texas Parks and Wildlife Department (TPWD) staff. The reports published in this volume were written in order to address development and management issues on TPWD lands. The compilers of this report are indebted to the TPWD staff that contributed to the report:

The TPWD Cultural Resources Program was supported by the State Parks Division throughout 2006. We are indebted for the continued support of State Parks Division Director Walt Dabney, Executive Director Robert Cook, and the TPWD Commissioners. Many TPWD park managers, wildlife management area managers, project managers, and State Parks and Wildlife Division regional directors continue to give their encouragement to the program. We rely on these field staff for their ongoing efforts in preserving the cultural resources in the TPWD system.

Luis Alvarado and Aina Dodge

Management Overview

Organizational Background

The present organization of cultural resource management within the Texas Parks and Wildlife Department took effect in September 1992, when the Cultural Resources Program was formed. Michael Strutt is the current Cultural Resources Program Director. The Cultural Resources Program employs six Resource Coordinators who oversee the cultural resources in each of their regions. These Resource Coordinators meet the archeological needs of TPWD with in-house personnel and through contractors who meet the professional standards specified in the Antiquities Code of Texas, Rules of Practice and Procedure. They advise staff in their regions on resource issues, develop management plans, and contract and oversee various field investigations. In 2006, the Cultural Resource Coordinators were Dawn Ramsey (north Texas), Diane Dismukes (west-central Texas), Kent Hicks (northwest Texas), Todd McMakin (east Texas), Rich Mahoney (east-central Texas), and Tim Roberts (west Texas).

In addition to the program director and regional resource coordinators, the Cultural Resource Program also employs the Archeology Survey Team who conducts inventory surveys and special studies on TPWD lands. Based at the Archeology Laboratory near the TPWD headquarters complex in Austin, the Archeology Survey Team consists of team leader, Margaret Howard, and team members Logan McNatt, Tony Lyle, and Luis Alvarado. Margaret Howard also assists as needed on statewide issues. In addition to their survey team duties, Luis Alvarado, Logan McNatt, and Tony Lyle serve as lab staff, offering support to the regions. Aina Dodge is the director of the laboratory facility that houses a research library, files of archeological activities on TPWD properties, workspace for analysis and report writing, and space for artifact curation.

Memorandum of Understanding

The Texas Historical Commission and the Cultural Resources Program of Texas Parks and Wildlife Department operate under a memorandum of understanding (MOU), which permits TPWD "to perform construction monitoring, archeological surface reconnaissance, and intensive cultural surveys (including shovel and limited mechanical subsurface probing) on all properties owned or controlled by TPWD." These investigations are authorized by an annual Texas Antiquities Permit that includes projects up to 200 acres. This document constitutes the report on these projects conducted in the year 2006 under Texas Antiquities Permit 4011. It has been completed to meet the requirements of the permit as stipulated by the MOU, which went into effect on May 15, 1995. The MOU has guided archeological activities of the agency since September 1992; the 2006 report is the fourteenth annual report submitted to the THC.

Organization of Report

The 2006 Annual Report is organized alphabetically by TPWD property.

Summary of Findings

Twenty field projects were completed in 2006 under Texas Antiquities Permit 4011 and are reported in this document. All reports were authored by TPWD personnel. Nineteen of the twenty field projects consisted of impact studies conducted prior to the initiation of a development or repair project; the remaining project is an ongoing systematic survey of Mustang Island State Park. During the 2006 investigations three new site were recorded (41PS955, 41PS956, and 41PS957) and nine previously recorded sites were revisited (41BP428, 41CT23, 41CT24, 41FB21, 41FB22, 41FB23, 41MC4, 41MC11, and 41MC267). The artifacts and records from these Texas Parks and Wildlife Department investigations are curated at the agency headquarters in Austin.

Bastrop State Park

Bastrop County

December 19, 2006

Author: Rich Mahoney, Texas Parks and Wildlife Department (TPWD) Cultural Resource Coordinator - Region 5

Project Description: Waterline Installation

Type of Investigation: Pedestrian Surface Survey and Shovel Testing

Staff: Rich Mahoney

Introduction

In December 2006, Texas Parks and Wildlife Department (TPWD) Cultural Resource Program Staff conducted an archeological survey of a portion of Bastrop State Park in Bastrop County (Figure 1). The survey concerns a proposed waterline installation project providing service to an existing structure in the southern portion of the Park. The proposed project occurs on lands owned by TPWD and was funded, in part, by federal State Wildlife Grant (SWG) dollars.

Project Description

The waterline installation project area consists of approximately 130 linear meters of new line. While the waterline trench width will be approximately six inches, the Area of Potential Effect (APE) includes a 5 m swath to allow any necessary machinery access for trenching. Turnaround points, staging areas, and material storage areas will be located atop and within previously built-out or surveyed areas. Prior impacts within the project area include a small two-bedroom structure with outbuildings, gravel driveway, overhead electric line, and a failed waterline. The house is estimated to have been constructed around 1970. Trench depth shall extend about two feet below ground surface. The overall areal impact of this project is approximately 0.16 acres.

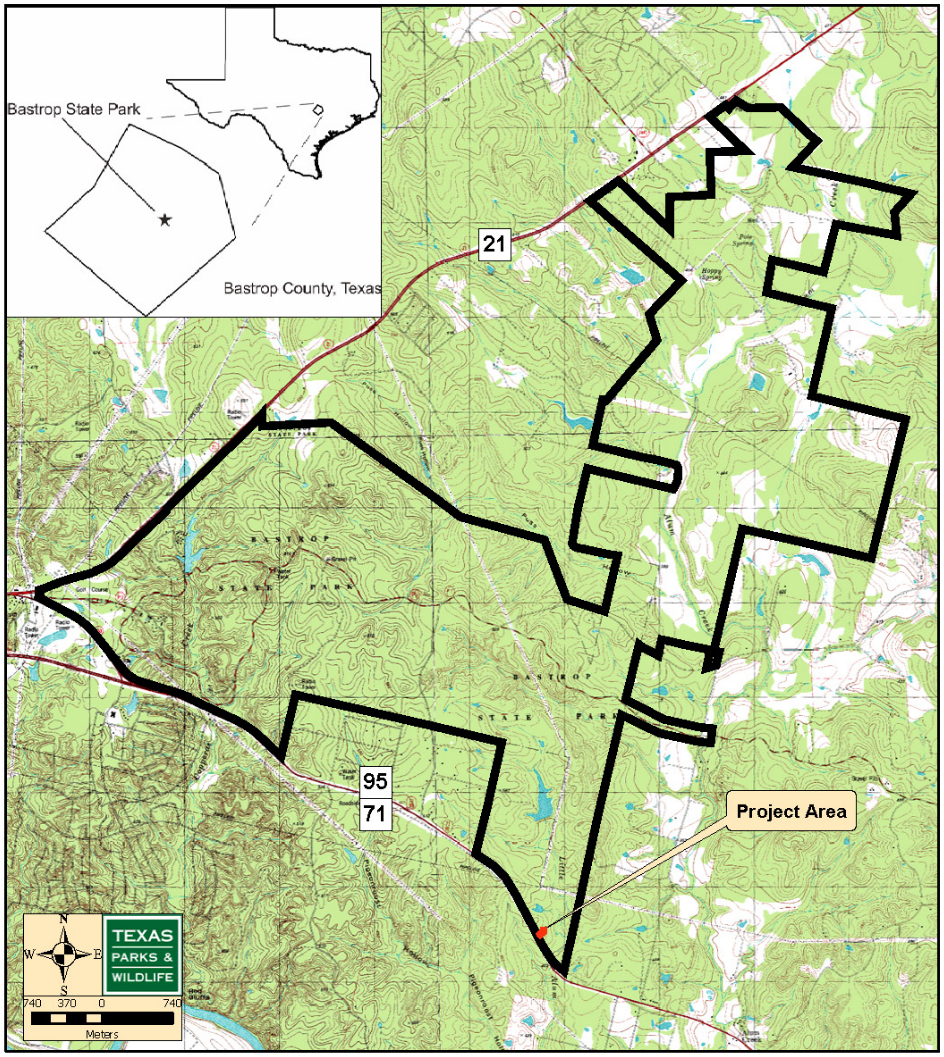


Figure 1. Aerial photograph montage depicting location of project area.

Environmental Setting

Bastrop State Park is located approximately 30 miles east-southeast of Austin in the central portion of Bastrop County. The Park currently consists of 6,486 acres within the "Lost Pines." Although situated within the Oak Woods and Prairies natural region (Figure 2), the Lost Pines are unique due to the predominance of loblolly pine-oak series vegetation disjunct from the Piney Woods of East Texas, nearly 100 miles away. The Park currently comprises roughly nine percent of the remaining 120 square miles of the Lost Pines of Texas.

The Park sits atop upland formations overlooking the Colorado River Valley. Review of the local geology (Figure 3) indicates that the project area sits atop the Eocene Reklaw Formation. This formation occurs throughout the majority (4,580 acres; 70 percent) of the Park and is typified by massive (15 m) beds of sandstone and clays (Proctor et al. 1981). Other formations underlying the Park include the Eocene Carrizo Sand (1,105 acres; 17 percent) and the Eocene Queen City Sand (560 acres; 9 percent). The remaining 235 acres (4 percent) consists of Quaternary alluvial high gravel deposits and generally conforms to the current golf course in the western portion of the Park.

Published soil data (Baker 1979) indicates the entirety of the current project area occurs within the Axtell-Tabor complex of gravelly sandy loam. The soils are typically found on ridgetops, mildly sloping to sloping side slopes and in drainageways (Baker 1979:8). It is estimated that this soil series occurs on approximately one-half of the current Park. Close to 40 percent of the known archeological sites within the Park occur atop these soils, making them a relatively high-probability for additional sites.

Cultural Setting

The Bastrop area falls along the eastern border of the Central Texas archeological region (Kenmotsu and Perttula 1993), alternatively, within the East-Central Texas archeological region (Mahoney et al. 2003). While no archeological sites were encountered during the current survey, archeological sites recorded in the immediate area span the entirety of the known periods of occupation in East-Central Texas.

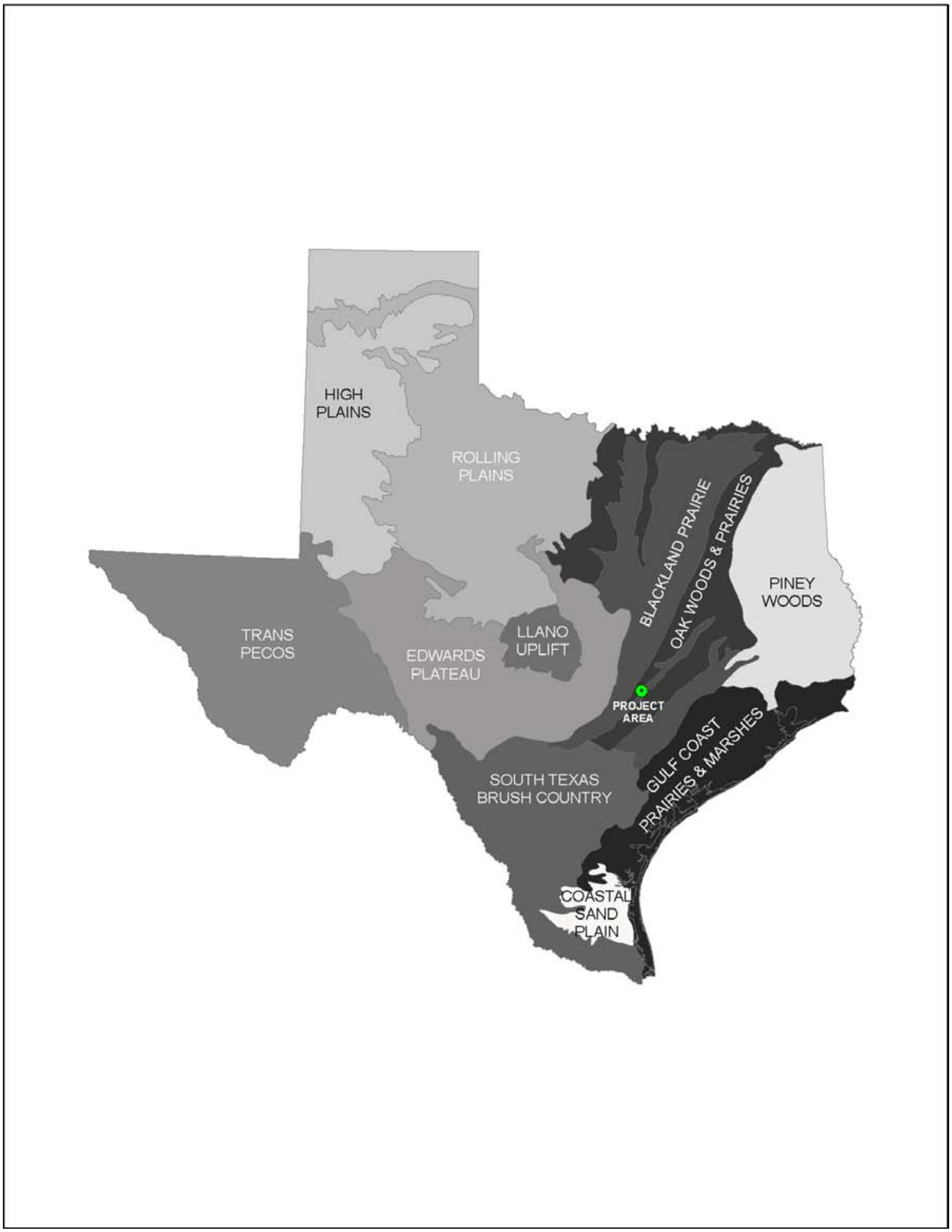


Figure 2. Project area in relation to Natural Regions of Texas.

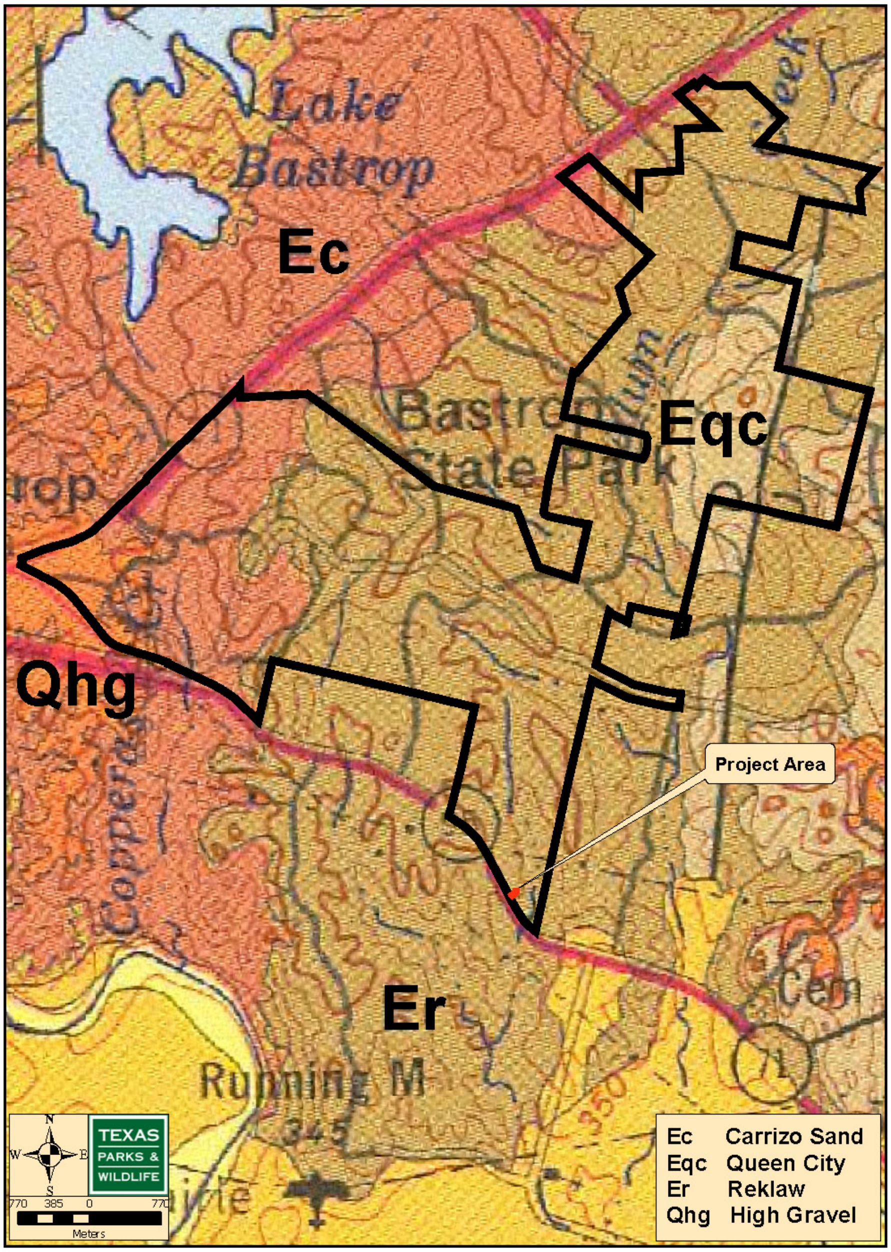


Figure 3. Project area in relation to local geology.

As such, this brief section outlines the general cultural chronology for the region. A more detailed account of these prehistoric periods, as well as the entirety of the cultural chronology for Central Texas and East-Central Texas can be found in Collins (2004), Fields (2004), Johnson (1995), and Prewitt (1981).

The Paleoindian period (11,500-8800 B.P.) commences during the latter part of the Pleistocene geologic epoch and terminates during the Early Holocene climatic interval (Ensor and Carlson 1988; Johnson and Goode 1994; Perttula 1999); conceptually, that era in prehistory wherein humans first entered the New World. Due to the frequent location of isolated finds of Paleoindian projectile points and the infrequent encounter of dense occupational features, it is generally inferred that these peoples were highly mobile, nomadic hunters, and opportunistic gatherers. Recent research (i.e. Bousman, et al. 2004; Collins 2004), however, is continuing to further define and refine our understanding of these early peoples, including their subsistence base and adaptation patterns.

Technologically, the Paleoindian period is divided into early and late phases. The early phase is typified by the presence of primarily fluted lanceolate points (i.e., Clovis and Folsom) produced of non-local materials. The exotic stone tools recovered from these early sites further suggest a high-mobility culture. The late phase of this period exhibits dart points, such as San Patrice and Dalton, made primarily of local materials (Ensor and Carlson 1988:18; Schambach 1998). The presence of woodworking tools, such as the Dalton adze, in association with these new variant dart points suggests a slightly more sedentary culture than its predecessor.

The Early Archaic period (8800-5600 B.P.) is characterized by the apparent onset of sedentary subsistence indicated by the diversity of recovered artifact assemblages (Girard 2000; Wyckoff 1984). The extinction of large herds of megafauna and the changing climate at the beginning of the Holocene appears to have stimulated a behavioral change in the prehistoric inhabitants of the region. While the basic hunter-gatherer adaptation probably remained intact, an economic shift away from big game hunting was necessary. In general, more intensive exploitation of local resources such as deer, fish, and plant stuffs is indicated by greater densities of ground stone artifacts, burned rock cooking features, and more specialized tools such as Clear Fork gouges and Guadalupe bifaces

(Turner and Hester 1993:246, 256). Temporally diagnostic projectile points of this period include Angostura, Gower, and Martindale.

The Middle Archaic period (5600-4200 B.P.) occurs during the final years of the Middle Holocene geologic epoch and may represent a time of transition in adaptation patterns. During the early part of this period, bison are again present along the plains and prairie regions of Texas after a nearly three millennia hiatus (Dillehay 1974). Their appearance is short-lived, however, and by approximately 5200 B.P. bison once again disappear from the faunal assemblage of the Southern Plains and adjoining prairie margin. The continuance and proliferation of relative sedentism and/or specific exploitation of localized natural resources is evidenced by the continued occupation and reoccupation of preferred landforms (Mahoney et al. 2003). Johnson and Goode (1994:28) also point to the specialization of targeting specific natural resources, possibly xerophytic plants. These characteristics in response to an increasingly drier environment (c.f. Bousman 1998; Johnson 1995) would form the basis for the transformation in the overall stylistic tradition to that of the Late Archaic.

Similar to the Paleoindian period, the Middle Archaic is technologically divided into two phases. The early phase consists of thin-bodied, broad-bladed projectile points such as the Early Triangular variety. It is postulated (Collins 1998) that these points were part of a stone tool kit customized for hunting the abundant bison of this early phase. The later phase is dominated by narrower bladed and thicker bodied dart points such as the Nolan and Travis varieties. It remains unclear whether this technological change can be directly attributable to the economic shift from bison procurement to medium-sized game procurement, such as deer and antelope.

The Late Archaic period (4200-1200 B.P.) roughly coincides with the beginning of the Late Holocene geologic epoch and represents the final three millennia of the Archaic Era. Johnson and Goode (1994:34) divide the Late Archaic into separate phases, with a point of demarcation at approximately 2600 B.P. The earlier phase, or Late Archaic I, commences with generally xeric conditions, probably correlative with the Dry Edwards Interval to the west. Palynological evidence from the nearby Boriak bog (Lee County, Texas) and the Weakly bog (Leon County, Texas) reveals relatively low arboreal canopy cover; indicating a predominant grassland environment for the region during this period

(Bousman 1998). Adaptation to a relatively dry climate with low precipitation and high temperatures are hallmarks of the early portion of the Late Archaic, with bison reappearing in the faunal assemblage following an over one thousand year hiatus (Dillehay 1974). Projectile-point styles of this phase include, in progressive order, Bulverde, Pedernales, Marshall, Montell, and Castroville (Johnson and Goode 1994).

The Late Archaic II witnesses a continued population increase (Prewitt 1985; Rogers and Kotter 1995) and divergent burial practices possibly influenced from cultures to the east (Johnson 1995:96-98). Palynological data derived from the above bog studies indicate a trend toward a more mesic environment during the latter phase of the Late Archaic (Bousman 1998). Burned rock middens appear to decline in usage during this time (Johnson and Goode 1994); however, recent research (e.g., Mauldin et al. 2003) questions the applicability of this as a period or phase marker. Typical projectile-points of the Late Archaic II include Marcos, Ensor, Frio, Darl, and Figueroa (Johnson and Goode 1994).

The Late Prehistoric period (1200-300 B.P.) represents the final few centuries prior to European contact in East-Central Texas, and exhibits a distinctive shift in technology from the previous periods. Evidence of bow and arrow weaponry first occurs in this period, with small arrow points appearing in the archeological record. The initial 600 years of this period, termed the Austin interval, is marked by the presence of expanding stem arrow points such as Scallorn and Edwards (Prewitt 1985). Environmentally, little change from the Late Archaic II is witnessed during the Austin interval, as faunal assemblages appear similar (Collins 2004).

The terminal Late Prehistoric subperiod, the Toyah interval, witnesses the return of bison to the region after several hundred years absence (Dillehay 1974). The animal's return resulted in a marked economic shift toward intensive bison procurement and processing (Prewitt 1981). The material culture from this interval reflects this shift with contracting stem arrow points such as Perdiz and Clifton and blade core technology. In addition, bone-tempered pottery makes its first appearance in the region during this interval.

Previous Investigations

The first archeological site to be recorded within the Park was discovered by an Austin Boy Scout named Randy Rose in 1965 (THC 2007). Later that year, the site was officially recorded by the Texas Archeological Society and ultimately assigned site number 41BP69. TPWD Archeology Staff reassessed that site in 1977 (Ralph 1996:45) and, based upon an informant's statement, recorded the second known site within the Park, site 41BP15. Both of the sites contain a prehistoric component, and both were officially designated as State Archeological Landmarks in 1983.

In the mid-1980s, TPWD Archeology Staff conducted two brief reconnaissance surveys at the Park (Ralph 1997). The first of the surveys, done in 1982, was an assessment for a new trail loop in the southeastern portion of the Park. Site 41BP69 was again reassessed, and erosion due to foot traffic was noted as an impact to the site. In addition, a possible Civilian Conservation Corps sandstone quarry was noted near the then eastern boundary fence, but no further site recordation was performed. The second survey, a preliminary reconnaissance for a proposed golf course expansion project, was completed in 1985. The reconnaissance noted the potential for cultural resources, and a recommendation for additional survey was made.

No further field investigations were conducted at the Park until the 1990s, when a flurry of development projects spurred reactive surveys and limited testing. The majority of these investigations focused on utility upgrades to the Park and golf course expansion. TPWD Archeology Staff conducted survey (Tomka 1992) and monitoring (Kegley 1994) fieldwork in 1991 and 1993, respectively. Results of these field investigations included discovery of one previously unrecorded prehistoric archeological site (41BP377).

Prior to golf course expansion, a survey of the 225 acres to be impacted was performed in 1993 by private consultants under contract to TPWD (Medlar 1995). The survey recorded four previously unrecorded archeological sites (41BP372-375) in the western portion of the Park. Among the sites included two historic trash dumps, a bermed earthenwork, a prehistoric lithic quarry, and a prehistoric lithic scatter. All of the sites were determined to be eligible for official designation as State Archeological Landmarks (Medlar 1995:30).

The consultant returned in 1995 to conduct survey and limited testing for proposed waterline upgrades (Medlar 1995). Two previously unrecorded prehistoric archeological sites (41BP428 and 41BP429) were recorded during the survey and previously recorded site 41BP377 was subject to limited testing. Each of the three sites was determined to be eligible for official designation as State Archeological Landmarks (Medlar 1995:44).

TPWD Archeology Staff again conducted survey (Howard-Hines 1996) and monitoring (Black 1996) fieldwork in 1995. The survey consisted of limited shovel testing at 41BP69 and represents the only subsurface investigation at the site. Monitoring fieldwork focused on the golf course expansion and did not result in the recordation of any previously unrecorded sites.

In 1998, a survey was conducted by private consultants under contract to TPWD in which two corridors were examined for a water and wastewater improvement project (Anthony and Brown 2000). One historic (41BP537) and two prehistoric (41BP536 and 41BP538) archeological sites were recorded along those routes. Although none of the sites were determined eligible for designation as State Archeological Landmarks, rerouting of the wastewater lines to a previously disturbed corridor along the paved park road avoided two of the sites and monitoring of the water line revealed no features or diagnostic artifacts in the area of the third site.

TPWD Cultural Resources Program Staff most recently conducted a small-scale survey within the western portion of the Park (Mahoney 2007). The survey concerned development of a wildlife viewing station near a Houston toad breeding pool. Shovel testing resulted in the delineation of the easternmost portion of site 41BP428, that area slated for development, and the wildlife viewing station was placed in another area of the Park.

Methods

Prior to initiation of the field investigations, a comprehensive review of all available archeological reports and databases was conducted to identify and characterize cultural resources known to occur in the vicinity of the project area. At least in part, the compilation of known cultural resources in the Bastrop area is based on the Texas Archeological Sites Atlas, Texas Historic Sites Atlas, and THC and TPWD map files. In addition, the literature and archival review inspected historic United States Geological Survey topographic maps and Natural Resources Conservation Service soil surveys (USDA 2004).

The survey consisted of a 100 percent pedestrian survey of the proposed new waterline (130 m). The single transect traversed the project area along the centerline of the proposed utility corridor. Flagging and pin flags were placed by Park Staff to orient the survey route.

Shovel tests were 30 cm in diameter and were excavated to a sufficient depth to expose the underlying Uvalde gravels. They were excavated in levels not exceeding 10 cm in thickness. Deposits from these tests were screened through quarter-inch hardware cloth.

Results And Recommendations

Two shovel tests were excavated within the project area (Figure 4), encountering no cultural material. Soils encountered in each of the shovel tests consisted of dark reddish-yellow sandy clay. Thickness of the soils averaged about 15 cm and was underlain by Uvalde gravel deposits. The gravels were inspected for any cultural alteration such as tested cobbles, but none was detected. The density of the gravel deposit precluded manual excavations to determine its thickness.

Based upon the negative results of the survey, the TPWD Cultural Resources Program recommended that the proposed project be allowed to proceed without further cultural resources investigations. Texas Historical Commission concurrence for this project was received in January 2007.

Figure 4. Survey transect; dotted circles depict shovel tests.

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BASTROP STATE PARK

BASTROP COUNTY

July 6, 2006

Author: Rich Mahoney, Texas Parks and Wildlife Department (TPWD) Cultural Resource Coordinator - Region 5

Project Description: Wildlife Viewing Blind Installation

Type of Investigation: Pedestrian Surface Survey and Shovel Testing

Staff: Rich Mahoney

Introduction

In July 2006, Texas Parks and Wildlife Department (TPWD) Cultural Resource Program Staff conducted an archeological survey of a portion of Bastrop State Park in Bastrop County (Figure 1). The survey concerns a proposed wildlife viewing blind installation project near an existing Houston toad breeding pond.

Project Description

The wildlife viewing blind installation project area consists of approximately 100 square meters in the western portion of the Park. The proposed project includes construction of a small wooden structure and a short path to connect to an existing pedestrian trail. Turnaround points, staging areas, and material storage areas will be located atop and within previously built-out or surveyed areas. Prior impacts within the vicinity of the project area include an existing pedestrian trail, an artificial waterfall, an artificial pond, overhead utility lines, and existing vehicular roadways. The overall areal impact of this project is approximately 0.02 acres.

Environmental Setting

Bastrop State Park is located roughly 30 miles east-southeast of Austin in the central portion of Bastrop County. The Park currently consists of 6,486 acres within the "Lost Pines."

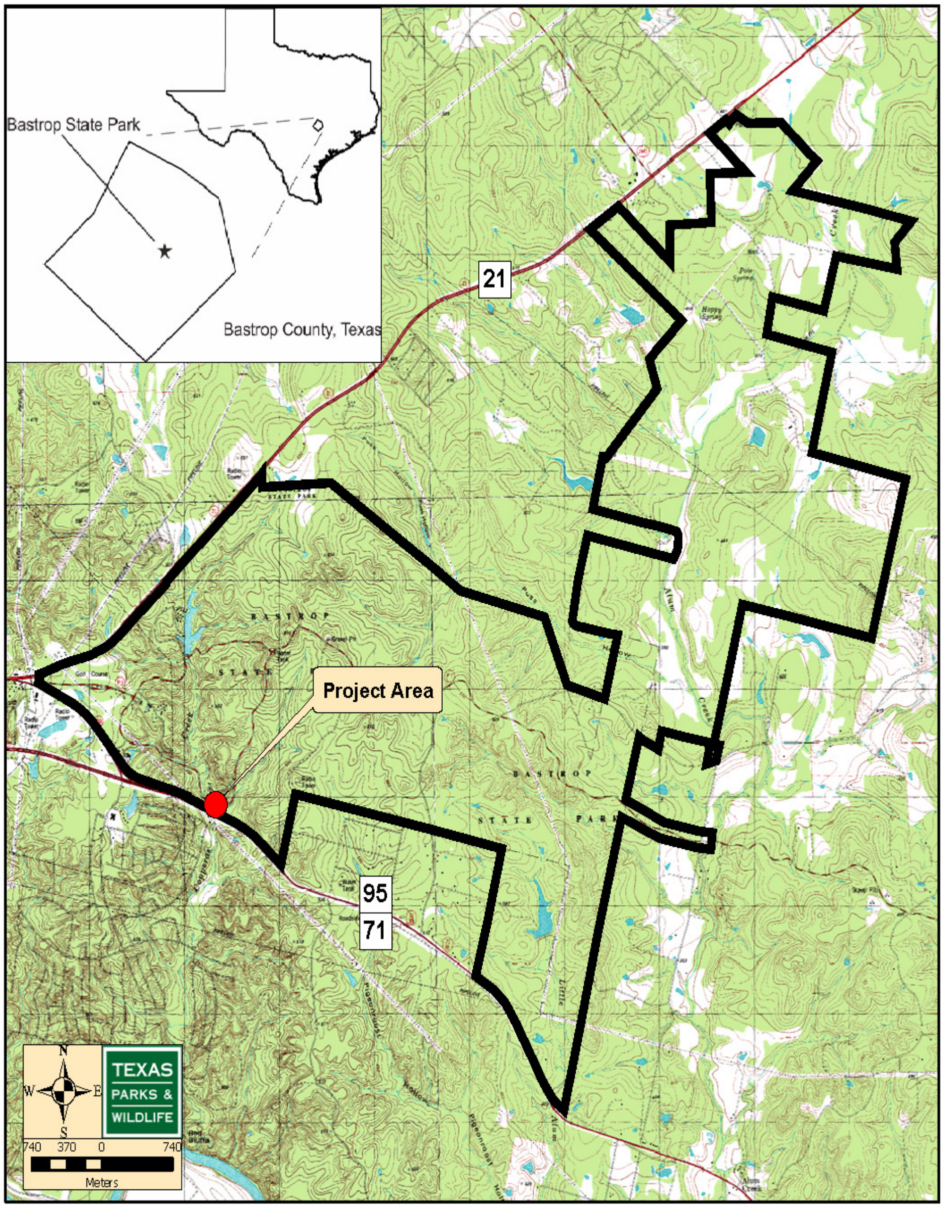

Figure 1. Aerial photograph montage depicting location of project area

Although situated within the Oak Woods and Prairies natural region (Figure 2), the Lost Pines are unique due to the predominance of loblolly pine-oak series vegetation disjunct from the Piney Woods of East Texas, nearly 100 miles away. The Park currently comprises roughly nine percent of the remaining 120 square miles of the Lost Pines of Texas.

The Park sits atop upland formations overlooking the Colorado River Valley. Review of the local geology (Figure 3) indicates that the project area sits atop the Eocene Carrizo Formation. This formation occurs throughout the majority (1,105 acres) of the original 1,901 acres of the Park and is typified by massive (12 m) beds of sandstone (Proctor et al. 1981). Other formations underlying the Park include the Eocene Reklaw Sand (4,580 acres) and the Eocene Queen City Sand (560 acres). The remaining 235 acres consists of Quaternary alluvial high gravel deposits and generally conforms to the current golf course in the western portion of the Park.

Published soil data (USDA 2007) indicates the entirety of the current project area occurs within the Silstid loamy fine sand. The soils are typically found on ridgetops within the Park. This soil is located along Copperas Creek and its tributaries and along minor tributaries of Alum Creek within the Park. Only one of the 15 known archeological sites occurs atop this soil, making it a relatively low-probability for additional sites.

Cultural Setting

The Bastrop area falls along the eastern border of the Central Texas archeological region (Kenmotsu and Perttula 1993), alternatively, within the East-Central Texas archeological region (Mahoney et al. 2003). While no archeological sites were encountered during the current survey, archeological sites recorded in the immediate area span the entirety of the known periods of occupation in East-Central Texas. As such, this brief section outlines the general cultural chronology for the region. A more detailed account of these prehistoric periods, as well as the entirety of the cultural chronology for Central Texas and East-Central Texas can be found in Collins (2004), Fields (2004), Johnson (1995), and Prewitt (1981).

Figure 2. Project area in relation to Natural Regions of Texas.

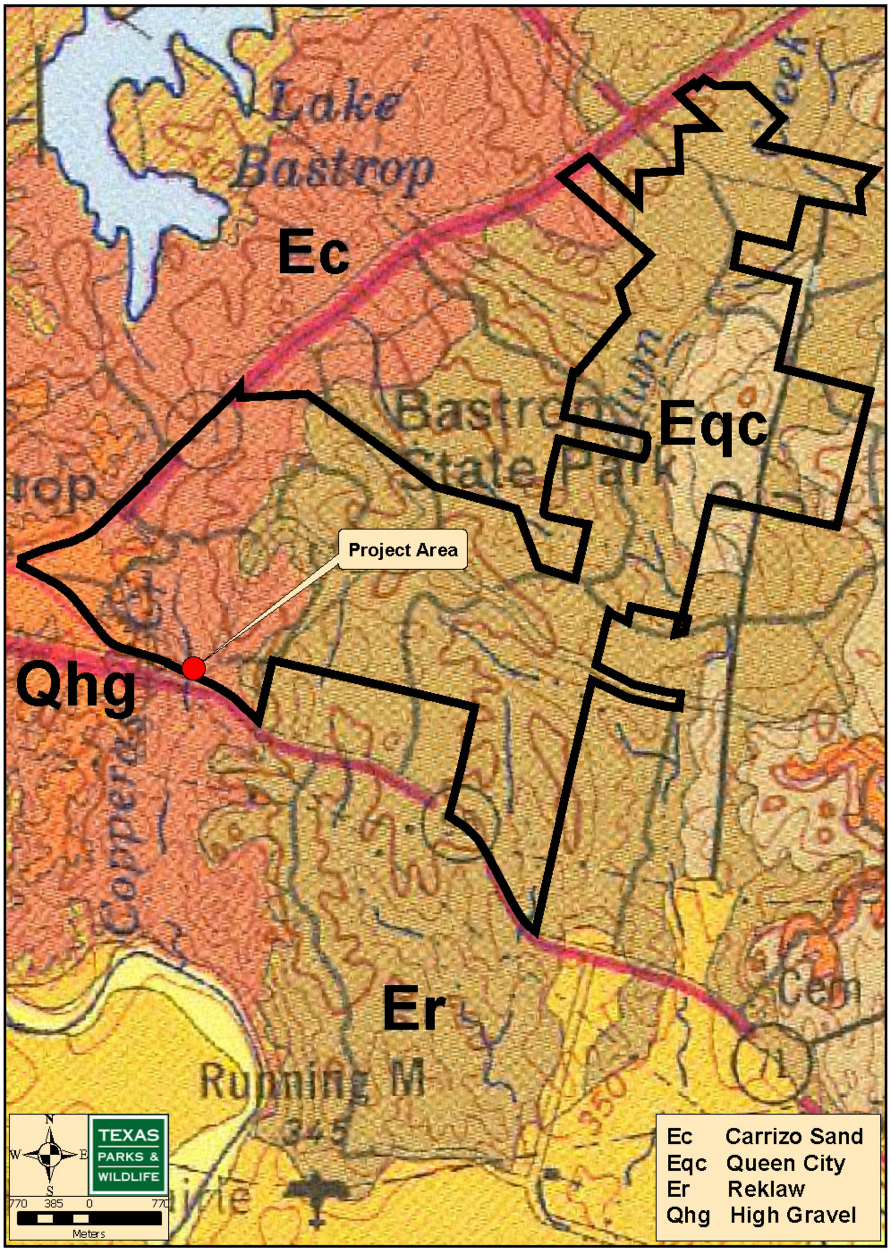

Figure 3. Project area in relation to local geology.

The Paleoindian period (11,500-8800 B.P.) commences during the latter part of the Pleistocene geologic epoch and terminates during the Early Holocene climatic interval (Ensor and Carlson 1988; Johnson and Goode 1994; Perttula 1999); conceptually, that era in prehistory wherein humans first entered the New World. Due to the frequent location of isolated finds of Paleoindian projectile points and the infrequent encounter of dense occupational features, it is generally inferred that these peoples were highly mobile, nomadic hunters and opportunistic gatherers. Recent research (i.e. Bousman, et al. 2004; Collins 2004), however, is continuing to further define and refine our understanding of these early peoples, including their subsistence base and adaptation patterns.

Technologically, the Paleoindian period is divided into early and late phases. The early phase is typified by the presence of primarily fluted lanceolate points (i.e., Clovis and Folsom) produced of non-local materials. The exotic stone tools recovered from these early sites further suggest a high-mobility culture. The late phase of this period exhibits dart points, such as San Patrice and Dalton, made primarily of local materials (Ensor and Carlson 1988:18; Schambach 1998). The presence of woodworking tools, such as the Dalton adze, in association with these new variant dart points suggests a slightly more sedentary culture than its predecessor.

The Early Archaic period (8800-5600 B.P.) is characterized by the apparent onset of sedentary subsistence indicated by the diversity of recovered artifact assemblages (Girard 2000; Wyckoff 1984). The extinction of large herds of megafauna and the changing climate at the beginning of the Holocene appears to have stimulated a behavioral change in the prehistoric inhabitants of the region. While the basic hunter-gatherer adaptation probably remained intact, an economic shift away from big game hunting was necessary. In general, more intensive exploitation of local resources such as deer, fish, and plant stuffs is indicated by greater densities of ground stone artifacts, burned rock cooking features, and more specialized tools such as Clear Fork gouges and Guadalupe bifaces (Turner and Hester 1993:246, 256). Temporally diagnostic projectile points of this period include Angostura, Gower, and Martindale.

The Middle Archaic period (5600-4200 B.P.) occurs during the final years of the Middle Holocene geologic epoch and may represent a time of transition in adaptation patterns. During the early part of this period, bison are again present along the plains and prairie regions of Texas after a nearly three millennia hiatus (Dillehay 1974). Their appearance is short-lived, however, and by approximately 5200 B.P. bison once again disappear from the faunal assemblage of the Southern Plains and adjoining prairie margin. The continuance and proliferation of relative sedentism and/or specific exploitation of localized natural resources is evidenced by the continued occupation and reoccupation of preferred landforms (Mahoney et al. 2003). Johnson and Goode (1994:28) also point to the specialization of targeting specific natural resources, possibly xerophytic plants. These characteristics in response to an increasingly drier environment (c.f. Bousman 1998; Johnson 1995) would form the basis for the transformation in the overall stylistic tradition to that of the Late Archaic.

Similar to the Paleoindian period, the Middle Archaic is technologically divided into two phases. The early phase consists of thin-bodied, broad-bladed projectile points such as the Early Triangular variety. It is postulated (Collins 1998) that these points were part of a stone tool kit customized for hunting the abundant bison of this early phase. The later phase is dominated by narrower bladed and thicker bodied dart points such as the Nolan and Travis varieties. It remains unclear whether this technological change can be directly attributable to the economic shift from bison procurement to medium-sized game procurement, such as deer and antelope.

The Late Archaic period (4200-1200 B.P.) roughly coincides with the beginning of the Late Holocene geologic epoch and represents the final three millennia of the Archaic Era. Johnson and Goode (1994:34) divide the Late Archaic into separate phases, with a point of demarcation at approximately 2600 B.P. The earlier phase, or Late Archaic I, commences with generally xeric conditions, probably correlative with the Dry Edwards Interval to the west. Palynological evidence from the nearby Boriak bog (Lee County, Texas) and the Weakly bog (Leon County, Texas) reveals relatively low arboreal canopy cover; indicating a predominant grassland environment for the region during this period (Bousman 1998). Adaptation to a relatively dry climate with low precipitation and high temperatures are hallmarks of the early portion of the Late Archaic, with bison reappearing in the faunal assemblage following an over one thousand year hiatus (Dillehay 1974). Projectile-point styles of this phase include, in progressive order, Bulverde, Pedernales, Marshall, Montell, and Castroville (Johnson and Goode 1994).

The Late Archaic II witnesses a continued population increase (Prewitt 1985; Rogers and Kotter 1995) and divergent burial practices possibly influenced from cultures to the east (Johnson 1995:96-98). Palynological data derived from the above bog studies indicate a trend toward a more mesic environment during the latter phase of the Late Archaic (Bousman 1998). Burned rock middens appear to decline in usage during this time (Johnson and Goode 1994); however, recent research (Mauldin et al. 2003) questions the applicability of this as a period or phase marker. Typical projectile-points of the Late Archaic II include Marcos, Ensor, Frio, Darl, and Figueroa (Johnson and Goode 1994).

The Late Prehistoric period (1200-300 B.P.) represents the final few centuries prior to European contact in East-Central Texas, and exhibits a distinctive shift in technology from the previous periods. Evidence of bow and arrow weaponry first occurs in this period, with small arrow points appearing in the archeological record. The initial 600 years of this period, termed the Austin interval, is marked by the presence of expanding stem arrow points such as Scallorn and Edwards (Prewitt 1985). Environmentally, little change from the Late Archaic II is witnessed during the Austin interval, as faunal assemblages appear similar (Collins 2004).

The terminal Late Prehistoric subperiod, the Toyah interval, witnesses the return of bison to the region after several hundred years absence (Dillehay 1974). The animal's return resulted in a marked economic shift toward intensive bison procurement and processing (Prewitt 1981). The material culture from this interval reflects this shift with contracting stem arrow points such as Perdiz and Clifton and blade core technology. In addition, bone-tempered pottery makes its first appearance in the region during this interval.

Previous Investigations

The first archeological site to be recorded within the Park was discovered by an Austin Boy Scout named Randy Rose in 1965 (THC 2007). Later that year, the site was officially recorded by the Texas Archeological Society and ultimately assigned site number 41BP69. TPWD Archeology Staff reassessed that site in 1977 (Ralph 1996:45) and, based upon an informant's statement, recorded the second known site within the

Park, site 41BP15. Both of the sites contain a prehistoric component, and both were officially designated as State Archeological Landmarks in 1983.

In the mid-1980s, TPWD Archeology Staff conducted two brief reconnaissance surveys at the Park (Ralph 1997). The first of the surveys, done in 1982, was an assessment for a new trail loop in the southeastern portion of the Park. Site 41BP69 was again reassessed, and erosion due to foot traffic was noted as an impact to the site. In addition, a possible Civilian Conservation Corps sandstone quarry was noted near the then eastern boundary fence, but no further site recordation was performed. The second survey, a preliminary reconnaissance for a proposed golf course expansion project, was completed in 1985. The reconnaissance noted the potential for cultural resources, and a recommendation for additional survey was made.

No further field investigations were conducted at the Park until the 1990s, when a flurry of development projects spurred reactive surveys and limited testing. The majority of these investigations focused on utility upgrades to the Park and golf course expansion. TPWD Archeology Staff conducted survey (Tomka 1992) and monitoring (Kegley 1994) fieldwork in 1991 and 1993, respectively. Results of these field investigations included discovery of one previously unrecorded prehistoric archeological site (41BP377).

Prior to golf course expansion, a survey of the 225 acres to be impacted was performed in 1993 by private consultants under contract to TPWD (Medlar 1995). The survey recorded four previously unrecorded archeological sites (41BP372-375) in the western portion of the Park. Among the sites included two historic trash dumps, a bermed earthenwork, a prehistoric lithic quarry, and a prehistoric lithic scatter. All of the sites were determined to be eligible for official designation as State Archeological Landmarks (Medlar 1995:30).

The consultant returned in 1995 to conduct survey and limited testing for proposed waterline upgrades (Medlar 1995). Two previously unrecorded prehistoric archeological sites (41BP428 and 41BP429) were recorded during the survey and previously recorded site 41BP377 was subject to limited testing. Each of the three sites was determined to be eligible for official designation as State Archeological Landmarks (Medlar 1995:44).

TPWD Archeology Staff again conducted survey (Howard-Hines 1996) and monitoring (Black 1996) fieldwork in 1995. The survey consisted of limited shovel testing at

41BP69 and represents the only subsurface investigation at the site. Monitoring fieldwork focused on the golf course expansion and did not result in the recordation of any previously unrecorded sites.

In 1998, a survey was conducted by private consultants under contract to TPWD in which two corridors were examined for a water and wastewater improvement project (Anthony and Brown 2000). One historic (41BP537) and two prehistoric (41BP536 and 41BP538) archeological sites were recorded along those routes. Although none of the sites were determined eligible for designation as State Archeological Landmarks, rerouting of the wastewater lines to a previously disturbed corridor along the paved park road avoided two of the sites and monitoring of the water line revealed no features or diagnostic artifacts in the area of the third site.

TPWD Cultural Resources Program Staff most recently conducted a small-scale survey within the southern portion of the Park (Mahoney 2007). The survey concerned waterline installation to an existing structure. Results of the pedestrian surface survey and shovel testing were negative.

Methods

Prior to initiation of the field investigations, a comprehensive review of all available archeological reports and databases was conducted to identify and characterize cultural resources known to occur in the vicinity of the project area. At least in part, the compilation of known cultural resources in the Bastrop area is based on the Texas Archeological Sites Atlas, Texas Historic Sites Atlas, and THC and TPWD map files. In addition, the literature and archival review inspected historic United States Geological Survey topographic maps and Natural Resources Conservation Service soil surveys (USDA 2004).

The survey consisted of a 100 percent pedestrian survey of the proposed new wildlife viewing blind area. Shovel tests were 30 cm in diameter and were excavated to a maximum depth of 60 cm below ground surface. They were excavated in levels not exceeding 10 cm in thickness. Deposits from these tests were screened through quarter - inch hardware cloth, and all artifacts were collected.

Following the field survey, all artifacts were inventoried, identified, and analyzed. Processing of recovered artifacts included washing and sorting into appropriate material categories (e.g., debitage, burned rock). An artifact catalog was created and entered into a Microsoft Excel spreadsheet.

All cultural material and survey records collected during the survey were prepared in accordance with current TPWD Archeology Laboratory procedures. Processed artifacts were stored in archival quality plastic bags and identified with acid free labels. Each label contains relevant provenience data and is tied to the generated spreadsheet. All material related to the current project is curated at the TPWD Archeology Laboratory in Austin.

Results

The eastern extent of previously recorded archeological site 41BP428 was defined during the current field investigation through pedestrian survey and excavation of 11 shovel tests. Originally recorded by University of Texas archeologists in 1995 (Medlar 1995) during a proposed utility upgrade, the eastern extent of the site was not delimited. Archeologists from Espey, Huston & Associates, Inc. (now, PBS&J) defined the western extent of the site in 1996 during a survey for a separate utility corridor (Nash et al. 1996).

Although prehistoric artifact recovery was moderate during the initial survey with 260 lithic artifacts (237 flakes, 8 utilized flakes, 2 cores, a “chopper,” a thick biface, and a *Travis*-like dart point), Medlar (1995:44) doubts the stratigraphic integrity of the prehistoric component due to Park and roadway development impacts. In addition, the recovery of several historic artifacts positioned within, and in some cases below, the layers containing prehistoric cultural material suggests some form of disturbance.

The 1996 survey focused primarily on a narrow (30 m) corridor for improvements to an electrical transmission line. During fieldwork, the archeologists noted a lithic scatter with a surficial expression along portions of the corridor that were denuded of vegetation (Nash et al. 1996:23). An estimated 40 lithic flakes were encountered along an approximately 250 m portion of the corridor. No historic material was noted during their survey.

The current pedestrian survey failed to reveal indication of a surficial expression of site 41BP428 within the project area; however, five of the 11 shovel tests excavated did encounter cultural material. The five positive shovel tests recovered a total of 35 prehistoric and historic artifacts. Included in this total are 31 pieces of lithic debitage, two pieces of bone, one transfer-print whiteware sherd, and one fragment of olive bottle glass. None of the prehistoric artifacts recovered during the current survey possessed any temporally diagnostic characteristics.

The two historic artifacts encountered during the present survey suggest a possible 19th century occupation in the area, predating Park development in the 1930s. A transfer print whiteware ceramic sherd was recovered, although the pattern could not be positively identified. Decorated whitewares were more popular during the earlier part of the 19th century (Miller 1980), and the median date of manufacture for blue transfer print whitewares is 1845, with a date range of manufacture of 1830-1860 (Loftstrom 1976). The other historic artifact recovered was a nondiagnostic shard of non-flat, very dark olive glass with a heavy patina. While color alone is not a reliable indicator of age (i.e., Hahn et al. 1994), darker olive colors are generally related to the 19th century (McKearin and Wilson 1978).

The recovery of historic artifacts within the same context as the majority of the prehistoric material suggests that the prehistoric component may be turbated into and indistinct from the original historic occupation. Later forestry operations and subsequent Park development may have further blurred the separation between the two, resulting in a mixed, multicomponent archeological site. Figure 4 depicts the vertical distribution of debitage in comparison to the historic artifacts recovered from all three phases of shovel testing at 41BP428. Table 1 contains the corresponding tabular data.

In depth lithic analysis of this assemblage was not warranted due to the small size of the collection recovered during the present survey. A cursory cortical analysis, though, reveals that 87 percent (n = 27) of the assemblage are tertiary flakes and the remaining 13 percent (n = 4) are secondary flakes. Limited inferences based upon this diminutive sample suggest late stage lithic reduction, and, when combined with other cultural material recovered from the site during the current and previous surveys (e.g., burned rock), possibly an open campsite.

In addition to the encounter of lithic debitage, abundant burned rock was encountered. While not completely quantified for this survey, burned rock was encountered throughout the vertical column but appeared most ubiquitous at 30-40 cm below ground surface. Although some larger cobbles of burned sandstone were noted, numerous chert and quartzite burned rocks, fragments, and heat spalls were noted in shovel tests across the project area. Small flecks of charcoal were encountered in association with several of the burned rocks, but none appeared large enough to determine wood species.

Discussion

The eastern extent of previously recorded, multicomponent archeological site 41BP428 was defined during the current survey. The prehistoric component of site 41BP428 is likely a prehistoric open campsite of unknown temporal affiliation. The historic component of the site may date to the mid- to late-19th century based upon artifact recovery. Cultural material was recovered at this site from ground surface (Nash et al. 1996) to a maximum depth of 60 cm below ground surface (current survey). Adjusted areal dimensions of the site are 90 m north-south and 345 m east-west.

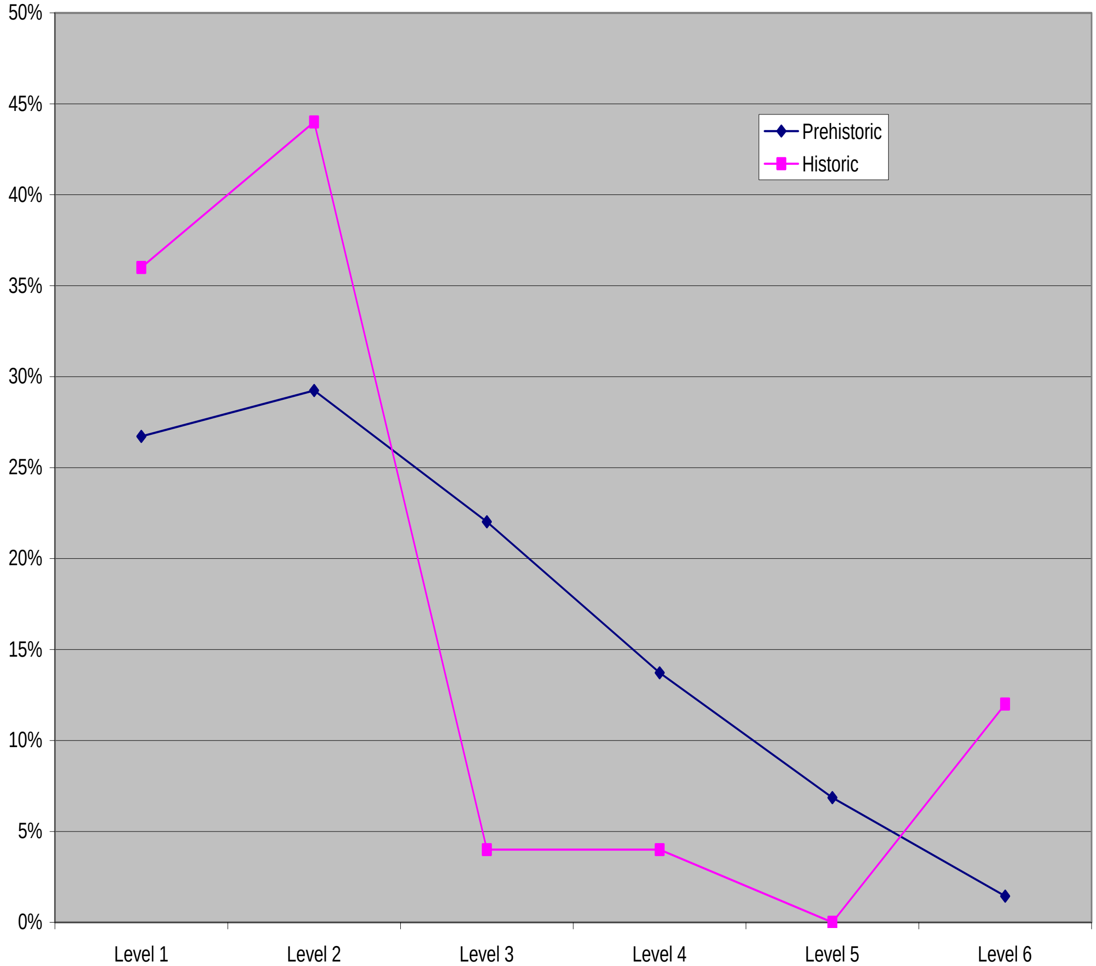

Figure 4. Vertical distribution of debitage and historic artifacts by percentage

Year*	ST	0-10	10-20	20-30	30-40	40-50	50-60	%	Total
1995	2	1	-	2	3	4	-	4%	10
1995	5	4	6	-	-	-	-	4%	10
1995	9	5	1	4	4	4	-	6%	18
1995	10	4	1	2	1	1	-	3%	9
1995	11	4	8	4	-	-	-	6%	16
1995	12	1	2	-	-	-	-	1%	3
1995	13	11	8	4	2	3	-	10%	28
1995	15	9	10	14	15	4	-	19%	52
1995	16	4	7	5	8	-	-	9%	24
1995	17	22	26	13	-	-	-	22%	61
1995	18	3	2	1	-	-	-	2%	6
1996	3	-	-	3	-	-	-	1%	3
1996	4	-	1	-	-	-	-	0%	1
1996	5	-	-	2	2	-	-	1%	4
1996	6	1	-	-	-	-	-	0%	1
2006	1	2	3	1	1	1	1	3%	9
2006	2	-	1	3	1	2	1	3%	8
2006	3	-	4	-	1	-	-	2%	5
2006	7	3	1	3	-	-	-	3%	7
2006	10	-	-	-	-	-	2	1%	2
%		27%	29%	22%	14%	7%	1%	-	100%
Total		74	81	61	38	19	4	100%	277

Table 1. Vertical and horizontal distribution of debitage
(*Source: Medlar 1995; Nash et al. 1996; this survey 2006)

The recovery of potential mid-19th century artifacts at the site is intriguing; however, the apparent mixed context of the two components may hamper the site's eligibility for official designation as an SAL. Additional survey would be needed to definitively determine the site's integrity and the potential to separate the two exhibited components.

The proposed wildlife viewing blind that was to impact 41BP428 was relocated to a previously disturbed area outside of the site bounds approximately 1.3 km upstream based upon the results of this investigation.

Future proposed projects within the aborted location are not recommended by the TPWD Cultural Resources Program due to the potential for adverse impacts to potentially significant, intact cultural deposits.

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BENTSEN-RIO GRANDE VALLEY AND ESTERO LLANO GRANDE STATE PARKS, HIDALGO COUNTY

September 20, 2006

Author: Christopher W. Ringstaff, Texas Parks and Wildlife (TPWD) Cultural Resource Coordinator - Region 2

Project Description: Habitat Restoration Project

Type of Investigation: Reconnaissance Survey

Staff: Christopher Ringstaff and Christopher Hathcock (World Birding Center Habitat Coordinator)

Introduction

The Parks and Wildlife Department (TPWD) propose to implement a Habitat Restoration and Enhancement Project at Bentsen-Rio Grande State Park and Estero Llano Grade State Park, Hidalgo County, Texas (Figure 1). Both parks are being developed as part the World Birding Center to promote eco-tourism. The proposed Habitat Restoration and Enhancement Project will require five phases; each activity and its impact is briefly described below. The total project area is approximately 132 acres. Funding for the project is being provided by the Unites States Fish and Wildlife Service (USWFS) as a State Wildlife Grant. Fieldwork for the project was conducted on September 20, 2006 and required a total of 18 man-hours (2.25 man-days).

Phase 1 (Figure 2) will restore 15 acres of thornscrub plant communities by planting seedlings of trees and shrubs found in Texas ebony-anacua and Texas ebony-snake-eyes plant communities. These plant communities will increase feeding, nesting, cover, and corridor habitat for federal and state listed threatened and endangered species that include the ocelot and jaguarondi and numerous other priority species listed for the South Texas Plains ecoregion at Bentsen Rio Grande State Park and World Birding Center.

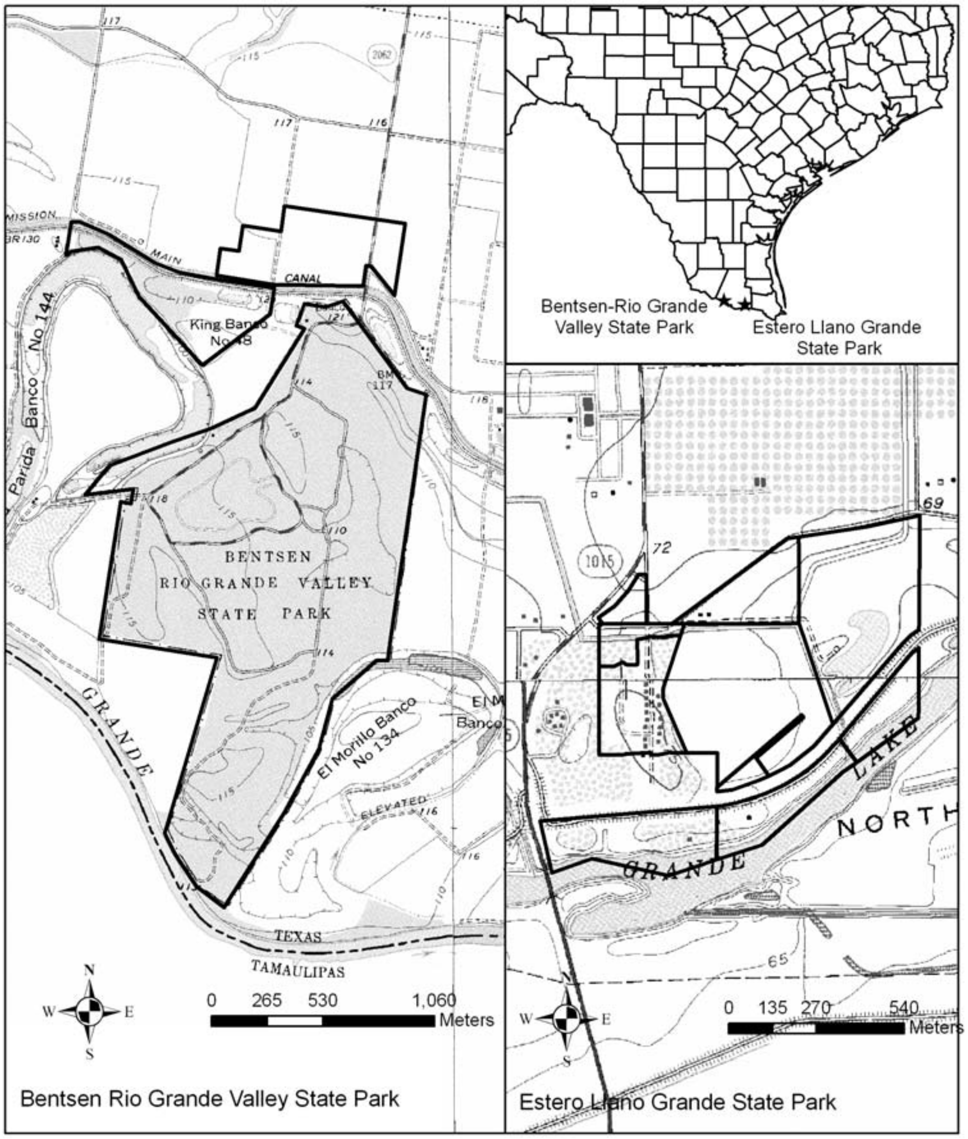

Figure 1. Bentsen Rio Grande Valley and Estero Llano Grande State Parks, Hidalgo County, Texas.

