

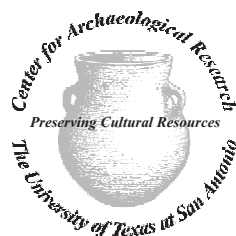
Descriptions of and Stabilization Strategies for 13 Archaeological Sites on Laughlin Air Force Base, Val Verde County, Texas

by
Leonard Kemp



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Prepared for:
Argonne National Laboratory
9700 South Cass Avenue
EVS/Building 240
Lemont, IL 60439



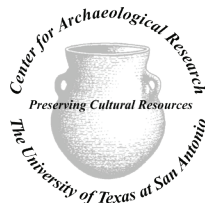
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The University of Texas at San Antonio
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Archaeological Report, No. 497

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Abstract:

The University of Texas at San Antonio (UTSA) Center for Archaeological Research (CAR), in response to a request from Argonne National Laboratory (Argonne), investigated 13 archaeological sites located on Laughlin Air Force Base (AFB), Val Verde County, Texas. The project was conducted in accordance with Section 110 of the National Historic Preservation Act (NHPA; 54 U.S.C. §§ 306101–306107, 306109–306114), which mandates that Federal agencies are responsible for the preservation of historic properties owned or controlled by any given agency, in this case the United States Department of the Air Force (DAF). Argonne tasked the CAR with relocation of the 13 sites, documenting their boundaries, providing an assessment of their condition, and proposing site stabilization strategies.

The field investigation was conducted in two phases. The primary goals of the first phase were to confirm the locations of the 13 archaeological sites and to establish photopoints at each site to document site conditions over time. From August 10 through 13, 2020, the CAR was able to relocate 11 sites (41VV1653, 41VV1654, 41VV1655, 41VV1683, 41VV1685, and 41VV1686–41VV1691). Site 41VV1684, a lithic scatter, is believed to have been destroyed during the construction of a gym facility and parking lot. Site 41VV1682 was not located during this first phase.

The second phase consisted of a Transect Recording Unit (TRU) survey that occurred from September 16 through 21, 2020 and on September 24, 2020. The location of site 41VV1682 was confirmed on September 24, 2020, and the site was surveyed on that date. Overall, the CAR surveyed 12 sites divided into 322 TRUs. Each TRU was 3 x 30 m, recording an area of 28,980 m². The CAR documented 15 features, including a sheet midden, burned rock middens, fire-cracked rock (FCR) scatters, and historic features associated with site 41VV1682, an early twentieth-century ranch. Eight diagnostic projectile points ranging in age from Late Paleoindian to Late Archaic were also recorded.

Based on the results of the survey, the CAR recommends the continued use of the photopoint system at least twice per year at all sites other than 41VV1684 to monitor site conditions. If approved, the CAR will assist in the implementation of the system and conducting training for Laughlin AFB personnel. In addition, the CAR recommends several on-the-ground site stabilization measures be undertaken by Laughlin AFB. These actions include the removal of a sign identifying the location of 41VV1653, the closure of specific roads within sites 41VV1654 and 41VV1655 to mitigate impacts to features and site assemblages, and fencing the southeastern portion of the base to enclose and protect sites 41VV1685–41VV1691 from intrusive livestock and civilian personnel. Finally, the CAR recommends that base hunting instructions be updated to include warnings that collecting artifacts on federal properties is a violation of federal laws and military statutes (Laughlin AFB 2020; Appendix A).

All records generated during the project were prepared in accordance with 36 Code of Federal Regulations (CFR) Part 79 and Texas Historical Commission (THC) requirements for State Held-in-Trust collections. All project-related materials, including the final report, will be permanently stored at the CAR curation facility, under accession #2352.

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Chapter 1: Introduction

The University of Texas at San Antonio (UTSA) Center for Archaeological Research (CAR), in response to a request from Argonne National Laboratory (Argonne), investigated 13 archaeological sites located on Laughlin AFB in Val Verde County, Texas (Figure 1-1). The project was funded by the U.S. Air Force Civil Engineering Center. The project was conducted in accordance with Section 110 of the National Historic Preservation Act (NHPA; 54 U.S.C. §§ 306101–306107, 306109–306114) which mandates that Federal agencies are responsible for the preservation of historic properties owned or controlled by any given agency, in this case the DAF. Pertinent to this project is the requirement that a Federal agency identify

and evaluate historic properties (King 2008). National Park Service (NPS 2020) guidelines state that this is an ongoing process and may require re-investigation of historic properties previously surveyed. Argonne tasked the CAR with relocating the 13 sites, documenting their locations and boundaries, providing an assessment of their condition, and proposing site stabilization strategies. The information generated by this project will be used in the management of these properties by the Laughlin AFB Cultural Resources Manager (CRM). Dr. Raymond Mauldin, the CAR Interim Director, oversaw all tasks and served as the Project Manager, with Leonard Kemp serving in the role of Project Archaeologist.

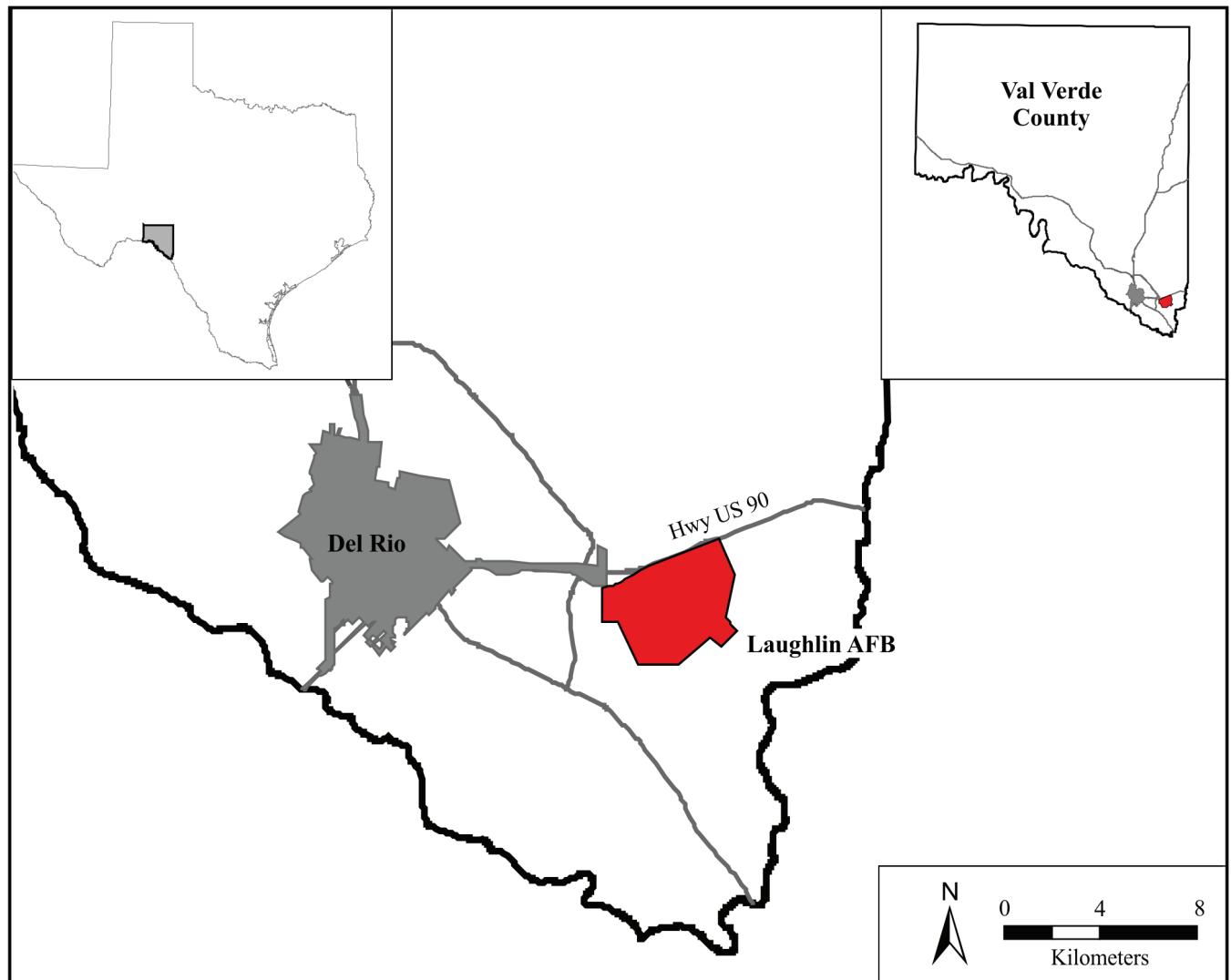


Figure 1-1. Image shows the locations of Laughlin AFB and the city of Del Rio. Insets show the location of Val Verde County in Texas (left) and the location of Laughlin AFB and Del Rio in the southeastern portion of Val Verde County (right).

Previous Archaeological Research at Laughlin AFB

De Vore (1993) conducted the initial survey of Laughlin AFB and recorded four archaeological sites (41VV1652, 41VV1653, 41VV1654, 41VV1655). Site 41VV1652, which consisted of one isolated projectile point, is located just east of base housing in the southeast portion of the facility. Site 41VV1653 is located on the northwestern portion of the base; sites 41VV1654 and 41VV1655 are located on the eastern portion of the base (Figure 1-2). In 1994, a survey by the CAR recorded an additional 10 archaeological sites (Tennis et al. 1996). Sites 41VV1682 and 41VV1683 are located in the northeastern section of the base (Figure 1-2). Site 41VV1684 is located near the center of the base. The remaining seven

sites (41VV1685–41VV1691) are located along east and west terraces of Sacatosa Creek in the southeast extension of the base (Figure 1-2). The 1994 survey also revisited three of the four sites identified by De Vore (Tennis et al. 1996). Site 41VV1652, the isolated find, was not re-investigated by Tennis and colleagues (1996). Following the 1994 survey, the Center for Ecological Archaeology (CEA) at Texas A&M University conducted archaeological testing on 10 of the 13 sites on Laughlin AFB (Dering 1998). These sites were 41VV1654, 41VV1655, 41VV1683, and 41VV1685–41VV1691. Site 41VV1653 could not be relocated and was presumed lost or destroyed (Dering 1998). Texas A&M did not investigate site 41VV1652 nor 41VV1682. The testing resulted in changes to the site boundaries for most sites. In the case of the six sites on the east side of Sacatosa Creek, site boundaries were enlarged to the point that they abutted one other (Figure 1-2).



Redacted Image

Figure 1-2. The 13 archaeological sites on Laughlin AFB on an Environmental Systems Research Institute (ESRI) US topographic map.

2020 Archaeological Investigations

The current field investigation was conducted in two phases. The goals of the first phase were to relocate the 13 previously recorded archaeological sites and to establish photopoints at each site to document site conditions over time. Photopoint monitoring consists of establishing a series of locations from which photographs are taken in specific directions using consistent camera heights (see Munoz 2014). Comparisons of those photos can provide a record of environmental changes and their impacts on an archaeological site (see Munoz 2014). From August 10 through 13, 2020, CAR personnel relocated 11 sites (41VV1653, 41VV1654, 41VV1655, 41VV1683, 41VV1685, and 41VV1686–41VV1691) and established at least one photopoint at each site. Site 41VV1684, a lithic scatter, was not relocated and is believed to have been destroyed during the construction of a gym facility and parking lot. Site 41VV1682 was not located during this first phase. The second phase occurred September 16 to 21, and on September 24, 2020. Site 41VV1682 was relocated and surveyed during this second phase. The CAR surveyed 12 sites using a Transect Recording Unit (TRU) survey method (see Doleman 1988). Quantitative artifact and feature data on 322 TRUs, each consisting of a 3 x 30 m cell, were recorded on the 12 sites. In addition, sites along the east side of Sacatosa Creek (41VV1686 to 41VV1691) were recorded a second time, using a 3 x 15 m TRU cell size. This second survey was undertaken to provide quantitative data that would allow us to assess the effectiveness and efficiency of the TRU method in this setting under similar circumstances. Smaller transects generate finer scale data

but require more time to record. Comparing the results of two different TRU surveys can begin to refine and assess the utility of the TRU recording method.

Report Organization

This report contains six chapters. Chapter 1 is the introduction. Chapter 2 briefly reviews the environmental setting of the southwest Texas region that encompasses Laughlin AFB. Chapter 3 presents a brief culture history of the Lower Pecos River in the prehistoric period and of the historic period of the Del Rio region, as well as a summary of archaeological investigations at Laughlin AFB. Chapter 4 summarizes the field and laboratory methods used in the study to relocate the 13 sites. The chapter also includes the definition and rationale of using the TRU survey method to assess site condition, as well as information on curation. Chapter 5 describes the previous and current archaeological work at the 13 sites. Chapter 6 presents the current site conditions and recommendations for stabilization strategies for Laughlin AFB cultural resources, both overall and site-specific. Chapter 7 summarizes the project, project findings, and recommendations. The document contains two appendices. Appendix A is a copy of Laughlin AFB hunting regulations and guidelines. Appendix B is a photopoint how-to guide for Laughlin AFB personnel to continue photo documentation of archaeological sites on the facility. Appendix C contains the initial CAR photopoint documentation and includes a transcription of the forms and scanned forms. A separate DVD contains the original forms and associated photographs for each photopoint and log.

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Chapter 2: Project Environment and Setting

The project area is located in the southeastern portion of Val Verde County in southwest Texas. This chapter summarizes the modern climate and the environment of the region. The section that follows describes the regional environment, soils, and drainages within the project area. It is followed by a summary of plants and animals found in the region. The final section is a summary of the region's paleoclimate data.

Climate

Val Verde County has a semiarid climate with hot summers and dry winters (Golden et al. 1982). Figure 2-1 shows the average monthly temperatures from 1981 to 2010 for Del Rio International Airport, located 13.5 km west of Laughlin AFB (NOAA 2020). The hottest months of the year are June, July, and August, with an average monthly temperature ranging from 28.8 °C to 30.1 °C. January is the coldest month of the year, with an average monthly temperature of 11.2 °C, followed by December at 11.33 °C.

Rainfall averaged 49.6 cm per year from 1981 to 2010 (NOAA 2020). The region has a bimodal rainfall pattern,

with the greatest amount of rainfall falling in May and June, averaging 13.1 cm during those months over the 20-year period. August through October have the second highest rainfall amount, with an average of 15.5 cm from 1981 to 2010. The driest months are November through February, with an average of 7.9 cm of precipitation over that four-month period from 1981 to 2010 (Figure 2-2).

The region has high interannual variability in both temperature and precipitation due to its location in southwest Texas between the humid east and the drier west, especially in the August through October period (Dering 1998). Droughts are common, with extreme summer heat and cold winters combining to create a marginal environment for intensive land use (Dering 1998:12).

Regional Setting

Laughlin AFB is situated near the intersection of two physiographic regions: the Southern Texas Plains, in which Laughlin AFB is situated, and the Edwards Plateau located

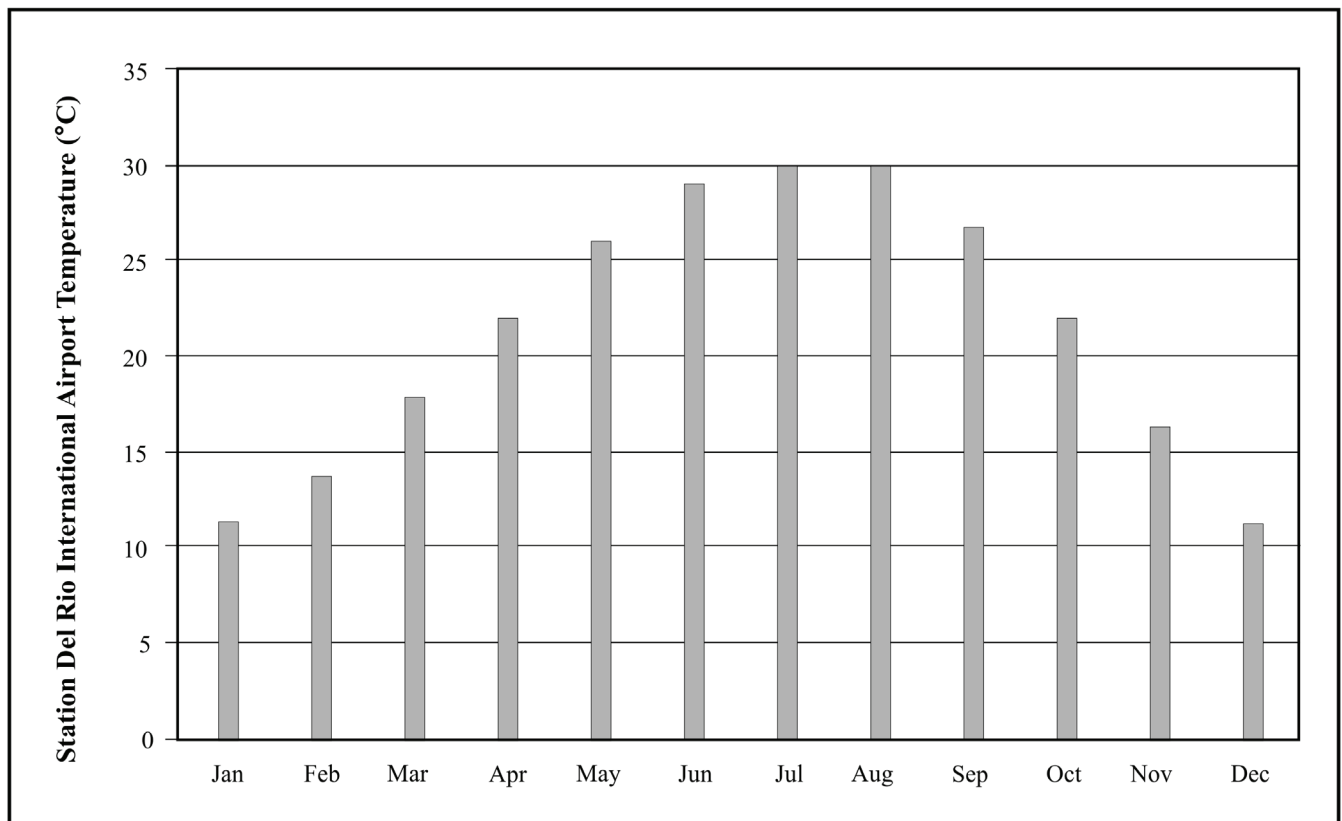


Figure 2-1. The average monthly temperature at Del Rio International Airport based on data from 1981 to 2010 (NOAA 2020).

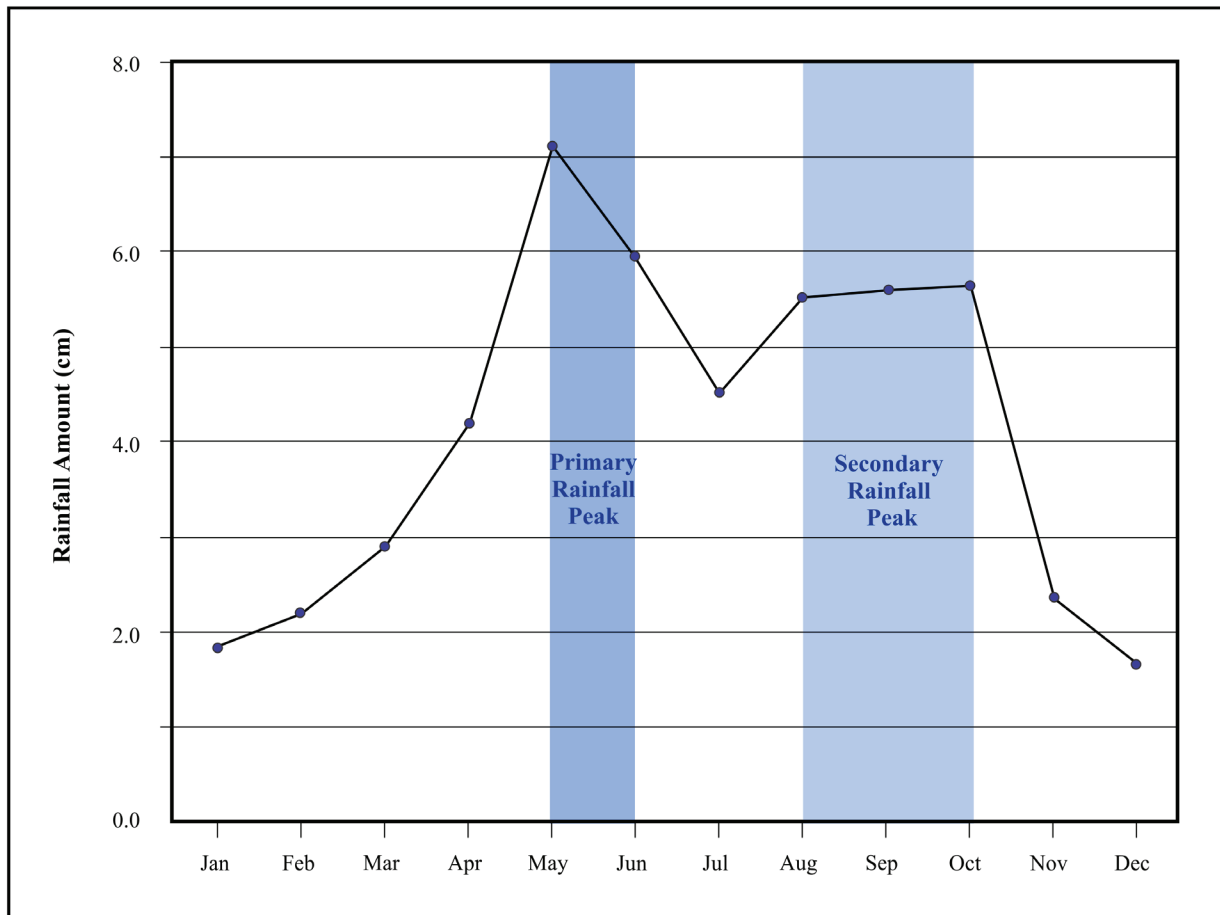


Figure 2-2. The average monthly rainfall based on data from 1981–2010. Peak rainfall occurs in May and June, with a secondary peak in August through October (NOAA 2020).

roughly 30 km to the north (Gould et al. 1961; Figure 2-3). Two major water features are found near the base. The Rio Grande (Rio Bravo) River is located 11 km to the south, and the Armistead Reservoir is 20 km to the west of the base. The reservoir was formed by damming the Rio Grande. The Pecos and Devil's Rivers in the United States and La Zorra in Mexico drain into the reservoir.

More specifically, Laughlin AFB is located in the Semiarid Edwards Bajada (EPA 2020). Alluvial fans and slope wash deposits found below the Balcones Escarpment characterize this sub-region of the Southern Texas Plains. The sub-region contains springs and perennial streams that originate on the Edwards Plateau. San Felipe Springs in Del Rio is one such spring and has the fourth largest flow in Texas (Texas Water Development Board 2018). It supplies potable water to both Del Rio and Laughlin AFB. The landscape changes dramatically west of Del Rio, becoming steep, with narrow canyons and large mesas.

Project Setting

Tennis and colleagues (1996) characterize the terrain of the landform on which Laughlin AFB is located as generally flat

with rolling hills (Figure 2-4). Two intermittent named creeks are located within the base, Zorro Creek in the northwestern portion and Sacatosa Creek along the eastern portion. Both are tributaries to the Rio Grande River to the south. Sacatosa Creek contains multiple *tinajas*, or standing bodies of water. Several *tinajas* were observed during the current survey. Three drainage ponds are located in the southwestern portion of the base. Elevations range from 340 m above mean sea level (amsl) at the center of the base, descending to 320 m amsl along Zorro Creek and 311 m amsl along Sacatosa Creek (Tennis et al. 1996).

The Zapata-Vinegarroon complex, a clay loam and gravelly loam, Acuna silty clay, and Olmos, a very gravelly loam, compose the dominant soils on base. In addition, Coahuila clay loam, Val Verde silty clay loam, and alluvial-derived soils of Pintas clays are found along Sacatosa Creek. Tobosa clays bracket Zorro creek. The archaeological sites reported here are associated with the Olmos, Coahuila, Acuna, Val Verde, Zapata-Vinegarroon, and Pintas soil units.

Tertiary/Quaternary-age Uvalde Gravels are the dominant surface geologic unit found on Laughlin AFB (Dering

1998:9). The Uvalde Gravels are a lag deposit of pebble to cobble-sized chert, quartz, limestone, and igneous nodules found in the uplands of Laughlin AFB. There is an outcrop of Uvalde gravels at 41VV1685, which is characterized as a lithic procurement site (Dering 1998:14). The Olmos-Acuna-Coahuila soil series overlays Uvalde Gravels (Golden et al. 1982: Figure 2-4). These soils are very shallow, shallow, or deep gravelly clayey and loamy soils found on terraces and uplands (Golden et al. 1982).

Flora and Fauna

Flora

Laughlin AFB is within the Rio Grande Plains, a landform composed of two vegetation regimes (Dering 1998). The first is a mesquite-acacia-bluegrass-bristlegrass regime found in the uplands, and the second is a ceniza-creosote regime found along the Rio Grande. With the exception of sites 41VV1682 and 41VV1684, the archaeological sites considered here are in undeveloped portions of Laughlin AFB. Nevertheless, all these sites have been affected to some degree by past base activities

and/or livestock grazing that have impacted the flora. Sites 41VV1653 and 41VV1686 through 41VV1691 are located along drainages with riparian vegetation of huisache (*Acacia farnesiana*), mesquite (*Prosopis spp.*), and hackberry (*Celtis occidentalis*; Dering 1998). Sites 41VV1654, 41VV1655, and 41VV1683 are found on the second terrace of Sacatosa Creek, with mesquite, Texas sage (*Leucophyllum frutescens*), blackbrush (*Coleogyne ramosissima*), hackberry, prickly pear (*Opuntia spp.*), Spanish dagger (*Yucca treculeana*), and other varieties of yucca (Dering 1998). Site 41VV1685 contains low shrubs of Texas sage, green condalia (*Condalia viridis*), javalinabrush (*Condalia ericoides*), and huisache (Dering 1998).

Fauna

Current wildlife recorded on Laughlin AFB (Laughlin AFB 2017) includes white-tailed deer (*Odocoileus virginianus*), coyote (*Canis latrans*), javalina (*Tayassu tajacu*), raccoon (*Procyon lotor*), skunk (*Mephitidae spp.*), cottontail rabbit (*Sylvilagus sp.*), black-tailed jackrabbit (*Lepus californicus*), Virginia opossum (*Didelphis virginiana*), nine-banded armadillo (*Dasypus novemcinctus*), and Mexican ground



Figure 2-3. Physiographic regions and features surrounding Laughlin AFB.

Redacted Image

Figure 2-4. Soil types and water resources associated with the 13 archaeological sites located on Laughlin AFB (Soil data: NRCS 2020).

squirrel (*Ictidomys mexicanus*). In addition to these mammals, the base hosts a variety of avian and reptile species. Species of large animals formerly found in the region include bison (*Bison bison*), black bear (*Ursus americanus americanus*), pronghorn antelope (*Antilocapra americana*), mountain lion (*Puma concolor*), and gray wolf (*Canis lupus*; Schmidly 2004).

Paleoclimate

No high-resolution, comprehensive paleoclimate record of the Lower Pecos region exists. Dering (1998; 2002)

cites multiple proxies to create a generalized paleoclimate chronology. According to Dering (1998), the region was cooler and wetter during the Late Pleistocene than today, as indicated by a greater amount of pine pollen analyzed from alluvial terraces (Bryant 1969; Bryant and Holloway 1985; Dering 1979; Van Devender 1990). Pine pollen decreases after 10,000 BP, suggesting gradual warming conditions (Bryant 1969; Bryant and Holloway 1985; Dering 1979). The warmest and driest climate conditions occurred between 8000 and 5000 BP, based on carbon isotope signatures (Boutton et al. 1994; Nordt et al. 1994; Waters and Nordt 1995). Arid conditions were interrupted by a brief return to

wetter and/or cooler conditions approximately 2,500 years ago, as signaled by the return of bison at the Bonfire Shelter archaeological site (Dibble and Lorraine 1968) and by an increase in arboreal pollen (Bryant and Holloway 1985). The environmental record since that time is ambiguous and contradictory. Patterns in lichen formation suggest a dry period between 1200 and 750 BP, which contrasts with the record in Central Texas that suggests a moister and cooler regime (Dering 1998; Russ et al. 1996).

While the specific paleoclimatic conditions are ambiguous, there are broad patterns in water and food availability that can be suggested. Dering (1998), citing historical accounts, notes that the xeric conditions of the region did not seem to hamper human mobility, as there were numerous springs as well as seasonally abundant food resources. Deer were a large part of the diet, as indicated by faunal recovery at Hind's Cave. Deer were more abundant in the mesic eastern portion of the region (Dering 1998, 1999), while some important plant resources, such as lechuguilla and sotol (*Dasyllirion* sp.), were more abundant in the xeric western area (Dering 1998, 1999; Saunders 1986). Canyons found in the western portion of the region also

provided a variable and productive plant community that included groves of nut-bearing trees (Dering 1998). As noted in the following chapter, a broad-spectrum foraging subsistence system is suggested by dietary studies, which indicate that people of the region consumed large and small animals, birds, fish, reptiles, and a wide variety of plants (Dering 1998:45; Huebner 1991; Sobolik 1988; Stock 1983; Williams-Dean 1978).

Summary

The Laughlin AFB region suffers frequent droughts and extreme temperatures. While the region lies on the southern boundary of the Edwards Plateau within the arid semi-desert scrub of south Texas, there are sources of water, especially on a seasonal basis. Two arroyos, the Zorro and Sacatosa creeks, run through the base, and Sacatosa Creek contains tinajas, which can provide water in times of diminished rainfall. Due to Laughlin AFB's location at the convergence of multiple biotic regions, a variety of plant and animal resources are available. These plant, animal, and water resources allowed hunter-gatherers to survive in this arid environment for over 10,000 years.

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Chapter 3: Cultural History and Past Archaeological Investigations

The culture history encompassing Laughlin AFB can be divided into two components: prehistory and history. Prehistory is defined as the period before written records and is dependent on archaeological interpretations of material culture left by past peoples. History utilizes the written record in conjunction with the archaeological record to construct a historical narrative based on interpretations of these methodologies. Laughlin AFB is located within the boundaries of the Lower Pecos archaeological region as defined by Turpin (2010:39). The cultural chronology of the Lower Pecos is summarized in the first section of this chapter. The proto-historic and historical periods of the Del Rio region are discussed in this second section of this chapter. The third section of this chapter reports on previous investigations at Laughlin AFB.

Prehistory

Initially, Turpin (2004:Figure 8.1) narrowly defined the Lower Pecos region geographically to the canyons of the Pecos and Devil's Rivers and to the northern portion of the state of Coahuila, Mexico. Turpin subsequently (2010:39) enlarged the Lower Pecos region to encompass a 150 km radius centered on the confluences of the Pecos and Rio Grande rivers. This expansion recognized shared cultural traits with the surrounding archaeological regions of central and south Texas, as well as the northern part of Coahuila (Figure 3-1).

The Lower Pecos chronology is divided into three major archaeological periods. The earliest is the Paleoindian Period, which extends from roughly 14,500 to 8500 Radiocarbon Years before Present (RCYBP). This is followed by the Archaic Period (8500 to 1200 RCYBP), the longest of the chronological divisions, and the Late Prehistoric Period, from 1200 to 350/ 250 RCYBP. Each of these periods is further divided into subperiods, based primarily on changes in projectile point forms.

Paleoindian Period

The Paleoindian Period is commonly divided into Early (14,500 to 9800 RCYBP) and Late (9800 to 8500 RCYBP) subperiods. Clovis, Folsom, and Plainview points are diagnostics of the Early Paleoindian subperiod, while Angostura and Golondrina projectile points are common diagnostics of the Late Paleoindian subperiod (Hester 2004; Turner et al. 2011; Turpin 2004).

In the Early Paleoindian subperiod, two sites, Cueva Quebrada and Bonfire Shelter, are associated with the hunting of large mammals. At Cueva Quebrada, the butchered and burned remains of horse, camel, bison, and bear were associated with a small amount of lithics, including a Clear Fork tool (Lundelius 1984). Radiocarbon assays from bone yielded dates of 14,300 to 12,000 RCYBP. However, Black and Dering (2008) suggest that the association between the cultural material and bone is weak and requires further study. In Bone Bed 2 at Bonfire Shelter, Dibble and Lorraine (1968) recovered remains of possible *Bison antiquus* associated with Folsom and Plainview points. Bone Bed 2 represents one of the earliest known examples of a coordinated jump technique for dispatching large herd animals in North America. The mean probability of radiocarbon assays of charcoal place the event(s) between 11,735 to 11,452 RCYBP (Kilby et al. 2021:Table 1).

Turpin (2004) and others (Collin 2004) view the Late Paleoindian subperiod as the beginning of an archaic-like adaptation of hunting smaller game and the increased use of plant foods. Hester (1983:Table 1) obtained radiocarbon dates from a hearth at Baker Cave. The dates were rerun using OxCal v4.4.4 software (InCal 2020) with 2-sigma values of 9020 ± 150 BP and 9180 ± 220 BP or median dates of 10133 ± 150 cal BP and 10380 ± 220 cal BP (Bronk Ramsey 2021). The contents of the hearth contained the remains of 16 species of plants, 11 species of small mammals, 18 species of reptiles, and six species of fish (Hester 1983:Tables 2 and 3). Additional evidence for plant resource use during this period comes from recent analysis of nut fragments from this same site, suggesting that mast resources likely were in use as early as 9140 ± 38 RCYBP (Hanselka et al. 2018).

Archaic Period

The Archaic period is commonly divided into three subperiods designated Early (8500–5500 RCYBP), Middle (5500–4100 RCYBP), and Late (4100–1200 RCYBP). While a general overview is provided below, the reader is referred to more detailed summaries by Hester (1983), Brown (1991), Dering (2002), Turpin and (2004).

Early Archaic

Turpin (2004:270) describes the Early Archaic as the “entrenchment” of what became Lower Pecos Archaic characteristics. This includes a preference to inhabit rockshelters, spatial division for specific tasks, and the

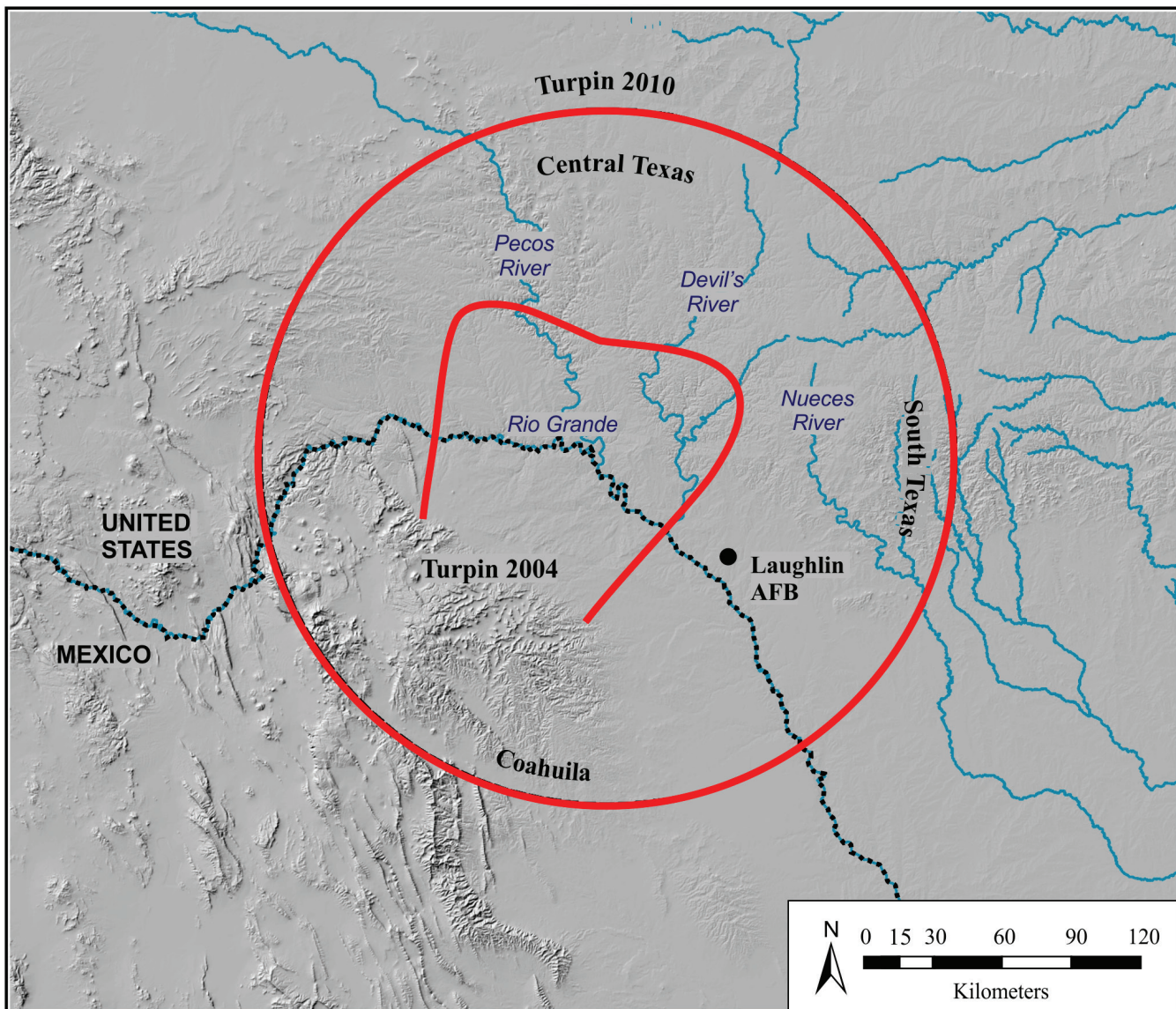


Figure 3-1. The two Lower Pecos regional boundaries defined by Turpin (2004, 2010).

ongoing use of earth ovens to process sotol and agave for food as well as fiber for clothing, sandals, matting, and twine (Turpin 2004:269–270). Diagnostic dart points include the Early Corner-Notched, Early Stemmed, and Early Barbed, as well as the Baker and Bandy point types. Turpin (2004) suggests that the Devil's Triangular point is a regionally specific dart point and is another cultural link to northeastern Mexico.

