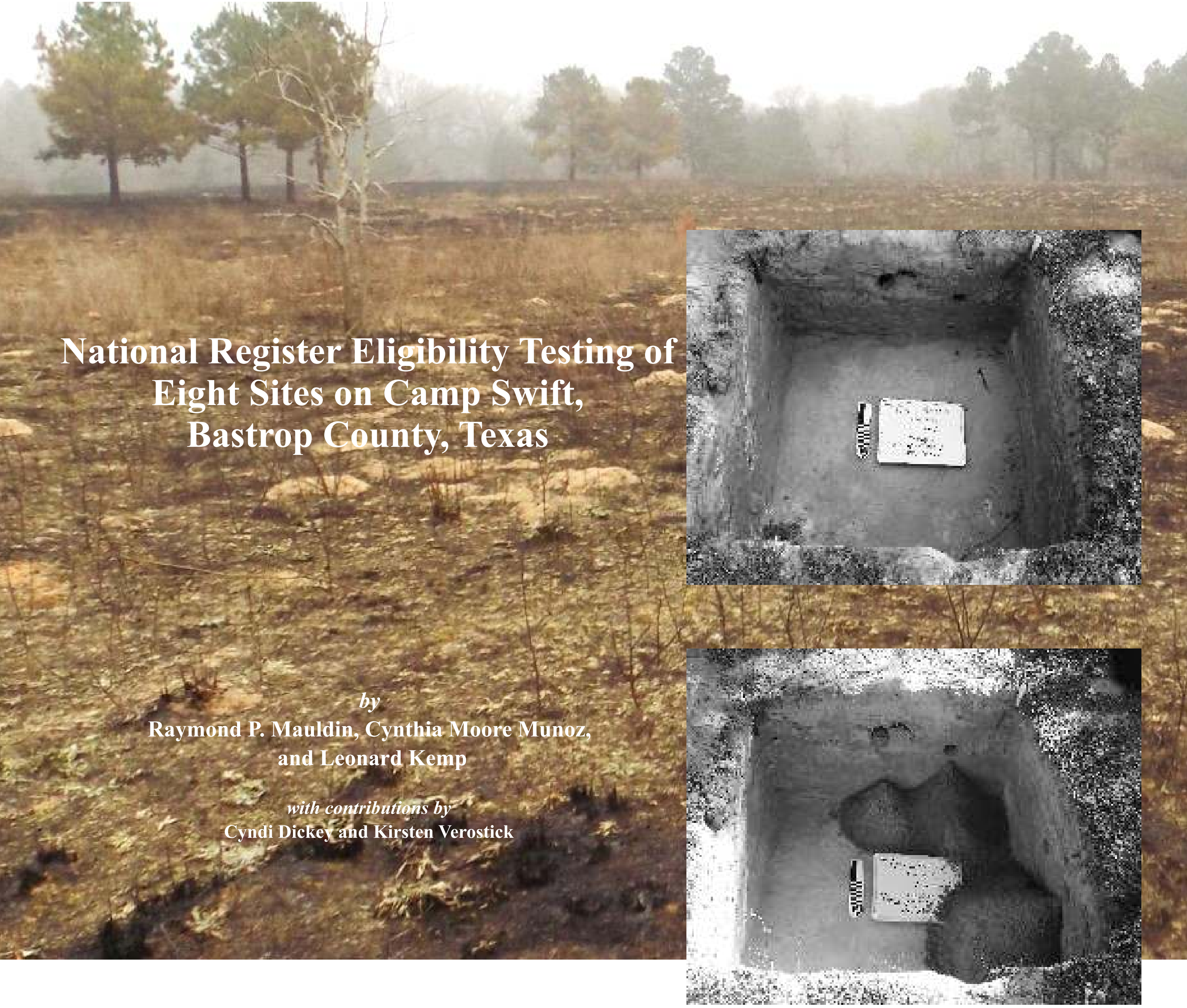


# National Register Eligibility Testing of Eight Sites on Camp Swift, Bastrop County, Texas

*by*
**Raymond P. Mauldin, Cynthia Moore Munoz, and Leonard Kemp**

*with contributions by*
**Cyndi Dickey and Kirsten Verostick**

Interagency Cooperation Agreement
No. TX11-ENV-09,
No. TX12-ENV-07, and
No. TX16-ENV-08

**REDACTED**

*Prepared for*:
Texas Adjutant General's Department
P.O. Box 5218
Austin, Texas 78763

*Prepared by:*
Center for Archaeological Research
The University of Texas at San Antonio
One UTSA Circle
San Antonio, Texas 78249
Archaeological Report, No. 436

# National Register Eligibility Testing of Eight Sites on Camp Swift, Bastrop County, Texas

*by*

Raymond P. Mauldin, Cynthia Moore Munoz, and Leonard Kemp

*with contributions by*

Cyndi Dickey and Kirsten Verostick

Interagency Cooperation Agreement
Nos. TX11-ENV-09, TX12-ENV-07, and TX16-ENV-08

**REDACTED**

*Prepared for:*
Texas Adjutant General's Department
P.O. Box 5218
Austin, Texas 78763

*Prepared by:*
Center for Archaeological Research
The University of Texas at San Antonio
One UTSA Circle
San Antonio, Texas 78249
Archaeological Report, No. 436

# Abstract:

The Center for Archaeological Research (CAR) at The University of Texas at San Antonio (UTSA) conducted fieldwork associated with National Register eligibility testing on eight prehistoric sites located on Camp Swift, a facility owned by the Texas Military Department (TMD) in Bastrop County, Texas. CAR carried out the work in accordance with Section 106 of the National Historic Preservation Act (NHPA) of 1966. The archaeological testing was conducted at two different times. The initial testing occurred in October and lasted through December of 2012 with seven sites (41BP776, 41BP778, 41BP780, 41BP782, 41BP792, 41BP801, and 41BP802) tested. In September of 2016, an additional site (41BP487) was investigated. The testing of the first seven sites was performed under Interagency Cooperation Agreement (ICA) Nos. TX11-ENV-09 and TX12-ENV-07 with Dr. Raymond Mauldin serving as Project Manager and Cynthia Moore Munoz serving as Project Archaeologist. The subsequent testing of 41BP487 was conducted under ICA No. TX16-ENV-08 with Dr. Paul Shawn Marceaux serving as Project Manager and Leonard Kemp serving as the Project Archaeologist.

The primary goal was to assess Camp Swift archaeological sites 41BP487, 41BP776, 41BP778, 41BP780, 41BP782, 41BP792, 41BP801, and 41BP802 for potential eligibility for the National Register of Historic Places (NRHP). CAR focused on three interrelated research domains. These domains are site chronology, the integrity of deposits, and their characteristics and content. In all, CAR excavated 41 1-x-1 m test units and screened roughly 26.65 m$^3$ of deposits. CAR archaeologists identified 1,576 pieces of chipped stone debitage, nine cores, 44 tools, and 18.7 kg of burned rock. CAR identified three features, one at 41BP802 and two features at 41BP487. Ultimately, CAR recommends that sites 41BP487, 41BP801, and 41BP802 are eligible for NRHP listing under criterion d in that the sites have yielded, and are likely to yield, information important to prehistory. The remaining five sites (41BP776, 41BP778, 41BP780, 41BP782, and 41BP792) are recommended as ineligible for NRHP listing. The Texas Historical Commission concurred with these recommendations on November 27, 2017. In addition, the TMD provided copies of the draft report to consulting Federally Recognized Tribal Nations for comment. It did not receive any formal comments back from the consulted tribes. If future review by Tribal Historic Preservation staff of this final report results in any need to edit or revise this report, TMD will work with Tribes and SHPO to prepare an updated publication.

Following laboratory processing and analysis and in consultation with the TMD, selected items that had no remaining scientific value were discarded. This discard conformed to Texas Historical Commission (THC) guidelines. All remaining archaeological samples, along with all associated artifacts, documents, notes, and photographs, were prepared for curation according to THC guidelines and are permanently curated at the CAR at The University of Texas at San Antonio.

# Table of Contents:

This page intentionally left blank.

# List of Figures:

This page intentionally left blank.

# List of Tables:

This page intentionally left blank.

# Acknowledgements:

This report represents the combination of two different testing projects on Camp Swift in Bastrop County. They were conducted roughly four years apart. The initial work, essentially completed in 2013, should have been published several years ago. However, apparently a lot can happen in four years. Over that period, we have said “goodbye” to too many and “welcome back” to too few. A new Center Director, some new staff, some old staff, some reshuffling of new and old staff, and we are finally getting around to combining that initial work with more recent efforts completed in 2016.

The fieldwork for the initial project, on which Cynthia Munoz served as Project Archaeologist, was completed in 2012. The field crew at that time consisted of Justin Blomquist, Mathew Colvin, Cyndi Dickey, Alex McBride, Steve Smith, and Tyron Tatum. In 2016, Leonard Kemp served as Project Archaeologist during the testing of 41BP487. Field crew for this more recent effort included David Barron, Jason Brian Perez, and Andrea Thomas. Former CAR Lab Director Melissa Eiring and current Lab Director Cynthia Munoz oversaw the laboratory processing of materials, assisted by Cyndi Dickey, Kirsten Verostick, and David Barron. Rick Young, Laura Carbajal, Katherine Smyth, Dr. Jessica Nowlin, and Leonard Kemp prepared figures for this final report. Jessica also helped track down comparative data on other Texas Military Department facilities. Dr. Kelly Harris edited the final document, assisted with tracking down references, tweaked figures, “undangled” participles, and reunited split infinitives. Cynthia Munoz, assisted by Karlee Jeffrey and Lindy Martinez, made sure the material and records were properly curated at CAR. Thank you all for your help and dedication.

Raymond Mauldin served as Project Manager on the 2012 work, and Dr. Paul Shawn Marceaux, that new Center Director mentioned above, served as Project Manager for the 2016 effort. Kristen Mt. Joy of the Texas Military Department was involved in both efforts. Kristen is always supportive of research, and it is a pleasure to work with her. Thanks Kristen for everything, including comments on the initial draft of this report. Thanks also to Lieutenant Colonel Philip Kost for his assistance and enthusiasm for these efforts and to personnel at Range Control at Camp Swift for keeping everyone safe.

This page intentionally left blank.

# Chapter 1: Introduction and Project Orientation

*Raymond Mauldin and Leonard Kemp*

The Center for Archaeological Research (CAR) at The University of Texas at San Antonio (UTSA) conducted fieldwork associated with National Register of Historic Places (NRHP) eligibility testing on eight prehistoric sites located on Camp Swift, a facility owned by the Texas Military Department (TMD) in Bastrop County, Texas. CAR carried out the work in accordance with Section 106 of the National Historic Preservation Act (NHPA) of 1966. The archaeological testing was conducted at two different times. In late October through December of 2012, seven sites (41BP776, 41BP778, 41BP780, 41BP782, 41BP792, 41BP801, and 41BP802) were tested. In September of 2016, an additional site, 41BP487, was investigated. The TMD is required to comply with NHPA regulations, and the evaluation work conducted here is a component of that regulatory compliance. The State Historic Preservation Officer (SHPO) at the Texas Historical Commission (THC) advises the TMD regarding their obligations under Section 106 of the NRHP, and to comply with applicable laws and regulations, the TMD operates an Installation Cultural Resource Management Plan (ICRMP). The work reported here supports the TMD's Camp Swift section of the ICRMP (TMD 2015). Though not conducted under a Texas Antiquities Permit, the project reported here was conducted in a manner consistent with the requirements of the Antiquities Code of Texas. The initial site testing was performed under Interagency Cooperation Agreement (ICA) Nos. TX11-ENV-09 and TX12-ENV-07 with Dr. Raymond Mauldin serving as Project Manager and Cynthia Moore Munoz serving as the Project Archaeologist. The subsequent testing of 41BP487 was conducted under ICA No. TX16-ENV-08 with Dr. Paul Shawn Marceaux serving as Project Manager and Leonard Kemp serving as the Project Archaeologist.

Camp Swift is a roughly 11,500-acre training facility located approximately 7 km south of the City of Elgin and 14 km north of the City of Bastrop (Figure 1-1). The United States Army acquired land for the construction of Camp

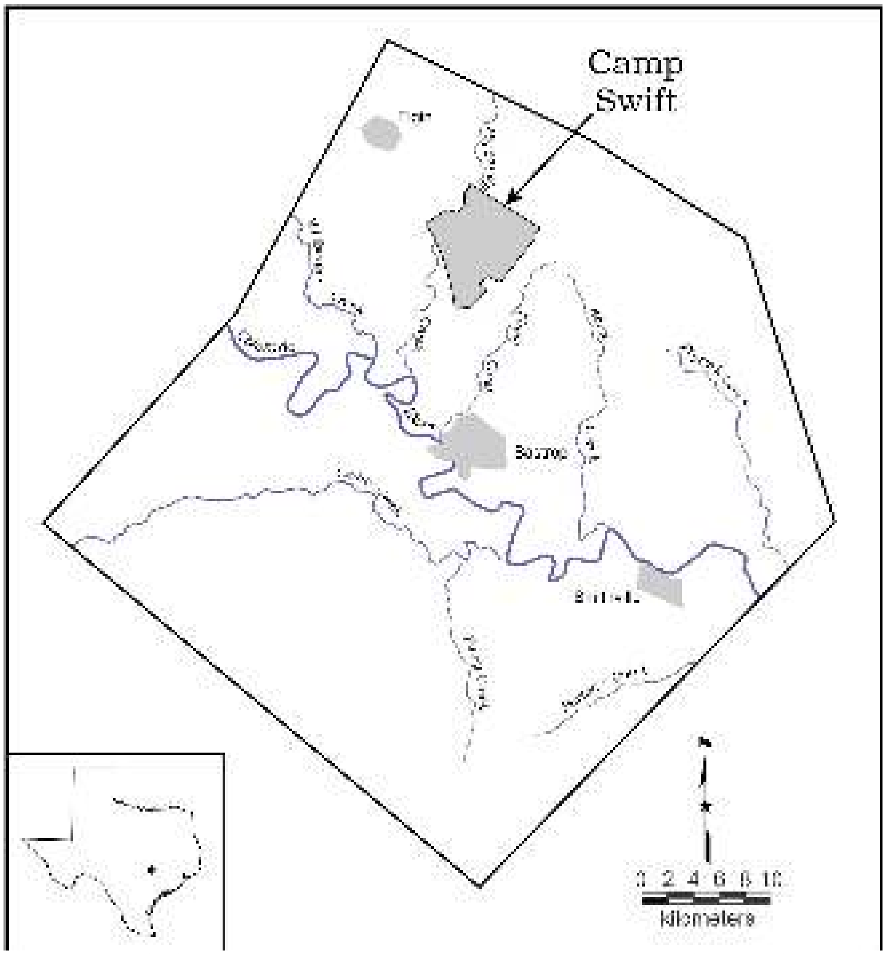


*Figure 1-1. The location of Camp Swift in Bastrop County, Texas, with major drainages.*

Swift at the beginning of World War II as part of the war effort (Leatherwood 2010; Leffler 2001; Sitton 2006). The facility, located on the Lake Bastrop and Elgin East Texas USGS 7.5-minute quadrangle maps, consists of rolling hills dissected by intermittent and flowing streams that drain into the Colorado River to the southwest (Munoz 2012:5). Camp Swift is used for a variety of military training activities, including light maneuvering, land navigation training, infantry coordination, and weapons training. Military users include the TMD and reserve components of the Army, Navy, Marines, and Air Force. In addition to military training, the facility is used by local police departments, university and high school ROTC groups, and other state agencies (e.g., Texas Forest Service) for training activities (TMD 2015:28-31).