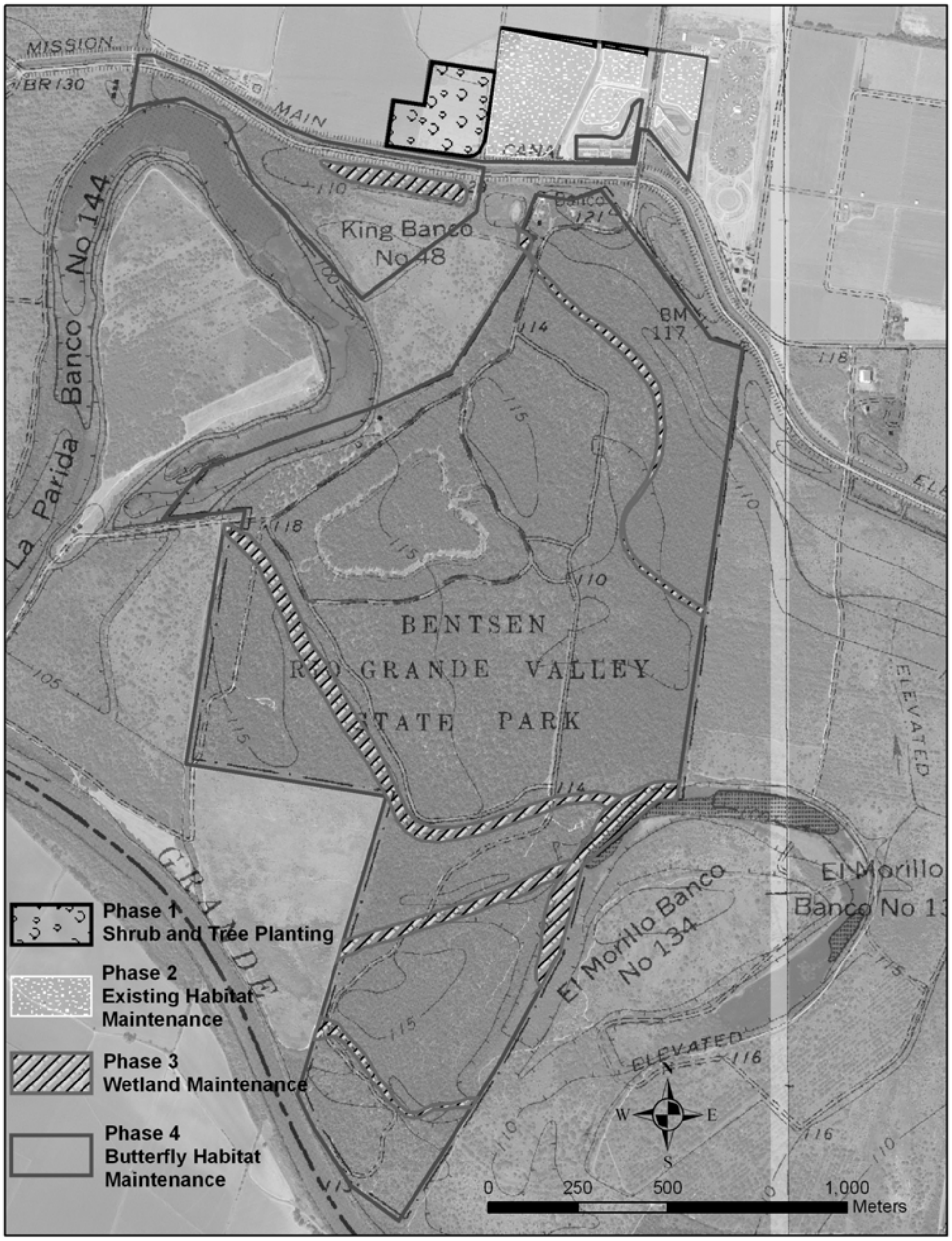

Figure 2. Habitat Restoration Projects at Bentsen Rio Grande Valley State Park.

The depth of impact for the hand-planting is approximately 6-12 inches (15-30 centimeters) within the Ap horizon (plow disturbed A horizon). Subsequent maintenance activities will include flood irrigation (0.5 acre-feet/acre) through an existing delivery system, shredding with a tractor, hand-pulling/cutting, and chemical control using Round-up and grass-specific Fusilade (Fluazifop-P-butyl).

Phase 2 (see Figure 2) consists of managing, maintaining, and monitoring 28 acres of trees and shrubs associated with the Texas ebony-anacua and Texas ebony-snake-eyes plant communities as part of the restoration of Tamaulipan thornscrub habitat for numerous priority species at Bentsen Rio Grande State Park and World Birding Center. Subsequent maintenance activities will include flood irrigation (0.5 acre-feet/acre) through an existing delivery system, shredding with a tractor, hand-pulling/cutting, and chemical control using Round-up and grass-specific Fusilade (Fluazifop-P-butyl).

Phase 3 (see Figure 2) will restore hydrology to 10 acres of resaca wetlands (El Morillo Banco) and maintain hydrology to 30 acres of seasonal wetlands in two resacas in the Bentsen Rio Grande State Park to provide seasonal freshwater wetlands for priority species, including the black-spotted newt and lesser Rio Grande siren, and to promote the health of the riparian woodland habitat. Areas will be flooded using a transportable pump and existing water delivery systems maintained and operated by local irrigation districts.

Phase 4 (see Figure 2) consists of managing and maintaining 5 acres of butterfly habitat established at Bentsen Rio Grande State Park to provide optimum feeding and larval host opportunities for butterflies and other wildlife identified as priority species in the Texas Comprehensive Wildlife Conservation Strategy. Regular maintenance activities will include: irrigation using an existing pop-up sprinkler system, periodic flooding of pond and water features, hand-pulling and digging of herbaceous weeds (maximum soil disturbance depth of 8”), mowing grass and trimming grassy edges, planting of trees, shrubs, forbs, and grasses from containers having a capacity less than 3 gallons (maximum soil disturbance depth of 12”), tilling of ground to remove weeds, incorporate fertilizers or pre-emergent herbicides, and prepare the ground for seeding and sodding.

Phase 5 (Figure 3) consists of enhancing 13 acres of freshwater wetland habitat and 30.5 acres of adjacent upland buffer created on a fallow agriculture field at Estero Llano Grande State Park by developing a wetland planting plan and wetland water management plan and by planting native wetland and upland buffer plants from nearby natural wetlands or from local native plant nurseries into the created wetland area.

Planting of wetland plants will involve seeding and transplanting individual plants with root lengths less than 8 inches. Upland plantings will involve transplanting plants from containers of 1-gallon capacity or less. Maximum ground disturbance depth will be 12 inches.

Environment

Hidalgo County lies within Fenneman’s (1938) West Gulf Coastal Plain section of the Coastal Plain physiographic province. The project area lies on the broad flood plain of the Lower Rio Grande and exhibits relatively flat and even topography.

The area is mapped as undivided Quaternary alluvium (Barnes 1976) consisting of sand, silt, clay, and gravel. Terrace soils within the project area are comprised of the Harlingen-Runn-Reynosa soil series that exhibit deep, very slowly, and moderately permeable soils and are typically composed of loamy fine sand or sandy loams (Jacobs 1981). Floodplain soils in the project area consist of Rio Grande- Matamoros soils, and are generally deep, slowly and moderately slowly permeable soils that typically have a light brownish- gray or grayish brown silt loam or silty clay surface layer.

The project area lies within the Tamaulipan Biotic Province as described by Blair (1950). Within this province, Jahrsdoerfor and Leslie (1988) recognize several biotic communities. Plant communities tend to follow old flooding patterns and are influenced by weather conditions that become drier from east to west (Vora 1992). Alluvial soils support dense riparian flora whereas drier uplands tend to be dominated by xeric vegetation (Blair 1950).

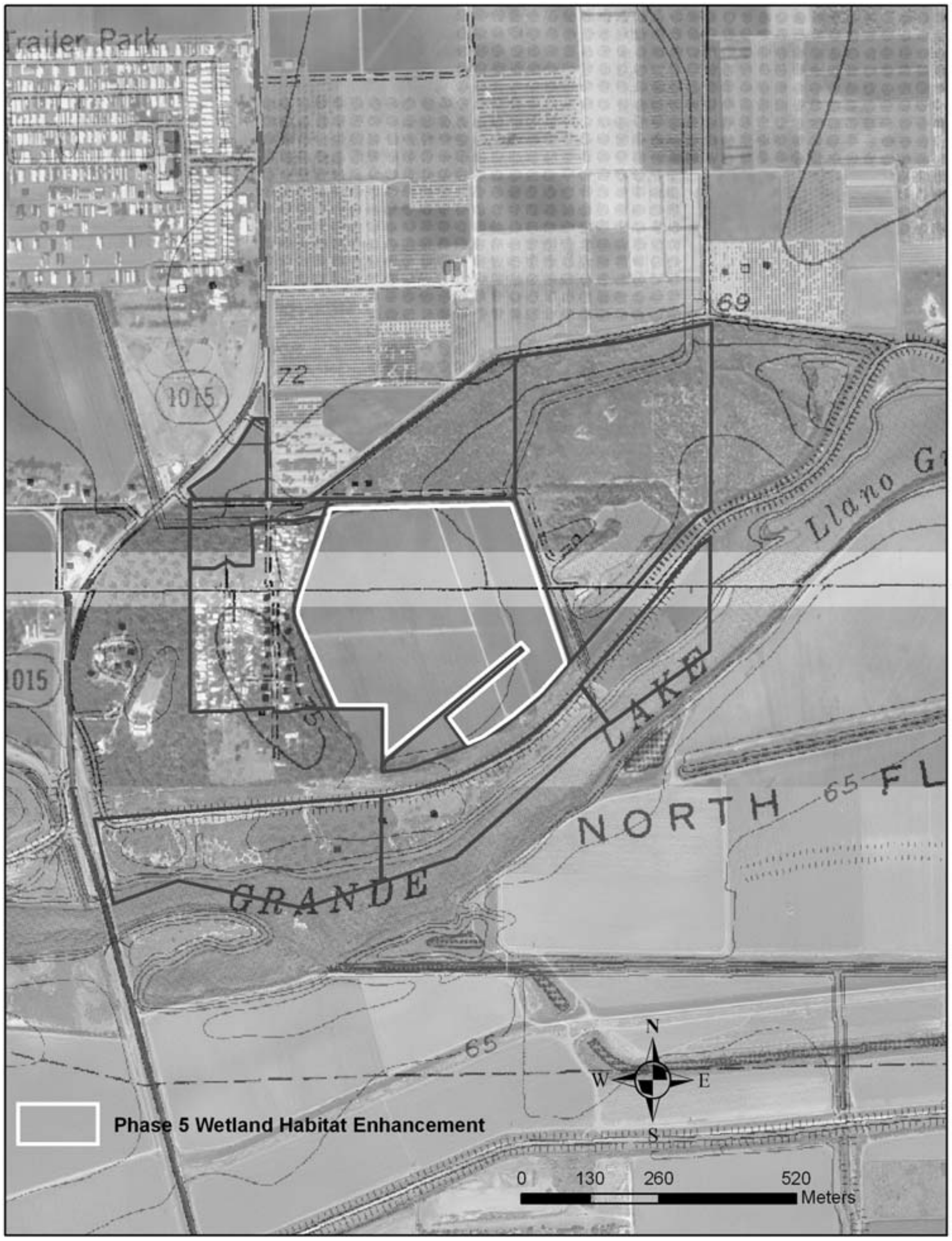

Figure 3. Habitat Restoration Project at Estero Llano Grande State Park.

Previous Investigations

Previous investigations within Bentsen-Rio Grande Valley State Park include an archeological survey by Texas A&M University (Hartmann et al. 1995), a historic overview of Bentsen Rio Grande Valley State Park by Leffler (1999), and a project review for the addition of a new headquarters building in 2002. No cultural resource surveys have been conducted in Estero Llano Grande State Park. The 1994 survey conducted by Texas A&M examined 588 acres of the original parkland acquired from the Lloyd Bentsen Family in 1944. A total of 424 shovel tests and two backhoe trenches were excavated. No archeological sites were recorded.

In *The History of the Bentsen Rio Grande State Park and its Environs,* (Leffler 1999), Leffler notes a ranch community known as Las Nuevas dating from approximately 1870 to 1930. The community consisted of three small thatched roof houses and a corral located near the old park headquarters. The survey conducted by Texas A&M mentions structural remains as well as historic artifacts near the headquarters but believed them to be no older than the late 1950s (Hartmann et al.1995:22) and did not record the area as a site. Although this discrepancy warrants further investigation by TPWD, this potential site is not in proximity to any of the proposed project areas.

A project review of a proposed new headquarters on a newly acquired 175 acre tract (immediately north of the park) was conducted in February 2002 by TPWD archeologist Aina Dodge. Citing the 1994 Texas A&M survey (Hartmann et al. 1994) south of the project area as well as the plow disturbed agricultural fields on which the proposed building was to be constructed, the THC concurred with the recommendation to proceed with the project in March, 2002.

Results Of Investigations

Prior to conducting fieldwork, archival research was conducted consisting of a historic map review including the 1940 General Highway Map of Hidalgo County, Texas and the 1910 King Banco No. 48 map by the International Boundary Commission. This was conducted to examine any changes in the physical landscape and determine if unrecorded historic structures are located in the project areas. Both maps reveal considerable channel migration of the Rio Grande in the last half of the twentieth century at Bentsen Rio Grande State Park. An overlay of these historic maps on 2004 aerial photography show the southern 1 kilometer portion of the park consists of recent alluvium.

In addition to revealing channel migration through time, overlay of the map data show a historic road passing through the project area of the Phase 2 area. Old Military Road was originally built in 1846 by Zachary Taylor as a supply route for his forces along the border. Examination of recent aerial photography (1995 and 2004) shows no visible linear features in the area where the road once existed.

An overlay of the 1940 General Highway Map of Hidalgo County on 2004 aerial photography at Estero Llano Grande State Park shows a massive berm associated with the Llano Grande Lake of the Arroyo Colorado directly on the proposed Phase 5 area. An examination of the area on 1995 aerial photography shows an agricultural field present in the proposed project area with the berm apparently rebuilt in its present location in the southern portion of the park sometime in the last half of the twentieth century.

Fieldwork for the proposed project included a reconnaissance survey and inspection of each proposed project areas verifying the agricultural and historic earth moving impacts in the areas for Phases 1, 2, 4, and 5. Although good surface visibility (60-90 percent) was provided by the fallow agricultural fields, no cultural materials were observed during the reconnaissance survey of these areas. In particular, no remnants of the Old Military Road (such as road and base material or linear topographic highs) were observed. As for Phase 3 (wetland restoration), no ground disturbance is required to maintain water levels for these seasonal wetlands.

To date, no archeological sites have been recorded within either park. Although, as mentioned previously, there is a potential historic site near the old headquarters but it is not within or near the proposed project areas. Both parks are located in an alluvial environment and the potential for undiscovered subsurface archeological materials is still present. However, with the greatest depth of impact from the project to be 12 inches (30 centimeters) for the hand planting of native vegetation, this impact is well within the zone of plow disturbed sediments and will not impact potentially intact sediments underlying the plow zone.

Conclusions And Recommendations

Based on the reconnaissance survey and evaluation of proposed impacts, the World Birding Center Habitat Restoration and Enhancement Project at Bentsen-Rio Grande Valley and Estero Llano Grande State Parks will not be conducted on or near known archeological sites and is unlikely to have any effect upon cultural resources that would be eligible for listing to the National Register of Historic Places or would be eligible for State Archeological Landmark designation. Concurrence with the findings was given by Texas Historical Commission on October 19, 2006. Habitat maintenance associated with the project is presently on-going. Vegetation planting is planned for Summer 2007. All records pertaining to this survey are on file at the TPWD Archeology Laboratory.

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Big Bend Ranch State Park

Brewster And Presidio Counties

March 2006

Author: Tim Roberts, Texas Parks and Wildlife Department (TPWD) Cultural Resource Coordinator - Region 1

Project Description: Archeological Survey of Proposed Contrabando Dome Trail, Big Bend Ranch State Park, Presidio and Brewster Counties

Type of Investigation: Pedestrian Surface Survey

Staff: Tim Roberts, Mark Lockwood, Linda Hedges (Regional Interpretive Specialist - Region 1), and Rod Trevizo (Park Specialist - Barton Warnock)

Introduction

Park staff at Big Bend Ranch State Park (BBRSP), Presidio and Brewster counties, proposed to establish a four mile (6.44 kilometers) multi-use trail near the southeast corner of the park utilizing approximately 2.46 miles (3.96 kilometers) of existing unimproved road, 1.11 miles (1.78 kilometers) of existing undeveloped horse trail, and 0.42 mile (0.68 kilometer) of trail that would have to be newly constructed around the corner of a private inholding in the area (Figures 1-2). The existing undeveloped road to be used as trail averages approximately eight feet (2.4 meters) in width, while the stretch of existing horse trail averages between two and three feet (0.61 and 0.91 meter) in width. The segment of new trail construction will measure a maximum of three feet (0.91 meter) in width. The total area included within the proposed trail route is approximately 2.94 acres (1.19 hectares). The proposed project area is situated entirely within Presidio County, more specifically within the USGS 7.5' Lajitas, Texas quadrangle (southwestern terminus at NAD83, UTM zone 13, 614189E, 3242926N; southeastern terminus NAD 83, UTM zone 13, 616033E, 3243942N).

Surface impact in the area of new trail construction, as well as other segments of the proposed trail route, will be limited to possible trimming/removal of vegetation, possible moving of some rocks along the trail route that are not located within archeological sites, and possible establishment of water bars in areas of the trail corridor where erosion may be a concern (but not including archeological site locations). The proposed trail, referred to as the ‘Contrabando Dome Trail’, will form a loop off of the north side of the existing Contrabando Trail, expanding hiking, biking and equestrian opportunities in this area of BBRSP. There will be no overnight camping locations associated with the Contrabando Dome Trail. Federally-funded trail grants will be used in the establishment of this trail, and in the fabrication and installation of interpretive signage recommended in this report.

An archeological reconnaissance of many areas of the state park, including nearby Contrabando Creek and Fresno Canyon, was conducted between 1988 and 1994 (Ing et al. 1996). However, based on the absence of previously recorded archeological sites within the present project corridor, the 1988-1994 reconnaissance does not appear to have included the Contrabando Dome area. No other cultural resource investigations have been previously conducted within the proposed Contrabando Dome Trail corridor.

As a result, a walkover of the entire proposed Contrabando Dome Trail was conducted, in segments, by Tim Roberts, the Texas Parks and Wildlife Department’s Cultural Resource Coordinator for West Texas, with the help of other TPWD staff members between 2003 and 2006. Approximately 12 person days were spent in the field over this period of time. The walkover included an additional 50 feet (15 meters) on both sides of the existing undeveloped road and trail, and a 100 feet (30 meters) wide corridor for the segment of proposed new trail construction. Pedestrian transects were spaced at 50 feet (15 meters) intervals. Consideration was also given to any sites, such as rockshelters or historic ruins, which might be located further away from the proposed trail route, but would still be readily visible to trail users. A total area of approximately 51.30 acres (20.78 hectares) was examined for archeological resources during the investigation.

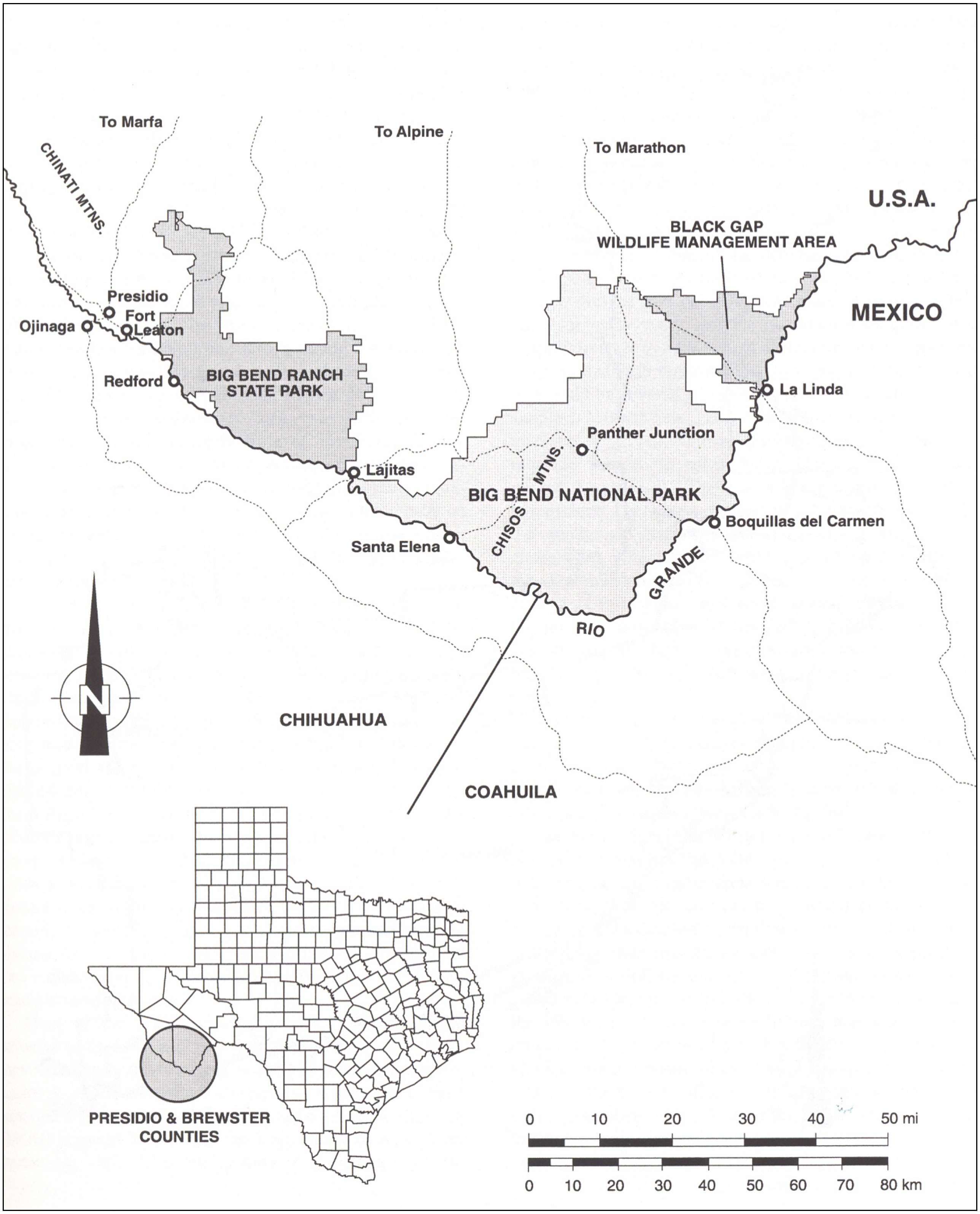

Figure 1. Location of Big Bend Ranch State Park within the Big Bend region of west Texas (from Ing et al. 1996:Figure 1.2).

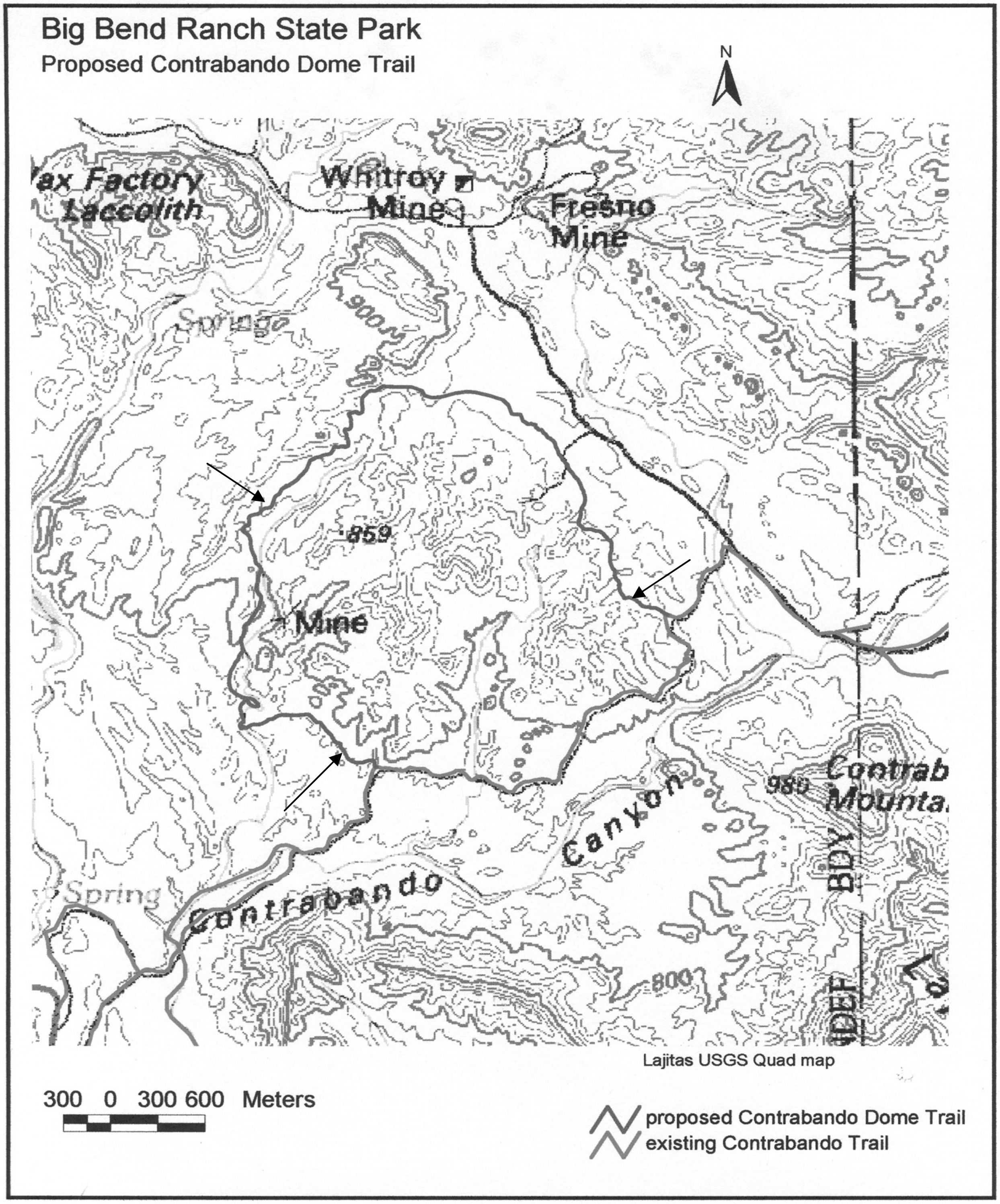

Figure 2. Proposed Contrabando Dome Trail route (indicated by arrows), Big Bend Ranch State Park.

The walkover resulted in the identification of three archeological sites and one location, a mining prospect without any structural features and only a few associated cans, which was documented as an isolated find. Two of the archeological sites are historic, including a cinnabar mining prospect and a cinnabar mine. The remaining archeological site is a chipped stone quarry site of unknown prehistoric age.

Environmental Setting

Landscape

Big Bend Ranch State Park covers approximately 300,000 acres (121,500 hectares) or about 468 square miles (1,216.8 square kilometers) in the Trans-Pecos Region of Texas in Brewster and Presidio counties. Six physiographic zones have been identified within the park, and have proven useful not only in describing the landscape of the park, but also in describing archeological survey areas in the park. The present project corridor is located within the Fresno Canyon—Contrabando lowlands physiographic zone (TPWD 1994:11; Ing et al. 1996:9-11).

Fresno and Contrabando canyons are situated in the eastern part of BBRSP. Fresno Canyon separates the Solitario from the eastern edge of the dissected Bofecillos Volcano, and was used as a transportation corridor by prehistoric and early historic travelers through the rugged terrain of the area. The Marfa-Lajitas road passed through this canyon, and was a main supply route for the ranching and mining development of the area until the early part of the 20th century (Deal 1976:17). Contrabando Canyon, as the name implies, was used historically as a route for smuggling illegal goods from Mexico into the United States. Ranching, candelilla wax processing, and cinnabar mining were important activities in the Contrabando area.

Geology

Because of the interesting geological history and mining interest in the Big Bend region, a number of detailed geological investigations, reports, books, and maps document the geology of the region, including BBRSP. Generally speaking, however, the landscape of the park reflects over 500 million years of geologic history, marked by remnants of a former mountain range (the Quachitas), ancient seabeds, lava flows, extinct volcanoes and a rifted crust. Today, plateaus, mesas, steep-walled canyons, and more recent mountains (the Bofecillos Mountains and the Cienega Mountains) dominate the vistas of the state park. The park's most famous geologic feature, the Solitario, is a collapsed volcanic dome that measures eight miles across and has some of the largest and most symmetrical molten-rock domes known in the world.

Soils

According to the Soil Conservation Service, the present project area is included within the Lajitas-Rock Outcrop-Chamberino soil association. Definitions for these soil types are not yet available, but they can be described as lacking water holding capacity and containing minimal organic matter.

Climate

The northeastern portion of the Chihuahuan biotic province, within which BBRSP is located, is an arid region characterized by an average annual precipitation of 25-37 centimeters (10-12 inches) - much of which falls during the monsoonal season from July to October - and an evaporation rate of 230 centimeters (90 inches). Weather records from nearby Presidio, Texas indicate mean temperatures of 49.8 degrees F in January and 86.5 degrees F in July for that area. Temperatures in the Bofecillos uplands, which are about 609 meters (2,000 feet) higher in elevation than Presidio, probably average slightly lower. Nonetheless, the entire area can be characterized as a hot desert. Summer daytime temperatures often exceed 100 degrees F, followed by cool nights in the 60s. Winters are much more temperate, with warm days and cool to cold nights. Light snow occurs almost every winter, but such weather seldom persists for more than a few hours.

Flora and Fauna

Big Bend Ranch State Park is situated in the Chihuahuan biological province (Blair 1950). More specifically, the park is within the Trans-Pecos Vegetational Area (Hatch et al. 1990). The flora and fauna of the area are represented by a wide range of species due to the high diversity present in the northern Chihuahuan Desert. The natural plant communities within the park include mixed desert scrub, desert grassland, riparian, and open juniper woodland. The mixed desert scrub is by far the most widespread of these communities, and is included within the present project area. The dominant plant in the area is creosote bush, although many other species are present. Other species include lechuguilla, yucca, ocotillo, candelilla, and various opuntias.

Like the flora of the park, the fauna of the area are also varied, especially the mammalian and herpeto (amphibian and reptile) species. There have been 48 species of mammals documented in the park, including 16 species of bats. The herpeto fauna includes at least 30 species of snakes alone. There have also been over 300 species of birds reported from the park and the immediate vicinity. Evidence from archeological sites on the state property indicates that deer, rabbit, rodents, turtles, lizards, and snakes were utilized by Native American inhabitants of the area (Beene 1994).

Culture History

Paleoindian Tradition

The Paleoindian Tradition, the earliest defined cultural tradition in North America, appears to extend from approximately 12,000 to 8000 years before present (B.P.) in the Trans-Pecos region of west Texas (Mallouf 1993:7; Miller and Kenmotsu 2004:212); however, this date range is subject to revision as more chronometric dates become available from contexts that have good association with Paleoindian material. This tradition is divided into Early and Late Paleoindian stages based on projectile point forms. Early Paleoindian artifact assemblages (12,000-9400 B.P.) include fluted style projectile points, while Late Paleoindian (9400-8000 B.P.) assemblages include unfluted lanceolate points, typically with collateral flaking and basal/shoulder grinding. Further subdivision of the Paleoindian Tradition into the Clovis complex (ca. 10,000-12,000 B.P.), Folsom complex (ca. 10,000-9400 B.P.), and the Plano/Cody complexes (ca. 9400-8000 B.P.) has been suggested based on functional and stylistic differences in the tool kits of these groups (Miller and Kenmotsu 2004:212). These differences in artifact traits may reflect changing hunting and settlement adaptations.

Although these early inhabitants of the New World were probably subsistence generalists (Sollberger and Hester 1972:326; Stanford 1991; Collins 1995:381; Brown and Anthony 2000:81), Paleoindians were at least somewhat dependent upon hunting the megafauna of the Late Wisconsinan glacial age, such as Columbian mammoth (*Mammuthus columbi*) and giant bison (*Bison antiquus*) (Suhm, et al. 1954:16; Dibble and Lorraine 1968; Judge 1973; Weir 1976:120; Frison 1978). These people traveled in small nomadic bands, camping in areas where good lithic materials could be procured for tool manufacture and where permanent water sources attracted game (Mallouf 2000:6).

The environment in what is now the northern Chihuahuan Desert during much of the Paleoindian period was cooler and wetter than today, and forest and woodland species flourished at much lower elevations than at present (Ing et al. 1996:25). Packrat midden research has indicated that perhaps as recently as 11,000 years ago, xeric woodlands with pinyon (*Pinus cembroides* var. *remota*) were located as low as 600 meters elevation (1,968 feet AMSL) in Maravillas Canyon (Van Devender et al. 1978:298).

While evidence of the earliest Paleoindians - the Clovis - is known from the Lake Amistad area near Del Rio, Texas (Greer 1968), and possibly from the Chispa site, located within a north-south trending basin (Lobo Valley) near Van Horn, Texas (Lindsay 1969), it appears to be almost absent from the archeological record of the Big Bend area. Campbell (1970) reported finding only one Clovis point from over 600 sites recorded in Big Bend National Park. No Clovis material has been recovered from Big Bend Ranch State Park.

Evidence of the subsequent Folsom culture, which dates to about 10,000 B.P., is somewhat more prevalent in the region (Suhm et al. 1962; Lindsay 1969). Excavations at the aforementioned Chispa site produced 108 Folsom points (Lindsay 1969; Seebach 2005). A possible unfinished Folsom point was recovered from the surface of a lithic scatter during the Natural Area Survey of the Chinati Mountains in the mid-1970s (Greer et al. 1980:22). More recently, two Folsom point fragments were discovered in an oak savanna setting near Fort Davis, Texas (Center for Big Bend Studies 2000:14; Mallouf 2000:6; Dennis J. Miller, personal communication May 3, 2000). A few Folsom points have also been observed in private collections on both sides of the Rio Grande in the Big Bend region (Aveleyra 1964:388; Krone 1975:15).

Marmaduke and Whitsett (1975) discovered Late Paleoindian projectile points, including Meserve, Plainview and Golondrina-Barber points, at two sites in the Davis Mountains, Jeff Davis County, during their survey of the Mount Livermore and Sawtooth Mountain area. In addition to diagnostic projectile points, numerous pieces of chipped stone debitage and debris were also recovered from these sites. At least one Angostura-like dart point and four Plainview points have been found in Big Bend National Park (Campbell 1970; Mallouf and Wulfkuhle 1989). And, one Angostura dart point and several Golondrina-Barber dart points have been recovered from Big Bend Ranch State Park (Ing et al. 1996:26; Roberts, in progress).

Archaic Tradition

The Archaic Tradition spans a period from about 8000 to 1200 B.P., and has been divided into the Early (8000-5000 B.P.), Middle (5000-2500 B.P.) and Late (2500-1000 B.P.).

Archaic periods are based on gradual changes in settlement patterns, population sizes, and technology. In addition to Early, Middle and Late Archaic periods, a Transitional Archaic period has been defined by some researchers in west Texas to identify the lengthy period of gradual change between the Late Archaic and Late Prehistoric periods.

In general, the Archaic Tradition is one in which specialized technologies were utilized in more diverse environmental settings than the previous Paleoindian Tradition (Willey and Phillips 1958:107; Jennings 1974). This is reflected in the variety of projectile point styles and other tool types produced during this period, and the distribution of Archaic sites across the landscape (cf. Weir 1976; Story 1985). Archaic groups depended on the seasonal or fortuitous availability of potential food sources from a wide range of environmental niches (Marmaduke and Whitsett 1975; Mallouf 1985:115). There was a growing dependence on the gathering of plant materials and less reliance on the hunting of large game animals (cf. Prewitt 1981:74). While Archaic populations remained highly mobile, there was a gradual trend toward decreasing group mobility (Charles 1994:34). Site sizes and distributions during this time suggest a gradual increase in Archaic populations, which may have resulted in increasingly restricted territorial ranges (Mallouf 1985:115; Wulfkuhle 1993:4-5).

With the possible exception of the last 400 to 500 years of the Archaic period, climatic data from this period reveals a gradual, sometimes interrupted, transition from the moister conditions of the previous Paleoindian period to more arid conditions. The period between 6600 and 6000 B.P., known as the Altithermal climatic period, was particularly dry. Although the Archaic period is generally well represented in west Texas (Cloud and Sanchez 1993: 8), there are strong indications that some areas of the region were virtually abandoned for much of the Altithermal period (Meltzer 1991: 261).

Mallouf (1981) suggests that the last 500 years of the Archaic Tradition were characterized by an interlude of increased moisture and widespread stream erosion; however, Charles (1994:218) proposes that climatic conditions across the Trans-Pecos were similar to those of today by 1400 B.P. Nonetheless, the woodlands in the west Texas region appear to have maintained a gradual retreat to higher elevations during the Archaic period, allowing for the gradual establishment of desert biomes (Wells 1977; Mallouf 1981; Van Devender 1990).

The Early Archaic period remains largely undefined across the Trans-Pecos. Meserve projectile points have been considered by some researchers in the Trans-Pecos to be transitional between the Late Paleoindian and Early Archaic periods (Suhm et al. 1962), and other researchers have suggested that Bulverde points are diagnostic of the later half of the Early Archaic period (Charles 1994:34). Nonetheless, recognition of Early Archaic components in the Trans-Pecos are based almost entirely upon cross-correlation of regional projectile point sequences with those of the Lower-Pecos and Central Texas regions (Mallouf 1985:101). As a result, the presence of corner-notched and expanding-stemmed dart point styles, such as La Jita, Uvalde, Baker, Martindale, Bandy, or Early Barbed projectile points, and later, shouldered styles such as Pandale, Zorra, and Bulverde, is generally considered indicative of Early Archaic occupations in the Trans-Pecos (Sanchez 1999:32).

Almost nothing is known of other tool forms associated with the Early Archaic in the region. Evidence from Reagan Canyon, Brewster County, for the latter part of the Early Archaic suggests an association of concave-base knives and various scraping implements with Pandale points (Kelley 1963). In addition, unifacial and bifacial Clear Fork gouges may be associated with Early Archaic occupation in the Big Bend area (Campbell 1970). In the Lower-Pecos, Early Archaic components are characterized by the appearance of basketry (Andrews and Adovasio 1980), cordage and sandals (Shafer and Bryant 1977:63), and painted pebbles (Parsons 1965:16).

A few Early Archaic Martindale and Pandale points have been recovered from sites within Big Bend Ranch State Park (Ing et al. 1996:104; Sanchez 1999:59). Additional Early Archaic sites have been identified within the the nearby Chinati Mountains (Greer et al. 1980), Big Bend National Park (Campbell 1970), the Lower Pecos region (Shafer and Bryant 1977), and adjacent parts of northern Mexico (Taylor 1966). Early Archaic site types include rockshelters, caves, hearth fields, middens, and lithic scatters. Sites from this period tend to occur in the lower basin and foothill zones (Sanchez 1999:33). Early Archaic inhabitants in the present state park area appear to have especially favored creek-side locales on gravel terraces (Ing et al. 1996:171).

Compared to the Early Archaic period, the Middle Archaic period is somewhat better represented in the region. In fact, the increased density of sites across a wider range of environments during this time, and an increase in new tool types, suggests that there was a substantial growth in population (Mallouf 1985:109, 112; Sanchez 1999:33). Middle Archaic sites, identified by the presence of Langtry, Val Verde, Shumla, Marcos, Almagre, Williams, Conejo, Lange, Marshall, and/or Tortugas projectile points, include burned rock middens, burned rock clusters, hearthfields, lithic scatters, quarries, rockshelters, caves and pictographs. Some dry rockshelters and caves in the Trans-Pecos have been especially productive of Middle Archaic cultural material, revealing basketry, sandals, cordage, matting, netting, pointed sticks, fending sticks, dart foreshafts, stone and shell beads, antler flaking tools, grinding slabs, abraders, bone awls, manos, retouched flakes, scraping implements, cores, and hammerstones (Mallouf 1985:109). Middle Archaic sites are located across a wide variety of landforms, including high mountain saddles, ridgetops, and canyon bottom terraces (Marmaduke and Whitsett 1975; Katz 1978; Boisvert 1980; Mallouf 1985).

Late Archaic sites appear to be much more prevalent over the entire Trans-Pecos than do earlier sites. As a result, Late Archaic sites have been the focus of more research. Late Archaic site types are similar to those of the Middle Archaic period. Material from these sites can include side- and endscrapers, perforators, a variety of manos and metates, hammerstones, abraders, bone awls, pointed sticks, split-yucca fireboards, fire drills, atlatls, pouches and blankets of rabbit fur and sewed skins, throwing sticks, wooden tongs and scoops, basketry, matting, sandals, gourd vessels, and other fiber items (Mallouf 1985:117). Late Archaic diagnostics include Ensor, Palmillas, Paisano, Frio, Edgewood, Ellis and Darl dart points. Central Texas dart point styles, including Marshall and Montell points, began to appear in the Trans-Pecos during the late Middle Archaic or early Late Archaic period (Mallouf 1985:116; Carpenter et al. 1996:89). Migratory bison hunters probably introduced these point types into the Trans-Pecos as they followed bison herds into the area from Central Texas (Mallouf 1985:116; Hester 1988:59-61; Carpenter et al. 1996:89). Bison herds may have been drawn into the Trans-Pecos by improving grazing conditions brought about by an increase in moisture during the first half of the Late Archaic period (Mallouf 1985:116).

Kelley, Campbell, and Lehmer (1940:27-29) termed the Late Archaic period the Chisos focus (now 'phase') in the Big Bend area. Chisos phase sites are characterized by the presence of ring middens, distinctive side- and corner-notched dart points, and basketry and other perishable items found in dry shelters. This period reflects the culmination of a subsistence economy keenly adapted to both hunting and gathering, including the intense use of desert succulents (Mallouf 1985; Ing et al. 1996:26).

Technological innovations such as the development of the bow and arrow and pottery are used to mark the beginning of the Late Prehistoric Tradition in the eastern Trans-Pecos, but the change from a Late Archaic to Late Prehistoric way of life was actually very gradual in the eastern Trans-Pecos (as opposed to hunter-gatherer groups in the western Trans-Pecos that quickly adopted the material culture and ideologies of nearby Jornada Mogollon agriculturalists [Mallouf 1985:127]) and there was considerable overlap between the two cultural traditions. As previously indicated, the term Transitional Archaic is used by some researchers in west Texas to identify this period of gradual change (cf. Katz and Katz 1974; P. Katz 1978; Mallouf 1985:28, 34). Hester (1988:61) considers Ensor, Figueroa, Frio, and Paisano points to be diagnostic of the Transitional Archaic period in the region. No Transitional Archaic sites have been documented as such within Big Bend Ranch State Park.

Late Prehistoric Tradition

The Late Prehistoric Tradition extended from about 1200 to 470 B.P. in the Trans-Pecos. This cultural tradition is characterized by the innovation of the bow and arrow across all of the Trans-Pecos, and the manufacture of pottery, the development of agriculture, and the establishment of villages in parts of the Trans-Pecos that were conducive to agricultural practices (Ing et al 1996:27; Sanchez 1999:36). These areas included the western Trans-Pecos, northern Mexico, and various small sections of land throughout the region (Beene 1994:26). One of these areas, known historically as “La Junta de los Rios”, is located at the confluence of the Rio Conchos and the Rio Grande, near present-day Presidio, Texas. Late Prehistoric cultures in this area were defined by archeologists in the first half of the twentieth century as part of the Bravo Valley Aspect, a cultural complex identified by the presence of permanent houses and villages, agriculture, pottery, and a variety of shell, bone, and stone artifacts. Most regional archeologists have since abandoned the Bravo Valley Aspect cultural concept (Ing et al. 1996:26), but this cultural phenomenon has been subdivided into three foci (Kelley et al. 1940) or phases (Mallouf 1992) as they are now called. These subdivisions include the Livermore phase (1200? – 800? B.P.), the La Junta phase (800 – 600 B.P.), and the Concepcion phase (600 – 320 B.P.).

Livermore sites, identified by the presence of distinctive Livermore arrowpoints, are found throughout most of the Trans-Pecos, and far northern Chihuahua and Coahuila, Mexico. The densest occurrences of these sites, however, occur in the Davis Mountains and in the Lobo Valley near Van Horn, Texas (Mallouf 1992). Dates associated with the Concepcion phase, which remains poorly defined, overlap both the Late Prehistoric and the Historic periods. The establishment of missions at La Junta in 1683 marked the formal end of the Concepcion phase and the beginning of the historic Conchos phase (described in following paragraphs) (Ohl and Cloud 2001:33). The La Junta phase is characterized by rectangular pithouses. As described by Mallouf (1992), La Junta phase inhabitants were indigenous hunters and gatherers who adopted a semisedentary lifestyle but never fully made the transition to an agricultural-based economy.

One Late Prehistoric/Historic cultural manifestation that has been more recently defined is the Cielo complex (ca. A.D. 1330 to 1680), a nomadic culture in the Big Bend region that was coeval with the Indians of La Junta and maintained a symbiotic trade relationship with these semi-sedentary groups (Ing et al. 1996:27). As described by Ing et al. (1996:20), base camps and villages of the Cielo complex are often situated on elevated landforms. Most base camps consist of from two to nine circular to oval stacked-stone enclosures with diameters of 2.7 to 3.4 meters (8.9 to 11.2 feet). In the La Junta area, Cielo complex villages may contain 50 or more of these enclosures. Other cultural features that can be associated with the enclosures include small hearths, ash pits, refuse middens, stone cairns, linear stone alignments, stone-lined cysts, stone "storage" platforms, incipient ring middens, bedrock mortars and cupules, and possible burials. Artifact assemblages may include Perdiz, basal-notched, and a few side-notched arrowpoints, arrowpoint preforms, flake drills, unifacial scrapers, beveled knives, conical cores, manos and metates, bone rasps, oval pestles, bone and stone beads, small turquoise beads, Olivella sp. shell beads, and a variety of expedient lithic tools. Pottery is not found on Cielo sites (Mallouf 1992, 1995).

Late Prehistoric sites in the region are often situated on elevated and unusual landforms, foothills, or in rockshelters (Mallouf 1985:143), and are more numerous than the preceding periods. The increase in the number of sites during this time may reflect a continued increase in population from the previous Archaic period, or increasing mobility among nomadic groups (Mallouf 1985). Nonetheless, the Late Prehistoric Tradition remained largely the same as the preceding Archaic Tradition. As summarized by Mallouf (1985:150), "only those aspects of sedentary existence which enhanced an already entrenched and successful nomadic hunting-gathering adaptation were actually incorporated." This cultural continuum between Archaic and Late Prehistoric occupations is reflected in the artifact assemblages recovered from dry rockshelters throughout the Trans-Pecos. Shared artifact types include basketry, matting, sandals, throwing sticks, rabbit fur robes, cordage, netting, and various other items (Sanchez 1999:36).

Historic Period

In 1535, the shipwrecked Spaniard Alvaro Nuñez Cabeza de Vaca, his Moorish companion Estebanico and a band of pack traders were the first non-native people to reach La Junta. Subsequent Spanish entradas, including the Rodriguez Expedition of 1581 and the Espejo Expedition of 1582-1583, passed through the area, but it was not until 1683 that Spanish missions were established at La Junta (Shipman, O. L., publisher 1938).

As discussed, the establishment of missions at La Junta marked the formal end of the Concepcion phase and the beginning of the Conchos phase among the indigenous population of the La Junta area. The Conchos phase, which lasted until 1760 (Kelley 1986:84), "represents the period of Spanish acculturation of the Indian villages," (Kelley et al. 1940:39). During this time, the rectangular pithouses discussed for the Late Prehistoric La Junta phase were still being constructed and lithic assemblages remained largely unchanged from that time. The Conchos phase, however, is easily distinguished from Late Prehistoric occupations by the presence of European or Mexican artifacts in the archeological record (Kelley et al. 1940:36-37). Native American pottery types from Conchos phase sites include Conchos Red-on-Brown, Pulicos Red-on-Brown, and occasionally Capote Red-on-Brown, Chinati Plain, Chinati Striated-Neck, and Chinati Neck-Banded (Kelley et al. 1940:37; Kelley 1986:85).

Accounts written by early Spanish explorers and nineteenth century travelers and settlers provide evidence of several Native American groups in the Big Bend, including the Jumano, Apache, Comanche, Cibola, Pescado, Venado, Chinarra, Pulique, Patarabuey, Cholome, and Suma tribes. While those tribes that were situated along the Rio Grande had become at least semi-sedentary, others (i.e. the Apache, Comanche, and possibly the Jumano) were more nomadic. Little is known about the eventual disappearance or assimilation of many of the early historic tribes in the region, but it appears that by the 1720s the Jumano had been assimilated by one or more of the Apache groups and were living and raiding with the Apaches (Newcomb 1961:233; Cloud and Sanchez 1993: 10;

Hickerson 1994:202). Tunnell and Madrid (1992:77) suggest that “the remaining Indians of the villages along the Rio Grande probably were assimilated into the larger Mexican population along the river.”

The nomadic Apaches and Comanches were far ranging in their travels, especially after acquisition of horses that were reintroduced to North America with the arrival of the Spanish. In the early 1700s, both the Apache and Comanche traversed the Big Bend country to conduct raids on Spanish settlers and mission Indians at La Junta and into Mexico (Tunnell and Madrid 1992:77; Ohl and Cloud 2001:34). Archeological sites attributable to these nomadic tribes are difficult to identify, but generally consist of small ephemeral lithic scatters, oftentimes with no diagnostic items. When found, Garza/Soto arrowpoints mark the intrusion of Plains Apache into west Texas about 1650 A.D. Occasionally, arrowpoints are found that have been fashioned out of metal barrel hoops or the bottoms of glass bottles that were brought into the area by non-indigenous people in the nineteenth century.

To try to prevent these raids, the Spanish constructed a series of presidios, including Presidio del Norte in the vicinity of present-day Presidio, Texas. Presidio del Norte was constructed in 1759-1760 (Jones 1991:49; Kelley 1992:xv). Construction of the presidios brought an end to the mission period and to the Conchos phase.

The following Alamito phase represents changes to the Indian settlements of La Junta through both ethnic admixture and acculturation that resulted after the construction of the presidios. House styles and pottery types changed only slightly from the previous phase, but European artifacts, such as modern chinaware, glass beads, metal cartridge cases, buttons, and other materials are common on Alamito phase sites. Economic pursuits during this phase included agriculture, fishing, and the gathering of wild foodstuffs (Kelley et al. 1940:37-38).

In 1821, Mexico gained its independence from Spain. After independence Mexico opened the country to foreigners, facilitating an extensive trade with the United States. While Apaches and Comanches initially also participated in this trade, they soon turned back to raiding Hispanic ranches and missions for food, cattle, and horses (Ing et al. 1996:40).

Texas became independent from Mexico in 1836, but the Big Bend region remained under Mexican control, and title to the land in the region continued under Mexican authority (Miller 1972:9). Indian hostilities continued, and by 1838 Hispanic settlements in the northern frontier were being abandoned (Griffen 1988:271-272).

Despite the threat of Indian attacks, there was still great interest by Mexican and American entrepreneurs to develop trade between the United States and Mexico. In 1839, an expedition led by Henry Connelly, a Missouri physician and prominent Chihuahua merchant, followed an old trail between the port town of Indianola, Texas (through San Antonio) and Chihuahua City, Mexico, seeking to open a shorter trade route than the circuitous route through St. Louis, Santa Fe, and El Paso (Shipman, O. L., publisher 1938; Ing et al. 1996:42; Texas State Historical Association 1996a:76-77; Ohl and Cloud 2001:34-35). Connelly's route, commonly referred to as the Chihuahuan Trail, followed Alamito Creek through present-day Presidio County, crossing the panhandle of what is now Big Bend Ranch State Park.

In 1845, Texas became one of the United States, and war was declared on Mexico later that same year. On February 2, 1848, the Mexican government conceded defeat and signed the Treaty of Guadalupe Hidalgo. This treaty established the Rio Grande as the boundary between the United States and Mexico along the southern Texas border.

The cessation of hostilities between Mexico and the United States saw a marked increase in the number of Americans moving into the Big Bend region. In 1848, Ben Leaton and his family moved to Fort Leaton, a large fortified adobe residential complex, where they operated a trading post until Ben Leaton's death around 1851. Other Americans, as well as Mexicans, moved into the region, establishing large ranches and farms, and facilitating the on-going trade through the area. In 1854, Fort Davis was established to protect settlers, traders, and travelers passing through the area from the Apache and Comanche who were continuing to conduct raids (Wooster 1990:32, 43). Except for a period of abandonment during and immediately following the Civil War, Fort Davis functioned in this capacity until after the last of the hostile Indians were killed or driven from west Texas.

After the Civil War ended in 1865, trade increased considerably in the Big Bend region. Presidio's importance as a port of trade peaked during the 1870s. As late as 1879 Presidio collected $52,899 in custom dues and El Paso collected only $797 (Applegate and Hanselka n.d.:60). In 1875, however, a hurricane wrecked the docks of Indianola; and, railroads connected San Antonio with the Gulf Coast in 1877, extending to El Paso in 1883, and joining El Paso with Mexico City in 1884. These developments ended any usefulness of the Chihuahuan Trail (Applegate and Hanselka n.d.:60), and Presidio's heyday as a major port of trade was over. Years later, in 1930, the tracks of the Kansas City, Mexico and Orient Railroad would follow the Chihuahuan Trail to Presidio, but would still fail to lift Presidio to its former glory as a port of trade.

Despite Presidio's decline as a port of trade, settlement of the Big Bend region by American ranchers and homesteaders accelerated after 1880, when the last of the Apaches led by Victorio were killed or driven from west Texas (Tunnell and Madrid 1992:77). Many of the historic ranches within present-day Big Bend Ranch State Park were established in the late nineteenth century. Kelley, Campbell, and Lehmer (1940:38) refer to the period represented by the ruins of Anglo-American and Mexican-American ranches, farms, and other undertakings in the region, and the associated artifact assemblages, as the Presidio phase.

In the 1910s the brothers Woodworth, Gus, and Gallie Bogel began buying and consolidating small ranches that had been established in the vicinity of the present park. After going bankrupt during the Great Depression, the Bogel's land holdings were in turn purchased by Mannie and Edwin Fowlkes, who continued the process of land consolidation initiated by the Bogels (Texas State Historical Association 1996b:526). When ownership of the Big Bend Ranch passed from the Fowlkes brothers in July, 1958 to Len G. (Tuffy) McCormick, it contained nearly 320,000 acres under fence (but not all under one ownership). The ranch configuration remained essentially unchanged through three subsequent successive owners. In July 1988, the Texas Parks and Wildlife Department acquired controlling interest of Big Bend Ranch from Robert O. Anderson and Walter Mischer with the fee purchase of 212,528 acres, along with 3,248 acres from Arrow Investment (TPWD 1994:6). Subsequent acquisitions have brought the total acreage of BBRSP to nearly 300,000 acres.

While ranching and farming activities are reflected in many of the historic archeological sites and structures within the present Big Bend Ranch State Park, other economic endeavors are also represented. In the eastern portion of the the park, one can see abandoned quicksilver mines and prospects, and the crude stone huts of the former miners. Reports of the presence of quicksilver in the Big Bend region circulated for over 30 years before the first serious exploration for cinnabar was undertaken in 1884. In that year, after reportedly being shown a specimen by Juan Acista, Ignatz Kleinmann, operator of a general store in Presidio, staked a claim near what became known as California Hill near Terlingua (Tyler 1975:138). Kleinmann failed to find sufficient quantities of quicksilver to make the mine profitable, but subsequent mines in the area did very well. In 1896, the newly established Marfa and Mariposa Mining Company took up a claim, and extracted over 9,000 flasks of mercury before disbanding in 1903 (Tyler 1975:139). Quicksilver mining in the area enjoyed a short boom during World War I, but gradually played out after the war. Most production ended by World War II (Tyler 1975:141).

The remains of wax-rendering operations can also be seen in the eastern portion of the Park. Wax was rendered from the native candelilla plants. Some candellila wax production still goes on today, but most of the wax-rendering sites on the Park probably date to the first half of the nineteenth century. Several wax factories were established in the Big Bend prior to World War I (Tyler 1975:147).

Previous Archeological Investigations

Archeological investigations within what is now Big Bend Ranch State Park began in the early 1970s, and have consisted mostly of selective, short-term surveys and reconnaissance-level investigations to assess archeological resources prior to land acquisition or development within the property. The earliest formal archeological work was a cursory archeological survey conducted by the General Land Office in May 1973. This survey, which included the Solitario and upper Fresno Canyon, resulted in the discovery of five sites within the Solitario and ten sites in upper Fresno Canyon. Site types included rockshelters, open campsites, and historic ranches (Ing et al. 1996:17).

The first extensive archeological investigations in the future State Park were conducted through the Office of the State Archeologist in 1975 as part of the interdisciplinary University of Texas Natural Area Surveys. Within the area of the Park, these Natural Area Surveys focused on the Solitario (Hudson 1976a), Fresno Canyon (Hudson 1976b), Colorado Canyon (Baskin 1976a), and the Bofecillos Mountains (Baskin 1976b). The surveys included assessments of the biological, geological, and archeological resources of these areas.

Within the Fresno Canyon—Contrabando lowlands physiographic zone, the Natural Area Survey of Fresno Canyon documented 15 open campsites and seven rockshelters. Pictographs, including depictions of horses, were observed in three of the rockshelters. No diagnostic artifacts were recovered from any of the archeological sites recorded during the Natural Area Survey of Fresno Canyon. In addition to the obvious surface collecting that had occurred on the sites in this area, subsurface disturbances were evident at two sites (Hudson 1976b).

Since the TPWD purchased the Big Bend Ranch property in 1988, several survey and reconnaissance level investigations have been conducted to minimize the impact of various park development projects on archeological sites, and to enhance our knowledge of the culture history of the area (cf. Sanchez 1999; Ohl and Cloud 2001; Gibbs 2004). As of September 2006, a total of 442 archeological sites had been documented within the park.

Diagnostic artifacts recovered from the archeological sites recorded within the Park span approximately the last 10,000 years, from Late Paleoindian period to Historic times; only the Early Paleoindian period is not represented within the park. Prehistoric site types include open campsites, rockshelters, quarries, lithic scatters, Late Prehistoric Cielo complex sites, rock imagery sites, and special-use or ritual sites. About 90 of the recorded archeological sites on the property contain historic components, most of which are associated with former ranching, mining, or candelilla wax processing activities.

Only two professional archeological excavations have been undertaken on sites within the Park. In 1989, three archeologists with the TPWD conducted test excavations at the Grassy Banks site (41PS443), a location between FM 170 (River Road) and the Rio Grande that was being considered for use as a designated overnight campsite at that time. These archeologists soon learned that they were mistakenly working on what was then General Land Office (GLO) property; however, the land was purchased by the TPWD a short time after the site testing was completed. Testing on 41PS443 consisted of ten backhoe trenches, ranging in length from 3.8 to 6.0 meters (12.5 – 19.7 feet), excavated into the high sandy alluvial terrace on which the site was partially situated. In addition, a single 1 x 1 meter (3.3 x 3.3 feet) test unit was hand-excavated in order to cross-section a small hearth feature that was evident on the surface. Other hearths and lithic scatters were apparent on the surface of 41PS443, but the subsurface excavations revealed only minimal cultural material (Ing et al. 1996:219-220).

Las Cuevas Amarillas (41PS201), a large prehistoric camp, was the subject of test excavations conducted by Debra Beene, a University of Texas graduate student, in 1991 and 1992 (Beene 1994). The site, located near a large spring in the Bofecillos uplands, covers approximately 59 acres and includes five rockshelters, some of which include pictographs, and ten midden areas. Beene tested seven of the middens. Material recovered during the excavations indicated that humans began to occupy the Cuevas Amarillas site on at least a semi-regular basis about 1600 years ago, during the Late Archaic period (isolated Middle Archaic projectile points indicate that Native Americans may have passed through the area at an earlier date, but did not spend any length of time on the site). Occupation of the site intensified during the following Late Prehistoric period, from about 1100 to 900 years ago. The presence of prehistoric pottery, including Casas Grande Corrugated, El Paso Bi-Chrome or Polychrome, and Chinati Scored sherds, as well as turquoise, Olivella shell, and obsidian, suggested a direct association between at least the Late Prehistoric inhabitants of the Cuevas Amarillas site and the early agricultural villages of La Junta de los Rios (vicinity of present-day Presidio, Texas and Ojinaga, Mexico).

Results And Recommendations Of Present Investigation

The present investigation of the proposed Contrabando Dome Trail resulted in the identification of three archeological sites and one location, a mining prospect without any structural features and only a few associated cans, which was documented as an isolated find. Two of the archeological sites are historic, including a cinnabar mining prospect and a cinnabar mine. The remaining archeological site is a chipped stone quarry site of unknown prehistoric age. In addition, two cinnibar mines, the Whitroy Mine and the Fresno Mine, are situated approximately three-quarters of a mile (1.2 kilometers) north-northeast of the closest point along the proposed Contrabando Dome Trail, and portions of these sites are visible from the trail corridor. The Fresno Mine, however, is located within a private inholding. And, many of the extant structures and artifacts associated with the Whitroy Mine, which was in production until the early 1970s, are less than 50 years of age and are not likely to draw the attention of most trail users. Furthermore, much of the cultural material associated with the mine is not easily transported. One exception is mercury flasks, a number of which were previously located at the Whitroy Mine. These flasks, which are popular among collectors, have been previously removed by park staff and are securely housed at the nearby Barton Warnock Environmental Education Center.

Brief summaries of the archeological sites and the isolated find, as well as recommendations for the proposed trail corridor are presented below:

***41PS955*:** This site is a 20th century cinnibar (i.e. quicksilver) mining prospect located within the Buena Suerte mining district of the Big Bend region. Cinnibar was first discovered at this location in about 1935 (Sharpe 1980:23). The Contrabando Dome prospect was diamond drilled from 1956 to 1957 as part of a Defense Minerals Exploration Administration (DMEA) project by the Big Bend Mining Company, but no significant mineralization was encountered at that time and no further exploration was undertaken (Sharpe 1980:24). Based on the distribution of cultural features and associated artifacts, this site measures approximately 280 meters north-south by 169 meters east-west. Features include at least one prospect opening, tailings, two limestone rock-lined machinery platforms, four limestone rock foundations (including one that marks a former privy), three probable forges, and the location of a former tent structure as evidenced by metal tent stakes still in place in the corners of this area. The prospect opening and associated tailings are located on an upland backslope, while the site infrastructure is situated primarily on bedrock benches and the side of an arroyo. The site is bisected by an undeveloped mining road that was associated with this prospect and mining site 41PS956 (discussed below). Historic artifacts are scattered across the site, but are especially prevalent in the vicinity of the aforementioned limestone foundations and forges. The artifact assemblage includes undecorated whiteware ceramics, late transfer print whiteware, whiteware with green annular decoration, embossed porcelain sherds, salt glazed earthenware, terra cotta pottery, clear bottle glass, brown bottle glass, tin cans including hole-in-top cans, wire nails, wire, corrugated metal, steel cable, iron plating, a spark plug, and a brass float for a water tank. Two large cull piles of chipped stone debitage, including a cull pile just outside the location of the former tent structure, were observed on the site. There is no prehistoric site component associated with 41PS955; it appears that the lithic artifacts were recovered by one or more of the miners from other locations and then brought onto this site. This site, or at least the features and artifacts associated with the infrastructure of the mining prospect at this location, will be obvious to the users of the proposed Contrabando Dome Trail. The terrain in the area would make rerouting the trail difficult, and new ground disturbance could foster further erosion of the area. Instead, it was recommended that interpretive wayside exhibit panels for this site be placed along the proposed trail (i.e. the existing mining road), and in trail brochures. This conforms to the strategy advocated by National Park Service personnel (Donald 2003) of explaining the historic context of sites to park visitors, which has been proven to reduce the incidence of vandalism. In addition to providing interpretive information, site 41PS955 will be monitored at least on a biannual basis, following the traditionally busier tourist seasons of spring and fall. The monitoring schedule, however, may be adjusted to coincide with the amount of use that the trail receives, as that information becomes known.