One mortuary site, Seminole Sinkhole, dates to this subperiod and contained the remains of 21 individuals (Turpin 1988). Turpin (1988) postulates that the common deposition of mixed age groups and genders of these individuals suggest an egalitarian hunter-gatherer society where old and young, male and female are treated similarly after death. Turpin (1988) further states that the sinkhole was used only over a short period and that it indicated “control” of Seminole Canyon by a single group.

Bousman and Quigg (2006) analyzed the stable carbon ($\delta^{13}\text{C}$) isotopic signature of collagen from seven individuals from Seminole Sinkhole dating to the Early Archaic. They found that carbon signatures derived from collagen were varied and ranged from -13.2 to -18.4‰ (Bousman and Quigg 2006:Table 1). They suggest that this difference may reflect exogamous mate exchange in which the individuals with lower $\delta^{13}\text{C}$ came from outside the area (Bousman and Quigg 2006:135).

Middle Archaic

The beginning of the Middle Archaic Period is marked by an increase in the processing of a variety of succulents such as lechuguilla, sotol, and yucca, as indicated by the large accumulation of earth oven remains found in rockshelters (Brown 1991; Dering 1999; Turpin 2004). Dering (1999)

reports two competing models to account for the earth oven phenomenon. These divergent views result in differing interpretations of population aggregation and mobility (Dering 1999; Shafer 1986; Turpin 1995, 2004). The first view describes “earth-oven resources as desert bounty,” with succulents viewed as a resource whose use can be intensified (Brown 1991). The second view describes “earth oven resources as a response to subsistence stress” caused by the overuse/depletion of other resources (Dering 1999:668). In this second view, these slow-growing succulents are costly to process relative to caloric return and can be quickly depleted (Dering 1999). In either view, processing produces large volumes of fracture rock, creating an “illusion” of increased plant use due to the high archaeological visibility of earth ovens (Dering 1999:671).

One of the hallmarks of the Middle Archaic in the Lower Pecos region is the appearance of large-scale, complex, and polychromatic pictographs in rockshelters, termed the Pecos River style (Boyd 2003; Turpin 2004). This imagery includes anthropomorphic figures with animal features holding sticks, atlatls, and plants. In addition to pictographs, localized point styles—including Pandale, Langtry, Val Verde, and Arenosa—begin to emerge (Turpin 2004).

Late Archaic

The Late Archaic begins with a brief return to more mesic conditions and the reintroduction of bison into the archaeological record. At Bonfire Shelter, Late Archaic bison component remains date to 2500 to 2780 RCYBP (Dibble and Lorraine 1968; Turpin 2004). Bison bone is also found at Eagle Cave, Castle Canyon, Arenosa Shelter, and Skyline Shelter in approximately the Late Archaic-dated strata (Turpin 2004). Dart points typical of central Texas, such as Marshall, Castroville, and Montell, are found at the site, suggesting some interaction between the Lower Pecos and central Texas regions due to the presence of bison (Turpin 2004).

Turpin (1984; 2004) dates the Red Linear pictograph style to the Late Archaic period based on bison hunting scenes and suggests that an outside group may have brought the style to the region, due to the stylistic differences between it and the Pecos River style. The Red Linear style is characterized by animated, monochromatic red, miniature stick figures engaged in group activities such as hunting deer or bison, in conflict scenarios between groups of warriors, or in reproductive or ritual scenarios (Turpin 1984; 2004).

Boyd and colleagues (2013) found in an analysis of 444 Red Linear images from 12 sites that the style is more diverse than assumed previously and may date earlier than

proposed by Turpin. They suggest that the Red Linear style is not monochromatic but polychromatic of yellow, red, and black. In addition, Boyd and colleagues (2013) also argue, based on the superimposition of Pecos River style over some Red Linear style figures, that the two styles may be contemporaneous. Ultimately, Boyd and colleagues (2013) argue that the two different styles may not reflect cultural differences but may be a functional matter and/or gender-related.

Shumla dart points are indicative of the middle portion of the Late Archaic, roughly 2,300 RCYBP. There is a return to more arid conditions during this subperiod, with Turpin (2004) assuming a possible return to past subsistence practices. The end of the Late Archaic is marked by greater interaction with central Texas, as indicated by the increase of Frio and Ensor style points in the Lower Pecos (Turpin 2004).

Late Prehistoric

The lack of stratified Late Prehistoric components and associated radiocarbon dates creates confusion as to the age of this period; however, the period generally dates from 1200 BP to 350–250 BP (Turpin 2004:274–277). The period is characterized by multiple changes in technology, settlement patterns, mortuary practices, and rock art (Black and Dering 2008; Turpin 2004). Turpin (2004) speculates that these changes are the result of migration(s) into the region. The adoption of the bow and arrow—and point styles that included Scallorn, Toyah, Perdiz, and Livermore—occurs during this period (Black and Dering 2008). Ring or crescent-shaped middens dating to the Late Prehistoric are found in upland settings. Brown (1991) suggests that their use is tied to plant availability and firewood.

Two radically different art styles date to this period. The Red Monochrome style consists of static, front-facing, life-sized human figures and animals painted in red (Turpin 1986a). Figures are sometimes depicted with bow and arrow, while arrows impale other figures. The Bold Line Geometric style is the second of the pictograph styles (Turpin 1986b). Abstract compositions include zigzag lines, herringbones, cross hatching, and diamond shapes creating a blanket-like pattern (Turpin 1986b).

Historic Period

The chronology of the historic period is divided into four subperiods. The first is the proto-historic period, which overlaps with the Late Prehistoric and early Spanish contact periods. The second subperiod encompasses the Spanish and

then Mexican presence within the region, beginning in the 1700s and stretching to the 1840s. The Mexican-American War (1846–1848), which resulted in the establishment of American sovereignty over the region and fostered sustained regional development, comprises the third subperiod. The final subperiod consists of the modern period from the early twentieth century to World War II and includes the creation of Laughlin Army Air Field (now Laughlin AFB). General information on the historic period can be found in Dering (1998), Krapf and colleagues (1994), Mehalchick and colleagues (1999), and Tennis and colleagues (1996). Figure 3-2 shows significant locations discussed in the following sections.

Proto-historic Period

Both Spanish movement to the north and Plains Indian migration to the south resulted in the displacement of multiple indigenous ethnic groups of the Lower Pecos region. Proto-historic sites are scarce and often lack temporal diagnostics and radiocarbon dates (Turpin 2004:277–279).

Turpin (2004:279) identifies this as a period of social unrest, with increased mobility providing a means of survival. The archaeology of this period is represented by rock art sites that contain images of horses or Plains Indian style motifs (Turpin 2004:278). Material culture includes metal projectile points and tipi rings (Turpin 2004:278).

Spanish and Mexican Period

The first Spanish expedition to cross through or near present-day Del Rio was an unofficial entrada by the Lieutenant General and Captain General of Nuevo León, Gaspar Castaño de Sosa, in 1590 (Chipman and Joseph 2010:55). Beginning in the 1670s, the Spanish began to explore the Rio Grande region that included the Lower Pecos. In 1699, the mission and presidio complex of San Juan Bautista was founded approximately 85 km to the southeast of Del Rio (Weddle 1991). Krapf and colleagues (1994:27), citing Perkins (1954), suggest that the Bosque-Larios expedition of 1675 may have founded a mission at the San Felipe Springs (Del Rio). Dering (1998:54), citing Habig (1976), Leutenegger

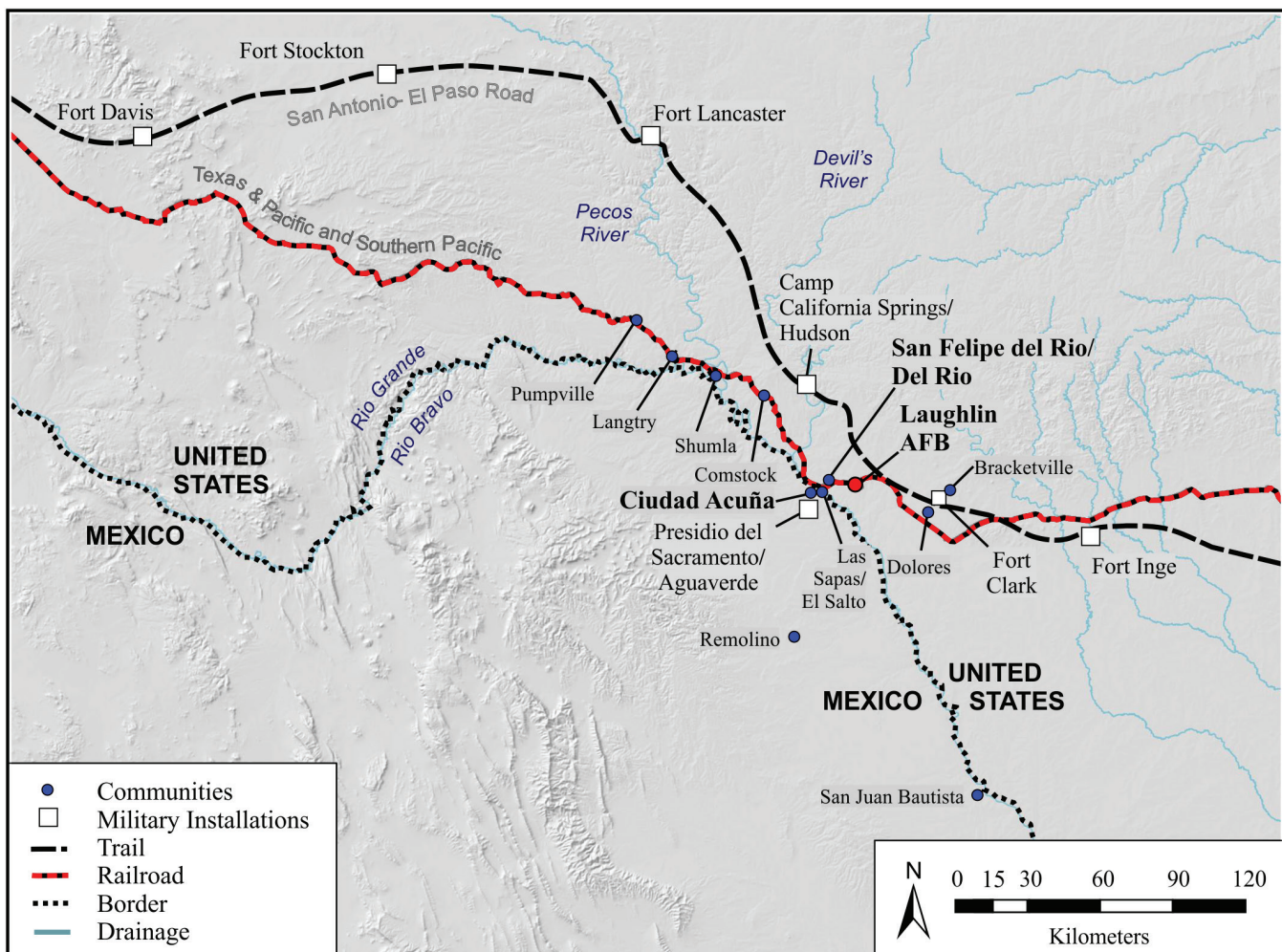


Figure 3-2. Historic communities, military installations, trails, and the railroad in the Del Rio region.

(1975), and personal communication with Turpin (1977), states that there is no evidence for a seventeenth-century mission at Del Rio. Wade (2003:47) asserts that the Bosque-Larios expedition merely crossed the Rio Grande some 15 miles south-southwest of Del Rio.

In 1729, an unsuccessful exploration of the region led to a later expedition by Coahuila Governor Blas María de la Graza Falcón (Dering 1998:54). This expedition resulted in the founding of the short-lived Presidio del Sacramento (1736) south of present-day Ciudad Acuña (Dering 1998:54). The presidio existed for possibly two or three years before it was closed and relocated (Dering 1998:54).

Given the lack of success, the Spanish described the region as *despoblado*, an inhospitable and barren place inhabited by hostile Native peoples who not only prevented settlement but also curtailed travel and communication (Daniel 1968). It was not until the Royal Regulations of 1772 that the Spanish attempted to settle the region with a line of presidios in the present-day northern Coahuila state (Turpin and Eling 2018). The regulation allowed a presidio, which was known as Presidio de Aguaverde, to be reestablished along the San Diego River in 1773 (Turpin and Eling 2018). In 1775, the Spanish began a campaign against the Apache with Aguaverde serving as headquarters for the operation. Ultimately, the campaign was successful, and the presidio was decommissioned in 1781 (Turpin and Eling 2018:1).

The region remained unsettled into the early nineteenth century. In the early 1800s, a small community called “Las Sapas” or “El Salto” was established at the mouth of the San Felipe River and the Rio Grande (Tennis et al. 1996:94). Tennis and colleagues (1994) describe it as simply a stopping place for migrants from Mexico to Texas. In 1821, the Mexican revolt that began in 1810 achieved independence from Spain. In 1824 and 1825, Mexico passed colonization laws that aimed to populate the Texas region. While no land grants were made specific to the Del Rio region, John Beales was commissioned to settle 8 million acres with 800 families in two areas of south Texas (Estep 2020). Ultimately, only one settlement was created: the village of Dolores, with 59 settlers in 1833 (Tennis et al. 1996). It was located on Las Moras Creek, seven miles west of Brackettville in present-day Kinney County, approximately 22 km west of present-day Laughlin AFB (Tennis et al. 1996). The village was subject to raids by Native peoples as well as drought, leading it to its abandonment during the Texas Revolution (Tennis et al. 1996).

Republic of Texas through the Late Nineteenth Century

The Republic of Texas was founded in 1836 following its successful revolt from Mexico. In its nine years of

existence, the Republic passed laws granting lands to Texas Independence veterans and settlers to create a viable populace and to raise funds to finance its operation. In 1845, land grants were issued that included the present-day city of Del Rio and the surrounding area (Tennis et al. 1996). In general, lots in this region were orientated to the creeks and Rio Grande to provide access to water for the developing cattle ranches.

The U.S. annexation of Texas was one of the causes that led to war with Mexico beginning in 1846. The Treaty of Guadalupe-Hidalgo (1848) ended the Mexican-American War, ceding Mexican territory to the United States and defining the border between Texas and Mexico. The Whiting and Smith Expedition of 1849 explored and surveyed the border, including the current project area, to create a commercial and military route between San Antonio and El Paso (Leatherwood 2016). As a result, the region began to grow more active because of the expanding western frontier.

U.S. and Mexican authorities created several forts and presidios along the west Texas border to protect settlers and travelers from Comanche, Lipan Apache, and bandit attacks. Mexican forces reactivated the Aguaverde presidio in 1851; the presidio was operational until 1853 (Turpin and Eling 2018:17). The main U.S. Army installation, Fort Clark, was created in 1852 near Brackettville (Smith 2000:59). The U.S. Army had already built Fort Inge (1849) to the east of Fort Clark in 1849 (Smith 2000:68). The army continued to build frontier installations through the 1850s, including Fort Davis (1854), Fort Lancaster (1855), and Fort Stockton (1859; Smith 2000:62, 70, 85). The army also built temporary camps, such as Camp California Springs in 1854 on the San Antonio–El Paso Military Road at the second crossing of the Devil’s River (Smith 2000:67–68). In 1857, there was a surge of hostilities between the army and the Comanche, resulting in the reactivation of the military outpost on the Devil’s River then known as Camp Hudson (Smith 2000:67–68).

In February of 1861, Texas voted to secede from the Union resulting in the surrender of U.S. military installations to Confederate forces the same year. This action resulted in the near-abandonment of most forts and camps in the region for the duration of the Civil War. Camp Hudson was an exception. The camp was occupied by Confederate forces in 1861 to guard the San Antonio–El Paso Road, a major military route to the territory of New Mexico (Krapf et al. 1994:47).

Following the war, the U.S. Army reoccupied Fort Clark in 1866 to curtail raiding, cattle rustling, and banditry (T. Smith 2021). The Kickapoo and their allies, the Lipan and Mescalero Apache, were the main antagonists. These tribes had settled in northern Coahuila under the auspices of the Mexican government. The U.S. Army reinforced the region

beginning in 1868 with the newly formed all-Black soldiers units, the Ninth and Tenth Cavalry regiments, and the paramilitary unit known as the Black Seminole Scouts (T. Smith 2021; Tate 2020). In 1873, Colonel Ranald Mackenzie led five companies of the Fourth Cavalry against the Kickapoo and Lipan near Remolino, Coahuila (Hamilton 1995). The military expedition, coupled with border patrols, effectively brought peace to the region (Hamilton 1995).

As noted in the previous chapter, the San Felipe springs provided abundant and clean water in the desert environment. In 1868, the community of San Felipe del Rio was settled downstream from the springs on San Felipe Creek (Tennis et al. 1996). Also in 1868, James Taylor, Joseph Ney, Surgeon Donald Jackson, A.O. Strickland, Randolph Pafford, and W.C. Adams (considered to be the founders of Del Rio) formed the San Felipe Agricultural Company to develop an irrigation system to create viable farmlands (Tennis et al. 1996:95). The population of San Felipe numbered 160 individuals in 1870 (Krapf et al. 1994:48). Despite the small population, there were enough children to form a school in 1874 (Krapf et al. 1994:48).

The widow of James Taylor, Doña Paula Losoyo Taylor de Rivera, was instrumental in developing the growing community by building a sugar cane mill, a candy factory, a flourmill, and a cotton gin (Tennis et al. 1996:94). In 1875, the Ninth United States Cavalry established a temporary camp at the springs of San Felipe (T. Smith 2021). Just south of the Rio Grande border, settlers began to settle what would become Ciudad Acuña in 1877 (Braudaway 2002:72). The Post of San Felipe Springs was created the following year and was occupied by the Tenth U.S. Cavalry (T. Smith 2021). In 1883, a post office was established in San Felipe, and the town name was shortened to Del Rio (Overfelt 2019). The post was changed to Camp Del Rio following the name change (T. Smith 2021).

The Del Rio region began to develop in earnest in the 1880s. In 1883, the Texas and Pacific Railroad and the Southern Pacific Railroad joined near the Pecos River with a stop in Del Rio. Brackettville was bypassed, resulting in a population decline and migration to Del Rio (Krapf et al. 1994:52). New towns and villages were created to service the railroad, including Comstock, Shumla, Lantry, and Pumpville (J. Smith 1994, 1995a, 1995b, 2019). The railroad created a boom market for land as well as for the transportation of products from the region. In 1885, Val Verde County was created from Crockett, Kinney, and Pecos counties, with Del Rio as the county seat (Texas Almanac 2010).

In 1890, the county supported 47 ranches and farms, and by the close of the century, the number of ranches and farms had tripled to 152 (Mehalchick et al. 1999:40). Many of

these ranches and farms were cattle- based, but shifted to sheep and goat due to the environmental constraints of water and grass, as well as the to the profitability of wool and mohair. European investors, spurred by the profitability of sheep ranching, created agencies to settle open lands with English, Irish, and Scot sheep ranchers (Krapf et al. 1994:53).

By the late nineteenth century, Del Rio had developed a diverse economy of retail and professional businesses. It was the largest city on the railroad between El Paso and San Antonio and served as a regional commercial hub, as well as being the seat of government. In the first U.S. Census of 1890 that included Val Verde County, the population numbered 2,874, with the population almost doubling to 5,263 in 1900 (Texas Almanac 2010).

Del Rio: 1900 to 1945

By 1900, Del Rio had developed the qualities of a modern city, including electric and telephone services (Mehalchick et al. 1999:41). In 1905, the first record of municipal government of Del Rio is recorded in council minutes, with water dominating the agenda (Mehalchick et al. 1999:41). The Del Rio Water Company was formed with the mission to expand service, install fire hydrants, and create water works plants (Mehalchick et al. 1999:41). In 1909, the first automobile dealership was formed, selling the Maxwell 2-cylinder model (Tennis et al. 1996:105). In 1915, the Texas Sheep and Goat Raiser's Association was founded and held its first conference in Del Rio, suggesting the significance of the Del Rio regional market in the state (Tennis et al. 1996:105).

The military retained a strong presence in the Del Rio region during this period. Fort Clark remained an active military installation until the middle of the twentieth century, and while Camp Del Rio closed in 1891, it reopened in 1907 (T. Smith 2000:59; T. Smith 2021). The largest contingent of military personnel, numbering 844 soldiers and 30 officers, occupied the base from 1916 to 1917 (T. Smith 2021). The troop increase is attributed to conflict due to the Mexican Revolution and military buildup for World War I. In 1919, Del Rio was selected as a stop for military airplanes used to reconnoiter the U.S.-Mexican border between Brownsville, Texas, and Nogales, Arizona (Krapf et al. 1994:62). In June of 1921, Camp Del Rio was closed again, although many soldiers continued to live in the area (Krapf et al. 1994:62; T. Smith 2021).

In the decade from 1910 to 1920, the population of Del Rio grew by 46% to 12,706 individuals (Mehalchick et al. 1999:43). Del Rio is described as a post-World War I

boomtown (Mehalchick et al. 1999:43). Dering (1998:64) states that improved breeds of cattle adapted to the arid environment spurred the development of markets in Coahuila and northern Mexico. By 1921, Del Rio had become one of the state's leading sheep producers, selling wool, lamb and mutton (Mehalchick et al. 1999:41; Tennis et al. 1996:105).

The Zacatosa Ranch (41VV1682) was one of the profitable sheep ranches begun during this period; it was acquired by the U.S. Government in 1942 in the parcel that would become Laughlin AFB. George (father) and Gilbert (son) Marshal leased 15,000 acres that formed the ranch from R.A. Harrison in 1921 or 1922 (Tennis et al. 1996:110). The ranch raised Rambouillet sheep, a breed known for its high-quality wool, and which was also a source of meat. In addition, the ranch produced goats and cattle, and food crops of barley, corn, and oats.

The development of automobiles and improved highways led to city leaders promoting Del Rio as a tourist destination (Mehalchick et al. 1999:44). Printed brochures promoted its climate, golf course, and country club (Mehalchick et al. 1999:44). Lake Hamilton and Lake Walk were created by damming portions of the Devil's River in 1928 and 1929, respectively (J. Smith 2020). The dams were built to store water for power and for recreation (J. Smith 2020). In 1929, an international bridge was built to connect to Ciudad Acuña, further promoting tourism and economic ties between the two cities (Mehalchick et al. 1999:44).

While the Great Depression certainly affected private investments in Del Rio and Val Verde County, public projects, specifically those under the auspices of the Relief Works Administration (RWA) and Works Project Administration (WPA), helped curtail unemployment and improved daily life (Mehalchick et al. 1999). These projects included road and bridge infrastructure, a new water plant, a sewer system, and water mains (Mehalchick et al. 1999:44).

The beginning of World War II created a boom market for agriculture and livestock, with the Del Rio region reaping economic benefits. The U.S. entry in the war in December 1941 led to the creation of the Del Rio Bombardiers Training Facility in July 1942 (Tennis et al. 1996:115). The base encompassed 3,862 acres of the former Zacatosa Ranch (41VV1682) that abutted U.S. Highway 90 and the railroad six miles east of Del Rio (Tennis et al. 1996:115). The installation trained pilots for the Martin Marauder B-26 medium bomber and the Douglas A-26 Invader light bomber (USAAF 1943). In March of 1943, the base was renamed Laughlin Army Air Field for Lt. Jack T. Laughlin, the first casualty from Del Rio killed during World War II (Leatherwood 1995).

Following the war, the base was deactivated in October 1945. However, the deactivation was short-lived, and the base was reactivated in 1952 during the Korean War (Laughlin AFB 2017). It was also designated as Laughlin AFB under the Air Training Command. In 1957, the base was assigned to the Strategic Air Command, serving as a base for U-2 high-altitude reconnaissance planes (Laughlin AFB 2017). In 1962, Laughlin AFNB was reassigned to the Air Training Command, implementing an undergraduate training program (Laughlin AFB 2017). Beginning in 1970 to the present day, the 47th Flight Training Wing has been based at Laughlin AFB, tasked with training U.S. Air Force pilots (Laughlin AFB 2017). Since 1979, pilots from coalition nations are also trained at Laughlin AFB (Laughlin AFB 2017).

Past Archaeological Investigations

Past investigations of Laughlin AFB have demonstrated that several aspects of the Lower Pecos chronology, briefly outlined above, are reflected in the prehistoric archaeological record on the base. The 12 prehistoric sites recorded on the installation include burned rock features and scattered chipped stone that indicate use of the area from the Late Paleoindian through the Late Prehistoric period. Two historic components found on the base include 41VV1682, the Zacatosa Ranch, and three historic features associated with 41VV1654. Laughlin AFB was built on the Zacatosa Ranch and was first used by the US Army Air Corps (Tennis et al. 1996). Except for a brief period following World War II, the base has been in continuous use by the DAF since the 1950s.

Steven De Vore of the NPS conducted a limited investigation in July of 1993 of areas known to have archaeological resources (De Vore 1993). He also reported on the archaeological potential at the leased Amistad Recreational Area Marina and an Auxiliary Airfield in Spofford, Kinney County, Texas (De Vore 1993). Four sites, 41VV1652 through 41VV1655, were documented on the main base. Site 41VV1652 consisted of a non-diagnostic projectile point. Site 41VV1653 was described as a lithic processing center. Site 41VV1654 was described as a lithic quarry site and 41VV1655 as a quarry site or lithic processing site (De Vore 1993). All four sites were recommended for further study. As De Vore had focused his work on the main base, he suggested a complete base survey should be implemented, excluding highly impacted areas such as runways, the golf course, the sewage disposal ponds, and two gravel pits (De Vore 1993).

The CAR was contracted by NPS to conduct a 100% survey of Laughlin AFB and its marina at Amistad Reservoir, which was undertaken in April and May of 1994. The CAR revisited three of the four sites recorded by De Vore and documented 10 new sites. Site 41VV1652 was not relocated. In addition,

to the archaeological survey, Tennis et al. (1996:Figure 2-1) conducted a geoarchaeological investigation to assess the potential for intact archaeological deposits. These areas were along Sacatosa Creek in the eastern portion of the base, Zorro Creek in the northwest portion, and two unnamed drainages in the southcentral section of the base.

The CAR recorded 11 sites as having only prehistoric components (sites 41VV1653, 41VV1655 and 41VV1683–41VV1691; Tennis et al. 1996). Four of the prehistoric sites contained temporal diagnostics artifacts, ranging from Late Paleoindian through the Late Archaic periods. Documented features included FCR scatters, clusters, and hearth remnants. Site 41VV1654 was recorded as having both prehistoric and historic components (Tennis et al. 1996). One site, the Zacatosa Ranch Headquarters (41VV1682), consists of early to mid-twentieth foundations remnants and artifact scatters. Tennis and colleagues (1996) recommended that, of the 13 sites, all but two (41VV1682 and 41VV1684) were eligible for inclusion in the NRHP.

In May and June of 1996, Texas A&M University's CEA conducted a review and testing project focused on the 11 sites recommended as eligible for the NRHP by the CAR. Subsurface testing was conducted on 10 of these sites, with forty-five 1 x 1 m units and five backhoe trenches excavated. Site 41VV1653 was not relocated by the CEA. Based on the CEA's excavation data, surface collections, site observations, and radiocarbon dates, the CEA suggested that four of the sites are eligible for NRHP listing (Dering 1998). These are 41VV1688, 41VV1689, 41VV1690, and the northern portion of site 41VV1654 (Dering 1998). This recommendation was based on the sites' potential to address regional research questions concerning the use of

upland landscape. The sites are characterized as having sufficient artifact assemblages, radiocarbon dates, and/or temporal diagnostics in deposits with some degree of integrity. The remaining sites—41VV1655, 41VV1683 through 41VV1687, and 41VV1691—were recommended as not eligible for inclusion to the NRHP, as they were considered highly deflated and lacking in temporal diagnostics and/or datable material. In addition to these eligibility determinations, the CEA recommended multiple changes to the site boundaries, with most sites increasing in size (Dering 1998:132).

Summary

Archeological sites found on Laughlin AFB fall within the extended boundary of the Lower Pecos culture area. The base contains 11 prehistoric sites classified as open sites with burned rock and/or chipped stone. Diagnostic artifacts often found on or just below the surface suggest that people from the Late Paleoindian through the Late Prehistoric period have used the Laughlin AFB area. Tennis and colleagues (1996) defined one site, 41VV1654, as having both prehistoric and historic components. The base contains one historic site, 41VV1682 (Zacatosa Ranch), an early to mid-twentieth century sheep ranch. Following the survey by the CAR and testing by the CEA, sites 41VV1688, 41VV1689, 41VV1690, and portions of site 41VV1654 were recommended as eligible for listing in the NRHP. Site 41VV1653 was not relocated by CEA during their investigation and was recommended as eligible for listing in the NRHP by the CAR. The remaining sites (41VV1655, 41VV1682 through 41VV1687, and 41VV1691), were recommended as not eligible for listing in the NRHP.

Chapter 4: Field and Laboratory Methods

The Integrated Cultural Resources Management Plan (ICRMP) for Laughlin AFB (2017) identified cultural procedures and goals to facilitate base planning and establish an effective environmental review process. The first two goals were the identification and evaluation of known cultural resources, and the development of procedures that would ensure that these resources were preserved and protected from human and natural impacts. The CAR prepared a work plan focused on assessing the condition of the archaeological sites on Laughlin AFB in response to the Argonne solicitation. This chapter reports on the field and laboratory methods used in pursuit of those tasks, including discussions of curation and reporting requirements. All work at Laughlin AFB was conducted between July and September of 2020.

Field Methods

Prior to the beginning of fieldwork, the CAR project archaeologist reviewed extant literature about past archaeological investigations at Laughlin AFB (e.g., Dering 1998; De Vore 1993; Laughlin AFB 2017; Tennis 1996) and in the Del Rio area (e.g., Dering 2002; McCuiston 2019). This review facilitated the creation of site-specific information packets used in field documentation. In addition to the literature review, CAR curatorial records were consulted for information not included in the previous cited reports, including field maps, site photographs, artifact lists, and data on site vegetation. Geographic Information System (GIS) data were created from these records and from those of the Texas Archaeological Sites Atlas (THC 2020) and were uploaded onto global positioning system (GPS) units.

Fieldwork began with a kickoff meeting at Laughlin AFB with the Laughlin AFB CRM, Mr. Danny Yandell. The meeting was conducted to familiarize the CAR project archaeologist and the project manager with base layout, operating procedures, and critical contacts. During that July 2020 meeting, CAR personnel, accompanied by Mr. Yandell, visited several sites.

Site-level work consisted of two phases. The first phase focused on site relocation and the establishment of photopoint documentation locations, while phase two focused on data collection from sites. The principal concern of the initial phase was that a site might not be found, as was the case when the CEA failed to relocate site 41VV1653 only a few years after it was initially recorded

(Dering 1998). The CAR was also concerned that a site would be misidentified, since the accuracy of the GPS data collected in the early 1990s was questionable, and artifact assemblages often lacked distinct artifact or feature characteristics. Nevertheless, during the first phase, 11 of the original 13 sites were relocated with a high degree of confidence using field maps from the CAR's curation records, in combination with GPS points, fence lines, and units from CEA testing that could be identified at several sites. Sites 41VV1684 and 41VV1682 were not relocated. In the case of 41VV1684, a small lithic scatter, it is likely that the site has been destroyed, as a gym and other buildings have been constructed at the recorded location of 41VV1684. For purposes of discussion in this chapter, the site will still be referenced, though it is likely destroyed. Site 41VV1682, the Zacatosa Ranch Headquarters, was not relocated during this initial phase and initially was presumed destroyed. However, after a review of high-resolution aerial photographs provided by the base, the site was relocated during the subsequent phase.

After a site was relocated, the CAR established a series of photopoints to facilitate its documentation (see Britt 2005). The CAR has used this system at multiple Texas Military Department facilities to record changes in the landscape in an objective and consistent manner (Munoz 2014). The process uses a digital camera mounted on a monopole placed on top of an aluminum-tagged photo datum (i.e., rebar) with its location documented by a GPS. Rebar photopoints were established on 12 of the 13 sites. At the thirteenth site, 41VV1684, which is presumed to have been destroyed by construction, a single photopoint was established on a cast-iron water-valve box, because this area has a high frequency of pedestrian traffic. Once established, CAR archaeologists took a series of photos from the point facing toward the cardinal directions, as well as toward other directions as deemed necessary to record the surroundings. A series of pertinent attributes were recorded on a standardized form, including the date, cloud cover, GPS coordinates, the height of the photopoint datum, the monopole height, the compass direction of the photos, and a description of each of the photos. In all, 29 photopoints were established at the 13 sites. These initial photopoints established at Laughlin AFB will serve as a baseline for subsequent documentation of physical changes to a site from year to year or over a multi-year period. Additional photopoints can be added if a need for documentation of new areas of concern arises, such as cases of vehicle damage, looting, or new erosional impacts.

The second, or site documentation phase, was conducted from September 16 through September 21, and on September 24, 2020. Sites documented included 41VV1653, 41VV1654, 41VV1655, 41VV1682, 41VV1683, and 41VV1685–41VV1691. The CAR used a Transect Recording Unit (TRU) survey method to document each site. This method was established at Fort Bliss and the White Sands Missile Range in the mid-1980s (see Doleman 1988). The approach strives to document all surface assemblages and features within a predefined spatial unit, a TRU cell. The method allows researchers to analyze the distribution of different artifact classes or a combination thereof, as well as to create and change site boundaries based on different criteria (see Mauldin et al. 1997). Dering (1998) used a similar method, described as a characterization unit (CU) and a transect unit (TR), to record Laughlin AFB sites. The CU and TR methods used pre-defined, pin-flagged areas within which all artifacts were identified (Dering 1998:76). Diagnostics were then mapped with an electronic distance measuring transit (Dering 1998:76).

For this survey, the CAR initially defined TRUs as measuring 3-x-30 m with two to six transects per site, depending on site size. Transects were designed to run parallel to each other. Within each TRU, the number of artifacts present at the class level (e.g., debitage, chipped stone tools, FCR, ground stone, metal artifacts, glass, ceramics, etc.), as well as observations on surface visibility and natural or cultural impacts, were to be recorded on a paper form. All features or artifacts with chronological potential within the TRUs were to be documented with a digital camera. No artifacts were collected. However, during the site relocation phase of the investigation, CAR archaeologists observed that crew access at sites 41VV1654 and 41VV1683 was limited by dense vegetation. Parallel transects would have been extremely time-consuming, given the need to cut multiple paths through these two sites. Consequently, on August 25, the CAR proposed to Argonne a modification of the

TRU survey method for 41VV1654 and 41VV1683. Using a 2018 high-resolution aerial image of Laughlin AFB, the CAR identified multiple game trails and other open corridors on these sites. The CAR proposed that these open trails could be surveyed in 3 x 30 m segments equivalent in area to the TRU cell size used on other sites. The revision, approved by Argonne in early September 2020, provided artifact and feature density that is roughly comparable to the original proposal and to the other sites, although the revision lacks the linearity and regular spacing of parallel TRU transects.

Table 4-1 provides a summary of the proposed TRU sampling for each of the surveyed sites. Due to their small size and proximity, sites 41VV1686 through 41VV1691 were investigated as a single entity. Dering (1998) also treated these six sites just to the east of Sacatosa Creek in a similar manner. The TRU data were supplemented by digital photographs of site setting, features, and diagnostic artifacts. These observations are broadly comparable to earlier descriptions (i.e., Dering 1998; Tennis et al. 1996) and will be useful for comparison as well as for providing data on conditional assessment and stabilization strategies.