These varied uses have the potential to affect cultural resources, and as such, regulations require that agencies identify and take into account adverse impacts on cultural resources that have significance. As of 2017, there are 306 recorded archaeological sites on Camp Swift, 230 of these sites have been determined to be ineligible for NRHP listing, with 14 eligible sites, and 62 sites where eligibility status has not been determined. Eight of these 62 sites with unknown eligibility are the focus of this report. Those sites are 41BP487, 41BP776, 41BP778, 41BP780, 41BP782, 41BP792, 41BP801, and 41BP802. Based on previous descriptions, preliminary site visits, and in-field results, CAR excavated 41 1-x-1 m test units and screened roughly 26.65 $m^3$ of deposits. CAR identified 1,576 pieces of chipped stone debitage, 9 cores, 44 tools, and 18.7 kg of burned rock. CAR identified three features, one at 41BP802 and two features at 41BP487. Ultimately, CAR recommends that sites 41BP487, 41BP801, and 41BP802 are eligible for listing on the NRHP. The remaining five sites (41BP776, 41BP778, 41BP780, 41BP782, and 41BP792) are recommended as ineligible for NRHP listing. Table 1-1 presents a summary of the tested archaeological sites. The Texas Historical Commission concurred with these recommendations on November 27, 2017. In addition, the TMD provided copies of the draft report to consulting Federally Recognized Tribal Nations for comment. It did not receive any formal comments back from the consulted tribes.

Following laboratory processing and analysis, and in consultation with the TMD, selected items that had no remaining scientific value were discarded. This discard conformed to THC guidelines. All remaining archaeological samples, along with all associated artifacts, documents, notes, and photographs, were prepared for curation according to THC guidelines and are permanently curated at the CAR at UTSA.

## Research Perspective

The current project involves testing of the eight sites to determine their NRHP eligibility status. The National Register is maintained by the National Parks Service (NPS), and criteria for eligibility determination are identified in Title 36, Code of Federal Regulations (CFR) 60.4 (NPS 2016). There are four criteria, designated a through d, that were developed to assess "the quality of significance" in a variety of areas, including archaeology (NPS 2016). For most archaeological sites, criterion d is most relevant as it states sites that possess integrity and that "have yielded, or may be likely to yield, information important in prehistory or history" are eligible for inclusion on the NRHP (NPS 2016).

Table 1-1. Summary of Tested Archaeological Sites

| **Site** | **Site Age** | **Site Type** | **NRHP Eligibility Recommendations** |
|---|---|---|---|
| 41BP487 | Late Archaic and Late Prehistoric | Multi-component Site | Eligible |
| 41BP776 | N/A | Multi-component Site | Not Eligible |
| 41BP778 | N/A | Open Campsite | Not Eligible |
| 41BP780 | N/A | Open Campsite | Not Eligible |
| 41BP782 | Late Prehistoric | Open Campsite | Not Eligible |
| 41BP792 | N/A | Open Campsite | Not Eligible |
| 41BP801 | N/A | Open Campsite | Eligible |
| 41BP802 | Late Archaic and Late Prehistoric | Open Campsite | Eligible |

Significance, then, is fluid, in that what is important in history or prehistory changes over time because the knowledge base changes. What is known, or at least is thought to be known, is different today than it was 30 or 40 years ago. For example, several decades ago large accumulations of burned rock in portions of Texas, termed burned rock middens (BRM), were a mystery (see Kelley and Campbell 1942; Pearce 1919, 1932). While most researchers would eventually suggest that they were primarily thermal features dating between 5000 and 2800 BP (e.g., Prewitt 1991; Weir 1976) and were involved in acorn processing (Creel 1986; Hester 1973), opinions varied (e.g., Goode 1991; Hester 1970, 1971; Hester ed. 1991; Howard 1983, 1991; Sorrow 1969). In the last quarter of the twentieth century, almost any investigation focused on BRMs was likely to yield information important in prehistory, given the minimal understanding of these features and their role in prehistory. Today much more is known about these feature types (Acuna 2006; Black 2003; Black and Creel 1997; Dering 1999; Ellis 1997; Thoms 2008; Wandsnider 1997). Consequently, current questions concerning BRMs need to be more focused, and features need to possess data specific to those questions if they are to be judged significant.

Significance also changes because of methodological and technological advances in the discipline. To continue the previous example, the development and increasing use of flotation procedures and accelerator mass spectrometry (AMS) radiocarbon dating of recovered succulents (Black and Creel 1997) produced dramatic increases in the knowledge of subsistence and chronology of BRMs.

Finally, the significance of a site changes because of theoretical shifts, resulting in shifts in the types of questions asked. As outlined below, this investigation is approached from a theoretical position that can be broadly classified as cultural ecology. The focus is on interactions between cultural systems and their environment, with an emphasis on chronology, technology, mobility, and subsistence. Cultural systems are viewed as adaptive, in that they are constantly responding to and initiating changes in their physical and social environments, and as differentiated, meaning that activities conducted by a group vary in space and time, and such variation generates different material remains. That is, individuals and groups operating within a cultural system can produce radically different sets of material remains on a landscape in response to different conditions. This position contrasts with others, for example, that see variation in artifacts (e.g., projectile point forms) and assemblages as reflecting historical relationships and group affiliation. The questions asked from a cultural ecological perspective and the significance of the material to provide answers will necessarily be different from those generated by researchers using a cultural-historical or some other research perspective. Given the current understanding of Central Texas and Camp Swift prehistory, as well as the needs of the TMD, investigations of these eight sites were focused on three interrelated research domains. These domains are site chronology, the integrity of deposits on a site, and the characteristics and content of a site.

Integrity is a necessary component for nomination to the NRHP that is specifically mentioned in 36 CFR 60 (NPS 2016). For the purposes and in the context of this investigation, integrity is viewed as a continuum rather than something that a site or assemblage either has or lacks. While it is probably the case that all assemblages have potential to answer some questions, assemblages with greater integrity have an increasing probability of answering a wider variety of questions than those that have little integrity. Another closely related research domain focuses on chronology. Almost all sites and assemblages can be placed in a chronological framework (e.g., prehistoric, historic), but for most questions, the finer the temporal resolution, the higher the probability that the site will be able to answer specific questions. This is because most, though not all of these questions, tend to involve specific periods. In addition, little is known about some periods (e.g., Early Archaic in Central Texas), and therefore, any data that can be assigned to this period, even broadly, is of interest. The last research domain of focus concerns the content of a site assemblage. Assemblages can have good integrity and good temporal control, but have low artifact diversity, lack features, or have redundant assemblage content. The range of questions that these assemblages can effectively address is likely to be more limited when compared to assemblages with greater content diversity or assemblages with a variety of features and feature types.

## Report Organization

This report contains ten chapters and five appendices. Following this introduction, Chapter 2 provides an overview of modern and, to the degree possible, past physical environments. It is concluded that the Camp Swift setting has a low diversity of both floral and faunal resources commonly used by hunter-gatherers. The low diversity of subsistence resources coupled with an unpredictable climate would have significantly impacted options available to hunter-gatherers. Chapter 3 presents archaeological background, including information on previous investigations on Camp Swift. The data suggest there are significant gaps in sustained occupations over time. Chapter 4 outlines the field and laboratory methods used on the project, while Chapter 5 provides a detailed description of each site, including information on the work accomplished and a summary of the materials recovered. Chapter 6 is the first of three chapters that summarize the three research domains noted above. The sixth chapter provides chronological information on the sites, including a discussion of temporal diagnostics and radiocarbon dates. When data are available, sites fall within the Late Archaic and Late Prehistoric occupations. There is no evidence of material dating prior to the Late Archaic. Chapter 7 looks at issues of integrity on these eight sites. Included in that chapter is an analysis of site integrity that is based on the degree of bioturbation, characteristics of artifact distribution and size, and patterning in magnetic susceptibility values. Chapter 8 presents information on site content, presenting data on lithic assemblage characteristics as well as the presence of features. The chapter focuses on content sample size and variety, suggesting that assemblages with greater variety are potentially more useful for assessing general research questions. Chapter 9 explores project level patterning in lithic material. This material is not used directly in eligibility determination, but it is designed to frame aspects of future investigations at Camp Swift. The tenth and final chapter provides a summary of the project, including recommendations for the NRHP eligibility of these eight sites. The CAR recommends three sites, 41BP487, 41BP801, and 41BP802, as eligible for inclusion to the National Register based on their likelihood to contribute information important to the prehistory of this region of Texas. The five remaining sites (41BP776, 41BP778, 41BP780, 41BP782, and 41BP792) are not recommended for NRHP listing. Five appendices are included in this volume. Appendix A presents details on the radiocarbon dates. Data on the magnetic susceptibility investigations are presented in Appendix B, and Appendix C provides details on the chipped stone assemblage. Appendix D lists attributes of tool stone available on Camp Swift, while examples of lithic tools recovered on the project are shown in Appendix E.

# Chapter 2: Natural Environment of the Project Area

*Cynthia Munoz, Raymond Mauldin, and Leonard Kemp*

This chapter presents an overview of the environment in the Camp Swift project area. Included are brief discussions of the physiographic setting, hydrology, soils, flora and fauna, modern climate, and the paleoclimate. Additional information on the area can be found in recent summaries by Haefner et al. (2012), Munoz (2012), and Yelacic and Lohse (2011).

## Current Physical Environment

The project area is located on Camp Swift in north-central Bastrop County. The area consists of rolling terrain dissected by both intermittent and flowing streams. Slope relief tends to be gentle to moderate ranging between one and twelve percent with elevations from about 113-173 m (370-570 ft.) above mean sea level (AMSL; Figure 2-1). Bastrop County falls within the Texan biotic province, which is characterized by a general vegetation region known as the Post Oak Savannah (Blair 1950). Camp Swift lies approximately 30 km east of the Balcones Escarpment (Figure 2-2).

### Modern Climate

The weather in Bastrop County is typically subtropical and humid with hot summers and cool winters (Marks 2010). The closest weather station with long-term data on temperature and rainfall is located approximately 10-15 km to the north-

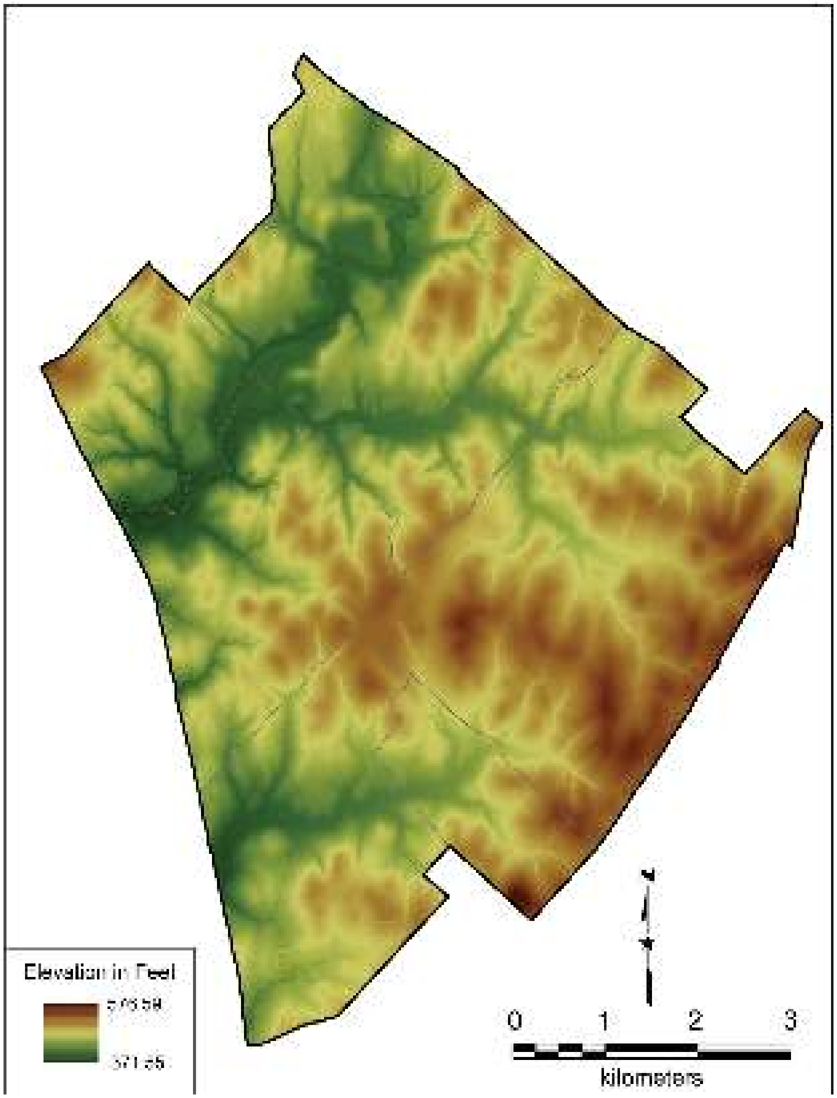


Figure 2-1. LiDAR map showing elevations of Camp Swift.