41PS956: This site is a 20th century cinnibar (i.e. quicksilver) mine located within the Buena Suerte mining district of the Big Bend region. As discussed for site 41PS955, cinnibar was first discovered at this location in about 1935 (Sharpe 1980:23). The Contrabando Dome prospect was diamond drilled from 1956 to 1957 as part of a Defense Minerals Exploration Administration (DMEA) project by the Big Bend Mining Company, but no significant mineralization was encountered at that time and no further exploration was undertaken (Sharpe 1980:24). Based on the distribution of cultural features and associated artifacts, the site area at 41PS956 measures approximately 140 meters north-south by 235 meters east-west. Features include at least one mine entrance (now gated), tailings, two limestone rock foundations, and three limestone rock ruins (including a probable privy). The remains of a large Ingersol-Rand diesel motor are also located on the site. The mine entrance and associated tailings are located on an upland backslope, while the building remnants are situated on bedrock benches. The site is bisected by an undeveloped mining road that was associated with this mine and prospecting site 41PS955 (previously discussed). Historic artifacts are scattered across the site, but are especially prevalent in the vicinity of the aforementioned limestone rock foundations and ruins. The artifact assemblage is much like that observed at 41PS955, and includes undecorated whiteware ceramics, late transfer print whiteware, whiteware with green annular decoration, embossed porcelain sherds, salt glazed earthenware, terra cotta pottery, clear bottle glass, brown bottle glass, tin cans, and corrugated metal. Like 41PS955, 41PS956 will also be obvious to the users of the proposed Contrabando Dome Trail. The terrain in the area would make rerouting the trail difficult, and new ground disturbance would foster further erosion of the area. Instead, was recommended that interpretive signage for this site be placed along the proposed trail (i.e. the existing mining road), and in trail brochures. As with 41PS955, the present site will be monitored at least on a biannual basis, following the traditionally busier tourist seasons of spring and fall. The monitoring schedule, however, may be adjusted to coincide with the amount of use that the trail receives.

41PS957: This prehistoric quarry site of unknown prehistoric age is located on the summit and shoulders of an upland hill, and measures approximately 61 meters north-south by 213 meters east-west based on the distribution of cultural material. Large chert-bearing cobbles on the hill summit were the focus of lithic procurement, probably over multiple episodes. This activity is reflected in the assemblage of tested cobbles, cores, primary and secondary decortication flakes, bifacial thinning flakes, and occasional expedient tools across the site. The nature of the artifact assemblage suggests that biface preforms or blanks were produced on the site for transport to other locations, where the preforms would have been finished into formal tools. A rock cairn of only four stacked rocks is located near the east end of the site and is the only cultural feature located on the site. This site is one of relatively few known prehistoric quarry sites on Big Bend Ranch State Park, but because this site includes only one minimal cultural feature and no temporally diagnostic artifacts, it is considered to have moderate to moderately low research potential. An existing undeveloped horse trail crosses the west end of the site, on an upland backslope. This trail constitutes part of the presently proposed Contrabando Dome Trail. Because the artifacts on this portion of 41PS957 are located on an actively eroding moderately to severely sloping landform, it is likely that these items are in secondary context. Because of this, the moderate to moderately low research potential of the site, and the desire to minimize new surface disturbance in establishing a trail system at Big Bend Ranch State Park, it was recommended that the existing undeveloped horse trail be utilized as part of the proposed Contrabando Dome Trail, without reroute. However, site 41PS957 will be monitored at least on a biannual basis, following the traditionally busier tourist seasons of spring and fall. The monitoring schedule, however, may be adjusted to coincide with the amount of use that the trail receives. If it appears that use of the proposed Contrabando Trail is causing undo impact to 41PS957, it is possible to reroute the trail around the east side of the site at that time.

Isolated Find: This isolated find consists of 3-4 bulldozer piles and about 6-8 tin cans adjacent to a bulldozed/bladed road, apparently associated with a nearby mining prospect. The prospect itself, however, is a considerable distance away from the proposed trail corridor and is not visible from the corridor. As a result, the prospect was not examined during the present walkover. The mining prospect may warrant recording as an archeological site at some future date, but the dozer piles and cans identified during the present project have little or no research potential and are not considered a significant component of the prospect. It was recommended that the trail route should proceed, as proposed, through this location.

The TPWD received concurrence with the aforementioned recommendations from the THC on April 7, 2006. Since that time, the TPWD contracted with the Center for Big Bend Studies, Sul Ross State University, Alpine, Texas, to complete an historic overview of the cinnabar prospect (41PS955) and cinnabar mine (41PS956) identified during the present project. The resulting overview was completed in August 2006, and information from this report was incorporated into the interpretive signage for these sites. Trail construction was completed in August 2006, and the interpretive signage for the trail was being fabricated as of January 2007.

Copies of this report and related archival documentation are curated at the TPWD Archeology Laboratory, Austin, and at the TPWD Region 1 Cultural Resource Coordinator's office, Fort Davis. No artifacts were collected during the present investigation.

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Brazos Bend State Park

Fort Bend County

January 4, 11, 12, and 26; July 10

Author: Christopher W. Ringstaff, Texas Parks and Wildlife Department (TPWD) Cultural Resource Coordinator - Region 2

Project Description: Park Road 72 Resurfacing and Americans with Disabilities Act (ADA) Improvements

Type of Investigation: Archeological Survey

Staff: Christopher Ringstaff

Introduction

The Texas Parks and Wildlife Department (TPWD) proposes to resurface PR 72 and PW 8110, expand parking areas and camping bays and install Americans with Disabilities Act (ADA) improvements at Brazos Bend State Park in Fort Bend County, Texas (Figure 1). The proposed project consists of resurfacing approximately 8.6 miles of PR 72 and PW 8110. The existing PR 72 Right of Way (ROW) is approximately 30 feet (9.1 meters) and the existing ROW of PW 8110 is 24 feet (7.3 meters) and no new ROW will be required for the road resurfacing. A total of 79 camping bay expansions are proposed for the existing bays at Red Buckeye (loop and shelter area) and Burr Oak camping areas. Parking lot expansions are proposed the 40 Acre Lake Picnic Area, Elm Lake Picnic Area, and Interpretive Center. The total acreage of the proposed roadway improvements and parking lot expansions is approximately 32.1 acres.

The proposed ADA improvements will consist of 32 ADA compliant picnic slabs and concrete sidewalks for access at Elm Lake, Hale Lake, and 40Acre Lake picnic areas and Burr Oak and Red Buckeye camping areas. Sidewalks will be built to grade and be 5 feet (1.5 meters) wide and picnic slabs will be 16 by 18 feet (4.9 by 5.5 meters) Funding for the project will come from the Texas Department of Transportation (TxDOT).

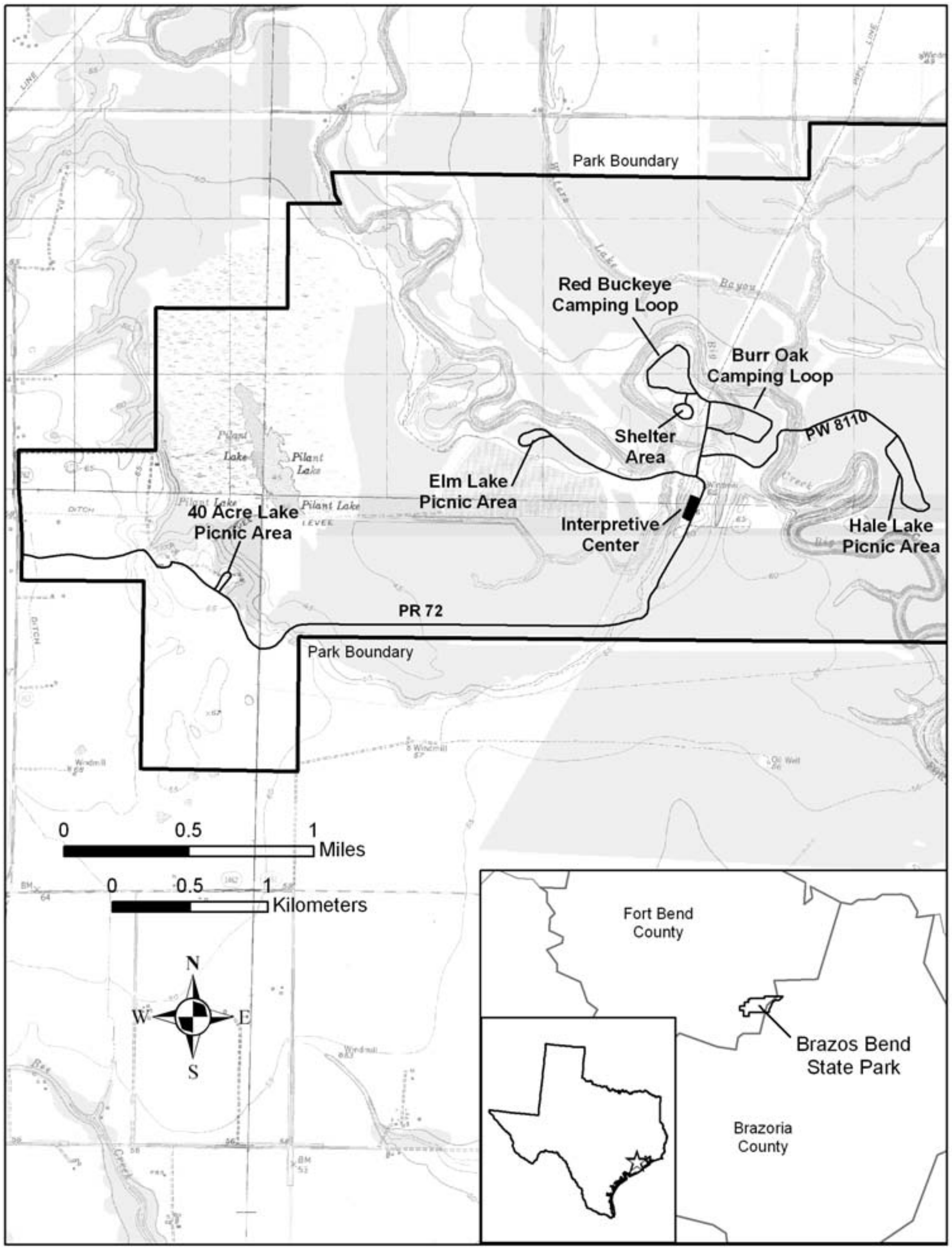

Figure 1. Project Location Map Showing Proposed Areas for TxDOT Improvements.

The total acreage of the proposed ADA improvements is approximately 2.4 acres. Fieldwork for the project was conducted on January 4, 11, 12, and 26 with subsequent monitoring on July 10. The project required 50.5 man-hours (6.3 man-days) in the field.

Environmental Setting

The climate of Fort Bend County is classified as humid-subtropical with hot summers and mild winters. The mean maximum temperature is 92.3 degrees Fahrenheit, while the average minimum temperature is 42.9 degrees Fahrenheit. The average annual rainfall is approximately 43.2 inches (110 centimeters) decreasing further inland. The first freeze usually occurs at the end of November and the last one takes place in February which allows for a 277-day growing season.

Brazos Bend State Park is located within the Austroriparian biotic province as defined by Blair (1950). Twenty-three species of mammals, 21 species of amphibians and reptiles, and 204 species of birds have been observed in the park (Texas Parks and Wildlife Department 1978:22) and include white-tailed deer (*Odocoileus virginianus*), opossum (*Didelphis virginiana*), armadillo (*Dasypus novemcictus*), stripped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), gray squirrel (*Sciurus carolinensis*), American alligator (*Alligator mississipiensis*), water moccasin (*Agkistrodon piscivorus*), hognose snake (*Heteron platyrhinos*), red-tailed hawk (*Buteo jamaicensis*), and great horned owl (*Bubo virginianus*). The park contains three distinct primary vegetation community types: upland coastal prairie, live-oak woodland, and bottomland mixed hardwood (Texas Parks and Wildlife Department 1978:18).

Fort Bend County is located in the West Gulf Coast Prairie physiographic province of the United States (Fenneman 1938). The bedrock geology of the West Gulf Coastal Plain consists of a series of stacked and tilted beds that dip and become progressively younger eastward toward the gulf. Within the park, the Geology consists of Quaternary alluvium and Beaumont formation (Fisher 1982). Soils in the park consist of flood plain soils of the Miller-Norwood-Pledger association made up of clay and clay loams formed in alluvium on level to nearly level surfaces (Mowery et al 1960).

Culture History

The prehistoric cultural sequence of the upper Texas coast is divided into three periods: Paleoindian, Archaic, and Ceramic. The Paleoindian period dates to the early Holocene, about 12,000 to 9000 B.P. (Aten 1983:141, 144-152). Sea level was much lower than today, and the coastline of the Gulf of Mexico was 30-40 km seaward of its present location (Aten 1983:117, 146). Few habitation sites have been dated to this period, but isolated Paleoindian projectile points have been found on the upper Texas coast in surficial or disturbed contexts (Aten et al. 1976:31, 56; Hester 1980:4; Patterson 1980:6). Most of the sites dating to this period may lie offshore (e.g., Aten and Good 1984), be deeply buried in the terraces of major streams, or have been obliterated by Holocene erosion (Hester 1980:7-8). Near the end of the Paleoindian period, extinction or dislocation of megafauna precipitated a shift toward a broad-based subsistence orientation termed Archaic (Willey and Phillips 1958:107; Aten 1983:146, 148).

The Archaic period on the upper Texas coast was a time of sea-level rise and climatic fluctuation in the middle to late Holocene, from 9000 B.P. to 1900 B.P. (Aten 1983:152-157). This period generally is divided into early, middle, and late parts (Story 1985:28-29). Few early Archaic sites (dating from 9000 to 5000 B.P.) are known on the upper Texas coast (Aten 1983:153; Story 1985:37), and it appears that site density was low on the entire coastal plain (Story 1985:31-34). The few known sites are located on the inner margin of the upper coastal plain, which may have been occupied more intensively than other areas of the plain during the early Archaic (Story 1985:31) as sea level rose. The coastline reached its present location in the middle Archaic, which lasted from 5000 to 3000 B.P. (Aten 1983:137). The earliest known shell middens on the coastal margin date to this period; while these sites appear to indicate a shift in resource procurement, they may simply be the oldest shell middens that have not been inundated. Increased territoriality during this period is represented by the establishment of cemeteries on the coastal plain along major streams (Story 1985:447).

During the late Archaic period, the modern climatic regime became established and sea level stabilized (Aten 1983:157-159). This period extended from 3000 B.P. to about 1900 B.P., but most sites postdate 2500 B.P., possibly representing a significant expansion of population (Aten 1983:157-159). All parts of the coastal plain were occupied to some extent, but settlement eventually focused on the strandline (Story 1985:47-48).

The Ceramic period is separated into early and late parts after Fields et al. (1983:27-30) and Story (1990:275-276). The early Ceramic period is identified by the co-occurrence of sandy or clay paste ceramics and dart points (most typed as Gary or Kent); it lasted from ca. 1900 B.P. to 1500-1400 B.P. (Aten 1983: 303). The sandy paste ceramic types are Goose Creek Plain, Incised, and Red-Filmed.

In the late Ceramic period, arrow points and grog-tempered ceramics were introduced around 1400 and 1000 B.P., respectively (Aten 1983:288, 303), although the use of sandy paste ceramics and, to a lesser extent, dart points persisted. The grog-tempered ceramics are typed as Baytown Plain and Incised, with varieties distinguished on the basis of sandy paste (San Jacinto and Jamison) or clay paste (Phoenix Lake or Spindletop) (Aten 1983).

Historic

Arrival of the earliest Europeans in the sixteenth century had little effect on the native cultures in this area other than the possible transmission of disease, but by 1740 trade was established between them and the French (Aten 1983:285, 289). Eighteenth-century French and Spanish settlements in the region were concentrated on the lower Trinity River (Bolton 1915:336-374). In the early eighteenth century, the lower Brazos River was divided between Tonkawa bands to the north and the Coco-Cujane group of Karankawa stock to the south and along the coast (Aten 1983:31).

Almost a century later in 1823, Stephen F. Austin was granted permission to move three hundred colonists into the heart of this area (Webb 1952:82), and by the 1850s the native inhabitants of the lower Brazos River had been virtually eliminated (Aten 1983:48). Brazos Bend State Park was part of an original land grant that was issued to Abner Harris and William Barrett in 1827. The tract changed hands many times, and may have once been used as a riverboat landing and shipping point for the local cotton industry. The land eventually reverted to ranching in the twentieth century (Texas Parks and Wildlife Department 1978:24-25).

Previous Investigations

Previous investigations in Brazos Bend State Park have recorded 16 archeological sites.

Eleven of the sites are identified as prehistoric and five are historic. Fourteen of the sites were identified during an archeological survey conducted in 1977 by TPWD archeologists soon after the property's acquisition in 1976. The survey revisited one previously recorded site 41FB2 and recorded 14 archeological sites including 41FB5-10, 41FB16, 41FB17, and 41FB21-26. The results of the survey were integrated into the park's master plan. In 1995, TPWD archeologists recorded an additional site, 41FB234, during a cultural resources survey of a proposed primitive campsite and day-use loop. Of the 16 total sites, 14 of these sites have been designated as State Archeological Landmarks (SALs). The two sites that have not been designated as SALs are 41FB2 and 41FB234

Two archeological sites have been identified in the project area; 41FB22, and 41FB23. A third recorded site, 41FB21, is located in proximity to the proposed project area. Sites 41FB21 and 22 are prehistoric sites both located on a bend of Big Creek. The sites are described as surficial scatters of ceramics, chipped stone debitage, and mussel shell. The two sites are reported as being largely undisturbed. No subsurface materials were recovered from shovel testing at either site. Site 41FB23 is a historic site purportedly dating to the late 19th century to early 20th century. At the time of the sites recording in 1977, the site consisted of a “hunting lodge”, a bottle neck cistern, a kiln, and old trace.

The site is described as being “100 percent disturbed in places”. All three sites are designated as SALs.

Field Investigations

Fieldwork for the proposed project required an intensive archeological survey consisting of pedestrian survey and shovel testing of the proposed areas of ADA infrastructure and parking lot expansion. The proposed camping bay expansions at Red Buckeye Camping Area that encroach on 41FB22 and are in proximity to 41FB21 were subjected to pedestrian survey and shovel testing (Figure 2). Pedestrian survey and shovel testing was also conducted at the proposed Interpretive Center parking lot expansion that encroaches on 41FB23 (Figure 3).

Although the proposed road resurfacing of PR 72 and PW 8110 will require no new ROW nor cross any previously recorded sites (except at the aforementioned Red Buckeye Loop location), reconnaissance survey was conducted along the length of the roadway.

Two archeological sites have been identified in the project area; 41FB22, and 41FB23. A third recorded site, 41FB21, is located in proximity to the proposed project area. Sites 41FB21 and 22 are prehistoric sites both located on a bend of Big Creek. The sites are described as surficial scatters of ceramics, chipped stone debitage, and mussel shell. The two sites are reported as being largely undisturbed (despite PR 72 bisecting 41FB22). No subsurface materials were recovered from shovel testing at either site. Site 41FB23 is a historic site purportedly dating to the late 19th century to early 20th century. At the time of the sites recording in 1977, the site consisted of a “hunting lodge”, a bottle neck cistern, a kiln, and old trace. Despite these features, the site is recorded as being extensively disturbed. Regardless of the varying impacts, all three sites are designated as SALs.

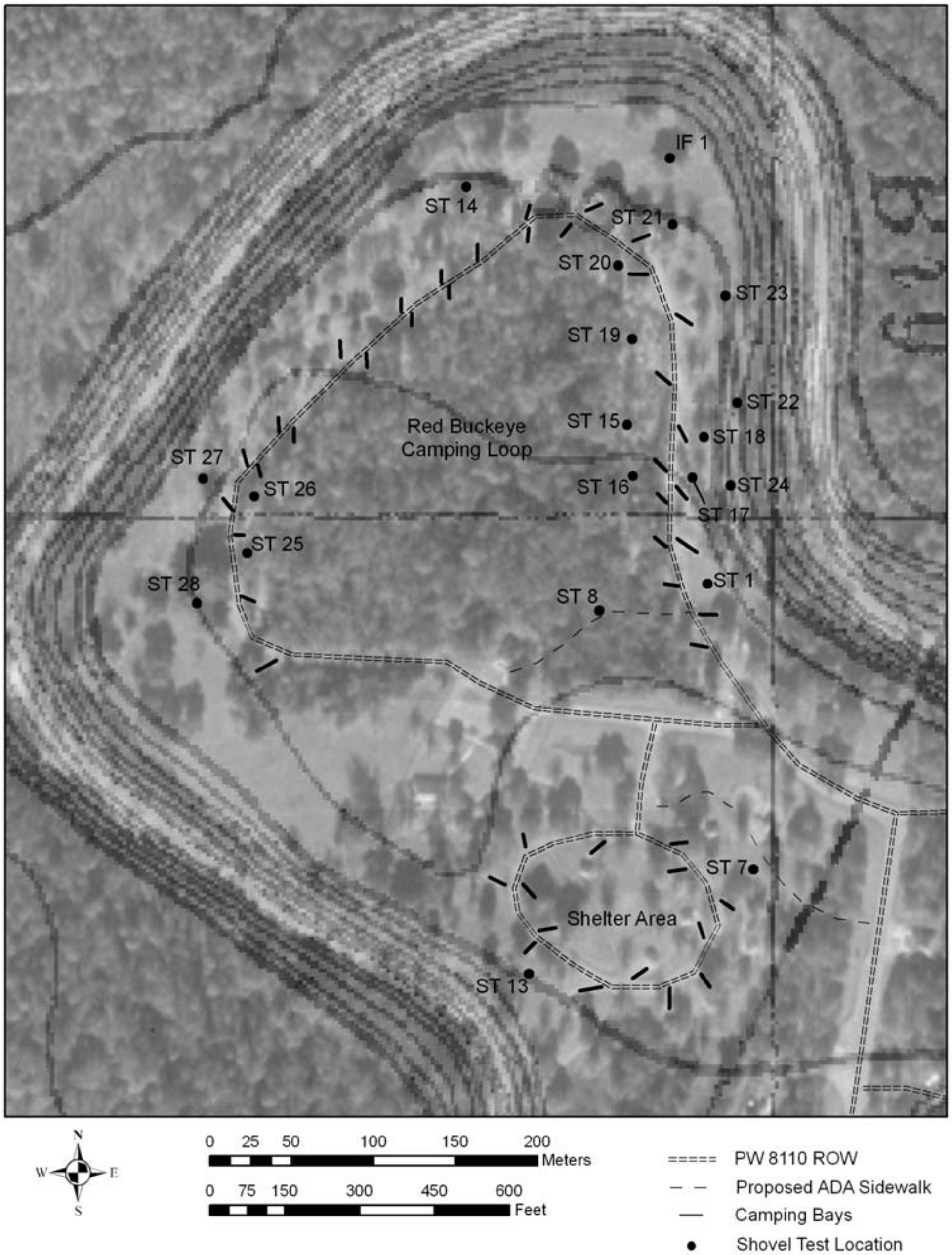

Figure 2. Shovel Test Locations at Red Buckeye Camping Loop.

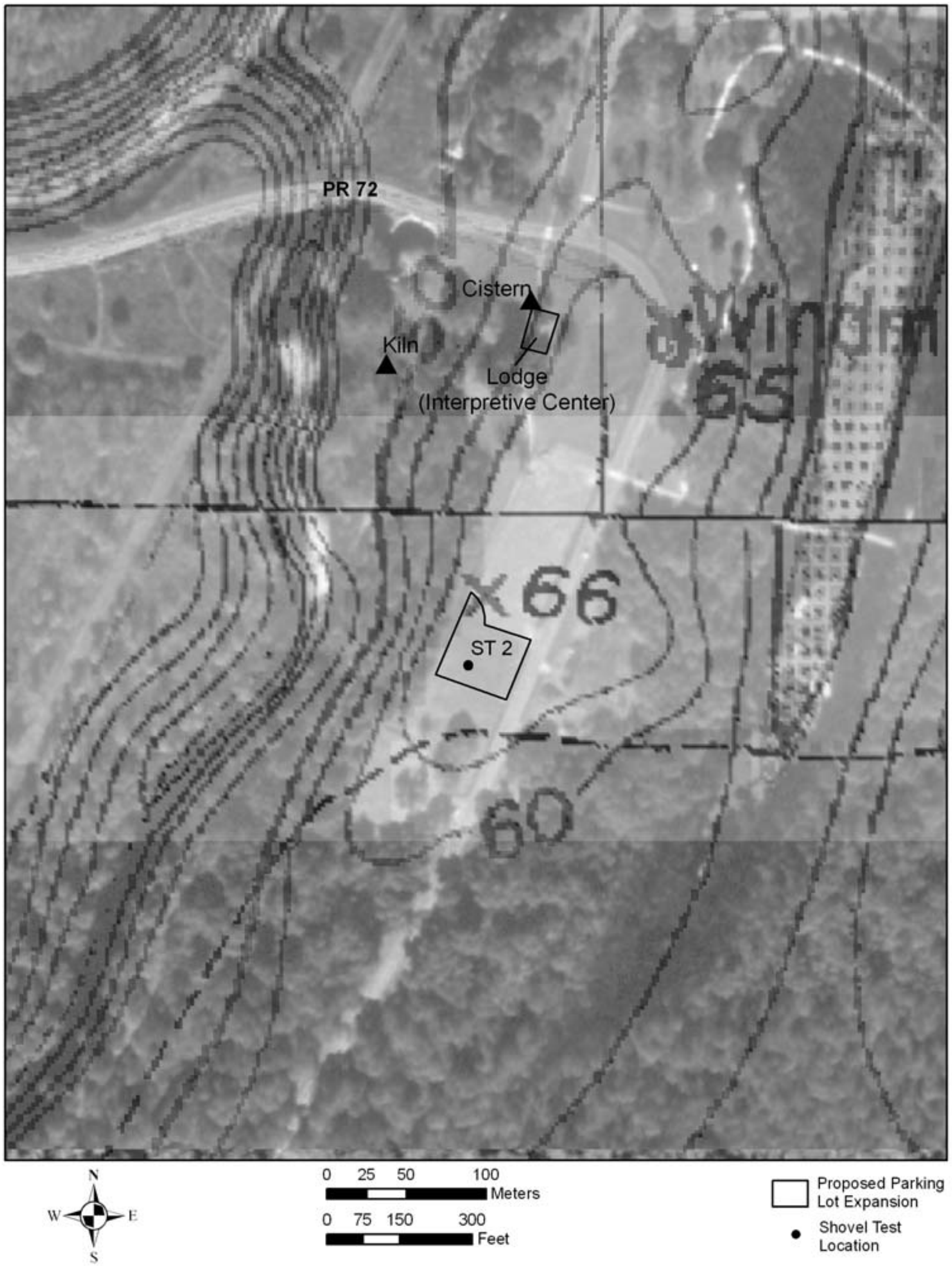

Figure 3. Proposed Parking Lot Expansion at Interpretive Center.

A total of 28 shovel tests were excavated across the project area (Appendix 1). Of the 28 shovel tests, 12 were excavated at proposed ADA and parking lot expansion areas. Sixteen were excavated at proposed camping bay expansions at Red Buckeye Camping Area that is located on 41FB22 and near 41FB21. All shovel tests were excavated below the proposed 12-18 inch (30.5-45.7 centimeter) depth of impact. No cultural materials were recovered during shovel testing.

During the pedestrian survey of the Red Buckeye Camping Area, no artifacts were observed in the immediate project area, adjacent gullies, or cut-bank exposures of Big Creek. However, a single chert flake was observed approximately 50 meters north of the recorded 41FB22 boundary (see Figure 2, IF 1) suggesting the site may extend further north than presently recorded.

The site revisit of 41FB23 and subsequent review of the 1977 site form and site location maps revealed discrepancies of the hand plotted locations on the USGS 7.5 minute topographic quadrangle and differentially corrected GPS data. A comparison of a hand drawn site map (with the site form) showing historic features within the delineated site boundary and field recording of the same features using differential GPS, suggest the site boundary should be shifted approximately 80 meters northeast (see Figure 3).

The site revisit of 41FB23 did confirm, as noted by the site form, that "nearly 100 percent of the site has been destroyed" likely by clearing activities in the 20th century. Pedestrian survey of proposed parking lot extension immediately south of the existing parking lot revealed no cultural materials and, as mentioned, shovel testing was negative.

Conclusions And Recommendations

Based on the pedestrian survey and shovel testing, TPWD Cultural Resource Program staff believes there will be no impacts or adverse effects to the State Archeological Landmarks 41FB21, 41FB22 and 41FB23 from the proposed project. However, construction activities in the Red Buckeye Camping Area will be monitored by TPWD Cultural Resources Staff. In addition, results of the survey conclude that the remainder of the proposed project area does not cross any other known or previously unrecorded sites and are unlikely to have any effect upon cultural resources that would be eligible for listing to the National Register of Historic Places or would be eligible for State Archeological Landmark designation.

Concurrence with these findings was given by the Texas Historical Commission on February 16, 2006. On July 11, 2006 monitoring was conducted in the Red Buckeye Camping Area. No cultural features or materials were observed in the areas of sub-surface ground disturbing activities.

The project is presently on-going to complete the road resurfacing of PR 72 and PW 8110. All pertinent records related to this project are curated at the TPWD Archeology Laboratory.

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Appendix 1. Shovel Test Summary

Test #	Depth (cm)	Recovery	Comments	Site
1	0-20	No recovery	Upper 10 cm disturbed fill	N/A
	20-40	No recovery		
	40-60	No recovery	Soil change at 50 cm	
2	0-20	No recovery	Upper 10 disturbed mottled fill	41FB23
	20-40	No recovery	Possible fill	
	40-60	No recovery	Possible fill	
	60-80	No recovery	Mottled dark brown clay	
3	0-20	No recovery	Black Clay	N/A
	20-40	No recovery		
	40-60	No recovery		
4	0-20	No recovery	Black Clay	N/A
	20-40	No recovery		
	40-60	No recovery		
5	0-20	No recovery	Upper 10 cm disturbed	N/A
	20-40	No recovery	Soil change to strong brown clay	
	40-60	No recovery		
6	0-20	No recovery	Disturbed	N/A
	20-40	No recovery	Soil change to strong brown clay	
	40-60	No recovery		
7	0-20	No recovery	Very dark brown clay	N/A
	20-40	No recovery		
	40-60	No recovery		
8	0-20	No recovery	Very dark brown clay	N/A
	20-40	No recovery	Terminated at 30 cm due to dense roots	
9	0-20	No recovery	Soil change at 10cm	N/A
	20-40	No recovery	Light brown sandy loam	
	40-60	No recovery	Mottled with orange clay	
10	0-20	No recovery	Black clay	N/A
	20-40	No recovery		

	40-60	No recovery		
11	0-20	No recovery	Very dark grayish brown clay	N/A
	20-40	No recovery		
	40-60	No recovery		
12	0-20	No recovery	Upper 10 cm disturbed	N/A
	20-40	No recovery	Strong brown clay	
	40-60	No recovery		
13	0-20	No recovery	Very dark grayish brown clay	N/A
	20-40	No recovery		
	40-60	No recovery		
14	0-20	No recovery	Fill material from adjacent RV pad	N/A
	20-40	No recovery	Brown sandy clay loam	
	40-60	No recovery	Soil change to reddish brown clay	
15	0-10	No recovery	Dark grayish brown clay	41FB22
	10-20	1 small sandstone fragment		
	20-30	No recovery		
	30-40	No recovery		
	40-50	No recovery		
	50-60	No recovery	Soil change to yellowish red clay loam	
15	0-10	No recovery	Dark grayish brown clay	41FB22
	10-20	1 modern metal tent spike		
	20-30	No recovery		
	30-40	No recovery		
	40-50	No recovery		
	50-60	No recovery		
	60-70	No recovery		
	70-80	No recovery	Possible slough deposit	
17	0-10	No recovery	Dark grayish brown clay	41FB22
	10-20	No recovery		
	20-30	No recovery		
	30-40	No recovery	Soil change to dark reddish brown clay	
	40-50	No recovery		
	50-60	No recovery		
18	0-10	No recovery	Modern fill	41FB22

	10-20	No recovery	Modern fill	
	20-30	No recovery	Modern fill	
	30-40	No recovery		
	40-50	No recovery	Reddish brown clay loam	
	50-60	No recovery		
19	0-10	No recovery	Dark grayish brown clay	41FB22
	10-20	No recovery		
	20-30	No recovery		
	30-40	No recovery	Soil change reddish brown clay loam	
	40-50	No recovery		
	50-60	No recovery		
20	0-10	No recovery	Dark grayish brown clay	41FB22
	10-20	No recovery		
	20-30	No recovery		
	30-40	No recovery		
	40-50	No recovery		
	50-60	No recovery		
21	0-10	No recovery	Mottled disturbed fill	41FB22
	10-20	No recovery	Mottled disturbed fill	
	20-30	No recovery	Dark reddish brown clay	
	30-40	No recovery		
	40-50	No recovery		
	50-60	No recovery		
22	0-10	No recovery	Excavated in gully	41FB22
	10-20	No recovery		
	20-30	No recovery		
	30-40	No recovery	Soil change reddish brown clay loam	
	40-50	No recovery		
	50-60	No recovery		
23	0-10	No recovery	Excavated in gully	41FB22
	10-20	No recovery		
	20-30	No recovery		
	30-40	No recovery	Soil change reddish brown clay loam	
	40-50	No recovery		
	50-60	No recovery		
24	0-10	No recovery	Excavated in gully	41FB22
	10-20	No recovery		

	20-30	No recovery	Soil change reddish brown clay loam	
	30-40	No recovery		
	40-50	No recovery		
	50-60	No recovery		
25	0-20	No recovery	In proximity to 41FB21	
	20-40	No recovery		
	40-60	No recovery		
26	0-20	No recovery	In proximity to 41FB21	
	20-40	No recovery		
	40-60	No recovery		
27	0-20	No recovery	In proximity to 41FB21	
	20-40	No recovery		
	40-60	No recovery	Soil change reddish brown clay loam	
28	0-20	No recovery	In proximity to 41FB21	
	20-40	No recovery		
	40-60	No recovery		

Daughtrey Wildlife Management Area

McMullen County

April 6, 12, 18, and 24, 2006

Author: Christopher W. Ringstaff, Texas Parks and Wildlife Department (TPWD)
Cultural Resource Coordinator - Region 2

Project Description: Fence Replacement with Fire Break and New Fence Installation

Type of Investigation: Intensive Archeological Survey

Staff: Christopher Ringstaff and Chris Mostyn (Daughtrey WMA Assistant Area Manager)

Introduction

The Texas Parks and Wildlife Department (TPWD) proposes replacing approximately 2.9 kilometers (1.8 miles) of existing fence line and installation of approximately 0.9 kilometers (0.5 miles) of new fence line in the Daughtrey Wildlife Management Area (Daughtrey WMA), McMullen County, Texas (Figure 1). The Daughtrey WMA is leased to TPWD by the United States Bureau of Reclamation. Funding for the project is being provided by TPWD.

The proposed project will be described as two segments. The first segment consists of a 2.9 kilometer fence replacement to be conducted on the south side of Park Road 7 (PR 7). Mechanical clearing for an adjacent 30-foot wide fire break is also planned. The final 240 meters of the fence line will be new fence turning eastward along an existing two-track road. This section will require no mechanical clearing and minimal hand clearing.

The second segment consists of approximately 650 meters of new fence line to be installed along Park and Wildlife W113 (PW-W113). The fence will be installed on both sides of the road and will extend to the terminus of the road and enclose the boat ramp and parking area.

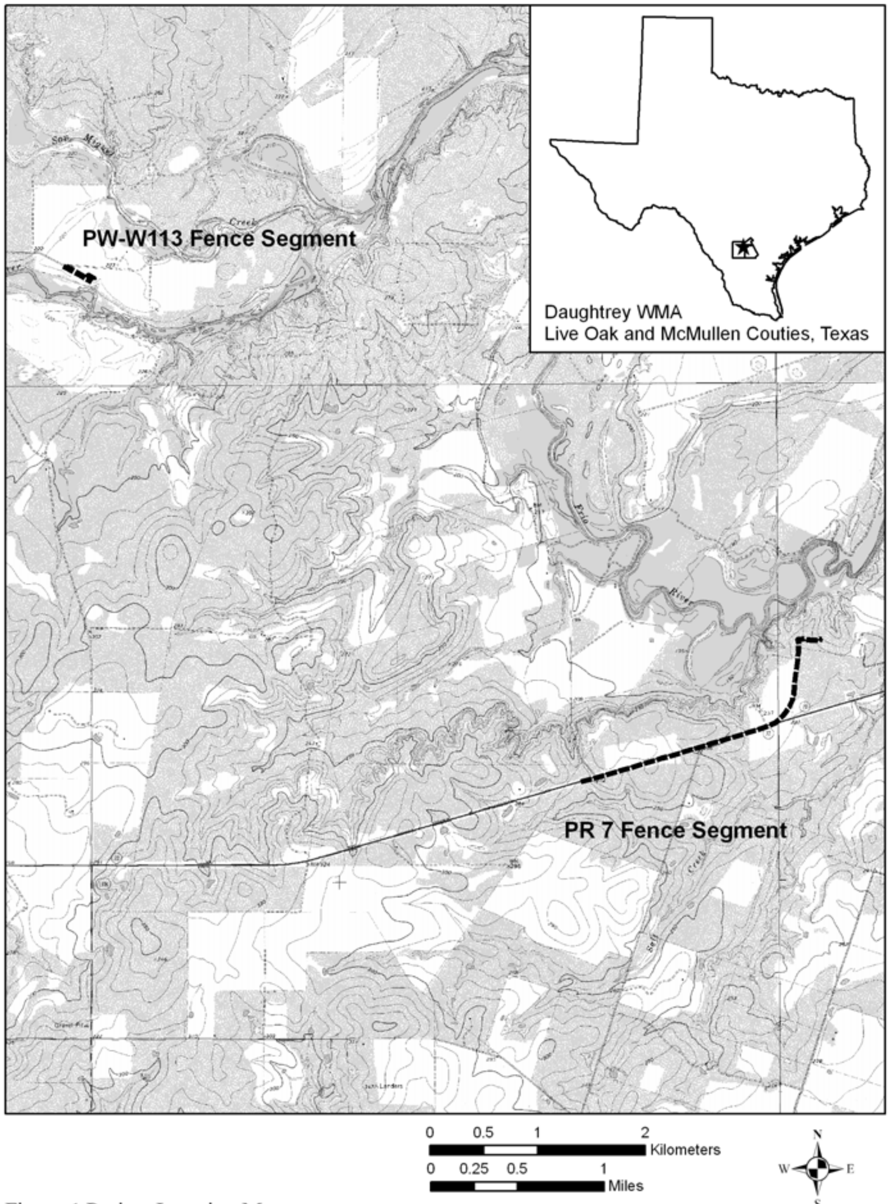

Figure 1 Project Location Map.

The total project area is approximately 7.8 acres. The fieldwork for the proposed fence project was conducted on April 6, 12, 18, and 24, 2006 and required 44 man-hours (5.5 man-days) in the field.

Environment

The project area is within the Western Coastal Plains physiographic province of the United States which is composed primarily of Tertiary sedimentary deposits. The geology of the project area is dominated by Eocene Whitsett Formation uplands along 2.3 kilometers of the 2.9 kilometer segment along PR 7. The remaining 0.6 kilometer of the segment is located on Pleistocene fluvial terrace deposits as well as the entire 0.7 kilometer segment along PW-W113. Based on field observations, the segments within the areas mapped as Pleistocene fluvial terrace deposits have the potential for Holocene alluvial sediments overlying the Pleistocene substrate.

The deep sandy soils found in the upland portion of the project area are derivative of the Eocene sandstone substrate, formed in-situ, and have been re-deposited by both colluvial and eolian processes. The deep loamy soils found in the portions of the project area located on Pleistocene terraces are formed in alluvium. Both the upland and Pleistocene terrace settings have the potential for buried archeological materials, however, the slow and/or episodic rates of aggradation often result in occupational overprinting and have potential for mixing of different temporal assemblages.

Previous Investigations

There have been numerous archeological investigations of the Choke Canyon area, the majority of which were associated with the Choke Canyon Reservoir Project in the 1970's and 1980's. In 1974-1976 the Office of the State Archeologist of the Texas Historical Commission (THC) conducted an archeological survey of the proposed reservoir (Lynn et al. 1977). The survey recorded 161 prehistoric sites, 11 historic sites, and six historic cemeteries. Thirty of the sites were nominated to the National Register of Historic Places and 44 were considered potentially eligible. Subsequent testing and data recovery at these sites was conducted during the 1980's by the Center for Archeological Research, the University of Texas at San Antonio (Brown et al. 1982; Scott and Fox 1982; Fox 1984; Hall et al. 1986; and Highley 1986).

A THC Archeological Sites Atlas search of the project area verified two archeological sites are located within the project area. These sites include 41MC11 and 41MC267. Both are described as prehistoric artifact scatters of burned rock, mussel shell and lithic debitage with some historic artifacts observed at 41MC11 along the north end of the site (currently inundated). A historic cemetery is delineated within the area of 41MC11 and is designated 41MC4. The cemetery is located approximately 60 meters north of the proposed fence line. Fox (1982) discusses the removal of all (five) burials at the site by Archeologists from the University of Texas at San Antonio prior to filling the reservoir. Two accounts of the cemetery from local lore were recorded by Everett (1981). One story indicated that sometime in the 1870s a family of squatters had eaten mistletoe berries and died. The second account told of a family traveling through the area that may have contracted diphtheria.

Results Of Investigations

The fieldwork for the proposed fence project consisted of an intensive archeological survey with shovel testing. Shovel testing was conducted along the linear right-of-way fence lines and intensified in the areas of alluvium and was less intensive on the Eocene uplands. A total of 23 shovel test were excavated across the project area (Figure 2a and 2b). All shovel tests were screened through quarter-inch mesh and the results of the shovel testing is summarized in Appendix 1. In addition, sites 41MC11 and 41MC267 were revisited during the project and 41MC4 was relocated to verify its proximity to project area. All spatial data were collected with a Trimble XT GPS receiver. The Trimble data were converted to vector shapefiles and overlayed on the Digital Raster Graphic (DRG) Calliham and Crowther 7.5 minute topographic quadrangles.

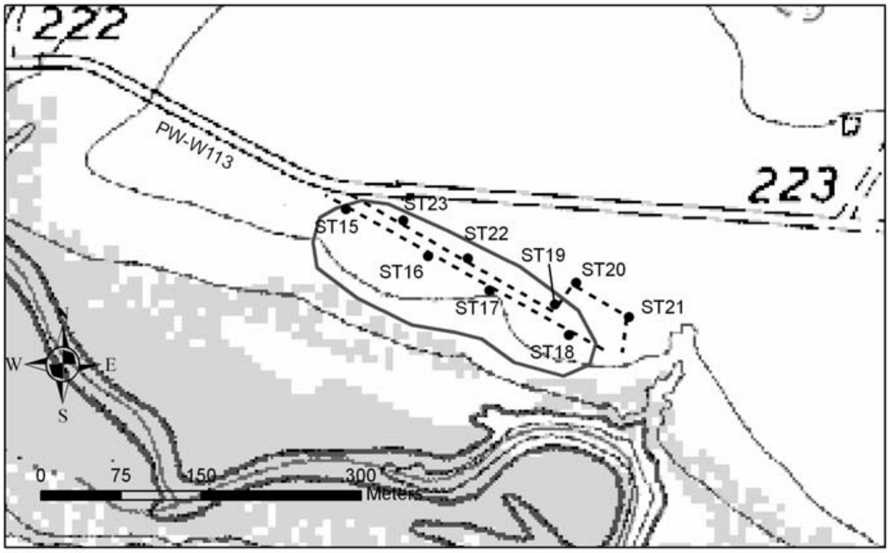

Figure 2a.

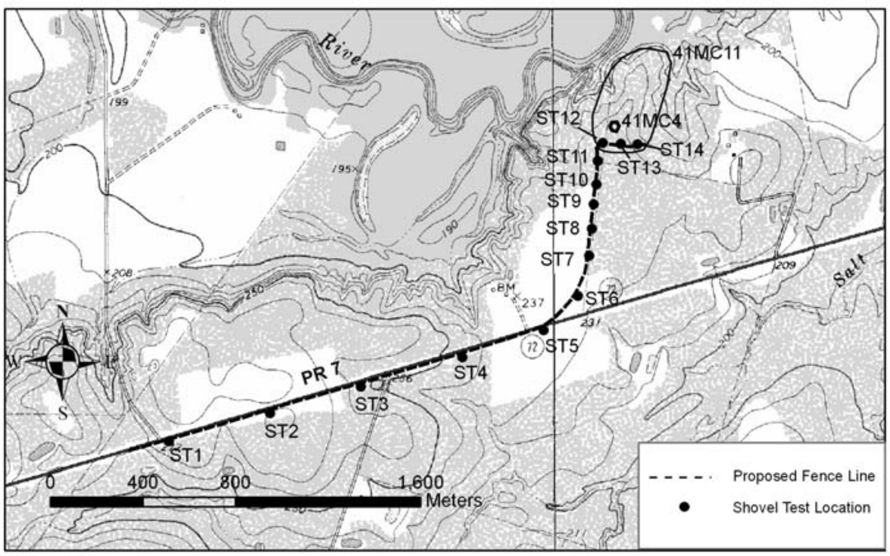

Figure 2b.

Figure 2a and b. Areas of Proposed fence installation with shovel test distribution and site locations.

During the pedestrian survey of the fence line along PW-W113, it was noted that the site extends almost the entire length of the project area (see Figure 2a). Although the THC Archeological Sites Atlas did not show a site polygon (only a centroid), the description of the size is roughly equivalent to what was observed in the field. Clearing had been conducted in the area allowing for excellent surface visibility.

At the time of the survey (April, 2006), Texas Department of Transportation road crews were resurfacing the PW-W113 project. When asked about the clearing, representatives from the Tilden Maintenance Office (San Antonio District) stated McMullen County had carried out the clearing. Nine shovel tests were excavated along the proposed fence line traversing the site. Four yielded subsurface cultural materials including chipped stone debitage, mussel shell, and burned rock (see Figure 2a and Appendix 1).

During the pedestrian survey of the proposed fence line along PR 7, the majority of the proposed fence line and 30-foot fire break was found to be located on Eocene uplands with a veneer of gravelly loam soil overlying the substrate. This upland segment of the proposed line extended for approximately 2.3 kilometers. Surface visibility was generally good and varied from 30-70 percent depending on brush. Surveying northward, the final 600 meters of the line was located on a Pleistocene terrace of the Frio River and shovel testing was intensified. Further to the north, the proposed fence line turned eastward and crossed visible surface cultural materials associated with 41MC11. It was noted that the site boundary extends significantly further southward and westward than is currently delineated. This is based on surface burned rock and lithic debitage exposed along the proposed area of new fence line and south of the adjacent two-track road. In addition, dense burned rock, lithic artifacts, and mussel shell was observed eroding from the east side of PR 7 just south of the boat ramp parking lot (see Figure 2b). The re-delineation map of the site has been submitted to the Texas Archeology Research Laboratory (TARL) along with a site revisit form. Three shovel tests were excavated along the proposed fence line traversing the site (see Figure 2b and Appendix 1) with all yielding subsurface cultural materials

Conclusions And Recommendations

Based on the results of the survey, TPWD Cultural Resources Program considers both 41MC11 and 41MC267 potentially eligible for listing in the National Register of Historic Places. Considering the existing conditions at these sites including previous clearing at both sites and a two-track road at 41MC11, the driving of t-posts for the fence line is not considered adverse impact. However, because there is the potential for undisturbed deposits below observed surface disturbances, any type of mechanical clearing in these two sites would be considered adverse impact and will not be permitted in these areas. In addition mechanical clearing needed for the 30 foot fire break along PR 7, should terminate 75 meters south of the intersecting two-track road that traverses 41MC11. The remaining portion of the PR7 project area does not cross any other known or unrecorded sites and is unlikely to have any effect upon cultural resources that would be eligible for listing to the National Register of Historic Places. Concurrence with these recommendations was given by the THC on June 8, 2006. The PW 113 portion of the project was completed in August 2006. The PR7 portion is presently on hold. All records pertaining to this survey are on file at the TPWD Archeology Laboratory.

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Appendix 1. Shovel Test Summary

Test #	Depth (cm)	Recovery	Comments	Site
1	0-20	No recovery	Gravelly loam	N/A
	20-30	No recovery		
2	0-20	No recovery	Sandy loam less gravel	N/A
	20-40	No recovery		
3	0-20	No recovery	Gravelly loam	N/A
	20-40	No recovery		
4	0-20	No recovery	Gravelly loam	N/A
	20-40	No recovery		
5	0-20	No recovery	Brown sandy loam	N/A
	20-40	No recovery		
	40-60	No recovery		
6	0-20	No recovery	Brown sandy loam	N/A
	20-40	No recovery		
	40-60	No recovery		
7	0-20	No recovery	Brown sandy loam	N/A
	20-40	No recovery		
	40-60	No recovery		
8	0-20	No recovery	Brown sandy loam	N/A
	20-40	No recovery		
	40-60	No recovery		
9	0-20	No recovery	Brown sandy loam	N/A
	20-40	No recovery	Terminated due to tree root	
10	0-20	No recovery	Brown sandy loam	N/A
	20-40	No recovery		
	40-60	No recovery		
11	0-20	No recovery	Brown sandy loam	N/A
	20-40	No recovery		
	40-60	No recovery		
12	0-10	1 chert flake	Brown sandy loam	41MC11
	10-20	1 mussel shell fragment		
	20-30	No recovery	Light brown sand	
	30-40	No recovery		
	40-50	No recovery	Terminated at duripan	
13	0-10	1 chert flake	Brown sandy loam	41MC11
	10-20	No recovery		
	20-30	No recovery	Light brown sand	
	30-40	No recovery		
	40-50	No recovery	Terminated at duripan	
14	0-10	2 chert flakes	Brown sandy loam	41MC11

	10-20	1 chert flake		
	20-30	No recovery		
	30-40	No recovery	Terminated at duripan	
15	0-10	No recovery	Disturbed	41MC267
	10-20	No recovery	Dark brown sandy loam	
	20-30	No recovery		
	30-40	No recovery		
	40-50	No recovery		
	50-60	No recovery		
16	0-10	No recovery	Disturbed	41MC267
	10-20	1 flake		
	20-30	No recovery	Dark brown sandy loam	
	30-40	No recovery		
	40-50	No recovery		
	50-60	No recovery		
	60-70	No recovery		
	70-80	No recovery		
17	0-10	No recovery	Disturbed	41MC267
	10-20	No recovery	Dark brown sandy loam	
	20-30	1 flake		
	30-40	1 burned rock, 1 mussel shell		
	40-50	1 burned rock		
	50-60	No recovery		
18	0-10	No recovery	Disturbed	41MC267
	10-20	No recovery		
	20-30	No recovery	Dark brown sandy loam	
	30-40	No recovery		
	40-50	No recovery		
	50-60	No recovery		
19	0-10	No recovery	Disturbed	41MC267
	10-20	No recovery		
	20-30	1 mussel shell fragment 1 burned rock	Dark brown sandy loam	
	30-40	No recovery		
	40-50	No recovery		
	50-60	No recovery		
20	0-10	No recovery	Disturbed	41MC267
	10-20	No recovery		
	20-30	No recovery	Dark brown sandy loam	
	30-40	No recovery		

	40-50	No recovery		
	50-60	No recovery		
21	0-10	No recovery	Disturbed	41MC267
	10-20	No recovery		
	20-30	No recovery	Dark brown sandy loam	
	30-40	No recovery		
	40-50	No recovery		
	50-60	No recovery		
22	0-10	1 flake	Disturbed	41MC267
	10-20	No recovery		
	20-30	1 mussel shell umbo	Dark brown sandy loam	
	30-40	No recovery		
	40-50	No recovery		
	50-60	No recovery		
23	0-10	No recovery	Disturbed	41MC267
	10-20	No recovery		
	20-30	No recovery	Dark brown sandy loam	
	30-40	No recovery		
	40-50	No recovery		
	50-60	No recovery		

Davis Mountains State Park

Jeff Davis County

September 12, 2006

Author: Tim Roberts, Texas Parks and Wildlife Department (TPWD) Cultural Resource Coordinator - Region 1

Project Description: Archeological Survey of Proposed Multi-use Trail/access road/firebreak, Primitive Area of Davis Mountains State Park, Jeff Davis County

Type of Investigation: Pedestrian Surface Survey

Staff: Tim Roberts and Mark Lockwood (TPWD Natural Resource Coordinator - Region 1)

Introduction

The staff of Davis Mountains State Park (DMSP) is proposing to establish a multi-use trail/emergency access road in the Primitive Area of Davis Mountains State Park, located within Jeff Davis County (Figures 1-2). This corridor will also serve as a firebreak during prescribed burns or in the event of a wildfire. Proposed trail development activities include the removal of larger rocks and vegetation with the six feet-wide bucket of a track loader. The maximum depth of excavation along the proposed corridor is estimated to be approximately two inches (5.08 centimeters). The total length of the proposed trail route, which includes a short segment of undeveloped (i.e. unbladed) dirt two-track road, is 1.4 miles (2.25 kilometers), and the width of the trail will be eight feet (2.44 meters). The project area, which is located entirely within the USGS 7.5' Fort Davis Quadrangle, will encompass approximately 1.36 acres (0.55 hectares). The UTM coordinates, all of which are in zone 13, for the proposed trail are: the northern terminus at 602920.8 m E, 3388569.5 m N; and the southern terminus at 602691.55 m E, 3386982.09 m N.

The proposed project corridor crosses a variety of upland landforms, including upland shoulders, backslopes, and footslopes. No water sources are located within or near the corridor. Much of the ground surface within the project corridor is covered by clastic material and soils are generally thin to non-existent.

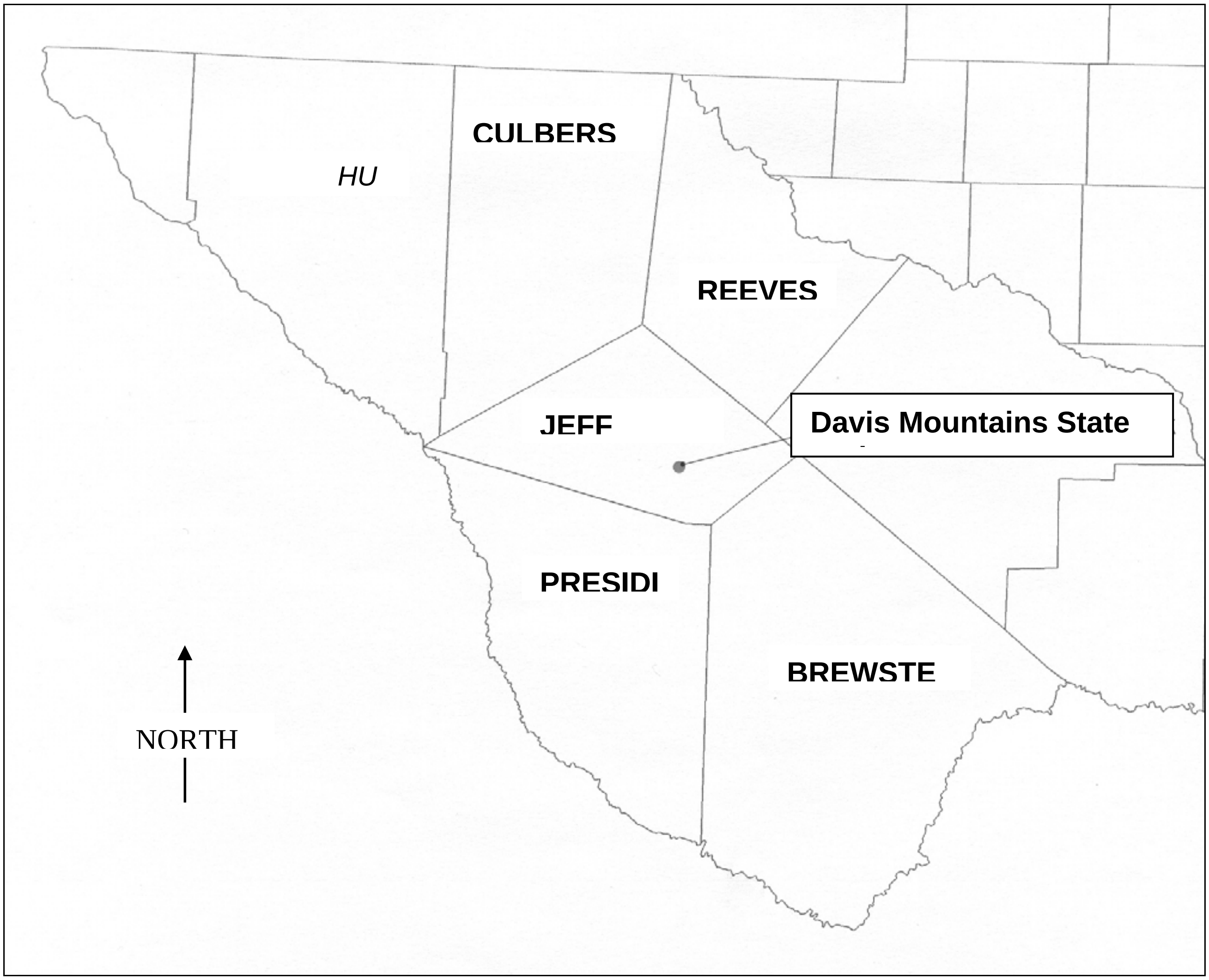

Figure 1. Location of Davis Mountains State Park within Jeff Davis County.

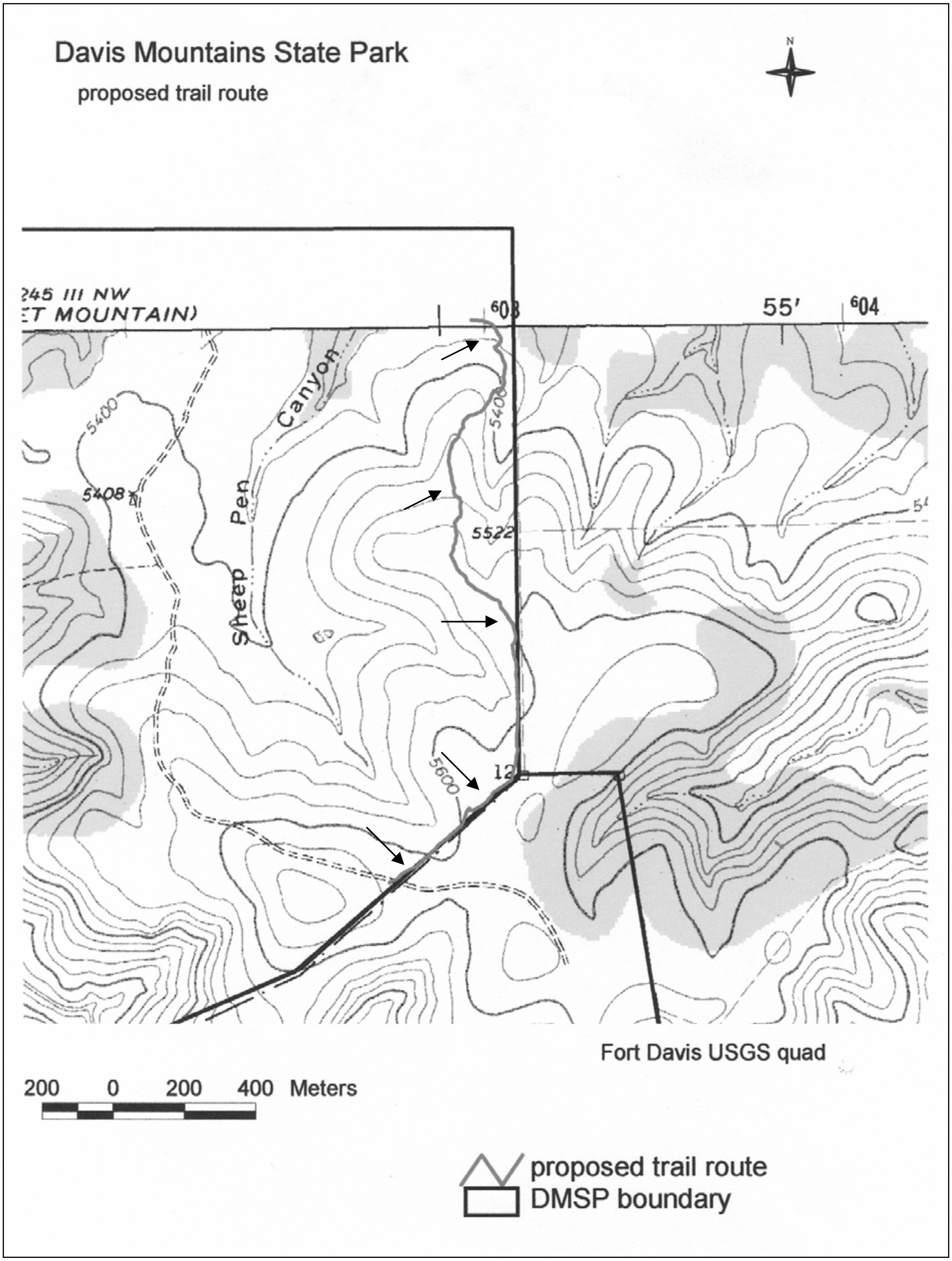

Figure 2. Proposed trail/access road/firebreak corridor, indicated by arrows, within Davis Mountains State Park.

Nonetheless, recent rains in the area have resulted in abundant grasses, as well as junipers, gray oaks, occasional agave, sotol, and various opuntias within the project corridor, providing 50 to 100 percent surface visibility at the time of the present investigation.

Based on the geomorphology and ground surface visibility, archeological sites, if present, should have been evident on the ground surface. Accordingly, a pedestrian surface inspection was conducted of the project corridor. The survey revealed one small rock cairn, probably of historic origin, outside the proposed trail corridor, but within view of the proposed trail. In addition, several horseshoes were observed along the proposed trail route. No other cultural features or artifacts were observed during this investigation.

Archeological field work for this project was conducted in September 12, 2006, under the authority of the 2006 annual Texas Parks and Wildlife Department Permit No. 4011. Two person days were required to complete the fieldwork for this project.

Environmental Setting

Landscape

Mount Livermore and other high peaks west of DMSP, with a total relief greater than 1,000 feet (300 meters), can accurately be described as mountainous. The park, however, is in the foothills of the higher peaks of the Davis Mountains range. Elevation within DMSP ranges from just under 4,900 to 5,700 feet (1,494 to 1,737 meters) above mean sea level, and the total relief in this area is less than 1,000 feet (300 meters).

Landscapes in the Davis Mountains encompass several generations of geomorphic surfaces, dating from the Pleistocene or perhaps even Tertiary to the present.

Because absolute dating of the surfaces has not been performed, relative dating techniques based on geomorphic principles are used to identify the history and course of landscape evolution.

Remnants of the Eppenauer geomorphic surface occur at the base west of Mount Locke. Based on its height above the current drainage network, this surface may date to the early Pleistocene or perhaps even to the Tertiary. Turner (1977:sheet 48) mapped the soils on the Eppenauer geomorphic surface as Sproul-Mainstay association, gently sloping.

Concordant summits and ridgecrests of the rounded hills (mapped Mainstay-Brewster association, hilly by Turner [1977]) in the central Davis Mountains represent remnants of the Limpia Crossing geomorphic surface that formed during a long period of geomorphic stability in the middle and late Pleistocene. Sideslopes of rounded hills date to a later episode of backwearing.

The walls of Limpia Canyon (partially mapped as Liv-Mainstay association, steep by Turner [1977]) and Keesey Canyon probably attained their general form during the Pleistocene. Liv and Mainstay soils with well-developed argillic horizons occur on Pleistocene-age colluvial slopes. Liv soils formed in thicker colluvial deposits, while Mainstay soils formed in parent materials with residual and colluvial components.

Incomplete stripping of the hillslopes by erosional processes during the Holocene removed a portion, but not all of the previous Pleistocene soil cover. Brewster soils, which lack significant B-horizon development, occur on the Holocene-age balloon-shaped erosion surfaces. Mainstay soils are on the Pleistocene-age inter-balloon erosional remnants. Included in many map units are areas of rock outcrop that occur on knobs, shelves, and other landforms where geological erosion has stripped away weathering products more quickly than they can accumulate.