Finally, note that following the completion of the initial TRU survey, the CAR conducted a second TRU survey using these same six sites (41VV1686 through 41VV1691). TRU cell size was reduced to 3 x 15 m, resulting in 108 TRUs. To the degree possible, the original transects were re-walked by the same surveyor. This was a methodological exercise done to compare the level of observation of the larger and smaller TRU cells. While the TRU method has been used with success in similar desert settings (see Doleman 1988), use of particular parameters, such as cell size, is one of several elements that likely affects the utility of the approach. Ideally, smaller cell sizes with more closely-spaced transects should provide higher resolution data. However, they also require considerably more time. Varying these parameters, while holding personnel and

Table 4-1. Level of Laughlin AFB TRU sampling

Site No. (41VV...)	Site Length x Width (m)	Transects Across Sites	TRUs (3-x-30 m)	m ² Sampled
1653	45 x 40	2	4	360
1654	1,110 x 260	n/a	149	13,410
1655	92 x 77	2	6	540
1682	135 x 120	3	21	1,890
1683	160 x 120	n/a	24	2,160
1684	160 x 55	2	12	1,080
1685	515 x 225	5	64	5,760
1686–1691	380 x 95	6	54	4,860

recording procedures constant, provides an opportunity to refine the overall approach.

Laboratory Methods and Curation

Throughout the project, the analysis and organization of records and logs were ongoing. All records generated during the project were prepared in accordance with 36 CFR Part 79 and THC requirements for State Held-in-Trust collections. Field forms were printed on acid-free paper and completed with pencil. All field notes, forms, and photographs were placed in labeled archival folders. Digital photographs were printed on acid-free paper and placed in archival-quality page protectors to prevent accidental smearing due to moisture. All project-related materials,

including the final report, will be permanently stored at the CAR curation facility, under Accession Number 2352.

Reporting Requirements

The CAR prepared this report of the investigations at Laughlin AFB, which provided documentation summarizing the activities and results of the project. The report also includes suggestions for stabilization strategies at individual sites. The CAR submitted the draft report to Argonne for comments. The review comments were incorporated into the final document, which was printed and distributed to Laughlin AFB and to Argonne National Laboratory. Secondary distribution to other state repositories and libraries is conditioned by prior approval by both parties.

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Chapter 5: Site Descriptions and Survey Results

This chapter describes the 2020 CAR investigation of the 13 Laughlin AFB archaeological sites (Figure 5-1). The sites are discussed in numerical order beginning with 41VV1653. The sites east of Sacatosa Creek (41VV1686–41VV1691) are discussed as a single entity, following Dering (1998). Each site section begins with a short description followed by a summary of past work. Additional information on past work at these sites can be found in Dering 1998 (Chapter 6) and in Tennis and colleagues 1996 (Chapter 5). The results from the present survey are then summarized for each site.

41VV1653

Background

De Vore (1993) described site 41VV1653 as a lithic scatter. It is located on the west side of the base, on a sloping ridge south of the Zorro Creek floodplain (Figure 5-2). A hiking trail runs through the site, and the surrounding area is designated as a nature preserve (Figure 5-3). In 1993, the CAR revisited the site, excavated one shovel test, documented three FCR

Redacted Image

Figure 5-1. The location of the 13 archaeological sites on Laughlin AFB (2018 aerial photograph courtesy of Laughlin AFB Civil Engineer Squadron/Civil, Environmental and Infrastructure Engineering).



Figure 5-2. View of site 41VV1653; in the background is the Zorro Creek floodplain.



Figure 5-3. Overview of site 41VV1653, facing northwest, showing hiking trail.

scatters, and defined the site boundary as encompassing approximately 1,800 m² (Tennis et al. 1996). The shovel test was negative for cultural material and was relatively shallow, encountering fossil, caliche, and gravels at 45 cm below the surface (cmbs; Tennis et al. 1996:36). The site also contained areas of exposed bedrock, suggesting shallow deposits (Tennis et al. 1996:36). The CAR used 10 m-diameter collection circles, known as dog leash collection areas, to sample the surface artifact assemblage. Collecting all material within the 10 m collection circle produced 20 pieces of debitage, 1 core, and 10 FCR (Tennis et al. 1996:36). Tennis and colleagues (1996) recommended the site as eligible for inclusion in the NRHP under Criterion D.

The CEA attempted to relocate the site but called off the effort after 15 survey hours failed to locate it (Dering 1998:112). In addition, they excavated nine shovel tests in the general area to identify any potential subsurface deposits (Dering 1998:113). No artifacts were observed on the surface or found in any of the shovel tests (Dering 1998:113). They speculated that, given the small number of artifacts identified by the CAR, deposits may have eroded away, and/or the site may have been destroyed by blading (Dering 1998:113).

Current Investigation

The CAR found 41VV1653 on August 13, 2020 by following the hiking trail and the original field map produced during the Tennis investigation (see Figure 5-4). The map placed the site approximately 200 m north of an existing two-track road and shows the trail bending to the west. These landmarks were used to input the approximate site location into a GPS unit. At that location during the August visit, the CAR observed a core, a uniface, and a flake. The original site datum was not relocated, nor were there any indications of the previously excavated shovel test. The CAR placed one photopoint (PP26) on the west side of the site and stacked two rocks on the point to conceal its location, given the public use of the area. The photopoint location was selected to monitor a series of small trails in the immediate area (Figure 5-5).

CAR archaeologists returned to the site on September 16, 2020. They conducted two transect investigations (T1, T2), each of which contained two TRUs, sampling 360 m² or approximately 20% of the site (Figure 5-6). The southernmost transect, T1, had the highest surface visibility, with an estimated average of 60% of the ground surface

Redacted Image

Figure 5-4. Map of site 41VV1653, after Tennis and colleagues (1996).

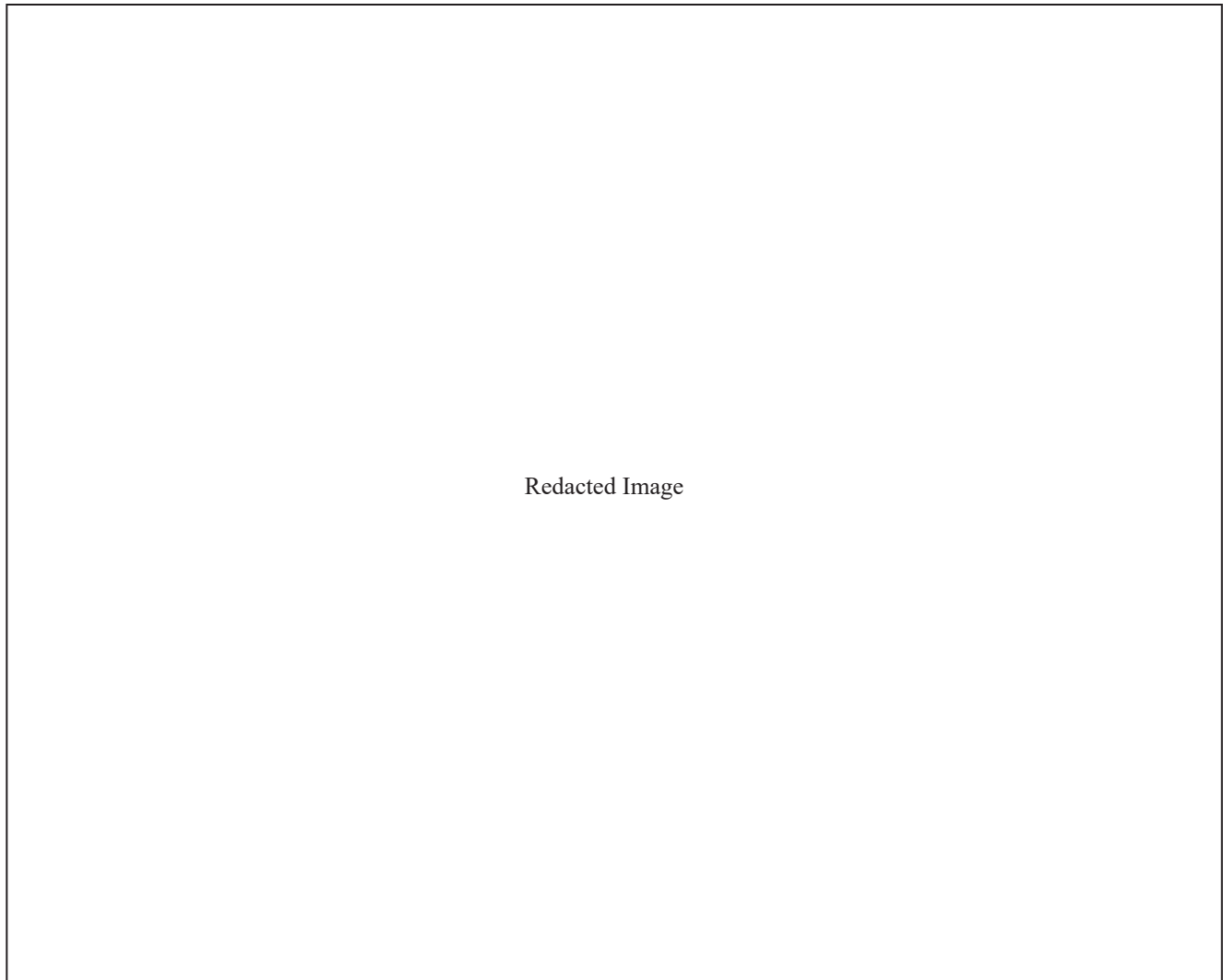


Figure 5-5. Site 41VV1653 showing location of Photopoint 26.

visible; a range of 20% to 100% ground surface visibility was noted in both TRUs. T2 average visibility was 55%, with both TRUs having a range of 30% to 80% visibility. The CAR recorded seven FCRs, one edge-modified flake, and one metal can on the site. Figure 5-6 shows that all the potentially prehistoric material was recorded on the northern transect, the area with the slightly lower surface visibility. While both the number of TRUs and the number of artifacts is low at this small site, density estimates in the TRUs ranged from 0.000 to 0.067 artifacts per m², with an average site density of 0.020 artifacts per m².

41VV1654

Background

De Vore (1993) first recorded 41VV1654 as a quarry and/or a possible large campsite. The large site is located on the

east side of Laughlin AFB on a terrace of Sacatosa Creek. Current estimates are that the site encompasses over 237,400 m². Not surprisingly, given the large size, the site boundaries encompass several different landscapes, examples of which are shown in Figures 5-7 through 5-11. De Vore (1993) recommended that the site warranted further investigation. Multiple investigations noted that 41VV1654 has been impacted by roads, bulldozer cuts, military bunkers, trenches, foxholes, and, in the southern portion of the site, a borrow pit (Dering 1998; De Vore 1993; Tennis et al. 1996).

Figure 5-12 (left panel) shows the site boundaries as defined by the CAR in 1994 (Tennis et al. 1996). CAR personnel excavated 28 shovel tests and collected surface artifacts from six dog leash units (Tennis et al. 1996). Twelve of the shovel tests were positive for cultural material that consisted solely of debitage. The shovel tests ranged in depth from 10 to 50 cmbs (Tennis et al. 1996). Three projectile points were recovered from the site, including a Golondrina/Barber, a Wilson, and

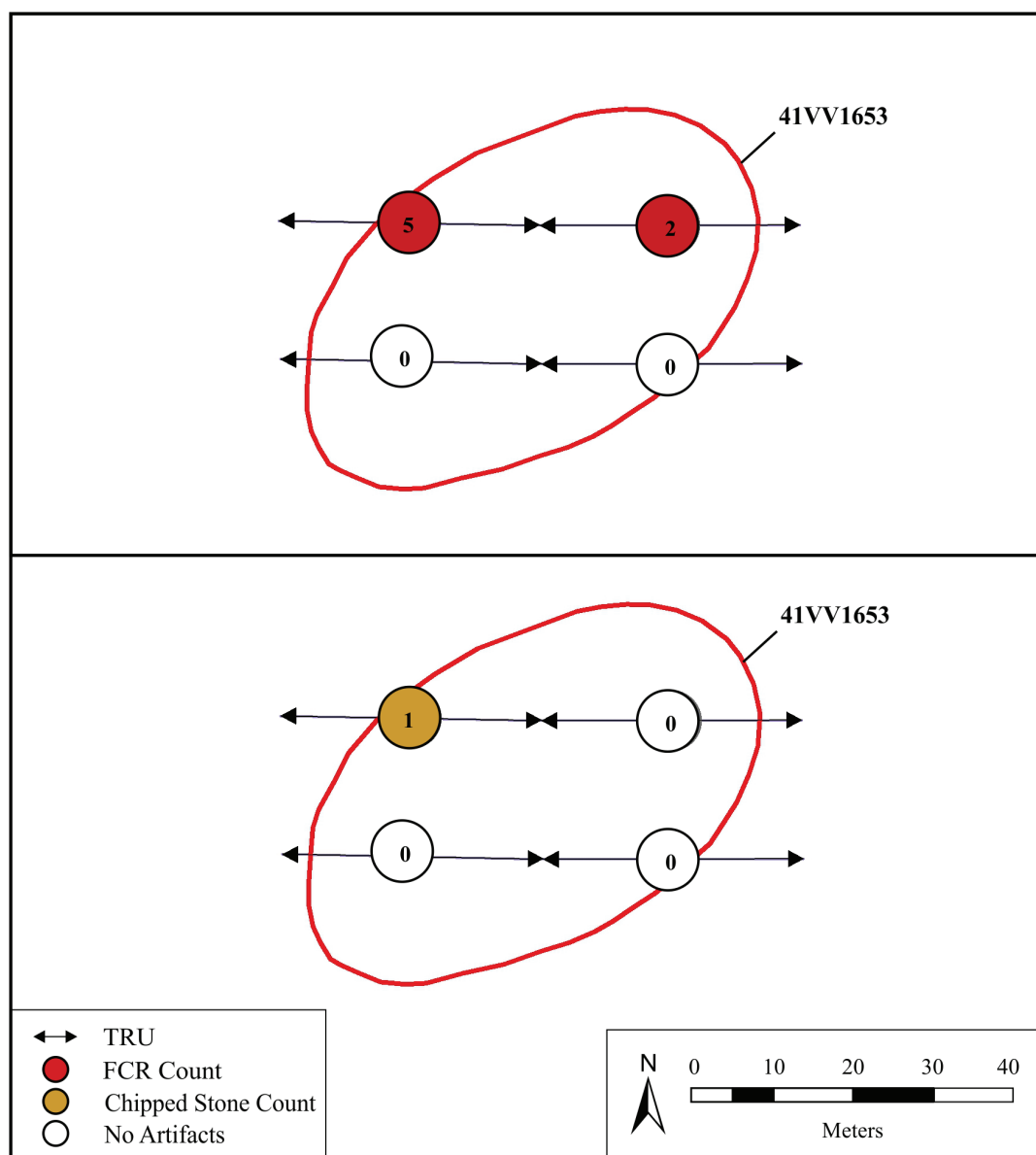


Figure 5-6. FCR (top panel) and chipped stone (bottom panel) counts observed in TRUs on site 41VV1653 (red line).



Figure 5-7. The eastern portion of site 41VV1654 falls within the floodplain of Sacatosa Creek.



Figure 5-8. View of the upland in the north-central portion of site 41VV1654.



Figure 5-9. The south-central portion of site 41VV1654 was heavily impacted by past military activities. This image shows multiple berms and abandoned construction equipment in the background.



Figure 5-10. View of the south-central portion of site 41VV1654.

a reworked Gower point, suggesting Late Paleoindian and Early Archaic occupations (Tennis et al. 1996). Tools collected from the site included bifaces, unifaces, and a ground stone pestle. Two FCR features were also identified in the central and southeastern portion of the site. Tennis and colleagues (1996) suggested that lithic tools were concentrated in the northern portion of the site (Figure 5-12, left).

The CAR also documented three historic features (C, D, and E; Tennis et al. 1996). Feature C is a scatter of historic artifacts located in the very southern portion of the site. A dog-leash survey of the feature documented 221 historic artifacts, including ceramics, bottle glass, cut nails, window glass, and limestone and brick fragments, covering an area approximately 20-x-40 m (Tennis et al. 1996:116–117, Table 10-1). The feature dates to prior to 1900 based on the presence of the cut nails. Prehistoric artifacts were also found in the historic scatter, including a projectile point and flakes (Tennis et al. 1996). Features D and E are found in the western portion of 41VV1654 (Tennis et al. 1996:116–117). They are two cement livestock troughs measuring 4.5 m in length and 60 cm in width and located approximately 45 m apart (Tennis et al. 1996:116–117). The CAR recommended 41VV1654 as eligible for listing in the NRHP under Criterion D (Tennis et al. 1996).

The CEA relocated the site and excavated 12 test units and one geomorphic trench (Dering 1998). The CEA also reduced the size of the site from 585,200 to 131,600 m². Figure 5-12 (right panel) shows the site boundaries and other relevant features that resulted from the CEA investigation. Thirty-one east-to-west surface recording transects, measuring 1-x-80 m to 300 m each in length, were conducted on this site (Dering 1998:76; Figure 68).

The CEA investigation recorded two sheet middens and four FCR features. The CEA divided 41VV1654 into six areas based on topography, including uplands, floodplain, and/or heavily modified areas (see Figure 5-12). The south-central

and southeastern areas were heavily impacted by military activities and/or road blading, while the north-central portion was less disturbed (Dering 1998:126–128). The northeastern, northwestern, and southern portions had areas that suggested colluvial/eolian and colluvial/alluvial deposition and that could contain intact archaeological prehistoric deposits (Dering 1998:124–128).

The CAR's Feature C was identified by the CEA on the surface surrounding their TU 11 in the southeastern portion of the site (Dering 1998:269). The CEA recorded far fewer artifacts: only 35, including glass (lavender, cobalt, aqua, milk, olive, and clear), ceramics (stoneware, whiteware, and undecorated porcelain), wire, and cut nails (Dering 1998:Table 57). The CEA referenced the two trough features identified by Tennis and colleagues (1996); however, these features were outside of their site boundary change and were not further documented (Dering 1998:Figure 67).

The average depth of the 12 test units was 45 cmbs, with the deepest being 70 cmbs (Dering 1998: Table 31). Artifact density in the test unit excavations was 681.1 per m³, consisting primarily of debitage (Dering 1998:122). One test unit (XU 4) was placed in the sheet midden in the north-central area. Testing revealed the midden was approximately 30 cm in thickness, with a density of 3,558 artifacts per m³ (Dering 1998:122). Artifacts consisted of FCR and debitage in roughly equal proportions (Dering 1998:122). The test unit contained an Early Archaic Pandale and Middle to Late Archaic Williams point, in addition to 20 edge-modified flakes, five cores, a biface, and a uniface (Dering 1998:122). Ten additional projectile points were recovered from surface transects. Overall, these diagnostic artifacts suggest Late Paleoindian through Late Archaic use of the site (Dering 1998:Table 33). No radiocarbon dates were obtained due to the lack of carbonized material (Dering 1998:Appendix E).

The CEA (Dering 1998:220–221) recommended that portions of 41VV1654 were eligible for inclusion in the NRHP, specifically

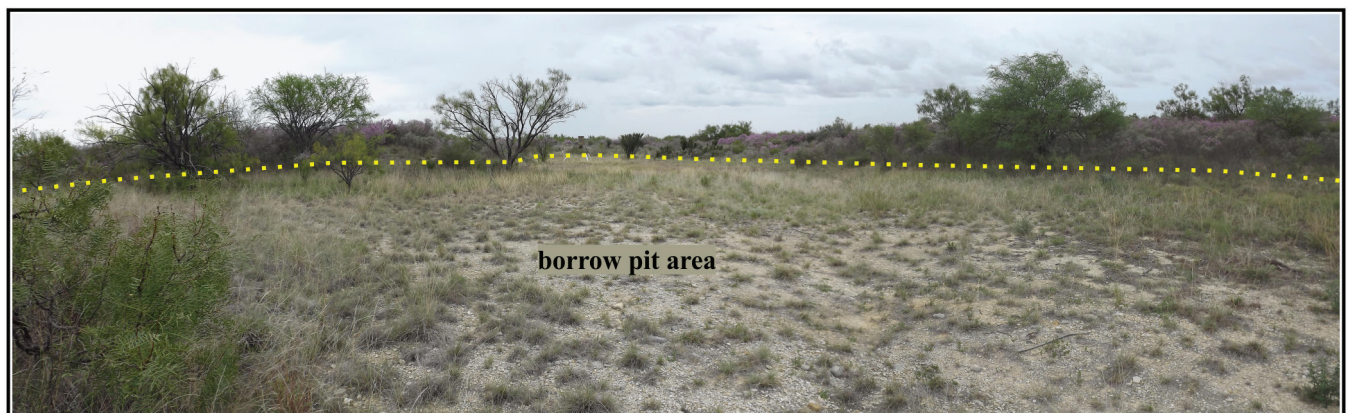


Figure 5-11. The southern portion of site 41VV1654 was also impacted by ground disturbance with the excavation of a borrow pit (outlined with the yellow dots).

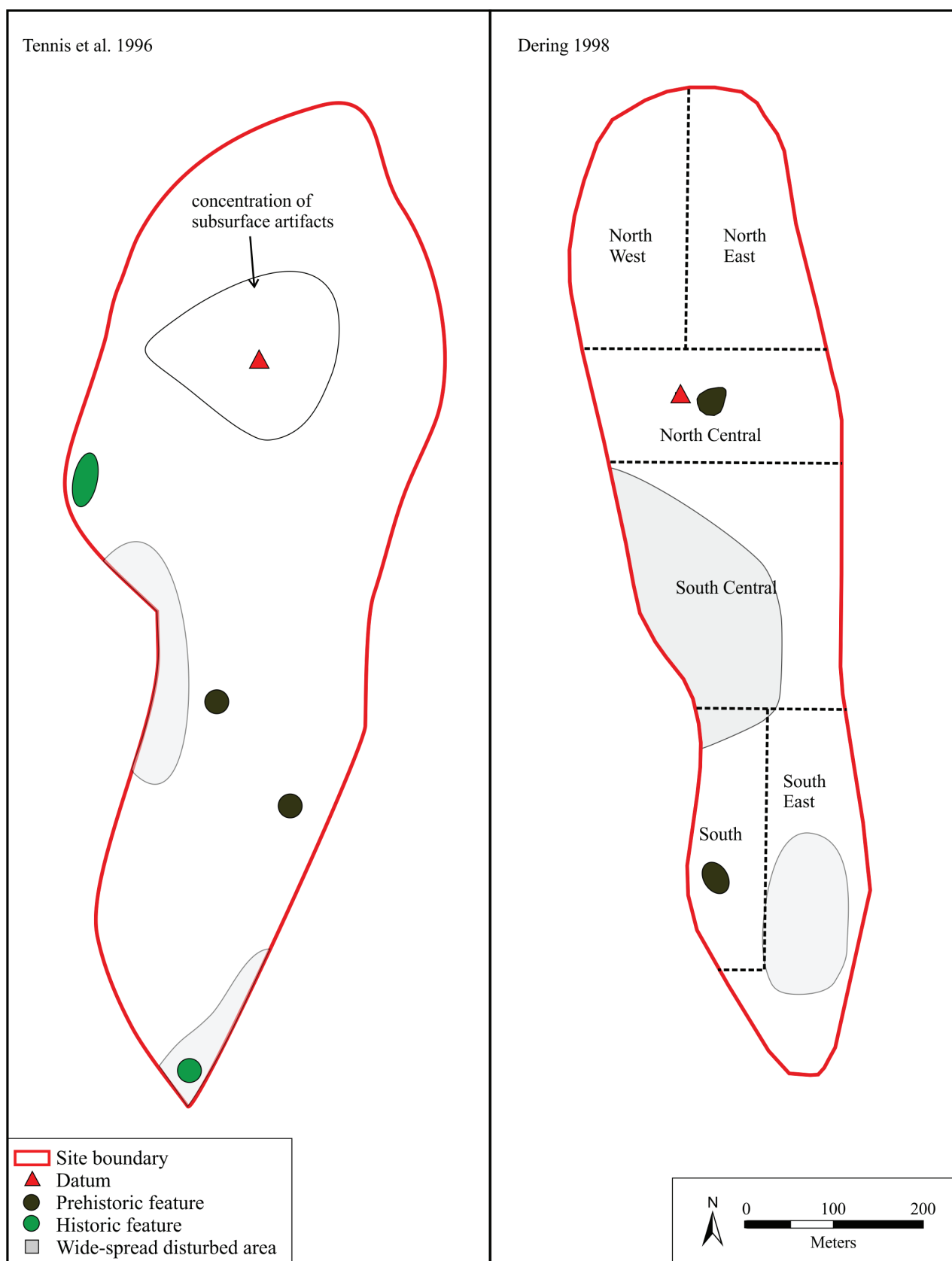


Figure 5-12. Site maps of site 41VV1654. The left panel shows the 1994 CAR investigation, while the right panel shows the 1996 CEA investigation and its delineation of the site.

the northwest and north-central areas of the site (Figure 5-12, right panel). Dering (1998:220) states that the northwestern area had strong potential for buried and intact archaeological deposits as well as a moderate number of artifacts. The north-central area was problematic due to the mixing of temporal diagnostics. However, given the presence of a large sheet midden and the geoarchaeological interpretation that the site may contain intact deposits, the CEA (Dering 1998:220–221) recommended the site as eligible for inclusion in the NRHP. The northeastern area and all the southern areas were recommended not eligible for listing in the NRHP due to the

lack of a significant artifact assemblage and/or impacts to these areas caused by military activities or the bioturbation of soils (Dering 1998:220–221).

Current Investigation

The CAR documented 41VV1654 on August 12, 2020, using the maps produced during the CEA investigation (Dering 1998:Figures 66 and 68). These maps contained roadways and the locations of test units, as well as the original CAR datum. This investigation used historic aerial

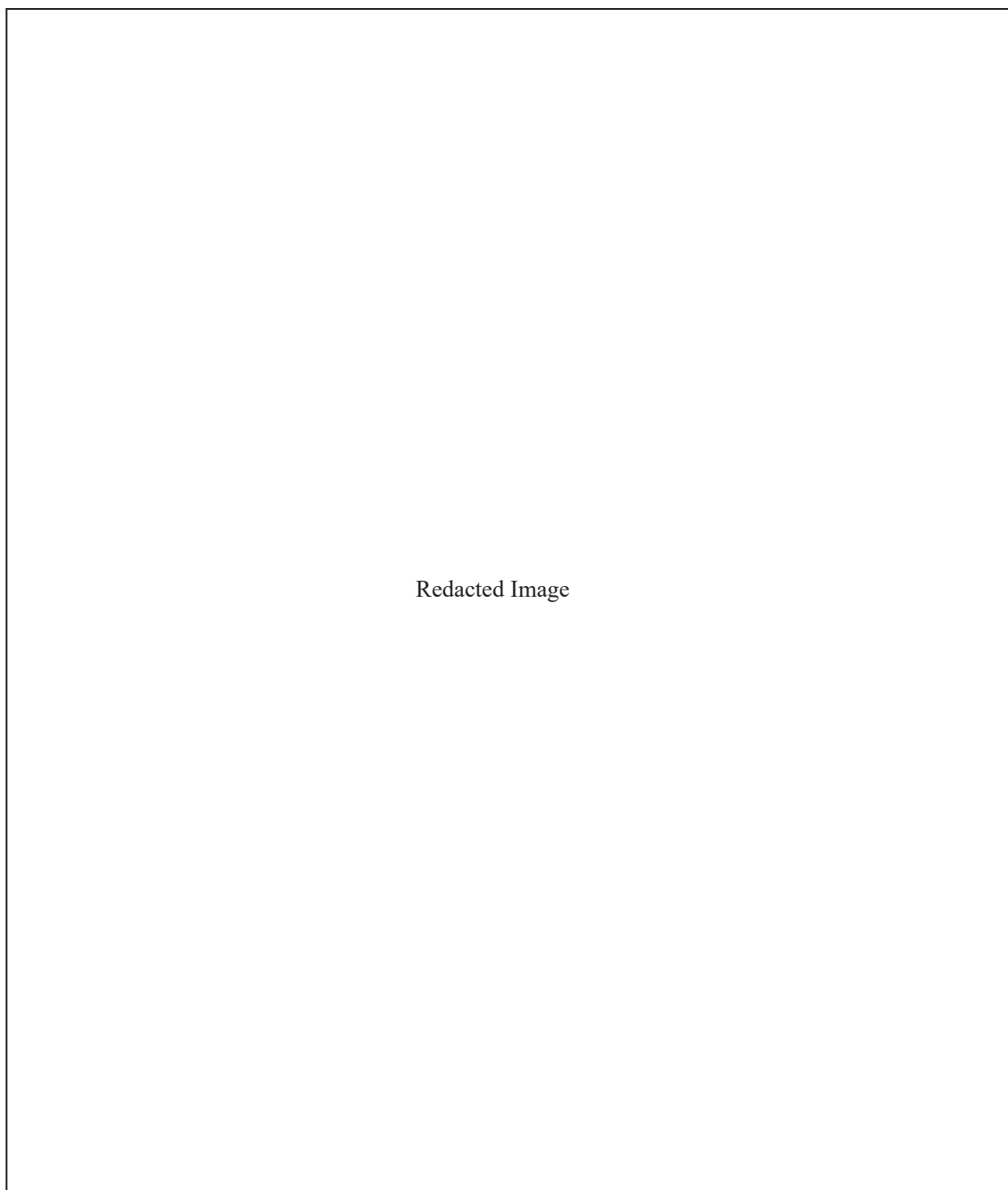


Figure 5-13. Location of photopoints and CEA spatial distinctions on site 41VV1654.

imagery to orient mapped roads to the current roadways (Google Earth 2020). During the current investigation, the CEA's division of 41VV1654, as shown in Figure 5-13, is used for discussion purposes.

In general, the site was overgrown with dense brush of Texas sage and mesquite. Some of the interior roads were covered with small brush and a variety of grasses. The CAR datum was not relocated during either phase of the present study, due in part to the dense brush. The CAR placed four photopoints (PP17 through PP20) on the site (Figure 5-13). Photopoints 17 and 19 were

positioned to monitor erosion near large sheet midden features. Photopoint 18 at the northern end of the site and Photopoint 20 in the south-central area were positioned to monitor erosional conditions.

CAR archaeologists returned to survey 41VV1654 from September 19 through September 21, 2020. As discussed in the previous chapter, the density of vegetation prevented use of parallel transects. As an alternative, the CAR identified exposed game trails and clearings on high-resolution aerial photographs and laid out 149 TRUs, each 30-x-3 m in size. The distribution of these TRUs is

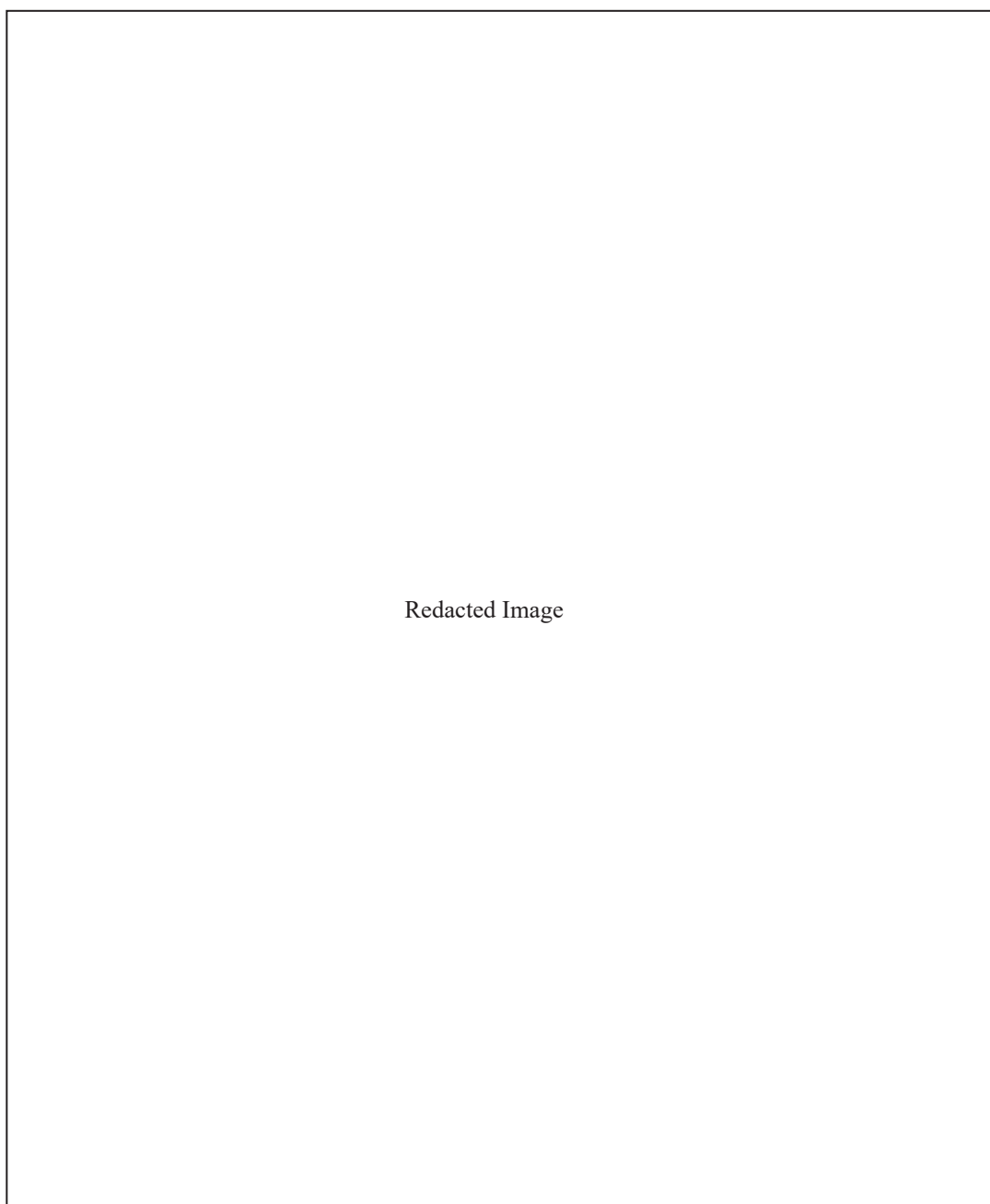


Figure 5-14. Location of TRUs on site 41VV1654.

shown in Figure 5-14. The sample covered 13,410 m², or approximately 5.6% of the site surface.

Overall, average surface visibility in the TRUs was estimated at 63% but ranged from 0 to 100%. Figure 5-15 shows average surface visibility at the site level, using vegetation estimates from the TRUs. Since the TRUs were selected because they had higher visibility, the extrapolation of the TRU vegetation patterns to the site as a whole likely underestimates vegetation coverage. Nevertheless, the pattern in Figure 5-15 matches impressions derived from examination of the high-resolution aerial photographs and

crew experience, including that the central and southern portions of the site have higher ground surface visibility, while the northern portions of the site have denser vegetation.

FCR was recorded in 69 of the 149 TRUs (46.3%), while chipped stone debitage was recorded in 51 TRUs (34.2%). Both debitage and FCR were recorded in only 37 TRUs (24.8%), suggesting some degree of spatial separation between these two artifact classes. The CAR documented 69 lithic tools that included bifaces, unifaces, edge-modified flakes, cores, a possible ground stone fragment, and six projectile points (see Figure 5-16). These tools

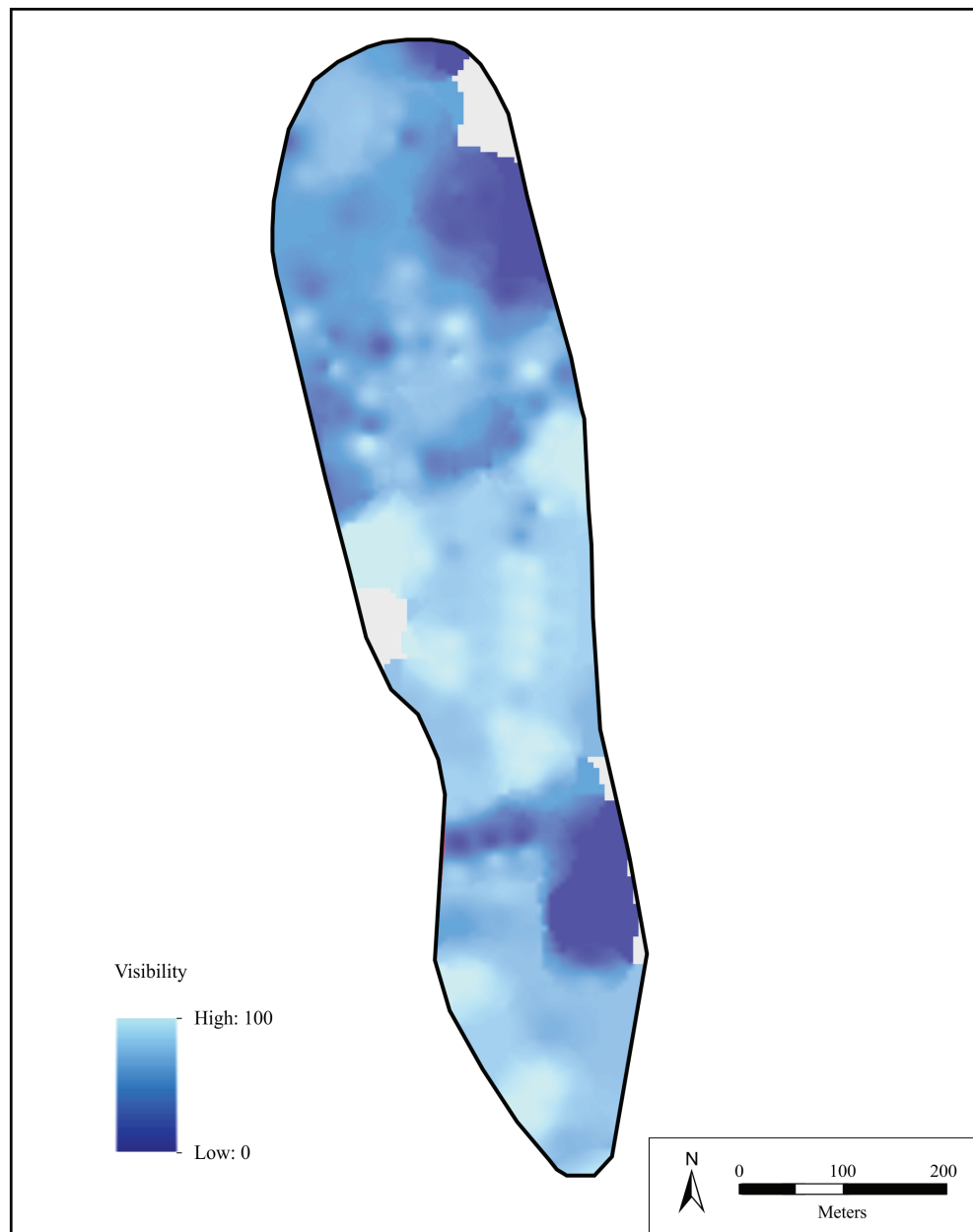


Figure 5-15. Estimates of the percent of ground surface visible at site 41VV1654, derived from recorded visibility for each TRU. Figure used inverse distance-weighted (IDW) interpolation in ArcGIS 10.8.1 with a search radius of 50 m. The gaps are based on an absence of data.