*Figure 2-2. Biotic regions of Texas showing the location of Camp Swift within the Texan province.*

northwest of Camp Swift at Elgin, Texas. The 30-year normal (1971-2000) data for the Elgin station (National Oceanic and Atmospheric Administration [NOAA] 2004) yielded an average yearly precipitation of 874.3 mm (34.42 in.). Rainfall is bimodal with a major peak in May and a secondary peak in October (Figure 2-3). On average, the driest months of the year over the 30 years were July and August, with mean rainfall totals of 50.3 mm (1.98 in.) and 49.5 mm (1.95 in.), respectively. Figure 2-4 shows the average monthly precipitation (inches) in Texas from 1961-1990 for the months of May and August. The driest month of the year, August, is also the warmest, with average daytime highs of 35.5°C (95.9°F; Figure 2-5). The coldest month is January, with average lows of 4.4°C (40.0°F). Yearly temperatures at Elgin average 20.4°C (68.8°F; NOAA 2004). The annual growing season in Bastrop County is 270 days (Marks 2010).

Figure 2-6 presents a plot of 72 years (1940-2012) of precipitation data from the Texas Water Development Board's quadrangle No. 710 (2013). The quadrangle covers over 10,000 km$^2$ including Travis and Williamson counties and the northern two-thirds of Bastrop County. The figure shows considerable year-to-year fluctuations, with the highest rainfall in 2004, when 1317.8 mm (51.88 in.) of precipitation was recorded. The lowest yearly total was 341.4 mm (13.4 in.) in 1954. The average rainfall for the 72-year period was 831.9 mm (32.72 in.).

## Hydrology

Camp Swift is drained by Big Sandy Creek and its tributaries, Dogwood Creek, Dogwood Branch, McLaughlin Creek, and Harris Creek, which eventually discharge into the Colorado River, approximately 13 km to the southwest (Munoz 2012:5). Seven of the sites are located in the southwest section of the facility that includes a portion of the tributaries and floodplains of both Dogwood Branch and Harris Creek (Figure 2-7). One site, 41BP487, is located in the northeast section of Camp Swift adjacent to Big Sandy Creek.

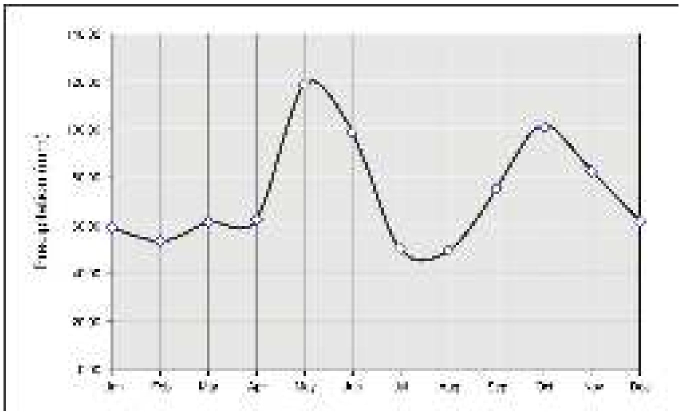


Figure 2-3. Mean monthly precipitation at Elgin, Texas (1971-2000).

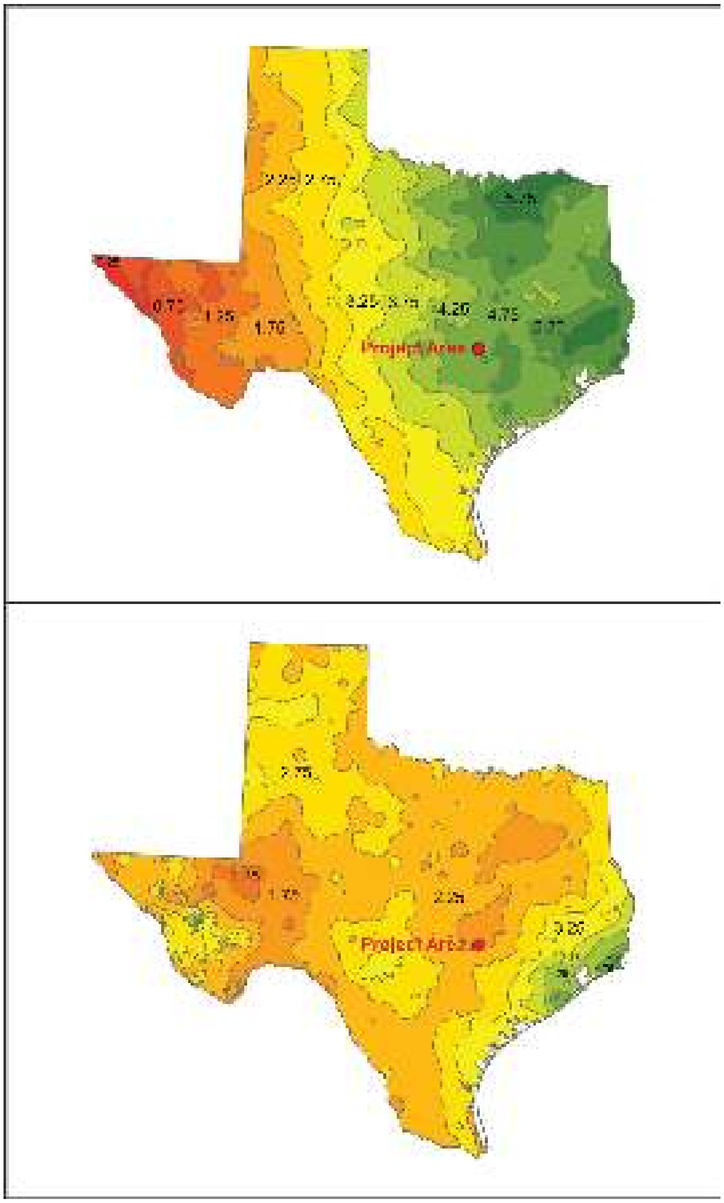


Figure 2-4. Average monthly precipitation (units are inches) in Texas from 1961-1990 for the months of May (top) and August (bottom).

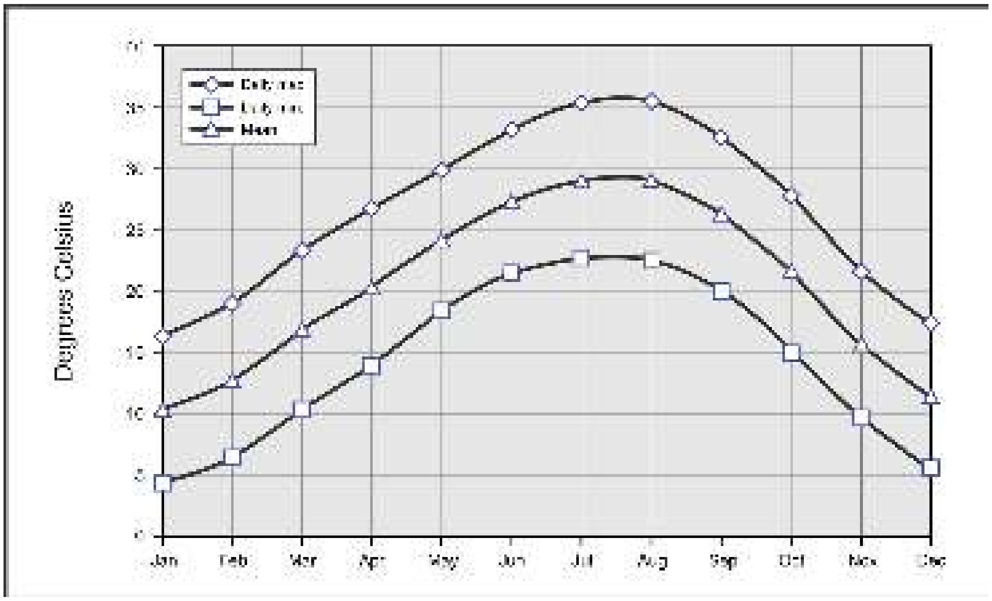


*Figure 2-5. Mean monthly temperature at Elgin, Texas (1971-2000).*

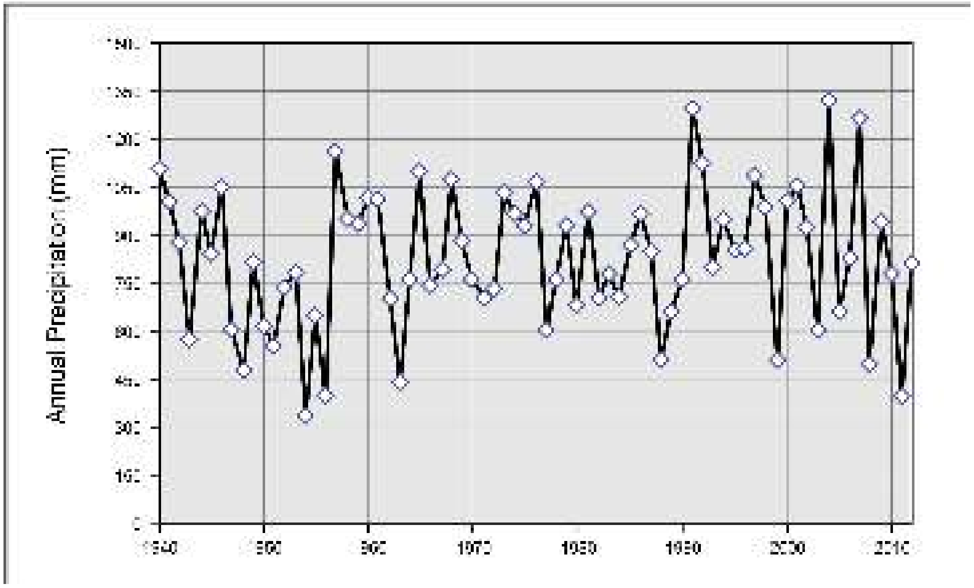


*Figure 2-6. Yearly precipitation at the Texas Water Development Board's quadrangle No. 710 Austin, Texas (1940-2012).*

## Geology and Soils

The geology on Camp Swift around the project area primarily consists of Eocene age Carrizo Sand and Wilcox Group deposits (Figure 2-8). Carrizo Sand (Ec) consists of fine to coarse-grained sandstone with some ironstone beds. The Wilcox Group on Camp Swift includes the Calvert Bluff Formation (Ecb), made up mainly of mudstone with some sandstone and lignite, and the Simsboro Formation (Esb), containing mostly sand with some clay, mudstone, and mudstone conglomerate. Pockets of Holocene age Alluvium (Qal) and Late Pleistocene age Fluviatile terrace deposits (Qt) lie to the north and the south of the project area (Barnes 1974). The deposits to the south, along the Colorado River, contain chert gravel carried from upstream chert-bearing Edwards Limestone formations. Alluvium (Qal) to the north, along Big Sandy Creek, contains chert and quartzite gravel.

Weathering of the bedrock has resulted in red, buff-colored sandy soils deposited as an outcome of colluvial, alluvial, and possible eolian processes (Bousman and Fields 1988; Frederick and Bateman 2001). This sandy mantle lies upon a pedogenically altered argillic Bt horizon. It is unclear whether the interface between the argillic horizon and the

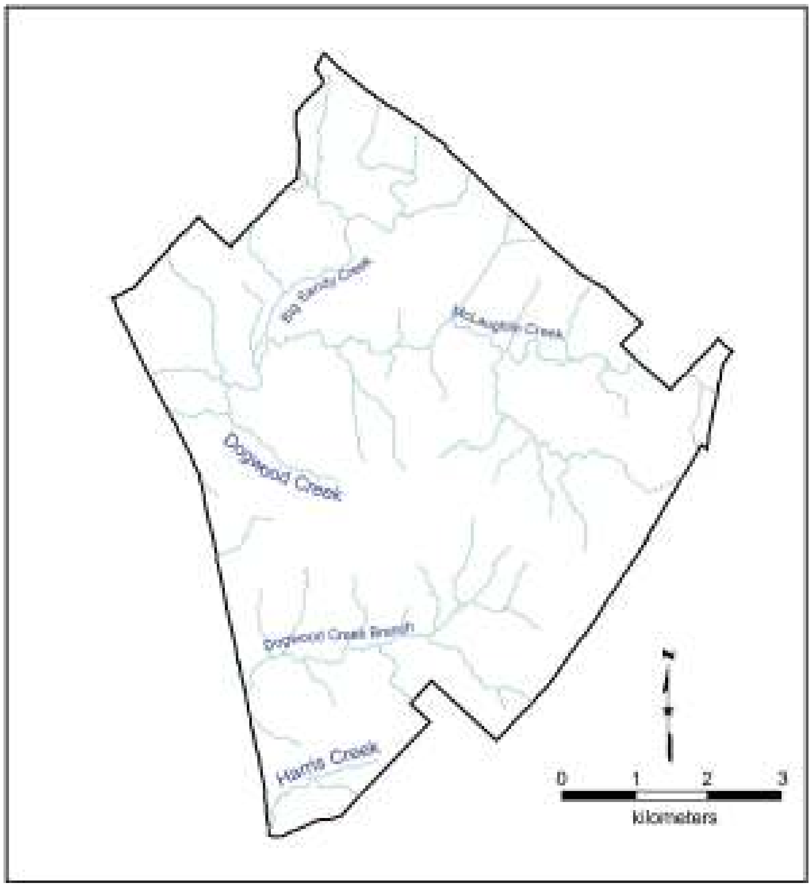


*Figure 2-7. Major creeks and their tributaries within Camp Swift.*

sand mantle is the result of pedogenesis or of sedimentation (see Frederick et al. 2002). This uncertainty has led to questions regarding the integrity of archaeological deposits in the region (see Bateman et al. 2007; Boulter et al. 2010; Leigh 1998; Thoms 2007).