Pleistocene or early Holocene age fluvial terrace and alluvial fan deposits occur in Keesey Canyon and Limpia Canyon, some 20 to 40 feet (6 to 12 meters) above the present-day stream channels. Adjacent Rockhouse soils probably date to the middle or late Holocene. Stream channel beds and low floodplains, mapped as Riverwash, are as young as the last flood event.

Climate

The Davis Mountains are an island of volcanic formations surrounded by basin grasslands and alluvial plains. Averaging more than a mile high, a cooler and wetter climate prevails compared to the lower elevations. Annual rainfall averaging 16 inches at Fort Davis to more than 20 inches north and east of Mount Livermore are approximately double the averages from most other locations in the Trans-Pecos Region. The area typically has only one rainy season in late summer and early fall when 75 percent of the annual moisture is generated by a monsoon weather pattern.

Due to these factors, temperatures tend to average milder as well. The only warm season months which are normally hot and dry are May and June. Average temperatures usually moderate in July if the expected seasonal rains occur. Primarily because of elevation, nighttime low temperatures during winter are usually below freezing, especially on clear nights. Daily highs can be moderate except during periods just following a frontal passage. Most frontal systems are generated in the Pacific Ocean and can be accompanied by strong westerly winds, especially in the late winter and early spring. Arctic systems almost always back into the mountain range from the northeast or east (Bryan et al. 2001:6).

Flora and Fauna

Blair (1950) includes the Davis Mountains in the Chihuahuan biotic province, which is part of the Mountain Ranges sub-region of the Trans-Pecos natural region (Diamond et al. 1987). The range conforms to the basin and range physiographic province. Although the Davis Mountains are considered to be in the northern portion of the Chihuahuan

Desert region, the vegetation is not desertic, primarily due to the massive nature of the mountain range, its relatively high average elevation, and the resultant increase in annual precipitation (16 to more than 20 inches [41 to more than 50 centimeters]). Situated between approximately 4,900 and 5,700 feet above mean sea level (AMSL), DMSP is found within an extensive Plains grassland; in the Trans-Pecos, the upward elevational contact of plains grassland is with juniper-oak-pinyon woodland at about 5,200 feet (1,585 meters) and the lower elevational contact is with desert grassland at about 4,300 feet (1,311 meters) (Powell 1994). Riparian woodlands, pinyon-juniper-oak woodlands, and coniferous forest occur in the area as well. In the southwestern United States, Plains grassland occurs as a mixed or short-grass community in which sod-forming species such as blue grama (*Bouteloua gracilis*) are important. Grazing and fire suppression have resulted in shrub-invasion in many areas, although much of the grassland remains an uncluttered perennial grass dominated landscape (Brown 1994).

Limpia Creek bisects the park from west to east and is the major landscape feature at DMSP. The riparian zone associated with the creek is also the most significant natural resource within the park. The 500-600 feet (152-183 meters) relief provided by Limpia Canyon contributes significantly to the scenic beauty of the park and its diversity of habitats. Permanent water flows near the lower end of Limpia Creek, shaded by riparian gallery woodland that is predominated by Rio Grande cottonwood (*Populus deltoides* var. *wislizenii*), Goodding willow (*Salix gooddingii*), and netleaf hackberry (*Celtis reticulata*). Keesey Creek, an ephemeral tributary of Limpia Creek, is bordered by a well-developed Emory oak (*Quercus emoryi*) woodland in which the park's campground is located. Rose-fruited juniper (*Juniperus coahuilensis*) and gray oak (*Quercus grisea*) are the principal woody plants on slopes, particularly those facing north. Particularly evident from the park's scenic drive, grasslands predominate, viewed as a sea of brown during most of the year but turning brilliant green during the summer/fall monsoon season.

Among the fauna that inhabit or have inhabited the DMSP area are various frogs, toads, turtles, lizards, snakes, rats, mice, jackrabbits, cottontails, gophers, porcupines, raccoons, javelina, mule deer, coyotes, occasional mountain lions and black bear and, perhaps in times past, Bighorn Sheep. Various invertebrates, ichthyofauna, and avifauna, including various quail, hawks, hummingbirds and other species, are also found in the park (Marmaduke and Whitsett 1975:33; Bryan et al. 2001:Appendix F).

Culture History

Paleoindian Tradition

The Paleoindian Tradition, the earliest defined cultural tradition in North America, appears to extend from approximately 12,000 to 8000 years before present (B.P.) in the Trans-Pecos region of west Texas (Mallouf 1993:7; Miller and Kenmotsu 2004:212); however, this date range is subject to revision as more chronometric dates become available from contexts that have good association with Paleoindian material. This tradition is divided into Early and Late Paleoindian stages based on projectile point forms. Early Paleoindian artifact assemblages (12,000-9400 B.P.) include fluted style projectile points, while Late Paleoindian (9400-8000 B.P.) assemblages include unfluted lanceolate points, typically with collateral flaking and basal/shoulder grinding. Further subdivision of the Paleoindian Tradition into the Clovis complex (ca. 12,000-10,000 B.P.), Folsom complex (ca. 10,000-9400 B.P.), and the Plano/Cody complexes (ca. 9400-8000 B.P.) has been suggested based on functional and stylistic differences in the tool kits of these groups (Miller and Kenmotsu 2004:212). These differences in artifact traits may reflect changing hunting and settlement adaptations.

Although these early inhabitants of the New World were probably subsistence generalists (Stanford 1991), Paleoindians were at least somewhat dependent upon hunting the megafauna of the Late Wisconsinan glacial age (Frison 1978). These people traveled in small nomadic bands, camping in areas where good lithic materials could be procured for tool manufacture and where permanent water sources attracted game (Mallouf 2000:6). The environment in the Trans-Pecos during this time was cooler and wetter than today, and forest and woodland species flourished at much lower elevations than at present (Ing and Smith-Savage 1996:25).

While evidence of the earliest Paleoindians (i.e., Clovis) is lacking in the Davis Mountains, there is evidence of the Folsom culture in the vicinity by about 8000 B.C. Two Folsom point fragments were discovered in lower elevations along the east flank of the mountain range, within an oak savanna setting (Dennis J. Miller, personal communication May 3, 2000). Unlike the Folsom artifacts, Late Paleoindian materials have been recovered from higher elevations within the Davis Mountains (Marmaduke and Whitsett 1975; Andretta 1976). Marmaduke and Whitsett (1975) collected Meserve, Plainview and Golondrina points, as well as numerous pieces of chipped stone debitage and debris, from two sites during their survey of the Mount Livermore and Sawtooth Mountain area. No Paleoindian artifacts have been discovered within Davis Mountains State Park.

Archaic Tradition

The Archaic Tradition spans a period from about 6500 B.C. to A.D. 1000, and is divided into the Early (6500-3000 B.C.), Middle (3000-1000 B.C.), Late (1000 B.C.-A.D. 1) and Transitional (A.D. 1-1000) Archaic periods in the Trans-Pecos region, based on gradual changes in settlement patterns, population sizes and technology.

In general, the Archaic Tradition is one in which specialized technologies were utilized in more diverse environmental settings than the previous Paleoindian Tradition (Jennings 1974). This is reflected in the variety of projectile point styles and other tool types produced during this period. Within the Trans-Pecos, the survival of Archaic groups depended on the seasonal or fortuitous abundance of potential food sources across a variety of microenvironments (Marmaduke and Whitsett 1975). There was a growing dependence on the gathering of plant materials (cf. Fulton 2000:7) and a diminished reliance on the hunting of large game animals. While a highly mobile settlement pattern was still preferred, there was a trend toward decreasing group mobility (Charles 1994:34). Site sizes and distributions during this time suggest an increase in Archaic populations. This may have resulted in more restricted territorial ranges (Wulfkuhle 1993:4-5).

With the possible exception of the last 400 to 500 years of the Archaic period, climatic data from this period reveals a gradual, sometimes interrupted, transition from the moister conditions of the previous Paleoindian period to more arid conditions. Mallouf (1981) suggests that the last 500 years of the Archaic period were characterized by an interlude of increased moisture and widespread stream erosion; however, Charles (1994:218) proposes that climatic conditions across the region were similar to those of today by A.D. 600. Nonetheless, the prevailing woodlands appear to have maintained a gradual retreat to higher elevations during the Archaic period, allowing for the gradual establishment of desert biomes in the lower elevations of the Trans-Pecos (Wells 1977; Mallouf 1981; Van Devender 1990).

While Meserve points have been considered by some researchers in the Trans-Pecos to be transitional between the Late Paleoindian and Early Archaic periods (Suhm and Jelks 1962), and still other researchers have suggested that Bulverde points are diagnostic of the later half of the Early Archaic period (Charles 1994:34), the Early Archaic period remains largely undefined in the region. Evidence of Early Archaic or potential Early Archaic populations in the Davis Mountains has been limited to occasional surface finds. Marmaduke and Whitsett (1975) recovered Bulverde points from several open campsites in the pine-oak-juniper forests of high mountain canyons, but they considered these sites to be Middle Archaic rather than Early Archaic sites. In addition, Andretta (1976) reported the discovery of Early Archaic artifacts along Alpine Creek, near the southeastern flank of the Davis Mountains.

Unlike the Early Archaic period, the Middle and Late Archaic periods are relatively well represented within the Davis Mountains. During their investigation of the Mount Livermore and Sawtooth Mountain area, Marmaduke and Whitsett (1975) documented six sites that contained Middle Archaic materials. These sites included hearthfields, lithic scatters and buried deposits in arroyo cuts. Two of the Middle Archaic sites were situated within Lower Canyon settings, while three sites were located in Upper Canyon settings; one site was identified in an alpine setting. Bulverde and Langtry projectile points were among the artifacts recovered from these sites. During the same investigation, Marmaduke and Whitsett (1975) recovered Late Archaic materials from 12 sites, including lithic scatters and buried components on canyon terraces, along intercanyon ridges and saddles, and in the broad valley fill. Among the artifacts recovered from these Late Archaic sites were Palmillas, Shumla, Ensor and Paisano projectile points. Two of the sites with Late Archaic components were discovered in Lower Canyon zones, while the remainders of the sites were situated in Upper Canyon locations. Kelly et al. (1940) recovered Late Archaic materials, as well as Late Prehistoric items, during their excavations at the McBride Site, an open campsite located in the southwestern foothills of the Davis Mountains. Artifacts recovered from the McBride Site included projectile points, sidescrapers, a chopper, chipped stone debitage, fire cracked rock, charcoal, and faunal material (Kelly et al. 1940).

As previously discussed, two isolated Late Archaic Figueroa points were recovered within Davis Mountains State Park, on high alluvial terraces along Limpia Creek. A third Figueroa point was found in association with a large open campsite located on a high alluvial terrace overlooking Limpia Creek. And, another probable Late Archaic point fragment was found on a high alluvial terrace overlooking Keesey Creek.

While technological innovations such as the bow and arrow are used to mark the beginning of the Late Prehistoric Tradition in the Trans-Pecos, the change from a Late Archaic to Late Prehistoric way of life was actually very gradual. The term Transitional Archaic is used to identify this period of gradual change (Katz and Katz 1974; P. Katz 1978; Mallouf 1985:28, 34). No Transitional Archaic sites have been recorded as such in the Davis Mountains, but Hester (1988:61) considers the aforementioned Ensor, Paisano and Figueroa points as diagnostic of the Transitional Archaic period in the Lower Pecos. Hester also suggests that Frio points are indicative of this period. In the Lower Pecos, Transitional Archaic inhabitants occupied rockshelters and open terrace sites (Hester 1988:61).

Late Prehistoric Tradition

The Late Prehistoric Tradition extended from about A.D. 1000 to 1530 in the Trans-Pecos. This cultural tradition is characterized by the innovation of the bow and arrow across the entire region, and the manufacture of pottery, the development of agriculture and the establishment of villages in parts of the Trans-Pecos that were conducive to agricultural practices (Ing and Smith-Savage 1996:27; Sanchez 1999:36). These areas included the western Trans-Pecos, northern Mexico and various small sections of land throughout the region (Beene 1994:26). Despite early Spanish explorer Antonio de Espejo's observations of diversion ditches east of present-day Fort Davis and near Balmorhea in 1582 (Charles 1994:37), and Smith's (1938) recovery of 20 corncobs from Late Prehistoric deposits in Carved Rock Shelter near Alpine, Texas, Late Prehistoric sites within the Davis Mountains proper do not appear to contain evidence that the inhabitants were intensive agriculturalists. To the author's knowledge, no pottery, maize or other domesticates have been recovered from sites in the Davis Mountains. Late Prehistoric sites in the Davis Mountains may represent special use sites by outlying Jumanos or other farming groups; however, the absence of pottery and domesticates on area sites suggests that inhabitants of the Davis Mountains probably retained a hunting and gathering subsistence pattern. As summarized by Newcomb, Jr. (1961:226), there were two geographically distinct groups of Jumano, both pursuing different kinds of subsistence. According to Newcomb, Jr. (1961:226):

> One group lived as settled gardeners in the Puebloan tradition, wresting their living from garden plots in the valleys of the Rio Grande and the lower Rio Conchos. The other group lived, or at least hunted, beyond the Chisos and Davis Mountains on the southernmost plains of West Texas.

Any farming in the outlying areas from Davis Mountains was likely to be small plot gardening done to supplement the diets of hunter-gatherers (Wulfkuhle 1993:5-6).

During the Late Prehistoric period, there is an increase in the total number of sites, with emphasis on the use of elevated and unusual landforms, rockshelters, and foothills (Mallouf 1985:143). The increase in the number of sites during this time may reflect a continued increase in population from the previous Archaic period, or increasing mobility among nomadic groups (Mallouf 1985). In many ways, however, the Late Prehistoric Tradition remained similar to the preceding Archaic Tradition. According to Mallouf (1985:150), "only those aspects of sedentary existence which enhanced an already entrenched and successful nomadic hunting-gathering adaptation were actually incorporated." This cultural continuum between Archaic and Late Prehistoric occupations is reflected in the artifact assemblages recovered from rockshelters throughout the Trans-Pecos. Shared artifact types include basketry, matting, sandals, rabbit sticks, rabbit fur robes, cordage, netting and various other items (Sanchez 1999:36).

The Late Prehistoric Tradition is well represented within the Davis Mountains. In 1895, a cache of nearly 2,000 Late Prehistoric Livermore arrowpoints, many of which had been ceremoniously broken, was recovered from a rock cairn atop Mt. Livermore (Janes 1930; Suhm and Jelks 1962; Robert J. Mallouf, personal communication April 11, 2000). In fact, the densest known occurrences of this point type are in the Davis Mountains and Lobo Valley areas of the central Trans-Pecos (Mallouf 1992). This point type is diagnostic of the Livermore focus (ca. A.D. 900-1300) in the Trans-Pecos region (Kelly et al. 1940; Kelly 1957). Unfortunately, relatively little is known about the Livermore focus. It is unknown whether the Livermore focus represents a Plains Indian migration into the Trans-Pecos, or whether these people were indigenous to the region.

During their survey of the Mount Livermore and Sawtooth Mountain area, Marmaduke and Whitsett (1975) recovered Late Prehistoric materials from five sites. These sites were nearly evenly distributed between Lower Canyon, Upper Canyon and Alpine environmental settings. With one exception, each of the sites produced Livermore points. A Starr point was recovered from the remaining Late Prehistoric site. Excavations at Goat Cave (41JD138), a large rockshelter in the northeastern Davis Mountains, revealed a Late Prehistoric tree-bark lined storage pit containing seven maguey leaves, a possible sandal fragment and three deteriorated cut-wood fragments (Mallouf 1990). Although the rockshelter did not produce any diagnostic artifacts, the pit feature was assigned a chronometrically determined age of A.D. 1037-1115 (Mallouf 1990).

As previously mentioned, the McBride Site also contained a Late Prehistoric component (Kelly et al. 1940).

Within Davis Mountains State Park, a Late Prehistoric arrowpoint fragment (type undetermined) was found in association with an open campsite overlooking Limpia Creek. An isolated Late Prehistoric Livermore arrowpoint was also recovered from the bank of Keesey Creek in the park.

Historic Period

The Davis Mountains are assumed to have been the homeland of Historic Apache, Comanche, and Kiowa bands, but there is no archeological evidence to suggest that any of these tribes were indigenous to this area. In fact, it was not until the mid-sixteenth century that the Mescalero Apache moved into the area and claimed the Davis Mountains and the surrounding plains as their homeland (Charles 1994:37; Wooster 1994:1; Tyler 1996:63).

Although Spanish explorers Cabeza de Vaca and Francisco Vasques de Coronado passed through the Trans-Pecos at various times in the first half of the sixteenth century, the first Spanish explorer to arrive in the Davis Mountains area was probably Antonio de Espejo in 1582 (Charles 1994:37). Espejo's *entrada* into the Trans-Pecos eventually took him to the future site of Fort Davis, Texas on August 13, 1583, and through Keesey Canyon (within present-day Davis Mountains State Park) the following day (Jacobsen and Nored 1993:9-10). As previously discussed, Espejo noted the presence of diversion ditches east of present-day Fort Davis and near Balmorhea.

Some researchers have attributed these early irrigation ditches to the Jumano who farmed parts of the Trans-Pecos between A.D. 1200 and 1400, and to subsequent bands of Mescalero Apache (Hutson 1898; Bogener 1993).

Indigenous people faced frequent attacks by the marauding Mescalero Apache, as did Spanish, Mexican and American settlers to the area. Oftentimes, these attacks would be a concerted effort between the Mescaleros and the Lipan Apaches to the east (Wooster 1994:2). As early as 1667, the Spanish considered plans for defending the Trans-Pecos frontier from such attacks (Simmons et al. 1989). Missions were established across the region, supported at various times by presidios and offensive campaigns. Mexico continued to garrison the region after they gained their independence from Spain in 1821 (Wooster 1994:2-3). Despite these efforts, there was little success at stopping the attacks. Instead, Comanche and Apache attacks in the region increased as the United States government started removing eastern tribes to reservations in the west (Wooster 1994:3).

The geography of the Trans-Pecos quickly changed in the first half of the nineteenth century. In 1836, the Republic of Texas won its independence from Mexico, and in 1845 the Republic of Texas became the 28th state in the Union. Following the Mexican War of 1846-1848, Mexico formally ceded its Trans-Pecos land holdings to the United States (Wooster 1994:3-4). Spurred on by hopes of striking it rich in the gold fields of California, travelers from the east crossed through the Trans-Pecos on their way to the West Coast. During this time, gold seekers and other travelers continued to be hindered by attacks from the Apache and Comanche. As a result, the United States Army constructed a string of forts across the region, including Fort Stockton, Fort Davis, Fort Lancaster and Fort Bliss (Charles 1994:37). Constructed in 1854, Fort Davis was situated along the San Antonio-El Paso road, about a quarter of a mile south of "Painted Comanche Camp". Painted Comanche Camp was named for the pictographs that were painted on some of the trees along Limpia Creek (Wooster 1994:4). Those at the Fort were charged with the tasks of patrolling the San Antonio-El Paso road, escorting stagecoaches, guarding mail relay stations and policing the Mexican border. The system of forts across the Trans-Pecos apparently did have the desired affect. Reports of Indian attacks declined through the late 1800s. The final major encounter between Indians and non-Indians in the Fort Davis region occurred in January, 1882 (Wooster 1994:40). Nonetheless, Fort Davis remained in operation until June, 1891 when the Fort was finally perceived to have outlived its usefulness (Charles 1994:38). Today, the Fort property is located immediately adjacent to that of Davis Mountains State Park.

After the abandonment of Fort Davis by the United States Army, the local economy fell into an economic depression (Wooster 1994:46). Nonetheless, most of the civilians in the area remained, continuing to make livings as sheep or cattle ranchers (cattle were brought into the area after Fort Davis was established in 1854 [Tyler 1996:121]), farmers or those providing support services for these industries. Cattle ranching continues to be an important industry in the area today.

Davis Mountains State Park is largely comprised of former ranch property. According to Jacobsen and Nored (1993:274) and other historians (Steely 1999:30-31, 205), the original portion of Davis Mountains State Park was donated in 1933 by the J. W. Merrill family (contributing 200 acres), J. W. Espy (200 acres) and the Union Trading Company with other Fort Davis citizens (160 acres). However, Jeff Davis County Courthouse records indicate that J. W. Merrill and his son R. W. Merrill donated 360 acres and leased another 1,340 acres for the establishment of a state park, retaining grazing rights for 99 years (to 17 January 2033). The records also indicate that J. W. Espy donated 169 acres of adjacent land. No mention is made of land donations by the Union Trading Company and other Fort Davis citizens. Regardless, the property that was donated included land within and immediately adjacent to Keesey Canyon. The canyon was named after O. M. Keesey, the first Jeff Davis County judge and school superintendent. Mr. Keesey served in these positions in the late nineteenth century.

The Civilian Conservation Corps (CCC), established as a New Deal program by President F. D. Roosevelt in 1933, provided the labor for the development of many Texas state parks. Development of Davis Mountains State Park, one of the earliest Texas

Civilian Conservation Corps (CCC) park projects, was carried out by Company 879 of the Civilian Conservation Corps (CCC) from June, 1933 to July, 1935, with assistance from Company 881 between June and November, 1933. The CCC constructed the original portion of the Indian Lodge, the CCC camp recreation hall (now a residence), the CCC camp mess hall (now a warehouse), a restroom facility, open picnic areas and campgrounds (including at least three stone picnic tables, three stone fireplaces and two sets of stone steps that still exist), a stone vehicular bridge (along a park road which has since been abandoned), and a one lane skyline drive and scenic overlook (including an overlook shelter) (Boykin 1983; Jacobson and Nored 1993). The remnants of other CCC camp structures are also still evident within the park.

In 1966, after the Espy family threatened to take back the land that J. W. Espy had donated due to the state's inactivity on the property, further development of the park’s campgrounds was initiated and other facilities constructed.

J. W. Espy retained grazing rights to the property which he donated until his death in 1986. The last of the cattle were removed from the original portion of Davis Mountains State Park in 1989. In 1990, an additional 1,357 acres of land was acquired for the park from Prude Ranch Inc. Prude Ranch Inc. retained grazing rights to nine hundred acres of this property until 1996.

Previous Investigations

The archeological prehistory of the Davis Mountains, including Davis Mountains State Park, is rather poorly known. The reasons for this are several, the most important being the general lack of large public works projects that usually generate cultural resource investigations. In addition, with few exceptions, much of the land in the area is held in large private ranches. Consequently, about the only relatively recent published information available to researchers of the Davis Mountains area is a Natural Areas Survey that centered on Mount Livermore and Sawtooth Mountain (Marmaduke and

Whitsett 1975), and excavations in Goat Cave (41JD138), a large rock shelter in the northeastern Davis Mountains (Mallouf 1990). Earlier archeological investigations were conducted in the Davis Mountains area (cf. Smith 1927, 1931, 1932, 1934, 1938; Smith and Kelly 1933), but the primary goal of many of these studies was to collect museum quality specimens (Wulfkuhle 1993:2). Less desirable artifacts were frequently not included in descriptive analyses, and sites often were only superficially reported. Much of the data considered important by today's standards was not recorded. Other studies have concentrated on specific types of sites, primarily rock art (cf. Kirkland 1937, 1938; Jackson 1938; Kirkland and Newcomb 1967; Lowrance 1987a, 1987b).

During the Natural Areas Survey of the Mount Livermore and Sawtooth Mountain areas in 1975, Marmaduke and Whitsett (1975) reported 52 prehistoric and historic archeological sites. These sites were found in three biotic communities that were distinguished by major floral associations and topographic relief. Marmaduke and Whitsett (1975) identified thirteen sites in the Lower Canyon community at elevations where the Desert Shrub-Grasslands association is the dominant vegetation. The Upper Canyons, where the Pinyon-Oak-Juniper association is found, produced 33 sites. Six sites were documented in the Alpine community. The plant association in this community is much the same as the Upper Canyons, but more thinly distributed. Additional Natural Areas Survey work conducted by Greer in 1977 resulted in the discovery of 56 additional sites within the Davis Mountains (Wulkuhle 1993:3).

An effort was made by Marmaduke and Whitsett (1975) to determine the primary attraction(s) or resource(s) available to human inhabitants in each of the designated biotic zones, but their results were limited by time constraints and lack of access to most of the land in the Davis Mountains. The survey revealed that temporary campsites and hunting camps were situated both along creek banks and on eroded remnant terraces some distance from watercourses in the lower two zones. The six sites found in the Alpine zone were located on flat ridgetops, saddles and ledges--areas not really suitable for extended residence, but perhaps for short-term exploitation of certain resources (acorns or pinyon nuts) or religious activities. Interestingly, sites in the Lower Canyon zone showed no evidence of vegetable baking activities (i.e., ring or crescent middens of burned rock) although the appropriate plants (sotol and agave) are common in that biotic zone today (Marmaduke and Whitsett 1975:41). Why burned rock middens, a common feature type on prehistoric sites across much of the Trans-Pecos, were not found by Marmaduke and Whitsett in the Davis Mountains remains to be answered.

In a much earlier, informal archeological survey in the northern foothills of the Davis Mountains and the Madera Valley, Kelly (1933:53-54) reported a more typical distribution of sites. In the higher foothills, Kelly found numerous campsites consisting of collections of hearths, but no evidence of long-term occupation. Along the lower-lying banks of Toyah Creek, however, Kelly found a large number of sites with one to twelve pit features each. The pit features were roughly circular or crescent-shaped, with a depressed center. These features are thought to represent large-scale sotol or mescal processing. Perhaps plant materials were gathered in the foothills and higher elevations of the mountains and transported to the well-watered valley floors along the major creeks for processing. Such a scenario might help explain the lack of burned rock middens and other food processing features along the higher elevation drainages (Keesey and Limpia Creeks) of Davis Mountains State Park.

In their final analysis, Marmaduke and Whitsett (1975: 43) found that practically the entire prehistoric period is represented by archeological sites within the Davis Mountains, from Paleoindian times to the Late Prehistoric. The Historic period can be recognized by the remains of military campsites, sites relating to the ranching industry, and sites associated with the Civilian Conservation Corps of the 1930s.

Like much of the Davis Mountains range, Davis Mountains State Park has not been systematically surveyed for archeological sites. Nonetheless, a limited amount of reconnaissance related to specific construction and repair projects has revealed evidence of prehistoric occupation, especially along the banks of Limpia and Keesey Creeks. Two sites, including a bedrock mortar site and a large open campsite, were identified on the rock outcrops and high terraces overlooking Limpia Creek. While no culturally diagnostic artifacts were found in association with the bedrock mortar site, Late Archaic dart points and a Late Prehistoric arrowpoint fragment have been found in association with the open campsite. Ash and charcoal-stained soil, some burned rock, and chipped stone debitage and debris were also found in association with the campsite. In addition to the aforementioned sites, two projectile point isolates, both of which were Late Archaic Figueroa points, were discovered on high terraces along Limpia Creek.

Another previously recorded bedrock mortar site overlooks Keesey Creek, while another bedrock mortar site is located on a large boulder within Keesey Creek. No artifacts have been found in association with either of these bedrock mortar sites. However, two projectile point isolates, including a probable Late Archaic dart point fragment and a Late Prehistoric Livermore arrowpoint were recovered from areas adjacent to Keesey Creek.

Based on our limited knowledge of the park's prehistoric cultural resources, the prehistoric site distribution pattern here generally mirrors that seen throughout the Davis Mountains. Temporary hunting camps can be expected in the higher elevations, while longer-term campsites will be located on high terraces along the major creeks.

Historic architecture and other structures in Davis Mountains State Park have been well documented for the most part, and consist primarily of an adobe resort known as Indian Lodge, an adobe residence (former CCC camp recreation hall), a warehouse (former CCC camp mess hall), a restroom facility, open picnic areas and campgrounds (including at least three stone picnic tables, three stone fireplaces and two sets of stone steps), a stone vehicular bridge, and a skyline drive and scenic overlook (including an overlook shelter), all built by the CCC during the 1930s (see Steely 1999 for more information). In addition, there is archeological evidence, much of which was identified during the present project, of other CCC camp structures and features in the park. With the exception of the original unpaved road leading to Skyline Drive, now part of the park's hiking trail system, all of the primary facilities have been maintained in good condition.

Indian Lodge has been considerably modified over the years to add public use facilities such as lodging rooms, a restaurant and ramps to accommodate handicapped access, but the historic section of the Lodge is presently being refurbished back to its original look. The former CCC camp recreation hall and mess hall have also been modified over the years, and now serve different functions.

In addition to the CCC-related structures and archeological features, the park also contains scattered remnants of the ranching era. Evidence of that era includes stone and wire fences, a windmill, water troughs, and occasional historic artifacts.

Results And Recommendations Of Present Investigation

As already noted, no systematic large block archeological surveys have been conducted within DMSP, but seven archeological sites have been previously recorded on the property. A review of site maps, however, showed that none of the known archeological sites are located within the presently proposed project corridor.

The present archeological survey of the proposed multi-use trail/access road/firebreak was conducted by Tim Roberts, the TPWD Cultural Resource Coordinator for West Texas, and Mark Lockwood, the TPWD Natural Resource Coordinator for West Texas, on September 12, 2006. The survey was extended approximately 50 feet (15 meters) from both sides of the flagged route, covering a total area of approximately 8.48 acres (3.44 hectares). Pedestrian transects were spaced at 50 feet (15 meters) intervals. The investigation revealed one small rock cairn, probably of historic origin, outside the proposed trail corridor, but within view of the proposed route. In addition, several horseshoes were observed along the proposed trail corridor.

The small rock cairn, designated as DMSP IF-1, is located at the summit of a small upland knoll. This cairn, which appears to be constructed on top of igneous bedrock, consisted of about 10 to 12 igneous rocks of various sizes. No artifacts, prehistoric or historic, were observed in association with the cairn. But, the absence of siltation around the base of this feature may indicate a relatively recent age of construction, perhaps as a property/survey marker. Given the absence of artifacts or other cultural features in the vicinity of the rock cairn, this feature is considered to have low research potential. With the exception of the aforementioned horseshoes, no additional cultural material was observed along the proposed project corridor.

As a result of these findings, cultural resource concurrence was requested of the THC for the proposed project to proceed. Concurrence was received from the THC on October 12, 2006. As of January 2007, the proposed multi-use trail/access road/firebreak was not yet completed.

Copies of this report and related archival documentation are curated at the TPWD Archeology Laboratory, Austin, and at the TPWD Region 1 Cultural Resource Coordinator's office, Fort Davis. No artifacts were collected during the present investigation.

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Franklin Mountains State Park

El Paso County

August 29, 2006

Author: Tim Roberts, Texas Parks and Wildlife Department (TPWD) Cultural Resource Coordinator - Region 1

Project Description: Archeological Survey of Proposed Federal Aviation Administration (FAA) Easement/access Road Development, Franklin Mountains State Park, El Paso County.

Type of Investigation: Pedestrian Surface Survey

Staff: Tim Roberts and Mark Lockwood (TPWD Natural Resource Coordinator - Region 1)

Introduction

In the summer of 2006 heavy rains in the city of El Paso destroyed an existing undeveloped road on the east slope of Franklin Mountains State Park that was used by the FAA to access a maintenance tram for radio antennas on the summit of South Franklin Mountain. These antennas are utilized not only by the FAA, but also the Border Patrol and other law enforcement agencies in the region. As a result, the FAA made a request to the TPWD to utilize another nearby undeveloped jeep road as an easement/access road to their maintenance tram (Figure 1 and 2). This road required improvements (i.e. blading) to make it drivable for maintenance vehicles. The road/easement is located entirely within the USGS 7.5’ El Paso, Texas Quadrangle. The southeast terminus of this jeep road is located in UTM zone 13, 360623E, 3524999N; the northwest terminus of the road is located in zone 13, 359942E, 3525334N. This project was federally funded.

The proposed easement/access road measured 0.7 mile (1.1 kilometers) in length, and the requested easement was 16 feet (4.9 meters) in width. The width of the existing undeveloped jeep road within the proposed easement was about eight feet (2.4 meters). The total area included within the proposed easement was 1.2 acres (0.5 hectare).

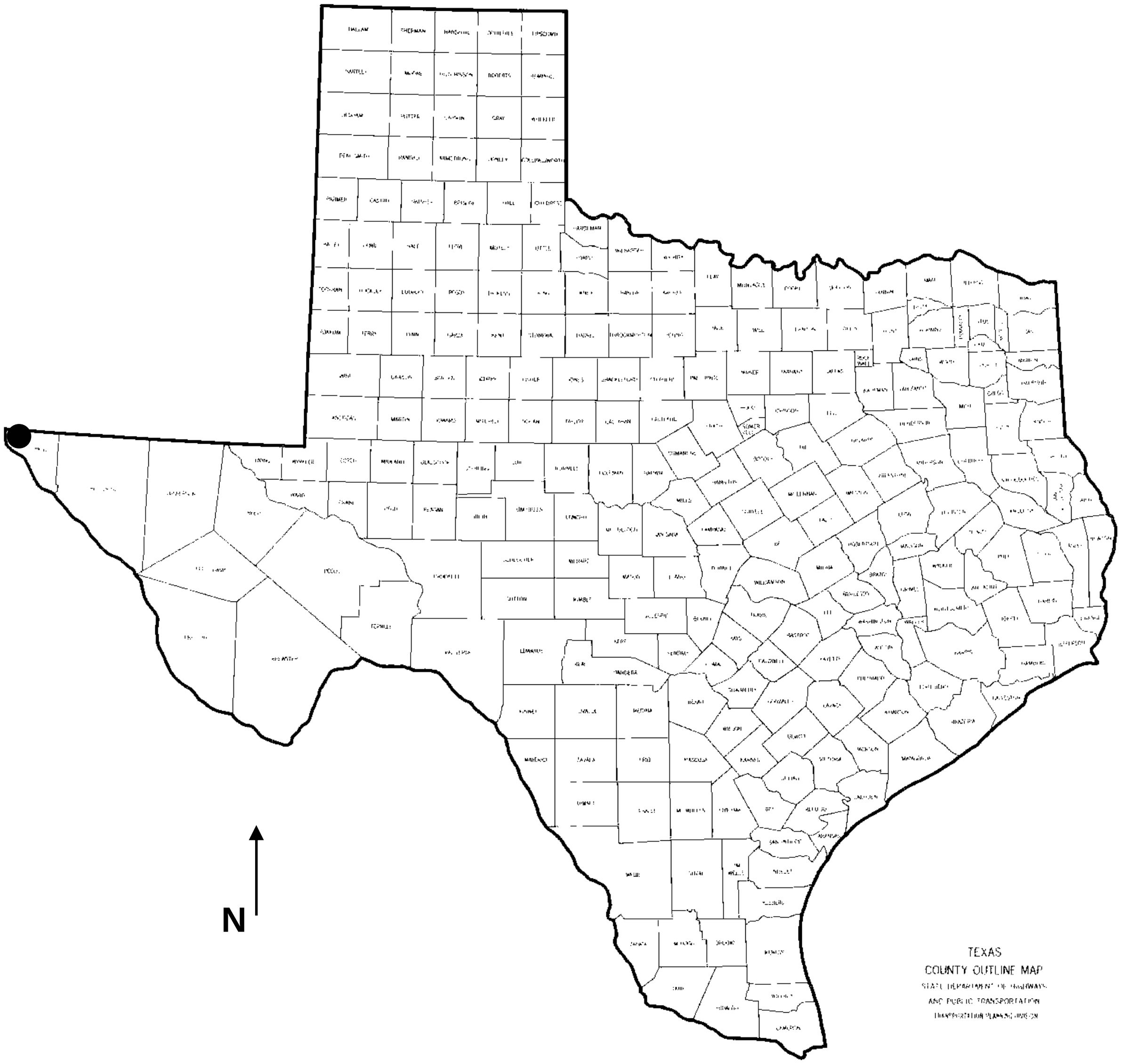

Figure 1. Location of project area in El Paso County, Texas.

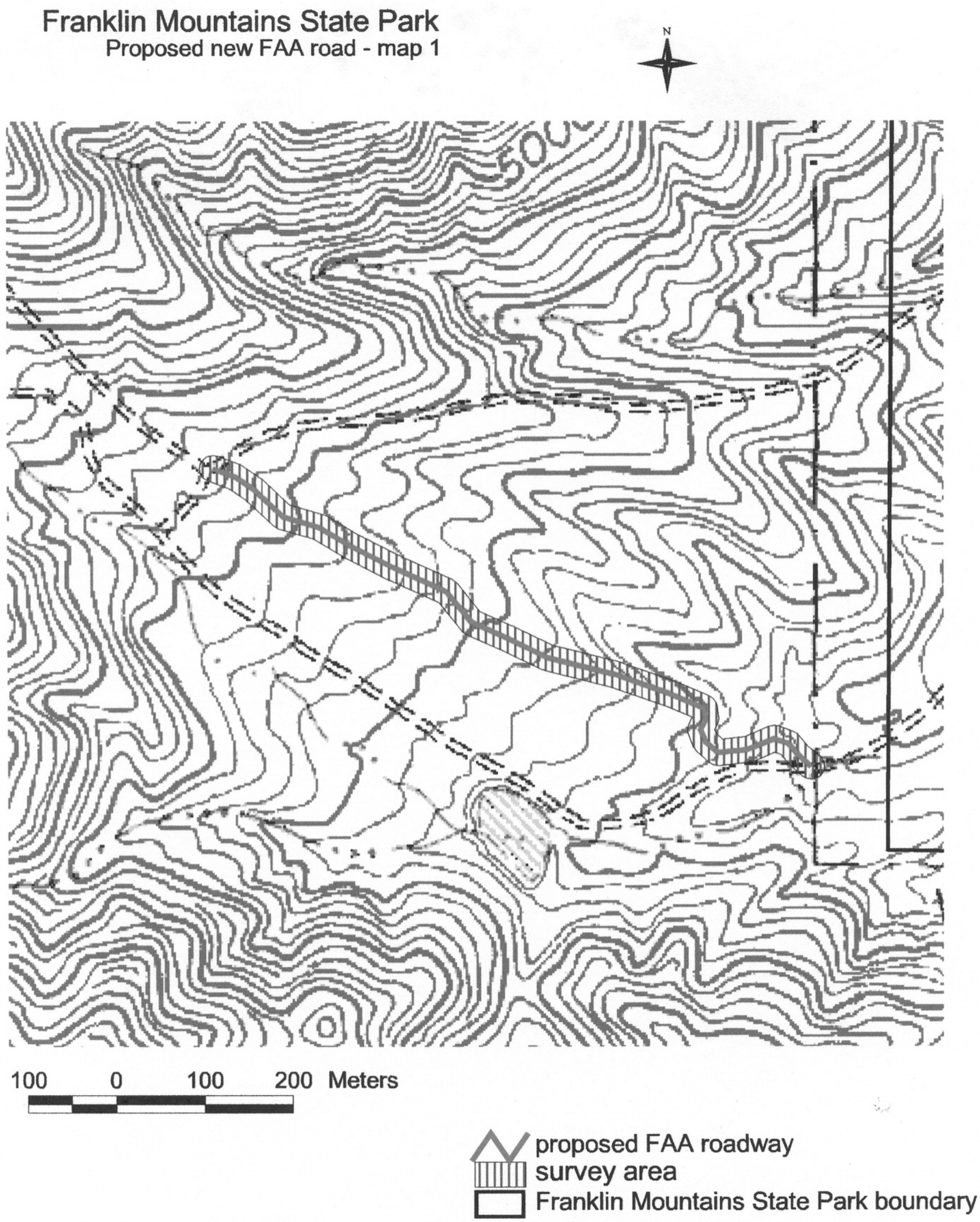

Figure 2. Proposed FAA easement/access road, Franklin Mountains State Park.

The proposed easement/access road is situated on a moderately sloping upland backslope in the foothills of the Franklin Mountains. Much of the area is mantled by loose igneous rocks with developed soils in places. Numerous lechuguilla, as well as occasional yucca, ocotillo, and various cacti, cover much of the backslope, providing about 70 to 100 percent ground surface visibility at the time of the present investigation. Accordingly, the archeological investigation of the proposed project corridor included a walkover of the route by the author and the TPWD Natural Resource Coordinator for the Trans-Pecos region of west Texas.

Archeological field work for this project was conducted on August 29, 2006, under the authority of the 2006 annual Texas Parks and Wildlife Department Permit No. 4011. Two person days were required to complete the fieldwork for this project.

Environmental Setting

Landscape

The Franklin Mountains are the southern extension of an almost continuous range over 100 miles long, including the Organ and San Andres Mountains to the north in New Mexico. This range is an excellent example of what is termed a tilted fault block mountain building. Similar ranges occur over a great region in the western United States and Mexico, including southern New Mexico, southern and western Arizona, eastern California, all of Nevada, and western Utah.

The Franklins are bordered on the east by the broad, flat surface of the Hueco Bolson, and on the west by the Mesilla Bolson. These two broad basins are portions of very large geologic features that extend far to the north and into Mexico to the south. The strata in the Franklins range in age from Precambrian (almost one billion years ago) through Permian (ending about 180 million years ago), with only the Cambrian period unrepresented.

The rocks exposed in the Franklins (except for the Precambrian granites) were deposited in shallow seas which covered the central part of the United States more or less continuously throughout the almost 400 million years of the Paleozoic age. After the Permian, the land was sufficiently elevated to exclude marine waters from the region. At the beginning of the Cretaceous period, about 135 million years ago, the land sank and the seas returned depositing extensive beds of shale and limestone in the foothills of nearby mountains to the south, although not in the Franklins. Late in the Cretaceous the seas once again receded as the continental land mass rose. No marine waters have since covered this region, and with their removal, the El Paso region gradually rose to near its present elevation through massive faulting and breaking of the earth's crust associated with the laramide Orogeny (Lovejoy 1980).

Franklin Mountains State Park is located in the Basin and Range physiographic province in the Mountain Ranges subregion of the Trans-Pecos natural region (Texas Parks and Wildlife Department 1990), and is in the northwestern portion of the Chihuahuan biotic province (Blair 1950). The park is situated near a transitional area with the Sonoran Desert to the west and the Rocky Mountains to the north. A conspicuous element of the Sonoran flora represented in the park is southwestern barrel cactus (*Ferocactus wislizenii*), which reaches the eastern extent of its range in the Franklin Mountains. The influence of the Rocky Mountains is evident in the occurrence of other species, such as Gambel oak (*Quercus gambelii*).

Climate

Generally, low yet variable precipitation, wide temperature fluctuations, low relative humidity, and abundant sunshine characterize the arid climate of Franklin Mountains State Park and the surrounding region. Annual precipitation recorded in the area has ranged from 2.73 inches to 17.80 inches since 1900 with a yearly average of 8.61 inches. Most of the rainfall comes in the form of thundershowers in late summer and early fall (July, August, and September), although significant winter precipitation is possible during "El Niño" years. Temperatures average between 32°F and 60°F in winter with the record low recorded as -8°F in 1962. In summer, average high temperatures range from 75°F to 95°F with a record high of 114°F in 1994. Temperatures exceeding 100°F are not uncommon during most summers. Late May, June, and early July is typically the hottest period of the year.

Flora and Fauna

Due to its size, landform variation, and far west Texas location, Franklin Mountains State Park is an important reservoir of biological diversity. To some extent the mountain range functions as a site of endemism and as a refugium for relict species as well. The elevation change (4,150 – 7,192 feet) at the park accounts for several general habitat types. In the lowlands, floristic formations include desert grassland and shrub desert. By contrast, in mesic canyons and atop the higher peaks a montane shrubland occurs. Relict species associated with the last full glacial period persist in the highest, coolest, and wettest reaches of the mountains. Little surface water occurs on the property, although one small complex of springs supports riparian woodland and some aquatic species. A federally listed endangered species, Sneed pincushion cactus (*Coryphantha sneedii* var. *sneedii*) has been recorded on certain limestone slopes. Additionally, resin-leaved brickelbush (*Brickellia baccharidea*) is endemic to the Franklin Mountains, occurring at no other location in the world.

The north to northeast slope of the peak known as Anthony's Nose is an important refugium of gastropods, including two species previously presumed extinct. One species (*Sonorella metcalfi*) and one subspecies (*Ashmunella pasonis polygyroidea*) are endemic to the Franklin Mountains. Amphibians, reptiles, birds, and mammals found in the park, in general terms, are typical of the northern Chihuahuan Desert region. The precise distribution of many species is dependent upon elevation, aspect, and general habitat. Lizards and snakes are well represented, whereas amphibians are poorly represented given the extremely limited aquatic resources. Protected herpetiles found in the park include two species listed as threatened at the state level: Texas horned lizard (*Phrynosoma cornutum*) and Texas lyre snake (*Trimorphodon biscutatus* subsp.

vilkinsonii). Bird populations vary seasonably, with the greatest concentrations present during spring and fall migration periods. The grasslands of the park supply important wintering habitat for a number of sparrows and other granivores, and the diverse physiography provides important nesting habitat for numerous breeding species. Many small mammals including a number of rodents and several bat species, large herbivores such as the infrequently encountered mule deer (*Odocoileus hemionus* subsp. *crooki*), and large carnivores such as coyote (*Lupus latrans* subsp. *texensis*) have been recorded.

Culture History

Paleoindian Tradition

The Paleoindian Tradition, the earliest defined cultural tradition in North America, dates from approximately 12,000 to 8000 years before present (B.P.) in west Texas (Mallouf 1993:7; Miller and Kenmotsu 2004:212). This tradition is divided into Early and Late Paleoindian stages based on projectile point forms. Early Paleoindian artifact assemblages (12,000-9400 B.P.) include fluted style projectile points, while Late Paleoindian (9400-8000 B.P.) assemblages include unfluted lanceolate points, typically with collateral flaking and basal/shoulder grinding. Further subdivision of the Paleoindian Tradition into the Clovis complex (ca. 12,000-10,000 B.P.), Folsom complex (ca. 10,000-9400 B.P.), and the Plano/Cody complexes (ca. 9400-8000 B.P.) has been suggested based on functional and stylistic differences in the tool kits of these groups (Miller and Kenmotsu 2004:212). These differences in artifact traits may reflect changing hunting and settlement adaptations.

Although these early inhabitants of the New World were probably subsistence generalists (Sollberger and Hester 1972:326; Stanford 1991; Collins 1995:381; Brown and Anthony 2000:81), Paleoindians were at least somewhat dependent upon hunting the megafauna of the Late Wisconsinan glacial age, such as Columbian mammoth (*Mammuthus columbi*) and giant bison (*Bison antiquus*) (Suhm et al. 1954:16; Dibble and Lorraine 1968; Judge 1973; Weir 1976:120; Frison 1978). These people traveled in small nomadic bands, camping in areas where good lithic materials could be procured for tool manufacture and where permanent water sources attracted game (Mallouf 2000:6).

The environment in what is now the northern Chihuahuan Desert during much of the Paleoindian period was cooler and wetter than today, and forest and woodland species flourished at much lower elevations than at present (Ing et al. 1996:25).

The earliest occupational sites in the El Paso vicinity consist of scatters of lithic materials washed out of deflated and eroded open sites. The recognizable artifacts, including Paleoindian points and associated lithic tools, suggest a wide distribution of people across the flanks of local mountain ranges and their adjacent interior. However, the Paleoindian tradition is very poorly represented in the Franklin Mountains. Isolated finds of Paleoindian points are occasionally mentioned for the area, but often without precise provenience information or association with other cultural deposits (Tomaso 1999:12). As discussed by Tomaso (1999:11-12), there may be a geomorphological explanation for the paucity of Paleoindian material in the Franklin Mountains. Pleistocene/Early Holocene beds are not exposed in most of the adjacent Hueco Bolson, either because they are deeply buried or because they have been eroded away and redeposited elsewhere. Within the Franklin Mountains, it is most likely that these beds were eroded away and redeposited (Monger 1993).

Archaic Tradition

After the extinction of most of the megafauna of the Late Wisconsinan glacial age, a new lifestyle evolved. This cultural tradition, referred to as the Archaic Tradition, extended from about 8000 to 1800 B.P. and is generally divided into the Early (8000-5000 B.P.), Middle (5000-3000 B.P.) and Late Archaic (3000-1800 B.P.) stages in far west Texas.

The Archaic period witnessed a continuation of hunting and gathering methods used by Paleoindians, but modified to adapt to the changes in the ecosystem brought about by the end of the glacial era and a warming and drying of the local environment. These changes saw a greater reliance on processed desert plants, as demonstrated by the existence of burned rock piles marking the locations of large earth ovens, and a wide range of crushing and grinding tools used for plant processing. The short dart propelled by an atlatl was the primary weapon for hunting and defense. A much greater variety of projectile point styles evolved during this time.

While Archaic populations continued to be moderately mobile on a seasonal basis (Hard 1983; Carmichael 1986; Wills 1988; Whalen 1994), there was a gradual trend toward increased sedentism (Charles 1994:34). By the Late Archaic period, the first permanent structures make their appearance in the form of semi-subterranean pithouses. Various plant materials and some pollen grains recovered from these early pithouses may represent the beginning of maize horticulture in the area (see Matson 1991). Site sizes and distributions during this time suggest an increase in population. Characteristics of the Archaic Tradition continued into the early Formative period with the addition of increased use of cultigens.

Although some of the aceramic sites at Franklin Mountains State Park are probably attributable to the Archaic Tradition, most of these sites have not yielded diagnostic artifacts. As a result, it is difficult to assign cultural periods to these sites with any degree of certainty. Nonetheless, models of human adaptation described by Hunter-Anderson (1986) and applied to this area by Whalen (1994), suggest that many of the higher altitude Archaic sites in the Franklins probably functioned as winter camps. Sites occupied on a seasonal basis could be expected to vary greatly in morphology (Whalen 1994).

Formative Tradition

While poorly defined in the Southwest, the Formative Tradition is generally characterized by the appearance of pottery vessels and pithouse architecture around 1000 B.P. (Thompson 1988:10). The Formative Tradition is further characterized by a more settled, at least seasonal sedentary lifestyle with some use of maize. The period began to be manifest in pit house villages by approximately 4,000 years ago (Bentley 1986:31), the very earliest beginnings of the Mogollon cultural tradition. A growing use, if not dependence, upon agriculture probably based on lowland floodwater farming (Matson 1991:308) appeared in the El Paso area, at least in the Hueco Bolson east of the Franklins, perhaps as early as 1800 B.P. (LeBlanc and Whalen 1979; Stuart and Gauthier 1984:240). By about 1250 B.P., the bow and arrow began to replace the atlatl, resulting in increased hunting efficiency. Development of extensive trade networks is evidenced by exotic imported pottery, marine shell jewelry and turquoise beads, while rock art motifs (such as those at nearby Hueco Tanks) show a rich ideological exchange with the south, west, and north. Late in the Formative period (after ca. 900 B.P.) pit houses evolved into contiguous-roomed surface pueblos. Development of the Formative Tradition occurred within environmental conditions that were probably very similar to those of today.

With the development of sedentary lifestyles and more settled, permanent pueblo type villages, the people living in the El Paso area became part of the cultural tradition known today as the Jornada Mogollon. Rather than a biologically specific group of people or a linguistic group, the Mogollon should be viewed as a sphere of artifactual, geographic, and distributional traits, more or less similar, which can be directly observed (Eidenbach 1985:1). The Jornada Mogollon extended from just west of El Paso north up the Rio Grande drainage to about Elephant Butte Dam, then northeast to Gran Quivira, south and east into the staked plains of Texas to just west of Big Bend National Park and into northern Chihuahua, including the Casas Grandes area of north central Chihuahua, Mexico (Wheat 1955:30; Eidenbach 1985:1). There are three recognized phases of the Jornada Mogollon, including the Mesilla (ca. 1600 to 950 B.P.), Doña Ana or Transitional (ca. 1050 to 900 B.P.), and El Paso (ca. 900 to 625 B.P.) phases.

The greater Mogollon cultural area extended as far as central Arizona and Albuquerque and is considered to have developed, more or less uniformly, out of a desert-adapted cultural tradition which persisted for at least 6,000 years throughout the Great Basin and the Southwest.

The development of the Mogollon cultural tradition was based on patterns of subsistence. Excavations at Tularosa Cave in central New Mexico (Martin 1979:64) provided a variety of well preserved plant and animal remains representing approximately 2,500 years of occupation (Matson 1991:282). From that collection, which included 40 genera of plants and the faunal remains of deer, bison, turkey, and muskrats, researchers have a good idea of what these people were eating. From the deposits at Tularosa Cave it is evident that from about 2500 B.P. to 1500 B.P., maize played an increasingly important role in the diets of the cave's occupants. After 1500 B.P., a growing dependence upon maize agriculture can be demonstrated throughout the area, including El Paso. Around 1200 B.P., sedentary farming villages (Kegley 1982:3), including multi-roomed pueblos, emerged throughout the Mogollon region in localities suitable for a variety of floodwater, monsoon dependent, and dry farming strategies (see Matson 1991:207-216).

The presence of a wide variety of indigenous and imported pottery types in the El Paso area reflect the importance of the area as a center of trade and commerce during the Formative period. Locally made wares included El Paso Brown and El Paso Polychrome, while imported or trade wares included Mimbres Boldface Black-on-White (B/W) bowls. During the latter part of the Formative period (i.e. the Doña Ana/Transitional and El Paso phases from approximately 900 to 625 B.P.), imported ceramics underwent a significant increase in number and vessel shapes. Mimbres Boldface B/W was fairly common, as was Mimbres Classic B/W from southwestern New Mexico. From north of the El Paso area came Chupadero B/W and Three Rivers Red-on-Terracotta (R/T), while St. Johns Polychrome and Wingate Black-on-Red came from the Little Colorado River in northeastern Arizona. Playas Redwares, Ramos Polychrome, and Villa Ahumada Polychrome were brought in from northern Chihuahua, Mexico and the Casas Grandes area (Bentley 1986:44).

The late Formative period in the El Paso area, and especially the Hueco Bolson, is also characterized by an increase in population. This resulted in a continuation of hunting and gathering subsistence strategies and an aggregation of local farming groups into areas best suited for intensive agriculture. This is seen as a shift from widely dispersed small dry farming plots around the bolson playas to lower gradient alluvial fans and playas nearer the mountains (Carmichael 1985:114; Bentley 1986:45), presumably to gain access to more dependable rainfall and floodwater events. The aggregation of the farming population into large contiguous room pueblos occurred throughout the Southwest. The Mimbres Mogollon to the west of El Paso had collapsed and essentially disappeared by 870 B.P. (Shafer 1990:9). By 700 B.P., many, if not most, small habitation sites across the Southwest were abandoned and populations aggregated in large multi-room pueblos, essentially reflecting the locations of modern day pueblos. The reasons for this general shifting of populations were probably varied. A devastating drought in the upper San Juan drainage toward the end of the 13th century may have precipitated some localized population shifts, and the final abandonment of such places as Mesa Verde and Chaco Canyon. These people likely migrated to more favorable agricultural areas; however, modern researchers are beginning to view this movement as a cyclical adjustment to recurring climatic conditions (Cordell 1996; Van West 1996). The El Paso area was the scene of similar aggregations of populations and the immediate vicinity seems to have been sparsely populated by 600 B.P. The first Spanish entradas into the area in the late 16th century did not mention any villages or populations in this section of the Rio Grande.

The Keystone Dam site (O'Laughlin 1980) on the western slope of the Franklin Mountains may represent the earliest beginnings of the Formative Tradition in the area. This winter habitation site includes the remnants of two small dwellings. Other definitively identified Formative sites within the park include four Mesilla phase sites (41EP21, 41EP391, 41EP405 and possibly 41EP4852) and four El Paso phase sites (41EP23, 41EP387, 41EP391 and 41EP405). No Doña Ana/Transitional phase sites have been reported in the park.

Protohistoric Period

The Protohistoric Period in far west Texas dates from about A.D. 1350 to 1540. The term Protohistoric assumes that earliest European encounters in the area would have had little or no effect on the native population, but European-introduced diseases probably preceded extensive European-Native American contact in the vicinity of the Franklin Mountains. By the time Europeans arrived to the area in 1581 (Broaddus n.d.), Native American populations were probably already somewhat decimated. Such a population loss may be reflected in the archeological record by a reduction in site sizes and complexity (Tomaso 1999:16).

Ethnohistoric sources indicate that the Manso people used the Franklin Mountains area most commonly during this period (Benavides 1965). According to Broaddus (n.d.:3):

> It appears that the Manso lived on the banks of the Rio Grande on the adjacent sand dunes or in the surrounding mountains, including the Franklin Mountains. In order to survive in the desert, the Mansos gathered agave, mesquite beans and other natural vegetation in the area,…found the mountainous locations…favorite locations to hunt and gather food.

Based on these observations, any of the undefined lithic scatters in the park could be attributable to Protohistoric Manso activity. Other Native American groups that were present in the area during this time include the Suma, Jumano, Jocomes, and Tampachoas (Tomaso 1999:16).

Historic Period

For the purposes of this discussion, the Historic Period is subdivided into the Spanish (1540-1821), Mexican (1821-1846) and Anglo (1846-present) phases. The degree to which Native Americans utilized this region during the Historic Period is uncertain. While Way (1978:22) contends that no Historic records indicate any Native American presence in the Franklin Mountains, other researchers suggest that Apaches and other tribes used the Franklin Mountains as temporary camps while planning and conducting raids, and interacting with European colonists and other Native American groups during the 18th and 19th centuries (Broaddus n.d.:5).

While the rugged terrain of the Franklin Mountains has never provided an ideal environment for permanent habitation, it has undoubtedly been the subject of exploration since the first Spanish entrada in 1581. The Spanish used the El Paso area as part of the Camino Real trade route between Chihuahua and Santa Fe. The first Spanish settlement in the area, El Paso del Norte, was established when the Spaniards and some of their Native American allies retreated from New Mexico during the Pueblo revolt of 1680 (Hughes 1914). During the subsequent Mexican phase, several small towns were established along the Rio Grande, but, again, sites in the Franklin Mountains would have been limited to wagon roads and short term camps (Tomaso 1999:17). Although the Republic of Texas formally annexed this area in 1836, Mexican control was not actually contested until the United States went to war with Mexico ten years later (Broaddus n.d.:6). In 1849, shortly after gaining control of the area, the United States established Fort Bliss in an effort to put an end to Apache and Mexican incursions into the area (Thomlinson 1945).

Since 1849, the Franklin Mountains have been the scene of various ranching, mining, and military activities. The mining industry is well represented in the park by open mine shafts on both the east and west sides of the mountains, a large concrete foundation of a tin ore processing mill on the east side, and open gravel and quartz quarries on the north and south. Tin deposits on the east flank of the Franklins are the major source of tin in the United States. The ruins of a small sheep-ranching complex can be seen in the Hitt Canyon drainage and wire fences are found throughout the park. Hardy-Heck-Moore and Associates Inc. (1996) have compiled a detailed history of the Franklin Mountains and the El Paso area, including the movement to establish the Franklin Mountains State Park (Hardy-Heck-Moore and Associates 1996:193-208).

Previous Investigations

Several archeological surveys conducted during the past 25 years have documented a fairly wide diversity of cultural resources within what is now Franklin Mountains State Park. Karen Way's survey (for the Natural Area Surveys) of the mountains in 1978 recorded 20 previously unrecorded prehistoric sites (Way 1978:37). Interestingly, all of Way's sites were small camps or small specialized activity areas, and no ceramics, ground stone, or cultural features were found on any of the sites. Way suggested that most sites in the Franklins were probably small, temporary camps and that larger, more permanent habitation sites would likely be at lower elevations and nearer to water sources. She reasoned, based upon the lack of large or significant sites, that the Franklin Mountain range has been a marginally used, auxiliary resource (especially for rhyolite, chert and andesite) area throughout prehistoric and historic times. Way estimated that her survey covered approximately ten percent of Franklin Mountains State Park, and used her weighted sample to predict the density of sites which could be expected on the unsurveyed portions of the park. Eight years later, using Way’s site density estimates, a Texas Archeological Society summer field school proved that her estimates were accurate and could be used to estimate the magnitude of a total park survey (Ron Ralph, personal communication to J. David Ing 1996).

In 1995, the Texas Parks and Wildlife Department contracted with the University of Texas at Austin to conduct additional reconnaissance and survey of approximately 1,500 acres in the Tom Mays, Hitt Canyon, and Tin Mine units and approximately 125 miles of proposed foot and horse trails that connected these units. Efforts of the survey concentrated on existing and proposed trails as well as areas proposed for future development. Every trail and proposed development in the Hitt Canyon Unit, Tin Mine Unit, Tom Mays Unit, Smugglers Pass, Visitor Center/Headquarters, and McKelligon Canyon City Park were surveyed on foot. Additional survey was done within the visual corridor accessed by many of the trails. Part of the intention of this work was to relocate and report on a number of archeological sites found in 1986 by the Texas Archeological Society field school. During this latest work by the University of Texas, every known site within the park boundaries was evaluated and an additional six previously unknown prehistoric sites were discovered and documented (Tomaso 1999:1). However, mistakes in the documentation of site coordinates, site misplots on maps, and the assignment of the same site number to more than one location makes it difficult, if not impossible, to accurately note the total number of known sites within Franklin Mountains State Park. Presently, after eliminating duplicated site numbers, there are a total of 38 sites plotted with trinomial numbers within the present boundaries of the park. These sites include aceramic sites that are probably attributable to the Archaic Tradition, Formative sites including El Paso phase and Mesilla phase sites, and historic mining and ranching sites. Isolated finds of Paleoindian points are occasionally found in the Franklin Mountains, but no Paleoindian sites have yet been identified within the state park.

Results And Recommendations Of Present Investigation

The archival review did not reveal that any cultural resource investigations have been previously conducted within the present project corridor, and none of the previously recorded archeological sites in Franklin Mountains State Park are located within the project corridor.

A walkover of the proposed trail route was conducted on August 29, 2006 by the Texas Parks and Wildlife Cultural and Natural Resource Coordinators for west Texas. Where possible, the walkover was extended 50 feet (15.2 meters) from both sides of the existing jeep road, covering a total area of approximately nine acres (3.6 hectares). Pedestrian transects were spaced at 50 feet (15 meters) intervals. The walkover revealed two isolated findspots.

The southernmost findspot, IF-1, consisted of a cluster of approximately eight to ten pieces of machine-cut lumber cut to various dimensions. Wire nails, a large bolt, and at least one wood screw were observed protruding from the boards, and a piece of wire fencing was fastened between two of the boards. There were no other artifacts, foundations or other cultural features found in association with these boards. As a result, these items were identified as an isolated findspot rather than an archeological site. The findspot measured approximately 25 feet (7.6 meters) northwest-southeast by 10 feet (3.0 meters) northeast-southwest and ran parallel to the existing jeep road. At least part of this findspot appears to fall within the proposed FAA easement.

The northernmost findspot, IF-2, consisted of an area measuring approximately 2.5 feet (0.8 meter) northeast-southwest by 3.0 feet (0.9 meter) northwest-southeast that had been outlined by fist-sized limestone rocks (Figure 3). The central area of this feature had been previously excavated, as indicated by a partial vertical soil profile that could still be recognized; however, the feature had since been filled with loose sediment and detritus. No artifacts or any other cultural features were found in association with IF-2. The function of this feature remains undetermined. While this findspot was within the walkover area of the present investigation, it is outside the actual easement being requested by the FAA. As a result, this feature will not be impacted by activities associated with the present project.

As a result of these findings, the TPWD requested concurrence from the THC for designation of the proposed easement/access road to the FAA to proceed. The TPWD received concurrence from the THC on September 6, 2006. As of January 2007, the FAA had not yet completed the proposed access road.

Copies of this report and related archival documentation are curated at the TPWD Archeology Laboratory, Austin, and at the TPWD Region 1 Cultural Resource Coordinator's office, Fort Davis. No artifacts were collected during the present investigation.

Figure 3. Feature of unknown function at IF-2.