Figure 5-16. Photos of projectile points found on site 41VV1654 during the 2020 investigation. They are typed as a Late Paleoindian point, possibly Golondrina (a); a Late Paleoindian/ Early Archaic form, possibly Angostura (b, c); a Middle Archaic Langtry (d); a Middle to Late Archaic Palmillas (e); and Late Archaic Darl-like point (f).

occurred in 32 different TRUs. The CAR did not revisit the two historic features—livestock troughs recorded by Tennis and colleagues (1996)—as the features were outside Dering’s (1998) 41VV1654 boundary. The CAR recorded a single piece of glass in the southern portion of 41VV1654.

The overall FCR density in the TRUs at a site level was 0.065 items per m², with the peak FCR density of 3.52 pieces per m² represented by 317 items. Chipped stone debitage in TRUs had a lower site level average (0.015 items per m²) and a lower peak density (0.56 per m²) relative to FCR. However, the peak density, represented by a collection of 50 pieces of debitage, occurred in the

same TRU as the FCR peak. Overall artifact density within the TRUs at the site level was 0.063 items per m².

Figure 5-17 shows the projected distribution at a site level for chipped stone debitage, while Figure 5-18 presents a similar distribution for FCR. The chipped stone distribution shows higher counts in several areas of the site and seems to match, at a general level, the visibility patterns presented previously in Figure 5-15. The FCR distribution is dominated by several high TRUs in the north-central portion of the site, though secondary clusters are also present. Comparisons between Figures 5-17 and 5-18 show strong overlap in the highest density area in the north, but clearly identify several areas in the south-central

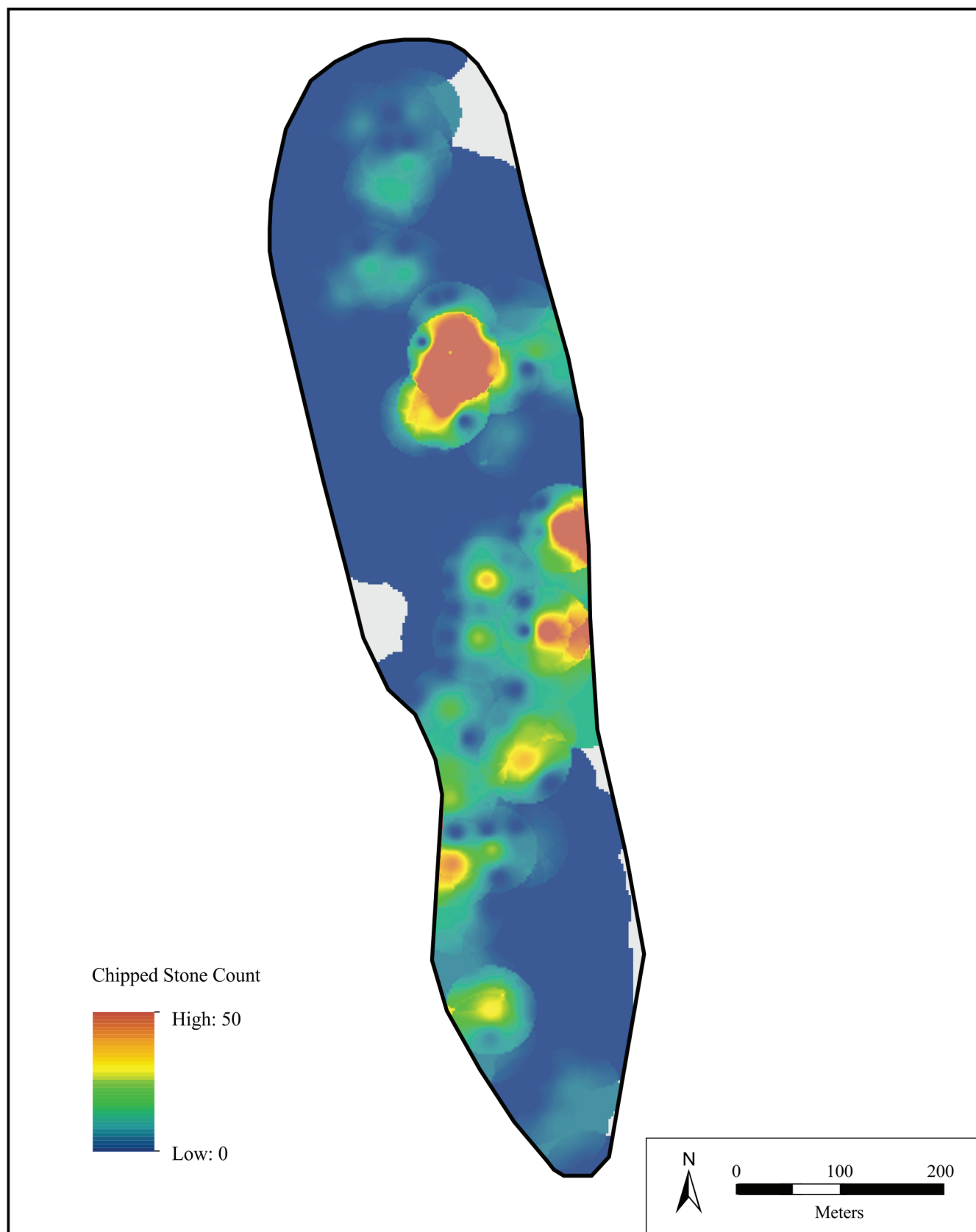


Figure 5-17. Chipped stone debitage counts on site 41VV1654 derived from TRU data. Figure used IDW interpolation in ArcGIS 10.8.1 with a search radius of 50 m. The gaps are based on an absence of data.

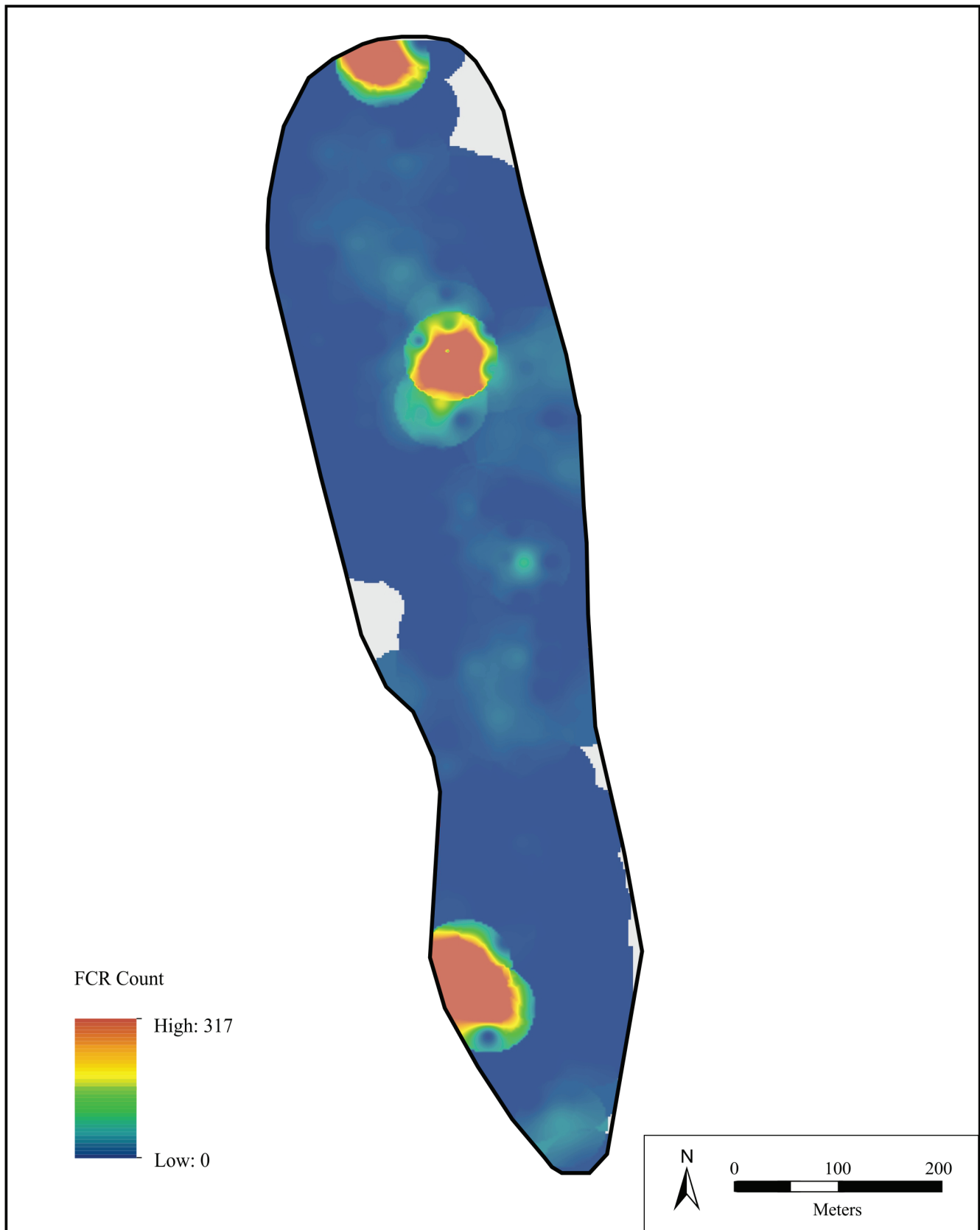


Figure 5-18. FCR counts on site 41VV1654 derived from TRU data. Figure used IDW interpolation in ArcGIS 10.8.1 with a search radius of 50 m. The gaps are based on an absence of data.

Redacted Image

Figure 5-19. Location of features on site 41VV1654 identified during the 2020 survey. The circled features represent sheet middens identified by Dering (2008) and recorded during the current survey. Four other features identified during this survey are referenced to the TRU in which they were found.

and southern portions of the site that have high chipped stone counts without corresponding FCR increases.

CAR personnel initially recorded nine FCR features, the distribution of which is shown in Figure 5-19. Dering (1998:Figure 66) previously identified several of these features as extensive FCR sheet middens located in the north-central and

southern areas (Figures 5-20-5-21). Five of the current features recorded by the CAR during the TRU survey fall with these sheet midden boundaries. As such, they were combined and given a count of one each. The remaining four features are a burned rock midden in the northwest (Figure 5-22) and three FCR scatters in the south-central areas of the site (Figures 5-23–5-25). These areas are clearly visible as density peaks in Figure 5-18.



Figure 5-20. Sheet midden in the north-central portion of site 41VV1654 (TRU 35), bisected by a road.



Figure 5-21. View to the west of sheet midden found in the southern area of site 41VV1654 (TRU 137).



Figure 5-22. View to the northwest of partially buried burned rock midden in the northeastern area of site 41VV1654 (TRU 2).



Figure 5-23. View to the south of FCR scatter in the south-central portion of site 41VV1654 (TRU 95).



Figure 5-24. View to the east of FCR scatter in the south-central portion of site 41VV1654 (TRU 104).



Figure 5-25. View to the north of FCR scatter in the south-central portion of site 41VV1654 (TRU 118).

41VV1655

Background

De Vore (1993) recorded 41VV1655 as a quarry or lithic-processing station. It is located on the west side of Sacatosa Creek and an unnamed drainage (Figure 5-26). The site contained chert debitage, edge-modified flakes, cores, and tested cores. De Vore (1993) states that the site was

impacted by road construction, drainage channelization, and the construction of a deer blind. He recommended that the site be investigated to determine its size, its depth of deposits, and its relationship to 41VV1654.

Tennis and colleagues (1996) returned to the site, excavated two shovel tests, and conducted one dog-leash survey (Figure 5-27, left panel; Tennis et al. 1996). The shovel tests were relatively shallow, terminating at 45 and 15 cmbs. The deeper



Figure 5-26. View to the south of site 41VV1655 showing the collapsed deer blind on the left and the location of the airfield represented by the vertical pole on the right portion highlighted in circle.

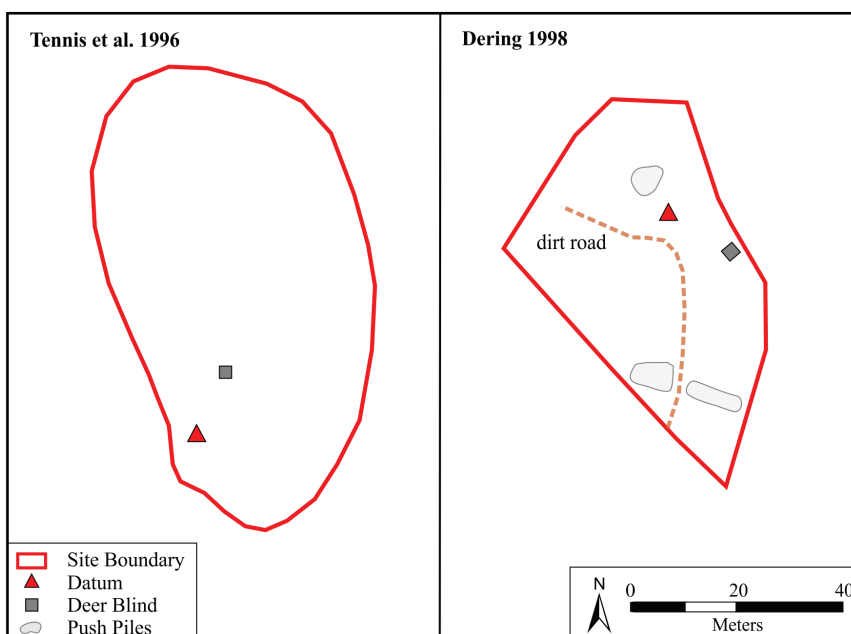


Figure 5-27. Maps of site 41VV1655. The left panel is from the CAR investigation, and the right panel is from the CEA investigation.

shovel test (ST89) resulted in the recovery of chert debitage in the upper 20 cm (Tennis et al. 1996:44). The other shovel test (ST100) was negative (Tennis et al. 1996:44). The dog-leash survey yielded 44 lithic artifacts, including 30 pieces of debitage, 4 cores, and 10 tested cobbles (Tennis et al. 1996:Table 5-4). Tennis and colleagues (1996) recommended the site as eligible for listing in the NRHP under Criterion D.

The CEA revisited 41VV1655, observing that it was heavily impacted by road blading through the site's center. Several bulldozer spoil piles were observed (Figure 5-27, right panel; Dering 1998:Figure 38). Three test units were excavated, and three surface areas measuring 20-x-20 m were surveyed. All excavation units were relatively shallow, terminating at bedrock encountered at 11 to 18 cmbs. Overall, 107 artifacts were recovered from the test units, with an artifact density of 254.8 artifacts per m³ (Dering 1998:Table 27). Recovered artifacts included the medial section of a Late Prehistoric arrow point, two bifaces, four edge-modified flakes, and one core (Dering 1998:116).

The surface survey recorded 51 cores, three bifaces, and a scatter of FCR (Dering 1998:116). The CEA suggested that the

low number of tools may be a result of collection by modern hunters (Dering 1998). They characterized 41VV1655 as a quarry site as well as a prehistoric campsite, based upon the FCR scatter. No features were documented. The site was recommended as not eligible for listing in the NRHP, due to the lack of archaeological context, artifact mixing, and lack of potential for buried deposits (Dering 1998:219).

Current Investigation

The CAR documented 41VV1655 on August 12, 2020, using the map produced during the CEA investigation (Dering1998:Figure 38). The map provided characteristics of the site (road, spoil piles, and remnants of the deer blind) that were relocated, confirming the site location. Note that while the CAR plotted site boundaries based on the grading and deer blind shown on the 1998 map (Figure 5-27, left), the straight boundary on the southwest likely represents the fence in that direction (Figure 5-28), suggesting the site may cover a slightly larger area.

The CAR placed two photopoints (PP24 and PP25) on the eastern and western portions of the site (Figure 5-28).

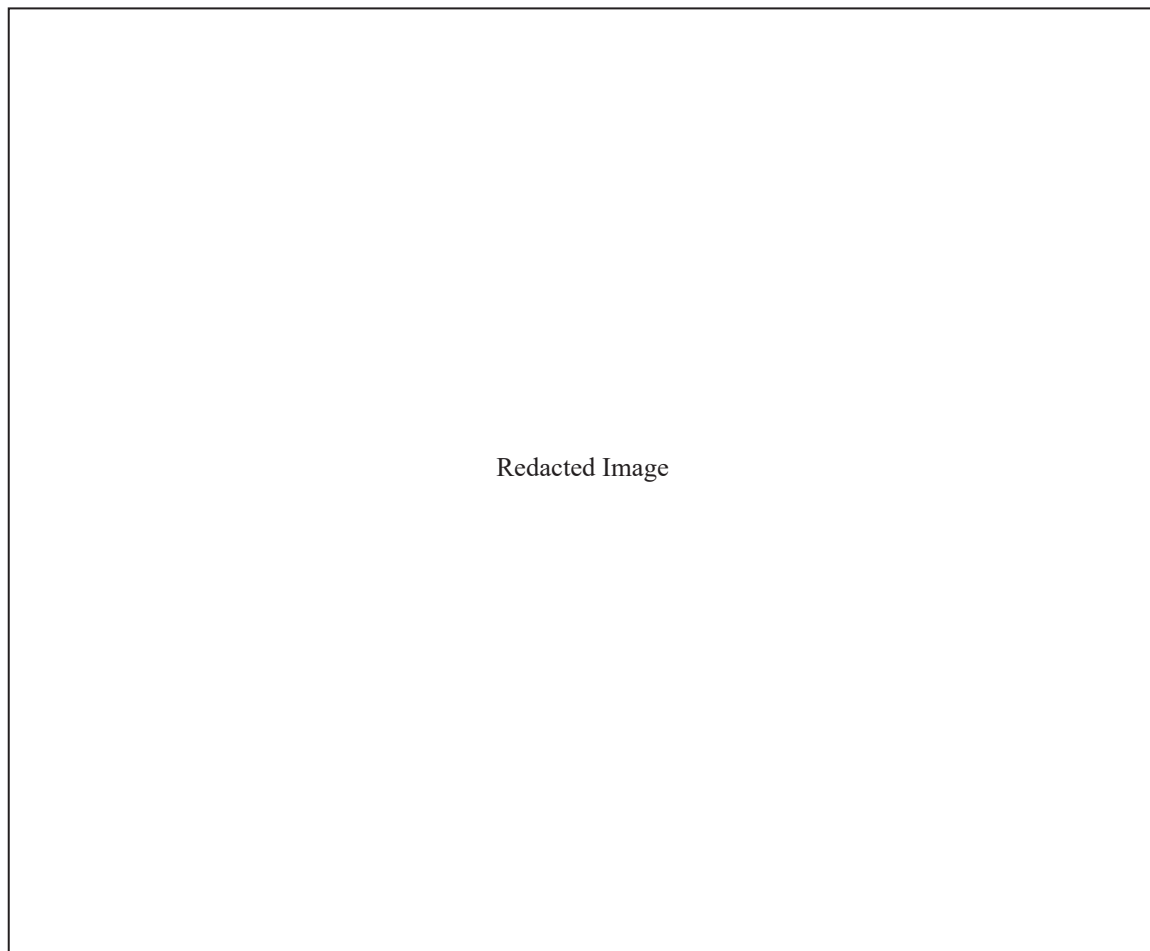


Figure 5-28. Site 41VV1655 showing photopoint locations.

Debitage and FCR were observed in the two-track road and the open area, as well as adjacent to PP25, during this phase of the investigation.

On September 18, 2020, the CAR conducted the TRU survey of 41VV1655. The survey consisted of three transects with six TRUs (Figure 5-29) and sampled 540 m² (7.6%) of the site surface. Surface visibility on the site was extremely low, ranging from 0 to 10%, with an average of 3.75%.

CAR personnel recorded 12 FCRs spread between four TRUs, along with a core (Figure 5-29). A metal can was also recorded. No features were observed; the FCR density within the TRUs was 0.02 items per m². The number of artifacts observed on the site was significantly less than those recorded by the CEA. While the low recovery is likely due to the dense brush and low visibility, the collection of artifacts by recreational users, potentially hunters associated with use of the deer blind, might also be a factor (see Dering 1998).

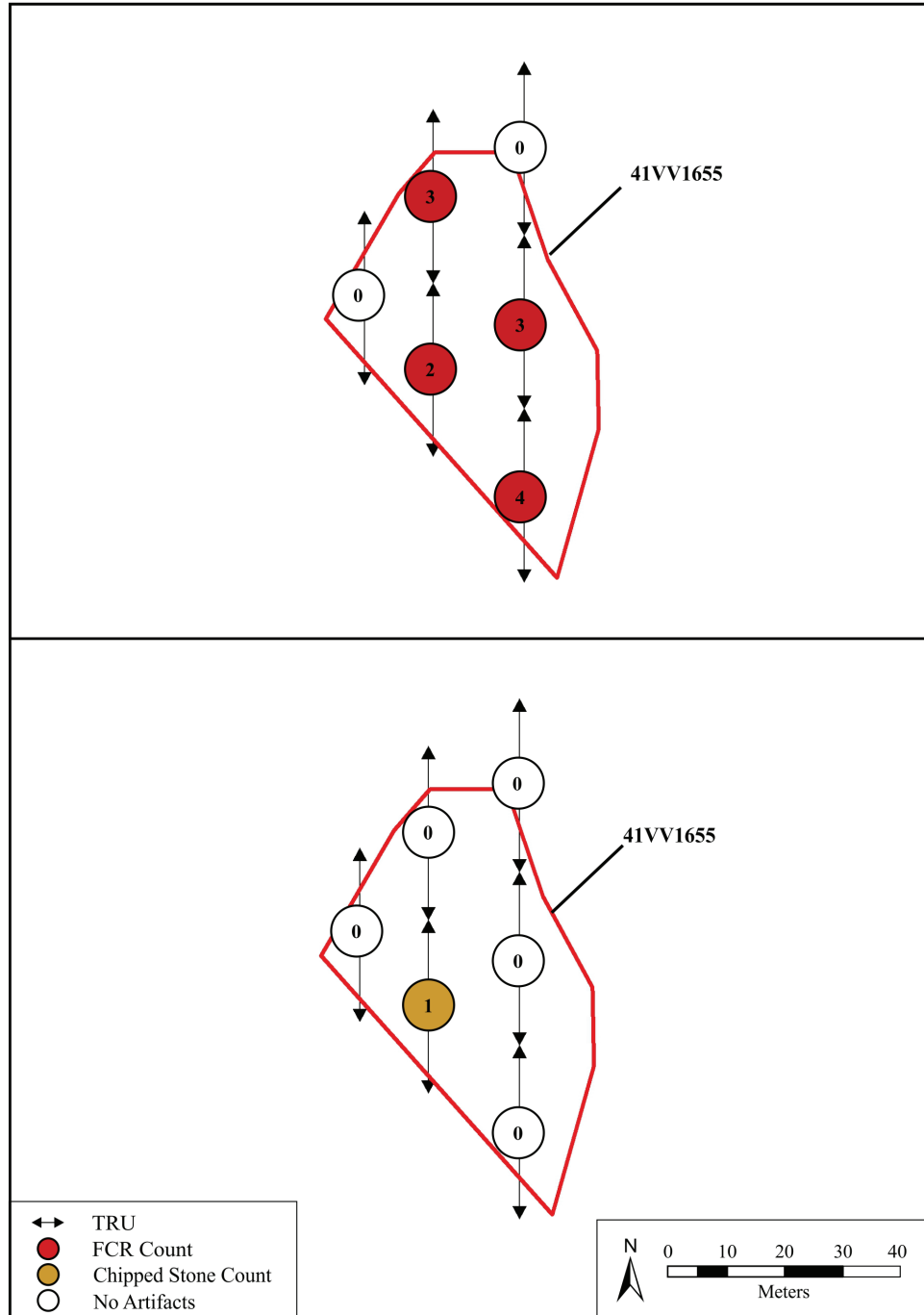


Figure 5-29. FCR (top panel) and chipped stone (bottom panel) observed in TRUs on site 41VV1655.

41VV1682

Background

Site 41VV1682, the former Zacatosa Ranch Headquarters, is within the safety zone in the northeastern section of Laughlin AFB (Figure 5-30). The extremely flat and grassy site area has been heavily impacted by blading that has removed all aboveground features. The ranch headquarters consisted of 12 previously inventoried structures including the main house, a bunkhouse, a kitchen, storage buildings, and corrals (Tennis et al. 1996:129; Figure 5-31).

In the 1994 survey (Tennis et al. 1996), the CAR identified 14 features consisting of structure remnants and historic artifact scatters (Tennis et al. 1996:Figure 9-2). Two dog-leash surveys were conducted, resulting in the recovery of 102 artifacts (Tennis et al. 1996:129). Most of the artifacts are related to construction activities, such as wire cut nails (Tennis et al. 1996:129). Other identified artifacts included

undecorated whiteware, a D'Hanis brick fragment, and color glass fragments (Tennis et al. 1996:129). This assemblage suggests an early to mid-nineteenth century occupation (Tennis et al. 1996:129). Three shovel tests were positive, one with a wire nail, and the other two with concrete blocks associated with a foundation (Tennis et al. 1996:124–125). Tennis and colleagues (1996) concluded that the site lacked integrity and that no subsurface deposits were present. They recommended that 41VV1682 was not eligible for listing in the NRHP. The site was not revisited by the CEA.

Current Investigation

The CAR first visited the presumed location of 41VV1682 in the safety zone on August 12, 2020. During that initial visit, CAR archaeologists, using the georeferenced site map and descriptions, were unable to locate any features or artifacts associated with 41VV1682. The CAR recorded a GPS point for use as a spatial reference. At the time, CAR archaeologists assumed the site was destroyed. This assumption appeared

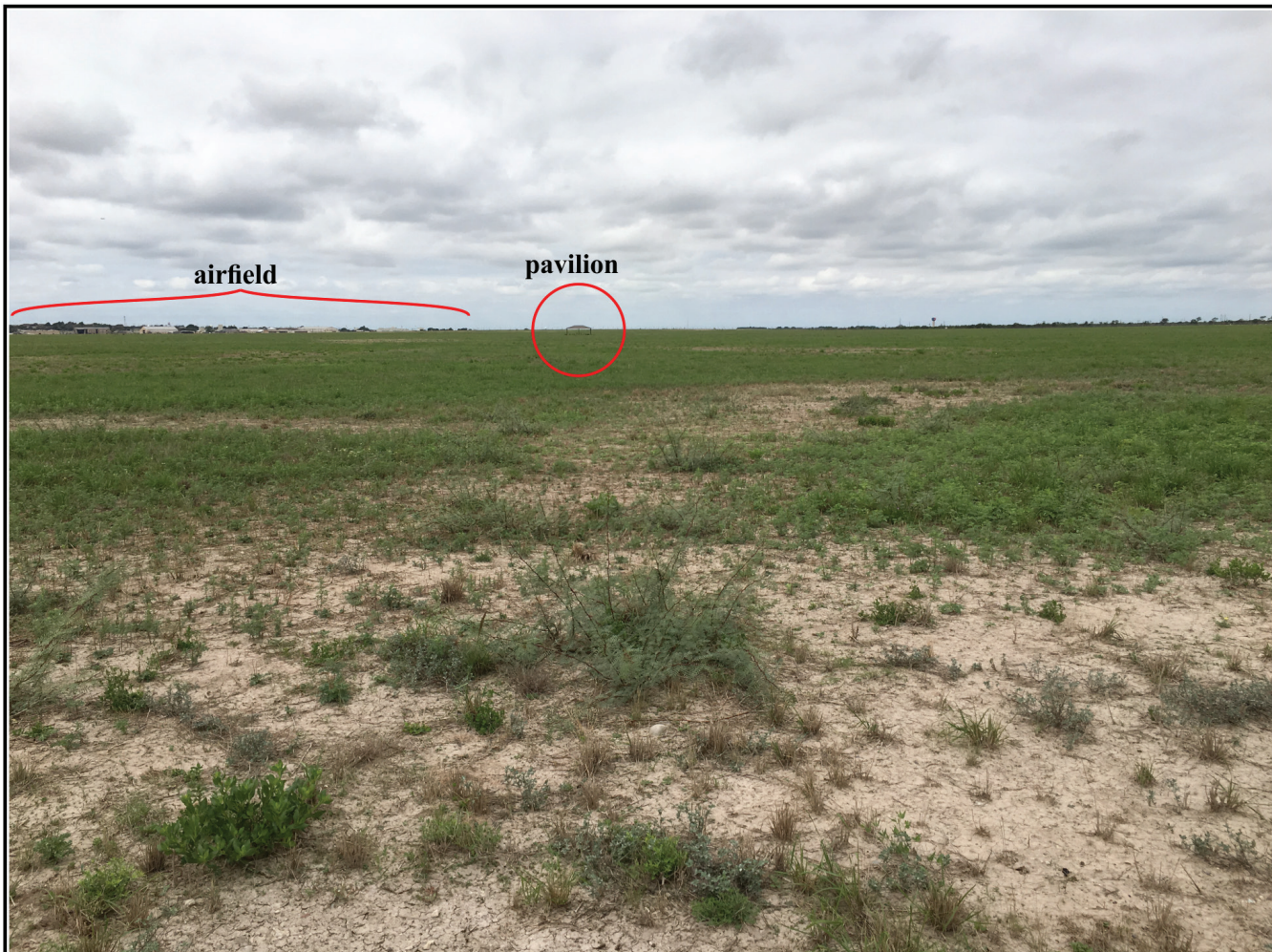


Figure 5-30. Overview of site 41VV1682 in the safety zone of Laughlin AFB. A pavilion is in the immediate background, and behind it is the airfield.

to be supported by a comment that the area was used for paragliding (personal conversation with Mr. T. Gomez, Laughlin CES GIS lead, on August 14, 2020). The area was grass-covered and mowed on a regular basis. However, subsequent examination of historic and high-resolution aerial photographs of Laughlin AFB, provided by Mr. Gomez, revealed several surface anomalies that could represent features (Figure 5-31). This new location was farther north than the original site boundary indicated. The CAR initiated a request to Argonne to revisit the presumed area of the site, which was granted. On September 24, the CAR revisited the area and confirmed the location of 41VV1682 through the presence of previously identified surface features. The CAR placed one photopoint (PP28) within the site (Figure 5-32). Photopoint 28 was placed along the northern edge of Feature A—a trough identified by Tennis and colleagues (1996; see Figure 5-35).

A TRU survey, consisting of three transects with 21 TRUs (Figure 5-33), was completed. The original site boundary

was determined by georeferencing the original site map by Tennis and colleagues (1996:Figure 9-2). As detailed below, the CAR was subsequently able to identify specific features, which allowed for a more accurate plotting of the site boundary; the CAR will propose an expansion of that boundary (see Chapter 6). The TRU survey sampled 1,890 m². The 16 items recorded in the TRUs included milk glass, red brick fragments, an undecorated white ware ceramic sherd, metal container fragments, a wire nail, a fence staple, and a red tile. In addition, one edge-modified flake was recorded. Surface visibility in all 21 TRUs ranged from 30 to 80%, with an average of 42.1%.

The TRU survey documented several features, including evidence of an L-shaped land scar visible in the 1942 and 2018 aerial images (see Figures 5-31 and 5-33). Tennis and colleagues (1996:123) had previously identified the south leg of the feature as “Feature I” and described it as a gravel and hard-packed caliche surface (Tennis et al. 1996:123). The 1942 aerial photograph shows structures

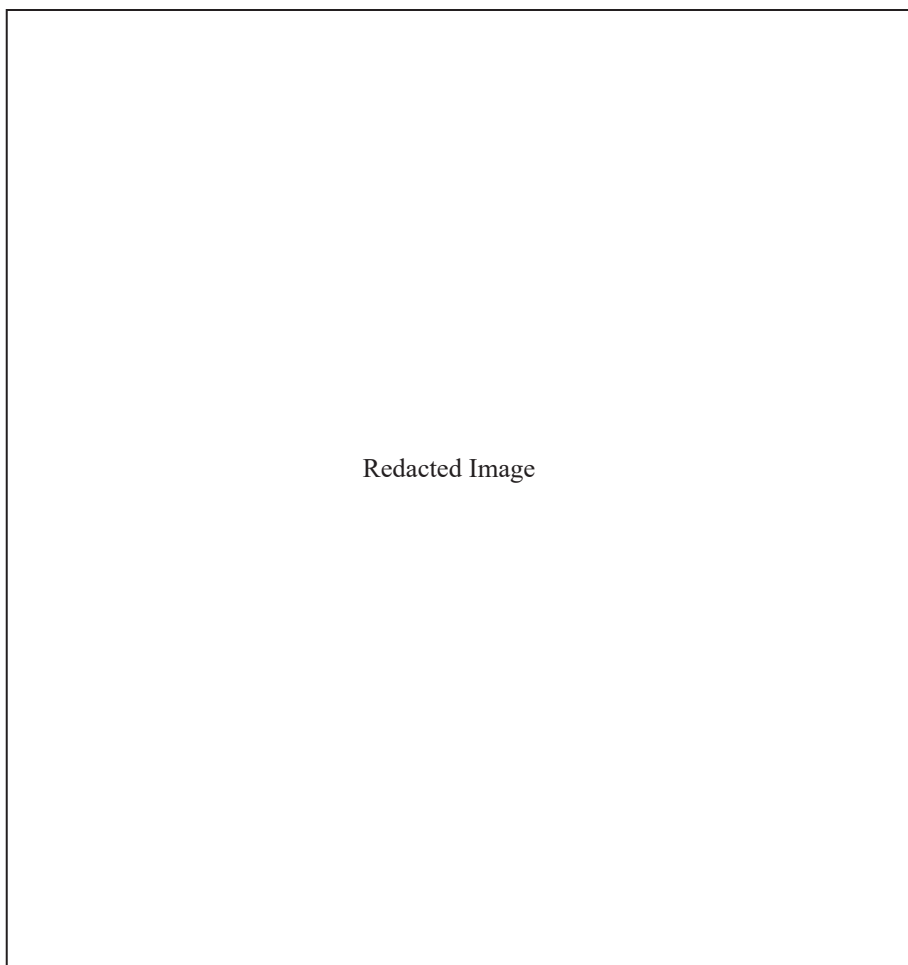


Figure 5-31. A 1942 aerial photograph, provided by Laughlin AFB, showing the base relative to Zacatosa Ranch headquarters, shown in the black square. Inset shows an image of the ranch headquarters that includes the two domicile structures and a hard-packed caliche surface presumed to be a ranch service road.