Soils on Camp Swift (Axtell, Crockett, Demona, Jedd, Patilo, Rosanky, Sayers, Silstid, Tabor, Uhland, and Wilson series) are associated with stream terraces, uplands, ridge tops, side slopes, floodplains, and bottomlands (Baker 1979). Figure 2-9 presents the soils series within a 2-km radius of the two test areas. The soils from the initial 7 sites (Figure 2-9, left) include Axtell fine sandy loam (AfC, AfC2, and AfE2), Crockett soils (CfB, CsC2, and CsD3), Demona loamy fine sand (DeC), Patilo complex (PaE), Rosanky fine sandy loam (RoB), Silstid loamy fine sand (SkC), Tabor fine sandy loam (TfA and TfB), and Uhland soils (Uh). The soils from site 41BP487 also include Axtell fine sandy loam (AfC, AfC2, and AfE2), Crockett soils (CsC2, CsD3, and CsE2), Demona loamy fine sand (DeC), Patilo complex (PaE), Silstid loamy fine sand (SkC), Tabor fine sandy loam (TfA and TfB), and Uhland soils (Uh), and additional soils include Jedd gravelly fine sandy loam (JeF) and Sayer fine sandy loam (Sa).

Axtell fine sandy loams make up 45 percent of the 12.6 km$^2$ study area. Associated with uplands and ridges, they derive from parent material weathered from shale and siltstone from the Eocene age Wilcox formation. AfC, AfC2, and AfE2 soils are as deep as 193 cm. They are composed of brown, fine sandy loam transitioning to yellowish-red, mottled clay at 13 cm, to yellowish-red to light brownish gray, mottled sandy clay at 38 cm, to gray, mottled sandy clay loam at 114 cm, and to a light-gray, mottled sandy clay at 152 cm to the series termination. These depths, gathered from Baker (1979), are based on the interpretation of a small number of representative profiles.

The Crockett series, covering 19 percent of the study area, consists of deep soils lying on weathered shale. These upland sediments are moderately well drained and very slowly permeable. The slightly sloping soils formed in residuum derived from weathered alkaline marine clays, sandy clays, or shale during the Cretaceous age. CfB, CsC2, and CsD3 sediments consist of 10 cm of brown loam over 91 cm of reddish-brown, light olive-brown, and light yellowish-brown mottled clay. The clay transitions to 51 cm of pale yellow and olive yellow, mottled clay loam (Baker 1979).

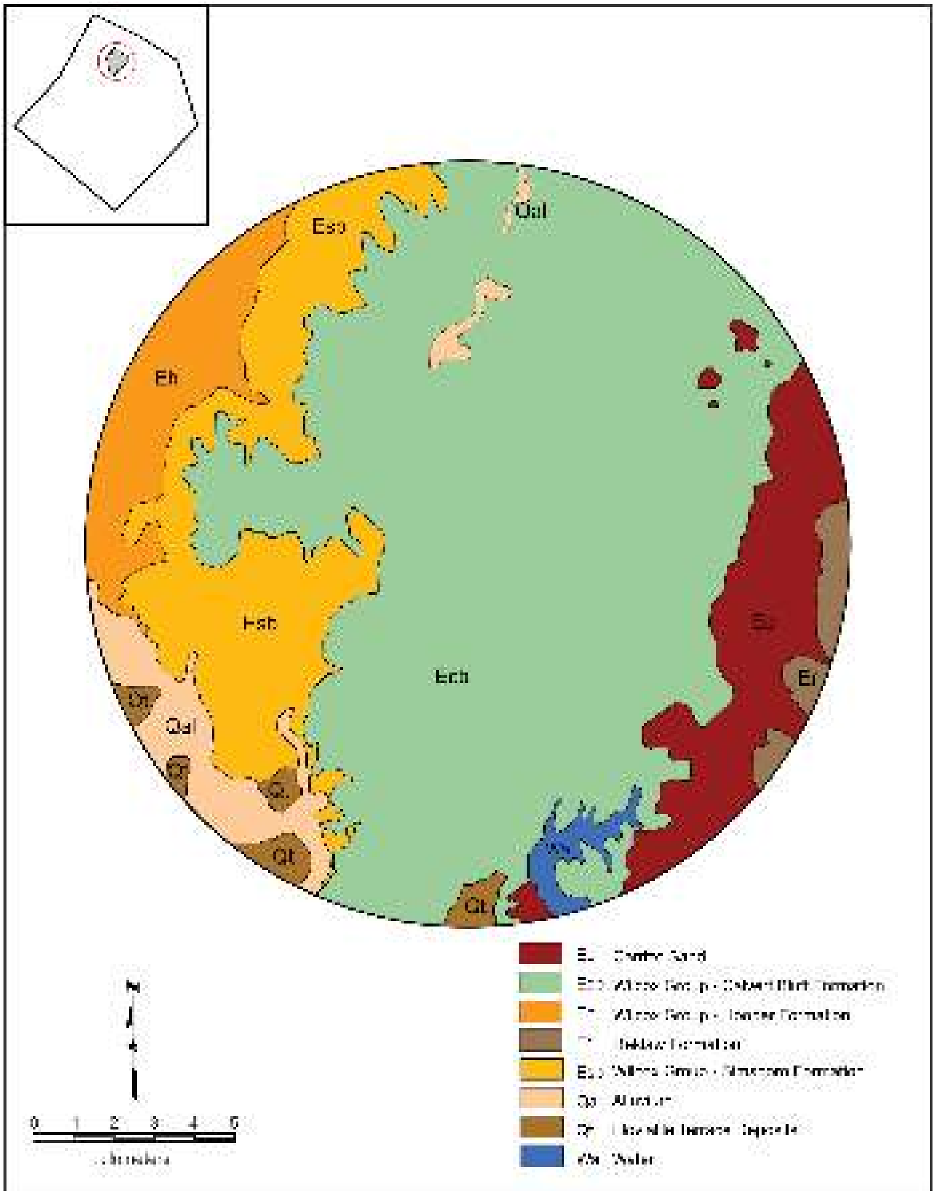


*Figure 2-8. Geologic formations within a 10-km radius of the project area. Inset shows the formations relative to Camp Swift in Bastrop County.*

Ten percent of the study area consists of Demona loamy fine sand (DeC). Located on nearly level to moderately sloping uplands, the DeC series are very deep, moderately well-drained, and slowly permeable soils that formed in loamy sediments on Pleistocene terrace deposits. DeC soils are as deep as 157 cm and are composed of light brownish-gray, loamy fine sand changing to pale brown, loamy fine sand at 13 cm, to dark red, mottled sandy clay at 71 cm, and to brownish-yellow, mottled sandy clay at 137 cm (Baker 1979).

Covering nine percent of the study area, the Tabor series (TfA and TfB) are very deep, moderately well-drained deposits located on upland stream terraces. The soil formed in loamy, clayey sediments. The series is made up of 15 cm of grayish-brown, fine sandy loam over 23 cm of pale-brown, fine sandy loam. The loam transitions to 58 cm of brownish-yellow clay over 64 cm of yellow to light gray, mottled clay (Baker 1979).

Uhland soils (Uh) are present on eight percent of the study area. The series, located along the channels of large creeks and on flood plains, consists of nearly level, deep, poorly drained soils that formed in alluvial sediment (Baker 1979). Uh soils reach a depth of 152 cm and are composed of grayish-brown, clay loam transitioning to brown, mottled fine sandy loam at 15 cm, to grayish-brown, mottled loam at 46 cm, and to mottled fine sandy loam at 102 cm to series depth (Baker 1979).

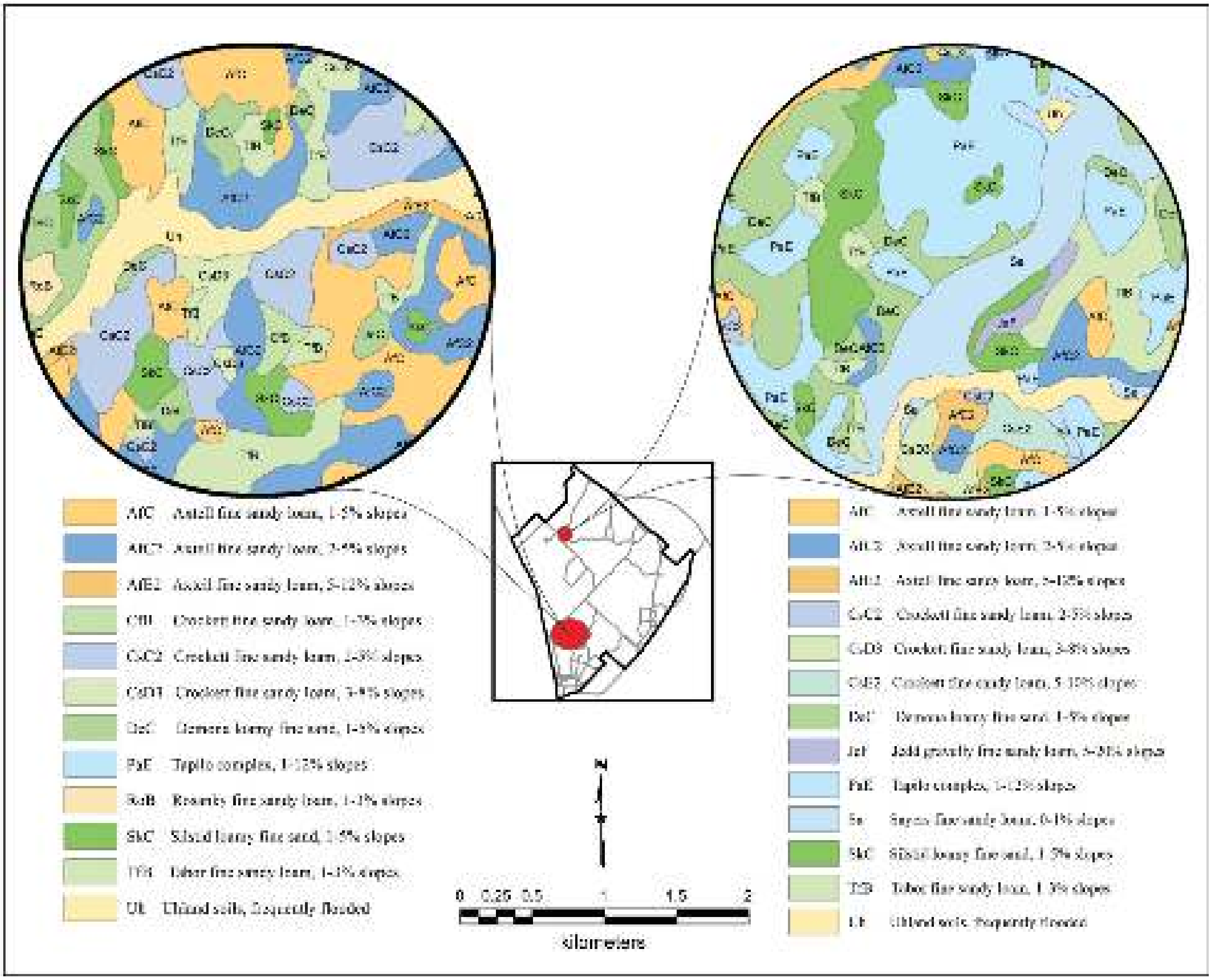


*Figure 2-9. Soil series within a 2-km radius of the project areas. On the left are the seven sites tested and on the right is the location of 41BP487.*

Silstid (SkC) soils cover four percent of the project area. The Silstid series consists of very deep soils that formed in residuum weathered from beds of loamy or sandy materials and interbedded sandstones. These upland sediments are well drained and moderately permeable. SkC sediments consist of 25 cm of light-gray, loamy fine sand over 46 cm of pale brown, loamy fine sand. A brownish-yellow, mottled sandy clay loam is found from 71-102 cm overlying 76 cm of mottled, strongly acidic clay loam. The final 25 cm are made up of mottled, strongly acidic fine sandy loam (Baker 1979).

Patilo (PaE) soils cover four percent of the project area. The Patilo series occurs on uplands and high terraces. The soils are deep, well drained, moderately permeable, and formed in thick sandy materials. PaE soils are as deep as 178 cm and are composed of light brownish-gray, fine sand transitioning to very pale, fine sand at 13 cm to light gray, mottled sandy clay loam at 132 cm below the surface (cmbs; Baker 1979).

Found on only one percent of the study area, the Rosanky series (RoB) lies on convex areas of upland ridges. The deep, loamy, sloping soils, formed in weakly fused packsand or sandstone. RoB soils consist of 13 cm of brown, fine sandy loam over 8 cm of light-brown, fine sandy loam. The next 56 cm are composed of red clay overlying 41 cm of reddish-yellow, sandy clay loam. Below this level, 46 cm of reddish-yellow, fine sandy loam overlies 15 cm of weakly consolidated sandstone (Baker 1979).