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Franklin Mountains State Park And Wyler Aerial Tramway, El Paso County

July 12, 2006

Author: Tim Roberts, Texas Parks and Wildlife Department (TPWD) Cultural Resource Coordinator - Region 1

Project Description: Archeological Survey of Proposed Crest Trail, Wyler Aerial Tramway and Franklin Mountains State Park, El Paso County

Type of Investigation: Pedestrian Surface Survey

Staff: Tim Roberts and Mark Lockwood (TPWD Natural Resource Coordinator - Region 1)

Introduction

The Texas Parks and Wildlife Department (TPWD) proposes to establish a 1.01 miles (0.41 kilometer) interpretive foot trail, referred to as the 'Crest Trail', that will connect the existing Wyler Aerial Tramway observation deck platform near the summit of Ranger Peak with existing nearby trail routes in Franklin Mountains State Park, El Paso County (Figures 1-2). A federally-funded trail grant will be used in the establishment of the trail route, as well as the fabrication and installation of a gate and metal stairs at the Tramway observation deck platform. The proposed project was divided into two phases, the first phase of which included the construction of the proposed gate and stairs and the development of approximately 958 feet (292 meters) of new trail (Figure 2). The second phase of the proposed project includes the development of the westernmost segment of the trail route (Figure 2), which measures approximately 699 feet (213 meters) in length. The remainder of the proposed Crest Trail follows an already existing trail that was originally constructed by a utility company prior to the property being acquired by the TPWD. The new sections of trail will be approximately two feet (0.61 meter) in width, and the depth of disturbance may be as much as 1.5 to 2 feet (0.46 – 0.61 meter). The total area included within the two new segments of trail is approximately 0.08 acre (0.03 hectare).

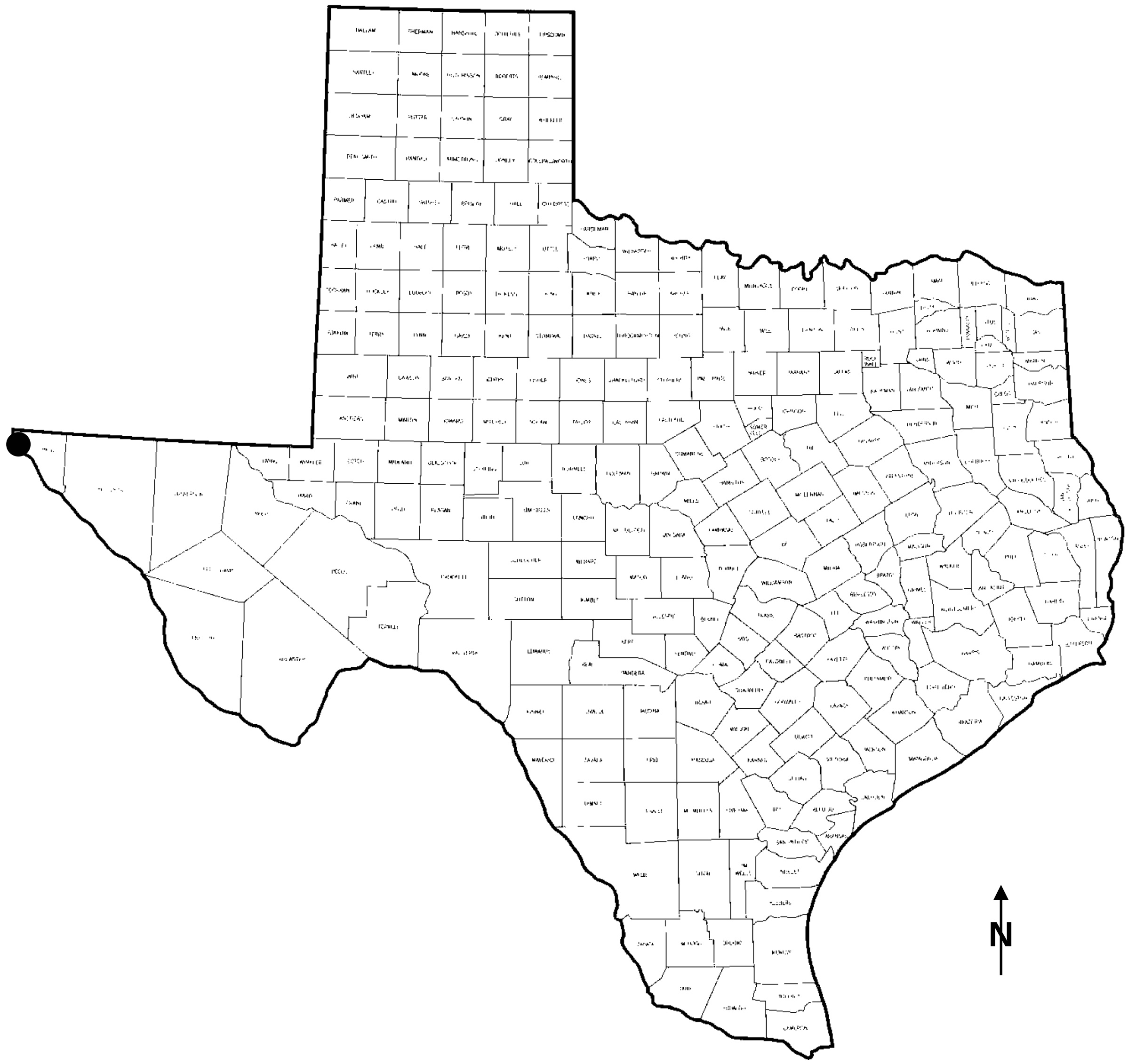

Figure 1. Location of project area in El Paso County, Texas.

Figure 2. Proposed Crest Trail, Wyler Aerial Tramway and Franklin Mountains State Park, El Paso County.

The project area is located entirely within the USGS 7.5' El Paso, Texas quadrangle. The northern terminus of the first phase of the project is located in UTM zone 13, 359605E, 3518834N; the southern terminus of this segment is UTM zone 13, 359560E, 3519575N. The northern terminus of the second phase of the project is situated in UTM zone 13, 359461E, 3519918N; the southern terminus of this segment is UTM zone 13, 359439E, 3519738N (see Figure 2).

The proposed trail corridor is situated on a narrow, rocky, ridge summit and a steeply sloping mountain backslope that is mantled by loose igneous rocks. As previously noted, a long segment of the proposed trail route follows an already existing path; this section of trail will not require much additional improvement. The remainder of the proposed trail route will require the excavation of loose rock, and possibly the building-up of trail in some locations. If additional building material is needed for the project, rock debris from the construction of the existing radio tower on top of Ranger Peak will be used. Despite the lack of soil development in the area, numerous lechuguilla, as well as occasional yucca, ocotillo, and various cacti, cover much of the backslope. The ridge summit is devoid of vegetation. As a result, the surface visibility within this segment of the proposed trail route ranged from 50 to 100 percent at the time of investigation. Accordingly, the archeological investigation of the proposed project corridor included a walkover of the route by the author and the TPWD Natural Resource Coordinator for the Trans-Pecos region of west Texas.

Archeological field work for this project was conducted on two separate occasions in July and August of 2006, under the authority of the 2006 annual Texas Parks and Wildlife Department Permit No. 4011. Approximately three person days were spent in the field during the course of this project.

Environmental Setting

Landscape

The Franklin Mountains are the southern extension of an almost continuous range over 100 miles long, including the Organ and San Andres Mountains to the north in New Mexico. This range is an excellent example of what is termed a tilted fault block mountain building. Similar ranges occur over a great region in the western United States and Mexico, including southern New Mexico, southern and western Arizona, eastern California, all of Nevada, and western Utah.

The Franklins are bordered on the east by the broad, flat surface of the Hueco Bolson, and on the west by the Mesilla Bolson. These two broad basins are portions of very large geologic features that extend far to the north and into Mexico to the south. The strata in the Franklins range in age from Precambrian (almost one billion years ago) through Permian (ending about 180 million years ago), with only the Cambrian period unrepresented.

The rocks exposed in the Franklins (except for the Precambrian granites) were deposited in shallow seas which covered the central part of the United States more or less continuously throughout the almost 400 million years of the Paleozoic age. After the Permian, the land was sufficiently elevated to exclude marine waters from the region. At the beginning of the Cretaceous period, about 135 million years ago, the land sank and the seas returned depositing extensive beds of shale and limestone in the foothills of nearby mountains to the south, although not in the Franklins. Late in the Cretaceous the seas once again receded as the continental land mass rose. No marine waters have since covered this region, and with their removal, the El Paso region gradually rose to near its present elevation through massive faulting and breaking of the earth’s crust associated with the laramide Orogeny (Lovejoy 1980).

The Franklins are located in the Basin and Range physiographic province in the Mountain Ranges subregion of the Trans-Pecos natural region (Texas Parks and Wildlife Department 1990), and is in the northwestern portion of the Chihuahuan biotic province (Blair 1950). The mountains are situated near a transitional area with the Sonoran Desert to the west and the Rocky Mountains to the north. A conspicuous element of the Sonoran flora represented in the area is southwestern barrel cactus (*Ferocactus wislizenii*), which reaches the eastern extent of its range in the Franklin Mountains. The influence of the Rocky Mountains is evident in the occurrence of other species, such as Gambel oak (*Quercus gambelii*).

Climate

Generally, low yet variable precipitation, wide temperature fluctuations, low relative humidity, and abundant sunshine characterize the arid climate of the Franklin Mountains and the surrounding region. Annual precipitation recorded in the area has ranged from 2.73 inches to 17.80 inches since 1900 with a yearly average of 8.61 inches. Most of the rainfall comes in the form of thundershowers in late summer and early fall (July, August and September), although significant winter precipitation is possible during “El Niño” years. Temperatures average between 32°F and 60°F in winter with the record low recorded as -8°F in 1962. In summer, average high temperatures range from 75°F to 95°F with a record high of 114°F in 1994. Temperatures exceeding 100°F are not uncommon during most summers. Late May, June and early July is typically the hottest period of the year.

Flora and Fauna

Due to the size of the mountains, landform variation, and far west Texas location, the Franklin Mountains are an important reservoir of biological diversity. To some extent the mountain range functions as a site of endemism and as a refugium for relict species as well. The elevation change (4,150 – 7,192 feet) accounts for several general habitat types. In the lowlands, floristic formations include desert grassland and shrub desert. By contrast, in mesic canyons and atop the higher peaks a montane shrubland occurs. Relict species associated with the last full glacial period persist in the highest, coolest, and wettest reaches of the mountains. Little surface water occurs on the property, although one small complex of springs supports riparian woodland and some aquatic species. A federally listed endangered species, Sneed pincushion cactus (*Coryphantha sneedii* var. *sneedii*) has been recorded on certain limestone slopes. Additionally, resin-leaved brickelbush (*Brickellia baccharidea*) is endemic to the Franklin Mountains, occurring at no other location in the world.

The north to northeast slope of the peak known as Anthony's Nose is an important refugium of gastropods, including two species previously presumed extinct. One species (*Sonorella metcalfi*) and one subspecies (*Ashmunella pasonis polygyroidea*) are endemic to the Franklin Mountains. Amphibians, reptiles, birds, and mammals found in the park, in general terms, are typical of the northern Chihuahuan Desert region. The precise distribution of many species is dependent upon elevation, aspect, and general habitat. Lizards and snakes are well represented, whereas amphibians are poorly represented given the extremely limited aquatic resources. Protected herpetiles found in the park include two species listed as threatened at the state level: Texas horned lizard (*Phrynosoma cornutum*) and Texas lyre snake (*Trimorphodon biscutatus* subsp. *vilkinsonii*). Bird populations vary seasonably, with the greatest concentrations present during spring and fall migration periods. The grasslands of the park supply important wintering habitat for a number of sparrows and other granivores, and the diverse physiography provides important nesting habitat for numerous breeding species. Many small mammals including a number of rodents and several bat species, large herbivores such as the infrequently encountered mule deer (*Odocoileus hemionus* subsp. *crooki*), and large carnivores such as coyote (*Lupus latrans* subsp. *texensis*) have been recorded.

Culture History

Paleoindian Tradition

The Paleoindian Tradition, the earliest defined cultural tradition in North America, dates from approximately 12,000 to 8000 years before present (B.P.) in west Texas (Mallouf 1993:7; Miller and Kenmotsu 2004:212). This tradition is divided into Early and Late Paleoindian stages based on projectile point forms. Early Paleoindian artifact assemblages (12,000-9400 B.P.) include fluted style projectile points, while Late Paleoindian (9400-8000 B.P.) assemblages include unfluted lanceolate points, typically with collateral flaking and basal/shoulder grinding. Further subdivision of the Paleoindian Tradition into the Clovis complex (ca. 12,000-10,000 B.P.), Folsom complex (ca. 10,000-9400-B.P.), and the Plano/Cody complexes (ca. 9400-8000 B.P.) has been suggested based on functional and stylistic differences in the tool kits of these groups (Miller and Kenmotsu 2004:212). These differences in artifact traits may reflect changing hunting and settlement adaptations.

Although these early inhabitants of the New World were probably subsistence generalists (Sollberger and Hester 1972:326; Stanford 1991; Collins 1995:381; Brown and Anthony 2000:81), Paleoindians were at least somewhat dependent upon hunting the megafauna of the Late Wisconsinan glacial age, such as Columbian mammoth (*Mammuthus columbi*) and giant bison (*Bison antiquus*) (Suhm et al. 1954:16; Dibble and Lorraine 1968; Judge 1973; Weir 1976:120; Frison 1978). These people traveled in small nomadic bands, camping in areas where good lithic materials could be procured for tool manufacture and where permanent water sources attracted game (Mallouf 2000:6).

The environment in what is now the northern Chihuahuan Desert during much of the Paleoindian period was cooler and wetter than today, and forest and woodland species flourished at much lower elevations than at present (Ing et al. 1996:25).

The earliest occupational sites in the El Paso vicinity consist of scatters of lithic materials washed out of deflated and eroded open sites. The recognizable artifacts, including Paleoindian points and associated lithic tools, suggest a wide distribution of people across the flanks of local mountain ranges and their adjacent interior. However, the Paleoindian tradition is very poorly represented in the Franklin Mountains. Isolated finds of Paleoindian points are occasionally mentioned for the area, but often without precise provenience information or association with other cultural deposits (Tomaso 1999:12). As discussed by Tomaso (1999:11-12), there may be a geomorphological explanation for the paucity of Paleoindian material in the Franklin Mountains. Pleistocene/Early Holocene beds are not exposed in most of the adjacent Hueco Bolson, either because they are deeply buried or because they have been eroded away and redeposited elsewhere. Within the Franklin Mountains, it is most likely that these beds were eroded away and redeposited (Monger 1993).

Archaic Tradition

After the extinction of most of the megafauna of the Late Wisconsinan glacial age, a new lifestyle evolved. This cultural tradition, referred to as the Archaic Tradition, extended from about 8000 to 1800 B.P. and is generally divided into the Early (8000-5000 B.P.), Middle (5000-3000 B.P.) and Late Archaic (3000-1800 B.P.) stages in far west Texas.

The Archaic period witnessed a continuation of hunting and gathering methods used by Paleoindians, but modified to adapt to the changes in the ecosystem brought about by the end of the glacial era and a warming and drying of the local environment. These changes saw a greater reliance on processed desert plants, as demonstrated by the existence of burned rock piles marking the locations of large earth ovens, and a wide range of crushing and grinding tools used for plant processing. The short dart propelled by an atlatl was the primary weapon for hunting and defense. A much greater variety of projectile point styles evolved during this time.

While Archaic populations continued to be moderately mobile on a seasonal basis (Hard 1983; Carmichael 1986; Wills 1988; Whalen 1994), there was a gradual trend toward increased sedentism (Charles 1994:34). By the Late Archaic period, the first permanent structures make their appearance in the form of semi-subterranean pithouses. Various plant materials and some pollen grains recovered from these early pithouses may represent the beginning of maize horticulture in the area (see Matson 1991). Site sizes and distributions during this time suggest an increase in population. Characteristics of the Archaic Tradition continued into the early Formative period with the addition of increased use of cultigens.

Although some of the aceramic sites in the Franklin Mountains are probably attributable to the Archaic Tradition, most of these sites have not yielded diagnostic artifacts. As a result, it is difficult to assign cultural periods to these sites with any degree of certainty. Nonetheless, models of human adaptation described by Hunter-Anderson (1986) and applied to this area by Whalen (1994), suggest that many of the higher altitude Archaic sites in the Franklins probably functioned as winter camps. Sites occupied on a seasonal basis could be expected to vary greatly in morphology (Whalen 1994).

Formative Tradition

While poorly defined in the Southwest, the Formative Tradition is generally characterized by the appearance of pottery vessels and pithouse architecture around 1000 B.P. (Thompson 1988:10). The Formative Tradition is further characterized by a more settled, at least seasonal sedentary lifestyle with some use of maize. The period began to be manifest in pit house villages by approximately 4,000 years ago (Bentley 1986:31), the very earliest beginnings of the Mogollon cultural tradition. A growing use, if not dependence, upon agriculture probably based on lowland floodwater farming (Matson 1991:308) appeared in the El Paso area, at least in the Hueco Bolson east of the Franklins, perhaps as early as 1800 B.P. (LeBlanc and Whalen 1979; Stuart and Gauthier 1984:240). By about 1250 B.P., the bow and arrow began to replace the atlatl, resulting in increased hunting efficiency. Development of extensive trade networks is evidenced by exotic imported pottery, marine shell jewelry and turquoise beads, while rock art motifs (such as those at nearby Hueco Tanks) show a rich ideological exchange with the south, west, and north. Late in the Formative period (after ca. 900 B.P.) pit houses evolved into contiguous-roomed surface pueblos. Development of the Formative Tradition occurred within environmental conditions that were probably very similar to those of today.

With the development of sedentary lifestyles and more settled, permanent pueblo type villages, the people living in the El Paso area became part of the cultural tradition known today as the Jornada Mogollon. Rather than a biologically specific group of people or a linguistic group, the Mogollon should be viewed as a sphere of artifactual, geographic, and distributional traits, more or less similar, which can be directly observed (Eidenbach 1985:1). The Jornada Mogollon extended from just west of El Paso north up the Rio Grande drainage to about Elephant Butte Dam, then northeast to Gran Quivira, south and east into the staked plains of Texas to just west of Big Bend National Park and into northern Chihuahua, including the Casas Grandes area of north central Chihuahua, Mexico (Wheat 1955:30; Eidenbach 1985:1). There are three recognized phases of the Jornada Mogollon, including the Mesilla (ca. 1600 to 950 B.P.), Doña Ana or Transitional (ca. 1050 to 900 B.P.), and El Paso (ca. 900 to 625 B.P.) phases.

The greater Mogollon cultural area extended as far as central Arizona and Albuquerque and is considered to have developed, more or less uniformly, out of a desert-adapted cultural tradition which persisted for at least 6,000 years throughout the Great Basin and the Southwest.

The development of the Mogollon cultural tradition was based on patterns of subsistence. Excavations at Tularosa Cave in central New Mexico (Martin 1979:64) provided a variety of well preserved plant and animal remains representing approximately 2,500 years of occupation (Matson 1991:282). From that collection, which included 40 genera of plants and the faunal remains of deer, bison, turkey, and muskrats, researchers have a good idea of what these people were eating. From the deposits at Tularosa Cave it is evident that from about 2500 B.P. to 1500 B.P., maize played an increasingly important role in the diets of the cave's occupants. After 1500 B.P., a growing dependence upon maize agriculture can be demonstrated throughout the area, including El Paso. Around 1200 B.P., sedentary farming villages (Kegley 1982:3), including multi-roomed pueblos, emerged throughout the Mogollon region in localities suitable for a variety of floodwater, monsoon dependent, and dry farming strategies (see Matson 1991:207-216).

The presence of a wide variety of indigenous and imported pottery types in the El Paso area reflect the importance of the area as a center of trade and commerce during the Formative period. Locally made wares included El Paso Brown and El Paso Polychrome, while imported or trade wares included Mimbres Boldface Black-on-White (B/W) bowls. During the latter part of the Formative period (i.e. the Doña Ana/Transitional and El Paso phases from approximately 900 to 625 B.P.), imported ceramics underwent a significant increase in number and vessel shapes. Mimbres Boldface B/W was fairly common, as was Mimbres Classic B/W from southwestern New Mexico. From north of the El Paso area came Chupadero B/W and Three Rivers Red-on-Terracotta (R/T), while St. Johns Polychrome and Wingate Black-on-Red came from the Little Colorado River in northeastern Arizona. Playas Redwares, Ramos Polychrome, and Villa Ahumada Polychrome were brought in from northern Chihuahua, Mexico and the Casas Grandes area (Bentley 1986:44).

The late Formative period in the El Paso area, and especially the Hueco Bolson, is also characterized by an increase in population. This resulted in a continuation of hunting and gathering subsistence strategies and an aggregation of local farming groups into areas best suited for intensive agriculture. This is seen as a shift from widely dispersed small dry farming plots around the bolson playas to lower gradient alluvial fans and playas nearer the mountains (Carmichael 1985:114; Bentley 1986:45), presumably to gain access to more dependable rainfall and floodwater events. The aggregation of the farming population into large contiguous room pueblos occurred throughout the Southwest. The Mimbres Mogollon to the west of El Paso had collapsed and essentially disappeared by 870 B.P. (Shafer 1990:9). By 700 B.P., many, if not most, small habitation sites across the Southwest were abandoned and populations aggregated in large multi-room pueblos, essentially reflecting the locations of modern day pueblos. The reasons for this general shifting of populations were probably varied. A devastating drought in the upper San Juan drainage toward the end of the 13th century may have precipitated some localized population shifts, and the final abandonment of such places as Mesa Verde and Chaco Canyon. These people likely migrated to more favorable agricultural areas; however, modern researchers are beginning to view this movement as a cyclical adjustment to recurring climatic conditions (Cordell 1996; Van West 1996). The El Paso area was the scene of similar aggregations of populations and the immediate vicinity seems to have been sparsely populated by 600 B.P. The first Spanish entradas into the area in the late 16th century did not mention any villages or populations in this section of the Rio Grande.

The Keystone Dam site (O'Laughlin 1980) on the western slope of the Franklin Mountains may represent the earliest beginnings of the Formative Tradition in the area. This winter habitation site includes the remnants of two small dwellings. Other definitively identified Formative sites within Franklin Mountains State Park include four Mesilla phase sites and four El Paso phase sites. No Doña Ana/Transitional phase sites have been reported in the park.

Protohistoric Period

The Protohistoric Period in far west Texas dates from about 1350 to 1540. The term Protohistoric assumes that earliest European encounters in the area would have had little or no effect on the native population, but European-introduced diseases probably preceded extensive European-Native American contact in the vicinity of the Franklin Mountains. By the time Europeans arrived to the area in 1581 (Broaddus n.d.), Native American populations were probably already somewhat decimated. Such a population loss may be reflected in the archeological record by a reduction in site sizes and complexity (Tomaso 1999:16).

Ethnohistoric sources indicate that the Manso people used the Franklin Mountains area most commonly during this period (Benavides 1965). According to Broaddus (n.d.:3):

> It appears that the Manso lived on the banks of the Rio Grande on the adjacent sand dunes or in the surrounding mountains, including the Franklin Mountains. In order to survive in the desert, the Mansos gathered agave, mesquite beans and other natural vegetation in the area,…found the mountainous locations…favorite locations to hunt and gather food.

Based on these observations, any of the undefined lithic scatters in the park could be attributable to Protohistoric Manso activity. Other Native American groups that were present in the area during this time include the Suma, Jumano, Jocomes and Tampachoas (Tomaso 1999:16).

Historic Period

For the purposes of this discussion, the Historic Period is subdivided into the Spanish (1540-1821), Mexican (1821-1846) and Anglo (1846-present) phases. The degree to which Native Americans utilized this region during the Historic Period is uncertain. While Way (1978:22) contends that no Historic records indicate any Native American presence in the Franklin Mountains, other researchers suggest that Apaches and other tribes used the Franklin Mountains as temporary camps while planning and conducting raids, and interacting with European colonists and other Native American groups during the 18^{th} and 19^{th} centuries (Broaddus n.d.:5).

While the rugged terrain of the Franklin Mountains has never provided an ideal environment for permanent habitation, it has undoubtedly been the subject of exploration since the first Spanish entrada in 1581. The Spanish used the El Paso area as part of the Camino Real trade route between Chihuahua and Santa Fe. The first Spanish settlement in the area, El Paso del Norte, was established when the Spaniards and some of their Native American allies retreated from New Mexico during the Pueblo revolt of 1680

(Hughes 1914). During the subsequent Mexican phase, several small towns were established along the Rio Grande, but, again, sites in the Franklin Mountains would have been limited to wagon roads and short term camps (Tomaso 1999:17). Although the Republic of Texas formally annexed this area in 1836, Mexican control was not actually contested until the United States went to war with Mexico ten years later (Broaddus n.d.:6). In 1849, shortly after gaining control of the area, the United States established Fort Bliss in an effort to put an end to Apache and Mexican incursions into the area (Thomlinson 1945).

Since 1849, the Franklin Mountains have been the scene of various ranching, mining, and military activities. The mining industry is well represented in the park by open mine shafts on both the east and west sides of the mountains, a large concrete foundation of a tin ore processing mill on the east side, and open gravel and quartz quarries on the north and south. Tin deposits on the east flank of the Franklins are the major source of tin in the United States. The ruins of a small sheep-ranching complex can be seen in the Hitt Canyon drainage and wire fences are found throughout the state park.

Previous Investigations

Several archeological surveys conducted during the past 25 years have documented a fairly wide diversity of cultural resources within the Franklin Mountains. Karen Way's survey (for the Natural Area Surveys) of the mountains in 1978 recorded 20 previously unrecorded prehistoric sites (Way 1978:37). Interestingly, all of Way's sites were small camps or small specialized activity areas, and no ceramics, ground stone, or cultural features were found on any of the sites. Way suggested that most sites in the Franklins were probably small, temporary camps and that larger, more permanent habitation sites would likely be at lower elevations and nearer to water sources. She reasoned based upon the lack of large or significant sites that the Franklin Mountain range has been a marginally used, auxiliary resource (especially for rhyolite, chert and andesite) area throughout prehistoric and historic times. Way estimated that her survey covered approximately ten percent of what is now Franklin Mountains State Park, and used her weighted sample to predict the density of sites which could be expected on the unsurveyed portions of the park. Eight years later, using Way's site density estimates, a Texas Archeological Society summer field school proved that her estimates were accurate and could be used to estimate the magnitude of a total park survey (Ron Ralph, personal communication to J. David Ing 1996).

In 1995, the Texas Parks and Wildlife Department contracted with the University of Texas at Austin to conduct additional reconnaissance and survey of approximately 1,500 acres in the Tom Mays, Hitt Canyon and Tin Mine units of the park and approximately 125 miles of proposed foot and horse trails that connected these units. Efforts of the survey concentrated on existing and proposed trails as well as areas proposed for future development. Every trail and proposed development in the Hitt Canyon Unit, Tin Mine Unit, Tom Mays Unit, Smugglers Pass, Visitor Center/Headquarters and McKelligon Canyon City Park were surveyed on foot. Additional survey was done within the visual corridor accessed by many of the trails. Part of the intention of this work was to relocate and report on a number of archeological sites found in 1986 by the Texas Archeological Society field school. During this latest work by the University of Texas, every known site within the park boundaries was evaluated and an additional six previously unknown prehistoric sites were discovered and documented (Tomaso 1999:1). However, mistakes in the documentation of site coordinates, site misplots on maps, and the assignment of the same site number to more than one location makes it difficult, if not impossible, to accurately note the total number of known sites within Franklin Mountains State Park. Presently, after eliminating duplicated site numbers, there are a total of 38 sites plotted with trinomial numbers within the present boundaries of the park. These sites include aceramic sites that are probably attributable to the Archaic Tradition, Formative sites including El Paso phase and Mesilla phase sites, and historic mining and ranching sites. Isolated finds of Paleoindian points are occasionally found in the Franklin Mountains, but no Paleoindian sites have yet been identified within the state park. No archeological sites have been recorded on the Wyler Aerial Tramway property.

Results And Recommendations Of Present Investigation

The archival review did not reveal that any cultural resource investigations have been previously conducted within the present project corridor, and none of the previously recorded archeological sites in the Franklin Mountains are located within the project corridor.

A walkover of the proposed project corridor was conducted on two separate occasions in July and August, 2006 by the Texas Parks and Wildlife Cultural and Natural Resource Coordinators for west Texas. Where possible, the walkover was extended 50 feet (15 meters) from both sides of the proposed corridor, covering a total area of approximately 12 acres (5 hectares). Pedestrian transects were spaced at 50 feet (15 meters) intervals. The walkover revealed no cultural resources on the ground surface, and confirmed that there is no potential for buried archeological deposits to exist on the rocky ridge summit or the steep backslope across which the project corridor extends.

As a result of these negative findings, the TPWD requested concurrence from the Texas Historical Commission (THC) for both phases of the proposed establishment of the Crest Trail to proceed (letters dated July 21, 2006 and September 8, 2006). The TPWD received concurrence from the THC for the first phase of the project to proceed on July 27, 2006, and for the second phase to proceed on October 11, 2006. As of January 2007, this project had not yet been completed.

Copies of this report and related archival documentation are curated at the TPWD Archeology Laboratory, Austin, and at the TPWD Region 1 Cultural Resource Coordinator's office, Fort Davis. No artifacts were collected during the present investigation.

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Huntsville State Park

Walker County

April 12-13, 2006

Author: Rich Mahoney, Texas Parks and Wildlife Department (TPWD) Cultural Resource Coordinator - Region 5

Project Description: Existing Pedestrian Trails Reroutes

Type of Investigation: Pedestrian Surface Survey and Shovel Testing

Staff: Rich Mahoney

Introduction

In April 2006, Texas Parks and Wildlife Department (TPWD) Cultural Resource Program Staff conducted an archeological survey of portions of Huntsville State Park in Walker County (Figure 1). The survey concerns a proposed Park trail enhancement project, consisting of rerouting certain portions of existing trails and development of a new interpretive trail.

Project Description

The trail enhancement project area consists of 16 reroutes and one new trail loop, amounting to approximately 2500 linear meters of new trails. While the trail width will be roughly 1m, the Area of Potential Effect (APE) includes a 5m swath to allow any necessary machinery access for trail development. Turnaround points, staging areas, and material storage areas will be located atop and within previously built-out or surveyed areas. Maximum disturbance along the trail is not anticipated to extend deeper than 60cm. The overall areal impact of this project is approximately 3.09 acres.

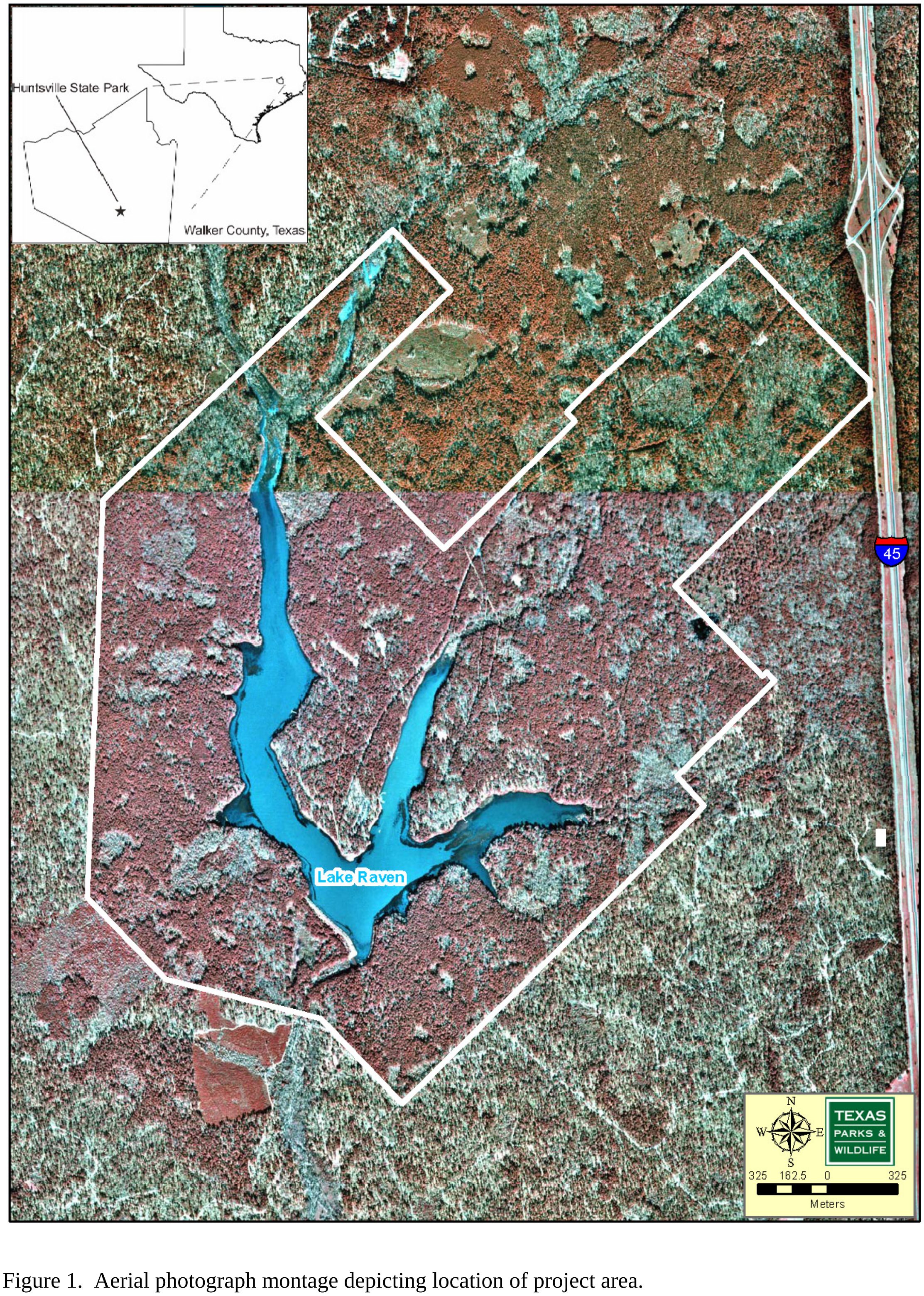

Figure 1. Aerial photograph montage depicting location of project area.

Environmental Setting

Huntsville State Park is located about five miles south-southwest of the City of Huntsville in the south-central portion of Walker County. The Park consists of approximately 2,040 acres and is situated within the extreme southwestern extent of the Piney Woods natural region (Figure 2). The mixed pine-hardwood forest series dominates the terrestrial vegetation throughout the Park and, in some areas, is quite dense. The topography could be described as gently rolling, with some relatively deep ravines that feed Lake Raven, a 200-acre impoundment constructed by the Civilian Conservation Corps.

Review of the local geology (Figure 3) indicates that the majority of the terrestrial portion of the Park sits atop the Plio-Pleistocene Willis Formation (Shelby et al. 1992). Specifically, this formation is expressed in the rolling uplands of the Park. This formation is typified by thick beds of sand and gravels, although occasional pockets of finer-grained sediments exist as remnants of overbank deposits (Aronow 1979). The Willis Formation is underlain by the Fleming Formation of the Miocene epoch. While the Fleming is also classed as alluvial in origin (Aronow 1979), the sediments consist primarily of finer-grained sediments of dense clays. Within the Park, these deposits underlie the rolling uplands and are exposed along drainages by the deeply incised ravines that dissect the Willis Formation.

Soils that have formed atop these formations consist of the Depcor-Annona-Huntsburg map unit (McClintock et al. 1979). In general, these soils consist of deep sands underlain by dense clays. Within the Park, the primary soil associations of this map unit are Depcor-Huntsburg, Depcor-Huntsburg-Gunter, and Gunter. Together, these soil associations comprise roughly 80 percent of the soils encountered in the Park. McClintock et al. (1979) describe the constituent soils of these as similar soil types, although the principal differentiation appears to be landform based.

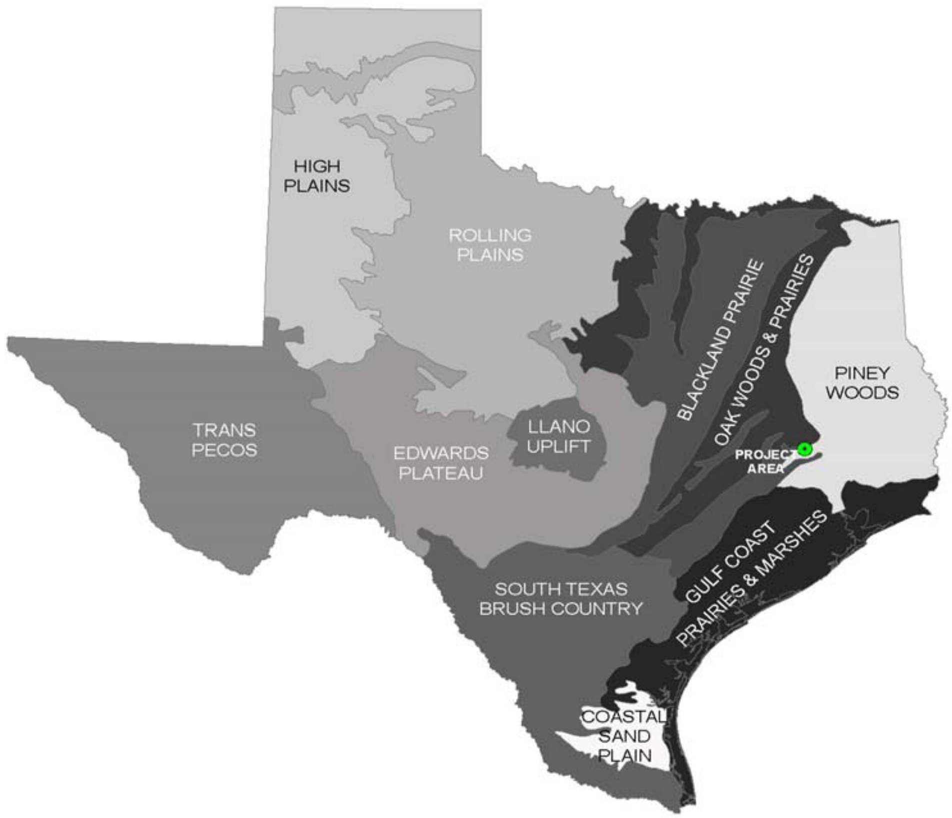

Figure 2. Project area in relation to Natural Regions of Texas.

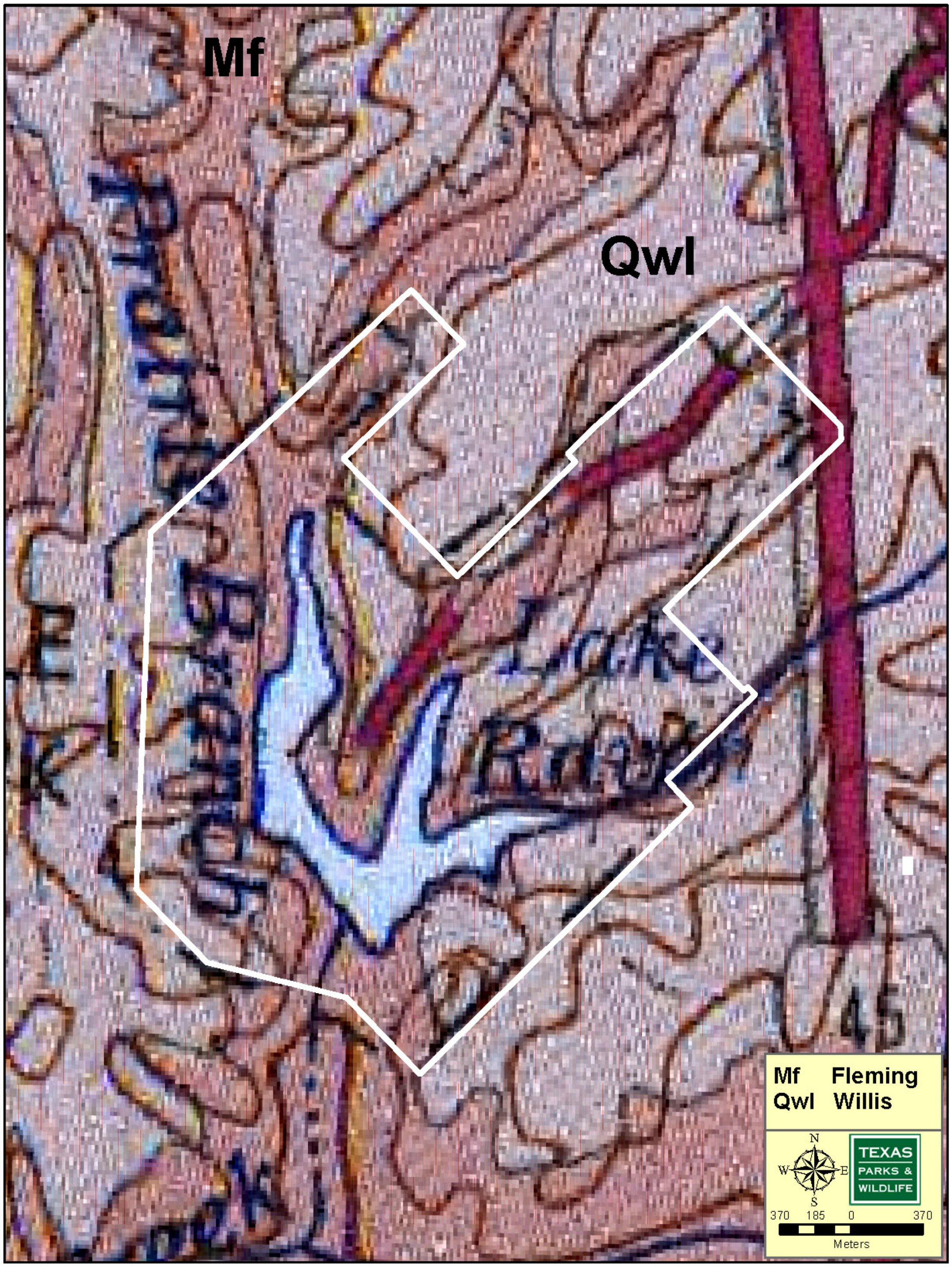

Figure 3. Project area in relation to local geology.

Cultural Setting

Huntsville State Park is situated in the Pineywoods of East Texas just south of the juncture of the Post Oak Savannah and Blackland Prairie vegetation subregions. The general region of the project area is bordered to the west by the Post Oak Savannah, to the north by the Ouachita province, to the east by the Southeastern Evergreen Forest of the Lower Mississippi River Valley, and to the south by the Gulf Coast Prairies and Marshes. This section presents a brief overview of the aboriginal cultural setting of the project area, followed by a concise review of previous archeological endeavors within the region, county, and Park.

The Paleoindian period, the time when humans first entered the New World, occurs during the latter part of the Pleistocene geologic epoch. Due to the frequent location of isolated finds of Paleoindian-era projectile points and the infrequent encounter of dense occupational features, it is inferred that these peoples were highly mobile, nomadic hunters and opportunistic gatherers. Without certainty, it is possible that the cultures of this era were specialized exploiters of the dwindling population of the now extinct megafauna that once roamed the North American continent.

With some variation, the Paleoindian period for this region is generally agreed to have begun approximately 12,000 years ago and terminated roughly 8,000 years ago sometime during the Early Holocene climatic interval (Ensor and Carlson 1988; Johnson and Goode 1994; Perttula 1999; Schambach 1998). However, Girard (2000:7) argues that the Paleoindian period for Northwest Louisiana occurs from 12,000 B.P. until 10,000 B.P. The termination for this period, relative to conventional Texas chronologies (however slightly varied they may be) is quite premature, and Girard qualifies this discrepancy due to the fact that "archeologists in Texas do not routinely calibrate radiocarbon dates" (2000:8). Granted, the primary reference Girard cites (Collins 2004) does not use calibrated dates; however, the periods of Collin's chronology do not differ markedly from those espoused by Johnson and Goode (1994), which are based upon calibrated dates utilizing the methodology of Stuvier and Reimer (1993).

Regardless the chronology of choice, the Paleoindian period is divided technologically into early and late phases. The early phase is characterized by the presence of primarily fluted projectile points (i.e., Clovis and Folsom) produced of non-local materials. The exotic stone tools recovered from these early sites further suggest a high-mobility culture. The late phase of the Paleoindian period is regionally characterized by dart points, such as San Patrice and Dalton, made primarily of local materials (Ensor and Carlson 1988:18; Schambach 1998). The presence of woodworking tools, such as the Dalton adze, in association with these new variant dart points suggests a slightly more sedentary culture than its predecessor.

The Archaic Era represents the following ca. 6,000 to 6,500 years of prehistory for this region and is subdivided into three separate periods: Early, Middle, and Late. These three subdivisions correspond to Shafer's (Shafer et al. 1975:13) Early, Middle, and Late Lithic Periods. Environmentally, this era commences just before the onset of the Middle Holocene geologic epoch, a time of "oscillating" conditions beginning at a moderate climate, trending toward a dry extreme, and returning to moderate conditions throughout the entirety of the era (Collins 2004:119; Johnson 1995). Culturally, the development of the Archaic within this region may have been attributable to late Paleoindian plainsmen exploiting the woodland-prairie margin and interacting with woodland cultures during times of drought (Johnson 1989).

Early Archaic manifestations within the region include the apparent onset of sedentary subsistence indicated by the diversity of recovered artifact assemblages at numerous sites (Girard 2000; Wyckoff 1984). Specifically, woodworking tools, such as adzes and wedges, become more common, as well as abraders and scrapers. The Conly site in northwestern Louisiana exhibited excellent preservation of faunal remains including mussel shell, bone, snail, and crawfish exoskeletons (Girard 2000:63). Additionally, Girard (2000:63) cites the presence of burned rock, grinding stones, pounding tools, an axe, various bifaces, and bone tools as further indicators of a more diversified pattern of subsistence.

The relatively brief Middle Archaic period represents the final years of the Middle Holocene and can be viewed as a transitional time for the prehistoric peoples of the region. During the early part of this period, bison are present along the bordering plains and prairie regions after a nearly three millennia hiatus (Dillehay 1974). However, their appearance is short-lived, and by approximately 5200 B.P. bison once again disappear from the faunal assemblage of the Southern Plains and adjoining prairie margin. The continuance and massive proliferation of relative sedentism and/or specific exploitation of localized natural resources is evidenced by the continued occupation and re-occupation of preferred landforms (Girard 2000:8). These adaptations, in response to an increasingly drier environment (Bousman 1998; Johnson 1995), would form the basis for the transformation in the overall stylistic tradition to that of the Late Archaic.

The Late Archaic period represents the final three millennia of the Archaic Era, from approximately 4200 B.P. to 1200 B.P. (Johnson and Goode 1994:29), and roughly coincides with the commencement of the Late Holocene. Within northeast Texas, the Woodland, pre-Caddoan culture introduces a new aspect to this generally accepted time of pre-ceramic, dart and atlatl using inhabitants of the state. Crude ceramics alongside smaller dart points typical of the Late Archaic period are diagnostic of this Woodland period.

Adaptation to a relatively dry climate with low precipitation and high temperatures appears to mark the beginning of the period (Bousman 1998), with bison reappearing in the faunal assemblage following over a one thousand year hiatus (Dillehay 1974). Despite these xeric conditions, human population seems to have increased within the region (Prewitt 1985; Shafer et al. 1975:17). Adaptation to this changing environment is best shown in Shafer's (1974) discussion of the Lake Conroe Reservoir project. During this time, burned rock accumulations are noted inland, with similar burned clay "ball" accumulations occurring in lithic poor environments toward the Gulf Coast. Floodplain-focused adaptation during this time is evident in various sites adjacent to the region (Girard 2000:9; Mahoney et al. 2003). Environmental changes can be cited as determinant factors in settlement patterns during this time. Specifically, temporary stabilization of stream bank terraces influenced settlement locations.

As evidenced in recovered artifact assemblages in the region, processing of plant resources appears to increase during this period (Story 1990). Palynological evidence from the Boriak Bog (Lee County, Texas) and the Weakly Bog (Leon County, Texas) reveals relatively low arboreal canopy cover; indicating a predominant grassland environment for these adjoining regions (Bousman 1998). Johnson and Goode (1994:34-35) propose for Central Texas that, due to the xeric conditions experienced by the peoples of the Late Archaic I period, burned rock middens proliferate for the processing of semi-succulents. Typical projectile-point styles of this period include Dawson, Gary, Kent, and Morrill (Fields 2004:351).

Johnson (1995) suggests Eastern (United States) religious influences, manifested in the form of various burial practices, as one of the primary indicators of the Late Archaic II phase in the adjoining Central Texas region. The continuum of the trend toward a mesic environment can also be attributable to this period change. While a definitive date cannot be placed upon the abandonment of burned rock middens, Johnson and Goode (1994) note that these feature types are generally associated with the Late Archaic I phase, and the absence thereof denotes the beginning of the Late Archaic II phase.

Unique to eastern Texas cultures, the Early Ceramic period encompasses the latter roughly 700 years of the traditionally accepted Late Archaic period and the initial 200 years of the traditionally accepted Late Prehistoric period in other Texas temporal chronologies. Within the Southeast Texas area, this period basically subsumes the Late Archaic II phase of Central Texas, referenced above. Artifact assemblages consist primarily of later, smaller Gary and Kent dart points and later, early arrow points such as the Scallorn with early, sandy paste ware ceramics. As stated above, most ceramic cultures within Texas are associated with the Late Prehistoric. Here, Archaic-era dart points are encountered alongside similar ceramic vessels and associated sherds. This coincidence provides strong evidence for a suggested continuum of aboriginal technology within this region. While the advent of ceramics in concert with the occurrence of the bow and arrow in the majority of the remainder of the state signifies the onset of the Late Prehistoric period, the advent of ceramics alone indicates the Early Ceramic period of Southeast Texas.

For the Upper Texas Coast, Aten (1983) further subdivides this period into the Clear Lake, Mayes Island, and Turtle Bay sub-periods. Aten utilized graphic seriation of aboriginal ceramic types to define his more detailed regional chronology. The Clear Lake sub-period (1900-1650 B.P.) introduces ceramic technology to the archeological record with temporal diagnostics of early sandy paste wares. The intermediate sub-period, Mayes Island (1650-1350 B.P.), is marked by a predominance of Goose Creek Plain, *var. Goose Creek*. The final subdivision of the Early Ceramic period, Turtle Bay

(1350-1000 B.P.), reveals an increase in Goose Creek Red Filmed and, more importantly, introduces the arrow point to the archeological record of Southeast Texas.

The introduction of these early ceramics into the region has primarily been attributed to influence from the Tchefuncte culture (Weinstein et al. 1989:18) of the Tchula period of the adjoining Lower Mississippi River Valley region to the east (Hahn et al. 1994:14). Key markers of this ceramic technology are sandy paste wares of introduced varieties such as Tchefuncte Plain, Mandeville Plain, and O'Neal Plain (Weinstein 1986), and various local varieties of Goose Creek Plain (Aten 1983:287).

In the Central Texas region, bordering the western edge of the Southeast Texas area, Prewitt (1981:Figure 3) identifies the initial succeeding Late Prehistoric phase as the Austin Phase, occurring from the termination of the Late Archaic II until approximately 650 B.P. This phase would generally be coeval with the final 200 years of the Early Ceramic cultures. Aside from the aforementioned changes in technology, Prewitt (1981:74) ascribes only a slight increase in the dependence upon hunting as a means of subsistence and a marked increase in the occurrence of "true cemeteries" as an indicator of period change.

In the Caddoan area adjoining to the north, transition from the Late Archaic, and more specifically from the Woodland (2500-1200 B.P.), to the Formative Caddoan (1200-1000 B.P.) period is arguably accepted to occur with the advancement in technology from hunting techniques utilizing the atlatl and dart to utilization of the bow and arrow, alongside the beginning of horticultural groups (Kenmotsu and Perttula 1993). Thus, the Woodland and Formative Caddoan periods would generally be coeval with the Early Ceramic cultures of Southeast Texas.

The subsequent Late Ceramic period is marked by an unequivocal shift in technologies. Most notably, perhaps, is the probable complete conversion to exclusive use of the bow and arrow, which is suggested to have been introduced by the Caddo to the north (Shafer et al. 1975:21) during the preceding Turtle Bay subperiod of the Early Ceramic period. As such, the archeological record begins to show a predominance of arrow points and a resultant cessation of dart points.

Continuing with the seriation of aboriginal ceramics, Aten (1983) again subdivides this more general period into two prehistoric sub-periods, Round Lake and Old River. The

Round Lake subperiod (1000-650 B.P.) is discernable with the introduction of grog-tempered ceramics, although sandy-paste wares are still in use during the early part of the sub-period. The final prehistoric subperiod for the upper Texas coast, Old River (650 B.P. to European contact), witnesses a variance of grog-tempered predominance, followed by a return to sandy-paste wares, and concludes with the proliferation of bone tempering. As opposed to eastern ceramic technology influences experienced during the Early Ceramic period, the archeological assemblage of the Late Ceramic period is indicative of more of a northern, or Caddoan, technological influence. Specifically, Weinstein et al. (1989:20) cite the decorative motif of excising, a Caddoan marker, in combination with the increase in bone tempered wares as strongly influenced by Caddoan culture.

To the west, the continuing Austin phase and the succeeding Central Texas Late Prehistoric phase, the relatively short-lived Toyah phase, as defined by Prewitt (1981), is characterized by the "dramatic" shift in subsistence from hunter-gatherer to that of an economy based primarily upon hunting. The majority of the Austin phase would generally be coeval with the Round Lake sub-period, and the Toyah phase would generally be coeval with the Old River sub-period. Based upon data from Dillehay (1974), bison once again appear in the faunal assemblage of archeological sites within Central Texas. An intermediate shift to a generally dry, mesic environment is attributed to this influx of ungulate dependence (Johnson 1995). The material culture of this time period appears to reflect subsistence based upon the procurement of bison in the form of various stone tools utilized for bison procurement and processing, such as Edwards, Perdiz, and Scallorn arrow points, along with various scrapers and other stone tools.

In the Caddoan area adjoining to the north, formal horticulture proliferates and agriculture begins with the Early Caddoan period (1000-800 B.P.); agriculture intensifies through the Middle Caddoan period (800-600 B.P.); and culminates during the Late Caddoan period (600 B.P. to European contact) with intensive agriculture, primarily of maize (Kenmotsu and Perttula 1993). Accordingly, the suite of Early, Middle, and Late Caddoan periods would generally be coeval with the Late Ceramic cultures of Southeast Texas.

Previous Investigations

The bulk of previously recorded archeological sites in the Walker County region are centered about work on the Honea Reservoir (now, Lake Conroe) and the associated San Jacinto River, and the Lake Livingston Reservoir and the associated Trinity River: the Conroe-Livingston Area per Aten (1983). These reservoirs are located at, and form the boundary of, Walker County in the northeast and the southwest. The balance of the previously recorded prehistoric sites in Walker County, similar to the remainder of inland Southeast Texas, is comprised of earthen midden deposits in riverine settings (c.f. Perttula 1993:210).

Professional archeological investigations begin in the region with the 1933 University of Texas excavations at the C.W. Ellis and Carl Matthews sites (41PK1 and 41PK2, respectively) in nearby Polk County (Barnard 1939). Excavations at the multicomponent Ellis site revealed cultural material spanning the Late Paleoindian through the Late Archaic periods. The Matthews site produced artifacts ranging from the Late Archaic through the Historic periods, including two Protohistoric burials.

Save for a single East Texas regional effort by Arnold of the University of Texas during 1939 through 1941 (Duffen et al. 1940), apparently no professional archeological investigations were conducted in the region until the Texas Archeological Salvage Project (TASP) reservoir projects of the 1960s. The Arnold regional study focused primarily on the location of historic Alabama-Coushatta Indian sites in East Texas, apparently to little avail (Davis et al. 1994:22).

The impending construction of the Honea and Livingston Reservoirs necessitated archeological surveys that resulted in the recordation of over 230 sites in Walker and, primarily, in the surrounding counties. During the 1965 survey of the proposed Honea Reservoir, Shafer (1965) recorded a total of 34 archeological sites. Only one site (41WA51), a prehistoric site of unknown temporal affiliation, was recorded in Walker County, though. The Livingston Reservoir survey was initially begun by TASP during the 1961-1962 investigations (Nunley 1963). The Houston Archeological Society (HAS) continued survey efforts from 1964 through 1969. In total, over 200 sites were recorded by TASP and HAS, with only seven occurring in Walker County (41WA1 through 41WA7). From 1965 through 1967, TASP conducted more intensive cultural resource investigations at six sites surrounding the Livingston Reservoir (McClurkan 1968) and three sites surrounding the Honea Reservoir (Shafer 1968). It is interesting to note that none of the sites identified in Walker County warranted further investigation.

Intensive work at prehistoric sites did not resume until the mid-1970s, with a survey of areas to be impacted by United States Forest Services development adjacent to Lake Conroe (Shafer and Baxter 1975). Two sites (41WA81 and 41WA82) were located in the Kaygal Recreation Area in Walker County and four were located along Scott's Ridge in Montgomery County. Subsequent to this survey, 41WA82 was subjected to further testing (McNatt 1978), as was 41MQ41 (Shafer and Stearns 1975). The Kaygal site revealed occupations of the Early and Late Ceramic periods, while the Scott's Ridge site produced artifacts spanning the late Paleoindian through Middle Archaic periods.

Following another decade-long hiatus, intensive work resumes with the 1984-1985 excavations at the Crawford Site (41PK69), in Polk County. The site is located north of Lake Livingston and was discovered by State Department of Highways and Public Transportation archeologists during survey for a bridge replacement in 1984 (Denton 1984). In total, roughly 114 cubic m were excavated, revealing a temporal span from the Early Archaic through Protohistoric periods (Ensor and Carlson 1988).

The 1990s and 2000s witnessed a dramatic increase in archeological investigations in Walker County, with and at least 26 and 20 projects, respectively. Utility projects and road improvements comprise the majority of archeological fieldwork conducted. At least eight surveys were conducted by or for the US Forest Service in the adjacent Sam Houston National Forest. Development on various Texas Department of Criminal Justice units necessitated at least five separate field investigations. The remainder of archeological investigations over these two decades includes surveys for housing developments, airport expansion, and golf course development (THC 2007).

Prior to the current survey, seven professional archeological investigations have been conducted within the Park. TPWD archeologists officially recorded the first archeological site encountered within the Park in October 1977. Responding to an encounter of a prehistoric burial, TPWD archeologists recorded site 41WA48; however, no human skeletal material was encountered. During October 1978, examination of a second potential burial resulted in the first recordation of prehistoric site 41WA47 (Ralph

1996:178-179). Both 41WA47 and 41WA48, along with another prehistoric site (41WA54) recorded by avocational archeologist Bill McClure during the 1970s, were officially designated as State Archeological Landmarks (SAL) on 28 June 1983.

A small survey of roughly 1/3 acre was the only field investigation conducted at the Park during the 1980s (Davis 1988). The survey concerned a small area along the entrance road that would allow late-arrival campers a place to park their recreational vehicles until the Park reopened the following morning. A series of three shovel tests was placed within the proposed project area, encountering no cultural material.

Similar to the remainder of the county and the region, the Park experienced a small flurry of archeological field investigations during the 1990s. In 1991, TPWD archeologists surveyed six separate proposed underground utility corridors in the Prairie Branch, Raven Hill, and Coloneh camping areas (Boes 1992). Among these areas, a total of 20 shovel tests were excavated. Several (n = 7) of the shovel tests encountered lithic debitage, however, the remaining 13 negative shovel tests were excavated to provide alternative routes for the proposed utilities and avoid concentrations of cultural material. No new sites were recorded as a result of this fieldwork.

In 1996, the TPWD Archeology Survey Team conducted a reconnaissance of a 325-acre portion of the Park (McNatt et al. 2001). During the fieldwork, previously recorded site 41WA47 was reassessed and five newly discovered sites were recorded. All of the newly recorded sites (41WA202 to 41WA206) contain a prehistoric component, and sites 41WA202 to 41WA204 were recommended for official designation as SALs. It was determined that additional testing would be required to determine the SAL eligibility of sites 41WA205 and 41WA206.

The TPWD Archeology Survey Team returned in 1998 to survey a ca. 2.8-mile linear project area (6.9 acres) for a proposed wastewater improvement project (McNatt et al. 2000). Excavation of 61 shovel tests along the proposed utility corridors resulted in the discovery of two previously unrecorded sites (41WA227 and 41WA228). As the survey was limited to the specified corridors, site bounds for the two new sites were not delimited. As such, the SAL eligibility for these sites could not be determined within the 1998 scope of work.

Prior to an extensive Texas Department of Transportation (TxDOT) development project within the Park, TPWD contracted with the Center for Archaeological research (CAR) at the University of Texas at San Antonio to conduct an archeological survey of areas to be impacted by the proposed project and limited mitigation of a portion of site 41WA47 (Greaves 2002). The survey consisted of 160 acres of area to be impacted by road and campground pullout widening and altering certain existing campsites to comport with Americans with Disabilities Act specifications. Three newly discovered archeological sites (41WA264 to 266) were recorded during the survey, and the bounds of previously recorded site 41WA228 were delimited. None of these four sites were determined eligible for official SAL designation.

CAR's limited mitigation at 41WA47 produced a robust dataset with good integrity, establishing the significant research potential of the deposits (Greaves 2002:94). A chronological sequence of AMS in concert with temporally diagnostic projectile points and ceramics indicate that the site was inhabited as early as the Late Archaic period through the Late Ceramic period. Based upon these data, it is inferred that the site is probably eligible for inclusion in the National Register of Historic Places.

Methods

Prior to initiation of the field investigations, a comprehensive review of all available archeological reports and databases was conducted to identify and characterize cultural resources known to occur in the vicinity of the project area. At least in part, the compilation of known cultural resources in the Huntsville area is based on the Texas Archeological Sites Atlas, Texas Historic Sites Atlas, and THC and TPWD map files. In addition, the literature and archival review inspected historic United States Geological Survey topographic maps and Natural Resources Conservation Service soil surveys (USDA 2004).

The fieldwork consisted of a 100 percent pedestrian survey of the ca. 2500m linear project area, augmented by the excavation of 25 shovel tests. A single transect traversed the centerline of each of the 16 proposed reroutes and the new interpretive trail loop. Flagging and pin flags were placed by Park Staff to orient the survey route. Shovel tests were 30 cm in diameter and were excavated in levels not exceeding 10 cm in thickness. Deposits from these tests were screened through quarter-inch hardware cloth. Each shovel test was excavated to a sterile clay substrate or a maximum depth of 70cm below ground surface. All shovel tests were mapped with a Trimble GeoXT GPS unit.

Results And Recommendations

A total of 25 shovel tests were excavated within the project area (Figure 4). In accord with soils discussed above, little variation was encountered throughout the Park. Three basic strata were identified through excavation: (1) humic layer of dark grayish brown sand loam; (2) a stratum of light yellowish brown slightly clayey silty sand; and (3) a substrate of reddish yellow sandy clay.

Aside from strata thickness, the primary variations noted were ferrous nodule content and the rare occurrence of small siliceous gravels. Both of these variations were only noted in stratum 2.

Regarding strata thickness, the majority (56%) of excavations did not encounter the clay substrate at their terminal depths of 70cm. In those excavations that did encounter the substrate, the depths at which it was encountered varied widely from 13 cm below ground surface to 64 cm below ground surface. In the single excavation along the interpretive trail that encountered the substrate, it was encountered at 51 cm below ground surface.

The survey failed to encounter any cultural material, features, or sites through pedestrian survey or shovel test excavations. The TPWD Cultural Resources Program therefore recommended that the proposed project be allowed to proceed without further cultural resources investigations. Texas Historical Commission concurrence for this project was received in May 2006.