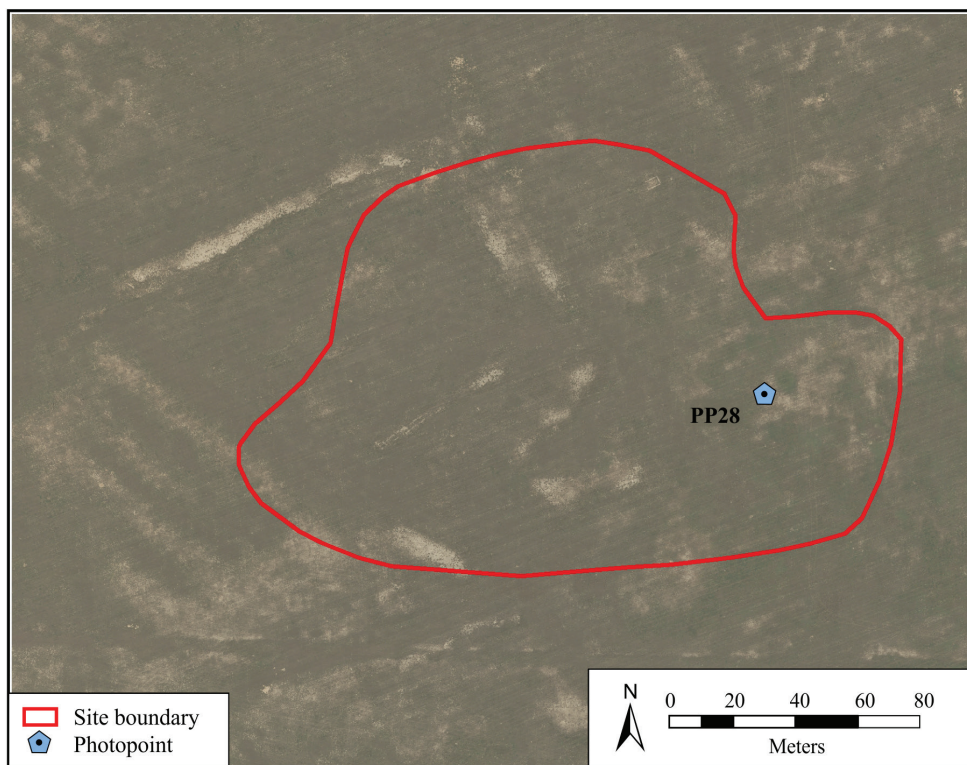


Figure 5-32. Photopoint 28 within site 41VV1682.

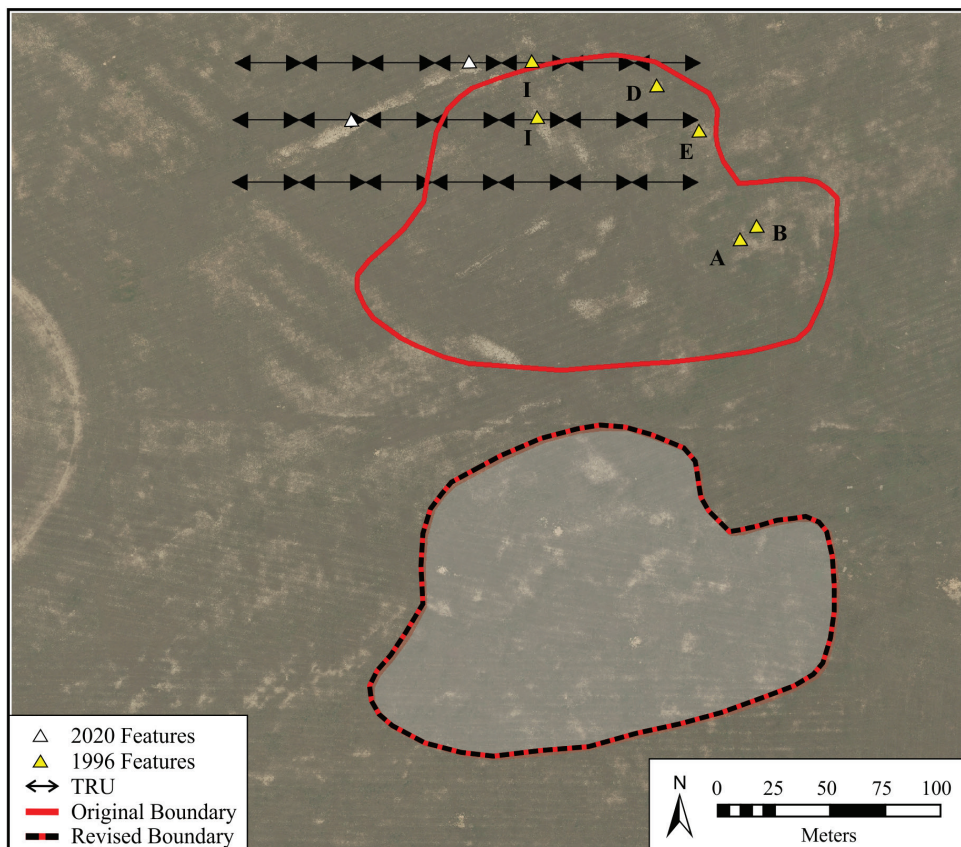


Figure 5-33. Site 41VV1682 showing original site location and revised site location, as well as TRU transects where historic feature were identified.

on the eastern portion of the feature, suggesting that it might be a remnant of a service road. During this survey, the CAR recorded the roadway in two TRUs running to the southwest of and perpendicular to Feature I. The CAR also documented the locations of four previously

identified foundation features (A, B, D, and E) defined by Tennis and colleagues (1996:Figure 9-2). Structure remnants included a watering trough and building foundations of poured concrete and concrete block. Figures 5-34 through 5-38 show these features.

Redacted Image

Figure 5-34. Main image shows the ranch service road visible on the 2018 aerial imagery that aligns with the 1942 aerial photograph (see Figure 5-31). Image A is a view to the southwest from the northern end of Feature I on site 41VV1682. Image B is a view to the southeast towards Feature I. The inset map is from Tennis and colleagues (1996) and shows the location of Feature I.

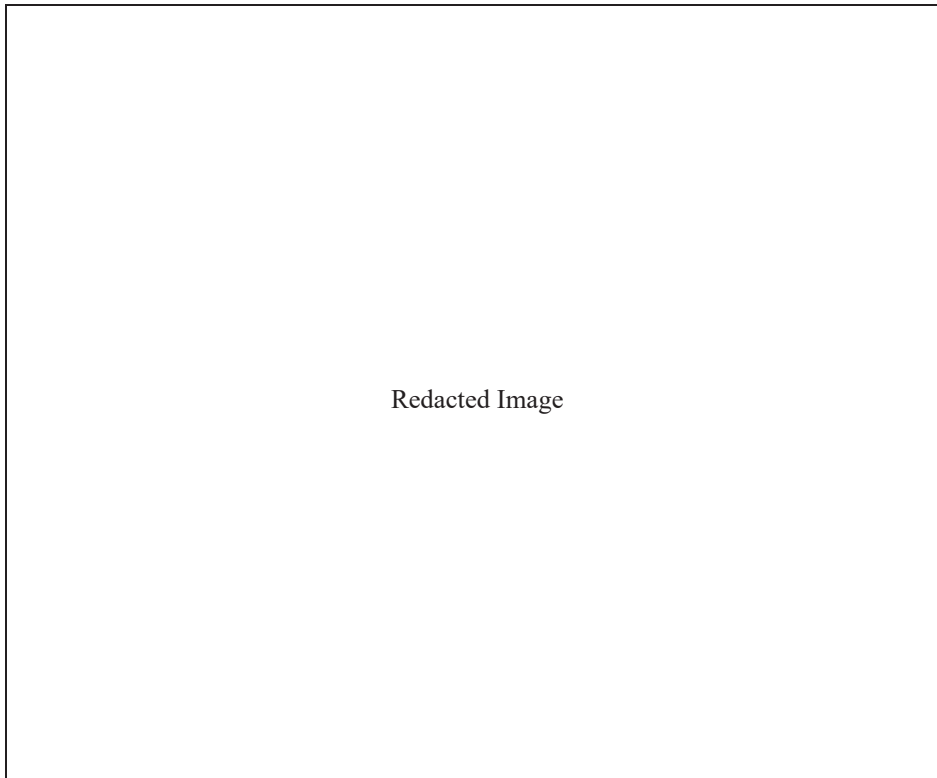


Figure 5-35. Image of Feature A on site 41VV1682, thought to be the base of a watering trough with a scatter of historic artifacts. The inset map is from Tennis and colleagues (1996) and shows the location of Feature A.

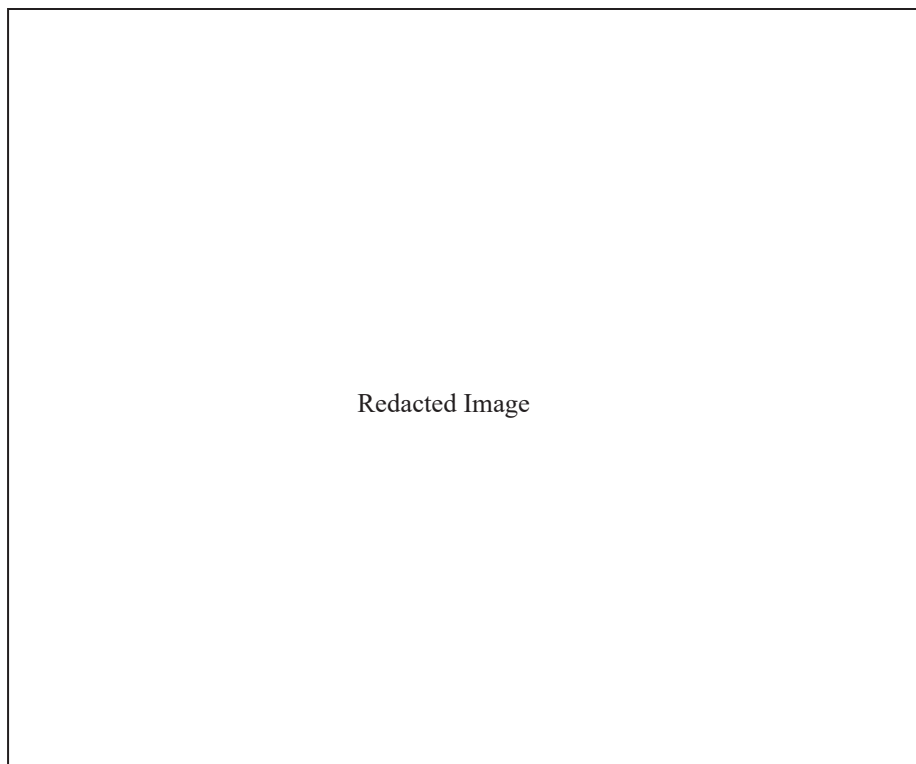


Figure 5-36. Feature B on site 41VV1682 consists of sandstone slabs believed to be the remnants of a foundation. The inset map is from Tennis and colleagues (1996) and shows the location of Feature B.

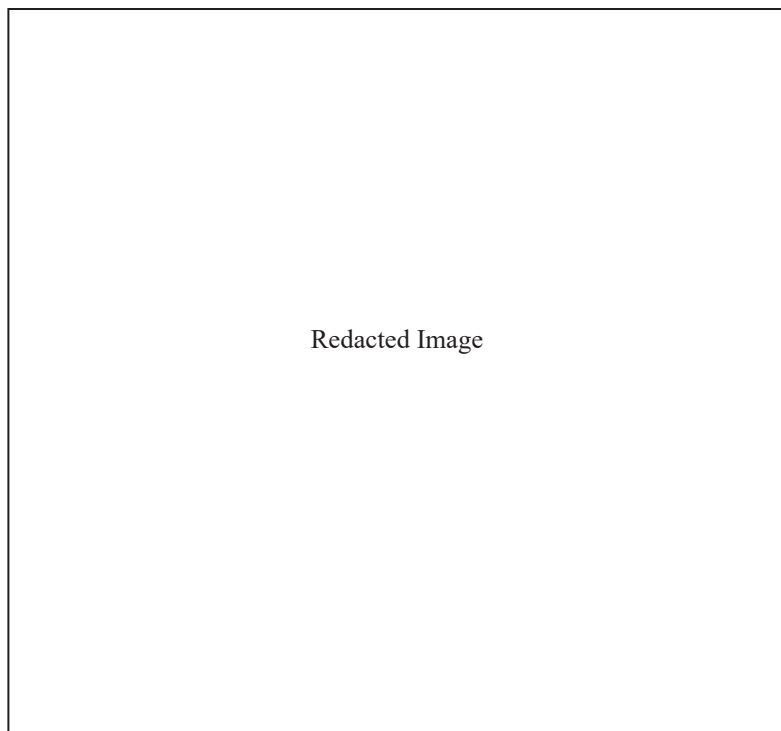


Figure 5-37. Feature D on site 41VV1682 is a buried concrete rectangular foundation (defined by white dashed line) with a scatter of construction debris. The inset map is from Tennis and colleagues (1996) and shows the location of Feature D.

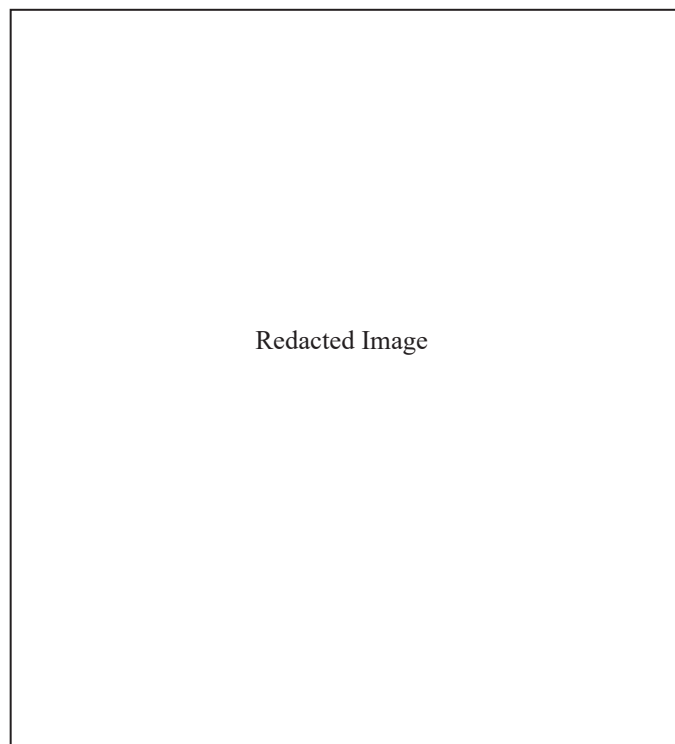


Figure 5-38. Detail of Feature E on site 41VV1682 showing the limestone foundation and brick fragments with a scatter of construction debris. The inset map is from Tennis and colleagues (1996) and shows the location of Feature E.

41VV1683

Background

In the 1994 survey of Laughlin AFB, the CAR identified site 41VV1683 on the west terrace of Sacatosa Creek (Tennis et al. 1996). It is an upland site densely covered with brush and mesquite (Figure 5-39). The site is described as a moderately dense scatter of lithics that included a Late

Paleoindian Angostura point, two biface fragments, edge-modified flakes (5), a possible hammerstone, cores (3), and debitage (16) (Figure 5-40, left panel; Tennis et al. 1996:46). Nine shovel tests were excavated and two dog-leash surveys conducted. Five of the shovel tests were positive for lithic artifacts, with one of the shovel tests containing lithics at 50 cmbs (Tennis et al. 1996:47). The dog-leash surveys resulted in the recovery of 41 artifacts from the eastern portion of the site. Tennis and colleagues (1996:47)



Figure 5-39. Image of site 41VV1683 overlooking the Sacatosa Creek floodplain in the background.

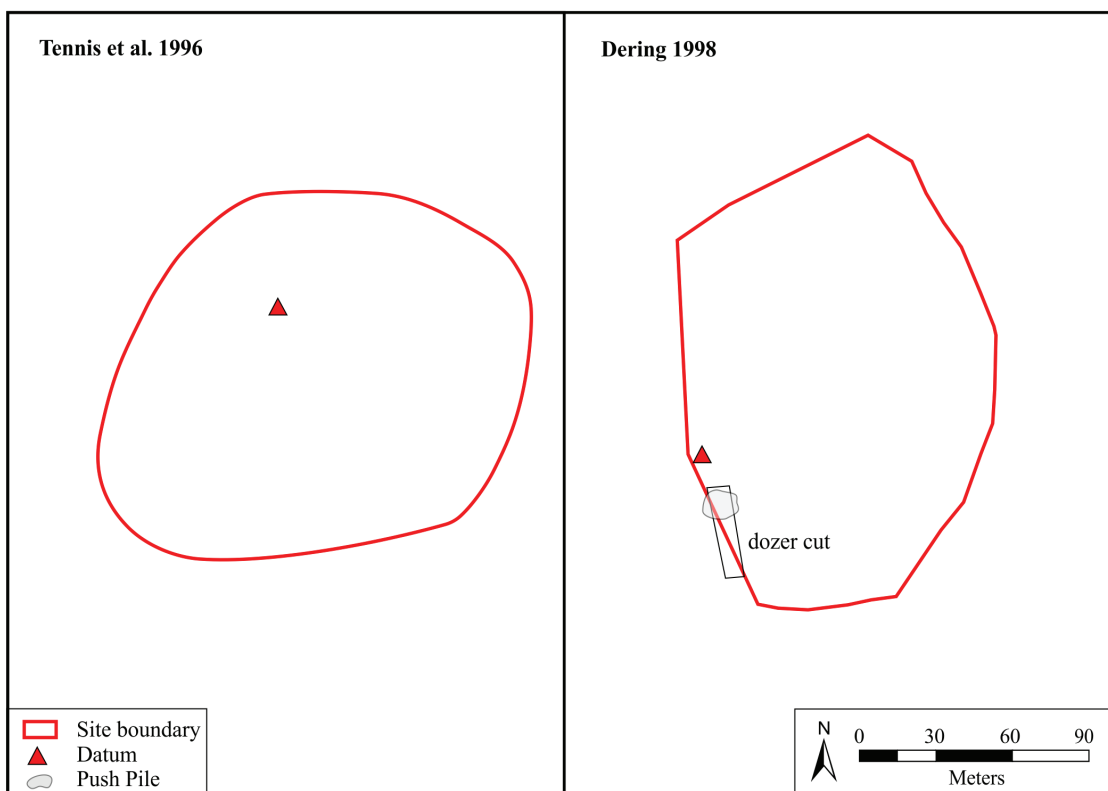


Figure 5-40. Maps of site 41VV1683. The left panel is from the CAR investigation, and the right panel is from the CEA investigation.

recommended the site as eligible for listing in the NRHP based on the presence of a Late Paleoindian component and the potential for subsurface archaeological deposits.

The CEA excavated four test units and surveyed the site with eight transects (Figure 5-40, right panel; Dering 1998:117). Seventy-one artifacts were recovered from the test units, an artifact density of 41.8 per m³. The test unit assemblage consisted of 67 pieces of debitage, a biface, a core, an edge-modified flake, and a piece of FCR (Dering 1998:117). The surface transects recorded 7 cores, 17 pieces of debitage, and 7 FCRs (Dering 1998:119). Three projectile points were collected outside the surveyed area. They included an Early Archaic Uvalde, a Middle Archaic Langtry, and a distal fragment of an unidentified point (Dering 1998:119). Artifacts were found in a relatively

thick mantle of soils of eolian and colluvial deposition. Geoarchaeological interpretation of this mantle suggests that it is heavily disturbed by bioturbation, with other areas of the site deflated (Dering 1998:221). The CEA, noting the lack of intact deposits as well as the sparse assemblage, recommended 41VV1683 as not eligible for listing in the NRHP (Dering 1998).

Current Investigation

The CAR documented 41VV1683 on August 12, 2020, using the map produced by Dering (1998; see Figure 5-40). Photopoints 21 and 22 were placed on the western portion of the site. An additional photopoint (27) was added on the south-central portion of the site on September 21 (Figure 5-41).

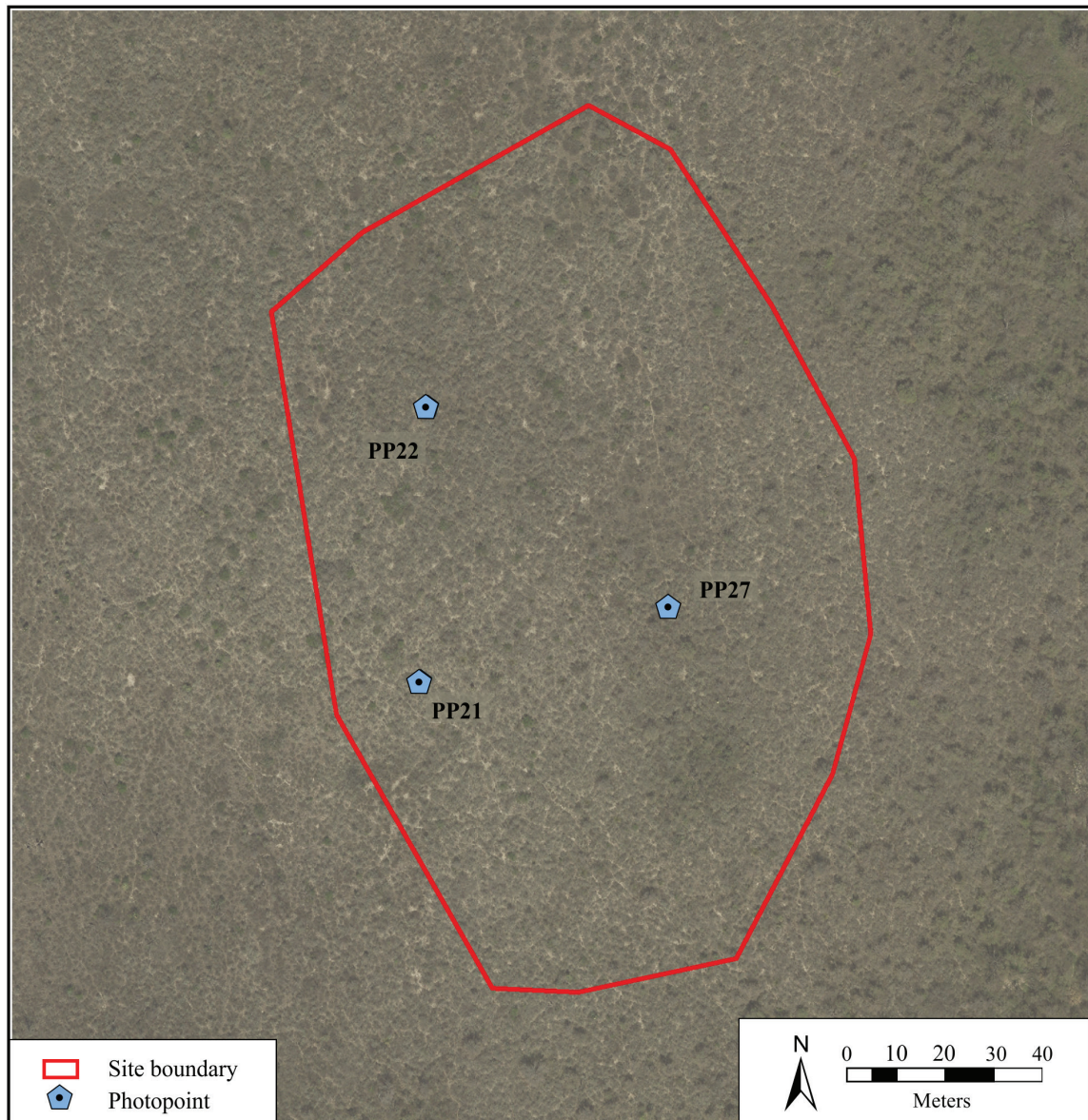


Figure 5-41. Site 41VV1683 showing photopoints.

During placement of the photopoints, CAR personnel noted that, like site 41VV1654, site 41VV1683 was heavily overgrown. Because systematic transects would be extremely time-consuming, the CAR requested permission from Argonne to alter the TRU strategy to focus on exposed trails. After that request was approved, the CAR executed this revised survey strategy, which consisted of examining 24 TRUs (Figure 5-42).

The CAR conducted the TRU survey of 41VV1683 on September 18, 2020. The TRU sample of 2,160 m² covered roughly 11.25% of the site. Surface visibility on the TRUs,

which focused on exposed game trails and other areas with less overgrowth, ranged from 50 to 80%, with an overall average of 72.5% visibility.

Figure 5-42 shows the TRU locations and the recovery for chipped stone debitage and FCR. The CAR recorded FCR (n=8) in four TRUs and chipped stone (n=7) in four TRUs. Two edge-modified flakes were also recorded. Given the relatively high percentage of the site surveyed, the quantity of recovered artifacts was surprisingly small. No features were recorded. The findings from this investigation are similar to those of Dering (1998:Table 32).

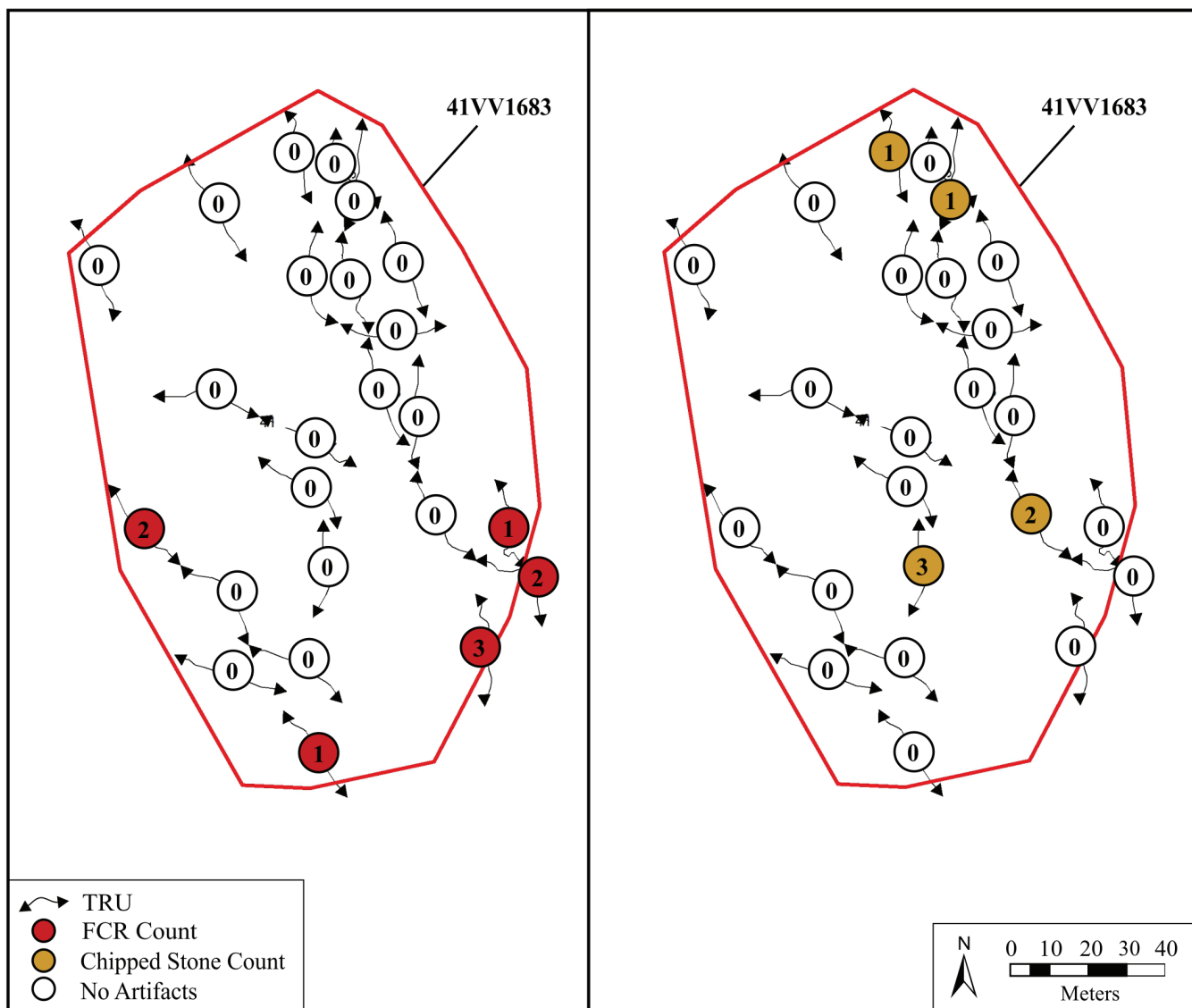


Figure 5-42. TRU locations and counts in cells for FCR (left panel) and chipped stone debitage (right panel) on site 41VV1683.

41VV1684

Background

The CAR identified and recorded 41VV1684 in the center portion of the base (Figure 5-43). They describe it as three areas, designated A, B, and C. Each contained a small surface scatter of debitage and FCR (Tennis et al. 1996:Table 5-8). Four shovel tests were excavated, revealing shallow bedrock or gravel/caliche encountered at between 9 and 50 cmbs. One shovel test was positive for a piece of debitage and seven FCRs at 10 cmbs, however, it was terminated at 13 cmbs, due to gravels and caliche (Tennis et al. 1996:50). Tennis and colleagues (1996) describe the site as highly disturbed and speculate that some of the sediment containing artifacts was brought to the site during construction or landscaping. Tennis and colleagues (1996) recommended that 41VV1683 was not eligible for listing in

the NRHP, based on the small artifact assemblage and the lack of site integrity. The site was not revisited by the CEA.

Current Investigation

The location of 41VV1684 was relatively certain, given the maps referencing identifiable features on historic satellite imagery (Google Earth 2020). The CAR revisited the location of 41VV1684 on August 13, 2020 (Figure 5-44). The CAR placed one photopoint (29) on an existing water-valve box as a locational marker. Since the 1994 investigation, the area encompassing 41VV1684 has been significantly developed, with construction of a parking lot, the base gym, and other buildings. The site likely no longer exists due to this extensive development. No TRU survey was undertaken at this site. The CAR recommends that no further actions are necessary at this site.

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Figure 5-43. Site map of 41VV1684 after Tennis et al. (1996:Figure 5-7). Insert is a 1996 aerial photograph (courtesy of Laughlin AFB).

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Figure 5-44. Site 41VV1684 showing Photopoint 29 and a parking lot, gym, sidewalks, and auxiliary buildings within the site boundary.

41VV1685

Background

Site 41VV1685 is located on a bedrock terrace west of Sacatosa Creek on the east side of the base (Figure 5-45). The landform consists of four lobes dissected by drainages with an upland area in the western and northwestern portions of the site (Figures 5-46 and 5-47). The site measured approximately 72,000 m² and, due to its size and topography, was divided into 4 areas designated A through

D by the 1994 CAR crew (Figure 5-48, left panel; Tennis et al. 1996:51).

Nineteen shovel tests were excavated, ranging in depth between 1 to 50 cmbs. Only three of the shovel tests were positive for artifacts despite the observation of surface artifacts. Nine dog-leash survey areas were completed, resulting in the characterization of the site as an extensive lithic scatter with unused chert cobbles eroding from the bedrock. Areas A, B, and C contained tested cobbles, cores, and a high percentage of primary and secondary



Figure 5-45. View of Sacatosa Creek from the southern portion of site 41VV1685.



Figure 5-46. View to the north of site 41VV1685 showing one of the three large drainages that cut through the site.

flakes. Area D contained a larger number of tertiary flakes, formal tools such as bifaces, unifaces, and edge-modified flakes as well as FCR. Tennis and colleagues (1996) recommended that 41VV1685 was eligible for inclusion in the NRHP under Criterion D.

The CEA (Dering 1998:Table 25) conducted Phase II investigations, excavating 11 test units or approximately 2.67 m³ (Figure 5-48, right panel). In addition, six 20-x-20 m characterization units were examined (Dering 1998:108). A total of 705 artifacts were recovered from the test units, with a density of 264.04 artifacts per m³ (Dering 1998:108). Lithics included six cores, four edge-modified flakes, two unifaces, and one dart point, with only a small amount of FCR (n=66; Dering 1998:112). The depth of excavation ranged from 7 to 49 cmbs, with an average depth of 0.24 cmbs (Dering 1998:Table 25). The majority of artifacts (92.7%; n=654) were found in the upper two levels (Dering 1998:Table 25). The surface survey documented 252 cores, 11 bifaces, 3 unifaces, and a Late Archaic Montell point (Dering 1998:112). No features were documented during this phase of the investigation.

As previously mentioned, most of 41VV1685 is situated on a bedrock terrace mantled by Uvalde gravels. Soils are very shallow, consisting of gravelly silty loam underlain by a Bk horizon over bedrock (Dering 1998:110). Dering (1998:110) states there is little potential for buried cultural deposits in this environment. Dering (1998:Table 32) increased the size of 41VV1685 approximately 59% to 115,875 m². The CEA recommended 41VV1685 as not eligible for inclusion in the NRHP, based on the lack of

site integrity, the lack of subsurface potential, and an absence of datable material (Dering 1998:Table 32).

Current Investigation

The CAR archaeologist combined recent Google Earth 2020 aerial imagery with previous site maps using site markers that included the fence and road to confirm the location of 41VV1685. The CAR placed three photopoints (PP14, PP15, and PP16) within the site on August 11, 2020 (Figure 5-49). PP14 was placed on the southernmost lobe of the site (Area A). Debitage, a biface, and tested cobbles were observed on the surface near the photopoint. PP15 is located on the south-central lobe (Area B), possibly near a previously excavated CAR shovel test. Surface artifacts were also observed in this area, consisting ofdebitage, cores, tested cobbles, and FCR. PP16 was placed in the northern lobe (Area D). A previous test unit was identified and is located 1 m to the west of this photopoint. As with the previous two photopoints, surface artifacts were observed at this location and included a biface,debitage, tested cobbles, and FCR. The CAR also documented a small FCR feature in this portion of the site near the north-south-oriented two-track road (Figure 5-50). A reworked Late Paleoindian projectile point base (Figure 5-51) and a Guadalupe-like adze were found near the FCR feature.

The CAR conducted the TRU survey of 41VV1685 on September 17, 2020 (Figure 5-52). The survey consisted



Figure 5-47. View to the north of the upland portion of site 41VV1685.

of five transects with 64 TRUs (Figure 5-52). The survey sampled 5,760 m², approximately 4.9% of the site.

Visibility ranged from 0 to 100%, with an average of 44.8%. Figure 5-53 used the TRU estimates of the percent of the ground surface that was visible to interpolate visibility at the site level. The figure suggests that visibility generally decreases from east to west, with the highest visibility in the northeastern quadrant of the site.

Sixty-two pieces of chipped stone debitage were observed, resulting in an overall site density of only 0.01 per m². In contrast, chipped stone tools and cores were relatively

common, with 51 tools or cores occurring in 25 TRUs. FCR was not common on the site, with only 44 items documented. While a feature was noted on the CAR's previous visit to the site (see Figure 5-50), it did not fall within the TRU sample.

Figure 5-54 shows the interpolated distribution of chipped stone debitage at a site level. Comparisons with Figure 5-53 clearly highlight the impact of visibility on this distribution. While FCR followed a roughly similar pattern, a figure for that distribution was not developed as there were only 44 pieces recorded, and the maximum number of FCR in any single TRU was 4.

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Figure 5-48. Maps from the previous investigation of site 41VV1685. The left panel is from the CAR investigation, and the right panel is from the CEA investigation.

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Figure 5-49. Photopoints on site 41VV1685 and location of a feature observed during the CAR's initial visit (see Figure 5-50).



Figure 5-50. Small hearth feature found on the eastern portion of site 41VV1685 during the first field session.



Figure 5-51. A reworked late Paleoindian point found on the surface of site 41VV1685 near the hearth feature.

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Figure 5-52. Transects and TRUs for the second visit to site 41VV1685 and a feature recorded during the initial visit.