## Flora and Fauna

Bastrop County falls within the Post Oak Savannah natural region of Texas (Figure 2-10). Several summaries of plant resources within this region are available (see Gould 1975; Gould et al. 1960; Hatch et al. 1990; Texas Parks and Wildlife Department [TPWD] 2013). The project area supports a diverse assemblage of flora from the Post Oak Woods/Forest

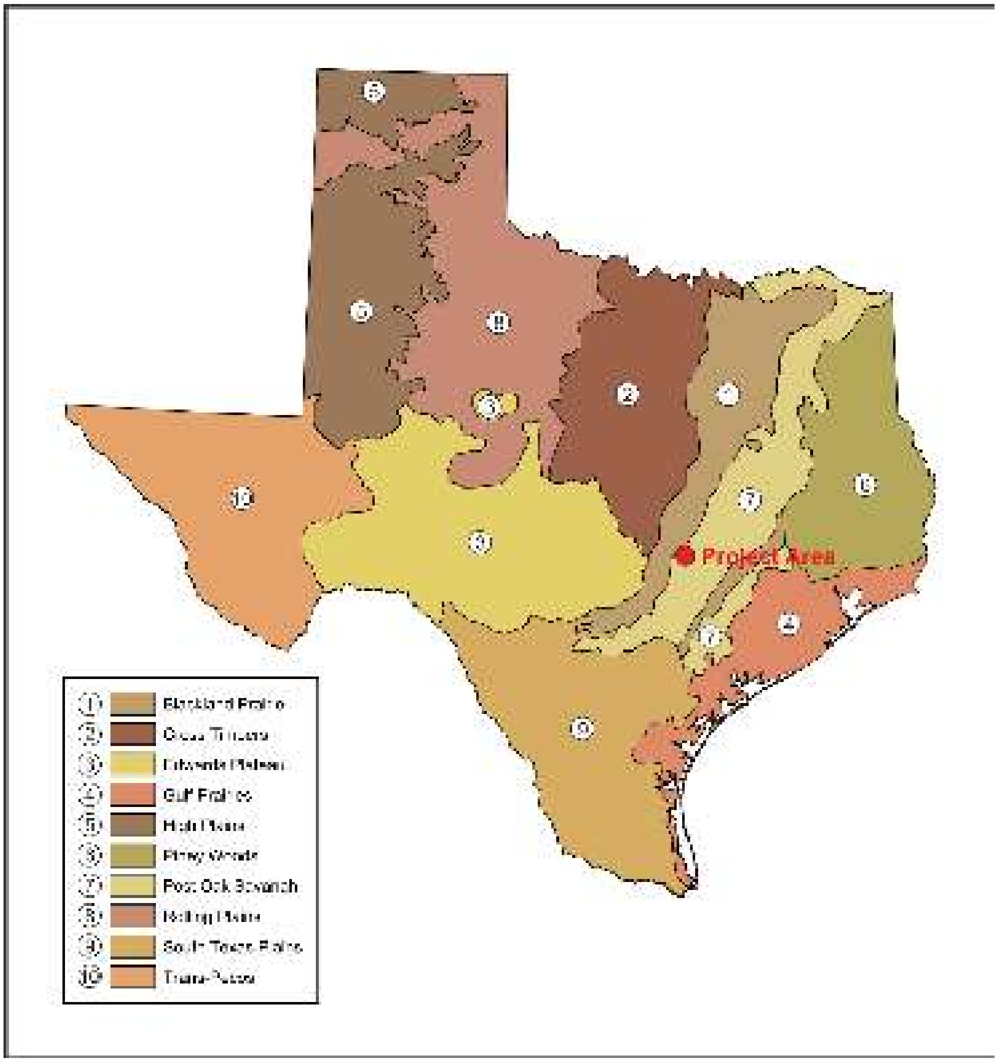


*Figure 2-10. Natural regions of Texas showing the location of Camp Swift within the Post Oak Savannah region.*

vegetation type, as defined by the TPWD (2013). Non-pastured area vegetation dominating the upper story consists largely of blackjack oak (*Quercus marilandica*), live oak (*Quercus fusiformis*), sandjack oak (*Quercus incana*), eastern red cedar (*Juniperus virginiana*), cedar elm (*Ulmus crassifolia*), black hickory (*Carya texana*), hackberry (*Celtis* sp.), and mesquite (*Prosopis* sp.). The understory contains yaupon (*Ilex vomitoria*), hawthorn (*Crataegus* sp.), American beautyberry (*Callicarpa americana*), coral-berry (*Symphoricarpos* sp.), dewberry (*Rubus* sp.), poison oak (*Rhus toxicodendron*), supplejack (*Berchemia* sp.), and trumpet creeper (*Campsis radicans*), and flora typical of tall grass prairies. Grasses in the region include sand lovegrass (*Eragrostis trichodes*), beaked panicum (*Panicum*), three-awn (*Aristida*), Spranglegrass (*Chasmanthium latifolium*), tickclover (*Desmodium psilophyllum*), silver bluestem (*Bothriochloa saccharoides*), and little bluestem (*Schizachyrium scoparium*; Gould 1975; TPWD 2013). Land disturbance associated with cultivation, ranching, and military activity has markedly changed the native vegetation region. Non-native invader species, including eastern cedar elm, yaupon holly, green briar, and eastern prickly pear, are currently present on Camp Swift.

Hatch et al. (1990) list 1,390 species of plants within the Post Oak Savannah. Thompson et al. (2012) compared each of the 4,287 native plant species listed by Hatch et al. (1990) for Texas to the Native American Ethnobotony database (Moerman 2005). The database lists 4,029 plant species used by 291 North American Native American groups for various purposes. For the study, Thompson et al. (2012) identified all matching items at the species level and concluded that humans have used 480 different components from 394 plant species in Texas for food. Each component was classified as roots and tubers, seeds, nuts, greens, fruits, or other (e.g., bark, stalks, sap). Figure 2-11 plots the number of plant classifications by food type for each of the ten natural regions. The most diverse food types are found in the Trans-Pecos (n=318), the

Edwards Plateau (n=264), and the Rolling Plains (n=219). For the Post Oak Savannah, 179 different plant components were available for subsistence needs.

Thompson et al. (2012) averaged Owen and Schmidly's (1986) net above-ground primary productivity data for each of the natural regions. A plot of the number of selected potential food plants within each region and the average net above-ground primary productivity suggests an inverse relationship (Figure 2-12). With the exception of the South Texas Plains and, to a lesser extent, the High Plains, as primary productivity increases, the number of available human food resources decreases. The pattern of lower potential plant food items on the South Texas Plains may reflect extensive historic landscape modification, while the lower plant food potential of the High Plains may be related to the grassland setting. Grasslands tend to have lower potential plant food sources for humans. The Trans-Pecos and the Edwards Plateau natural regions, with the highest food plant diversity, may have been the most stable for hunter-gatherers as fluctuations in food resources could have been compensated for by shifts to alternate food sources (Thompson et al. 2012). In contrast, the pattern of low food plant diversity in settings, such as the Pineywoods and the Post Oak Savannah, may well result in a less stable hunter-gatherer adaptation. As ecological fluctuations perturbed any single plant resource type, few alternatives would have been available for hunter-gatherers.

For faunal resources, Blair (1950) records 49 species of mammals in the Texan biotic province including white-tailed deer (*Odocoileus virginianus*), eastern cottontail rabbit (*Sylvilagus floridanus*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), and fox squirrel (*Sciurus niger*). Numerous bird species are common including the northern bobwhite (*Colinus virginianus*), eastern meadowlark (*Sturnella magna*), mourning dove (*Zenaida macroura*), killdeer (*Charadrius vociferous*), field sparrow (*Spizella pusilla*), red-tailed hawk (*Buteo jamaicensis*), and belted kingfisher (*Ceryle alcyon*). Blair (1950) also catalogs 57 reptiles and 23 amphibians.

Thompson et al. (2012) looked at distribution patterns for 101 Texas mammals that likely were used for food. Mammals were categorized by weight into small (0.005-0.95 kg, n=73), medium (1.25-19.0 kg, n=21), and large (46.7-275.0 kg, n=7) size groups. Contour maps were created using species distributional maps (see Davis and Schmidly 1997) overlaid on 189 quadrates, each roughly 64 km$^2$ (see Owen and Schmidly 1986). Figure 2-13 presents maps of the distribution data for small, medium, and large mammals within the quadrates.

Figure 2-13 shows that the area with the highest diversity of small and large mammals is the Trans-Pecos. The Big Bend area and the southern Edwards Plateau have high numbers of

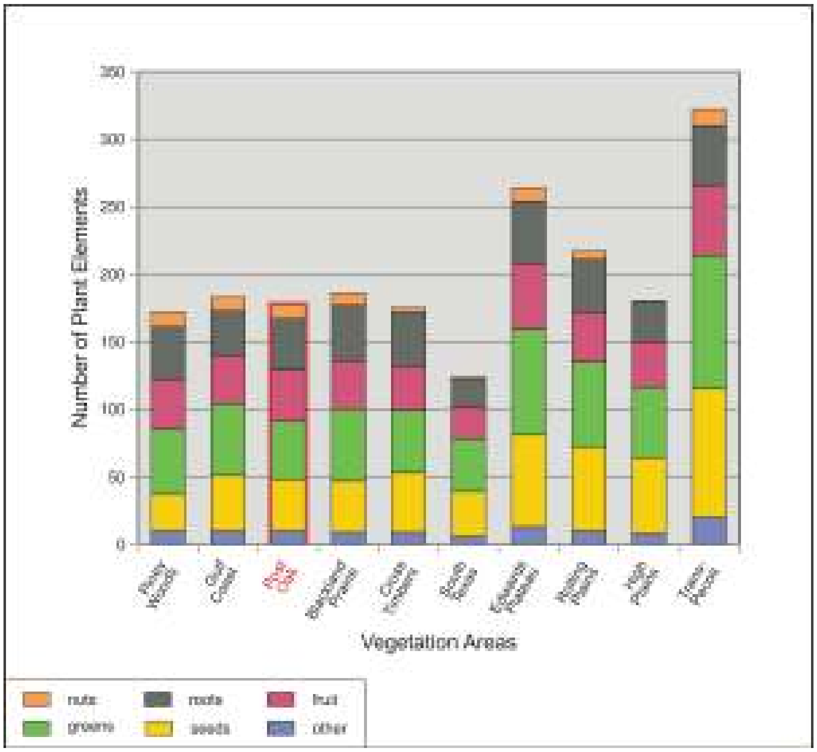


*Figure 2-11. Number and type of plant elements by natural region within Texas (after Thompson et al. 2012). The bar plot for the Post Oak Savannah region that encompasses Camp Swift is outlined in red.*

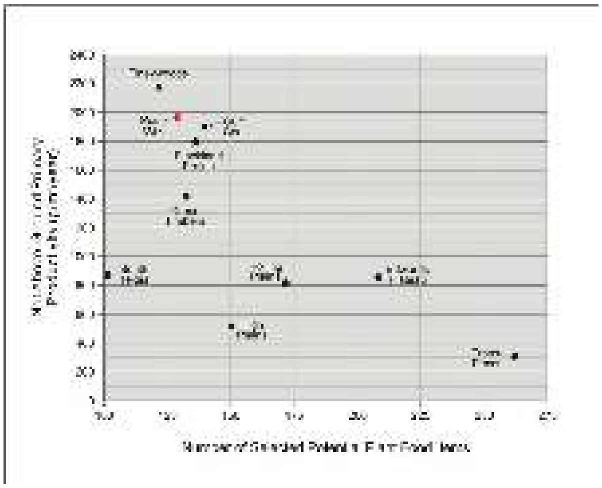


*Figure 2-12. Primary productivity and number of selected potential plant food items for Texas vegetation areas (after Thompson et al. 2012). The Post Oak Savannah region that encompasses Camp Swift is marked in red.*

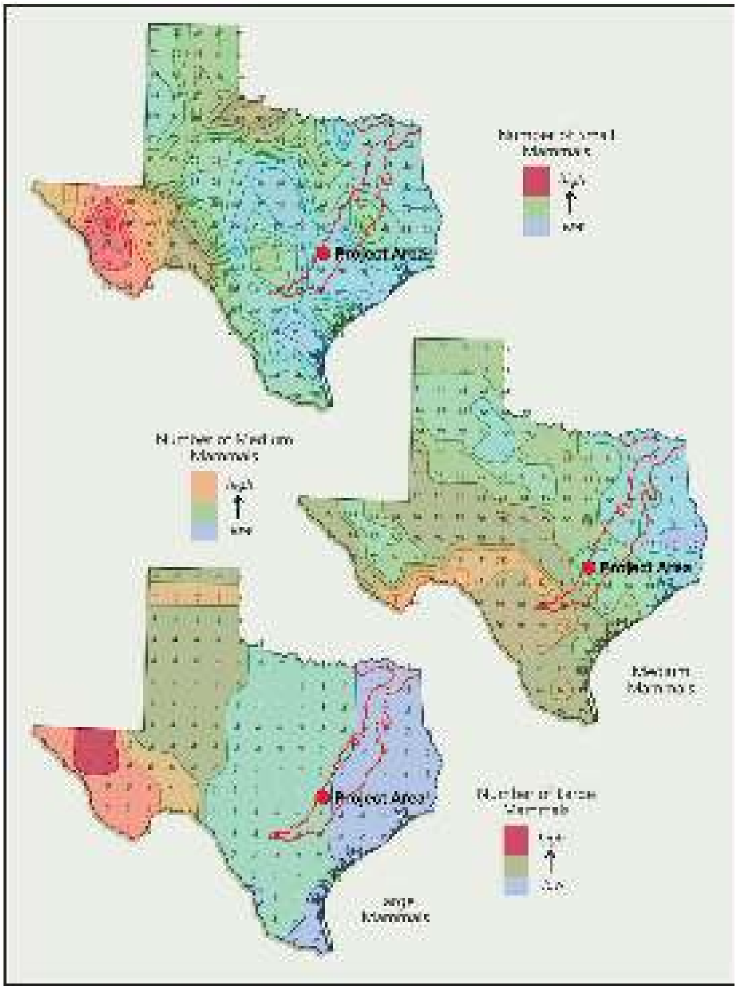


*Figure 2-13. Diversity of small, medium, and large animals within Texas (after Mauldin and Figueroa 2006). The Post Oak Savannah region is delineated in red.*

medium-sized mammals. The lowest diversity of large and medium mammals is found in Eastern Texas, and the lowest diversity of small mammals occurs along the Upper Coast. Within the Post Oak Savannah, there is relatively low-to-moderate diversity for all three groups.