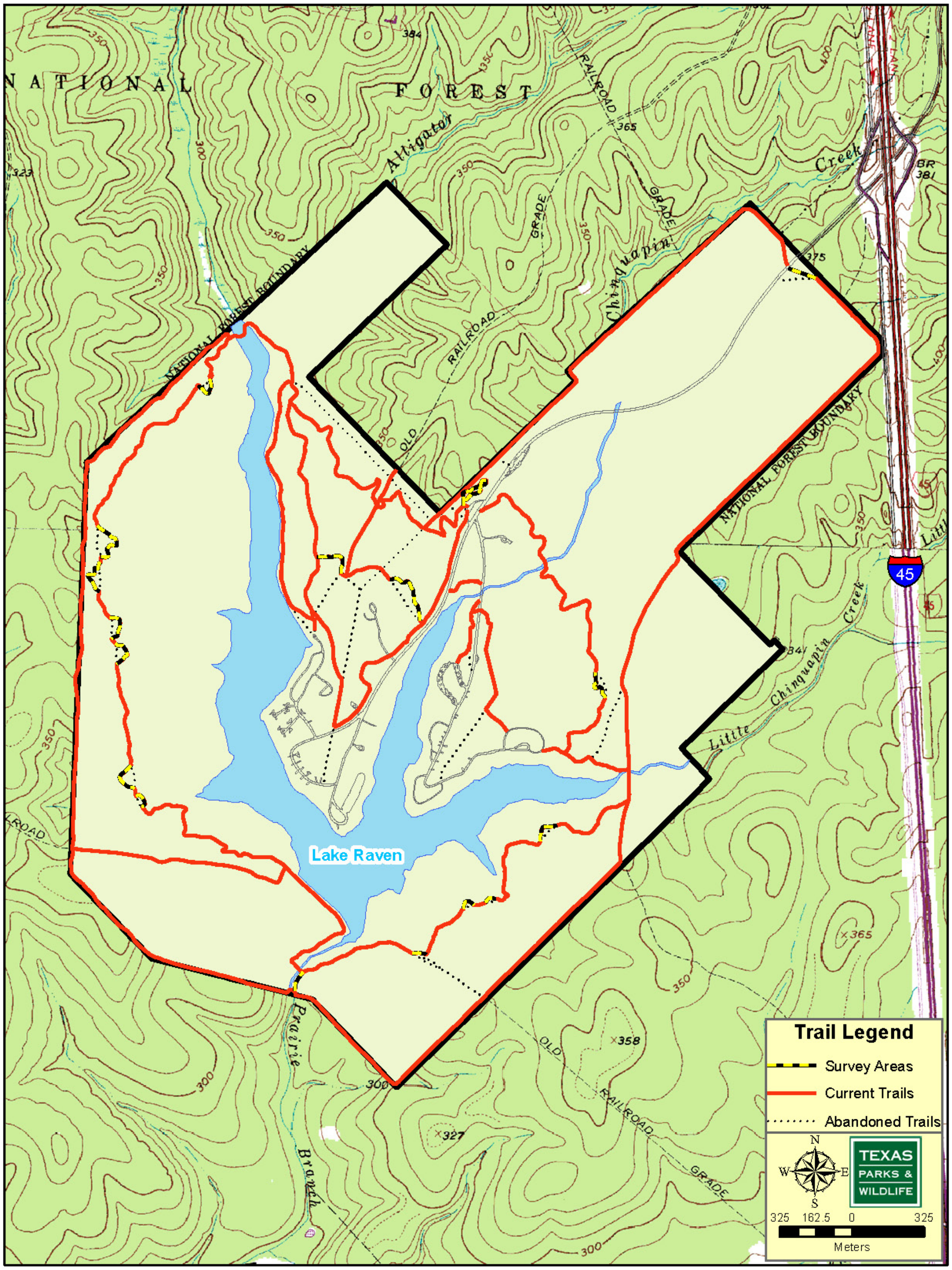

Figure 4. Project survey areas

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Lake Casa Blanca State Park

Webb County

February 23, 2006

Author: Christopher W. Ringstaff, Texas Parks and Wildlife Department (TPWD)
Cultural Resource Coordinator - Region 2

Project Description: Spillway Vegetation Clearing

Type of Investigation: Archeological and Paleontological Survey

Staff: Christopher Ringstaff

Introduction

The Texas Parks and Wildlife Department (TPWD) proposes to clear invasive vegetation within the spillway at Lake Casa Blanca State Park, Webb County, Texas. The proposed project is being conducted at the behest of Webb County and the Texas Commission on Environmental Quality to insure water flow will not be impeded during a flood event. The area to be cleared is approximately 160 meters in length and varies from 90 to 125 meters wide (Figure 1). Funding for the project will come from TPWD.

The project will be conducted within the existing spillway which has been excavated into Eocene sandstone on an upland drainage divide between San Ygnacio and Chacon Creeks. Clearing will be conducted largely by hand with chainsaw, but a shredder and backhoe may also be employed. Lake Casa Blanca was impounded in 1951 and operated by the city of Laredo and Webb County until its acquisition by TPWD in 1990. Field work was conducted on February 23 and required 9 man-hours (1.1 man-days). The total project area is approximately 3.6 acres

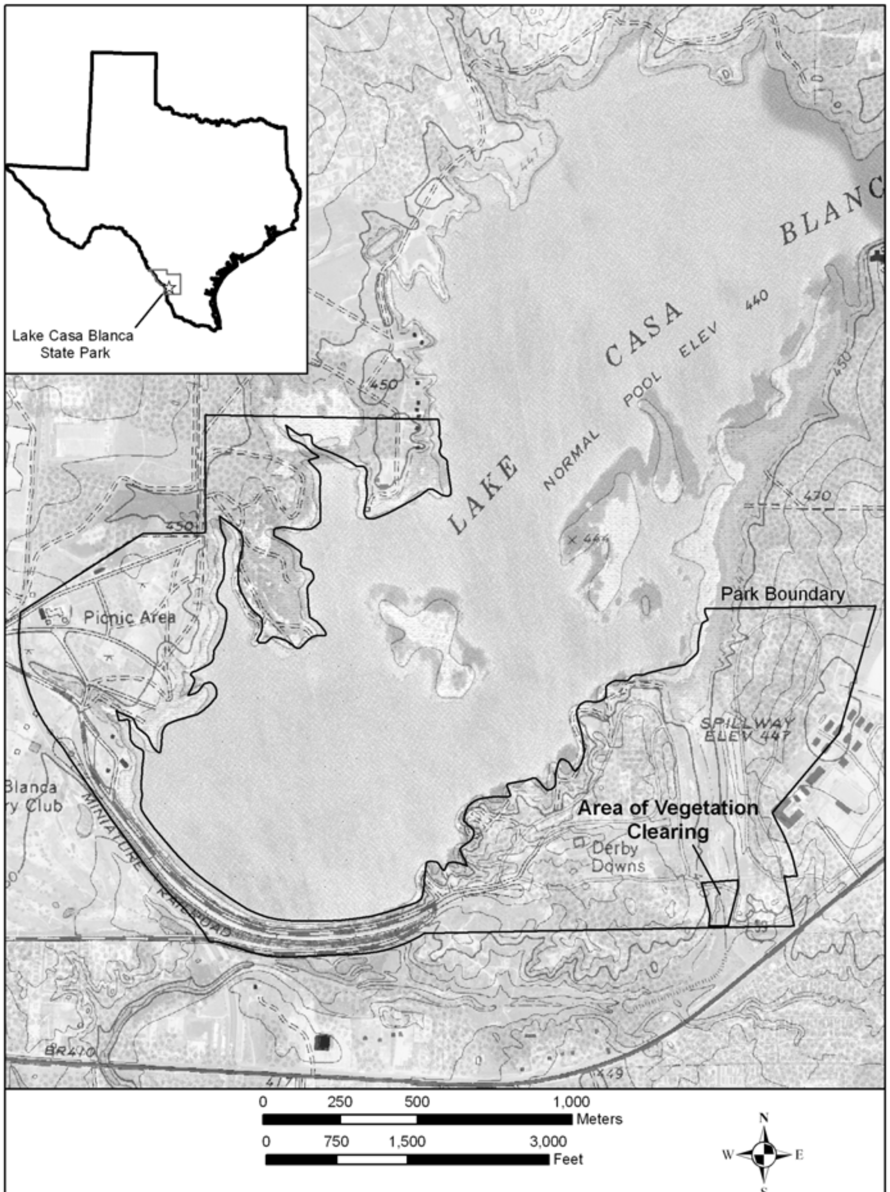

Figure 1. Project Location Map.

Environment

The project area lies within south-central Webb County. The county as a whole has a landscape that is nearly level to rolling and lies within the West Gulf Coastal Plain section of the Coastal Plain physiographic province (Fenneman 1938). The Coastal Plain in this area is underlain by Tertiary sediments. The climate of Webb County is humid subtropical with hot summers and mild winters. Rain is heaviest in late spring and fall with 19.8 inches (90.3 millimeters) of annual rainfall. The mean annual temperature is 73 degrees (Sanders and Gabriel 1985:1, 3).

The spillway is excavated into the Eocene-age Laredo Formation. The Geological Atlas of Texas describes this formation as "sandstone and clay; thick sandstone members in upper and lower part, very fine to fine grained, in part glauconitic, micaceous, ferrruginous, crossbedded, dominantly red and brown; clay in middle, weathers orange yellow; dark gray limestone concretions common, some fossiliferous; marine megafossils abundant; thickness about 620 feet" (Barnes 1976).

Excavation of the spillway has removed all in-situ soils. Soils in immediate proximity to the project area consist of Maverick-Catarina complex. These soils are composed of moderately deep, well drained, clayey soils on uplands that formed in saline, calcareous, clay and shale (Sanders and Gabriel 1985:80). Maverick soils are formed on the summits and side slopes of hills with slopes ranging from 3 to 10 percent. Catarina soils are found in narrow valleys and on foot slopes of hills with slopes less than 2 percent (Sanders and Gabriel 1985:30).

Previous Investigations

Previous investigations in Lake Casa Blanca State Park have recorded 6 archeological sites 41WB364 to 369. The sites were recorded in 1992 by James Warren who describes all six sites as surface artifact scatters dating to the Archaic to Late Prehistoric. None of these sites were considered to warrant official State Archeological Landmark (SAL) designation or listing to the National Register of Historic Places (NRHP). None of these recorded archeological sites are located in or near the project area.

In 1984, paleontologists with the University of Texas at Austin Vertebrate Paleontology Laboratory discovered fossil bearing strata in the walls of the spillway. Over the past two decades, several investigations have recovered numerous Eocene invertebrates and plants plus terrestrial and marine vertebrates that include rhinoceros, four-toed horse, opossum, sea cow, tiger shark, drum, mud shrimp, oyster, mangrove palm, and tropical fern (Westgate 1999). These resources are protected under the Texas Parks and Wildlife Natural Resources Code and are mentioned in this report only as a matter of record.

Results Of Investigations

Fieldwork for the proposed vegetation clearing project consisted of pedestrian survey of the entire 3.6 acre area. Pedestrian survey verified the project area was in the quarried spillway and no remnant or intact upland surfaces or soils were present and no cultural materials or features were observed. In addition, no paleontological specimens were observed in the project area. A visit to one of the excavation areas of the University of Texas Vertebrate Paleontology Laboratory (approximately 150 meters north of the project area in the eastern spillway wall) indicated that the fossil bearing strata are higher in elevation than the excavated floor of the spillway.

Conclusions And Recommendations

Based on the results of the pedestrian survey, the proposed project will not impact any known or unrecorded archeological sites or paleontological resources. TPWD Cultural Resources Program staff believes the proposed project is unlikely to have any effect upon cultural resources that would be eligible for listing to the National Register of Historic Places or eligible for State Archeological Landmark designation. Work should be allowed to proceed with no further investigations. Concurrence with the findings was given by Texas Historical Commission on March 7, 2006.

Clearing of the spillway was conducted in summer 2006. All records pertaining to this survey are on file at the TPWD Archeology Laboratory.

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Lake Corpus Christi State Park

San Patricio County

March 6, 2006

Author: Christopher W. Ringstaff, Texas Parks and Wildlife Department (TPWD) Cultural Resource Coordinator - Region 2

Project Description: PR 25 Road Resurfacing

Type of Investigation: Archeological Reconnaissance Survey

Staff: Christopher Ringstaff

Introduction

The Texas Department of Transportation (TxDOT) proposes to resurface approximately 0.45 miles (800 meters) of Park Road 25 in Lake Corpus Christi State Park, San Patricio County, Texas (Figure 1). The proposed project consists of resurfacing the existing roadway from the park entrance (at the intersection of PR 25 with FM1068) to the park headquarters. The road width is approximately 22 feet (6.7 meters) with a cleared right-of-way (ROW) extending from 15 feet (4.6 meters) to 25 feet (7.6 meters) either side of the roadway. The proposed project will not widen the existing road nor will it require a new ROW. The total project area is approximately 2.8 acres. Funding for the project will come from the TxDOT through a Federal Highway Administration road safety grant. The fieldwork for the proposed project was conducted on March 6, 2006 and required 6 man-hours (0.75 man-days) in the field.

Environment

The project area is within the Western Coastal Plains physiographic province of the United States which is composed primarily of Tertiary sedimentary deposits. The geology of the project area consists of Pleistocene Lissie Formation (Barnes 1987). The sandy soils found in the project area consist of Orelia and Papalote Series.

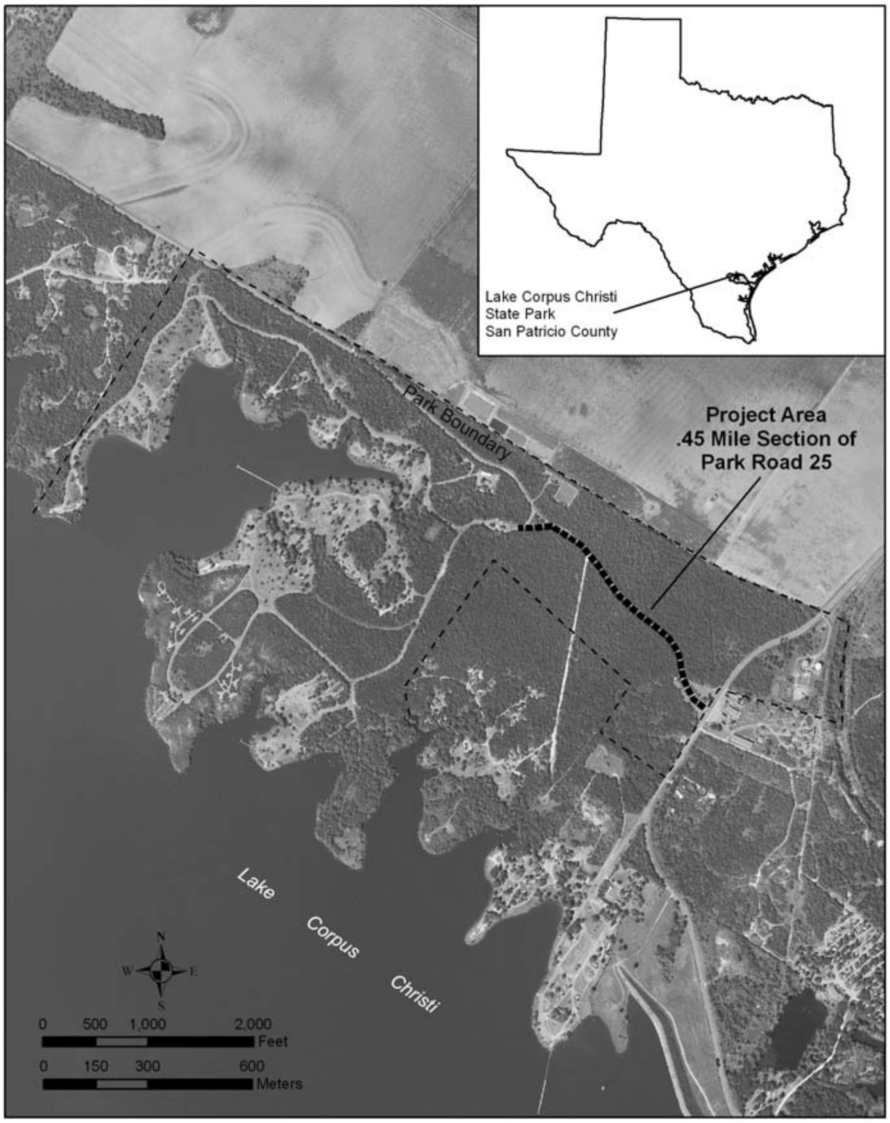

Figure 1. Project Location Map

Both soils consist of loamy soils formed on nearly level slightly concave to slightly convex uplands (Guckian and Garcia 1979:54-55). The upland Pleistocene terrace setting of the project area has little potential for buried archeological materials.

Previous Investigations

Previous investigations in Lake Corpus Christi State Park have recorded 2 archeological sites 41SP116 and 41SP178. Neither is located in or near the proposed project area. Site 41SP116 is described as prehistoric lithic scatter and was recorded by archeologists with the University of Texas at San Antonio in 1982 (Lukowski 1984). Site 41SP178 consists of an early twentieth century homestead that had burned down prior to acquisition of the park by Texas Parks and Wildlife Department (TPWD). The site was recorded in 1991 by TPWD staff and was described as foundation remains and scattered surface artifacts. Neither site has official State Archeological Landmark designation.

Results Of Investigations

Fieldwork for the proposed trail resurfacing project was conducted March 6, 2006 and consisted of a reconnaissance survey of the approximately 0.45 mile ROW. The survey noted complete vegetation clearing of the ROW, thin soils and exposed bedrock, and ground surface visibility ranging from 40 to 70 percent. A single cultural feature was noted during the survey consisting of a masonry entrance gate located approximately 110 feet (33 meters) west of the intersection of PR 25 and FM 1068. The entrance gate is one of several Civilian Conservation Corp (CCC) structures constructed between 1934 and 1937 that remain in the park (Steely 1999). The entrance gate is constructed of molded caliche blocks and has apparently seen some modifications, particularly red brick cap and accents that were added sometime in the 1970s.

Conclusions And Recommendations

Other than the CCC entrance gate, no other cultural materials or features were observed during the pedestrian survey of the remaining portions of the project area. Based on the pedestrian survey, TPWD Cultural Resources Program staff believes there will be no impacts or adverse effects to cultural resources that would be eligible for listing to the National Register of Historic Places or for State Archeological Landmark designation. However, there is concern for the Depression Era CCC masonry entrance gate. Thus, Cultural Resources Staff have stipulated a construction buffer of 10 feet on either side of the entrance. Concurrence with these recommendations was given by the Texas Historical Commission on March 21, 2006 and the road resurfacing project was completed in Fall 2006. All records pertaining to this survey are on file at the TPWD Archeology Laboratory.

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Lake Somerville State Park -

Somerville Trailway, Lee County

January 13-20, 2006

Author: Rich Mahoney, Texas Parks and Wildlife Department (TPWD) Cultural Resource Coordinator - Region 5

Project Description: New Access Roads and Parking Lots Development

Type of Investigation: Pedestrian Surface Survey and Mechanical Auger Boring

Staff: Rich Mahoney, Darrell Fischer (Trailway Manager), and Dennis Humphries (Park Host)

Introduction

In January 2006, Texas Parks and Wildlife Department (TPWD) Cultural Resources Program Staff and Lake Somerville State Park Staff conducted an archeological survey of portions of Somerville Trailway, Lake Somerville State Park in Lee County (Figure 1). The survey concerns the proposed Nails Creek and Flag Pond Access Project, consisting of vehicle parking areas and two new vehicular access roads. The proposed project occurs on lands leased by TPWD from the US Army Corps of Engineers (COE).

Project Description

The overall project area consists of four separate parking areas and two access roads, which, when combined, comprise a total of 4.91 acres and 4,050 linear meters (2.52 miles), respectively (Figure 1). Approximately 1,650 linear meters (1.03 miles) of the proposed access roads consist of existing, improved roads that will not require further improvement for the proposed undertaking and, as such, were not subject to subsurface investigation. Similarly, one of the proposed parking areas is situate atop an abandoned well pad that will not require additional improvement and was not surveyed. The maximum depth of disturbance associated with this project shall not extend deeper than 46 cm (18 in). It is not anticipated that the linear access roads shall exceed 10 m in width.

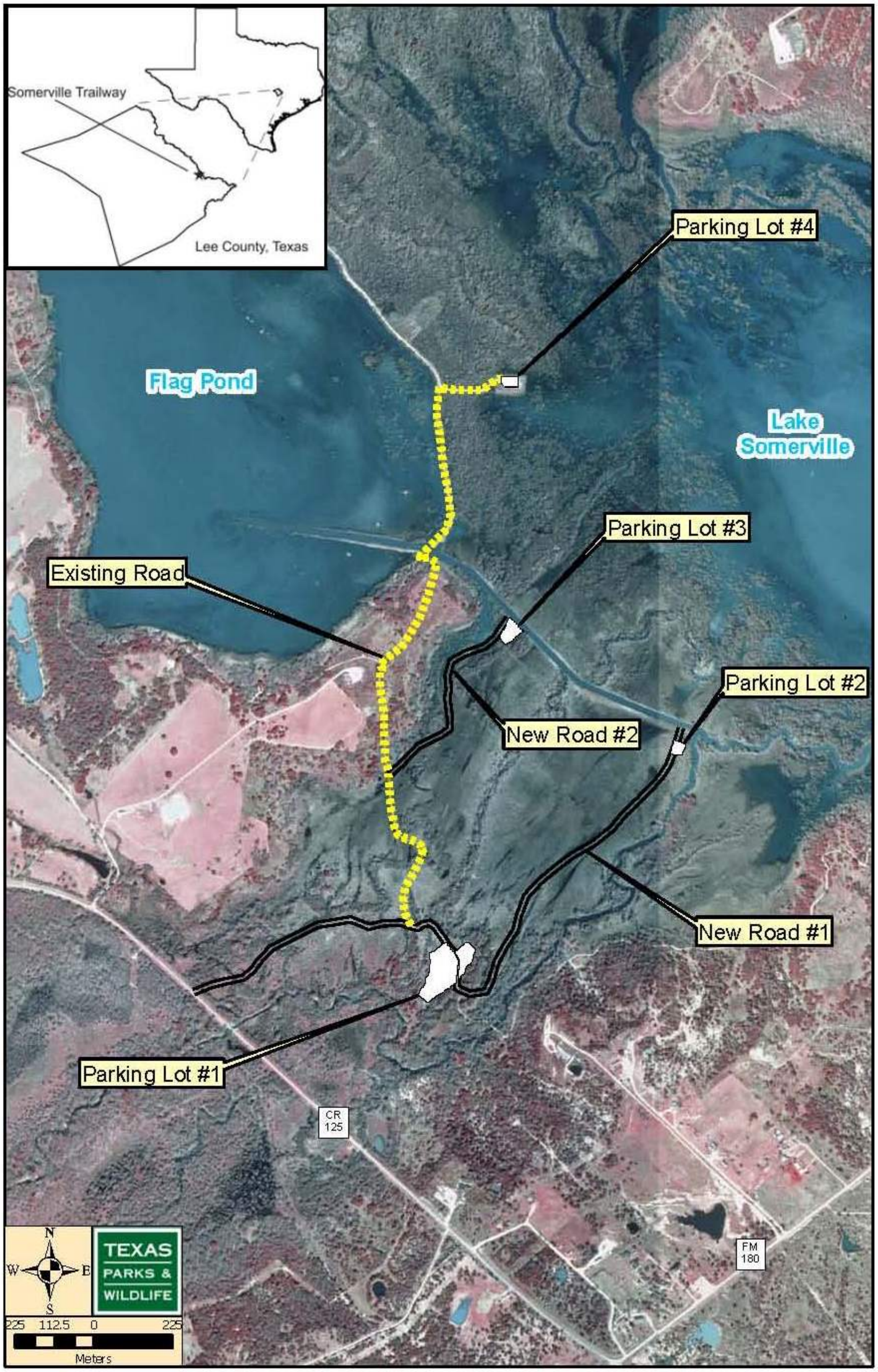

Figure 1. Aerial photograph montage depicting location of project area and individual components of project.

This survey, then, addresses the 2,400 linear meters (1.49 miles; 5.93 acres) and 4.48 acres of parking lot development that has the potential to impact previously undisturbed sediments. The total area surveyed for the current project is 10.41 acres.

Environmental Setting

Somerville Trailway is located roughly 70 miles east of Austin along the southern border of Burleson County and the northern border of Lee County. This unit of the Lake Somerville State Park Complex consists of 4,580 acres and is situate in the Oak Woodlands subregion of the Post Oak Savannah natural region (Figure 2). Originally vegetated by oak stands with relatively open understories of climax grasses such as bluestems, today's savannah exhibits an invasion of dense yaupon underbrush and mesquite. Ongoing prescribed fire management, though, has sought to curtail proliferation of these invasive species and restoration of the native vegetation is currently underway.

Yegua Creek, the primary stream on which Lake Somerville is situate, is comprised of the confluence of three separate streams: West Yegua Creek, East Yegua Creek, and Middle Yegua Creek. West Yegua Creek heads in the northeastern portion of Bastrop County and confluences with Middle Yegua Creek in northeastern Lee County. East Yegua Creek heads in the southern portion of Milam County forms the Lee County and Burleson County political boundary and confluences with Middle Yegua Creek roughly five miles east of Dime Box and 15 miles south of Caldwell. Middle Yegua Creek heads in southeastern Williamson County, and, following the confluence with East Yegua Creek, forms Yegua Creek proper, which flows approximately 30 miles to confluence with the Brazos River.

Review of the geology of the area (Figure 3) indicates that the entirety of the project area is contained within floodplain deposits of Quaternary alluvium (Proctor et al. 1981). Conversely, the majority of recorded archeological sites in the Lake Somerville State Park Complex occur atop more coarse-grained soil types, indicating a preference for the well-drained sands of the ridges and terrace-like landforms above the Yegua Creek floodplain.

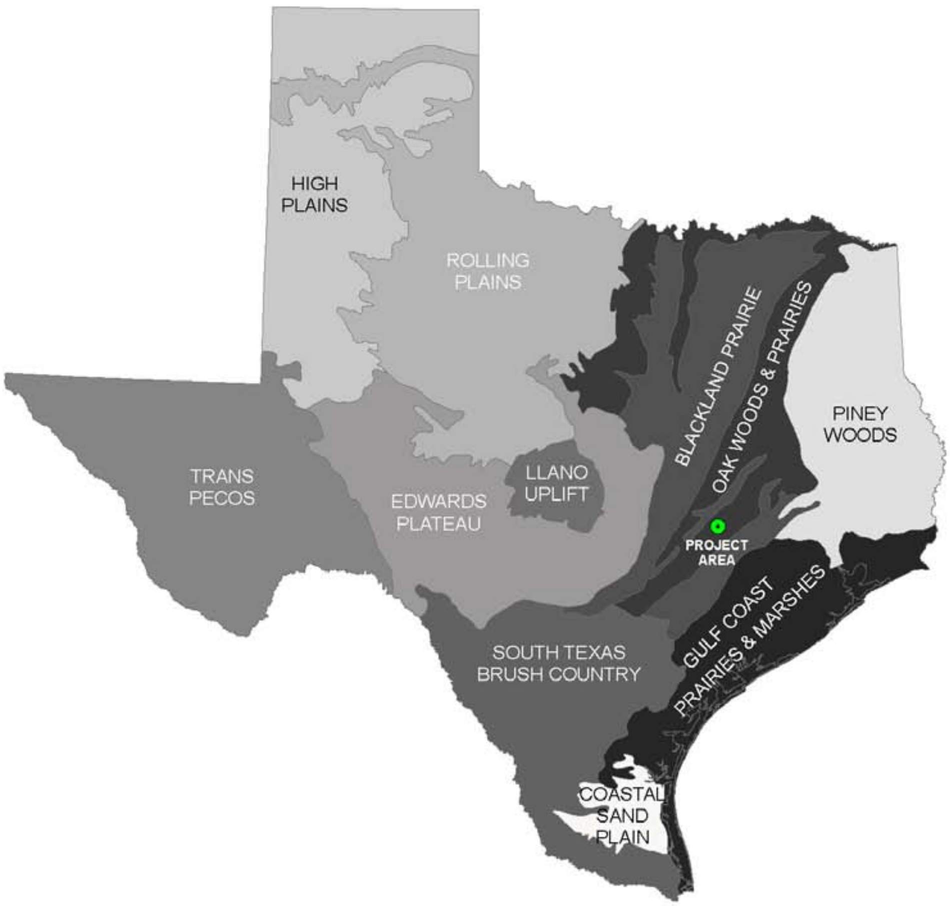

Figure 2. Aerial photograph montage depicting location of project area and individual components of project.

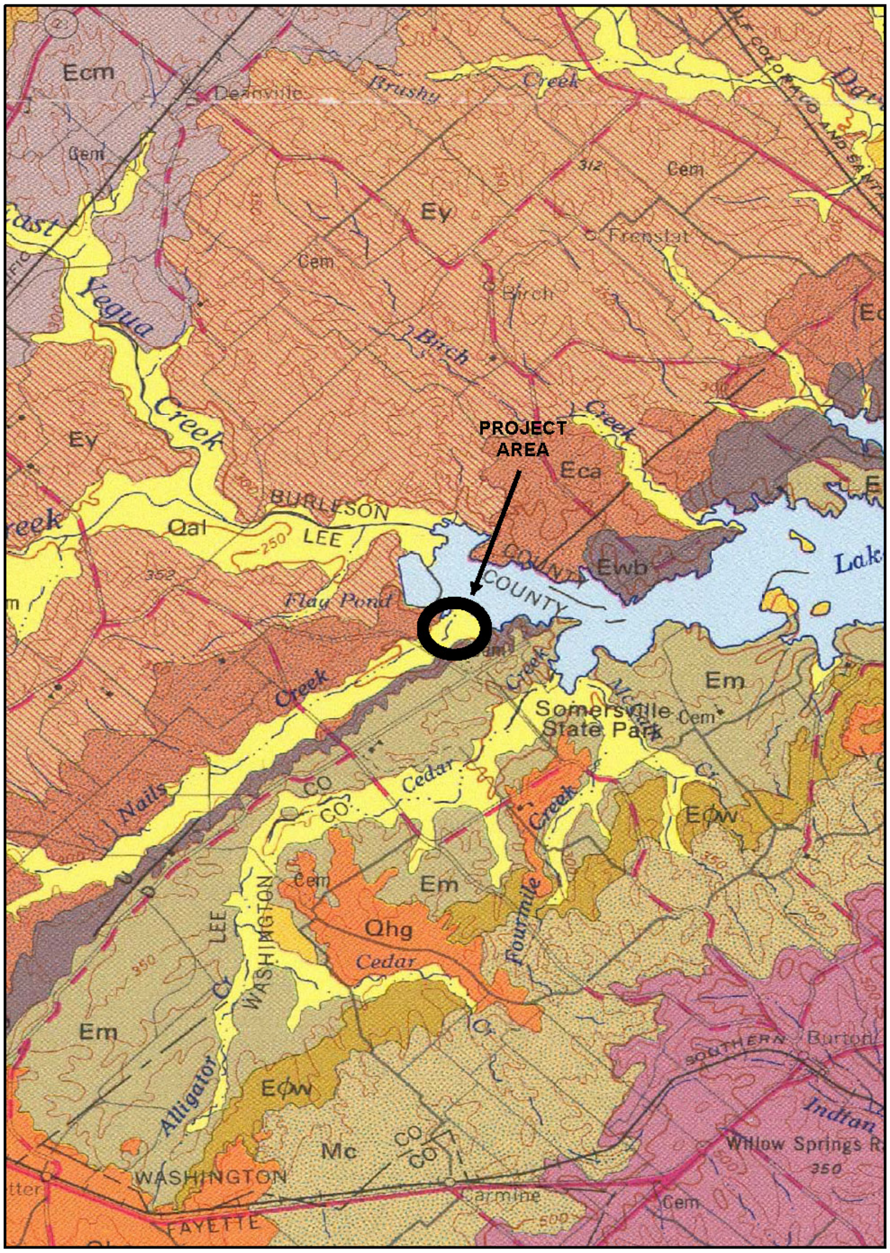

Figure 3. Project area in relation to local geology.

Cultural Setting

The Lake Somerville area falls along the eastern border of the Central Texas archeological region (Kenmotsu and Perttula 1993), alternatively, within the East-Central Texas archeological region (Mahoney et al. 2003). While no archeological sites were encountered during the current survey, archeological sites recorded in the immediate area span the entirety of the known periods of occupation in East-Central Texas. As such, this brief section outlines the general cultural chronology for the region. A more detailed account of these prehistoric periods, as well as the entirety of the cultural chronology for Central Texas and East-Central Texas can be found in Collins (2004), Fields (2004), Johnson (1995), and Prewitt (1981).

The Paleoindian period (11,500-8800 B.P.) commences during the latter part of the Pleistocene geologic epoch and terminates during the Early Holocene climatic interval (Ensor and Carlson 1988; Johnson and Goode 1994; Perttula 1999); conceptually, that era in prehistory wherein humans first entered the New World. Due to the frequent location of isolated finds of Paleoindian projectile points and the infrequent encounter of dense occupational features, it is generally inferred that these peoples were highly mobile, nomadic hunters and opportunistic gatherers. Recent research (Bousman et al. 2004; Collins 2004), however, is continuing to further define and refine our understanding of these early peoples, including their subsistence base and adaptation patterns.

Technologically, the Paleoindian period is divided into early and late phases. The early phase is typified by the presence of primarily fluted lanceolate points (i.e., Clovis and Folsom) produced of non-local materials. The exotic stone tools recovered from these early sites further suggest a high-mobility culture. The late phase of this period exhibits dart points, such as San Patrice and Dalton, made primarily of local materials (Ensor and Carlson 1988:18; Schambach 1998). The presence of woodworking tools, such as the Dalton adze, in association with these new variant dart points suggests a slightly more sedentary culture than its predecessor.

The Early Archaic period (8800-5600 B.P.) is characterized by the apparent onset of sedentary subsistence indicated by the diversity of recovered artifact assemblages (Girard 2000; Wyckoff 1984). The extinction of large herds of megafauna and the changing climate at the beginning of the Holocene appears to have stimulated a behavioral change in the prehistoric inhabitants of the region. While the basic hunter-gatherer adaptation probably remained intact, an economic shift away from big game hunting was necessary. In general, more intensive exploitation of local resources such as deer, fish, and plant stuffs is indicated by greater densities of ground stone artifacts, burned rock cooking features, and more specialized tools such as Clear Fork gouges and Guadalupe bifaces (Turner and Hester 1993:246, 256). Temporally diagnostic projectile points of this period include Angostura, Gower, and Martindale.

The Middle Archaic period (5600-4200 B.P.) occurs during the final years of the Middle Holocene geologic epoch and may represent a time of transition in adaptation patterns. During the early part of this period, bison are again present along the plains and prairie regions of Texas after a nearly three millennia hiatus (Dillehay 1974). Their appearance is short-lived, however, and by approximately 5200 B.P. bison once again disappear from the faunal assemblage of the Southern Plains and adjoining prairie margin. The continuance and proliferation of relative sedentism and/or specific exploitation of localized natural resources is evidenced by the continued occupation and reoccupation of preferred landforms (Mahoney et al. 2003). Johnson and Goode (1994:28) also point to the specialization of targeting specific natural resources, possibly xerophytic plants. These characteristics in response to an increasingly drier environment (Bousman 1998; Johnson 1995) would form the basis for the transformation in the overall stylistic tradition to that of the Late Archaic.

Similar to the Paleoindian period, the Middle Archaic is technologically divided into two phases. The early phase consists of thin-bodied, broad-bladed projectile points such as the Early Triangular variety. It is postulated (Collins 1998) that these points were part of a stone tool kit customized for hunting the abundant bison of this early phase. The later phase is dominated by narrower bladed and thicker bodied dart points such as the Nolan and Travis varieties. It remains unclear whether this technological change can be directly attributable to the economic shift from bison procurement to medium-sized game procurement, such as deer and antelope.

The Late Archaic period (4200-1200 B.P.) roughly coincides with the beginning of the Late Holocene geologic epoch and represents the final three millennia of the Archaic Era.

Johnson and Goode (1994:34) divide the Late Archaic into separate phases, with a point of demarcation at approximately 2600 B.P. The earlier phase, or Late Archaic I, commences with generally xeric conditions, probably correlative with the Dry Edwards Interval to the west. Palynological evidence from the nearby Boriak bog (Lee County, Texas) and the Weakly bog (Leon County, Texas) reveals relatively low arboreal canopy cover; indicating a predominant grassland environment for the region during this period (Bousman 1998). Adaptation to a relatively dry climate with low precipitation and high temperatures are hallmarks of the early portion of the Late Archaic, with bison reappearing in the faunal assemblage following an over one thousand year hiatus (Dillehay 1974). Projectile-point styles of this phase include, in progressive order, Bulverde, Pedernales, Marshall, Montell, and Castroville (Johnson and Goode 1994).

The Late Archaic II witnesses a continued population increase (Prewitt 1985; Rogers and Kotter 1995) and divergent burial practices possibly influenced from cultures to the east (Johnson 1995:96-98). Palynological data derived from the above bog studies indicate a trend toward a more mesic environment during the latter phase of the Late Archaic (Bousman 1998). Burned rock middens appear to decline in usage during this time (Johnson and Goode 1994); however, recent research (Mauldin et al. 2003) questions the applicability of this as a period or phase marker. Typical projectile-points of the Late Archaic II include Marcos, Ensor, Frio, Darl, and Figueroa (Johnson and Goode 1994).

The Late Prehistoric period (1200-300 B.P.) represents the final few centuries prior to European contact in East-Central Texas, and exhibits a distinctive shift in technology from the previous periods. Evidence of bow and arrow weaponry first occurs in this period, with small arrow points appearing in the archeological record. The initial 600 years of this period, termed the Austin interval, is marked by the presence of expanding stem arrow points such as Scallorn and Edwards (Prewitt 1985). Environmentally, little change from the Late Archaic II is witnessed during the Austin interval, as faunal assemblages appear similar (Collins 2004).

The terminal Late Prehistoric subperiod, the Toyah interval, witnesses the return of bison to the region after several hundred years absence (Dillehay 1974). The animal's return resulted in a marked economic shift toward intensive bison procurement and processing (Prewitt 1981). The material culture from this interval reflects this shift with contracting stem arrow points such as Perdiz and Clifton and blade core technology. In addition, bone-tempered pottery makes its first appearance in the region during this interval.

Previous Investigations

Professional archeological investigations began in the immediate area prompted by the U.S. Army Corps of Engineers creation of Lake Somerville in the 1960s. The Texas Archeological Salvage Project (Honea 1960) conducted survey of the area to be inundated and officially recorded the first sites within Burleson, Lee, and Washington Counties. Of the 29 sites recorded during the survey, Honea recommended additional excavation at only one location, site 41BU1, the Erwin's Bridge Site. Site 41BU1 was subsequently excavated by the Texas Archeological Salvage Project in 1964 (Peterson 1965); however, extensive excavations failed to reveal significant cultural deposits.

Numerous surveys were conducted in the Lake Somerville vicinity beginning in the 1980s, primarily for petroleum exploration-related cultural resource clearances. The majority of the 462 recorded archeological sites and 322 cultural resources reports of investigations (THC 2005) in the tri-county region of Burleson, Lee, and Washington Counties can be attributed to cultural resource surveys for the abundant well pads, pipelines, and flowlines resultant from the oil boom of the 1980s.

The most recent series of extensive investigations includes work performed by Texas A&M University, The Center for Ecological Archaeology (Thoms and Ahr 1996; Thoms 2004). In the Birch Creek Unit, A&M focused on the Lake Somerville shoreline which had been exposed due to lake drawdown. Thirteen previously unrecorded sites were recorded along the drawdown zone. Survey work within the Nails Creek Unit defined 20 archeological sites.

TPWD Cultural Resources Program Staff have recently conducted two small-scale surveys within the complex (Mahoney 2005; 2006). Both surveys failed to encounter any previously unrecorded archeological sites; however, both surveys were successful in delimiting the inland extent of two sites previously recorded during the Texas A&M surveys.

Methods

Prior to initiation of the field investigations, a comprehensive review of all available archeological reports and databases was conducted to identify and characterize cultural resources known to occur in the vicinity of the project area. At least in part, the compilation of known cultural resources in the Lake Somerville area is based on the Texas Archeological Sites Atlas, Texas Historic Sites Atlas, and THC and TPWD map files. In addition, the literature and archival review inspected historic United States Geological Survey topographic maps and Natural Resources Conservation Service soil surveys (USDA 2004).

Due to the thick, recent Holocene deposits of the Yegua floodplain, the methodology employed for the field survey included use of a mechanical auger for all subsurface investigations. Mechanical augering was conducted using a Kubota L2050 tractor equipped with a 4-ft-long and 9-in-diameter auger bit. Each auger boring measured roughly 23 cm in diameter and was excavated to below the maximum depth of proposed disturbance (46 cm) where possible. Each boring was excavated in 20 cm increments, and the excavated sediments were inspected for cultural material. The auger tests were spaced 100 m apart along the entire linear project area. Within the parking lots, the rate of auger boring excavation matched the required rate of shovel tests per acre under the THC's *Minimum Survey Standards*. Specifically, hand-excavated shovel tests were replaced with mechanical auger borings at a 1:1 ratio.

Results And Recommendations

A total of 40 auger borings were excavated within the project area (Figures 4-7), encountering no cultural material. Surface deposits encountered in each of the borings consisted of loosely compacted, fine-grained sand loam. Thickness of these recent deposits varied from 5 cm to 60 cm, revealing an undulating substrate.

Without exception, this substrate was comprised of dense, fine-grained silty clays. The thickness of this stratum was not determined as it exceeded the depths attainable by the mechanical auger. Based upon the negative results of the survey, the TPWD Cultural Resources Program recommended that the proposed project be allowed to proceed without further cultural resources investigations. Texas Historical Commission and U.S. Army Corps of Engineers concurrence for this project was received in February 2006.

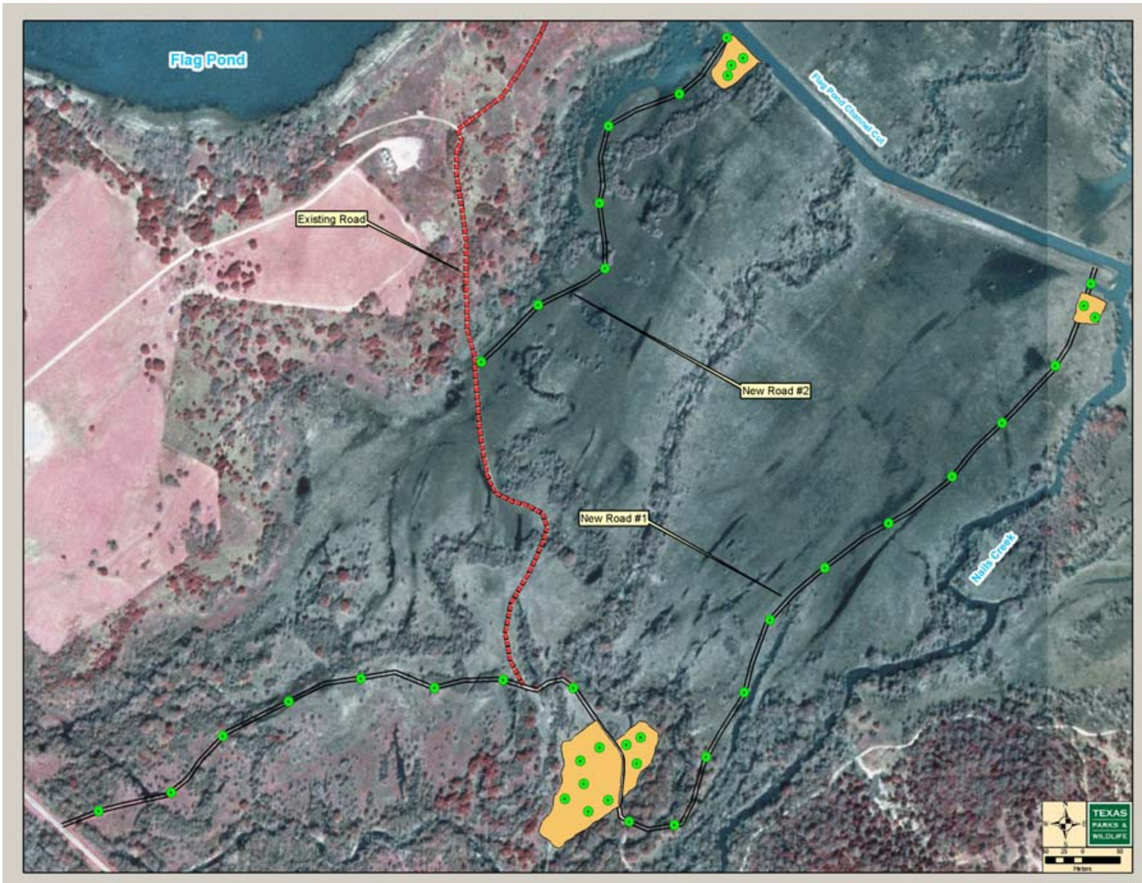

Figure 4. New access roads component of project. Dotted circles depict auger borings.

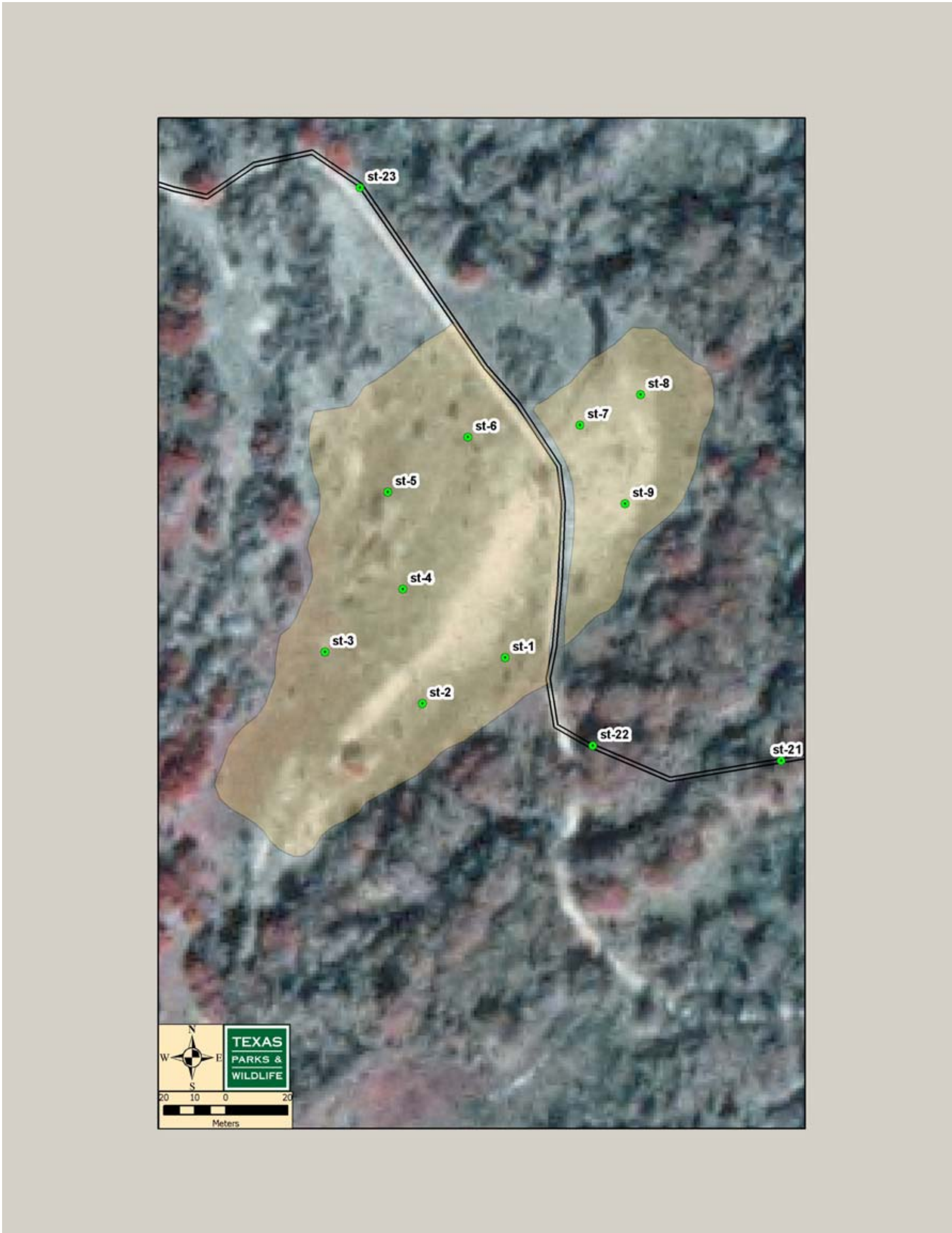

Figure 5. Parking lot #1 component of project. Dotted circles depict auger borings.

Figure 6. Parking lot #2 component of project. Dotted circles depict auger borings.

Figure 7. Parking lot #3 component of project. Dotted circles depict auger borings.

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Levi Jordan Plantation State Historic Site

Brazoria County

June 30, 2006

Author: Michael Strutt, Texas Parks and Wildlife Department (TPWD) Cultural Resources Program Director

Project Description: Shovel Testing Evaluation of Route for a Proposed Hog Fence

Type of Investigation: Shovel Testing Program

Staff: Michael Strutt

Introduction

On June 30, 2006 a shovel testing program of a portion of the Levi Jordan State Historic Site was undertaken to evaluate the archeological potential within a proposed route of a protective fence to be placed around the historic core of the site to protect it from feral hogs. The overall areal impact of this project is less than 1 acre and entailed .5 person days of field work.

Environmental Setting

Levi Jordan Plantation State Historic Site is located 60 miles south of Houston in southwest Brazoria County, and encompasses 92 acres, bounded on the northeast and southeast by Farm to Market Roads 524 and 521, respectively (Figure 1). The Levi Jordan Plantation State Historic Site is located along the eastern portion of the Gulf Coast Prairies and Marshes Region of Southeast Texas. The region is composed of belt-like strips of alluvial deltaic soil that run parallel to the Gulf of Mexico. The site lies in Brazoria County where the climate is considered humid subtropical. The average annual temperature is 69 degrees with 268 frost free days. Average annual rainfall is 49.9 inches distributed evenly throughout the year. Winters are generally very mild, summers hot and humid.

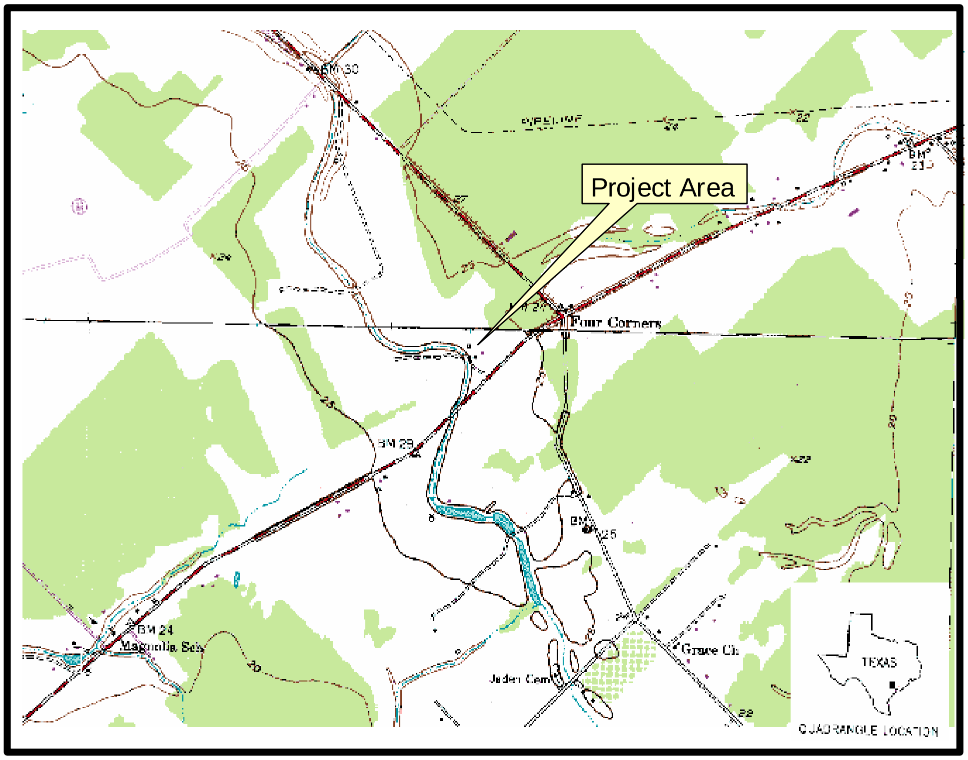

Figure 1: Levi Jordan Plantation State Historic Site, Brazoria County
Cedar Lane and Sweeny, Texas Quadrangles, 7.5 minute series.

The soils underlying the site consist primarily of Asa silty clay loam, Norwood silt loam, and Pledger clays. The Pledger clays lie along the northern portion of the site, and to the east of the house where the shovel testing survey was completed the soils are Asa silty loams (Crenwelge et al. 1981).

Cultural History

The significant historical periods at the State Historic Site are the antebellum and immediate post-bellum eras of Texas history. Levi Jordan came to Brazoria County in 1848 and purchased 2,221 acres to establish a plantation (Brown 2005a:4). He brought with him a number of slaves from his Arkansas and Louisiana holdings, who began the laborious process of clearing the land to plant provision fields and establish sugar cane as the cash crop (Brown 2005a:5). From 1848 until the Civil War the slave population on the plantation continued to grow up to approximately 96 individuals (Brown 2005a:7). After the war some of the freedmen continued to live on the plantation as sharecroppers. They continued to live in the former slave quarters where they had lived before the war. Their lives as both slaves and freedmen are documented in a rich archeological record discovered at the quarter's site. It is that record which makes this State Historic Site highly significant in both Texas and United States history. It is one of the few such places in the country to be studied archeologically.

Previous Investigations

The previous investigations at the Levi Jordan Plantation State Historic Site include a series of archeological field schools directed by Kenneth Brown of the University of Houston from 1986 through 2002. Most of Brown's investigations involved the slave and freedmen's quarters north of the main house. However, Brown also conducted shovel testing and limited excavations near the main house (Brown 2005a:5). These investigations lead to the publication of three reports by Brown for the Texas Parks and Wildlife Department, and several Master's theses. The main thrust of the reports by Brown is the black community on the plantation; the theses deal with various aspects of slave life or artifact analysis from individual cabins within the quarters.

Other archeological investigations undertaken at the site include a small testing program beneath two rooms in the main house by TPWD in 2003 (Howard 2003) and a survey and testing project conducted by Texas State University Center for Archaeological Studies (Leezer 2006). The testing by TPWD in 2003 aimed at augmenting architectural information regarding the house. The work conducted by Texas State University also sought information related to the architectural history of the house and surveyed a proposed location for a visitor's center.

Methods

The shovel testing survey conducted in 2006 consisted of the excavation of 5 shovel test pits at random intervals along a line for a proposed fence (Figure 2). Each shovel test was excavated by hand in either natural stratigraphic levels or 10 centimeter units until sterile soil was encountered. Investigations impacted less than one-acre of the site and

Results

Only one shovel test (HF 02) yielded artifacts. In level two, 20-30 centimeters below the surface, ironstone, bone, burned bone and brick fragments were discovered. The test pit location was chosen because of brick fragments seen on the surface. The artifacts likely came from the slave and freedmen's quarters 50 feet to the west. The other four test pits did not yield any artifacts.

Conclusions And Recommendations

Because of the artifacts discovered in shovel test (HF 02) the Cultural Resources Program recommended that the fence location be moved 50 feet to the east to avoid disturbing archeological deposits related to the slave quarters. The fence will be constructed when funding is available and staff trained in cultural resources recognition will monitor the project.

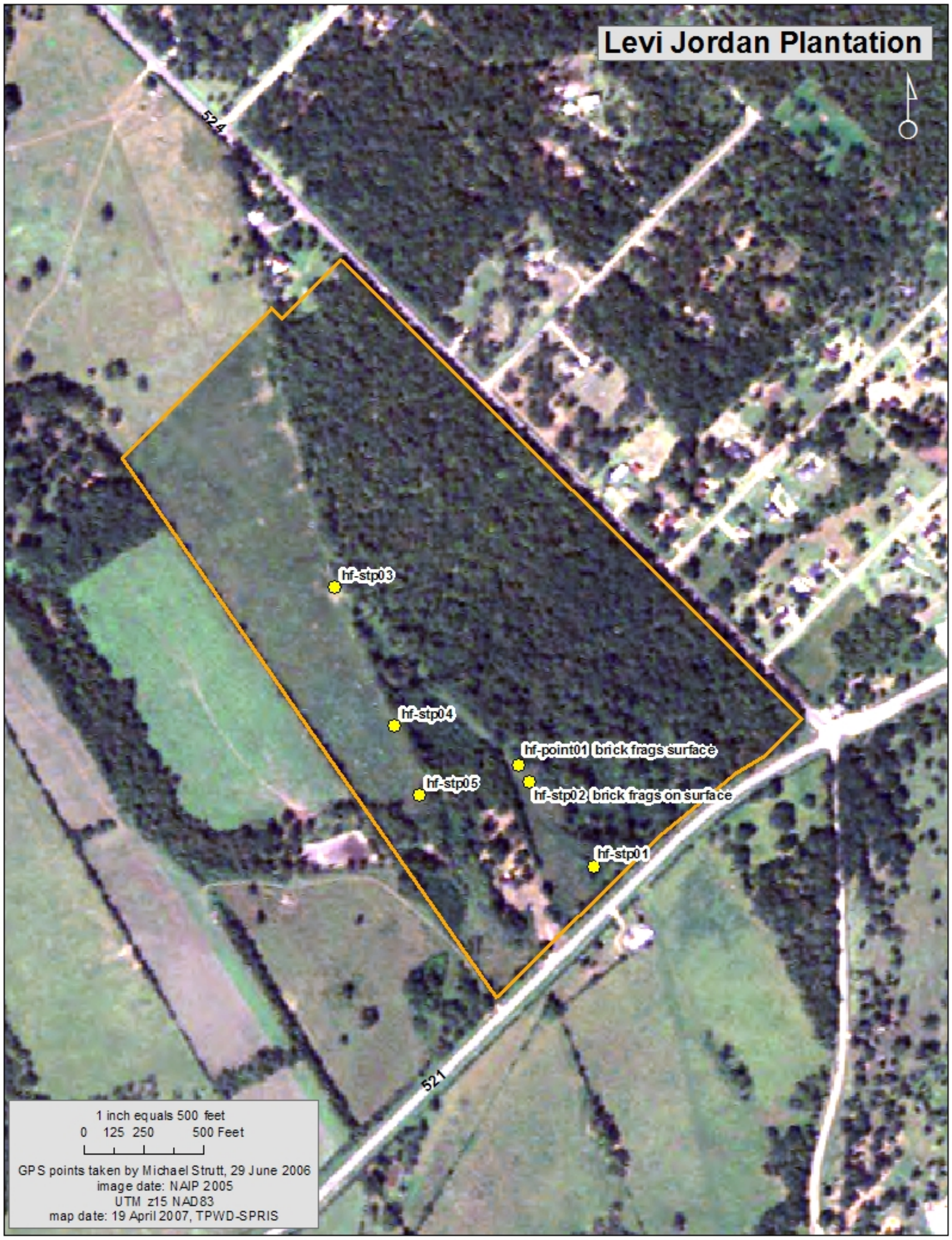

Figure 2. Levi Jordan SHS property boundary and shovel test locations

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Matador Wildlife Management Area

Cottle County

January 19, 2006

Author: Kent Hicks, Texas Parks and Wildlife Department (TPWD) Cultural Resource Coordinator - Region 6

Project Description: Surface Survey and Selective Shovel Testing of Areas to be Impacted by Fence Line Grading

Type of Investigation: Surface Survey and Shovel Testing

Staff: Kent Hicks

Introduction

In November of 2005, TPWD Wildlife Division developed a plan to construct a barbed-wire fence along the south side of the Middle Pease within the Sisk Pen Pasture of the Matador Wildlife Management Area (WMA). The fences are needed to facilitate the movement of cattle and to achieve wildlife management goals. As these areas had not been previously surveyed for the presence of cultural resources, and was to be cleared with a bulldozer, the TPWD Parks Division Cultural Resources Program was commissioned to complete this work.

The project consists of a 20 feet wide transect 3.97 miles in length (9.6 acres; Figure 1). Hand clearing will be utilized to provide access and define the project ROW. A D5 bulldozer will then be brought in to grade the cleared area and remove all stumps. This prepared surface will then be maintained over time to provide a firebreak and access needed for fence line maintenance. Grading depth will be limited to six inches but stump removal may cause localized disturbance of as much as two feet.

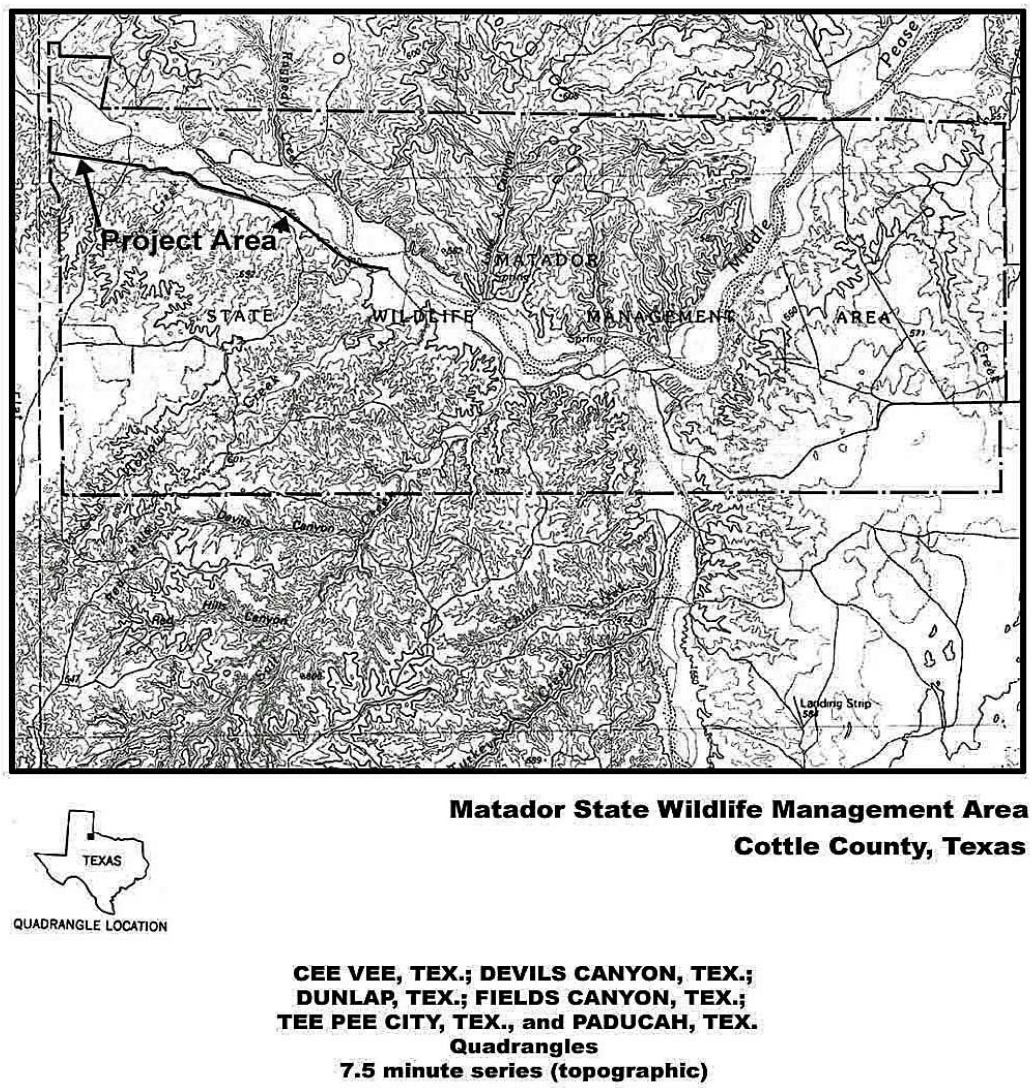

Figure 1. Matador State Wildlife Management Area, Cottle County, Texas

Environmental Setting

The Matador Wildlife Management Area (WMA) is located in the central Rolling Plains section of the Great Plains province (Fenneman 1931) of Cottle County, Texas approximately nine miles northwest of Paducah. It consists of 28,183 contiguous acres

and serves as a multi-use area supporting such activities as hunting, fishing, hiking, bird watching, horseback riding, and photography. Plant communities present include mesquite uplands, shinnery oak rangeland, sandy bottomland with willow hackberry, cottonwood, and plum trees, and gravelly hills covered by red-berry juniper and mesquite. Average annual rainfall is 22 inches with the greatest amounts occurring in May and June.