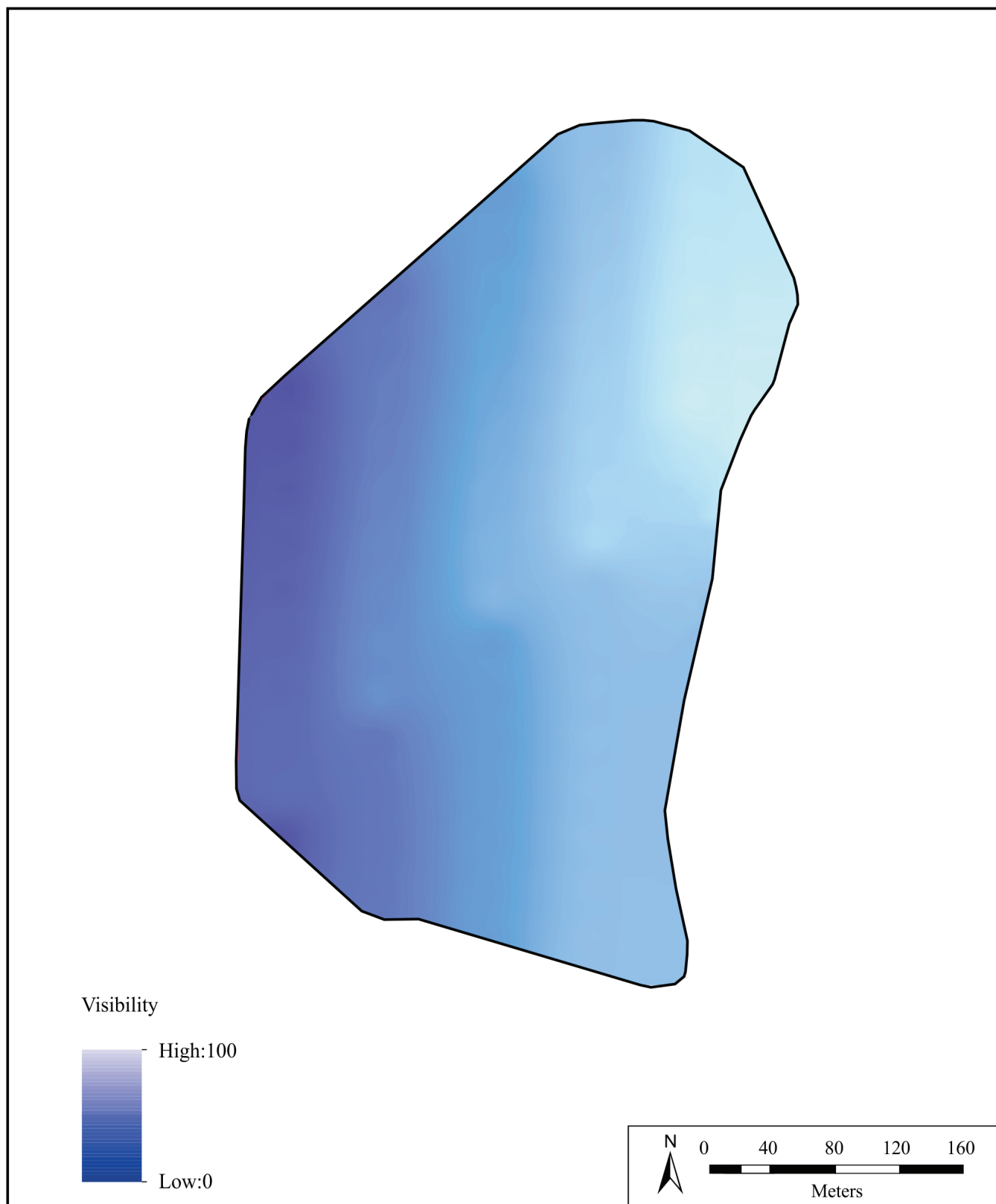


Figure 5-53. Estimates of the percent of ground surface visible at site 41VV1685, derived from TRU data. Figure used IDW interpolation in ArcGIS 10.8.1 with a search radius of 90 m.

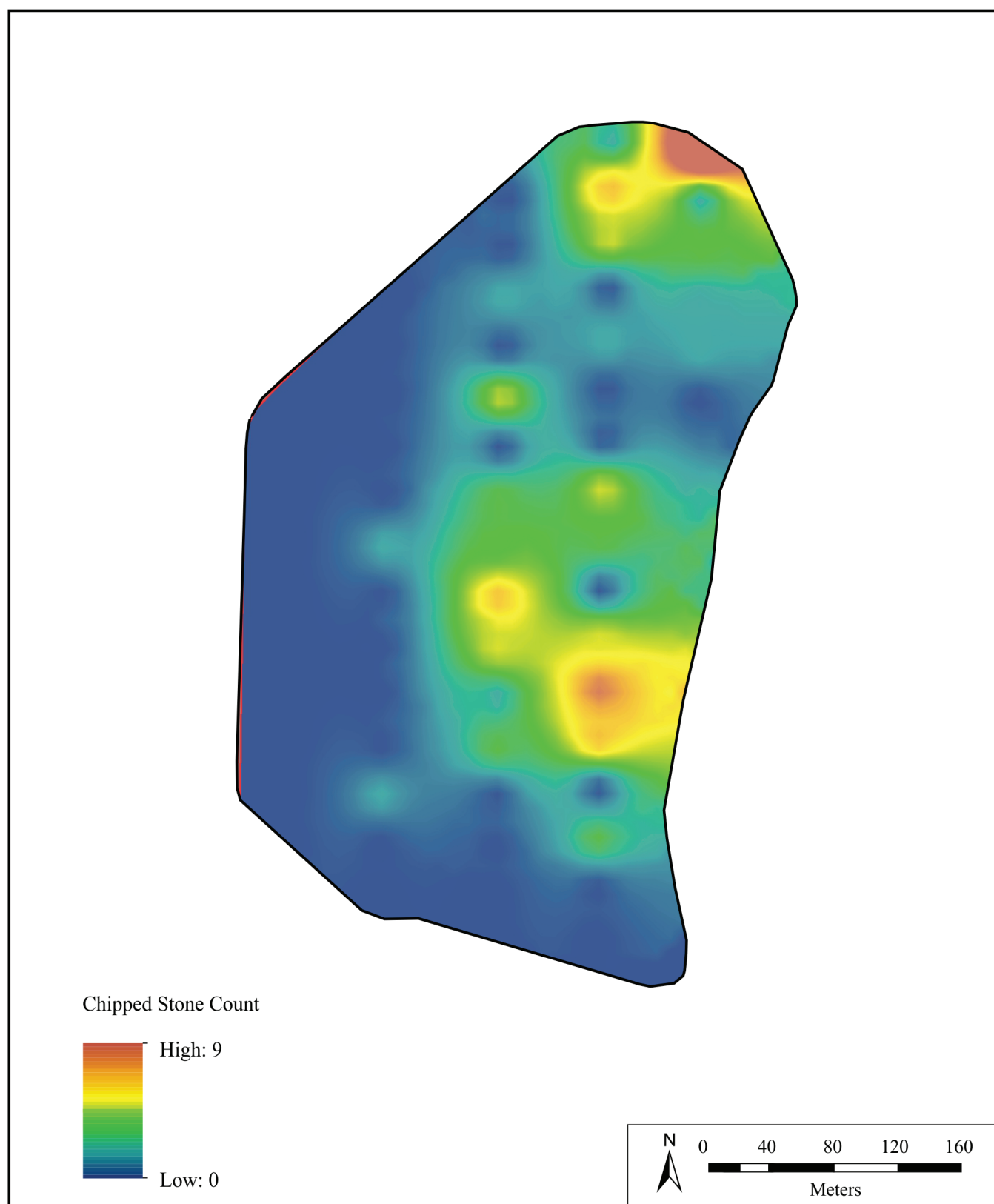


Figure 5-54. Chipped stone debitage counts on site 41VV1685 derived from TRU data. Figure used IDW interpolation in ArcGIS 10.8.1 with a search radius of 90 m.

Sacatosa Creek Sites (41VV1686 through 41VV1691)

Background

Sites 41VV1686 through 41VV1691 were recorded by Tennis and colleagues (1996) along the east bank of Sacatosa Creek (Figure 5-55 and Figure 5-59, right panel). The southernmost site is 41VV1686, which lies within Terrace 1 (T1) approximately 1.5 m above the creek. Sites 41VV1687 and 41VV1688 abut the floodplain. Site 41VV1691, just north of 41VV1688, is 40 m east of the creek and occupies more of T1 that is adjacent to the valley ridge. Site 41VV1690 is directly south of 41VV1689 and shares a similar topography. The northernmost site, 41VV1689, lies on top of T1, abutting the valley ridge of Sacatosa Creek (Figure 5-56). Vegetation consists of mesquite, huisache, acacia, prickly pear, and tasajillo, with many areas barren due to livestock grazing (Figures 5-57 and 5-58). This section will present an overall discussion

of these six sites, referred to collectively as the Sacatosa Creek sites, rather than discussing them as separate entities, since they are located on the same landform and in close proximity to one another.

In 1994, the CAR excavated 18 shovel tests and conducted eight dog-leash surveys on these sites (Tennis et al. 1996:Chapter 5). Table 5-1 summarizes the findings from the Tennis and colleagues (1996) investigation of the Sacatosa Creek sites. Tennis and colleagues (1996:Table 12-1) recommended that all Sacatosa Creek sites be considered eligible for listing in the NRHP under Criterion D.

Table 5-2 shows the level of work conducted by the CEA (Dering 1998) during their investigation of the Sacatosa Creek sites. Fifteen test units were excavated, resulting in the removal of 7.51 m³ of deposits. Six shovel tests were excavated at 41VV1689 to link features found in the western and eastern portions of the site. In addition, the CEA conducted a 100% surface survey of each site (Dering 1998:Chapter 6). That investigation resulted in a size increase of all Sacatosa



Figure 5-55. View to the south of Sacatosa Creek. The six sites discussed in this section are to the east (left) of the creek.



Figure 5-56. The northeastern portion of site 41VV1689 is an upland of sparse vegetation.



Figure 5-57. Scrub desert vegetation of mesquite, prickly pear, and grasses was observed throughout the six Sacatosa Creek sites. View to the north from Photopoint 7 on site 41VV1689.



Figure 5-58. View of site 41VV1691, showing cattle trails and barren areas due to grazing, which was common throughout the six Sacatosa Creek sites.

Table 5-1. Summary of the findings from the Tennis and colleagues (1996:Table 12-1) investigation of the Sacatosa Creek sites

Sites	Description	Site Size (m ²)	Number of Feature(s)	Temporal Diagnostics
41VV1686	Lithic scatter	840	3	None
41VV1687	Lithic scatter	60	0	None
41VV1688	Lithic scatter	12,800	2	Unidentified lanceolate (Paleoindian), Kinney (Middle Archaic), Ensor (Late Archaic)
41VV1689	Lithic scatter	2,800	1	Bandy/Martindale (Early Archaic)
41VV1690	Open camp site	625	4	Perdernaes (Late Archaic)
41VV1691	Lithic scatter	189	0	None

Table 5-2. Summary of the level of work conducted by the CEA of the Sacatosa Creek sites (Dering 1998)

Sites	Number of Test Units (TU)	TU Volume (m ³)	Shovel Tests	Trenches	Site Size (m ²)
41VV1686	2	0.78	0	1	1,440
41VV1687	2	0.78	0	1	2,925
41VV1688	4	2.19	0	2	7,200
41VV1689	4	2.40	6	0	5,586
41VV1690	2	0.87	0	0	9,025
41VV1691	1	0.49	0	0	1,520
Total	15	7.51	6	4	27,696

Creek sites; the overall area increased approximately 66%, making the sites essentially contiguous (Figure 5-59, right panel; Dering 1998:Table 34).

Table 5-3 is a summary of the findings by the CEA during investigation of the Sacatosa Creek sites (Dering 1998:Chapter 6). Dering (1998:190) suggested that lithic tools found at the Sacatosa Creek sites might have been associated with plant use. Dering (1998:Table 55) also characterized the seven excavated features found at the Sacatosa sites as four FCR platforms (i.e., a single or double layer of FCR), two FCR basins, and one FCR concentration. Dering (1998:202) noted that three of these seven features, those found at 41VV1689 and 41VV1690, contained sufficient FCR mass to bake plants

that required long cooking times, while the remaining features might have served other purposes. Temporal diagnostics suggest the landform was used from the Paleoindian through the Late Prehistoric periods. Dering (1998:142) interpreted that occupation as a series of short-term campsites, based on the construction and type of thermal features found along the eastern side of Sacatosa Creek.

The Sacatosa Creek sites, while occupying the same landform, varied in terms of geomorphic character. Deflation characterized 41VV1686 and 41VV1687 (Dering 1998:205). Artifacts were in a mixed context and were found on the surface or just below the surface (Dering 1998:206). Site 41VV1688 was less impacted by deflation and contained

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Figure 5-59. Map of the six Sacatosa Creek sites. The left map is from the CAR investigation, and the right map is from the CEA investigation. Note that the latter investigation resulted in the enlargement of most of the sites, resulting in a nearly continuous archaeological site.

Table 5-3. Summary of the CEA investigation of the Sacatosa Creek sites (Dering 1998)

Sites	Number of Artifacts from Test Units (Density)	Number of Features	Surface Survey	Temporal Diagnostic	Radiocarbon Date
41VV1686	378 (471.8 per m ³)	8	Unidentified dart point (1), cores (10), bifaces (3), edge-modified flake (1)	Uvalde (Early Archaic)	No charcoal present
41VV1687	156 (156.0 per m ³)	1	Cores (4), bifaces (2), edge-damaged cobble tool (1)	None	No charcoal present
41VV1688	1,055 (479.5 per m ³)	4	Cores (10)	None	2090 ± 50 (NSRL-3556), 2080 ± 50 (NSRL-3557), 160 ± 110 BP (Beta 968968)
41VV1689	183 (79.6 per m ³)	6	Cores (10), biface (1), edge-modified flake (1)	Lanceolate (Paleoindian)	100 BP (GX 22534), 700 ± 190 BP (GX 22535)
41VV1690	78 (97.5 per m ³)	6	Core (1), projectile point (1)	Early Triangular (Early Archaic)	1480 ± 250 BP (GX 22536)
41VV1691	33 (70.0 per m ³)	0	Unidentified dart point, cores (1), bifaces (2), uniface (1)	Unidentified dart point (Archaic)	No charcoal present

a thick colluvial mantle with two possible discrete cultural deposits suggesting that the site has archaeological integrity (Dering 1998:206). Sites 41VV1689 and 41VV1690 share the same soils and stratigraphic character (Dering 1998:206). The discovery of a buried late Holocene-era paleosol suggests that other portions of the site may contain archaeological deposits with some integrity (Dering 1998:206). The location of 41VV1691, adjacent to the valley wall, differs somewhat from the five other Sacatosa Creek sites. The archaeological deposits from 41VV1691 have been strongly affected by deflation and gullies that removed Holocene-era soils, leaving a course gravelly colluvium.

The CEA recommended that 41VV1688, 41VV1689, and 41VV1690 are eligible for inclusion in the NRHP (Dering 1998:Table 56). They based this recommendation on the degree of site integrity and the strong possibility of intact deposits (Dering 1998:218). Sites 41VV1686, 41VV1687 and 41VV1691 were recommended as not eligible for listing in the NRHP (Dering 1998:Table 56). These sites lacked diagnostic artifacts, carbonized plant remains, and/or the potential for buried deposits due to erosion (Dering 1998:216, 218–219).

Current Investigation

CAR archaeologists visited the Sacatosa Creek sites during the initial visit to the base. The barbed wire fence that separates 41VV1688 and 41VV1691 was identified at

that time. This fence served as a marker to orient the CEA site boundaries shown in Dering (1998:Figure 17). Using the CEA maps and Google Earth historic satellite imagery, the project archaeologist and CAR GIS analyst were able to create a GIS shapefile for the Sacatosa Creek sites.

CAR archaeologists visited the Sacatosa Creek sites on August 10 and 11, 2020, placing 13 photopoints within the sites (Figure 5-60). In addition, the CAR recorded any prominent markers that would help in the adjustment of the site boundaries. Several photopoints were placed near or adjacent to test units from the CEA Phase II investigation. Photopoint 1 was placed on top of an extant rebar stake that may be a datum for Test Unit 1 (Dering 1998:107). Photopoint 2 was placed next to a test unit potentially identified as Test Unit 2 of 41VV1690, though the location currently falls within the boundaries of 41VV1689 (Figure 5-60). Photopoint 3 was placed 5 m southeast of a test unit in the east portion of 41VV1689 (Dering 1998; Figure 30). Photopoint 4 was placed along a two-track road southwest of a burned rock midden feature. Photopoint 7 was placed 3 m east of a test unit in 41VV1689 (Dering 1998:Figure 30). Photopoint 9 was placed south of a drainage filled with concrete debris. This might be the remains of Backhoe Trench 1N excavated at 41VV1688 by CEA archaeologists in 1996 (Dering 1998:Figure 27).

The CAR conducted two TRU surveys of the Sacatosa Creek sites. The first survey took place on September 17

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Figure 5-60. Location of photopoints on the six Sacatosa Creek sites.

and the second on September 21, 2020. The first survey (Survey 1) consisted of six transects with 54 TRUs (Figure 5-61). The second survey (Survey 2) used the same six transects of TRUs, but now with the TRU divided into a northern and a southern portion. This division effectively reduced the TRU cell size from 3-x-30 m to 3-x-15 m and

produced 108 TRUs. As noted in the previous chapter, the CAR's goal was to explore impacts of changes in survey methodology on the underlying patterns. For ease of comparison with the previous sites discussed in this chapter, Survey 1 results are presented first, and Survey 2 results are presented next.



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Figure 5-61. Survey 1 TRUs for the initial survey of the six Sacatosa Creek sites.

The 54 TRUs that made up Survey 1 sampled 4,860 m², or roughly 15.5% of the area encompassing the Sacatosa Creek sites. Surface visibility ranged from 0 to 100%, with

an average of 38%. Figure 5-62 shows the interpolated visibility, with increasing ground cover towards the creek (west) and on the southern end of the sites.

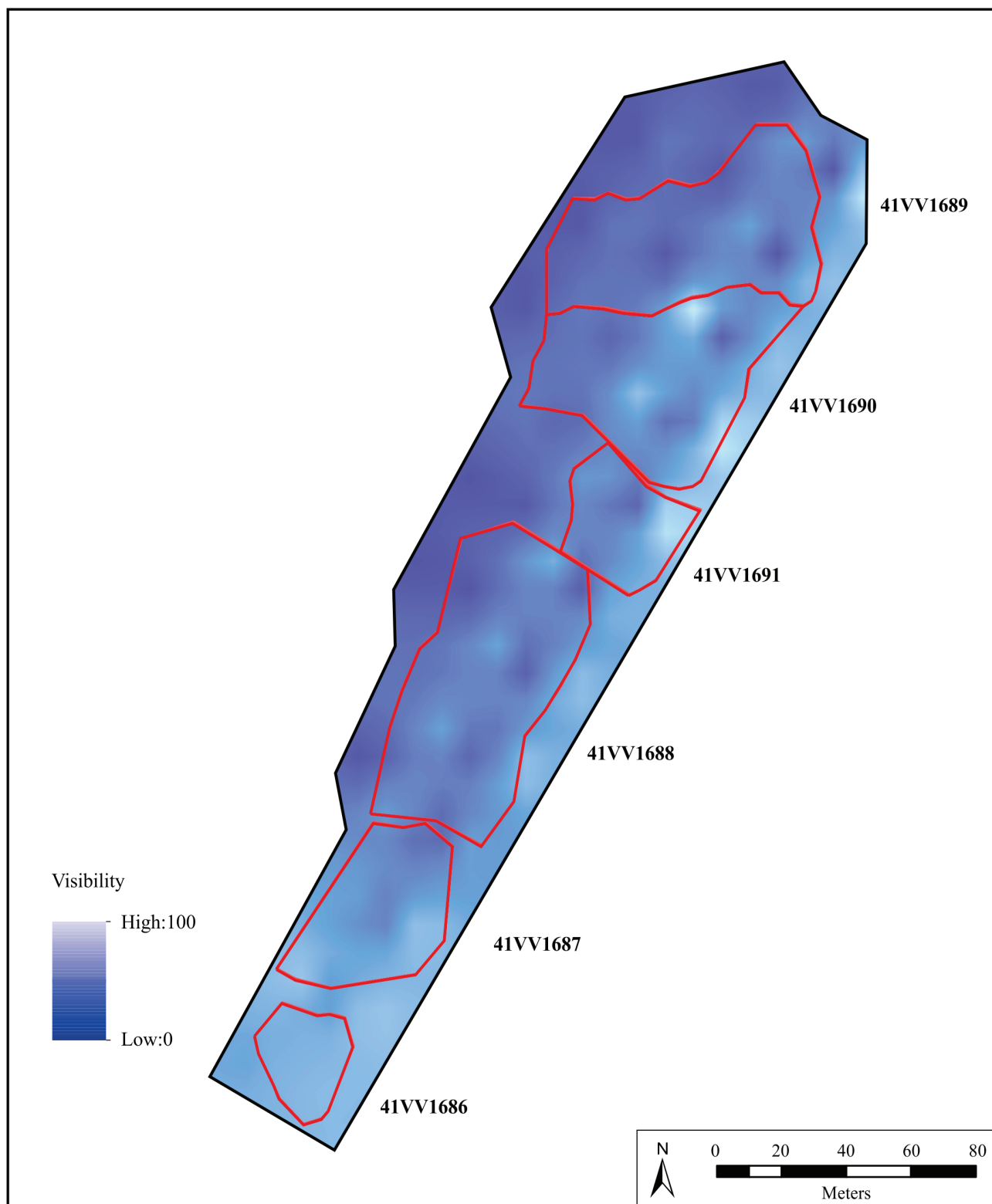


Figure 5-62. Estimates of the percent of ground surface visible at the Sacatosa Creek sites derived from TRU data. Figure used IDW interpolation in ArcGIS 10.8.1 with a search radius of 50 m.

FCR was observed throughout the six sites, and the CAR recorded 333 FCRs in 39 of the 54 TRUs (72.3%) during the first survey, a density of 0.069 items per m² in the TRUs. However, although sparse amounts of FCR occurred throughout the six sites, the majority of the FCR were in two features recorded at 41VV1690 (Figure 5-63) and 41VV1688 (Figure 5-64). Figure 5-65 shows the overall interpolated distribution, based on the initial survey of the area that highlights the clustered distribution. Removing these two TRUs with features produces a density of 0.028 FCR per m².

Recorded in only four TRUs, chipped stone debitage was not commonly encountered during the survey. Locations of the five pieces of chipped stone debitage are shown in Figure 5-66. The only other prehistoric item noted was a single biface recorded at 41VV1687. Several pieces of metal and glass were also noted in transects.

Also recorded on Survey 1 were the remnants of a corral and a collapsed structure constructed of wood and corrugated

metal with staples and wire nails used as fasteners. These features were located on 41VV1690 (Figure 5-67). Because the structure was not recorded by Tennis and colleagues (1996) or by Dering (1998), it is presumed to have been constructed within the last two decades.

Survey Comparisons

As noted previously, the CAR conducted a second TRU survey in the Sacatosa Creek area. Archaeologists attempted to walk the same six transects with the same recorder, but with smaller TRU recording sizes, partitioning the original TRUs into a northern and a southern component, each 3-x-15 m. This produced 108 TRUs. Smaller TRUs provided finer spatial control, though at a cost of more recording time. Note, however, that a variety of factors renders any strict, statistical comparison between the two survey results questionable. During both surveys, the documentation was hindered by vegetation, specifically brush patches which forced the surveyors off transect, requiring them to reenter the TRU past the areas of vegetation. In addition, on the second survey,



Figure 5-63. A partially buried, burned rock midden documented along a two-track road on site 41VV1690.

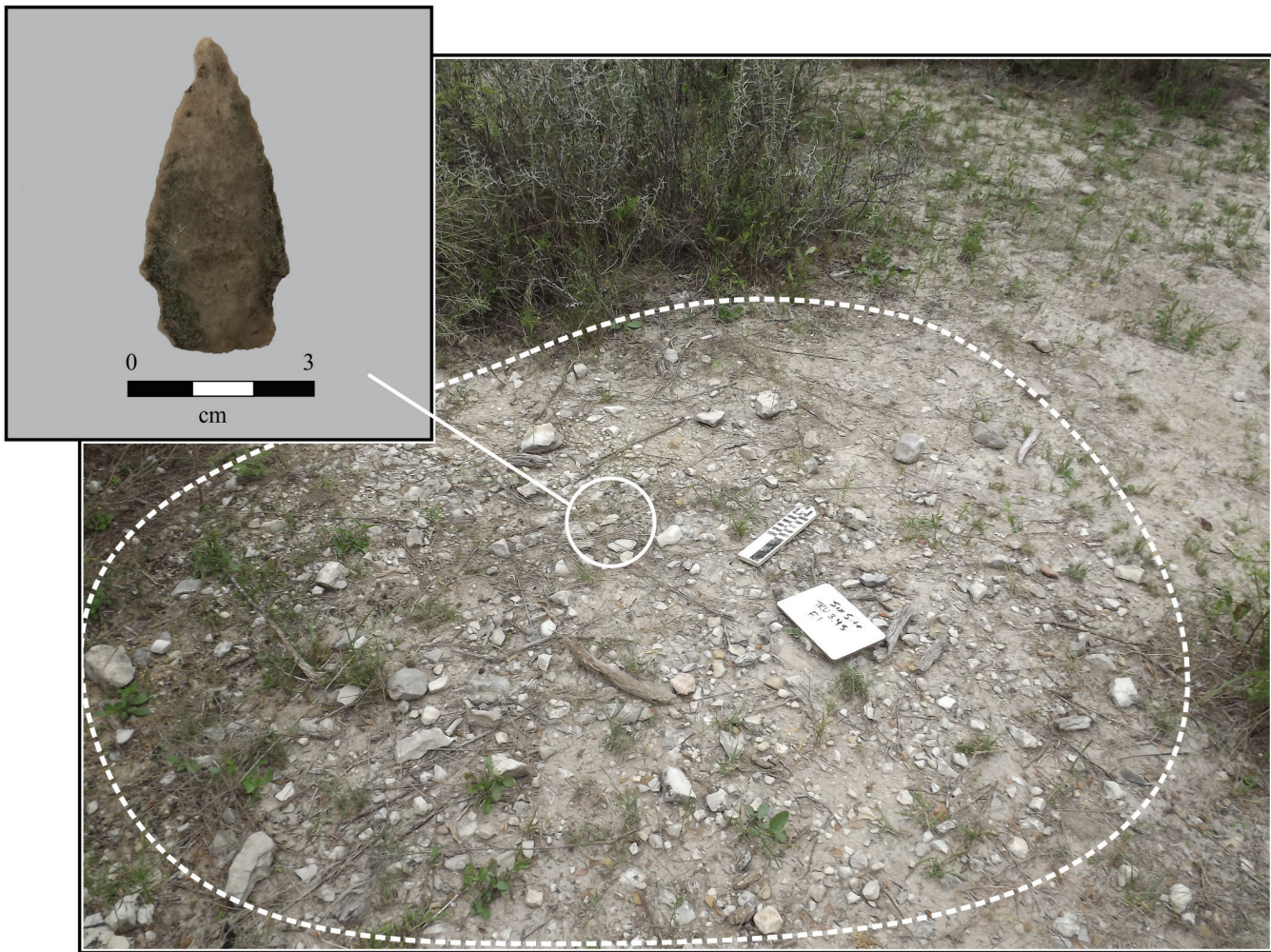


Figure 5-64. FCR scatter with chipped stone and a Langtry-like projectile point (circled in black; inset) found on site 41VV1688. Note that the point was recorded on Survey 2.

recorders knew where features were, having encountered them on their initial transects. Nevertheless, the exercise, which allowed for a general comparison between the two surveys, was useful in that it provided data on the utility of the approach for characterizing the archaeological record.

In most comparisons, the two surveys provided a similar picture of artifact counts. The FCR densities were essentially identical, with Survey 1 recording 0.0685 items per m^2 , compared to 0.0695 per m^2 in Survey 2. Survey 1 recorded only five pieces of chipped stone debitage and a single biface. Survey 2 recorded four pieces of debitage, and a few more lithic tools and four cores, including one projectile point. Both surveys suggest similar patterns at the macro level.

There are, however, several differences. Foremost among these is the recording of a third feature on Survey 2. This scatter of FCR, shown in Figure 5-68, was not recorded on the initial survey. Only three FCRs were recorded in the larger TRU on Survey 1. Figure 5-69 shows all features

recorded in the area, including the corral (see Figure 5-67), and identifies the feature recorded on the second survey.

While the addition of the feature on 41VV1691 is the principal difference, the distribution of material within the surveys also varied. Figure 5-70 compares non-feature FCR counts between Survey 1 and Survey 2. Not surprisingly, given the smaller TRU size, Survey 2 seems to provide better resolution. Artifacts summed at over a 90 m^2 TRU and plotted in the center of a 3-x-30 m block are now summed at 45 m^2 and plotted at the center of a 3-x-15 m block.

Survey 2 also took longer. Survey 1 was completed in 3 hours and 40 minutes. Survey 2 was completed in roughly 4 hours and 10 minutes. While not quantified, Survey 2 also resulted in greater lab processing time, given that twice the number of records were generated.

Figure 5-71 compares counts of all artifacts (chipped stone and FCR) in TRUs on the two surveys along Transect 1. This

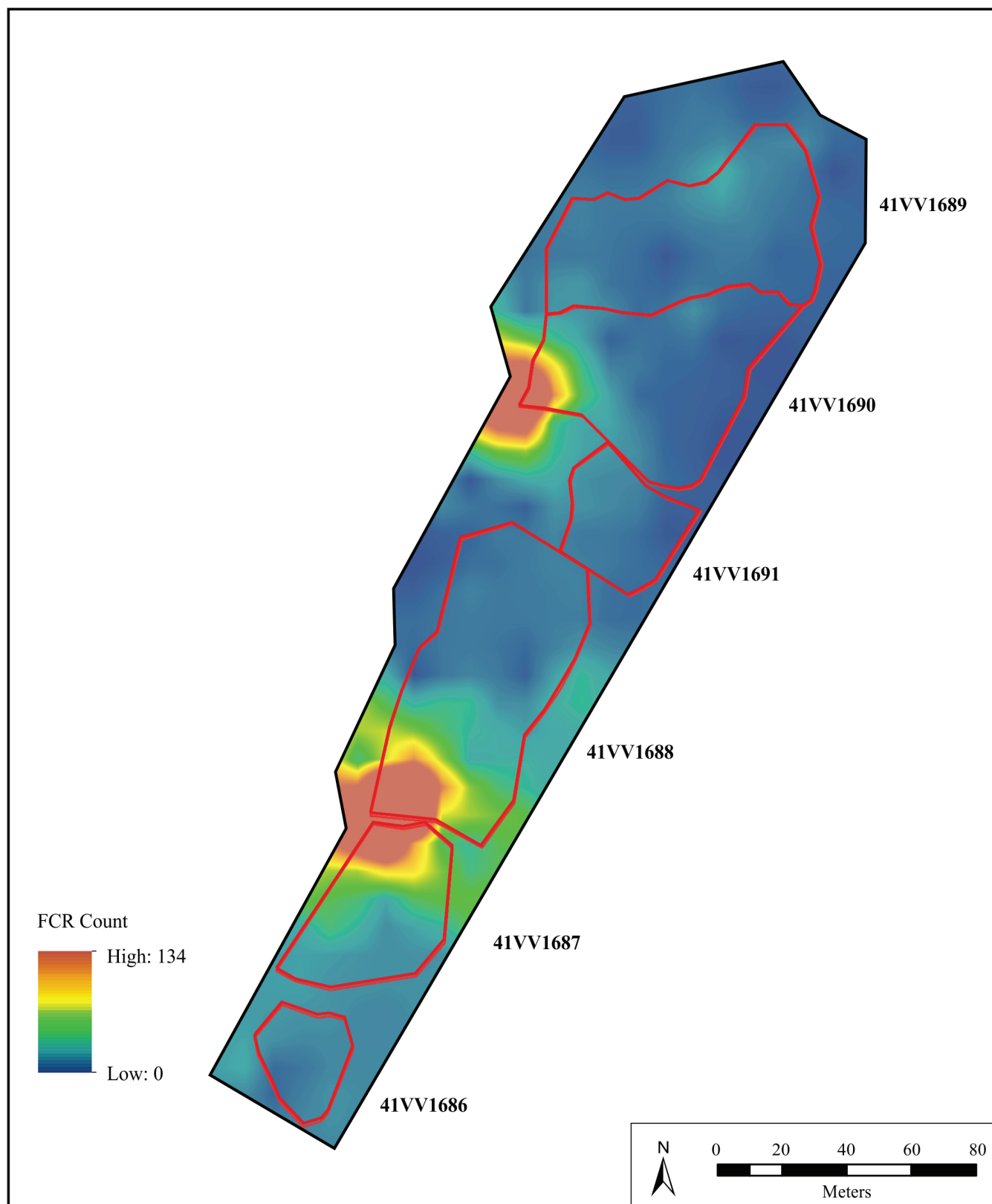


Figure 5-65. Estimates of FCR counts for sites along Sacatosa Creek interpolated from TRU counts. Figure used IDW interpolation in ArcGIS 10.8.1 with a search radius of 50 m.

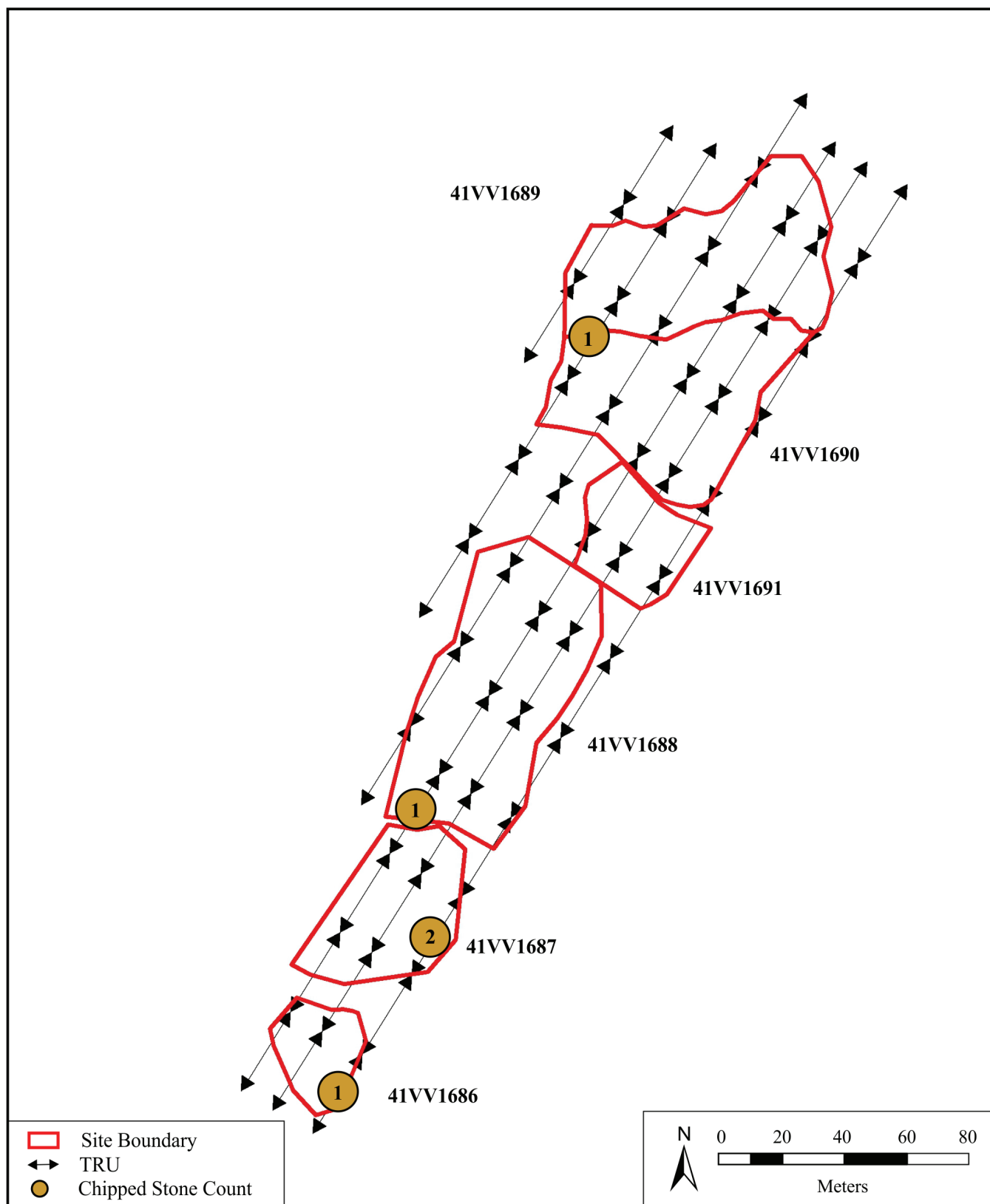


Figure 5-66. TRU locations and counts for chipped stone debitage on Sacatosa Creek sites.



Figure 5-67. Remnants of a corral found on site 41VV1690 (see Figures 5-60, 5-62).



Figure 5-68. A FCR scatter found on the surface of site 41VV1691 during Survey 2.

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Figure 5-69. Location of features and corral identified during Survey 1 and Survey 2.