The relatively limited plant diversity in the Post Oak Savannah is expressed in a reduced mammalian diversity. These patterns primarily rely on modern or well-documented historical plant and mammalian species. Other resources would have been available thousands of years ago. The Post Oak Savannah lies within an area that Mauldin and Figueroa (2006:Figure 2-10) suggest, based on ethnohistoric data (Wade 1998), ecological summaries (McDonald 1981), and summaries of bison from archaeological sites (Dillehay 1974; Huebner 1991; Thompson et al. 2012), is on the eastern edge of the primary locations of bison in the state, at least during certain time periods.

## Paleoclimate

Paleoenvironmental studies aid in the understanding of how human behavior responds and adapts to changing environments over time. Much of the current knowledge about paleoenvironmental conditions in Central Texas in the Late Holocene is derived from climate studies using various proxy measures. These include the presence/absence of bison (Collins 1995; Dillehay 1974; Mauldin et al. 2012), changes in arboreal pollen frequencies (Bousman 1998; Camper 1991; Nickels and Mauldin 2001), geomorphological shifts in alluvial deposition along major streams (Hall 1990; Holliday 1989), shifts in soil isotopes (Cooke 2005; Nordt et al. 1994, 2002), shifts in animal stable isotopes (Munoz, Mauldin, Thompson, and Caran 2011), and fluctuations in shrew species in cave deposits (see Toomey 1993). Regional summaries of the Central Texas paleoclimate are available from Collins (1995), Johnson and Goode (1994), Cooke (2005), Brown (1998), and Bousman (1998).

Figure 2-14 presents four Central Texas sequences that use long-term data and a variety of different proxies to monitor patterns in vegetation shifts at the community level. A review of four of the data sets, based on the assumption that the four sequences are accurately monitoring shifts in vegetation at large spatial scales, suggests some regional variability encompassed by similar overall trends. Data from the Medina River in southern Bexar County (Sequence 1, Figure 2-14) represent carbon isotopic signatures derived from a series of buried, dated soils (Nordt et al. 2002). Hall's Cave carbon isotope data (Sequence 2, Figure 2-14), also on buried sediments, are from a well-dated deposit in Kerr County (Cooke 2005). Boriack and Patschke bogs (Sequences 3 and 4, Figure 2-14) are located in Lee County, approximately 36

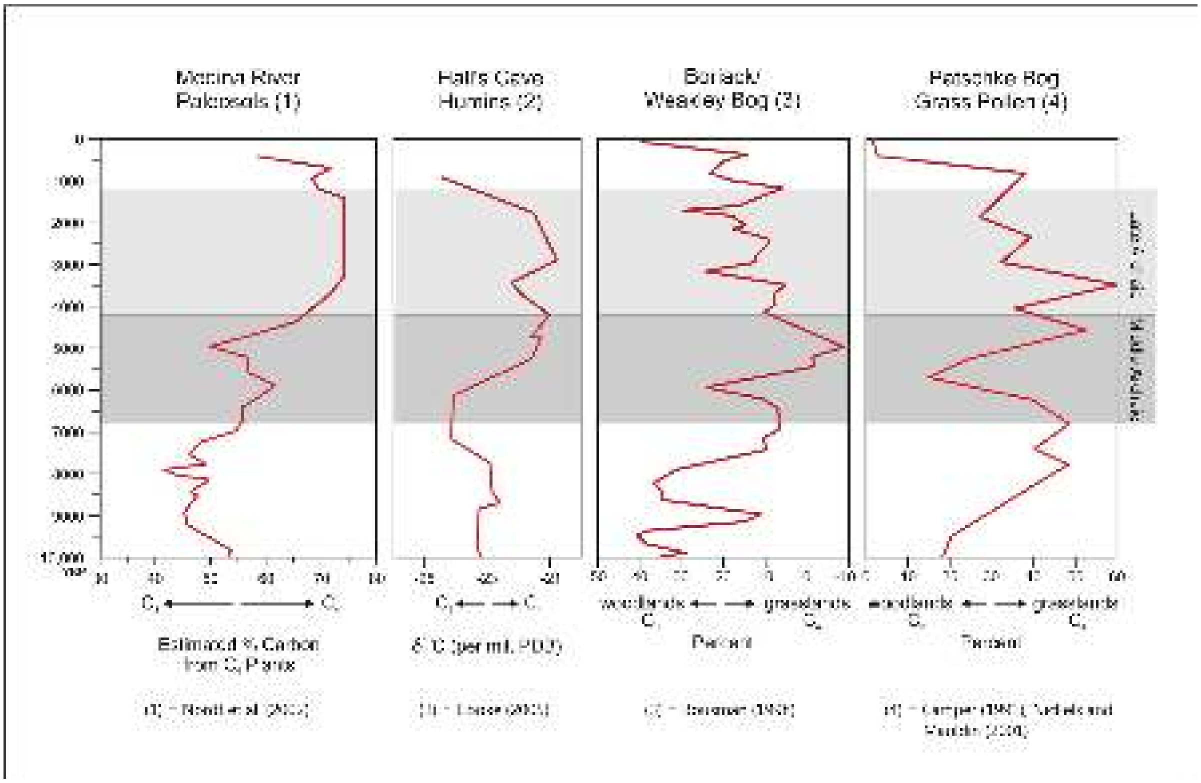


*Figure 2-14. Four long-term paleoclimate/vegetation sequences for Central Texas (after Thompson et al. 2012).*

km to the northeast of Camp Swift. The Boriack arboreal pollen sequence is poorly dated (Bousman 1998); however, the Patschke grass pollen sequence is supported by four radiocarbon dates (Camper 1991; Nickels and Mauldin 2001).

The two carbon isotope data sets in Figure 2-14 suggest a high frequency of $C_3$ plants before about 6,000 years ago, with an increase in $C_4$ at the beginning of the Middle Archaic. The data differ slightly, with the Medina River sequence showing a decline in $C_3$ plants to about 5,000 years ago and then a rapid increase in $C_4$ throughout the Late Archaic. The Hall's Cave sequence indicates no decline in $C_4$ in the Middle Archaic but does show a slight decrease in the early portion of the Late Archaic. Both sequences show a decline in $C_4$ late, with the decline initiated at about 1200 BP in the Medina River area and at about 2000 BP in the Hall's Cave sequence. Data from the two pollen sequences in Figure 2-14 suggest more variability. A high frequency of arboreal vegetation is present in both sequences at about 8500 BP, giving way to grasslands by around 7500 BP. The Boriack bog data show a decline in grassland that culminates at around 6200 BP, with a rapid increase in grasslands in the Middle Archaic up to about 5000 BP. After that date, grasslands decline and the sequence terminates prior to 2,000 years ago. Conversely, the Patschke pollen data suggest an increase in woodland communities in the initial Middle Archaic, with a rapid increase in grasslands through the remaining portion of this period. Grass pollen, and by extension grasslands, reach a peak in the Patschke sequence at around 3,500 years ago and then begin a slow, though variable, decline. Overall, the four long-term data sets in Figure 2-14 suggest a relatively mesic period with warmer temperatures as indicated by extensive grasslands/$C_4$ vegetation regimes during most of the Middle and Late Archaic. Grasslands seem to be at their peak in the early portion of the Late Archaic, and then they begin a slow, gradual decline until the close of that period. In addition, the data suggest a different pattern, one of rapidly declining grasslands, is characteristic of at least the last 1,000 years.

Because these proxies frequently function at different temporal and spatial scales (see Ellis et al. 1995) and adequate numbers of samples to reflect spatial and temporal variability are difficult to acquire (see Boulter et al. 2010; Munoz and Mauldin 2012:9-10), efforts are ongoing to develop detailed information on the paleoclimate at short temporal scales (see Kemp et al. 2008; Munoz, Mauldin, Paul, and Kemp 2011; Smith 2011; Smith et al. 2014). One such effort is represented by recent work by Munoz and Mauldin (2012) who explored the variability in weather at Camp Swift using data from Elgin, Texas, (NOAA 2002) to develop a macrophysical climate model (MCM) of the previous 18,000 years. MCMs use seasonal solar radiation combined with estimates of ice and snow volumes, volcanic eruptions, and other elements that can affect atmospheric transparency and absorption of solar radiation to provide high resolution estimates of essential climate variables for a particular location (see Bryson 1989, 1992, 1994, 2005; Bryson and Bryson 1997; Bryson and Goodman 1986; Bryson et al. 2007). Instructions for the creation and use of MCMs are available (Bryson and DeWall 2007; DeWall 2007). Elgin maintains the closest climate station to the project area.

Using climate normals from 1961 to 1990, Munoz and Mauldin (2012) constructed monthly and annual temperature, rainfall, and potential evaporation estimates for a 100-year period and used the estimates to model the climate for the past 18,000 years. Although highly variable, annual rainfall increased from 18,000 to approximately 5800 BP. Precipitation rapidly decreased during the following 400 years, then increased until about 4800 BP. Rainfall stabilized at approximately 850 mm, and stayed consistent through 500 BP. At that point, conditions became wetter and more variable. Munoz and Mauldin (2012:Figure 2-10) use potential evapotranspiration and annual precipitation estimates to suggests that the area was dominated by forests before 12,000 BP. Patterns in Figure 2-15, taken from Munoz and Mauldin (2012:Figure 2-10), suggest that for most of the last 12,000 years, Camp Swift was likely made up of grasslands with short periods of woodland/savannah vegetation early (ca. 10,000-12,000) and late (ca. post 600) in the sequence. The model also indicates dryer periods at approximately 5300 BP and 8800 BP. Munoz and Mauldin (2012:Figure 2-10) conclude that the MCM is mostly consistent with the overall sequences of the pollen data sets, though the temporal and spatial scale differences make comparisons difficult.

Although the current investigation at Camp Swift generated no new empirical data on paleoclimate, the North American tree-ring based summer Palmer Drought Severity Indices (PDSI) was reviewed to provide a high-resolution summary of climate variability in the Central Texas region (Cook and Krusic 2004). The PDSI, which measures soil moisture, was created in the early 1960s as a means to quantify drought (Palmer 1965). Calculated from precipitation, potential evaporation, transpiration, soil, runoff, and temperature, the index ranges from four (extreme wet period) to negative four (extreme drought). A value of zero designates a normal period (see Alley 1984; Karl 1986). Cook and Krusic's (2004) summer PDSI database, developed from a point-by-point regression, provides high-resolution drought data at short temporal scales. Because the tree-ring widths are standardized to correct for the normal compression of inner rings, directional changes are minimized, resulting in data that is not ideal for monitoring long-term climate shifts (Dean 1988; Fritz 1976, 1991). However, the PDSI values can produce a detailed representation of variability in vegetation production.

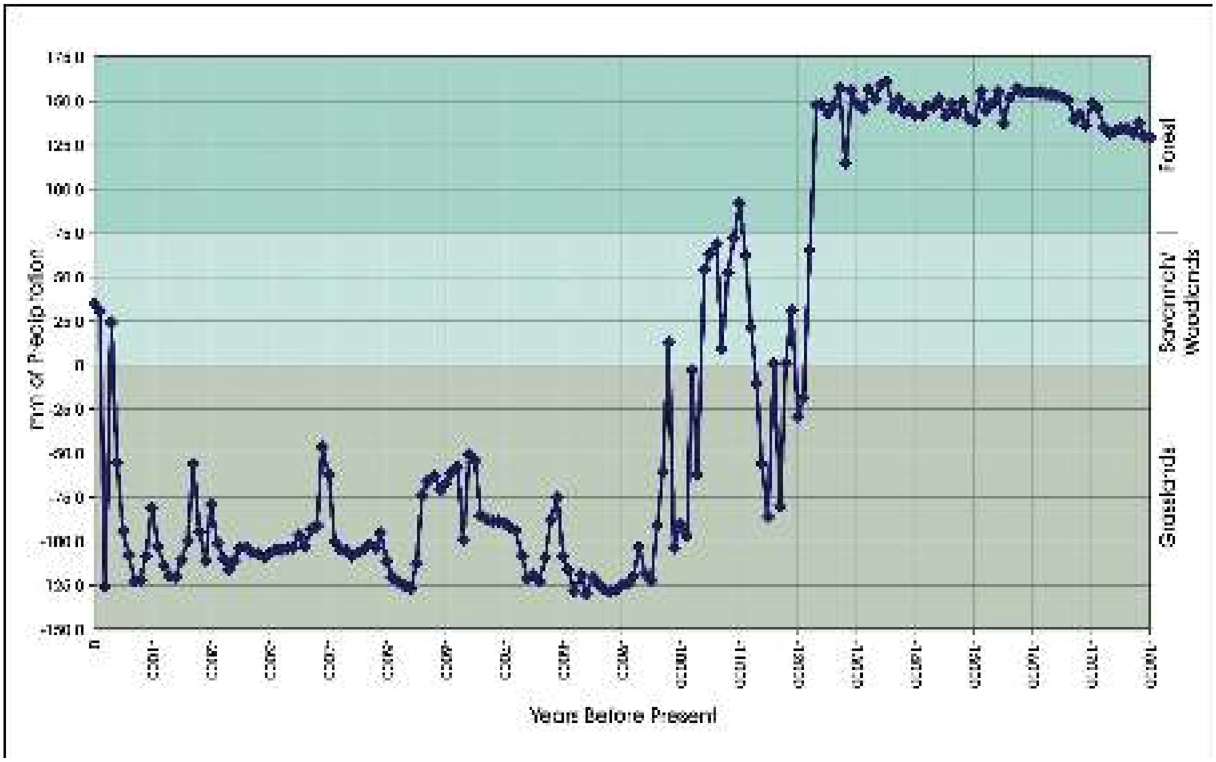


*Figure 2-15. A Macrophysical Climate Model for Camp Swift/Elgin of vegetation regimes (0-18,000 BP) at 100-year resolution (after Munoz and Mauldin 2012).*

PDSI values from grid point 181, located on the southwest edge of Bastrop County, are available for the last 1,000 years (Cook and Krusic 2004). Figure 2-16 shows the location of this data point, along with the locations of the Elgin and Austin, Texas, weather stations, Boriack and Patschke bogs, Hall's Cave, and the Medina River. A scatter plot of grid point 181 PDSI values and Austin, Texas, weather station annual rainfall values from 1900 through 2003 resulted in a positive relationship (Pearson's R = 0.57, $P < 0.01$) suggesting that for the last century a reasonably strong relationship existed between Central Texas PDSI values and annual rainfall (Thompson et al. 2012:14).