The Middle and South Pease Rivers have cut rough valleys that dominate the topography of the WMA. The inter-fluvial divisions consist of Permian-age red beds overlain thinly by loam derived from Pleistocene-age aeolian deposits. Residual Miocene-age quartzite and mudstone (i.e. "Potter chert") nodules occur along this boundary and were utilized by native groups as lithic resources and hearth materials. The only Holocene-age sediments within the project area occur within active drainages or as localized aeolian "cover sands" that thinly overlie stable uplands and are a product of historic agricultural practices on the Southern High Plains and Rolling Plains.

Previous Investigations

Two previous surveys have been conducted at Matador WMA. The first, (Harrison and Sansom 1992) involved the surface survey of approximately 45 miles of roads and fence lines in preparation for the grading of 30 feet wide fire lanes. This work covered approximately 164 acres and occurred within the eastern third of the WMA. Two sites (41CT23 and 41CT24) were located on ridge tops and within existing road cuts. Both sites were considered to be Archaic-age short term hunting camps and are not National Register of Historic Places eligible.

The second survey was conducted the following year as a continuation of the previous year's work and in preparation for controlled burning (Harrison and Pace 1993). An additional 15 miles (30 feet wide; 55 acres) of roads and fence lines were surface surveyed and limited shovel testing was undertaken in two areas where buried deposits were thought to be possible. This project area was also in the eastern third of the WMA. No archeological evidence was located by this survey.

Methods

The 20 feet wide transect was pedestrian surveyed by TPWD Cultural Resource Coordinator Kent Hicks. Shovel probing was used extensively to identify upland areas where shallow resources might be masked by recent deposition. Shovel testing however was limited to areas identified by probe to have higher potential and to determining depth and breadth of identified sites. Shovel probes entailed removing one or more scoops of sediment to assess the exposure while shovel tests were excavated by natural horizon as 30 x 30cm units and the matrix produced was screened through quarter-inch mesh.

Results

The survey tract (see Figure 1) falls almost completely within the active floodplain and river channels of the Middle Pease Rivers. Deposits along this transects are primarily deep coarse sands over gravels or a combination of the two at the surface. Shovel probing indicates that these deposits extend well below the disturbance level associated with this project. Vegetation ranges from grass burr and other weeds in the more active zones to established trees and shrubs at the fringes of the floodplain. No cultural resources were observed along this transect and the likelihood of site preservation in this topographic setting is very low. Shovel tests were excavated at three locations where the route crossed non-alluvial deposits but produced evidence only of thin eolian sands over Permian-age sediments.

Conclusions And Recommendations

The proposed fence line transect holds virtually no potential for the preservation of intact archeological deposits and it is recommended that no restriction be placed on disturbance of less than two feet in depth along these proposed fence lines.

This recommendation was accepted by the Texas Historical Commission on May 10, 2006 with the addendum that TPWD staff trained in the recognition of cultural resources monitors all ground disturbances.

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Harrison, Billy R. and Lynn Pace
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Mustang Island State Park

Nueces County

March 28-30 and December 20, 2006

Author: Christopher W. Ringstaff, Texas Parks and Wildlife Department (TPWD) Cultural Resource Coordinator - Region 2

Project Description: Mustang Island Cultural Resources Inventory

Type of Investigation: Archeological Survey.

Staff: Christopher Ringstaff, Michael Strutt (TPWD Cultural Resource Program Director), John Hoomes (Mustang Island SP Interpretive Specialist)

Introduction

In March and December of 2006, Cultural Resources Staff from the Texas Parks and Wildlife Department (TPWD) conducted an intensive archeological survey of 101.1 acres of Mustang Island State Park (MISP) Nueces County, Texas (Figure 1). The archeological survey was conducted as part of the MISP Master Plan update and as an ongoing systematic cultural resources inventory of the park which began in 1995 by the TPWD Archeological Survey Team (Howard et al. 1997). Information collected from this survey will also be used to aid in the production of a Resource Management Plan (RMP). Funding for the project was provided by TPWD, the Texas Commission on Environmental Quality, Texas General Land Office, and the United States Department of Interior in their capacities as natural resources trustees using funds recovered on behalf of the public for natural resources injuries resulting from the Skaubay/ Berge Banker oil spill.

Environment

The central Texas coast is part of the Gulf Coastal Plain (Fenneman 1938), a nearly flat physiographic province with elevations decreasing very gradually from the interior to the coast. The elevation of MISP ranges from sea level to 10.5 m (35 ft) above sea level.

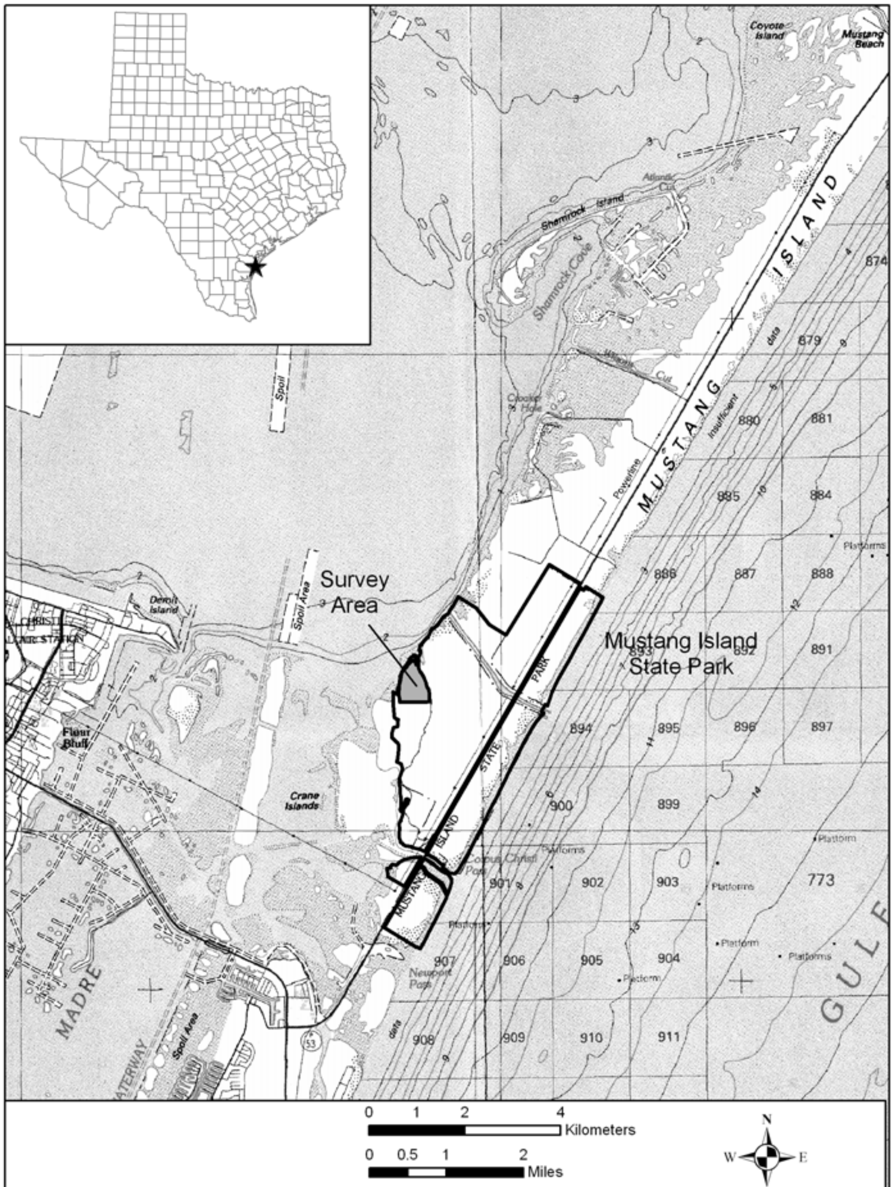

Figure 1. Project location map.

The climate of Nueces County reflects its intermediate position between a humid, subtropical coastal area to the northeast and a semiarid inland area to the west and southwest (Franki et al. 1965). The county has hot summers, with a mean maximum temperature of 34^{o} C (93º F) in July (Ramos 1995). Winters are mild, with a mean minimum temperature of 7º C (45º F) in January.

The soils in MISP have been classified into the coastal beach, the coastal dunes, and the Galveston-Mustang-Tidal flats association (Franki et al. 1965). Soils in the project area consist of Mustang fine sands which occupy nearly level areas between the coastal dunes that are generally less than 1.5 m (5 ft) in elevation. They are very young soils, with a 15 cm (6 inch) thick, light gray surface layer containing a small amount of humus. The subsoil is moist, almost white, and about 60 cm (24 inches) thick. The parent material is usually saturated and often salty. These soils support an abundance and variety of native grasses that are tolerant of water and salt.

Previous Investigations

The archeological literature review for MISP consisted of a THC Archeological Sites Atlas search (maps and site forms), a review of TPWD archeological site maps, and review of historic and archeological survey reports (Freeman 1995; Howard et al 1997). To date, there are four recorded archeological sites within Mustang Island State Park - 41NU7, 41NU224, 41NU284, and 41NU285. Sites 41NU284 and 41NU285 were recorded in 1985 by Howard et al. (1997), 41NU224 was recorded by avocational archeologist Skip Kennedy in 1984, and 41NU7 was recorded by Thomas Campbell in 1963 (Campbell 1964). Two of these sites, 41NU224 and 41NU284, are designated State Archeological Landmarks (SALs). Both are multi-component sites having both historic and prehistoric occupations represented by historic glass and ceramics, faunal remains (shell and some fragmented bone), stone artifacts, and prehistoric ceramics. In contrast, site 41NU285 is not a designated State Archeological Landmark. This ephemeral site is represented solely by a series of small shell scatters. Lastly, site 41NU7 is a purported prehistoric shell midden. Despite numerous attempts by TPWD staff to relocate 41NU7, the site has never been found. Howard et al. (1997:16) suggests the site is mis-plotted based on discussions with avocational archeologist Ed Mokry who indicated the site is located south of the present park boundary.

Methods

In preparation for a survey in a relatively flat and featureless area, transects were digitized within the proposed survey area polygon. The survey area polygon was digitized over 1 meter resolution 2004 digital orthophotography of Nueces County produced by the United States Department of Agriculture National Agriculture Imagery Program (USDA-NAIP). As per the Texas Historical Commission (THC)/Council of Texas Archeologists' (CTA) Archeological Survey Standards for Texas, the transect interval was set at 30 meters. Prior to fieldwork, the survey area polygon, transects, park boundary, and clipped aerial photo background files were uploaded into a Trimble GeoXT GPS unit.

The survey area is located on the western margin of the park approximately 1.1 kilometers southwest of Fish Pass and expands the area of archeologically surveyed parkland as an addition to the existing cultural resources inventory. The area surveyed was chosen as a northward expansion of the prior 1995 TPWD survey and as a test of Howard et al. (1997:88) proposed probability model. The model delineates the back-bay tidal flats, Corpus Christi Pass, and western Fish Pass as high probability areas while the dune and beach areas are considered low probability. Shovel testing of the survey area was also conducted per the THC/CTA Archeological Survey Standards for Texas. All shovel tests were approximately 30 cm in diameter and screened through quarter-inch mesh.

Results Of Survey

The intensive archeological survey of 101.1 acres of MISP was conducted March 28-30 and December 20, 2006 and required approximately 64 man-hours (8 man-days).

The survey included a pedestrian survey consisting of twenty (30 meter interval) transects as well as the excavation of 35 shovel tests (Figure 2). No cultural materials or features were observed during the pedestrian survey or recovered during shovel testing

(Table 1). Ground surface visibility was variable from 10 percent in grassy areas and 90 percent in denuded tidal flats and averaged above 50 percent.

Although no archeological sites were recorded during the survey, the survey noted significant damage to the tidal flat area by four-wheel drive activity on and off existing two-track roads. Despite the absence of cultural material recovery from the shovel testing, subsurface lenses of crushed and whole shell were encountered across the project area (Appendix 1). Material from these lenses were carefully examined in the field and provided no evidence to suggest they were anthropogenic and are markedly similar to bayside beach deposits observed on the western margin of the project area during low tide.

Conclusions And Recommendations

During the 101.1 acre intensive archeological survey conducted at MISP, no additional archeological sites were recorded. All 35 shovel tests conducted in the survey area were negative and no cultural materials or features were observed during the pedestrian survey. Observed small to medium sized crushed and whole shell along the western project area beachfront was consistent with shell lenses found during shovel testing. Considering the absence of large shell fish species such as Eastern Oyster or Lightning Whelk in the lenses encountered during shovel testing (not to mention the absence of cultural materials such as ceramic, chipped stone, or modified shell or bone), these lenses are not considered cultural and likely represent high energy storm deposition and/or relict beach margins.

Figure 2. Shovel test distribution in survey area.

As an inventory survey, there are no recommendations concerning a specific project impact. However, other than the survey's contribution to the inventory of park land surveyed, it has provided addition data from which we can augment the interpretation of prior surveys as well as make recommendations on land-use and land management. Despite the results of the survey, Howard's proposed probability areas (Howard et al. 1997:88) are still considered a viable predictive model until additional quantitative survey data can provide a basis for modification. Although no cultural resources were recorded during the survey, observations such as vehicle impact made during the survey will assist in formulating cultural resource and natural resource management recommendations for the bayside portion of the park. All records pertaining to this survey are on file at the TPWD Archeology Laboratory.

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1997 *Archeological Survey and History of Mustang Island State Park, Nueces County, Texas*. Texas Parks and Wildlife Department.

Appendix 1. Shovel Test Summary

Test #	Depth (cm)	Recovery	Comments	Site
1	0-20	no recovery	light brown sand	N/A
	20-40	no recovery		
	40-60	no recovery		
	60-80	no recovery		
2	0-20	no recovery	light brown sand	N/A
	20-40	no recovery	crushed shell	
	40-60	no recovery	crushed shell and sand	
	60-80	no recovery	gray sand	
3	0-20	no recovery	light brown sand	N/A
	20-40	no recovery		
	40-60	no recovery		
	60-80	no recovery		
4	0-20	no recovery	light brown sand	N/A
	20-40	no recovery		
	40-60	no recovery	water at 50 cm	
5	0-20	no recovery	light brown sand	N/A
	20-40	no recovery		
	40-60	no recovery	crushed shell at 45 cm	
	60-80	no recovery		
6	0-20	no recovery	light brown sand	N/A
	20-40	no recovery	gray sand at 35 cm	
	40-60	no recovery	crushed shell at 50 cm	
7	0-20	no recovery	brown sand with iron oxide stains	N/A
	20-40	no recovery	water at 35 cm	
8	0-20	no recovery	brown sand	N/A
	20-40	no recovery		
	40-60	no recovery		
	60-80	no recovery	water at 80 cm	
9	0-20	no recovery	light brown sand	N/A
	20-40	no recovery		
	40-60	no recovery	crushed shell	
	60-80	no recovery	crushed shell and sand	
10	0-20	no recovery	light brown sand	N/A
	20-40	no recovery		
	40-60	no recovery		
	60-80	no recovery		
	80-100	no recovery	gray sand	
11	0-20	no recovery	light brown sand with iron oxide stains	N/A
	20-40	no recovery		
	40-60	no recovery	water at 50 cm	
12	0-20	no recovery	light brown sand	N/A

	20-40	no recovery		
	40-60	no recovery	water at 60 cm	
13	0-20	no recovery	light brown sand	N/A
	20-40	no recovery	increased crushed shell	
	40-60	no recovery	water at 50 cm	
14	0-20	no recovery	light brown sand	N/A
	20-40	no recovery	water @30 cm	
15	0-20	no recovery	light brown sand	N/A
	20-40	no recovery	gray sand	
	40-60	no recovery	water at 60 cm	
16	0-20	no recovery	light brown sand	N/A
	20-40	no recovery		
	40-60	no recovery	light gray sand	
	60-80	no recovery		
17	0-20	no recovery	light brown sand	N/A
	20-40	no recovery		
	40-60	no recovery	light gray sand	
	60-80	no recovery	water at 70 cm	
18	0-20	no recovery	light brown sand	N/A
	20-40	no recovery		
	40-60	no recovery	light gray sand water at 60 cm	
19	0-20	no recovery	light brown sand	N/A
	20-40	no recovery		
	40-60	no recovery	light gray sand water at 60 cm	
20	0-20	no recovery	light brown sand	N/A
	20-40	no recovery		
	40-60	no recovery	light gray sand water at 50 cm	
21	0-20	no recovery	light brown sand	N/A
	20-40	no recovery		
	40-60	no recovery	light gray sand water at 50 cm	
22	0-20	no recovery	light brown sand	N/A
	20-40	no recovery		
	40-60	no recovery	light gray sand water at 50 cm	
23	0-20	no recovery	light brown sand with iron oxide stains	N/A
	20-40	no recovery		
	40-60	no recovery	water at 50 cm	
24	0-20	no recovery	light brown sand	N/A
	20-40	no recovery	water at 40 cm	
25	0-20	no recovery	light brown sand with iron oxide staining	N/A
	20-40	no recovery		
	40-60	no recovery	water at 50 cm	
26	0-20	no recovery	light brown sand	N/A
	20-40	no recovery		
	40-60	no recovery	gray sand with water at 60 cm	

27	0-20	no recovery	light brown sand with iron oxide stains	N/A
	20-40	no recovery	water at 40 cm	
28	0-20	no recovery	light brown sand	N/A
	20-40	no recovery	crushed shell	
	40-60	no recovery		
29	0-20	no recovery	light brown sand	N/A
	20-40	no recovery		
	40-60	no recovery	water at 50 cm	
30	0-20	no recovery	light brown sand	N/A
	20-40	no recovery	water at 40 cm	
31	0-20	no recovery	light brown sand	N/A
	20-40	no recovery		
	40-60	no recovery	water at 50 cm	
32	0-20	no recovery	light brown sand with iron oxide stains	N/A
	20-40	no recovery		
	40-60	no recovery	water at 50 cm	
33	0-20	no recovery	light brown sand with crushed shell	N/A
	20-40	no recovery	water at 30 cm	
34	0-20	no recovery	light brown sand	N/A
	20-40	no recovery		
	40-60	no recovery	gray sand and water at 60 cm	
35	0-20	no recovery	light brown sand	N/A
	20-40	no recovery	crushed shell	
	40-60	no recovery	gray sand	
	60-80	no recovery	water at 70 cm	

Palmetto State Park

Gonzales County

April 18-20, 2006

Author: Rich Mahoney, Texas Parks and Wildlife Department (TPWD) Cultural Resource Coordinator - Region 5

Project Description: New Pedestrian Trail

Type of Investigation: Pedestrian Surface Survey, Shovel Testing, and Mechanical Auger Boring

Staff: Rich Mahoney, Todd Imboden (Park Manager), Bradley Williams (Lead Ranger), and Paul Billings (Ranger)

Introduction

In April 2006, Texas Parks and Wildlife Department (TPWD) Cultural Resources Program Staff and Palmetto State Park Staff conducted an archeological survey of portions of Palmetto State Park in Gonzales County (Figure 1). The survey concerns a proposed new pedestrian trail in the central, eastern, and southern portions of the Park.

Project Description

The trail expansion project area consists of approximately 3,300 linear meters of new trails. While the trail width will be roughly 1 m, the Area of Potential Effect (APE) includes a 5 m swath to allow any necessary machinery access for trail development. Turnaround points, staging areas, and material storage areas will be located atop and within previously built-out or surveyed areas. No prior impacts have affected the project area. While the majority of disturbance along the trail is not anticipated to extend deeper than 10 cm, footbridges will be constructed in certain locations requiring small pilings for structural support and will extend to 60 cm below ground surface. The overall areal impact of this project is approximately four acres.

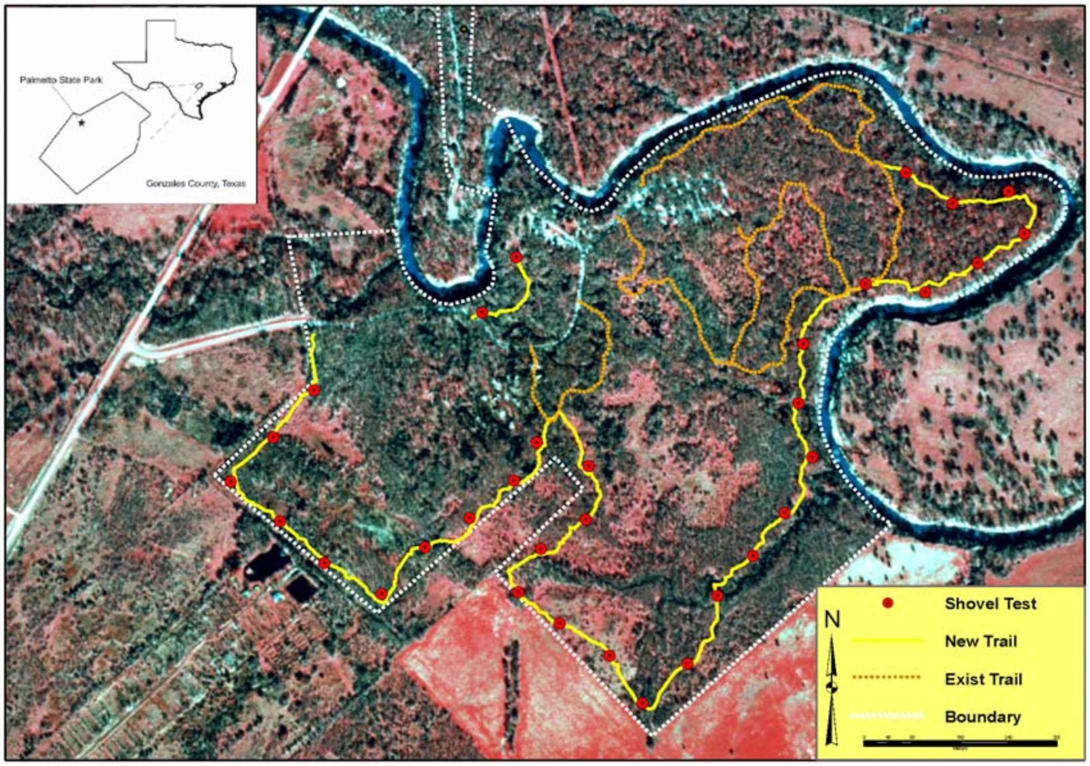

Figure 1. Aerial photograph montage depicting location of project area.

Environmental Setting

Palmetto State Park is located along the San Marcos River about nine miles south of the City of Luling in the northwestern portion of Gonzales County. The Park consists of approximately 280 acres and is situated within the extreme southwestern extent of the Post Oak Savannah natural region (Figure 2). Post oak-blackjack oak series and sugarberry-elm series dominates the areas along the San Marcos River (Black 2000), primarily in the eastern portion of the Park. Marshes, bogs, springs, and mud boils occur within the Park and provide a unique environment in which the dwarf palmetto exists, well west of its current range. The terrain is relatively flat, with some ridge and swale topography near the river, indicating the floodplain nature of the entirety of the Park.

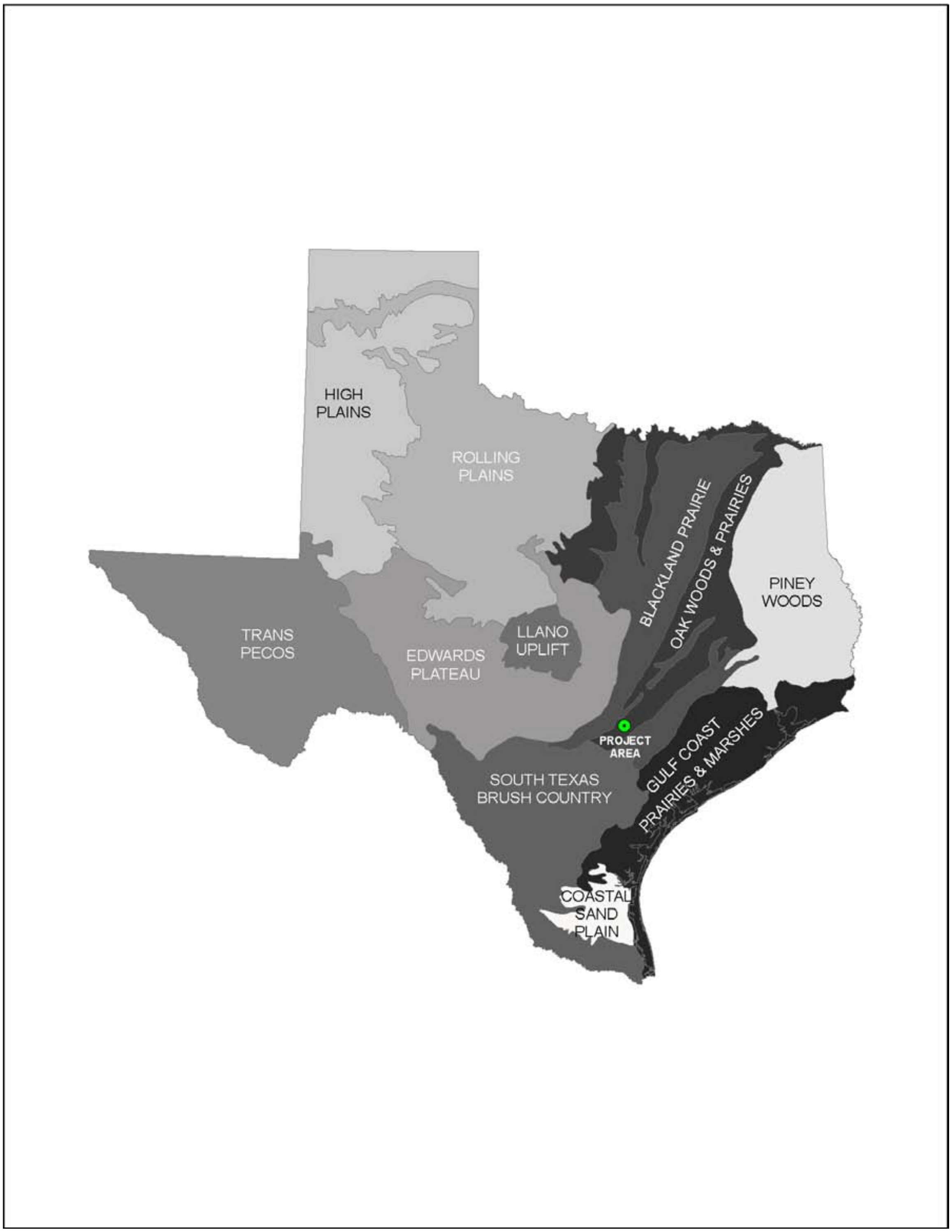

Figure 2. Project area in relation to Natural Regions of Texas.

Review of the local geology (Figure 3) indicates that the entirety of the project area occurs within recent alluvial deposits of the San Marcos River (Proctor et al 2001). With the exception of the Park headquarters/maintenance complex and the property along the access road from U.S. Hwy 183, the entire Park sits atop these recent fine-grained sediments. That portion along the access road actually straddles the left descending floodplain escarpment formed by an outcrop of the Eocene Reklaw Formation. This formation consists of medium to coarse-grained sandstones that were likely the source for facility construction by the Civilian Conservation Corps during the 1930s.

Soils within the project area are mapped as clays and clayey soils associated with recent (Holocene) alluvial deposition (USDA 2007). The majority of the project area consists of Bosque clay loam, Bosque-Tinn complex, and Tinn clay (Figure 4). A small portion of the central project area consists of Navasota clays. The published soil descriptions of these various components differ little, with all described as frequently flooded soils. The only variation encountered during the survey occurred along the eastern portion of the project area, wherein recent deposits of sand occurred atop the ridges in the ridge and swale topography, noted above. These coarse-grained deposits probably represent events of massive, low-energy flood events in the area.

Cultural Setting

The Palmetto area falls along the extreme southeastern border of the Central Texas archeological region (Kenmotsu and Perttula 1993), alternatively, within the southern portion of the East-Central Texas archeological region (Mahoney et al. 2003). While no archeological sites were encountered during the current survey, archeological sites recorded in the immediate area span the entirety of the known periods of occupation in East-Central Texas. As such, this brief section outlines the general cultural chronology for the region. A more detailed account of these prehistoric periods, as well as the entirety of the cultural chronology for Central Texas and East-Central Texas can be found in Collins (2004), Fields (2004), Johnson (1995), and Prewitt (1981).

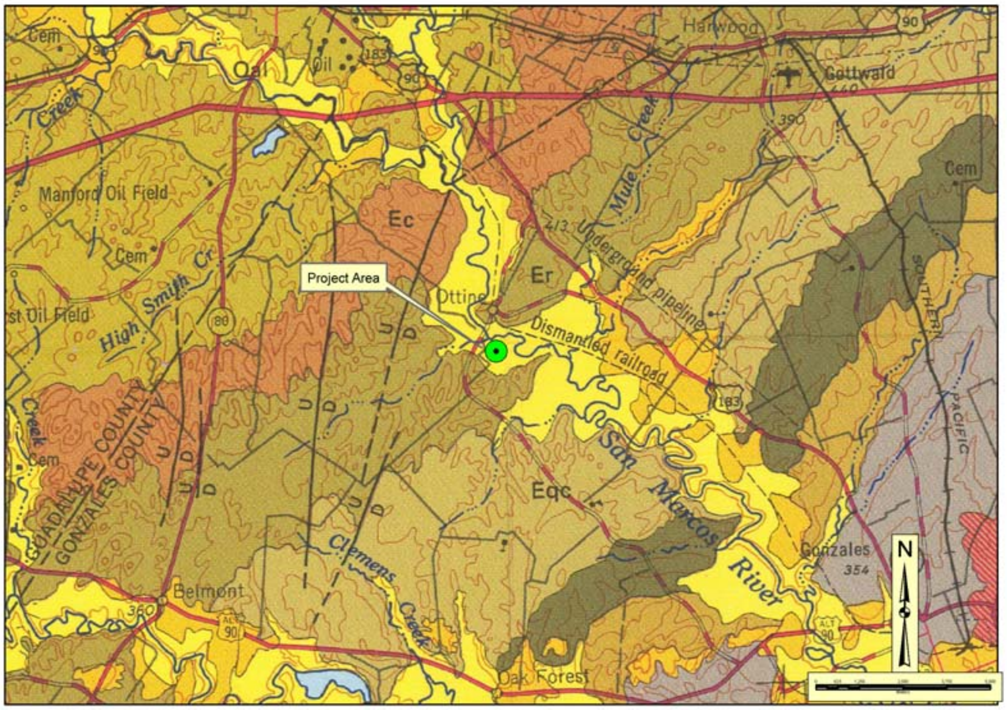

Figure 3. Project area in relation to local geology.

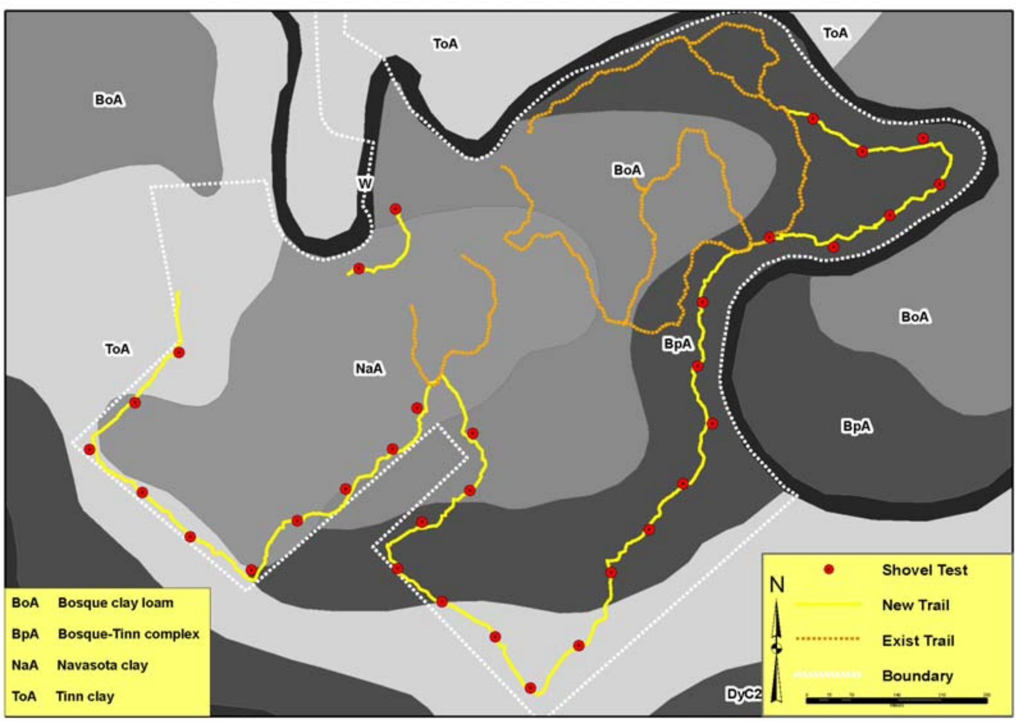

Figure 4. Soils encountered within project area.

The Paleoindian period (11,500-8800 B.P.) commences during the latter part of the Pleistocene geologic epoch and terminates during the Early Holocene climatic interval (Ensor and Carlson 1988; Johnson and Goode 1994; Perttula 1999); conceptually, that era in prehistory wherein humans first entered the New World. Due to the frequent location of isolated finds of Paleoindian projectile points and the infrequent encounter of dense occupational features, it is generally inferred that these peoples were highly mobile, nomadic hunters and opportunistic gatherers. Recent research (Bousman, et al. 2004; Collins 2004), however, is continuing to further define and refine our understanding of these early peoples, including their subsistence base and adaptation patterns.

Technologically, the Paleoindian period is divided into early and late phases. The early phase is typified by the presence of primarily fluted lanceolate points (i.e., Clovis and Folsom) produced of non-local materials. The exotic stone tools recovered from these early sites further suggest a high-mobility culture. The late phase of this period exhibits dart points, such as San Patrice and Dalton, made primarily of local materials (Ensor and Carlson 1988:18; Schambach 1998). The presence of woodworking tools, such as the Dalton adze, in association with these new variant dart points suggests a slightly more sedentary culture than its predecessor.

The Early Archaic period (8800-5600 B.P.) is characterized by the apparent onset of sedentary subsistence indicated by the diversity of recovered artifact assemblages (Girard 2000; Wyckoff 1984). The extinction of large herds of megafauna and the changing climate at the beginning of the Holocene appears to have stimulated a behavioral change in the prehistoric inhabitants of the region. While the basic hunter-gatherer adaptation probably remained intact, an economic shift away from big game hunting was necessary. In general, more intensive exploitation of local resources such as deer, fish, and plant stuffs is indicated by greater densities of ground stone artifacts, burned rock cooking features, and more specialized tools such as Clear Fork gouges and Guadalupe bifaces (Turner and Hester 1993:246, 256). Temporally diagnostic projectile points of this period include Angostura, Gower, and Martindale.

The Middle Archaic period (5600-4200 B.P.) occurs during the final years of the Middle Holocene geologic epoch and may represent a time of transition in adaptation patterns. During the early part of this period, bison are again present along the plains and prairie regions of Texas after a nearly three millennia hiatus (Dillehay 1974). Their appearance is short-lived, however, and by approximately 5200 B.P. bison once again disappear from the faunal assemblage of the Southern Plains and adjoining prairie margin. The continuance and proliferation of relative sedentism and/or specific exploitation of localized natural resources is evidenced by the continued occupation and reoccupation of preferred landforms (Mahoney et al. 2003). Johnson and Goode (1994:28) also point to the specialization of targeting specific natural resources, possibly xerophytic plants. These characteristics in response to an increasingly drier environment (Bousman 1998; Johnson 1995) would form the basis for the transformation in the overall stylistic tradition to that of the Late Archaic.

Similar to the Paleoindian period, the Middle Archaic is technologically divided into two phases. The early phase consists of thin-bodied, broad-bladed projectile points such as the Early Triangular variety. It is postulated (Collins 1998) that these points were part of a stone tool kit customized for hunting the abundant bison of this early phase. The later phase is dominated by narrower bladed and thicker bodied dart points such as the Nolan and Travis varieties. It remains unclear whether this technological change can be directly attributable to the economic shift from bison procurement to medium-sized game procurement, such as deer and antelope.

The Late Archaic period (4200-1200 B.P.) roughly coincides with the beginning of the Late Holocene geologic epoch and represents the final three millennia of the Archaic Era. Johnson and Goode (1994:34) divide the Late Archaic into separate phases, with a point of demarcation at approximately 2600 B.P. The earlier phase, or Late Archaic I, commences with generally xeric conditions, probably correlative with the Dry Edwards Interval to the west. Palynological evidence from the nearby Boriak bog (Lee County, Texas) and the Weakly bog (Leon County, Texas) reveals relatively low arboreal canopy cover; indicating a predominant grassland environment for the region during this period (Bousman 1998). Adaptation to a relatively dry climate with low precipitation and high temperatures are hallmarks of the early portion of the Late Archaic, with bison reappearing in the faunal assemblage following an over one thousand year hiatus (Dillehay 1974). Projectile-point styles of this phase include, in progressive order, Bulverde, Pedernales, Marshall, Montell, and Castroville (Johnson and Goode 1994).

The Late Archaic II witnesses a continued population increase (Prewitt 1985; Rogers and Kotter 1995) and divergent burial practices possibly influenced from cultures to the east (Johnson 1995:96-98). Palynological data derived from the above bog studies indicate a trend toward a more mesic environment during the latter phase of the Late Archaic (Bousman 1998). Burned rock middens appear to decline in usage during this time (Johnson and Goode 1994); however, recent research (Mauldin et al. 2003) questions the applicability of this as a period or phase marker. Typical projectile-points of the Late Archaic II include Marcos, Ensor, Frio, Darl, and Figueroa (Johnson and Goode 1994).

The Late Prehistoric period (1,200-300 B.P.) represents the final few centuries prior to European contact in East-Central Texas, and exhibits a distinctive shift in technology from the previous periods. Evidence of bow and arrow weaponry first occurs in this period, with small arrow points appearing in the archeological record. The initial 600 years of this period, termed the Austin interval, is marked by the presence of expanding stem arrow points such as Scallorn and Edwards (Prewitt 1985). Environmentally, little change from the Late Archaic II is witnessed during the Austin interval, as faunal assemblages appear similar (Collins 2004).

The terminal Late Prehistoric subperiod, the Toyah interval, witnesses the return of bison to the region after several hundred years absence (Dillehay 1974). The animal's return resulted in a marked economic shift toward intensive bison procurement and processing (Prewitt 1981). The material culture from this interval reflects this shift with contracting stem arrow points such as Perdiz and Clifton and blade core technology. In addition, bone-tempered pottery makes its first appearance in the region during this interval.

Previous Investigations

Gonzales County has a rich archeological and historic heritage. The county has 217 previously recorded archeological sites, five officially designated State Archeological Landmarks, 109 Historical Markers, nine properties listed on the National Register of Historic Places, and 74 historic cemeteries (THC 2007). The vast majority (n = 130+) of the archeological sites in the county were recorded during a single survey for the aborted

Cuero I Reservoir in the southeastern portion of Gonzales County and the northern portion of DeWitt County (Fox et al. 1974). The remainder of the sites was recorded during surveys conducted to locate archeological resources in advance of land development projects, such as road development and improvement projects. While a brief reconnaissance was conducted by TPWD Archeology Staff in 1994 (Black 2000), no reported subsurface survey work has been conducted within the Park, and no known archeological sites occur within the Park.

Methods

Prior to initiation of the field investigations, a comprehensive review of all available archeological reports and databases was conducted to identify and characterize cultural resources known to occur in the vicinity of the project area. At least in part, the compilation of known cultural resources in the area is based on the Texas Archeological Sites Atlas, Texas Historic Sites Atlas, and THC and TPWD map files. In addition, the literature and archival review inspected historic United States Geological Survey topographic maps and Natural Resources Conservation Service soil surveys (USDA 2007).

The fieldwork consisted of a 100 percent pedestrian survey of the approximately 3,300 m linear project area, augmented by the excavation of 33 shovel tests and auger borings. A single transect traversed the centerline of the entirety of the proposed trail. Flagging tape and pin flags were placed by Park Staff to orient the survey route. Shovel tests were 30 cm in diameter and auger borings were 23 cm in diameter; all were excavated in levels not exceeding 10 cm in thickness. Each shovel test and auger boring was excavated to a minimum of 45 cm below ground surface to account for any incidental disturbance by machinery. Auger borings were excavated to 60 cm below ground surface in normally submerged areas where footbridge support pilings are anticipated to be erected. Deposits from these tests were screened through quarter-inch hardware cloth, where possible. In areas where dense clays predominated, sediments were troweled instead of screened.

All shovel tests and auger borings were mapped with a Trimble GeoXT GPS unit.

Results And Recommendations

Without exception, the proposed project area contained no evidence of cultural features or material. No sites were recorded during the survey and no previously recorded sites were encountered. The TPWD Cultural Resources Program therefore recommended that the proposed project be allowed to proceed without further cultural resources investigations. Texas Historical Commission concurrence for this project was received in June 2006.

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Palo Duro Canyon State Park

Randall County

October 6, 2006

Author: Kent Hicks, Texas Parks and Wildlife Department (TPWD) Cultural Resource Coordinator - Region 6

Project Description: Pedestrian survey and sub-surface testing of a 0.2-acre tract to be impacted by the installation of an air-quality sampling station

Type of Investigation: Pedestrian Survey and Testing

Staff: Kent Hicks

Introduction

In September of 2006, the U.S. Environmental Protection Agency proposed the installation of an air sampling station at Palo Duro Canyon State Park that would act as a component of their nation-wide air quality monitoring network (CASTNET). The preferred location for this project is pastureland approximately 100 m south of the canyon rim on the Canoncita property of the park (Figure 1). This area is not generally open to the public.

The project, as proposed, requires a 30 m x 30 m (0.20 acre) footprint for footings and anchors and also requires one 75 m long x 0.3 m wide (0.0054 acre) trench for electrical and telephone service lines. The maximum depth of proposed disturbance is 61 cm. As the project area had not been previously examined for the presence of cultural resources and lies within a zone of relatively high probability for their presence, the TPWD Cultural Resources Program was contacted to conduct these investigations. This work was conducted on October 6, 2006 and took 0.5 man days to complete.

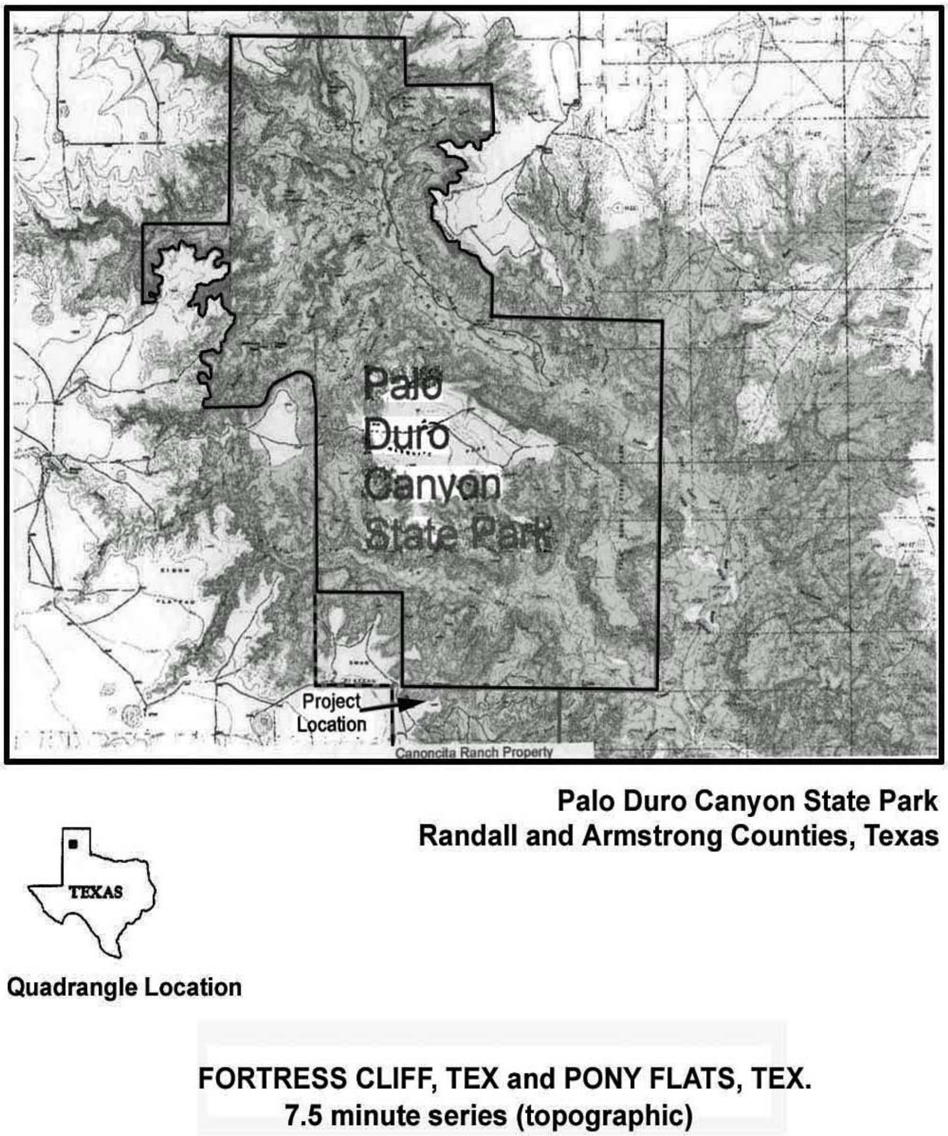

Figure 1. Map of Palo Duro Canyon State Park showing the project location.

Environmental Setting

Palo Duro Canyon State Park consists of 18,438 acres located in Randall and Armstrong Counties of the Texas Panhandle (Figure 2). The park lies 12 miles east of Canyon, Texas and 26 miles south and east of Amarillo. Palo Duro Canyon can be described as a huge erosional scar, the result of millions of years of deposition and erosion, which lies within the transitional zone between the Southern High Plains (Llano Estacado) and the Rolling Plains physiographic provinces. The park setting further lies along an indistinct boundary between the Short-grass Plains and the Mesquite Plains districts of the Kansan Biotic Province.

Topography and Hydrology

Upland areas of the park include its entrance near the northwest corner (Llano Estacado proper), a small peninsular area in the northeast corner (between Brushy Draw and South Brushy Draw), and the centrally located Mesquite Park that is a large remnant mesa cut off from the Llano Estacado by erosion. Except for a few small playas along the western side of Mesquite Park, the park is externally drained. Although uplands make up only about 10 percent of the park's area, the escarpment at the edge of the Llano Estacado defines much of the park’s boundary, so this setting provides the nondescript template into which the dramatic erosional features of the park are cut.

The remainder of the park lies within the Escarpment Breaks subregion of the Rolling Plains (Diamond et al. 1987). The unique nature and setting of the park is due to headward erosion of the Prairie Dog Town Fork of the Red River that acts as the park's primary drainage system. This situation has produced eroded canyons that reach depths of 700 feet and elevations within the park that range from 3,478 feet (1,061 m) on the Llano Estacado above South Brushy Draw to 2,674 feet (815 m) near Cita Creek at the park's southeast corner. North Cita Creek is the largest of the park's tributaries to the Prairie Dog Town Fork of the Red River.

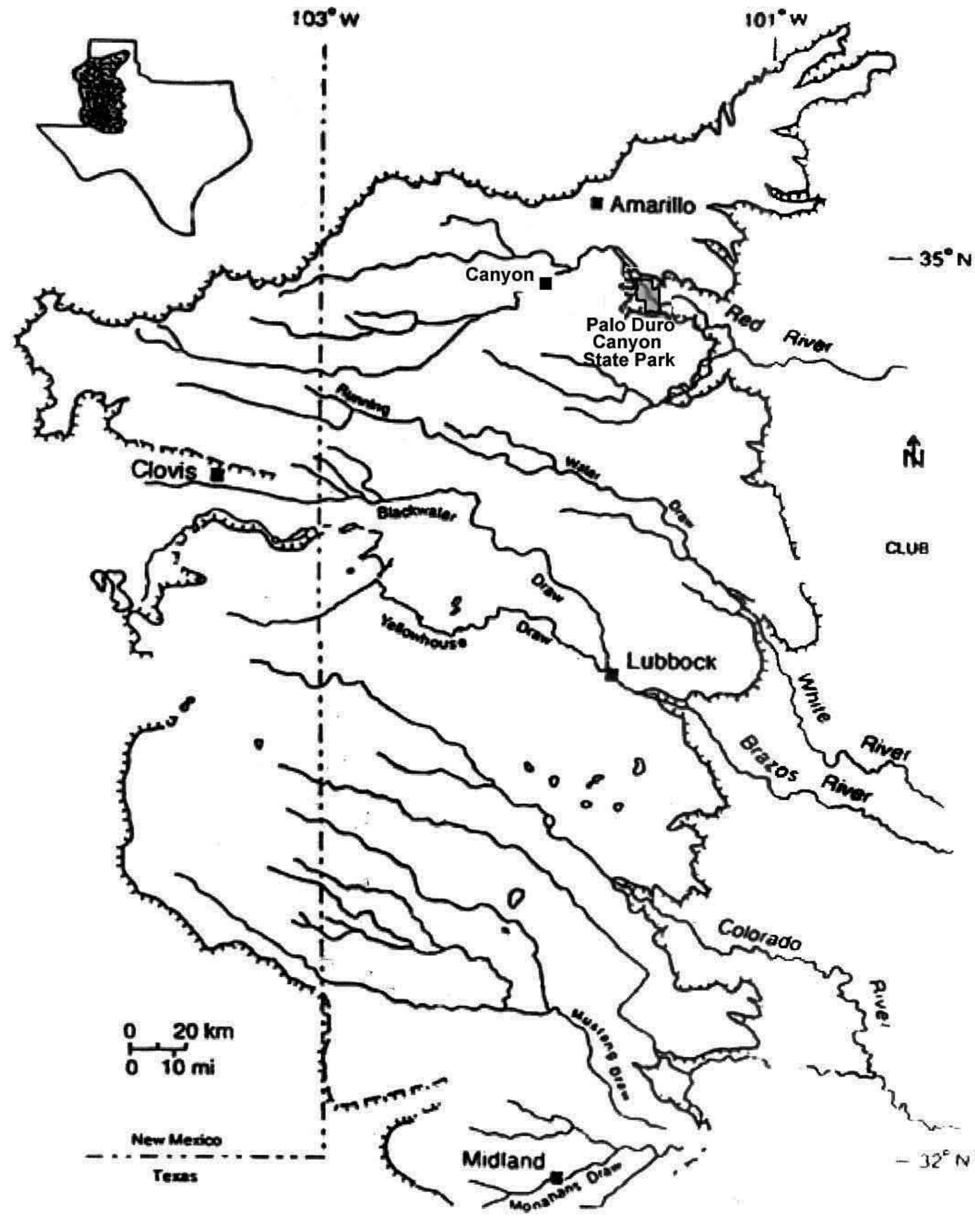

Figure 2. Map of the Texas Panhandle showing the location of Palo Duro Canyon State Park.

Other tributaries include Sunday Creek, Little Sunday Creek, South Cita Creek, and Timber Creek. Springs are still active within the park, at least seasonally, and include Little Sunday Spring, CCC Springs, and North Cita Springs (Brune 1981).

Geology

All rock formations within Palo Duro Canyon State Park are of sedimentary origin and dip slightly to the east (Maxwell 1970). Three geologic eras (Paleozoic, Mesozoic, and Cenozoic) are represented within the park. The oldest exposed layers are from the Permian Period (245 to 285 million years ago) Quartermaster Formation and were laid down as alternating brightly colored (mostly brick red) shales, mudstones, and sandstones in an environment that alternated from shallow seas to sandy shores. Gypsum (calcium sulfate) deposits are interbedded with these "redbeds" and they occur as hard, white, crystalline layers. The maximum exposed thickness of the Quartermaster Formation within the park is approximately 155 feet thick and occurs near Water Crossing #2 (Hood and Underwood 1978).

Permian-age strata are unconformably overlain by Triassic Period (208 to 245 million years ago) rocks of the Dockum Group. The Dockum is represented in the park by a lower unit of variegated shale, and some sandstone, called the Tecovas Formation. Fossils found in the Tecovas Formation (semi-aquatic reptiles, fish, and primitive amphibians) indicate that these rocks were derived from sediments deposited in swamps and streams (Matthews 1969). The Tecovas Formation is laid down as multi-hued (orange, yellow, lavender, and maroon) bands indicative of dry and wet cycles. The late Triassic upper Dockum is represented by the Trujillo Formation that consists of hard, cross-bedded sandstone and conglomerate interbedded with red and gray shale (Maxwell 1970). The Trujillo sandstones are highly resistant to erosion and form many of the benches, pedestals, and mesas that typify the Palo Duro landscape.

The Trujillo Formation is unconformably overlain by the Pliocene-age (2 to 5 million years ago) Ogallala Formation. This time gap between the Triassic and Pliocene periods represents approximately 200 million years and encompasses the Mesozoic and Cenozoic eras. The lower portion of the Ogallala Formation is composed of a reddish-brown, fine to medium–grained conglomerate sandstone known locally as the "Potter Gravel." The upper portion of the Ogallala Formation is characterized by a thick, dense, white to flesh colored, caliche deposit. This unit forms the highly resistant "Caprock" of the Llano Estacado. Although the Ogallala Formation reaches a thickness of as much as 700 feet on the Southern High Plains, within Palo Duro Canyon State Park it generally ranges from 20 to 40 feet (Hood and Underwood 1978). Fortress Cliff serves as both the most representative and spectacular expression of the Ogallala within the park. Overlying the Ogallala Formation on the uplands are the Pleistocene and later eolian sediments of the Blackwater Draw Formation.

Climate

As Palo Duro Canyon State Park is incised into the Southern High Plains, its climate is generally similar. Locally, however, microenvironments may produce variations including higher wind speeds due to exposure and funneling; higher temperatures due to reflection off of rock faces and lower elevations; or moderated temperature and wind speed in highly sheltered areas. Humidity within the park is generally low as southerly winds prevail. The growing season averages 200 days.

The climate of the Southern High Plains is semiarid, continental, and remarkably uniform. It can be classified as dry, mid-latitude semi-desert (NOAA 1982). Factors that have contributed to the area's semi-aridity include its interior position within the continent, its location near the edge of a subtropical high-pressure zone, and the "rainshadow effect" produced by the Rocky Mountains to the west (Templer 1974). Wind speeds average 22 km per hour with the strongest winds occurring February through May (Bomar 1995).

Low, even climatic gradients occur across the Southern High Plains as it lies within a climatic transition zone between the more humid regions of central Texas and the more arid regions of eastern New Mexico. Gradients in mean annual temperature vary from 13° C (56° F) in the northwest to 18° C (64° F) in the southeast. Mean annual precipitation similarly ranges from 33 cm (12.9 in) in the southwest to 50 cm (19.7 in) in the northeast (Haragan 1983). Precipitation is not evenly distributed throughout the year as 80 percent falls in the six-month period from May to October (Templer 1974). Extreme interannual variability in precipitation and temperature is also common.

Soils

The soils of Palo Duro Canyon State Park can be characterized as ranging from shallow clay loam mollisols (primarily Pullman, Mansker, and Olton series) on the uplands to sandy loam inceptisols (Mobeetie, Quinlan, and Woodward series) in the bottomlands along the drainages (Jacquot et al. 1970). The playas on Mesquite Park are Randall clay vertisols, while the highly sloped canyon walls and the broken lands at their bases do not provide a setting where soil development can develop.

Flora

Palo Duro Canyon State Park exhibits a diversity of vegetation as several habitats and their associated series level plant communities are represented here. The upland portions of the park that lie on the Llano Estacado are dominated by a mesquite woodland disturbance type of vegetation that has invaded and replaced the original mid-grass and shortgrass grasslands. The more shallow soils of the steep slopes, foot slopes, and high alluvial/colluvial terraces generally support a mainly evergreen shrubland of the Oneseed Juniper Series, although some slopes are better watered and exhibit Harvard Shin Oak-Tallgrass Series shrublands. The deep sandy alluvial soils of the Prairie Dog Town Fork of the Red River support a Cottonwood-Tallgrass Series community.

Fauna

The diversity of Palo Duro Canyon is also illustrated in the variety of fauna that occurs here. Both eastern (Rolling Plains) and western (Southern High Plains) species of birds and mammals, some at the northern limits of their range, make their home here. This diversity, coupled with the quantity of fauna, makes Palo Duro Canyon a unique habitat.

Culture History

Five general culture periods are recognized (Johnson 1987) for the Southern High Plains, the Rolling Plains and by extension, Palo Duro Canyon State Park: Paleoindian (11,500-8500 B.P.), Archaic (8500-2000 B.P.), Ceramic (2000-550 B.P.), Protohistoric (A.D. 1541-1750), and Historic (A.D. 1750 to the present). The majority of aboriginal sites known within the region are surface occurrences representing single-occupation utilization of local resources but numerous multiple-occupation sites in good stratigraphic context have also been studied.

Paleoindian Period (11,500-8500 B.P.)

The Paleoindian period is generally seen as the setting for relatively rapid environmental change as the cool, wet conditions of the late Pleistocene become warmer and drier (Holliday 1997). Subsistence patterns are broad based but appear to be focused on the waterways with early Paleoindian peoples hunting a wide variety of now-extinct large game animals and later groups focusing on bison procurement (Johnson 1987). The Paleoindian period (consisting sequentially of Clovis, Folsom, Plainview, and Firstview cultures) is represented by kill sites, butchering locales, and caches.

Clovis age occupations on the Southern High Plains in stratigraphic context include Blackwater Draw Locality #1 (Hester 1972), Miami (Sellards 1938), and Lubbock Lake (Johnson 1987). No controlled excavations have been undertaken at Clovis-age sites on the Rolling Plains of Texas but the McLean site (near Abilene) produced a Clovis point in association with mammoth (Ray 1942) and the Cooper Canyon site (near Post) is recorded on the National Register of Historic Places (Steely 1984) as consisting of deep midden deposits from which Clovis points have been collected.

Folsom sites on the Southern High Plains include Blackwater Draw Locality #1 and the Lubbock Lake Site. On the Rolling Plains, only Caprock Canyons State Park’s Lake Theo Folsom site (Harrison and Killeen 1978) and Adair-Steadman (Tunnell 1977) have been professionally excavated; however, the Post-Montgomery site is reported (Steely 1984) as a mostly intact, stratified deposit containing bone, lithic debitage, scrapers, in association with Folsom and Midland points.

Plainview sites in good stratigraphic context include, on the Southern High Plains, the Plainview type-site (Sellards et al. 1947), Mark's Beach (Honea 1980), Lubbock Lake, and Ryan's site (Hartwell 1992). Intact Plainview sites are rare on the Rolling Plains although surface finds are common (Holliday 1997).

Firstview sites on the Southern High Plains with good stratigraphic context are limited to Blackwater Draw Locality #1, Lubbock Lake, and San Jon. On the Rolling Plains, only the Acton site (Blaine et al. 1968) contains a Firstview component. This site is on a high terrace above the Brazos River but is approximately 150 miles east of Caprock Canyons State Park. No Firstview-age occupations have been recorded within the park.

Archaic Period (8500-2000 B.P.)

Few, if any, sites in the Southern High Plains and Rolling Plains regions provide a complete stratigraphic record of the transition from the Paleoindian to the Archaic Period. The artifactual signature of the Archaic is distinct however, and is typified by a variety of notched and stemmed projectile points, grinding equipment for processing plants, roasting ovens and rock-lined hearths, and faunal assemblages that include only modern species (Holliday 1997). Environmental conditions for the area continued to get warmer and drier through the early Archaic, culminating in the Altithermal of the middle Archaic (6500-4500 B.P.) and then gradually ameliorating throughout the late Archaic to produce essentially modern conditions at the Period's end. Archaic-age sites found within the area of study include kill/butchering sites, campsites, rockshelters, and burials.

The early Archaic is probably the least understood timeframe for these regions. At Lubbock Lake sediments of this age produce evidence of bison hunting and processing but little in the way of material culture (Johnson and Holliday 1986). A bison bonebed with associated projectile points is also reported at San Jon (Holliday 1997) and testing and analysis are now underway. No early Archaic sites have been excavated on the Rolling Plains or Escarpment Breaks sub region but surface finds of projectile points thought to date to this age are not uncommon (Katz and Katz 1976).

The middle Archaic is characterized by the subsistence changes in response to the changing environment as the importance of plant processing increases and populations become increasingly tied to dwindling water resources. At Blackwater Draw Locality #1 (Evans 1951), Mustang Springs (Meltzer 1991), and Mark's Beach (Honea 1980) prehistoric wells have been discovered incised into the draw systems of the Southern High Plains while at Lubbock Lake a roasting oven was located (Johnson and Holliday 1986). Little is known of the middle Archaic on the Rolling Plains but the Bitter Creek site in Hall County (east of Caprock Canyons State Park) is thought to date to this timeframe (Hughes and Hood 1976).

The late Archaic provides an interesting situation in that it is better represented on the Rolling Plains and Escarpment Breaks than on the Southern High Plains. Although this may largely be due to landscape stability and site preservation characteristics, implications for changes in land and resource use must also be considered. On the Southern High Plains, only Lubbock Lake is known to contain intact late Archaic deposits although a number of surface site have yielded diagnostic artifacts from this time (Johnson and Holliday 1986). Excavated bison kill sites on the Rolling Plains include Bell, Strong, and Twilla (Hughes 1976) while camps include the County Line site, the Gobbler Creek Bridge site, and the Polecat site (Boyd 1997), and rockshelters include Deadman's Shelter (Willey and Hughes 1978) and Boren Shelter #2 (Boyd 1997).

Ceramic Period (2000-550 B.P.)

The Ceramic Period is a time of transition from traditional Archaic lifeways to those based on the adoption of technological changes brought about by the introduction of ceramics and the bow and arrow. Barbed arrow points (primarily Scallorn) become prevalent and are often associated with pottery, Borger Cordmarked (Woodland association) in the Canadian River Valley but usually Mogollon Brownware on the Southern High Plains and Rolling Plains.

Ceramic-age sites in good stratigraphic context are rare on the Southern High Plains. At Lubbock Lake, game processing stations are found that radiocarbon date to this period but no ceramics or diagnostic lithics have been found. On the Rolling Plains, the Justiceburg Reservoir project found and excavated three Ceramic-age sites (Boyd et al. 1990) containing bedrock mortars and grinding stones, Deadman's and Scallorn projectile points, and kaolinite trade goods. The importance of the Escarpment Breaks sub-region continues into the Ceramic Period as many of the Archaic sites here also contain transitional or Ceramic-age components. Sites containing mixed dart and arrow point assemblages include County Line, Blue Clay and Deadman's Shelter (Hughes and Willey 1978), and all of the Tule Canyon sites.

Protohistoric Period (A.D. 1541-1750)

The Escarpment Breaks continues to be a focal point of cultural activity throughout the Protohistoric Period and acts as a geographic dividing line between the Tierra Blanca Complex to the north and the Garza Complex to the south. Although similar in many respects, the Tierra Blanca peoples had more permanent shelter, utilized Alibates agate as their primary lithic source material (Garza Complex peoples utilized Edwards Plateau chert as their primary lithic resource), and Tierra Blanca sites contain no Garza or Lott points, common at Garza Complex sites.

Historic Period (A.D. 1750 to present)

European occupation of the Southern High Plains and Rolling Plains began in the 1860s with the incursion of buffalo hunters, Comancheros, and U.S. military units, and slightly later Pastores (Hispanic sheepherders from New Mexico) and cattle ranchers. Tested sites for the area include Adobe Walls (Baker and Harrison 1986), Merrell-Taylor Village (Guffee 1976), and the Massie Pastores site (Hicks and Johnson 2000).