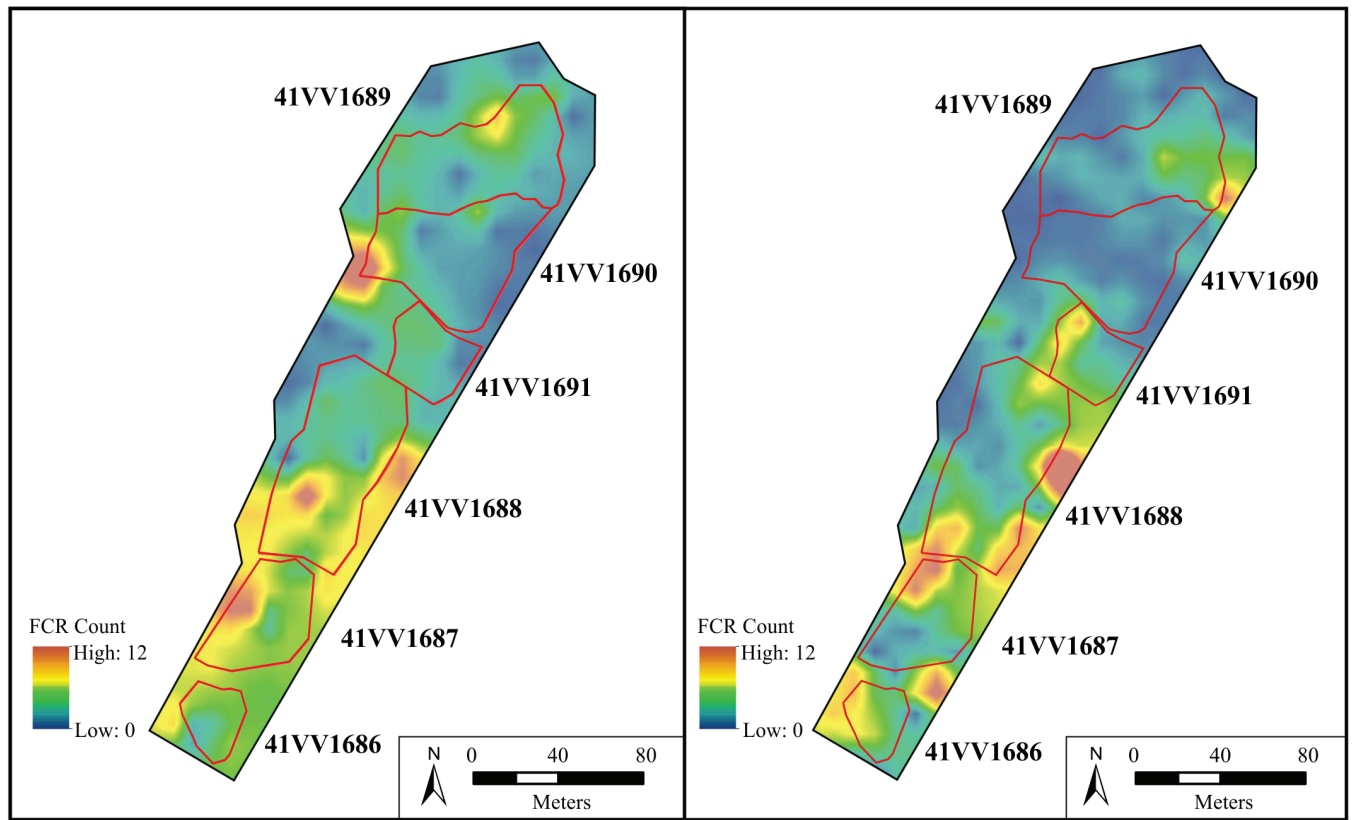


Figure 5-70. Non-feature FCR distribution, for Survey 1 (left panel) and Survey 2 (right panel). Interpolations were created in ArcGIS 10.8.1 using IDW with a search radius of 50 m.

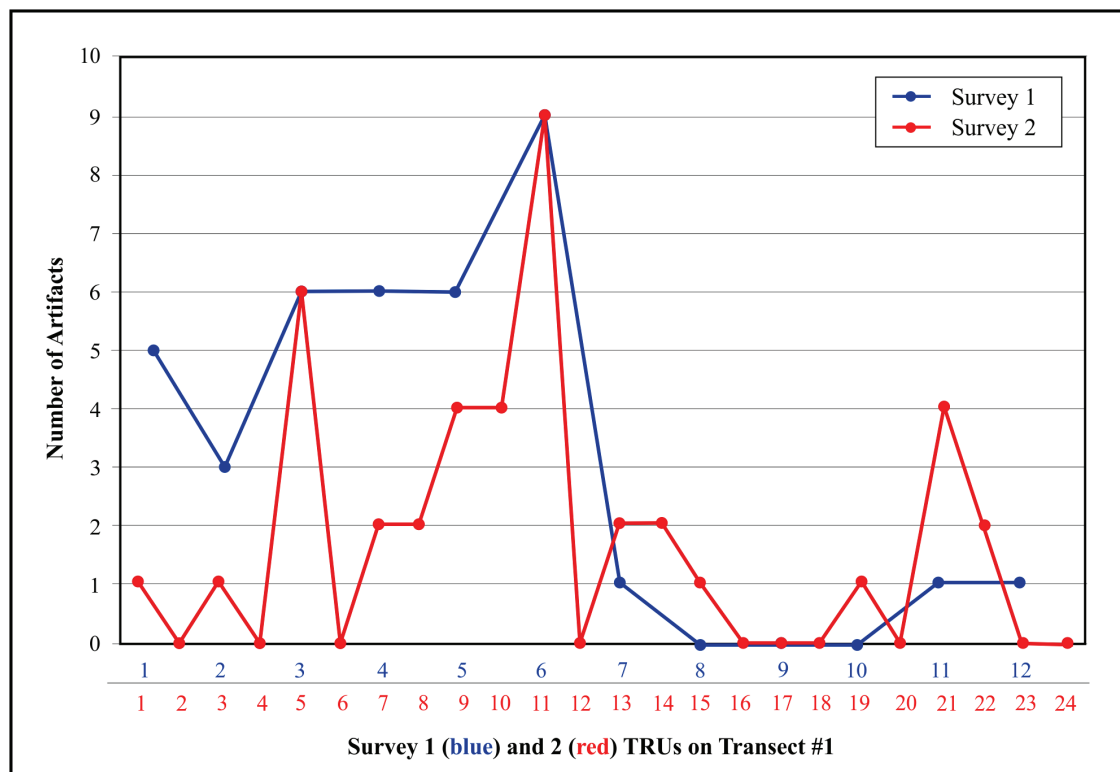


Figure 5-71. Survey 1 and Survey 2 comparison of documentation for all artifacts (chipped stone and FCR) along Transect 1 TRUs.

transect, along the eastern edge of the six-site area, had the highest recovery rates. While there is high variation in Survey 2 due, in part, to the smaller cell size, the overall numbers of items observed are surprisingly close, with 38 items on Survey 1 and 41 items on Survey 2. Both surveys also show higher counts at the beginning of Transect 1, peak counts in the middle, and lower counts near the end. While there likely always will be differences in survey data, given varying conditions and recorders, the similarities in the two data sets provides some confidence that the TRU methodology, even using the longer 30 m distance, is providing consistent information on the surface archaeological record.

Summary

The CAR conducted two phases of archaeological investigation of 13 sites in August and September 2020 at Laughlin AFB. Table 5-4 summarizes the results of that

investigation. During both phases, site conditions and impacts were documented as a basis to create stabilization strategies for each site, which are discussed in the following chapter. The primary goals of the first phase were to determine the accuracy of site locations and to make a preliminary assessment of site condition. During the project, 12 of the 13 sites were relocated. Site 41VV1684, a small lithic scatter, is presumed destroyed. The project also included the placement of photopoints and documentation of their locations with a GPS. The CAR placed 29 photopoints that can be used in the future to assess changes to individual sites. The CAR documented one feature and a Late Paleoindian point at 41VV1685 during the first phase. During the second phase, the CAR conducted a TRU survey of the twelve sites. The CAR documented 15 features and 7 projectile points during the TRU survey. The Sacatosa Creek sites were surveyed twice using a TRU reduced in size to 3-x-15 m (108 TRUs) to compare the accuracy of the technique using different TRU sizes.

Table 5-4. Summary of findings from the 2020 Investigation

Sites	Photopoint Number	Number of Recorded TRU (3 x 30 m)	Recorded Features	Diagnostic Points
41VV1653	26	4	0	0
41VV1654	17, 18, 19, 20	149	6	6
41VV1655	24, 25	6	0	0
41VV1682	23*, 28	21	5	0
41VV1683	21, 22, 27	24	0	0
41VV1684	29	n/a	n/a	n/a
41VV1685	14, 15, 16	64	1	1
Sacatosa Creek Sites (41VV1686–41VV1691)	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13	54	3	1

*not within the current site boundary

Chapter 6: Site Recommendations

This chapter presents the CAR's recommendations for stabilizing the 12 existing Laughlin AFB archaeological sites. These recommendations include the implementation and use of the photopoint system for the 12 sites, followed by general base-wide recommendations for site protection and avoidance. The final section contains site condition assessment and specific site stabilization recommendations for each of the existing archaeological sites. Site 41VV1684 is assumed to have been destroyed, so no condition assessment or recommendations are provided for that site.

Photopoint Monitoring

The CAR recommends that photopoint monitoring become a standard procedure to document the condition of the 12 existing sites. This will allow the Laughlin AFB Civil Engineer Squadron/Civil, Environmental (CES/CEIE) to assess site impacts through a long-term visual record, as well as provide a means to quantify erosion or deposition at each of the photopoints. The CAR suggests that documentation take place twice a year. Appendix B is a how-to guide for Laughlin AFB personnel to continue the photopoint documentation of archaeological sites. Appendix C contains the photopoint documentation (n=29) for all the sites in a Word format. A DVD will contain the raw data collected during the photopoint documentation including the original forms in a PDF format, the photographs in a JPEG format, and a photolog in Excel. In addition, CAR will provide a one-day training session of the photopoint process for Laughlin AFB.

General Base Recommendations

In subsequent discussion with Laughlin AFB CES/CEIE and Argonne, several preventive measures were discussed to mitigate potential impacts to archaeological resources base-wide. This includes the posting of signage, the avoidance of archaeological sites, and the implications of planned burns. This section briefly discusses these issues.

The overwhelming majority of archaeological sites are in areas not readily accessible to base personnel. These areas are located in the eastern and southeastern, undeveloped portions of the base and are fenced off, with the exception of the Sacatosa Creek sites, which are accessible from the ranch road to the south. This report recommends

remedying this situation, as discussed in the site-specific recommendations. Laughlin AFB CES/CEIE suggested the installation of signs that warn of the presence of archaeological sites in these areas and of the disciplinary actions and/or legal prosecution that might result from intentional or inadvertent site impacts. CAR suggests that these signs should be placed at access points to these areas, such as gates, so as not to draw attention to specific site locations. Argonne will produce said signs.

In addition, Laughlin AFB CES/CEIE recommended language in the report emphasizing that archaeological sites be avoided to reduce impacts from ground-disturbing activities. This activity includes planned actions such as construction, dumping, and training, as well as recreational activities such as off-roading. This issue can be solved in part by the installation of signage (mentioned above) with language stating that dumping and off-roading are prohibited. In addition, if the photopoint system is implemented, Laughlin AFB CES/CEIE will not only be visiting these archaeological sites on a periodic basis to assess site conditions but will also have a record of damage that could inform increased surveillance and/or criminal prosecution. Construction activities and planned military exercises are generally run through a chain-of-command that includes notification to Laughlin AFB CES/CEIE, which can inform relevant parties of the avoidance issue.

Finally, controlled burns are planned for future occasions to reduce dense plant under growth on undeveloped portions of Laughlin AFB. A map provided to Laughlin AFB CES/CEIE shows that all existing archaeological sites fall within these controlled-burn areas. Laughlin AFB CES/CEIE states that no heavy equipment will be used, and that vegetation will be hand-cut. However, the controlled burn will potentially impact archaeological sites by making them more visible, as well as by introducing modern carbon to these sites. Because specifics—timing and exact methodologies, etc.—of the controlled burns are unknown at this time, Laughlin AFB CES/CEIE should consult with Argonne prior to any controlled burn to mitigate impacts to archaeological sites.

Site-Specific Stabilization

This section provides a brief assessment of conditions at each site and specific recommendations to remedy current and/or potential impacts to the site.

41VV1653 - Site Recommendations

Site 41VV1653 is located along a hiking trail. The 1994 CAR investigation documented three FCR scatters and a “paucity of artifacts” (Tennis et al. 1996:36). The CEA could not relocate the site during their 1996 investigations. The current investigation documented no features and only a small number of FCRs and lithics. No temporal diagnostics have been recorded during either of the two site surveys. There is little potential for intact subsurface deposits, as indicated by the shallow shovel tests conducted by the CAR in 1994. Based on this, the CAR suggests that further testing of the site, proposed by Tennis and colleagues (1996:141), is unnecessary. The CAR recommends that 41VV1653 is not eligible for listing in the NRHP based on the low density of artifacts, lack of temporal diagnostics, and low potential for intact subsurface deposits.

A sign at the nearby trailhead advertises that “archaeological sites” are located within 100 feet (Figure 6-1). The CAR recommends that that the sign be removed and replaced

with one that does not include specific text referencing the site location. The trail contains other recently installed signs that provide information on the area and its historical use by Native people.

41VV1654 - Site Recommendations

The current investigation concurs with Dering’s (1998) comment that 41VV1654 has diversity in terms of landscape, including uplands, floodplain, and heavily modified areas. Large portions of the site have been affected by military activities and/or road blading. The most severe damage is in the south-central and southeastern areas of the site. The northern portions of the site have been less affected by these activities, although roads have impacted archaeological features in these areas.

The CAR recommends that additional photopoints be placed at 41VV1654, with a focus on those areas containing features found during this and previous investigations. At least three features are located within or adjacent to

Redacted Image

Figure 6-1. The CAR recommends removal of this sign that identifies the approximate location of site 41VV1653.

roads. The CAR recommends cultural material found in the road in the north-central and southern areas of the site be recorded with a total station, collected, analyzed, and curated (Figure 6-2). The CAR also recommends that the portion of the sheet middens in the north-central and southern areas be stabilized through road closures to lessen damage from erosion. Areas suggested for road closure are shown in Figure 6-3. If these measures are not possible, the CAR recommends other means, such as road mats or soil caps, to stabilize these features.

Sites 41VV1654, 41VV1655, and 41VV1683 are also located in a base-designated hunting area. As referenced earlier, Dering (1998) suggested that modern hunters may have collected artifacts from 41VV1655. In addition, the eight projectile points documented during this survey were all found on the surface. Accordingly, the CAR recommends including stronger language in Laughlin AFB Instruction 32-7064, Base Hunting. Currently, Section 1.6.21 (2020; Appendix A), states, “Destruction, injury, defacement, disturbance, or removal of government property is

prohibited. Searching for or removing objects of antiquity is prohibited. Recreational use of metal detectors for any purpose on Laughlin AFB is prohibited.” Section 1.6.21 could be rewritten to include language stating that the collection of artifacts from a federal facility is a violation of federal laws and military statutes and is subject to penalties including fines and/or incarceration.

41VV1655 - Site Recommendations

Site 41VV1655 is situated on a relatively stable landform abutting the main outside perimeter road on the east side of the airfield. This site was heavily impacted by road blading prior to the initial archaeological investigations (Figure 6-4). The site may have been subject to unauthorized artifact collection, as suggested by Dering (1998). Currently it appears that little recent activity has occurred on the site, as indicated by the collapse of a deer blind and overgrown vegetation. The CAR recommends that, if the road bisecting the site is no longer used, it should be closed (Figure 6-5). This closure would serve to minimize further damage to the site.



Figure 6-2. View of the sheet midden found along the road edge in the north-central portion of site 41VV1654.

Redacted Image

Figure 6-3. Aerial image showing suggested road closure at 41VV1654.



Figure 6-4. The road that bisects site 41VV1655. The CAR suggests closing this road if it is no longer in use to mitigate further damage to the site.

Redacted Image

Figure 6-5. Aerial image of site 41VV1655 showing suggested road closure.

41VV1682 - Site Recommendations

The Zacatosa Ranch site (41VV1682) consists of foundation remnants and a small scatter of artifacts. Tennis and colleagues (1996:118) noted that the site had been previously bladed and heavily damaged. The area that includes the site serves as a safety zone, and the only current activity is regular mowing.

The initial 41VV1682 site shapefile was plotted in the wrong location. The location was determined from the THC's Texas Archeological Sites Atlas and from maps on file at the CAR. The CAR created a new shapefile with the correct location using both the site maps presented by Tennis and colleagues (1996:Figure 9-2) and information gathered on visible features recorded during the most recent work. The CAR recommends increasing the site size to incorporate the extent of the service road feature and correcting the location in the THC's records (Figure 6-6).

41VV1683 - Site Recommendations

Site 41VV1683 is located on the west side of Sacatosa Creek. The site has not been impacted by road blading or

other activities except for a small area in the southwestern portion of the site. However, the site has experienced and is subject to erosion and bioturbation. The CAR recommends no other actions except that 41VV1683 be monitored using the photopoint system to document any future change or disturbances to the site.

41VV1685 - Site Recommendations

Site 41VV1685, as well as the Sacatosa Creek sites (412VV1686–41VV1691), are outside the base perimeter fence. Past investigations reported that livestock grazing impacted vegetation, which contributed to erosion and the displacement of artifacts on 41VV1685 (Dering 1998:113; Tennis et al. 1996:51). A two-track road also runs through the north-central portion of the site.

Following a survey of the area, the CAR recommends that fencing should be installed separating Laughlin AFB and neighboring properties (Figure 6-7). This fencing will mitigate livestock damage to the sites as well as other incursions (hunting, off road traffic, etc.). Further, the CAR recommends that 41VV1685 continue to be monitored using the photo points installed nearby. If erosion

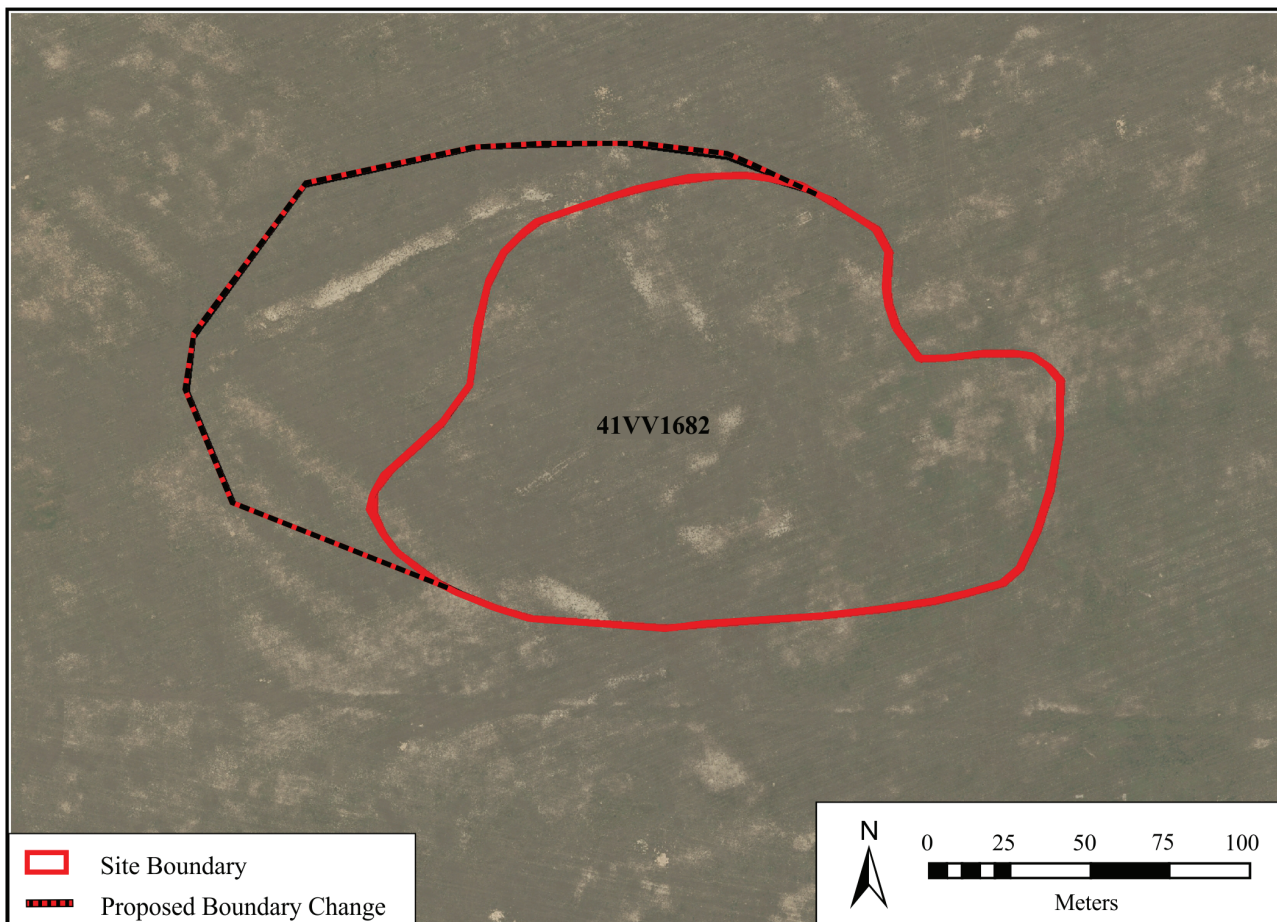


Figure 6-6. Aerial image showing the current and proposed site boundary of site 41VV1682.

Redacted Image

Figure 6-7. Aerial photograph the proposed fence based on the Laughlin AFB boundary.

continues to be an issue, other remedies may be needed to mitigate site degradation, such as the reintroduction of native vegetation to stabilize the landform.

The Sacatosa Creek Sites (41VV1686- 41VV1691) - Recommendations

The Sacatosa Creek sites also lie outside the airfield perimeter fence. No fencing separates these sites from the neighboring ranches, whose grazing livestock are affecting the sites (Figure 6-8). Road blading and livestock trails have created erosion that has the potential to displace and/or remove the colluvial mantle containing possible intact cultural zone (Dering 1998:104).

As is the case for 41VV1685, the CAR recommends that fencing should be installed separating Laughlin AFB and neighboring properties (see Figure 6-8). This will mitigate livestock damage to the sites as well as other incursions (hunting, off-road traffic, etc.). In addition, the CAR recommends using the photopoint system to monitor

changes to the site. If future funds become available, the area should be returned to a more natural environment through the reseeding of native grasses and other vegetation, following consultation with environmental personnel. This action may minimize further erosional damage to the sites.

Summary

The existing 12 archaeological sites on Laughlin AFB have been impacted to varying degrees by primary (human-caused) and secondary (natural) processes that have led to site degradation. The CAR recommends photopoint monitoring of these sites to provide documentation on a yearly basis. This will aid the Laughlin AFB CRM in the assessment of each site's condition over time. In addition, three sites (41VV1654, 41VV1655, and 41VV1683) are within designated base hunting areas. The CAR recommends changes to the base hunting instruction (Laughlin AFB Instruction 32-7064; Appendix A) to emphasize that collection and/or destruction of archaeological material is a violation of federal laws and military statutes.



Figure 6-8. Livestock observed during the survey of the Sacatosa Creek sites.

Laughlin AFB CES/CEIE also provided base-wide recommendations that will mitigate impacts to archaeological resources. These include the posting of signage informing base personnel, including civilian contractors, that intentional or unintentional impacts to archaeological sites is against federal statutes and military regulations and is punishable by fines and/or imprisonment. Laughlin AFB CES/CEIE also has informed Argonne and CAR that controlled burns will take place in the future. CAR recommends that, as specifics of this operation become known, Laughlin AFB CES/CEIE should consult with Argonne prior to any controlled burn to mitigate impacts to archaeological sites.

The CAR also recommends the following specific actions to stabilize the archaeological sites on Laughlin AFB,

based on prior or potential impacts to these sites (Table 6-1). The sign identifying the distance to archaeological site 41VV1653 along a hiking trail should be removed. At site 41BX1654, the CAR suggests closure of two roads that cross an area with recommended eligible archaeological features. The CAR also recommends the closure of the road that goes through 41VV1655. The seven sites located on the southeastern portion of the base are not fenced off and lie in an area currently used by local ranchers to feed and water livestock. Numerous livestock trails therefore run through these sites, potentially affecting archaeological features and contributing to the degradation of the sites and the area as a whole. The CAR recommends construction of a fence along the edge of the installation to exclude livestock and unauthorized access to Laughlin AFB property.

Table 6-1. Summary of the CAR evaluation, impacts, or potential impacts to the 13 Laughlin AFB archaeological sites, and recommended actions to stabilize these sites

Sites	Impacts or Potential Impacts	Site Stabilization Recommendations
41VV1653	Collection of artifacts	Photopoint monitoring of site, removal of sign identifying the location of the archaeological site
41VV1654	Erosion, vehicle traffic, collection of artifacts	Photopoint monitoring of site features, selected road closures, revision of base hunting instruction to warn against artifact collection
41VV1655	Erosion, vehicle traffic, collection of artifacts	Photopoint monitoring of site, road closure, revision of base hunting instruction to warn against artifact collection
41VV1682	Vehicle traffic	Photopoint monitoring of site
41VV1683	Bioturbation, erosion, vehicle traffic, collection of artifacts	Photopoint monitoring of site, revision of base hunting instruction to warn against artifact collection
41VV1684	Not Applicable	Not Applicable
41VV1685	Livestock grazing, erosion, vehicle traffic, collection of artifacts	Photopoint monitoring of site, installation of a fence to exclude livestock, revision of base hunting instruction to warn against artifact collection
Sacatosa Creek Sites (41VV1686–41VV1691)	Livestock grazing, erosion, vehicle traffic, collection of artifacts	Photopoint monitoring of sites, installation of a fence to exclude livestock and unauthorized access, revision of base hunting instruction to warn against artifact collection

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Chapter 7: Summary

The CAR, in response to a request from Argonne National Laboratory, investigated 13 archaeological sites located on Laughlin AFB, Val Verde County, Texas. The project was initiated by Section 110 of the NHPA (54 U.S.C. §§ 306101–306107, 306109–306114) which mandates that Federal agencies, such as Laughlin AFB, are responsible for the preservation of historic properties owned or controlled by the federal agency. The CAR was tasked by Argonne to relocate the 13 sites, document their locations and boundaries, provide an assessment of their condition, and propose site stabilization strategies.

Prior to fieldwork, an intensive review of literature of the three previous investigations undertaken by the NPS, the CAR, and the CEA was undertaken. A pre-field meeting was held with Laughlin AFB personnel to reconnoiter the sites as well as to familiarize CAR personnel with base procedures. Two phases of field work followed the reconnaissance. During both phases, site conditions were documented as a basis to create stabilization strategies for each site. The first phase consisted of relocating and confirming the locations of the 13 archaeological sites coupled with the implementation of the photopoint system on each of the sites. The photopoints will serve as baseline of site condition(s) through photographic documentation. The CAR relocated 12 of the 13 sites: 41VV1653, 41VV1654, 41VV1655, 41VV1682, 41VV1683, and 41VV1685–41VV1691. Site 41VV1684 is presumed to have been destroyed during the construction of Laughlin AFB facilities. Twenty-nine photopoints were established within the sites.

The second phase consisted of a TRU survey of the 12 existing sites to document all features and artifacts within a defined spatial cell. In this case, a TRU was defined as 3-x-30 m. In addition to feature/artifact documentation, observations were recorded on surface visibility and natural and/or anthropogenic impacts to the site. The CAR surveyed 322 TRUs or 28,980 m², documenting 15 features and 8 diagnostic points during the two phases of the investigation.

All sites have been affected to some degree by natural and/or anthropogenic impacts. These impacts include erosion, bioturbation, past military and construction activities, unofficial collection of cultural artifacts, and livestock grazing. In Chapter 6, the CAR presented a table of potential impacts specific to each site and recommendations to address these impacts. First, the CAR recommends that each of the existing 12 sites be monitored for future impacts. The CAR suggests that the photopoint system is a potential solution to quantify disturbances, or the lack thereof, through photo documentation. The photopoint system has been successfully utilized by the Texas Military Department on several installations. Appendix B offers a how-to manual for this system, and the CAR will provide training in the system for Laughlin AFB personnel. We recommend the photopoint recording should occur at least twice per year at all sites other than 41VV1684 to monitor site conditions.

As detailed above in Chapter 6, the CAR recommends several actions be undertaken by Laughlin AFB personnel. These actions include the removal of a sign stating the location of Site 41VV1653 and the closure of specific roads impacting cultural features and assemblages at 41VV1654 and 41VV1655. The CAR recommends installation of a fence to enclose the base from surrounding properties in the southeastern portion of the base to exclude livestock and unauthorized access. The CAR recommends that the Laughlin AFB update Instruction 32-7064 (Base Hunting; Appendix A) to include language that warns of and describes penalties for the collection or disturbance of archaeological features and artifacts on federal properties.

All records generated during this project were prepared in accordance with 36 CFR Part 79 and THC requirements for State Held-in-Trust collections. All project-related materials, including the final report and collected artifacts, will be permanently stored at the CAR curation facility under accession #2352.

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Appendix A: Laughlin Air Force Base Instruction 32-7064 (Base Hunting) March 25, 2020

BY ORDER OF THE COMMANDER
OF THE 47TH FLYING TRAINING
WING (AETC)



LAUGHLIN AIR FORCE BASE
INSTRUCTION

32-7064

25 MARCH 2020

Civil Engineering

BASE HUNTING

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction implements Air Force Policy Directive (AFPD) 32-70, Environmental Quality, and Department of Defense Instruction (DODI) 4715.03, Natural Resources Conservation Program. Policies, procedures, and responsibilities are outlined in AFI 32-7064. It applies to all individuals while on Laughlin AFB (Laughlin AFB) lands or recreation areas. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF IMT 847, Recommendation for Change of Publication. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with *Management of Records*, and disposed of in accordance with Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). Legal Requirements Statement: **Note:** that failure to comply with the publication is punishable as a violation of Article 92, of the UCMJ for military members. All other hunters on Laughlin AFB will be subject to state/federal fines and possible revocation of hunting privileges on Laughlin AFB.

SUMMARY OF CHANGES

This document is substantially revised and must be completely reviewed. All previous Laughlin AFB hunting instructions have been superseded by this instruction. The previous 32-7002 draft instruction number has changed to LAUGHLIN AFB INSTRUCTION 32-7064 to be more in line with the procedures and responsibilities outlined in AFI 32-7064. The plan was brought into

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compliance with requirements of the Installation Natural Resources Management Plan (INRMP) and the Sikes Act.

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Chapter 1

RESPONSIBILITIES

1.1. Wing Commander will:

- 1.1.1. Approve the Laughlin AFB recreational hunting program.
- 1.1.2. Direct closure of hunting areas for base exercises, inspections, and training.
- 1.1.3. Direct suspension of recreational hunting on Laughlin AFB at any time at his/her discretion.

1.2. Civil Engineer Squadron (CES) will:

- 1.2.1. Designate Installation Natural Resources Manager (INRM) as responsible for guidance, direction, and oversight of natural resource program goals as defined in the Laughlin AFB Integrated Natural Resources Management Plan (INRMP) and in accordance with AFI 32-7064, *Integrated Natural Resources Management*.
- 1.2.2. Ensure INRM is responsible for the monitoring of wildlife at Laughlin AFB and will work with the Texas Parks and Wildlife Department (TPWD), U.S. Department of Agriculture (USDA) Wildlife Biologist and other authorities as required. The hunting program at Laughlin AFB is only one of the management tools used to manage the wildlife populations at Laughlin AFB and is included in the INRMP.
- 1.2.3. INRM enrolled in TPWD Land Management Assistance (LMA) under the Managed Lands Deer Program (MLDP) in 2019 and will maintain Laughlin AFB enrollment annually. The MLDP is intended to foster and support sound management and stewardship of native wildlife and wildlife in Texas. Deer harvest is an important aspect of habitat management and conservation. The program is managed by a TPWD and is utilized to manage white-tailed deer population on Laughlin AFB. Deer management at Laughlin AFB will be done in cooperation with the TPWD wildlife biologist for Val Verde County Texas. INRM will determine the seasonal deer take based on the survey data.
- 1.2.4. Be responsible for the overall development and guidance for all subsequent updates to this instruction and will be assisted by other organizations with reviews, operation and enforcement of this instruction.
- 1.2.5. Keep records of deer taken for reference using the Laughlin AFB Harvest Log information provided by the Force Support Squadron (FSS). The Harvest Log will be uploaded annually to the TPWD LMA website Laughlin AFB MLDP account by the INRM as program requires.
- 1.2.6. Report violations of this instruction to Base Defense Operations Center (BDOC) and report violations of the Texas Hunting regulations to Val Verde County Texas State Game Wardens (everyone's responsibility).
- 1.2.7. Submit the annual fish and wildlife reimbursable budget to Air Force Civil Engineer Center Natural Resources Branch (AFCEC/CZTQ) as required.
- 1.2.8. Ensure all hunting signs are displayed as appropriate at the beginning and end of each hunting season for hunting areas being utilized.

1.2.9. Ensure funding is available for the purchase of needed equipment/supplies from reimbursable budget.

1.2.10. Ensure feeders, stands, shooting lanes, hunting signs and stand equipment are in working order prior to hunting season and throughout the season. This does not include filling feeders or purchasing corn.

1.2.11. Will track wounded deer; if the deer is still alive, will contact the USDA Biologist to assist with disposal. If the animal is found dead, will remove and bury in the burial pit.

1.2.12. The take is determined by the INRM and will be briefed seasonally.

1.3. Outdoor Recreation (ODR) will:

1.3.1. Ensure every hunter has an appropriate Texas State hunting license and proof of successful completion of a Texas-approved Hunter Education Training Class, if applicable.

1.3.2. Provide Laughlin AFB season access and safety cards, collect access fees, and complete/submit DD Form 1131, *Cash Collection Voucher*. Turn in all access fees to Accounting and Finance for deposit into special fund 575095 18EF 667100. If FSS charges an administrative fee to cover costs, it must be accounted for separately from the access fees collected for the 57 5095 account. **Note:** 57 5095 funds will be issued to CES by AFCEC and normally loaded onto Government Purchase Card. Upon termination of a fee collection program for hunting, fishing, trapping, or outdoor recreation, installations must notify AFCEC/CZTQ and the collection account will be closed.

1.3.3. Provide the necessary information to 47 CPTS/FMA (Comptrollers/Financial Management Office) annually required to complete and submit an AF Form 2639, *Fiscal Year Financial Plan*, for the Fish/Wildlife/Outdoor Recreation Program. 47 CES will review and approve the Financial Plan.

1.3.4. Maintain Laughlin AFB Harvest Log for deer-taken to include 2-3 point, 4-7 point, 8+ point bucks and does. Provide the game harvested data log to the INRM no later than (NLT) seven business days after the close of the hunting season. Each game species will be documented on separate logs for example Dove or Quail. Ensure logs are filled out completely.

1.3.5. Open registration no later than two weeks prior to first day of the hunting season. Registrations will only be made for the current season. Hunting access fees will be paid NLT noon of the second to last duty day prior to the weekend.

1.3.6. Maintain Laughlin AFB hunting area usage schedule and provide it to the BDOC dispatcher. This information will serve as the master list of authorized base hunters. Hunter information will include: Name, date of birth and driver's license number, contact number, vehicle information and the Laughlin AFB hunting access and safety card number.

1.3.7. Ensure hunters are provided information regarding routes to and from deer stands, deer stand procedures, and Laughlin AFBI 32-7064 is located on the Laughlin webpage.

1.4. Security Forces Squadron (SFS) will:

1.4.1. Have full authority to perform their duties at any time including access to all hunting areas.

1.4.2. Spot-check hunters for compliance with applicable regulations/instructions.

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1.4.3. Ensure coordinated access to all federal and state conservation officers for the purpose of fish and wildlife law enforcement.

1.4.4. Coordinate with TPWD Game Wardens (GW) for Val Verde County Texas to provide appropriate enforcement of all fish and wildlife laws. Contact the TPWD GW for Val Verde County prior to hunting season to coordinate access schedule. TPWD GW are the primary Laughlin AFB enforcement of all fish and wildlife laws. If the TPWD GW cannot provide appropriate enforcement coverage, then SFS will notify the Wing Commander that hunting must cease until appropriate law enforcement is established. Appropriate enforcement may be reestablished by either further coordination with TPWD GW or by certifying SFS members in conservation law enforcement through successful completion of the Land Management Police Training course at the Federal Law Enforcement Training Center.

1.4.5. Ensure notifications of all game law violations are reported to the BDOC who will then notify a TPWD GW. Accomplish AF Form 3545, *Incident Report*, on all violations and provide information to the TPWD GW.

1.4.6. Ensure hunters are parked on authorized utility roads.

1.4.7. Ensure the Reports and Analysis Section (47 SFS/S5R) forwards Incident Report to applicable unit commanders (or civilian equivalent) for action.

1.4.8. Ensure receipt of the master list of the authorized base hunters from ODR with all the license numbers, permit numbers and hunter locations to ensure hunter accountability. Civilians who request to hunt on base shall be subjected to a vetting procedure like base visitors or contractors seeking unescorted access. This will be completed before acceptance of reservations for hunting or training.

1.4.9. Ensure Defense Control Center personnel inform ODR when off-base civilians pass the background check. ODR will then add them to the master list, and start accepting money and reservations. When the hunter checks in at pass and ID, they will be given a day pass to hunt or attend the training.

1.5. Wing Safety Group (SEG) will:

1.5.1. Ensure deer stands are free of hazards before start of hunting season.

1.5.2. Review sign placement for hunting program.

1.5.3. Review any new deer stand placements.

1.5.4. Review the safety briefing provided by FSS to the hunters.

1.5.5. Review any incident reports or safety reports as required.

1.6. Hunters must:

1.6.1. Every hunter (including out-of-state hunters) born on or after 2 Sep 1971, must successfully complete a Hunter Education Course (minimum age of 9). To hunt on base, a Hunter Education Course is required by active duty members and honorably discharged veterans of the United States Armed Forces, active duty members or those who have previously served as members of the Texas Army National Guard, Texas Air National Guard, or the Texas State Guard, or persons who are serving or have previously served as a peace officer as described by Subdivision (1), (2), (3) or (4) Article 2.12, Code of Criminal Procedure. Hunters

17 years and older may complete either the online or in-person course. Hunters 16 years and younger must have completed a Texas-approved Hunters Safety Course. Additionally, youth hunters must be accompanied by another hunter who has met hunting criteria established at Laughlin AFB. Laughlin AFB INRM, TPWD, and Texas Game Warden provide a safety briefing prior to open season. All hunters must abide by applicable Federal, State, and Laughlin AFB regulations/instructions.