Figure 2-17 plots the mean PDSI values for 25-year groups from AD 1000 to 2000 for grid point 181. Values above the zero line are associated with 25-year periods of relatively high soil moisture and rainfall, while negative PDSI values are associated with lower soil moisture. The sequence indicates a period of below average rainfall from AD 1000 to the end of the Initial Late Prehistoric (AD 1250) with 100 percent of the 25-year groupings below the zero line (PDSI average value = -0.84). Although the sequence improves in the Terminal Late Prehistoric, negative PDSI values suggest below average rainfall with 55 percent of the groupings below zero (PDSI average value = -0.05). Between AD 1490 and 2000, the PDSI values increase with 72 percent of the groupings above the zero line (PDSI average value = 0.19). Increased rainfall should reflect localized increased productivity in grasslands suggesting that production in the region was relatively low during the Initial Late Prehistoric, increased marginally in the Terminal Late Prehistoric, and was significantly higher during the Historic/Modern era.

Figure 2-18 presents rainfall variability at grid point 181 over the last 1,000 years. The graph was constructed by computations of the absolute difference between PDSI scores for consecutive years summarized at 25-year intervals. Elevated mean values reflect periods of high variability in PDSI values and suggest high variability in precipitation. From AD 1000 to 1250, variability was low with an average between-year difference of 1.59. The variability increased substantially to 2.33 during the Terminal Late Prehistoric and continued to the present with higher than average year-to-year fluctuations (average between-year difference = 2.24). These data suggests significant variation in yearly PDSI values, rainfall, and related grassland production during the Terminal Late Prehistoric.

The long-term data discussed previously, i.e., the Medina River's and Hall's Cave carbon isotope signatures and the Boriack and Patschke bogs' pollen sequences (see Figure 2-14), suggest that grasslands have been in a rapid decline over the last 1,000 years. The macrophysical climate model

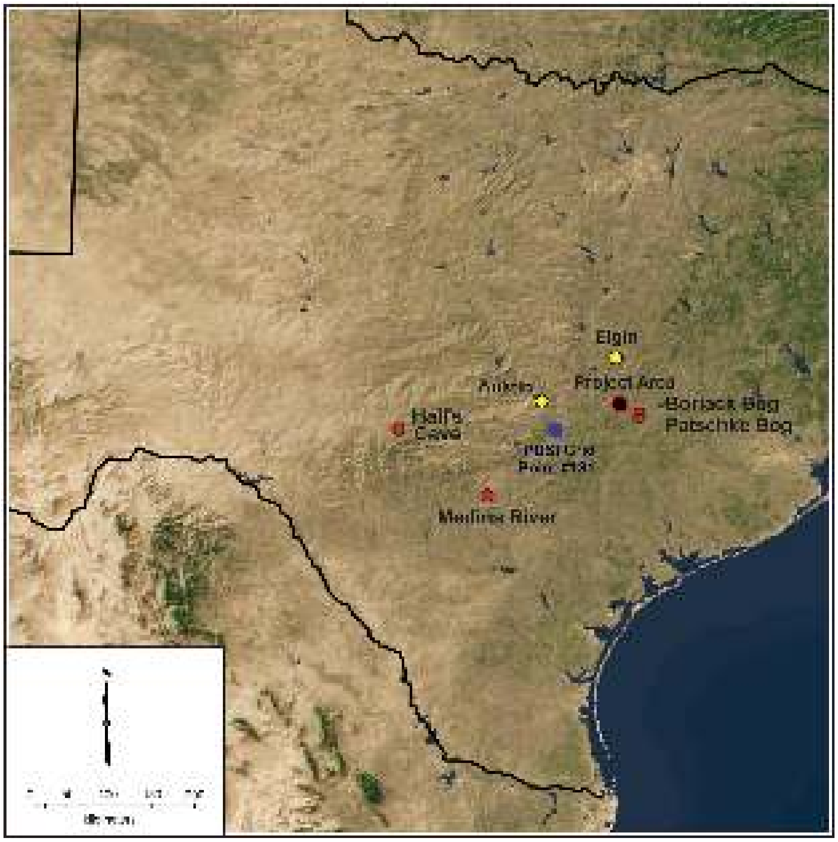


*Figure 2-16. Location of long-term data points (red), short-term PDSI point (blue), and modern weather stations (yellow).*

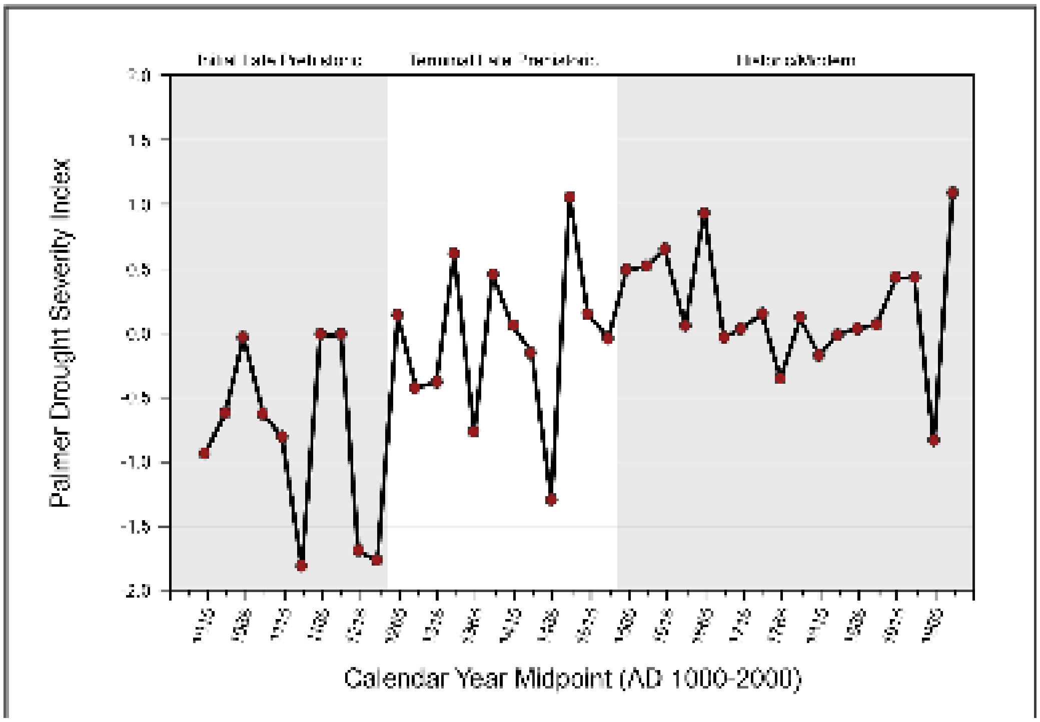


*Figure 2-17. Mean PDSI values from grid point 181 grouped at 25 years AD 1000-2000 (data from Cook and Krusic 2004).*

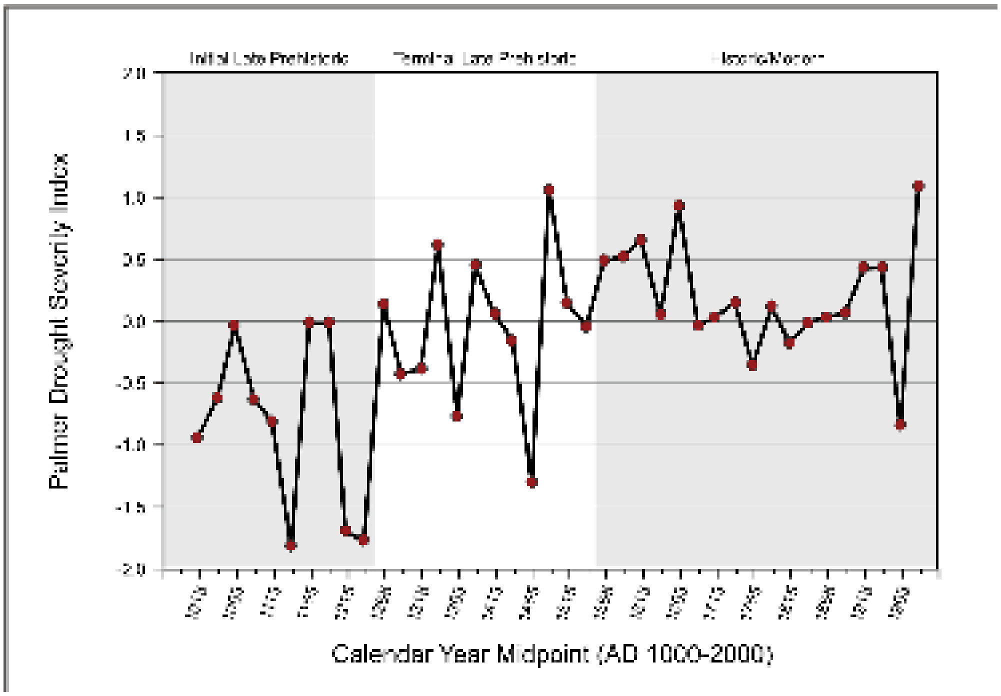


*Figure 2-18. Summary at 25-year intervals of year-to-year variation in PDSI values AD 1000-2000 for grid point 181 (based on data in Cook and Krusic 2004).*

developed by Munoz and Mauldin (2012) also indicated a decrease in grasslands with short periods of woodland/savannah vegetation in the last 1,000 years. This conflicts with the patterns seen in the PDSI values. Unresolved issues with both data sets, i.e., the standardization of the PDSI to correct for inner ring compression and the long-term temporal scales with several cases of poor dating, likely explain some of the difference. All three data sets do indicate that Late Prehistoric grassland production in Central Texas was below the long-term average. In a review of four summer PDSI grid points (165, 166, 180, and 181) covering Central Texas, Mauldin et al. (2012) conclude that high variability in grassland production during the Terminal Late Prehistoric would have resulted in marked differences in the quality and quantity of forage over a particular 25-year period. This in turn would have affected the availability of large grazers, e.g., bison, for Late Prehistoric hunter-gatherers in the region.

## Summary

The project area, then, has water available, at least on an intermittent basis, adequate rainfall, and a long growing season. Lithic raw material, such as chert, for tools is limited in the immediate project area. However, high quality cherts are available in good quantities to the west on the Edward's Plateau and in secondary deposits associated primarily with drainages within the county. The Post Oak Savannah setting has a low frequency of edible plants, and mammal diversity appears to be low as well. This is especially the case for medium and small mammal size classes. There is, then, a low overall diversity of floral and faunal resources commonly used by hunter-gatherers. While paleoenvironmental patterns are still not well understood, the low overall diversity of resources commonly used by hunter-gatherers suggests that when environmental perturbations limited a given resource, there were few alternatives available. This setting may well be unstable for hunter-gatherers, especially in situations where mobility is limited. As outlined in the next chapter, however, there is little evidence at present of human occupation at Camp Swift prior to around 4000 BP. Under low population levels, environmental fluctuations could simply be alleviated by moving to a different area. Sometime after 4000 BP, occupations in the Camp Swift area seem to have increased and seem to have peaked late in the prehistoric sequence. Fluctuations, such as those suggested by some of the environmental data (see Figure 2-18), could have a significant impact on adaptations late in the time.

This page intentionally left blank.

# Chapter 3: Cultural Environment and Previous Archaeological Research

*Raymond Mauldin and Cynthia Munoz*

This chapter provides a description of the culture setting of the study area. Prior to the current investigation, the seven sites tested on this project were assigned to the prehistoric period without any finer distinctions. The work performed during this investigation (see Chapters 5 and 6) suggests that some of the occupations for the sites can now be assigned to the Archaic and the Late Prehistoric Period. Two of the sites, 41BX487 and 41BX776, also had historic material, but that material was not relevant to the eligibility determination because that component had been previously investigated (see Nickels, Bousman, and Hurley 2010; Nickels, Worrell, and Bousman 2010a, 2010b). Consequently, the initial section in this chapter focuses primarily on the prehistoric rather than the historic sequence for the study area, with emphasis on the Archaic and Late Prehistoric. This chapter concludes with a brief summary of archaeological work on Camp Swift.