Previous Investigations

No large-scale professional site location surveys have been conducted within Palo Duro Canyon State Park. In 1983 TPWD archeologist Ron Ralph conducted an informal survey in the southeastern portion of the park in conjunction with a proposed grazing lease and recorded sites 41RD21, 41AM7, and 41AM8. In 1989, 41RD50 was formally recorded by local archeologist Billy Harrison in conjunction with a mesquite removal project. This site had been previously located and minimally recorded as A272 by Jack Hughes of the Panhandle-Plains Historical Museum. The Battle of Palo Duro Canyon site was recorded in 1970 by local archeologist Roberta Speer and 41AM6 was recorded by A. J. Taylor in 1983 as part of the Panhandle Pastores Project. The remainder of what is known of the Park cultural resources derives from informal “fieldtrips” organized by local professors and avocational archeologists between 1952 and 1976.

Field Investigations

As the project area is relatively small (0.20 acre) and surface visibility is relatively limited (approximately 25 percent), the ground surface area, including the trench line, was examined closely. Additionally, one 40 cm x 40 cm test pit (near the site center) was excavated to a depth of 60 cm and all sediments removed were screened through quarter-inch mesh.

No evidence of cultural occupation was found. Although it is probable that only the upper 22 cm of clay loam within the test pit is Holocene in age, the excavation was taken to 60 cm to equal the proposed level of disturbance. This lower 38 cm is dark heavy (Randall) clay indicating that an ancient playa once occupied this area.

Conclusions And Recommendations

Based on the findings of this fieldwork, it was recommended that the proposed project is unlikely to have any effect on cultural resources that would be eligible for listing to the National Register of Historical Places or would be eligible for State Archeological Landmark designation. Concurrence with this recommendation was provided by the Texas Historical Commission on November 10, 2006.

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Richland Creek Wildlife Management Area

Freestone County

August 17, 2006

Author: Christopher Lintz, Texas Parks and Wildlife Department (TPWD) Wildlife Division Archeologist

Project Description: Campsite and Road Development for North and South Units

Type of Investigation: Pedestrian Survey and Limited Backhoe Trenching with Adjacent Screened Control Sample Columns

Staff: Chris Lintz

Introduction

The Texas Parks and Wildlife Department (TPWD) under cooperative agreement with the Texas Department of Transportation (TxDOT) is taking the lead in proposing to establish 2.2 miles (3.52 kilometer) of roadways within the North and South Management Units of the Richland Creek Wildlife Management Area (WMA), Freestone County, Texas (Figure 1). This project uses federal funds to construct the roads, and associated parking at 22 primitive campsites, five parking areas, and two vehicle access gates. The construction activities for the two areas are situated entirely within Freestone County, within the USGS 7.5' Roustabout Camp, Texas quadrangle.

The present project will disturb about 4.34 acres (1.74 hectare) within a general 28.4 acre (11.36 hectare) area in the South Unit and about 5.26 acres (2.1 hectares) within a general 17.36 acre (6.94 hectare) area in the North Unit as non-contiguous construction components. The following provides a detailed description of the size of the project.

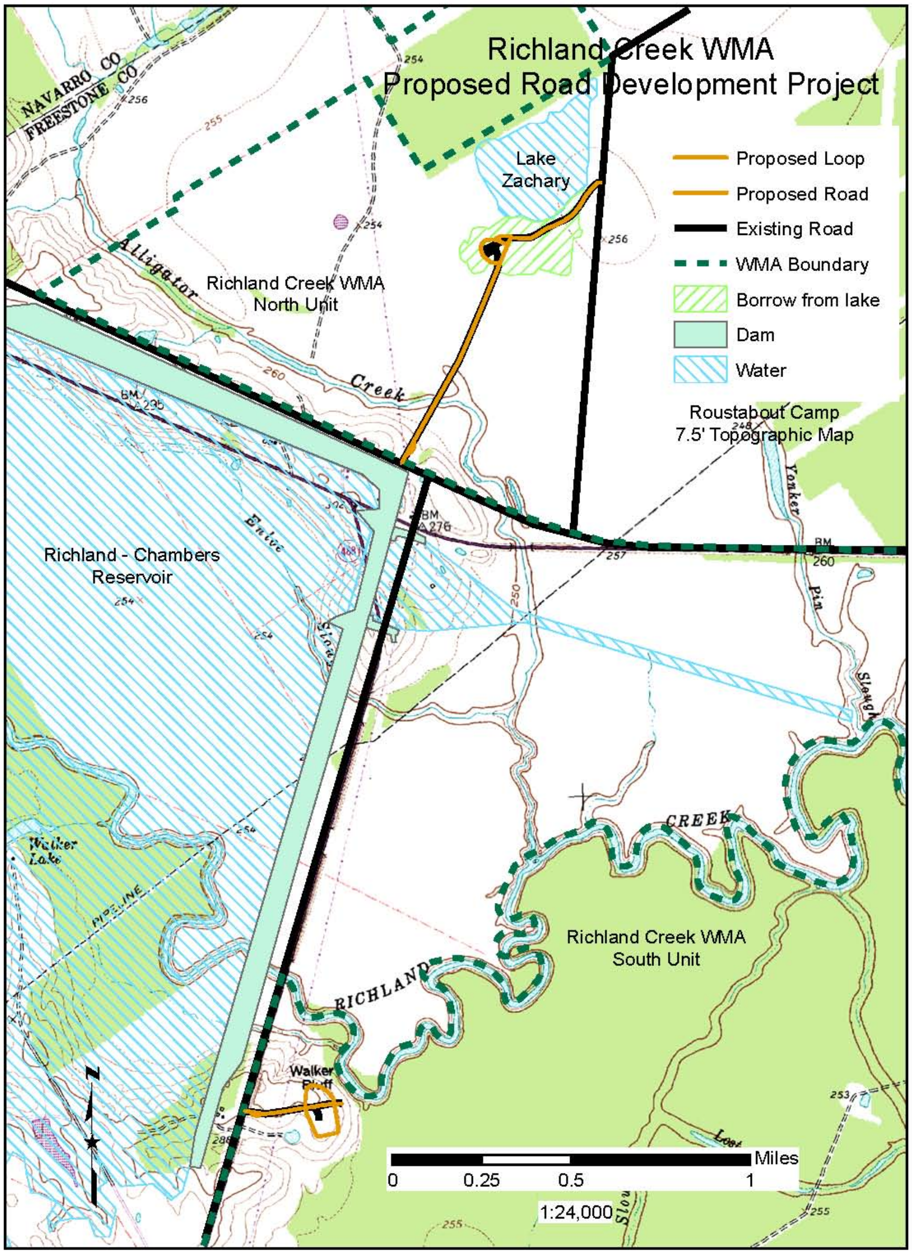

Figure 1. Richland Creek WMA Proposed Road Development Project

South Unit Developments

The proposed South Unit development consists of a ca. 2,355 ft (717.8 m) long by 25 ft (7.6 m) wide "access road" and gate located east of FM 488 on a Pleistocene age upland setting. On the hill top is to be placed a "loop road" that is about 2,185 ft (666 m) long by 25 ft (7.6 m) wide; it provides access to a group parking lot for about 50 vehicles (ca. 225 by 140 ft; 68.6 by 42.7 m) with an Americans with Disability Act (ADA) access and pullout parking (each ca. 100 ft [30.4 m] long by 10 ft [3 m] wide) for some 14 camping pads along the two roads. No underground utilities or toilet facilities are proposed for the campsite development under the cooperative agreement with the TxDOT.

North Unit Developments

The North Unit involves the construction of 5,226 ft (1593 m) of primary access road on top of an abandoned haul road developed during construction of the adjacent Richland-Chambers Reservoir. The road extends from US 287 northward across Alligator Creek, passes along the southeast edge of Lake Zachary and ends at an existing gravel roadway. The plans call for the south end of project to include the development of an Access Gate for vehicles and parking area within 450 ft (137.2 m) of US 287. The original construction haul road used an old railroad tank car as a culvert for Alligator Creek, but subsequent erosion has destroyed this crossing. The access road will cross Alligator Creek by means of either a large box culvert or a bridge approximately 1,100 ft (335.3 m) north of US 287. At a distance of about 3,280 to 3,600 ft (1000 to 1097 m) north of US 287 will be constructed a 1,246 ft (380 m) primary loop road that extends towards the west of main access road. This primary loop road includes pullout parking for eight camping pads. A second ca. 600 foot-long (182 m) road loop will be built that connects the north edge of the primary loop road to the north access road is designed for a large parking lot with ADA access to trailheads near Lake Zachery. Three smaller parking lots are proposed to occur along the northwest side of the main access road along the southern edge of Lake Zackary. Finally, the project proposes to up-grade approximately 3.1 miles (5 km) of existing roads access to the North Unit by additions to the road base of foundation material and re-blading the roadway.

Environmental Setting

The Richland Creek WMA is situated along the Prairie Margin, defined as an ecotone separating the Midwestern grasslands biome from the Eastern Deciduous Forest. In Texas, the region contains a mosaic of grassland and deciduous forest biomes that generally are oriented in bands north to south and correlate to differences in the basal geology, which was laid down during the Eocene as the oceans retreated to the south and east. The Richland Creek WMA occurs along the western edge of the Post Oak Savannah and the adjacent Tall Grass Prairie to the west. The following brief review of the regional geology and landform setting is provided to assist in differentiating landscapes with the potential to contain buried archaeological deposits (e.g. of Holocene age) from much earlier deposits that have little to no potential for buried archaeological remains.

Landscape

All of the proposed developments in the South Unit of the WMA are located on rolling terrain classified as Pleistocene age Quaternary Terrace 2 (Qt-2) south of, and adjacent to the Holocene age alluvium of the Richland Creek floodplain (Flawn 1970). The Pleistocene terrace remnant is inset against Eocene age sand and mudstone/clay deposits of the Simsboro Formation, which is also mantled with Pleistocene age "quartz arenite". The potential for deeply buried archaeological remains is low at this upland hill slope setting.

The south edge of the proposed developments of the North Unit occurs on the elevated Pleistocene age Qt 2 terrace deposits near the confluence of Richland Creek and the Trinity River. But most of the proposed lands near and north of Alligator Creek consists of Holocene age alluvium (Flawn 1970). This Holocene age QT surface is part of a broad, flat floodplain of the Trinity River and Alligator Creek. Near the creek, the margins of the alluvial terraces are eroded and gently slope down about 1 meter towards Alligator Creek. The potential for buried archaeological remains is regarded as medium to high. The water level of Alligator Creek is presently about 5 meters below the top of the haul road surface and about 2.5 m above the height of the adjacent Holocene age landform.

Floral and Fauna

Dominant plants of the Post Oak Savannah in east Texas has developed on sandy soils and are dominated by an open canopy of post and black jack oak, and hickory over an under story of big blue stem and little bluestem (Bruseth and Moir 1989: 49). Major food animals of the region include deer, squirrel, rabbits, raccoons, and opossums. Historically, a few bear, bison, and elk might be expected to be present in low numbers.

Historic Impacts and Developments

The proposed developments of the South Unit occur in areas that are historically modified and disturbed from past development activities. The hilltop is currently used as a very primitive campsite. Most (ca. 1,000 ft; 304.8 m) of proposed access road and portions of the loop road and group parking lot (ca. 350 ft; 106.7 m) coincide with an abandoned oil well access and pad placed on top of the hill. Portions of this access road are raised about 2 ft (0.60 m) above the surrounding land, and the road is mechanically bladed, and covered with gravel road chat. This access road also crosses a buried gas line that parallels FM 488 and a utility corridor with metal towers and a parallel aerial power line. Installation of all these utilities has further disturbed the west slope of the hill. The utility corridor is seasonally mowed and maintained. The abandoned well pad is currently used by TPWD as a gravel reserve storage area and has a pile of gravel for routine road maintenance activities. The north, east, and southern hill slopes above the floodplain that encompass most (ca. 1,835 ft; 560 m) of proposed loop road and primitive campsites have been selectively cleared of brush; the present vegetation on the hill slopes is an open oak-parkland. Brush removal in the past consisted of clearing using mechanical equipment and mechanical raking of roots to a depth of about 12 to 15 inches (0.30 to 0.38 m).

Historic disturbances in the north unit are derived from several sources. East-west road US 287 has been shifted about 300 m north from the alignment depicted on the USGS topographic map to accommodate the dam construction of the Richland-Chambers Reservoir during the 1980s. The current proposed main access road across Alligator Creek coincides with the massive haul road measuring about 66 ft (20 m) wide and is elevated about 6 ft (2 m) above the surrounding terrace with channelized borrow ditches cut 6.5 ft (2 m) into the surrounding terrace surface. The unpaved haul road extends from the gravel quarry near Lake Zackary to US 287 and is completely intact, except for the crossing at Alligator Creek. The original railroad car culvert has washed out and will require replacement by some kind of bridge or culvert structure. The haul road is not currently used but it is seasonally mowed to enhance wildlife browse.

Lake Zackary at the north end of the proposed development was created by pumping water into a former borrow pit that provided the sand for concrete used in constructing spillways for the Richland-Chambers Dam. The area of the proposed campsites, parking lots and the two loop roads occur at the former location of the cement processing site for the dam. Based on the land form setting relative to the lake shore and surrounding areas, an estimated 8 ft (2.4 m) of spoil pile fill covers this proposed campsite area. Much of this area was mechanically disturbed during the cement plant operation. Thus, nearly all of the proposed development in the North Unit will occur in areas historically modified by the addition of substantial fill from the cement plant, and the haul road beds. The only possible intact sediments to be potentially affected are the banks of Alligator Creek that will be disturbed during installation of the replacement box culvert or bridge.

Culture History

The culture history applicable for the Richland Creek WMA is largely derived from four seasons of intense archaeological studies conducted at the adjacent Richland-Creek Reservoir (Bruseth and Moir 1987, McGregor and Bruseth 1987; Bruseth and Martin 1987). This sequence, supplemented by information from a broader region, delineated four general periods: Paleoindian, Archaic, Late Prehistoric, and Protohistoric.

Paleoindian Period

No sites from this earliest period, which dates from 11,000 to 5000 B.C., were investigated at the Richland Chambers Reservoir. Most of the alluvial deposits containing remains of this period are deeply buried or washed away during subsequent down-cutting. Most remains from this earliest period are apt to occur as surface finds on upland hills that geologically predate the span of occupation. Local collections from the region do contain examples of Clovis and Folsom Lanceolate stone dart tips that are characterized by channel flutes struck from the base. These people apparently spanned the terminal Pleistocene period and as nomadic hunters and gatherers, they relied on a wide spectrum of animals, including period exploitation of such extinct mammals as mammoths and large horn bison.

Archaic Period

The Archaic period is characterized by hunter-gatherer groups who relied on modern forms of animals during the span from 5000 B.C. to A.D. 700. The dominant hunting weapons relied on large darts propelled by means of the atlatl; other equally-important technological innovations of this long period include the development of burned rock cooking using ovens of perhaps stone boiling methods, and the grinding of seeds and nuts. In general, the Archaic is subdivided into three sub-periods based on considerable changes in stone dart tip forms and variations in hafting technologies. The Early Archaic (6000 to 3000 B.C.) is characterized by a contracting and ground stemmed dart head, the Wells Point and shoulderless dart form called the San Patrice. Evidence from the region suggests that notched and ground pebbles, called Waco sinkers, may have been in use during this period. No early Archaic sites were excavated within Richland-Chambers Creek Reservoir, but from the general distribution of these artifacts, they generally reflect the movement of small groups over broad areas with a generalized hunting and gathering adaptation.

The Middle Archaic sub-period spans from 3000 to 1000 B.C. Six sites examined at Richland Chambers Reservoir contained Middle Archaic debris, but only the assemblages from 41FT200 and 41NV96 were not mixed with later remains. Diagnostic tools of the Middle Archaic include the recovery of medium to small dart points with pronounced shoulders and minor barbs; these include the Bulverde, Carrollton, and Yarbrough forms. Also present are Clear Fork gouges and perhaps the continuation of Waco sinkers. The excavations at the adjacent reservoir turned up clusters of burned rock concentrations, which were interpreted as remnants of hot rocks used in short-use earth ovens. During this period direct evidence of bone remains from sites indicate that a range of game, including turtle, cottontail rabbit, birds, fish, and deer were utilized, along with hickory nut exploitation.

The late Archaic sub-period spans from 1000 B.C. to A.D. 700. A total of 15 sites investigated at Richland-Chambers Reservoir were examined during this period. The dominant dart point of the Late Archaic is the contracting stemmed Gary point. Faunal remains from these sites indicate the use of deer, turtle, hickory nuts, several kinds of seeds, and the cooking of prairie turnips (*Psoralea*). During the transitional period, the Archaic folks leveled large areas, which are designated as "Wyle Focus pits". The size of some of these pits is very impressive, and their functions are still poorly understood; some contain human remains, while other were regarded as roasting pits or even dance areas. Considerable more study of these features is needed to more completely understand their purpose. Some shell tempered pottery also appeared during the terminal or transitional Archaic.

Late Prehistoric Period

This period is defined by the appearance of the bow and arrow technology along with the fluorescence of ceramic production. Initially, the Late Prehistoric Period was subdivided into an early and late subphase that roughly correlated to the Gibson and Fulton period in the Caddoan Area (Bruseth and Moir 1989: 14). By the completion of the Richland Creek Reservoir project, the early Late Prehistoric period had two recognized phases: the Richland Creek Phase and the Round Prairie Phase; while the late Late Prehistoric had one phase: the St. Elmo phase.

The Richland Creek Phase (A.D. 700 to 900) is distinguished by the use of corner notched arrow points, Scallorn and Steiner forms, which are made along with small Gary points. The pottery of this period consists of plain vessels with sandy paste, or vessels decorated by punctuated dots or incised lines and are tempered with bone, grog, and/or grit. Large roasting pits persist into the Richland Creek phase but they are much smaller than the sizes of pits found during the Archaic. Also appearing during this phase are small pits, and clusters of post holes. The patterns of post holes suggest the use of semi-permanent structures, but to date the patterns of post holes have not revealed the forms of these houses. The subsistence of the Richland Creek phase was based on fish, deer, rabbits, turtle, prairie turnips, hickory nuts, acorns, pecans, and various seeds.

The Round Prairie Phase (A.D. 900 to 1300) is based on the dominance of small arrow points classified as the Alba type, which are made along with small Gary points that likely were used with atlatl darts. Ceramics are still dominated by the appearance of vessels decorated with incising and punctuates. The sites of the Round Prairie resemble the range of features present on the Richland Creek Phase sites; however, there is a greater concentration and some over-printing of features. This suggests that the Round Prairie phase people either stayed longer at sites or returned more often to the site place.

The St. Elmo phase (A.D. 1300 to 1650) is characterized by small contracting stemmed arrow points (Perdiz and Clifton forms) that occur with Gary dart points. These small arrows were used to hunt bison, which moved into the region. A distinctive attribute is the appearance of maize recovered in association with hickory nuts, pecans, acorn, seeds, and prairie turnips. The domesticated corn was found in such small numbers that it was not possible to ascertain whether it was grown locally or carried in from the northeast. Pottery of this period increases in abundance and includes varieties of engraved, and incised decorative types. The site characteristics suggest that the people were more mobile during this period than during the Round Prairie phase.

Increased mobility is reflected in an increase in non-local lithic resources and tool forms commonly found with bison hunting groups residing in other areas.

Protohistoric Period

The period 1650 to ca. 1830 is regarded as the Protohistoric Period and is represented by the interactions of several aboriginal groups in the region; however, specific details of occupations in the region are poorly known. Although Euro-Americans occupied parts of Texas since the mid 1500's few explorers traversed this part of Texas or established settlements in the region. European trade goods including firearms, metal knives, and livestock–especially horses and mules that escaped or were captured from Spanish missions in south or east Texas – were introduced. Presumably, the region was used as temporary campsites by hunting parties of indigenous Caddoan Nations residing to the East, and/or some of the Wichita bands (derived from the prehistoric Henrietta focus) from the west. The attraction of European guns and livestock drew numerous groups to the region, including Lipan Apaches (ca. 1500) and Comanche (ca. 1700), and the northern bands of the Wichita from Kansas (ca. 1760). These highly nomadic interlopers disrupted the indigenous Wichita and Caddoan groups, although some Spanish and French trade goods were exchanged to these and other indigenous Texan groups during the period 1650 and 1830.

Little is known about the specific details of indigenous occupations in the Limestone County region during this Protohistoric period. There are reports of a Wichita village along Tehuacana Creek—possibly within the southern edge of the Richland Creek WMA (South Unit), but this site has not been documented by professional archaeologists (Bill Young, personal communications, 2006).

Historic Period

Due in part to Spanish prohibition of settlements away from established missions and the aggressiveness of indigenous nomadic groups in the region, Anglo settlements of this part of Texas were rarely attempted before the 1830s, and seldom occurred until after the Civil War in the late 1860s. The archaeological studies of Richland Chambers Reservoir recorded several sites along upland drainage divides, but most of these post date 1880.

Previous Investigations

This section discusses previous archaeological studies in the vicinity of the project are with special emphasis on those projects occurring within one mile (1.6 km) of each project area. Two large, multi-year projects have been conducted in the vicinity of Richland Creek WMA, the earlier involved intensive sample survey of one-kilometer units for the proposed Tennessee Colony Reservoir (Richner and Lee 1976, 1977). The systematic survey of this project also entailed a boat trip down the Trinity River and Richland Creek to locate sites in the cut banks. The second major project close to the area involves the 1979 archaeological studies of the proposed Richland Chambers Reservoir (Bruseth and Moir 1987). Several smaller archaeological projects have been conducted at the Richland Creek WMA; due to the limited extent of these projects and the differences in the settings, discussions of these smaller projects are presented separately for each of the WMA units.

South Unit

Other surveys were conducted of the Richland Creek WMA Shop Area (Moore 1994), and archaeological survey have been conducted along the Kemp Geophysical and Delhi Pipeline routes (Moore 1993; Turpin 1996). The abandoned well pad has also been surveyed, and local avocational archaeologists have also reported sites in the area.

The Texas Sites Atlas lists some 18 sites within a one-mile radius of the South Unit project area. About half occur on upland hills comparable to the present project area, and the rest occur in the banks of the Richland Creek river channel that is incised about 16.5 ft (5 m) into the Holocene floodplain. Only one archaeological site was recorded for the immediate vicinity of the proposed road and campground development, site 41FT154 at “Walker Bluff” along the lower northeastern slopes of the hill and alluvial floodplain. Site 41FT154 yielded sparse chipped stone or lithic debris, retouched flakes, the mid-blade of an unidentified dart point, one piece of incised pottery, mussel shell fragments, and sparse historic artifacts including clear glass and ironstone vessel fragments. Formal testing was apparently not conducted during reservoir development. The Texas Atlas also indicates that the proposed well pad and roads (currently abandoned on the hilltop and incorporated into the present project) was surveyed by professional archaeologists, but the electronic link identifying the date or author of the survey was not operating; no report was found in the TPWD files. Apparently no archaeological sites were identified in the well pad area on top of the hill, and the project was cleared for development. Other studies report the recovery of a Clovis point found near this hill; Bill Young also says he found the barb from a Calf Creek Point and a Perdiz Point on the surface of the lower slopes of the hill—perhaps in the vicinity of reported site 41FT154.

North Unit

In addition to the intensive studies conducted by SMU archaeologists for the Tennessee Colony and Richland Chambers Reservoirs, selected surveys were also conducted on Pleistocene terraces along the north edge of the north unit in conjunction with the Navarro County Wetlands facility (Bruseth 1982). Surveys of the bottomland Holocene terraces were conducted for the proposed share crop fields north of Alligator Creek and (Corbin 1992a, 1992b) and an extensive Ducks Unlimited Marsh development project near Zackary Lake (Davis 1991). More recently, a survey was conducted of a proposed pump station associated with the Richland-Chambers wetland treatment facility (Ferring 2004). Mr. Bill Young, the local THC Steward, was not aware of any artifacts ever coming from the haul road area along Alligator Creek.

The Texas Sites Atlas lists some 11 sites within a one-mile (1.6 km) radius of the project area. Most occur along the upland ridge south of the present parcel and only four sites have been found along Alligator Creek. Two archaeological sites are plotted very near the present project. One site, 41FT231, was an historic farmstead that occurred within the original haul road corridor (Moir and Jurney 1987). Following limited shovel testing investigations in the yard area and documentation of the structural foundations, this site was cleared for development of the haul road used at the Richland-Chambers Reservoir. This site no longer exists.

The second site, 41FT220, was originally recorded by SMU archaeologists in 1980 on the north bank of Alligator Creek approximately 500 ft (150 m) east and downstream from the proposed haul road and east of a north-trending lateral drainage. The original site form lists the recovery of some 50 flakes, six points (types unspecified), four bifaces, one potsherd, and fire-cracked rock from this site.

A dozen years later Dr. James Corbin (1992a) extended the site boundaries of 41FT220 by 1640 ft (500 m) further west along the north creek bank (including both sides of the abandoned haul road) based on “a very thin (sic, sparse) scatter of prehistoric cultural materials (three siliceous flakes), a fragment of bison long bone, and occasional fire-cracked rock." Corbin (1992a) noted that the cultural materials extend no more than 164 ft (50 m) north of the creek. Elsewhere Corbin (1992b) said that the artifacts were observed only 12 to 16 inches (30 to 40 cm) below surface. He states that shovel testing was attempted, but "the soil was extremely hard and could not be penetrated with a shovel for more than a few centimeters" (Corbin 1992a). His records do not show the specific locations of the few artifacts he observed or why the low density of remains from a half kilometer away is related to 41FT220, instead of being a different site or isolated find(s). With all the borrow fill covering the proposed area of the proposed road building project, the only area of potential affect represents construction associated with the replacement of the bridge or culvert box on the north bank of Alligator Creek

Methods

A windshield reconnaissance was conducted of all existing roads to assess the extent of developments. In the south unit, the entire roadway was walked out as was inspections of the well pad area and the hill slopes to the northeast, closest to site 41FT154. Due to the geological setting of this Pleistocene hill top and prior mechanical brush clearing, and fair ground visibility, no shovel tests were placed in this pre-cultural setting due to the prior well developments and the land clearing that has occurred on this hill top.

In the north unit, a drive-through reconnaissance was conducted of the haul road, and sand quarry pit to ensure that that more than one meter of fill covered these proposed campsite areas. A pedestrian inspection of the sand quarry facility was conducted to verify that no features remain from the dam construction activities; except for several piles and a general mantle of sand across the area, no substantial features were found. Inspection of the Alligator Creek crossing revealed that the railroad car culvert has washed out and the bridge would have to be replaced. Field inspections were made of the south and north banks of Alligator Creek at the washed-out bridge site. These field reconnaissances indicate that the proposed developments would only disturb Holocene age deposits at the bridge replacement locale along Alligator Creek. All other proposed developments would occur on top of disturbed fill (haul roads and spoils piles near the sand quarry), or on stable Pleistocene settings affected by prior construction events.

No artifacts were observed along the eroded north or south banks of Alligator Creek at the haul road ROW despite fair surface exposures. Most Holocene sediments of the cut bank were composed of fine Blackland Prairie clay loams, with occasional stream rolled pebbles. This soil may correlate to the Navarro soil identified in the Richland Chambers Reservoir area as dating between A.D. 670 and A.D. 1820 (Bruseth and Moir 1987: 37). Due to Dr. Corbin's (1992a, 1992b) expansion of site 41FT220 by ca. 500 m to the west along north bank of Alligator Creek, including the washed-out haul road, a pedestrian survey was made from just west of the haul road to a prominent northern gully that represented the original western site boundary. Special emphasis was placed on the slopes and gravel bars in the creek.

In order to further verify that the bridge replacement project would not impact any sites, mechanical testing was deemed necessary of the haul road ROW. This testing consisted of digging two backhoe trenches in a T-configuration along the north eroded slope of Alligator Creek along the center line of the haul road. At this location, the north bank of Alligator Creek measures some 5 m (16.4 ft) tall by about 10 m (32.8 ft) horizontally from road to water edge. Trench 1 was placed on the eroded slope in the centerline of the haul road some 3 m (9.8 ft) from the water's edge, oriented parallel to the creek. It measured 5 m (16.4 ft) long by 2.5 m (8.2 ft) wide and was excavated to a depth of about 2 m (6.5 ft) along the sloping bank face at a depth of 3 m (9.85 ft) below the top of the roadway. Trench 2 was a sloping trench oriented perpendicular to Trench 1 and parallel to the axis of the haul road. It was 7 m long and extended from the north side to Trench 1 upslope to the haul road surface. Maximum depth of Trench 2 at most points along the sloping trench was about 2 m (6.5 ft), but stratigraphic information was derived from both walls and the sloping floor surface. The excavation of the two trenches was monitored for artifacts and ecofacts. The combination of the two trenches exposed a

5.25 m creek bank profile. A measured profile was made of the east wall of Trench 2. Careful examination of this profile failed to locate any artifacts in profile.

As further validation of no artifacts present in the north cut bank, a column of sediments measuring 25 x 25 cm was excavated from the east bank of Trench 2 in 20 cm interval and water-screened through quarter-inch mesh hardware cloth. This 2 m deep column extended from the base of the haul road fill (marked by an expansive burned clay layer) to the approximate elevation of the Alligator Creek. The results of the ten excavated levels are reported below.

Results

The South Unit Development

Pedestrian survey of the road and hill slopes in the south unit found the area to have moderate vegetation cover of an estimated 60 percent. No flakes or artifacts were observed on this Pleistocene covered hill and in light of the mechanical brush clearing of the entire hill, the chances of finding intact deposits are exceedingly low. The archaeological remains present at the Walker Bluff site, 41FT154, apparently does not extent on to the hill slope.

The North Unit Development

Based on the reconnaissance inspection of the proposed developments in the north unit, the only potential for finding intact archaeological remains is along the banks of Alligator Creek. On August 21-22, 2006, Dr. Christopher Lintz conducted bank inspection, backhoe trenching, sediment descriptions, and controlled screening of fill from a 2.0 m deep sample column of undisturbed fill along the center line of the haul road at the north bank of Alligator Creek.

Reconnaissance of the 3 m tall Alligator Creek banks observed no artifacts or ecofacts along the eroded beveled surfaces of the upland setting for a distance of about 30 m (98 ft) of the haul road. The sediments exposed in this area uniformly consisted of Blackland Prairie clays and/or fine sediments and except for occasional pea gravel no rocks were exposed in the cut banks, and no confirmation was found for the 500 m expansion of site 41FT220 towards the west based on the surface reconnaissance.

Near water level about 20 to 25 m (65 to 82 ft) east of the haul road, was a low inset alluvial terrace containing embedded sandstone boulders, and moderately large, unworked, Uvalde gravel clasts, hematite nodules, along with chunks of concrete, and shells of both yellow paper mussels (*lampsilis terres*) and Asian clam shells (*corbicula sp*) that were introduced into North America in 1940s (Howells, Neck and Murray 1996). One of the large rock slabs was a complete unifacial metate measuring 23 by 19 by 8 cm (91 by 7.5 by 3.1 inches), with a shallow depression on one face and peck-shaping all over the base. The association of this metate with historic concrete and shells of a species introduced since 1940, indicates that the entire terrace is a modern deposition. All remains, including the metate are not in original context, and the size of the clasts indicates that they are not derived from the fine sediments of the adjacent cut bank surface. The metate has been displaced from unknown areas up-stream. Due to the scarcity of compete metates from the region, it was collected as an isolated artifact (IF-W721-1).

Archaeological monitoring of the mechanical excavations of the two backhoe trenches only saw a concentration of three *Lampsilis sp*. bivalve shells, at 3.9 m (12.8 ft) below the haul road surface. Manual probing around the shells showed them to be isolated and not associated with bones, flakes, charcoal, burned rock or other indications of an archaeological context. A series of five major strata were present in the backhoe trench profiles (Figure 2 and Table 1).

Special comments are made about three strata represented in profile. The 15-cm (6-inch) thick layer of oxidized clay pellets of Stratum 2, which spans a 3+ m (10 ft) long wall segment and floor profile of Trench 2 is regarded as remnants from a natural burn. This interpretation was based on the expansive size of the oxidized clay layer, which extended beyond the backhoe trench limits, and the lack of associated artifacts or ecofacts. The burned layer may represent historic brush clearing perhaps associated with construction of the haul road.

Stratum 3 is regarded as a Blackland Prairie clay alluvial unit that has been darkened from the overabundance of decomposed carbon, relative to the influx of new sediments.

This unit contains three carbonate zones, each 10 to 15 cm thick, and which possibly represent post-depositional soil modification of secreted carbonates that occurred during phreatic or high water stands within Blackland Prairie clay accumulations. The absence of abrupt boundaries suggests that they are not different depositional sediment sources.

Stratum 4 is a 25+ cm (10 inch) thick layer of continuous laminated tan sand in a wedge between Blackland Prairie clay sediments. The laminations indicate natural point bar sediments redeposited from upland sandy sediments during a few flood events. The presence of abrupt upper and lower boundaries indicates that the unit was laid down quickly. Most likely, the sands were eroded into the Alligator Creek channel during or shortly after an arid climatic event reduced the upland ground cover.

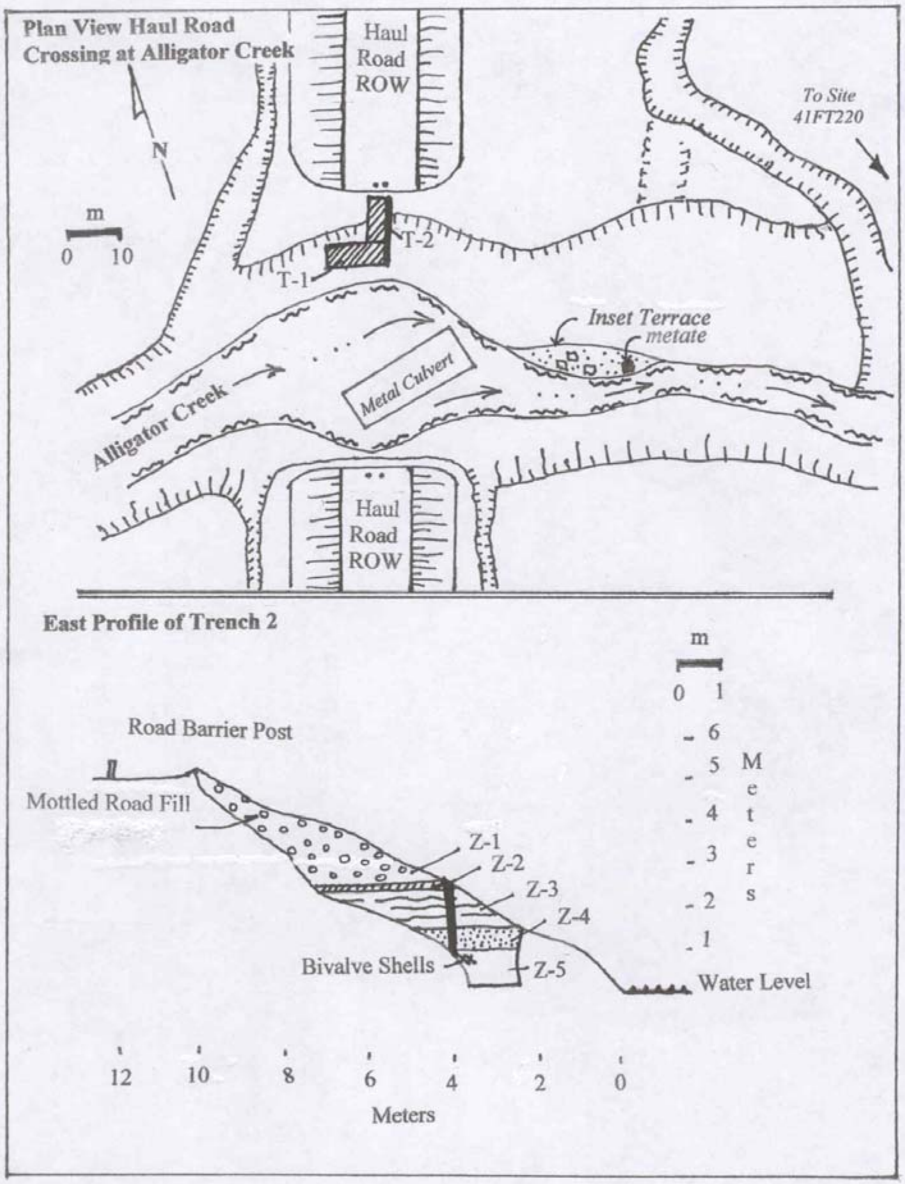

Figure 2. Plan view of haul road and east profile of Trench 2

Table 1. Profile Description of Backhoe Trench North Bank of Alligator Creek at the Haul Road				
Stratum	Depth below Haul Road (cm)	Thicknes s (cm)	Matrix Description	Interpretation
1	0-245	245	Very dark gray(10YR 3/1) fine clay loam massive structure, mottled with large irregular chunks of reddish yellow (7.5YR 6/6) clay peds firm with an abrupt lower boundary	Imported Haul Road Fill, as indicated by clear mixing of Blackland Prairie sediments with large, displaced clay ped inclusions.
2	245-260	15	Reddish yellow (7.5YR 6/6) to light gray (7.5YR 7/0) granular burned clay pellets	Chunks and pellets of burned earth-- One or more burn layers at original historic contact zone— probably from historic brush clearing.
3	260-345	85	Very dark gray (10YR 3/1) fine clay, angular block structure, with red clay skins on pedon faces; three zones (280-285, 300-310; and 325-335 cm bs) within this unit have whitish carbonates (?) on ped faces.	Massive zone of Blackland prairie clay with trans-located clay skins from upper zones and three phreatic-deposited carbonates layers indicating possible high ground water elevations.
4	345-375	25	Light brownish gray (10YR 6/2) laminated silt layer.	Alluvial point bar (?) depositional unit in Alligator Creek from one or more discrete flood events; sediments not locally derived likely eroded from upland sand sheets possibly following xeric climatic events.
5	375-530+	185+	Very dark gray (10YR 3/1)	Blackland prairie clay with red clay skins on pedon faces. Three Lampsilis bivalve shells observed during mechanical trenching from this unit.
			Water Level—Alligator Ck	

Inspection of the trench floor and walls found no evidence of discrete oxidized soil, ash or charcoal lenses indicative of cultural features, nor pieces of chipped stone, burned rock, or bones. The only mussel shells observed were the concentration of three valves unassociated with cultural remains, as mentioned above.

The results of water-screening sediments from 10 excavated levels, each 20 cm thick, of a control column yielded a few flecks of charcoal and natural pebbles but no artifacts, bones or mussel shells. Table 2 documents the recovery from each 20 cm thick level and includes stratigraphic zone correlations, the matrix description in each level, and observations on materials in the screen. The controlled excavations found four or fewer small unmodified pebbles of cobbles in Levels 1, 2, 3, and 5, which were associated with Strata 1 and the upper part of 3. Small pieces of charcoal were recovered from Levels 3 and 7; the upper piece is directly associated with the burned clay layer (Stratum 2), and the lower portion of Stratum 3. A few snails were present in most levels, but no fresh water mussels were recovered.

Since the control column extended from the burned surface (Stratum 2) through the depth of the observed *Lampsilis* bivalve shells in Stratum 5 without finding associated artifacts, it seems that the control column did not encounter cultural remains.

The results of manual excavations of the control column of sediments suggest that 41FT220 does not extend into the area of the haul road or bridge replacement area. The limited field work suggests that Corbin (1992) may have erred in his justification for expanding the archeological site boundaries. Without any further documentation from Corbin on the distribution of the artifacts he found, it is not possible to determine whether he found some new archaeological site, unrelated to 41FT220, or if he grouped a series of isolates into an expanded site area. The backhoe and control column testing tenuously suggest that no archaeological deposits will be adversely affected from the replacement of the bridge crossing over Alligator Creek.

Table 2. Water Screen Results from the Control Column, North Bank of Alligator Creek, Richland Creek WMA.

Level	Depth below eroded surface (cm)	Depth below Haul Road (cm bs)	Soil Zones	Matrix Description	Artifact Recovery	Comments
Unexcavated upper fill		Eroded surface 0-210	Z-1	Blackland Prairie clay-loam	Not Tested	Materials eroded from upper bank of Alligator Creek
1	0-20	210-230	Z-1	Blackland Prairie clay-loam	None	4 natural pebbles
2	20-40	230-250	Z-1	Blackland Prairie clay-loam	None	2 natural pebbles
3	40-60	250-270	Z-2 & Z-3	Red and white burned clay over Blackland Prairie, angular blocky clay-loam	None	1 charcoal fleck, 1 unmodified cobble (4 cm diameter)
4	60-80	270-290	Z-3	Blackland Prairie clay-loam; 1 white carbonate phreatic layer	None	
5	80-100	290-310	Z-3	Blackland Prairie clay-loam; 2 white carbonate phreatic layers	None	2 natural pebbles
6	100-120	310-330	Z-3	18 cm Blackland Prairie clay-loam over 2 cm tan black clay	None	
7	120-140	330-350	Z-3 & Z-4	10 cm Blackland Prairie clay-loam over; 5 cm of brown sand; over 5 cm of laminated yellow sand	None	1 fleck of charcoal
8	140-160	350-370	Z-4 & Z-5	10 cm yellow laminated sand; 10 cm Blackland Prairie clay-loam with red ped faces	None	
9	160-180	370-390	Z-5	All Blackland Prairie clay-loam with red ped faces; lampsilis shell layer	None	
10	180-200	390-410	Z-5	All Blackland Prairie clay-loam with red ped faces	None	
lower fill (not dug)			Z-5	All Blackland Prairie clay-loam with red ped faces	Not tested	

Recommendations

In considering the nature of the proposed road and campsite development impacts and the care in design to maximize use of previously disturbed areas in the Richland Creek WMA, TPWD sought and secured concurrence from the Texas Historical Commission on a recommendation that these highway and campsite developments will have no effect on cultural resources. This is an appropriate recommendation in light of the shallow proposed impacts (12 to 15 inches [30 to 38 cm]) for the developments on the Pleistocene age hill in the South Unit. Even though considerable development is planned for the Holocene surface in the North Unit, all work will be confined to the top of a pre-exisitng haul road or along the sand sheet next to the sediment quarry that is presently Zackary Lake. The development of the haul road in 1980 took out historic site 41FT231 on the Pleistocene ridge along the south edge of the project area. The only current construction activities that have the potential to affect Holocene deposits involve the bridge replacement over Alligator Creek. The archaeological testing at this locality has demonstrated that no archaeological remains are present, despite earlier attempts to expand site 41FT220 into this region. The discovery of one isolated metate in an inset terrace of Alligator Creek was associated with concrete chunks and bivalve shells introduced to North America after 1940s.

Construction of the bridge replacement should be monitored by staff with cultural resource training. In the unlikely event that archaeological remains (including burned rock, chipped stone tools and debris, buried animal bones, and/or features) are encountered during construction, then earth altering construction activities should immediately stop. The Richland Creek Wildlife Manager and the Wildlife Archaeologist should be immediately contacted, so that a trained archaeologist can be assess the nature of the unanticipated discovery according to the criteria established for the significance of the National Register of Historic Places or the State Archaeological Landmarks. If such remains are encountered, then formal archaeological investigations may be required under an archaeological permit from the Texas Historical Commission to assess and/or salvage the remains.

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Washington County Hunter Education Center

Washington County

November 10, 2006

Author: Rich Mahoney, Texas Parks and Wildlife Department (TPWD) Cultural Resource Coordinator - Region 5

Project Description: Washington County Hunter Education Center

Type of Investigation: Pedestrian Surface Survey and Shovel Testing

Staff: Rich Mahoney

Introduction

In November 2006, Texas Parks and Wildlife Department (TPWD) Cultural Resources Program Staff conducted an archeological survey of a portion of Brenham High School in Washington County (Figure 1). The survey concerns the proposed Washington County Hunter Education Center project, consisting of a free-standing structure and all necessary underground utilities. The proposed project occurs on lands owned by Brenham Independent School District and was funded, in part, by a federal Target Range Grant administered by the U.S. Fish and Wildlife Services.

Project Description

The outdoor education center project consists of construction of one, and possibly two, free-standing structures and necessary utilities. The project area is located at the new location of Brenham High School at 525 A. H. Ehrig Drive in the City of Brenham. The project area is approximately 1.20 acres and the Area of Potential Effects (APE) includes sufficient space to allow any necessary machinery access for building construction. Turnaround points, staging areas, and material storage areas will be located atop and within previously built-out or surveyed areas. Prior impacts within the project area include a sanitary sewer line that basically bisects the project area and construction of a gravel road along the western boundary of the project area. Maximum depth of impact is estimated to be roughly one meter below ground surface.

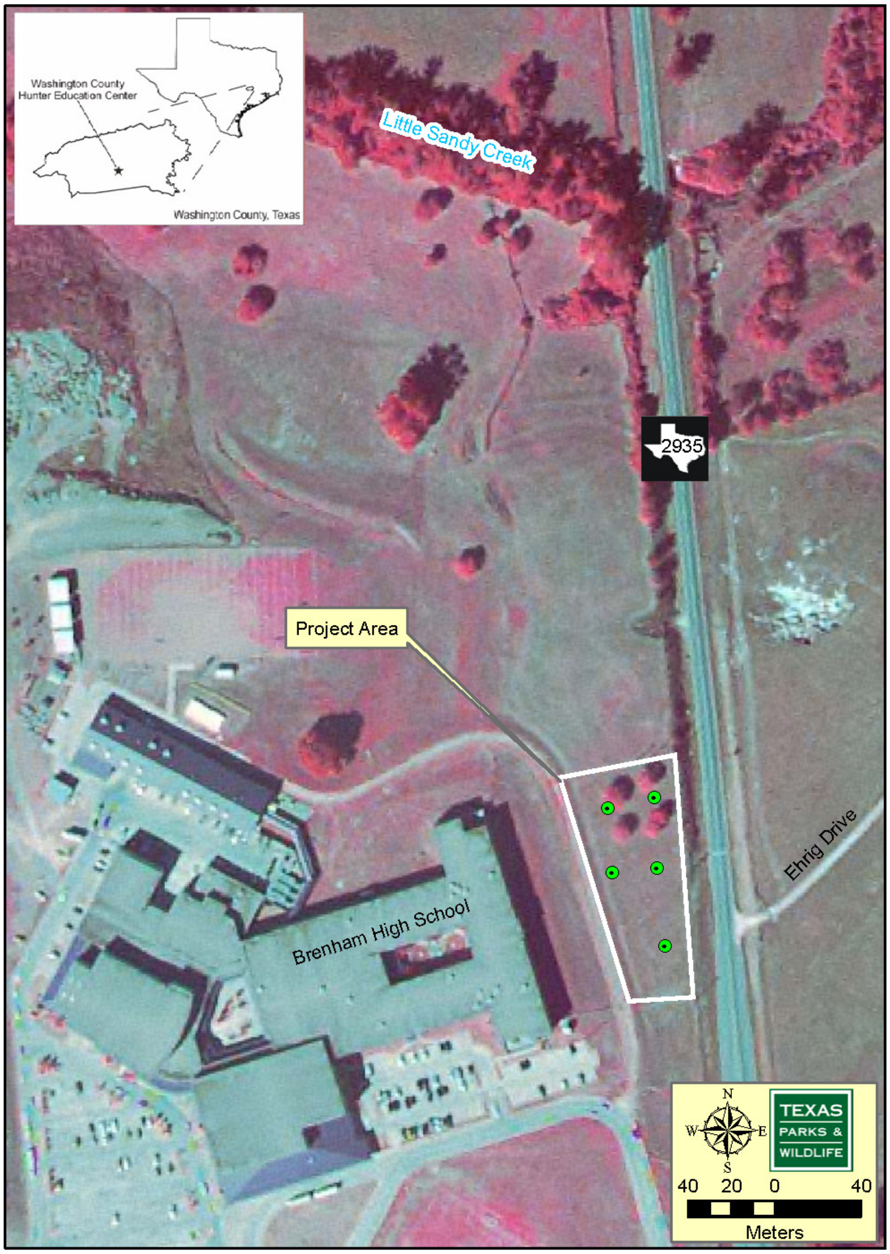

Figure 1. Aerial photograph montage depicting location of project area.
Dotted circles depict shovel tests.

Environmental Setting

The City of Brenham is located about 70 miles west of Houston in the central portion of Washington County. The project area is situated within the Blackland Prairie natural region (Figure 2), although the vegetation is consistent with that of a manicured lawn, consisting of mown carpet grass and five mesquite trees. Examination of historic aerial photographs indicates the area was used as pastureland as recently as 1996.

Review of the local geology (Figure 3) indicates that the project area sits atop the Fleming Formation of the Miocene epoch (Proctor et al. 1981). While the Fleming Formation is classed as alluvial in origin (Aronow 1979), the sediments consist primarily of finer-grained sediments of dense clays. Within the County, these deposits form the rolling uplands that are dissected by drainages exhibiting the younger Pleistocene alluvial deposits.

Published soil data (USDA 2004) indicates the entirety of the current project area occurs within the Carbengale series of clay loams. Shovel test results mirror the published soil descriptions, with a surface layer of dark grayish brown clay loam 18-26 cm thick. This stratum is underlain by a very light grayish brown loam or silty clay. As a series, these soils represent less than eight percent of the soils mapped in Washington County.

Cultural Setting

The Brenham area falls along the eastern border of the Central Texas archeological region (Kenmotsu and Perttula 1993), alternatively, within the East-Central Texas archeological region (Mahoney et al. 2003). While no archeological sites were encountered during the current survey, archeological sites recorded in the immediate area span the entirety of the known periods of occupation in East-Central Texas. As such, this brief section outlines the general cultural chronology for the region. A more detailed account of these prehistoric periods, as well as the entirety of the cultural chronology for Central Texas and East-Central Texas can be found in Collins (2004), Fields (2004), Johnson (1995), and Prewitt (1981).

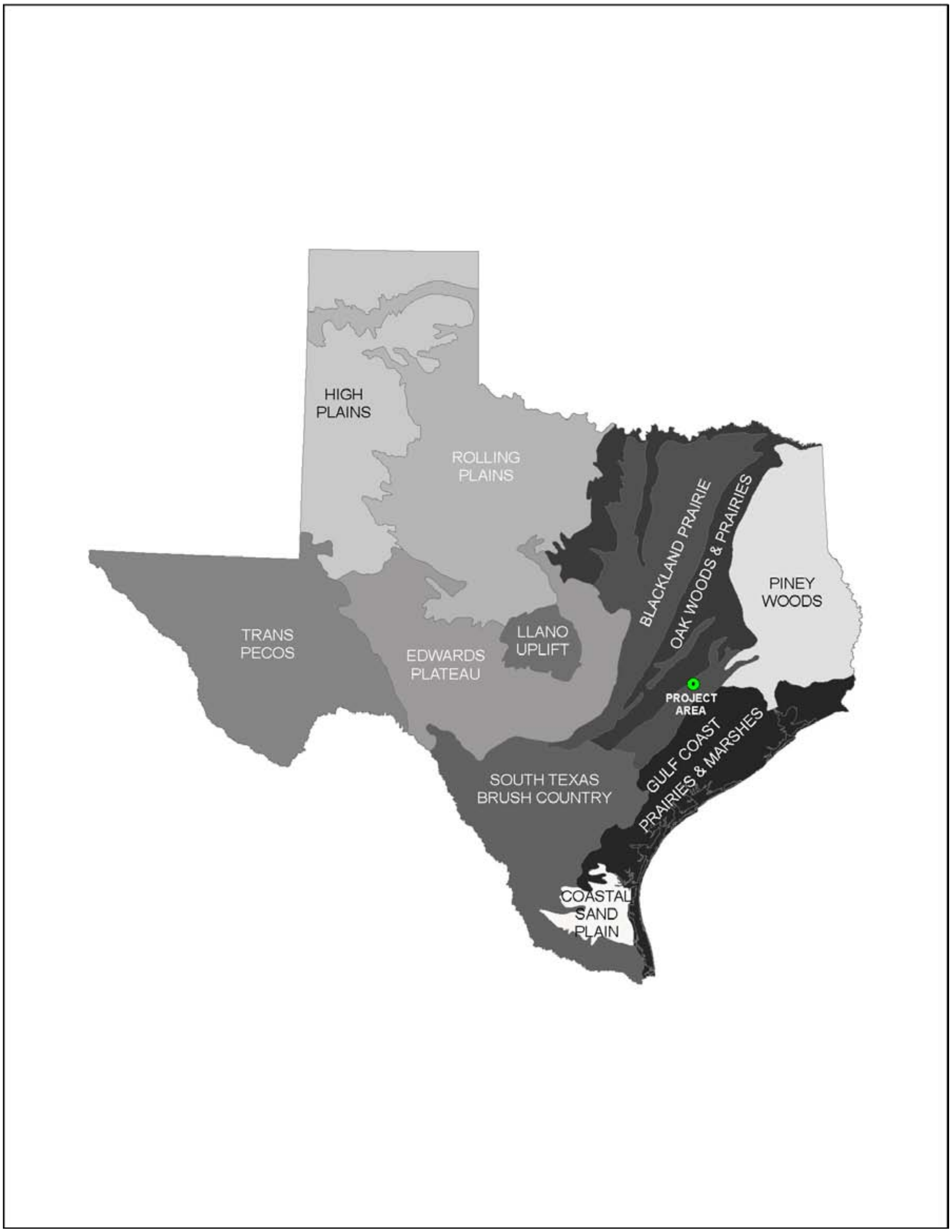

Figure 2. Project area in relation to Natural Regions of Texas.

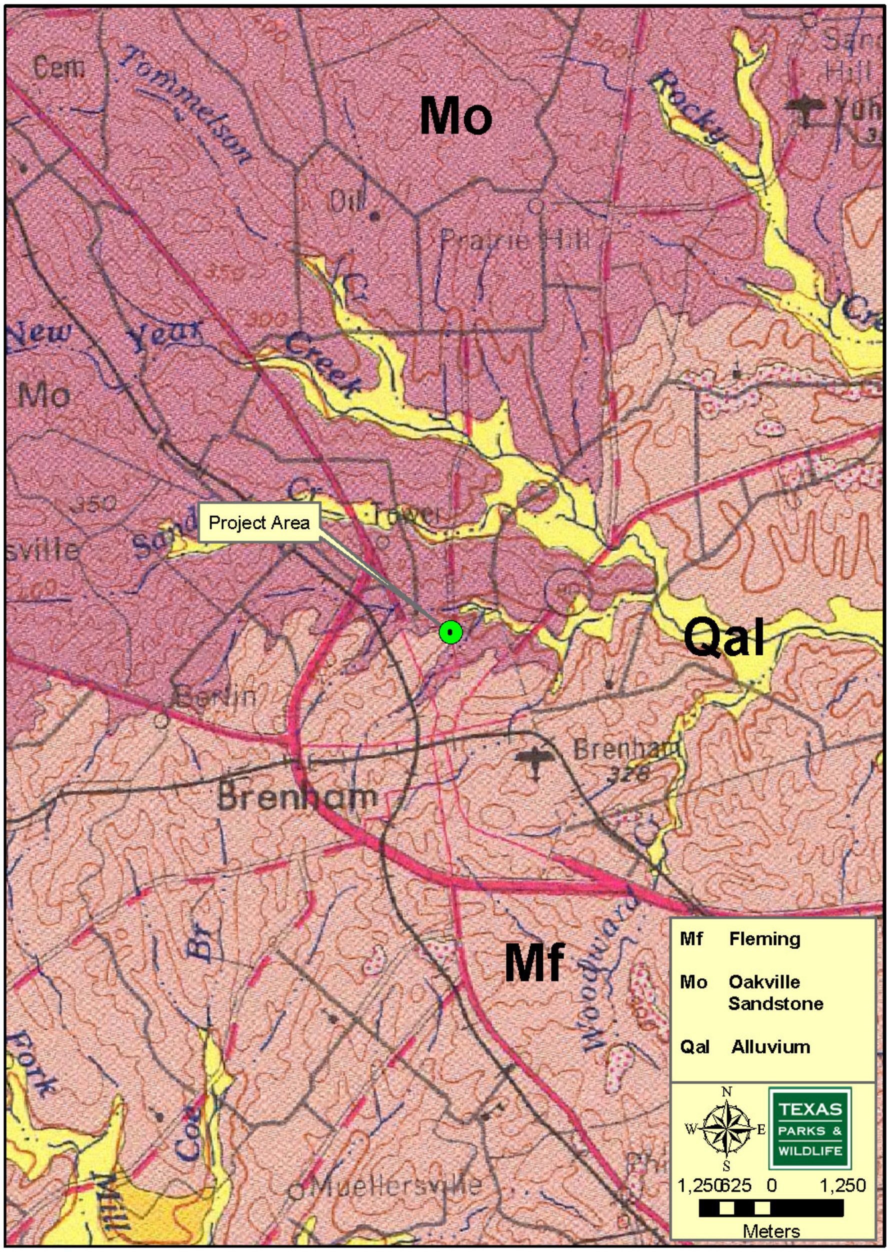

Figure 3. Project area in relation to local geology.

The Paleoindian period (11,500-8800 B.P.) commences during the latter part of the Pleistocene geologic epoch and terminates during the Early Holocene climatic interval (Ensor and Carlson 1988; Johnson and Goode 1994; Perttula 1999); conceptually, that era in prehistory wherein humans first entered the New World. Due to the frequent location of isolated finds of Paleoindian projectile points and the infrequent encounter of dense occupational features, it is generally inferred that these peoples were highly mobile, nomadic hunters and opportunistic gatherers. Recent research (Bousman et al. 2004; Collins 2004); however, is continuing to further define and refine our understanding of these early peoples, including their subsistence base and adaptation patterns.

Technologically, the Paleoindian period is divided into early and late phases. The early phase is typified by the presence of primarily fluted lanceolate points (i.e., Clovis and Folsom) produced of non-local materials. The exotic stone tools recovered from these early sites further suggest a high-mobility culture. The late phase of this period exhibits dart points, such as San Patrice and Dalton, made primarily of local materials (Ensor and Carlson 1988:18; Schambach 1998). The presence of woodworking tools, such as the Dalton adze, in association with these new variant dart points suggests a slightly more sedentary culture than its predecessor.

The Early Archaic period (8800-5600 B.P.) is characterized by the apparent onset of sedentary subsistence indicated by the diversity of recovered artifact assemblages (Girard 2000; Wyckoff 1984). The extinction of large herds of megafauna and the changing climate at the beginning of the Holocene appears to have stimulated a behavioral change in the prehistoric inhabitants of the region. While the basic hunter-gatherer adaptation probably remained intact, an economic shift away from big game hunting was necessary. In general, more intensive exploitation of local resources such as deer, fish, and plant stuffs is indicated by greater densities of ground stone artifacts, burned rock cooking features, and more specialized tools such as Clear Fork gouges and Guadalupe bifaces (Turner and Hester 1993:246, 256). Temporally diagnostic projectile points of this period include Angostura, Gower, and Martindale.

The Middle Archaic period (5600-4200 B.P.) occurs during the final years of the Middle Holocene geologic epoch and may represent a time of transition in adaptation patterns.

During the early part of this period, bison are again present along the plains and prairie regions of Texas after a nearly three millennia hiatus (Dillehay 1974). Their appearance is short-lived, however, and by approximately 5200 BP bison once again disappear from the faunal assemblage of the Southern Plains and adjoining prairie margin. The continuance and proliferation of relative sedentism and/or specific exploitation of localized natural resources is evidenced by the continued occupation and reoccupation of preferred landforms (Mahoney et al. 2003). Johnson and Goode (1994:28) also point to the specialization of targeting specific natural resources, possibly xerophytic plants. These characteristics in response to an increasingly drier environment (Bousman 1998; Johnson 1995) would form the basis for the transformation in the overall stylistic tradition to that of the Late Archaic.

Similar to the Paleoindian period, the Middle Archaic is technologically divided into two phases. The early phase consists of thin-bodied, broad-bladed projectile points such as the Early Triangular variety. It is postulated (Collins 1998) that these points were part of a stone tool kit customized for hunting the abundant bison of this early phase. The later phase is dominated by narrower bladed and thicker bodied dart points such as the Nolan and Travis varieties. It remains unclear whether this technological change can be directly attributable to the economic shift from bison procurement to medium-sized game procurement, such as deer and antelope.

The Late Archaic period (4200-1200 B.P.) roughly coincides with the beginning of the Late Holocene geologic epoch and represents the final three millennia of the Archaic Era. Johnson and Goode (1994:34) divide the Late Archaic into separate phases, with a point of demarcation at approximately 2600 B.P. The earlier phase, or Late Archaic I, commences with generally xeric conditions, probably correlative with the Dry Edwards Interval to the west. Palynological evidence from the nearby Boriak bog (Lee County, Texas) and the Weakly bog (Leon County, Texas) reveals relatively low arboreal canopy cover; indicating a predominant grassland environment for the region during this period (Bousman 1998). Adaptation to a relatively dry climate with low precipitation and high temperatures are hallmarks of the early portion of the Late Archaic, with bison reappearing in the faunal assemblage following an over one thousand year hiatus

(Dillehay 1974). Projectile-point styles of this phase include, in progressive order, Bulverde, Pedernales, Marshall, Montell, and Castroville (Johnson and Goode 1994).

The Late Archaic II witnesses a continued population increase (Prewitt 1985; Rogers and Kotter 1995) and divergent burial practices possibly influenced from cultures to the east (Johnson 1995:96-98). Palynological data derived from the above bog studies indicate a trend toward a more mesic environment during the latter phase of the Late Archaic (Bousman 1998). Burned rock middens appear to decline in usage during this time (Johnson and Goode 1994); however, recent research (Mauldin et al. 2003) questions the applicability of this as a period or phase marker. Typical projectile-points of the Late Archaic II include Marcos, Ensor, Frio, Darl, and Figueroa (Johnson and Goode 1994).

The Late Prehistoric period (1200-300 B.P.) represents the final few centuries prior to European contact in East-Central Texas, and exhibits a distinctive shift in technology from the previous periods. Evidence of bow and arrow weaponry first occurs in this period, with small arrow points appearing in the archeological record. The initial 600 years of this period, termed the Austin interval, is marked by the presence of expanding stem arrow points such as Scallorn and Edwards (Prewitt 1985). Environmentally, little change from the Late Archaic II is witnessed during the Austin interval, as faunal assemblages appear similar (Collins 2004).

The terminal Late Prehistoric subperiod, the Toyah interval, witnesses the return of bison to the region after several hundred years absence (Dillehay 1974). The animal's return resulted in a marked economic shift toward intensive bison procurement and processing (Prewitt 1981). The material culture from this interval reflects this shift with contracting stem arrow points such as Perdiz and Clifton and blade core technology. In addition, bone-tempered pottery makes its first appearance in the region during this interval.

Previous Investigations

Washington County has a rich archeological and historic heritage. The county has 71 previously recorded archeological sites, four officially designated State Archeological Landmarks, 141 Historical Markers, 66 properties listed on the National Register of Historic Places, and 197 historic cemeteries (THC 2007). Most of these sites have been recorded during surveys conducted to locate archeological resources in advance of land development projects. The first archeological sites to be officially recorded by professional archeologists include four prehistoric sites within the U.S. Army Corps of Engineers Lake Somerville project in the early 1960s (Honea 1961). Subsequent archeological surveys in the county consist primarily of small, petroleum-related development projects and are represented by more than 100 archeological reports.

Methods

Prior to initiation of the field investigations, a comprehensive review of all available archeological reports and databases was conducted to identify and characterize cultural resources known to occur in the vicinity of the project area. At least in part, the compilation of known cultural resources in the Brenham area is based on the Texas Archeological Sites Atlas, Texas Historic Sites Atlas, and THC and TPWD map files. In addition, the literature and archival review inspected historic United States Geological Survey topographic maps and Natural Resources Conservation Service soil surveys (USDA 2004).

The survey consisted of a 100 percent pedestrian survey of the project area. Shovel tests were 30 cm in diameter and were excavated to 60 cm below ground surface. They were excavated in levels not exceeding 10 cm in thickness. Deposits from these tests were screened through quarter inch hardware cloth.

Results And Recommendations

Two shovel tests were excavated within the project area (see Figure 1), encountering no cultural material. Based upon the negative results of the survey, the TPWD Cultural Resources Program recommended that the proposed project be allowed to proceed without further cultural resources investigations. Texas Historical Commission concurrence for this project was received in November 2006.

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