(<http://www.tpwd.state.tx.us/publications/annual/hunt/means/>).

1.6.2. Remain in designated locations as noted in hunter area map (**Attachment 4, Figure A4.1**).

1.6.3. Provide proof of completion of a hands-on firearms safety-training course, i.e., license to carry permits, AF Form 522. Final decision authority for proof resides with the ODR manager. Individuals 16 years of age and younger are exempt from the proof of hands-on firearms training requirement.

1.6.4. Be thoroughly familiar with and comply with this instruction.

1.6.5. Ensure their weapon is “legal” in accordance with Federal, State, and Laughlin AFB regulations/instructions and practice weapons safety at all times.

1.6.6. Receive an annual safety briefing on permitted firearms, deer hunting areas and stand usage by the FSS/CES/SFS/SEG including training on routes to and from stands and parking areas prior to hunting on Laughlin AFB.

1.6.7. Register with ODR before hunting and call the BDOC dispatcher (830) 298-5100 with hunter’s name, hunting permit number, and hunting area at the beginning and end of each hunt. Rifle hunters will also provide their stand location. Hunters must leave the hunting area NLT 2200.

1.6.8. Make every attempt to recover wounded deer within their assigned area and report non-recovered deer to the BDOC on the same hunting day. Hunters will not enter another area during hunting hours to track a wounded animal.

1.6.9. During shooting hours, hunters in Area 2 may track an animal only within 100 yards of their shooting lane.

1.6.10. For tracking purposes, hunters may carry a sidearm to kill a downed or wounded deer. Sidearm will not be loaded prior to locating the game and hunter will inform BDOC that a weapon is about to be discharged. Extreme caution will be used.

1.6.11. Report game law violations to the BDOC.

1.6.12. Do not feed, bait, or trap birds of any kind.

1.6.13. Have the following documents with them while hunting: A valid Texas resident, special resident, or non-resident hunting license, or combination hunting/fishing license; proof of completion of the Texas Hunter Safety Course; Laughlin AFB season hunting access and safety card; Department of Defense (DoD) identification card, or Air Force identification card. Members of the public and all non-military guests, when authorized to hunt on Laughlin AFB, must have a valid driver’s license or other State-issued photograph identification card. Accompanied minors are exempt from ID requirements. Hunters must also have all appropriate

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stamps/endorsements on their hunting license and, if required, user must sign game stamps. For white tailed deer only, a seasonal tag from FSS is required.

1.6.14. Park vehicles in designated areas, out of the way of traffic so that SFS or emergency response vehicles may pass. Additionally, in order to eliminate security risks and climbing aides, hunters may not park their vehicles next to the perimeter fence at any time.

1.6.15. Shooting hours are in two separate sessions, one is 30 minutes before sunrise until 1000 and the other is from 1400 to 30 minutes after sunset. Laughlin AFB allows early setup up to 90 minutes prior to sunrise. Hunters must contact BDOC to inform them of the hunters' presence in a hunting area prior to sunrise. The 60 excess minutes are strictly for preparation. Hunters must not fire any weapon before the time stated above in accordance with Texas State law. Firearms shall be unloaded at this time. See additional guidance in [Chapter 3](#).

1.6.16. Temporary blinds may be utilized in all areas. All blinds must be marked with the owner's name and must be removed after the session ends. In addition, an archer will not nock an arrow until established in the elevated stand/blind and must un-nock the arrow and replace it in the quiver prior to departing the elevated stand/blind. Hunters may place temporary blinds facing away from any access roads.

1.6.17. Hunters may field-dress deer in the field or at a designated burial site only (not a main road or public area) and must remove carcass and entrails to the designated burial sites or bag up and remove from Laughlin AFB. If using the burial pits, all entrails must be completely cover with dirt to discourage scavengers. Do not deposit any part of a carcass or entrails in any trash bin located on Laughlin AFB, as this is a safety hazard which could attract scavengers, creating a safety problem (i.e., BASH). Violators will have hunting privileges suspended on Laughlin AFB for the season without reinstatement.

1.6.18. Pick up all spent shell casings and trash and remove from Laughlin AFB.

1.6.19. Any person engaging in outdoor activities on Laughlin AFB does so at his/her own risk and agrees to indemnify and hold harmless the United States of America against any and all claims for loss, damage, or injury sustained to their person or property. Hunting is an inherently dangerous activity and any person engaging in this sport does so at their own risk.

1.6.20. Disturbance or interference with any individual engaged in official business or an authorized activity on the Laughlin AFB reservation is prohibited. Disturbance of the peace or other disorderly conduct is prohibited. Hunters are not allowed to consume alcohol, be intoxicated, or otherwise under the influence of controlled substances while engaged in hunting activities.

1.6.21. Destruction, injury, defacement, disturbance, or removal of government property is prohibited. Searching for or removing objects of antiquity is prohibited. Recreational use of metal detectors for any purpose on Laughlin AFB is prohibited.

1.6.22. The collection, intentional destruction, or injury of any plant or animal, except as specifically authorized, is prohibited.

1.6.23. Only registered, street legal vehicles are authorized on designated roads. No off-road, four-wheeled vehicles are authorized, with the exception of official vehicles.

1.6.24. The possession of a loaded weapon in a vehicle is prohibited. A loaded weapon is any firearm with ammunition within the chamber or within a magazine/clip attached to the firearm

(e.g., shotgun or rifle with a shell in the chamber or magazine), or a nocked arrow on a bow. Weapons must be completely encased and locked while in a vehicle, and ammunition kept separate from the firearm.

1.6.25. Hunting with a weapon other than a bow (recurve, compact, or cross bow) in a designated archery area is prohibited. Possession of a weapon when traveling to or from the designated hunting area and or the base gate or ODR is permitted.

1.6.26. The driving of deer by two or more individuals is prohibited.

1.6.27. Driving a metal object into any tree or hunting from a tree, in which a metal object has been driven, is prohibited.

1.6.28. A minimum distance of 200 feet must be maintained from public access areas (golf course) at all times.

1.6.29. Hunters will use the Laughlin AFB Harvest Log to document their harvest and report any harvest to ODR NLT the next business day.

1.6.30. In the event of a real-world Active Shooter situation, hunters must cease hunting activities and stay in place until the "All Clear" is given.

1.6.31. Season hunting access and safety cards will be required.

1.6.32. Deer Tags issued by Laughlin AFB FSS are only valid on Laughlin AFB.

1.6.33. All other deer tags obtained outside the installation are not valid on Laughlin AFB.

1.6.34. The season for deer hunting will terminate after all tags have been utilized.

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Chapter 2

POLICIES

2.1. General Information

2.1.1. The following specific items apply to hunting on Laughlin AFB:

2.1.2. Seasons, hours, species limits, and restrictions are subject to yearly change and are in accordance with Texas state law and published in the current issues of the *Texas Parks and Wildlife Hunting Guide* and *Migratory Game Bird Hunting Regulations*. Hunting seasons, including closures of specific areas and/or species are listed in current *Texas Parks and Wildlife Hunting Guide*. Hunters should consult [Attachments 2, 3 and 4](#) prior to hunting to ensure an area or specific species is allowed on Laughlin AFB. Seasons and/or species on Laughlin may be different than those under TPWD.

2.1.3. Laughlin AFB may allow hunting during all deer, turkey, quail, and dove seasons in the above publications. In addition, non-game, exotic, and fur-bearing species as defined in the *Texas Parks and Wildlife Hunting Guide* may be hunted in accordance with Texas state hunting regulations during the seasons for game animals. Hunting non-game, exotic and fur-bearing species is subject to the same restrictions on areas, methods and weapons that apply to hunting game animals on Laughlin AFB.

2.1.4. For violations of any Laughlin AFB and/or Texas state hunting regulation, punishment shall include but not be limited to, Laughlin AFB hunting privileges being revoked for the remainder of the season for the first violation and permanent revocation for a second violation. **Note:** Any serious violation may result in being barred from the installation (for non-DoD affiliated personnel) and/or permanent loss of Laughlin AFB hunting privileges after the first violation and does not preclude any additional punishment under the jurisdiction of the TPWD GW for any violation.

2.2. Persons Authorized to Hunt on Base will:

2.2.1. Comply with Force Protection Conditions (FPCON) directives. Consistent with The Sikes Act, 16 U.S.C. § 670a(a)(3)(A), during FPCON Normal the following categories of hunters are authorized and all identified hunting areas are “Open” Active Duty Military (includes Reserve and National Guard on active duty or full time manning);

2.2.1.1. Department of Defense Civilians;

2.2.1.2. Active Duty Military Dependents and Family Members;

2.2.1.3. Military Retirees;

2.2.1.4. Department of Defense Civilian Retirees;

2.2.1.5. Employees of Installation Prime Contractors (defined as a contractor with a five year or greater term contract); and

2.2.1.6. General Public.

2.2.2. Due to concerns with safety, national security, and mission requirements, when the Force Protection Condition is “Alpha,” or “Bravo,” all hunting areas are deemed “Restricted” and only the following are authorized to hunt:

- 2.2.2.1. Active Duty Military (includes Reserve and National Guard on active duty or full time manning);
- 2.2.2.2. Department of Defense Civilians;
- 2.2.2.3. Active Duty Military Dependents and family members;
- 2.2.2.4. Military Retirees;
- 2.2.2.5. Department of Defense Civilian Retirees;
- 2.2.2.6. Employees of Installation Prime Contractors (defined as a contractor with a five or more year term contract).
- 2.2.3. Due to heightened security threats, when the Force Protection Condition is “Charlie,” all hunting areas are deemed “Restricted” and only the following are authorized to hunt.
 - 2.2.3.1. Active Duty Military (includes Reserve and National Guard on active duty or full time manning);
 - 2.2.3.2. Department of Defense Civilians;
 - 2.2.3.3. Active Duty Military dependents and family members;
- 2.2.4. When the Force Protection Condition is “Delta,” no hunting is allowed on any part of Laughlin AFB by anyone without the installation commander’s express written approval.
- 2.2.5. When Force Protection Conditions are “Alpha,” “Bravo,” or “Charlie,” those authorized to hunt, based on the conditions above, may sponsor up to two guest hunters so long as the guests are licensed to hunt in Texas.

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Chapter 3

GENERAL HUNTING REGULATIONS

3.1. County Listing. Refer to the *Texas Hunting Guide* and *Migratory Game Bird Hunting Regulations*, Val Verde County, est Section, for critical items (i.e., game animals/birds, restricted species, seasons, and bag limits, etc.) applicable on Laughlin AFB.

3.2. Shooting hours for all game animals and game birds (except migratory game birds) (excluding white-tailed deer) is in two separate sessions, 30 minutes before sunrise to 30 minutes after sunset. White-tailed deer morning sessions start 30 minutes before sunrise and end at 1000, tracking hunters must vacate by 1330. The afternoon session starts at 1430 and ends 30 minutes after sunset, tracking hunters must vacate by 2200.

3.3. Dress and appearance for all shotgun/rifle hunters: hunters must wear at least 400 square inches of blaze orange while in hunting areas in accordance with Texas state laws for public hunting areas. Blaze orange headgear must be worn along with at least 144 square inches of blaze orange on the chest and back. The only exceptions to wearing blaze orange on Laughlin AFB will be migratory birds (dove), turkey, and archery hunters. Rifle hunters may remove their blaze orange while inside the rifle stand.

3.4. Seasons and bag limits will be determined by the INRM. Non-game, exotic and fur-bearing species, along with javelin, may be hunted on Laughlin AFB in accordance with (IAW) Texas hunting laws during approved seasons for game animals. Hunting these species is subject to the same restrictions on areas, times, seasons, and methods as game animals. Small non-game animals (such as raccoons, opossums, rabbits, and skunks) may be hunted by shotgun, archery, or (from the rifle stands only) by rifle. Larger non-game and exotic species such as feral hogs, African exotics, and javelin may be taken with archery equipment during approved game seasons, or (from the rifle stands only) during approved deer seasons only.

3.5. Special hunting events may be conducted only after approval through the Mission Support Group Commander (47 MSG/CC) and the 47th Flying Training Wing Commander (47 FTW/CC).

Chapter 4

HUNTING TYPES AND INFORMATION

4.1. Shotgun Hunting.

4.1.1. Small game hunting (dove, rabbit, quail, and turkey) (spring and fall) in designated hunting areas, may be permitted on base with a shotgun, subject to the following restrictions:

4.1.1.1. Small game hunting may be accomplished in all Laughlin AFB hunting areas, except in areas 2 and 5 during rifle deer season as specified in [Attachment 2](#). All carcasses and entrails must be removed from the area.

4.1.1.2. For mourning dove, white wing dove, rabbit, and quail hunting; use shot no larger than #6. 4.1.1.2.1. **NOTE:** These numbers apply to pellet size.

4.1.1.3. Shotgun hunters will not fire toward private property or within 200 yards of any base structure (does not apply to deer stands and similar field structures). Shotgun hunters will remain at least 100 yards from the golf course at all times and direct fire away from the course.

4.1.1.4. Shotgun hunters will wear blaze orange in accordance with [Paragraph 3.3](#), unless hunting for turkey or dove.

4.2. Archery Hunting.

4.2.1. Archery hunting for deer, turkey, and small game is permitted in all Laughlin AFB hunting areas, but is restricted in areas 2 & 5 during rifle deer season.

4.2.2. The FSS will limit the number of archers in each area to reduce conflicts, and may assign archery locations for the season on a first-come, first-served basis based on the number of archery hunters. Archers are exempt from blaze orange requirements on Laughlin AFB.

4.2.3. Archery hunting locations must be well clear of any structures, roads, and the golf course.

4.2.4. Temporary blinds, tripod stands, hanging-type stands, and deer feeders may be utilized. All blinds, stands, and feeders must be marked with the owner's name and must be removed after each assigned hunting period.

4.2.5. Archery hunters must make every attempt to recover wounded deer. Report non-recovered deer to BDOC on same hunting day.

4.2.6. Archers hunting near area 2 or in area 5 must confirm that rifle stands are empty prior to tracking wounded deer within 200 yards of deer stands and lanes or within 400 yards down-range of rifle stands during rifle season.

4.3. Rifle Hunting.

4.3.1. Deer hunting with authorized firearms, listed in [Paragraph 4.4](#), is permitted only from approved base rifle stands in areas 2 and 5 during regular firearms season and late-season antlerless/spike season. Non-game, exotic, and fur-bearing animals may also be taken from rifle stands in accordance with [Paragraph 2.1.3](#). Turkeys may not be taken by rifle on Laughlin AFB.

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4.3.2. Area 2 will be off-limits to archery and shotgun during the rifle deer season (General Season and Special Late Season) if rifle hunters are assigned. Area 5 will also be off-limits to archery and shotgun during wing events. Small game and birds may be hunted in the Parasail Area within Area 5 during wing events.

4.3.3. All rifle hunters must wear blaze orange IAW **Paragraph 3.3**

4.3.4. Hunters driving to hunting stands must park their vehicle in the designated parking area and proceed to the stand on foot.

4.3.5. Hunters utilizing the rifle stands must have their weapon cased and unloaded to and from deer stands. Weapons will be unloaded and cased before pursuing game or departing the stand. Muzzle-loading hunters may consider their weapon “unloaded” after the primer is removed.

4.3.6. Immediately upon arrival at the stand, the hunter must raise the red safety flag to inform others that hunting is taking place. Only after raising the red flag can the hunter load their weapon.

4.3.7. There are two separate shooting hours, one is 30 minutes before sunrise until 1000 and the other is at 1400 to 30 minutes after sunset. Laughlin AFB allows early log-in to the BDOC up to 90 minutes prior to sunrise. The 60 excess minutes are strictly for preparation. Hunters must not fire any weapon before the time stated above in accordance with Texas state law.

4.3.8. No rifle rounds may be discharged in any direction except within the firing lanes and all shots must be with downward deflection.

4.3.9. Rifle hunters must make every attempt to recover wounded deer. Report non-recovered deer to BDOC on same hunting day.

4.4. Legal weapons.

4.4.1. All hunting weapons must meet the criteria for legal weapons listed in the (TPWD) Outdoor Annual Publication under, “Hunting Regulations Means and Methods” (available where hunting licenses are sold), or on the TPWD website under the same titles: <http://www.tpwd.state.tx.us/publications/annual/hunt/means/>.

4.4.2. Rifle stand hunters hunting for deer must use either shotguns utilizing slugs (no buckshot), legal muzzle-loading weapons not to exceed 12.954 mm (.50cal), or center-fire rifles using bullets of at least 5.56 mm (.223 caliber.) but not larger than .30 caliber series. They may be single shot or repeating (not fully automatic).

4.4.3. Hunters outside of the rifle stands may only use shotguns firing pellets (no slugs) or legal archery equipment (recurve, cross, or compact bow). Migratory bird hunters must have magazines plugged in accordance with Federal regulations to a total capacity of not more than three shells.

4.5. Rifle Stand Utilization.

4.5.1. Rifle hunting stands will be permanently placed in sites where safe firing is possible and approved by 47 FTW/SEG.

4.5.2. Firing lanes must be plainly marked (cleared of trees/brush etc.). Recommend 40 feet wide and 150 feet long.

4.5.3. The following equipment will be maintained in stands: Red flag, two seats.

Table 4.1. Contact Information.

Laughlin AFB Outdoor Recreation - 830-298-5830
Laughlin AFB Natural Resource Manager - 830-298-5746
Val Verde County Sheriff's Office – 830-774-7513
Texas Parks & Wildlife Department Game Warden's val Verde County Texas Parks & Wildlife Game Warden's Val Verde County - 830-719-0905, 830-313-6921, 830-703-9277, 830-313-1959, 830-313-6145. https://tpwd.texas.gov/warden/index.phtml?county=Val Verde
Base Defense Operations Center - 830-298-5100
Defense Control Center - 830-298-5349

LEE G. GENTILE JR., Colonel, USAF
Commander, 47th Flying Training Wing

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Attachment 1

GLOSSARY OF REFERENCES, ABBREVIATIONS AND ACRONYMS

References.

Laughlin AFB, *Integrated Natural Resources Management Plan*, 20 April 2012

AFPD 32-70, *Environmental Quality*, 20 July 1994

AFI 32-7064, *Integrated Natural Resources Management*, 18 Nov 2014

AFI 34-110, *Air Force Outdoor Recreation Programs and Procedures*, 06 Jan 2012

AFI34-101, *Air Force Morale, Welfare and Recreations (MWR)*, 28 March 2013

AFJI 34-122, *Civilian Non-appropriated Funds and Morale, Welfare, and Recreation Activities*, 22 April 1988

Adopted Forms.

AF Form 3545, *Incident Report*

DD 1131, *Cash Collection Voucher Laughlin AFB, Deer Harvest Log*

Laughlin AFB, *Other Logs as required*

Abbreviations and Acronyms.

AFCEC/CZTQ—Air Force Civil Engineer Center Natural Resources Branch

AFPD—Air Force Policy Directive

BASH—Bird Aircraft Strike Hazard

BDOC—Base Defense Operations Center

CATM—Combat Arms Training and Marksmanship

CC—Commander

CEIE—Civil Engineers Environmental

CES—Civil Engineer Squadron

CPTS/FMA—Comptrollers/Financial Management Office

DCC—Defense Control Center

DoD—Department of Defense

FAM Camp—Family Campground

FTW—Flying Training Wing

FSS—Force Support Squadron

GW—Game Warden

IAW—In Accordance With

ID—Identification Data

INRM—Installation Natural Resources Manager

INRMP—Installation Natural Resources Management Plan

Laughlin AFB—Laughlin Air Force Base

Laughlin AFBI—Laughlin Air Force Base Instruction

LMA—Land Management Assistance

MLDP—Managed Lands Deer Program

MSG—Mission Support Group

NLT—No Later Than

ODR—Outdoor Recreation

OPR—Office of Primary Responsibility

RAPCON—Radar Approach Control

SEG—Wing Safety Group

SFS—Security Forces Squadron

TPWD—Texas Parks and Wildlife Department

USDA—U.S. Department of Agriculture

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Attachment 2

HUNTING AREA DESCRIPTION

A2.1. Area One.

A2.1.1. Shotgun hunting is allowed in area 1 for all small game except ducks during approved seasons. Shotgun hunters must remain at least 100 yards from the golf course and direct fire away from the course.

A2.1.2. Archery hunting is allowed for deer and small game during approved seasons.

A2.1.3. Rifle hunting is not allowed in area 1.

A2.2. Area Two.

A2.2.1. Shotgun hunting is allowed in area 2 for all small game during approved seasons except ducks. Shotgun hunters must remain at least 100 yards from the golf course and direct fire away from the course. Only rifles can be used while hunting deer. Shotguns can only be used for small game when assigned by ODR.

A2.2.2. Archery hunting is allowed for deer and small game during approved seasons. During rifle deer season, archery hunters are restricted to the west portion of the area and the northeast corner. Archery locations and routes to/from must be at least 200 yards laterally from deer stands/feeders and not within 400 yards downrange of either gun stand. Archery hunters must call to ensure deer stands are vacant before tracking deer within that restricted area of rifle stands and wait until the rifle stand is vacated if occupied.

A2.2.3. Rifle hunting is allowed during the General Season and Special Late Season from Rifle Stand 2A and Rifle Stand 2B only. Weapons must be cased/unloaded at all times unless in the rifle stand with the red flag raised.

A2.3. Area Three.

A2.3.1. All hunters must remain clear of the Combat Arms Training and Marksmanship (CATM) facility and the danger zone behind CATM.

A2.3.2. Shotgun hunting is allowed in area 3 for all small game except ducks during approved seasons. Shotgun hunters must remain 200 yards from and direct fire away from the RAPCON facility and base housing.

A2.3.3. Archery hunting is allowed for deer and small game during approved seasons.

A2.3.4. Rifle hunting is not allowed in area 3.

A2.4. Area Four.

A2.4.1. Shotgun hunting is allowed in area 4 for all small game during approved seasons. Shotgun hunters must remain at least 200 yards from the water reclamation facility, CATM, and the FAM Camp and direct fire away from these facilities.

A2.4.2. Archery hunting is allowed in area 4 for deer and small game during approved seasons.

A2.4.3. Rifle hunting is not allowed in area 4.

A2.5. Area Five. (Wing Functions Only)

A2.5.1. Shotgun hunting is allowed in area 5 for all small game except ducks during approved seasons. Shotgun hunters must remain 200 yards away from buildings and off-base housing on the north perimeter of area 5, and direct fire away from these areas. During rifle deer season shotgun hunting is limited to the middle portion of area 5.

A2.5.2. Archery hunting is allowed from approved locations for deer and small game during approved seasons. During rifle deer season, archery locations, parking spots and routes to/from are restricted to the middle portion of the area between the Stand 3 and Stand 4 portions. Archery hunters must call to ensure deer stands are vacant before tracking wounded deer in the Stand 3 or Stand 4 portions of area 5.

A2.5.3. Rifle hunting is allowed during the General Season and Special Late Season from rifle stands 3 and 4 only. Weapons must be cased/unloaded at all times unless in the rifle stand with the red flag raised.

A2.6. Area Six.

A2.6.1. Area 6 is restricted to archery and shotgun hunting only during approved seasons, and has restrictions on hunting times. Area 6 is open from 30 minutes prior to sunrise until 1000, and from 1500 to 30 minutes past sunset.

A2.6.2. Hunters must remain well clear of roads, the nature trails, and any fenced enclosures behind the horse stables, and firing lanes must be directed away from them.

A2.6.3. Rifle hunting is not allowed in area 6.

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Attachment 3

WEAPON TYPE BY HUNTING AREA

Table A3.1. Weapon Type by Hunting Area

WEAPON TYPE						
	1	2	3	4	5	6
Shotgun – Small Game	YES	YES	YES	YES	Wing Only	YES
Shotgun – Game Bird	YES	YES	YES	YES	Wing Only	YES
Archery – Deer & Small Game	YES	YES	YES	YES	Wing Only	YES
Rifle – Deer Only	NO	YES Stands 2A & 2B	NO	NO	Wing Only	NO

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Attachment 4
HUNTING AREA MAP

Figure A4.1. Hunting Area Map



Appendix B: Photopoint Set Up and Maintenance

Photopoint Set-Up and Maintenance

The photopoint system is a photo-based method in which cultural resources are documented over time using standardized locations and views. The method was developed by Texas Military Department (TMD) Natural Resources personnel (Britt 2005). The CAR has used this system at multiple TMD facilities to record changes in the landscape of archaeological sites in an objective and consistent manner (Munoz 2014). A case example from one of these bases illustrates the utility of the system to document damage. In April 2008, CAR recorded an archaeological site, documenting it with photopoints and noting site condition as good, with little to no disturbance (Munoz 2014). A return visit in 2010 documented a fallen tree and craters, demonstrating that the site had been severely impacted by target practice (Munoz 2014; Figure B-1). The evidence provided by the photopoint system can be useful in chain-of-command decisions to protect historic properties under their stewardship.

The CAR has prepared this appendix to serve as a how-to guide for Laughlin AFB CES/CEIE personnel to set up and maintain a photopoint system to monitor archaeological sites. This how-to guide will include a list of needed materials and equipment, a sample form, and the process of photopoint documentation. In addition, CAR archaeologists will conduct in-field training of personnel to facilitate the implementation of the system.

Required Materials and Equipment

The materials and equipment needed to implement the program are generally in-stock items or readily available

to purchase. The CAR used the following to establish 29 photopoints on Laughlin AFB:

- 1) A digital camera to shoot the images
- 2) A camera monopod (photo stick) to support and level the camera
- 3) Painted rebar 12" in length to serve as a photopoint datum, and a hammer to place the photopoint
- 4) Aluminum tags with stamped photopoint numbers wired to the rebar
- 5) A metal stamp kit to create the unique identifier
- 6) A compass
- 7) A sub-meter accurate GPS.

Photopoint Process Stages: A) Reconnaissance; B) Placement; C) Documentation; D) Processing

A) The first stage involves determining site boundaries, pinpointing associated features as well as other points of interests that define the site, and selecting the locations of the photopoints. The CAR created an ArcGIS geodatabase of the Laughlin survey that was provided to Laughlin AFB CES/CEIE. This data will aid in locating known archaeological sites, their boundaries and documented features, and the first series of photopoints installed by the CAR. The data included the following:



Figure B-1. Photopoint documentation showing an archaeological site in 2008 before any impact and assessed as in good condition. Subsequent photopoint documentation shows the severe impact from training exercises in 2010.

- ANL_Laughlin_SDSFIE_SiteBoundaries
 - o Point and Polygon data of the most up-to-date site boundaries in SDSFIE format (for as much information as we had gathered during the current work)
- ANL_Laughlin_ArchData
 - o Artifact_pt – Artifacts observed in the field
 - o Feature_pt– Features (pts) observed in the field
 - o Feature_In - Feature (ln) observed in the field
 - o Photopoint – Photopoint locations established in the field
 - o PossibleUnit_pt – Points of possible units from previous excavations observed in the field
 - o TRU – Locations of each Transect Recording Unit created in the GIS lab based on regular lengths and intervals or existing paths based on aerial imagery. CAR used the TRU as only a location reference during the survey. It did not record stop and start points of each TRU.

In addition, the database contains georeferenced-digitized maps from previous archaeological survey and testing at the facility that may be of use for future investigations.

B) In the second stage, onsite photopoints are placed. The CAR archaeologists began this project by establishing 29 photopoint locations at each of the documented sites. The

photopoint is an aluminum-tagged datum (i.e. a piece of 12" rebar) in a specific area of the site. Generally, photopoint locations have been pre-selected or considered before the fieldwork. A particular location might be chosen because it shows significant archaeological features, significant natural features or characteristics, and/or modern human or natural impacts to the site.

Table B-1 lists sites at Laughlin AFB and their associated photopoints placed by the CAR during this investigation. One site, 41VV1684, was destroyed by construction, although a single photopoint was established on a cast-iron water-valve box due in part to high pedestrian traffic in the vicinity. Laughlin AFB CES/CEIE will determine whether it is worthwhile to continue further documentation of that site. In addition, one photopoint (PP23) was placed in the initial location of 41VV1682 that was later proven to be the wrong site location. Additional photopoints can and should be added to the database as the landscape changes and/or as new sites or features are identified. The CAR recommends that additional photopoints be placed at 41VV1654, with a focus on those areas containing features found during this and previous investigations. The location of those additional photopoints should be flexible based on current needs and on-the-ground observations.

C) The third stage involves photo documentation of the site. At either a new or a previously placed photopoint location, a digital camera is mounted on a monopole (a photo stick) and placed on top of the photopoint (i.e., the piece of 12" rebar). It is important to maintain the same camera height for each documentation session; this attribute will be recorded and should remain consistent. The photographer

Table B-1. Summary of Archaeological Sites and their Photopoints

Sites 41VVxxx	Photopoints (PP) Located on the Site
1653	PP26
1654	PP17, PP18, PP19, PP20
1655	PP24, PP25
1682	PP23*, PP28
1683	PP21, PP22, PP27
1684	PP29
1685	PP14, PP15, PP16
1686	PP13
1687	PP11, PP12
1688	PP8, PP9, PP10
1689	PP2, PP3, PP7
1690	PP4, PP6
1691	PP1, PP5

*PP23 is not within the current site boundary

shoots a series of images from that point facing toward each cardinal direction, as well as toward any other directions deemed necessary to record the surroundings. It is best practice to consider conditions that may affect the photo documentation process such as but not limited to lens glare from rising/ setting sun, high contrast light conditions, and close proximity to vegetation. However, given the nature of field recording mitigating these conditions may not always be possible. The location is recorded with a GPS, and a standardized form is completed, as discussed below.

D) The final stage of the process involves completing field forms and entering the images and collected data into a

database. CAR archaeologists generally prefer paper forms, entering the data and photos upon completion of the visit, as opposed to electronic forms. However, digital forms can be created in ArcGIS or similar programs, with the data and photographs entered on a computer tablet and uploaded to a server to expedite the process. The choice of the type of final database rests with Laughlin AFB CES/CEIE.

During its investigation, CAR used the following form to document photopoint information on Laughlin AFB (Figures B-2 and B-3). The form consists of a front page noting the site trinomial, date, visit number, time, weather, GPS information, height of rebar from ground to top of

Archaeological Site Monitoring Form–Photopoint Data			
Facility Name: Laughlin AFB			Date:
Site Number:	Visit Number:	Time:	
Weather:			
GPS File Number:	GPS Northing:	GPS Easting:	
Photo point #:	Point height from ground to rebar top (cm):		
Camera:		Photographer:	
Position photostick on top of rebar. If using a tripod, center it over the rebar. Measure the height from the top of the rebar to the top of the photostick or tripod. Using a camera with a standard lens, take one photo in each of the cardinal directions. Record the photos in the order taken. Take any additional photos needed, and record the compass bearing and reason.			
Photo Number	Bearing	Height from top of rebar to top of photostick (cm)	Description
Comments			

Figure B-2. Example of the front of a CAR photopoint form.

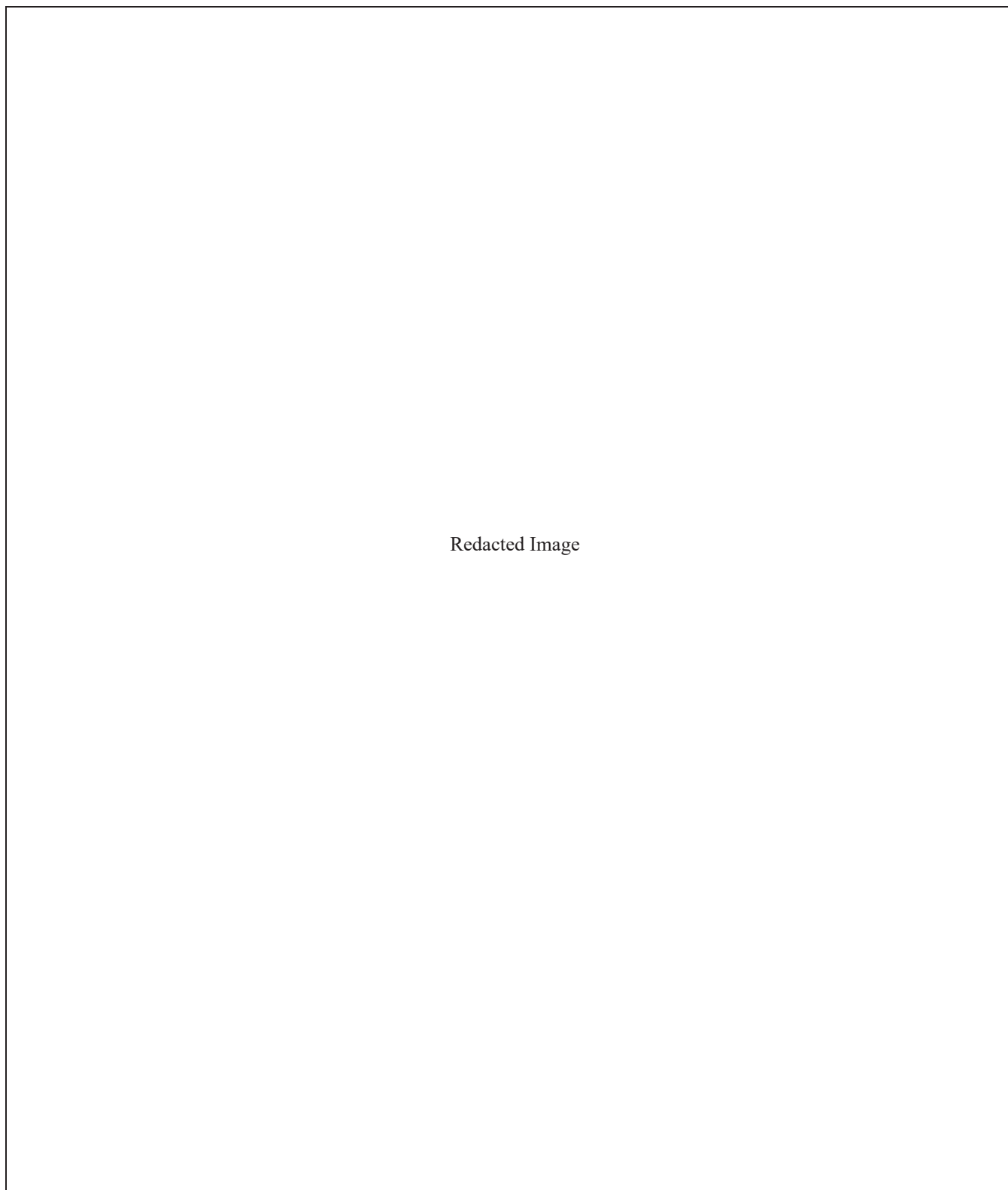


Figure B-3. Example of the back of the photopoint form, showing photos from a previous visit.

rebar (which measures static ground surface, soil erosion, or deposition), and photo information includes direction and the height of the camera (Figure B-2). Figure B-3 shows an example of a potential back page consisting of photographs from a previous visit. This aids in identifying any changes to the site landscape, impacts to archaeological features, and/or human or natural processes affecting the site.

Appendix C contains the CAR photopoint documentation utilizing the format discussed in the above paragraph. A separate DVD contains the raw data including a PDF of all field forms and photographs from each photopoint with a log describing those photographs. If used, the form should be modified to suit the particular needs of Laughlin AFB CES/CEIE.

Recurring Site Visits

Following the initial documentation, recurring visits are a relatively straightforward matter. CAR recommends that revisits should happen at a minimum of every two years. Revisits can also coincide prior to and after major events that affect the landscape such as planned burns, training exercises, etc. The timing of such revisits should be initiated to coincide with the first visit to have a similar set of images for comparison. Personnel should bring the

previous documentation as an aid in finding the photopoint location, as well as to make an on-the-ground comparison to the last visit. Photopoint documentation is conducted in the same manner as the initial visit, including recording the date, visit number, time, weather, GPS information, and the rebar height from the ground to the rebar top. The replication of the direction and camera height will insure a relatively accurate comparison between visits. Following the revisit, this documentation should be uploaded into a database of the client's choice and analyzed for similarities and differences which should be included in that documentation.

Summary

The Laughlin project was conducted in accordance with Section 110 of the National Historic Preservation Act (NHPA; 54 U.S.C. §§ 306101–306107, 306109–306114) to document thirteen previously recorded sites. This law requires federal agencies to protect historic properties under their care. As noted in Chapter 1, National Park Service (NPS 2020) guidelines state that this is an ongoing process. The photopoint system is a diagnostic tool that will aid Laughlin AFB CES/CEIE in this process. CAR will conduct photopoint-system training for Laughlin AFB CES/CEIE in the near future.

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Appendix C: Results of Photopoint Documentation

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