## Prehistoric Background

Camp Swift is in central Bastrop County, a location that could be assigned to several different, poorly defined, archaeological regions (see Collins 2004; Hester 1989; Prewitt 1981). In this study, the area is considered part of the Central Texas Region relying primarily on the work of Collins (2004), supplemented by Black (1989) and others (e.g., Johnson and Goode 1994; Prewitt 1985). The prehistoric sequence for Central Texas is commonly discussed in general terms using three broad temporal distinctions. These are the Paleoindian, Archaic, and Late Prehistoric periods, each of which is further divided into sub-periods, intervals, or phases. These smaller divisions are primarily created by focusing on shifts in projectile point styles that are thought to have a temporal aspect, with support for the temporal divisions coming from stratigraphy and, to a lesser degree, radiocarbon dates (see Black 1989a; Bousman et al. 2004; Collins 2004; Johnson and Goode 1994; Prewitt 1981, 1985). For many researchers in Texas, these temporal distinctions tied to projectile points style changes reflect cultural distinctions. That is, specific styles of point (e.g., Perdiz, Langtry) are thought by some researchers to be associated with specific cultural groups (e.g., Johnson 1994; Johnson and Goode 1994; Prewitt 1981, 1985; Shafer 1977). Here, these distinctions are used to discuss temporal rather than cultural relationships.

For this chapter, broad periods are briefly discussed to provide context for the data recovered from the eight tested sites. Many of the key sites relied upon for the discussion of regional prehistory were excavated prior to the widespread use of radiocarbon dates. However, radiocarbon dates are relied on whenever possible. While there are clearly problems assuming either a calibrated or uncalibrated radiocarbon temporal scale for several periods, all dates will be listed as roughly equivalent to calendar years when possible. In addition, all dates reported here use the BP convention.

### Paleoindian Period (13,000-9000 BP)

Beginning near the close of the Pleistocene, researchers often divide the Paleoindian Period into an Early and a Late sub-period (e.g., Bousman et al. 2004), with the initial period covering roughly 2,000 years. While claims for earlier occupations in Central Texas are increasingly well supported (see Collins 2003; Waters et al. 2011), Clovis material is still considered the earliest occupations for the region that are widely accepted by most researchers at present. Diagnostic projectile points from this Early Period include fluted Clovis and Folsom types, as well as other lanceolate-shaped point types (e.g., Plainview). Late Paleoindian forms included lanceolate-shaped, unfluted points (e.g., Golondrina,/Barber, St. Mary's Hall) and several stemmed forms, such as Wilson, San Patrice, Berclair, and Big Sandy (see Bousman et al. 2004; Collins 2004).

Clovis points have a wide distribution, with materials spread across much of North America. Several researchers provide summaries of Clovis lithic technologies (see Bradley et al. 2010; Collins 1999a) and adaptive patterns (Bonnichsen and Turnmire, eds. 1991). Over 500 Clovis points have been recorded in Texas (Bever and Meltzer 2007), including a possible Clovis artifact from Camp Swift (Nickels et al. 2005). In many cases, Clovis points are recovered as isolated artifacts not associated with other occupational debris or features, though several Clovis sites, including Aubrey (Ferring 2001), the Miami site (Holliday et al. 1994), Pavo Real (Collins et al. 2003), and the Gault site (Collins 1999b, 2003; see also Jennings 2012) have all been excavated in the state. The Gault site (41BL323), located in Bell County in Central Texas, has one of the most extensive Clovis assemblages (Collins 2003), including over 650,000 excavated artifacts that appear to be associated with Clovis (Goebel et al. 2008). Clovis adaptations originally were thought to reflect a specialized, highly mobile adaptation focus on hunting extinct megafauna, including mammoth, mastodon, and bison (e.g., Wormington 1957). Recent faunal data suggest the exploitation of a greater diversity of small- and medium-sized mammals and reptiles (e.g., Collins 2003). Collins (2003:9) suggests the Gault site may represent a generalized adaptation, similar in many respects to adaptations seen in the Archaic Period, rather than a specialized large game adaptation. Nevertheless, an analysis of 33 Clovis age faunal assemblages by Waguespack and Surovell (2003) showed that extinct megafauna were consistently present on these sites.

Folsom occupations follow Clovis, and Folsom does appear to be a more specialized adaptation focused on the exploitation of bison (*Bison antiquus*). Folsom components have a limited spatial distribution relative to Clovis, with the former primarily located in or near grasslands and in basin and range settings (see Andrews et al. 2008). Largent (1995; see also Largent et al. 1991) reports distributional data on 345 points recovered from 63 of the 254 Texas counties, with most recovery in the southern Panhandle, South, and West Texas. Data from far West Texas and southern New Mexico (Amick 1994) suggest that Folsom occupations were highly mobile. Bonfire Shelter, located in South Texas (Bement 1986; Dibble and Lorrain 1968), Lubbock Lake (Johnson and Holliday 1989), Lipscomb (Hofman 1995), and the Plainview sites (Speer 1990) in the Texas Panhandle region are well-known occupations that contain Folsom points and associated material or contain other material that seem to date to Folsom. Here, Midland points are included in Folsom characterization, as the temporal range of these types appears similar as does the overall style (see Bousman et al. 2004). The principal difference is the absence of fluting on Midland forms, an absence that may be related to raw material limits and high fluting failure rates (see Amick 1995). Jennings (2012; see also Waters et al. 2011) reports the recovery of about 18,000 Folsom/Midland artifacts at the Debra L. Friedkin site, located near Gault in Bell County, and data on Folsom assemblages at Pavo Real (41BX52) are reported by Collins et al. (2003). Though dated, Largent's overview (see Largent 1995; Largent et al. 1991) shows no Folsom material recovered from Bastrop County.

Late Paleoindian materials, tentatively dated from 11,000 to 9000 BP, have a variety of new point types present. Within Texas, Late Paleoindian lanceolate-shaped, unfluted point forms include Golondrina/Barber/Dalton, Scottsbluff, and St. Mary's Hall, as well as several stemmed points forms such as Wilson, San Patrice, Berclair, and Big Sandy (see Bousman et al. 2004). Angostura points are grouped at the close of the Late Paleoindian, though some researchers consider this form to be in the Early Archaic (Collins 2004). The distribution of any single Late Paleoindian point type is more limited when compared to those dating in the Early Paleoindian Period. There is also a greater diversity of point forms. When combined with the limited spatial data, this diversity may reflect lower overall mobility and an emphasis on local resources (see Anderson 1996). Research on the Late Paleoindian material from the Wilson-Leonard site in Williams County, Texas, (Collins 1998) seems to be consistent with the notion of a more diverse diet. Other well-known sites with Late Paleoindian material directly related to subsistence include the Angostura material from the Richard Beene site in Bexar County (Thoms et al. 1996), lower deposits from Baker Cave in Val Verde County (Chadderdon 1983; Hester 1983), and faunal material from the Horace River (41HH23) site (Mallouf and Mandel 1997) among others (see also Johnson, ed. 1987).

At Camp Swift, evidence of Paleoindian occupation is minimal. A single Clovis preform was recovered from 41BP495 (Nickels et al. 2005:75), though no associated material was reported. In addition, at site 41BP485, the base of what appears to be an Angostura point was collected (Nickels et al. 2005:75; Robinson 2001:121-122).

## Archaic Period (9000-1200 BP)

Relative to the preceding Paleoindian Period, the 7,800-year Archaic Period reflects increased population, an overall intensification of hunting and gathering, lower mobility, and an associated focus on the use of increasingly local resources. In the Central Texas area, a variety of technological changes, some of which are clearly related to subsistence and a shifting resource structure, appear during this period. These include the extensive use of rock as heating elements in cooking hearths (see Black and McGraw 1985; Collins 1995, 2004), the expansion of ground stone technology, and the continued diversification and specialization in chipped stone technology (Collins 2004; Johnson and Goode 1994; Turner and Hester 1999; Turner et al. 2011). Associated changes in mobility and organization include the founding of large cemeteries and more restricted spatial distribution on point types, both of which may signal the development of territories (Black and McGraw 1985). Researchers commonly divide the Archaic into three broad sub-periods designated Early, Middle, and Late (e.g., Collins 2004; see also Johnson and Goode 1994). The divisions are somewhat arbitrary, and the beginning and end dates, as well as associated diagnostics, fluctuate among researchers. This discussion will primarily follow the synthesis of Collins (2004) for Central Texas.

### Early Archaic (9000-6800 BP)

The Early Archaic is primarily defined by a series of new point types, including Early Split Stem/Early Triangular, Gower, Martindale, and Uvalde (Collins 2004). These tend to be corner or basally notched forms (see Turner and Hester 1999; Turner et al. 2011). As noted previously, some researchers (Collins 2004) place the Angostura at the beginning of this sub-period, rather than in the end of the Paleoindian Period as done here. Similarly, some researchers place Andice/Bell point forms at the end of the Early Archaic (e.g. Nickels et al. 2005), while this investigation assigns them to the beginning of the Middle Archaic, following Collins (2004). Beyond the specific point types, a series of what seem to be specialized tools, including Guadalupe bifaces and Clear Fork gouges (Turner et al. 2011), appear during this time, as do new processing facilities such as burned rock middens (e.g., Acuna 2006; Collins 1998). These shifts all hint at differences in subsistence, settlement, and overall organization relative to the Paleoindian Period.

Well-known sites that contribute directly to the understanding of the Early Archaic include the Richard Beene site (Thoms et al. 1996), the Wilson-Leonard site (Collins 1998), the Sleeper site (Johnson 1991), the Gatlin site (Houk et al. 2009; Oksanen 2008), the Vargas site (Quigg et al. 2008), and the Buckeye Knoll site (Ricklis et al., eds. 2012). Cave and shelter sites, primarily from the Lower Pecos, also have added critical data, especially in terms of resource use (see Riley 2008, 2012; Turpin 2004).

Summaries by Weir (1976) and Story (1985) suggest that Early Archaic groups were highly mobile and potentially organized in groups of small size. Population density is assumed to have been low, and subsistence was based on a broad range of resources, including a variety of fauna, such as bison, deer, rabbits, rodents, and fish, and evidence for plant resources, including prickly pear, agave, and geophytes (Collins 2004; Hester 2004).

The Early Archaic is the first temporal distinction for which there is direct evidence on subsistence, at least for a few individuals, through the isotopic analysis of human bone. Bement (1994), working at Bering Sinkhole (41KR241) in Kerr County, reports stable carbon isotopes from collagen, which monitors protein intake, and carbonate, which monitors carbohydrates and protein, from two individuals that fall near the end of the Early Archaic time frame at 7050 to 6780 BP. These data average a -14.3‰ for $\delta^{13}C$ in collagen and a -6.6‰ for carbonate. This is consistent with a moderate reliance on plants (e.g., cactus, agave) and animals that used the CAM or $C_4$ photosynthetic pathway to process carbon (e.g., bison) and a low dependence on $C_3$ resources, such as sotol, deer, and acorns (Bement 1994; see also Bousman and Quigg 2006; Mauldin et al. 2013). This isotopic picture contrasts, somewhat, with what has been presented based on archaeological material. This is especially the case with the $C_4$/CAM collagen signatures. Though derived from a sample size of only two individuals, the $\delta^{13}C$ from collagen suggests some dependence on $C_4$/CAM feeding animals, with the principal candidate in this region being bison. However, researchers have suggested that bison were not present during this period in this portion of the state (Collins 1995, 2004; Dillehay 1974). Other dietary sources may account for this difference, or bison may be present at this time.

Evidence of Early Archaic occupation at Camp Swift is limited. Assuming that the Angostura point on 41BP485 is associated with a Late Paleoindian occupation, there are only two Early Archaic components identified so far on Camp Swift. Site 41BP728 has an Early Triangular point form recovered (Nickels, Bousman, and Hurley 2010; Nickels, Worrell, and Bousman 2010b), and Nickels and Bousman (in prep.) report a radiocarbon date for a feature at 41BP529 that calibrates near the end of this period. Note also that an Andice point is reported for site 41BP390, placing this site in the Early Archaic according to Nickels et al. (2005:75). Though the point form is placed at the beginning of the Middle Archaic, the recovery of this point form at 41BP390 is not mentioned in early site summaries (see Robinson et al. 2001). Regardless of the temporal placement of 41BP390, it is clear that occupation during the Early Archaic at Camp Swift was minimal.

## Middle Archaic (6800-4200 BP)

A variety of new projectile point styles are defined for the Middle Archaic in Central Texas. These include Andice, Bell, Calf Creek, Nolan, Taylor, and Travis point types (Turner and Hester 1999; Turner et al. 2011). Some place Bulverde points at the close of the Middle Archaic, though this report will follow Collins (2004) who lists this form as the initial type in the subsequent Late Archaic sub-period. The early portion of the Middle Archaic also is characterized by what appears to be a more specialized biface technology, with thin, triangular bifaces common, especially in the context of the early point forms such as Andice, Bell, Calf Creek, and Taylor point styles (Black 1989a; Collins 2004; Johnson 1995). The close of the Middle Archaic is reflected by Nolan and Travis point types (Black 1989a; Collins 2004; Johnson 1995) and appears to correlate with the onset of drier conditions (see Collins 2004). Well-known sites that have shaped the understanding of Middle Archaic adaptations in the region include the Landslide site (Sorrow et al. 1967), the Gatlin site (Houk et al. 2009; Oksanen 2008), the Jonas Terrace site (Johnson 1995), and the Granberg site (Munoz, Mauldin, and Hard 2011).

Some (Collins 2004; Johnson 1995; Johnson and Goode 1994) suggest that the shifts in point styles during the early portion of this period reflect the movement of populations into Central Texas from North Texas, Oklahoma, and Arkansas with a more specialized lithic technology perhaps geared to bison hunting. Collins (1995, 2004) suggests that bison are present during the period when Andice, Bell, and Calf Creek points are present but are absent during the latter portion of the Middle Archaic. Dillehay (1974), however, finds no such presence during the Middle Archaic in his earlier review. In a recent review of presence/absence data from Central and South Texas, Munoz and Mauldin (2011:105-117) found bison were present on 3 of 13 (23 percent) early Middle Archaic sites, consistent with Collin's (1995) suggestions, but also found that bison were recovered on 5 of 19 (26 percent) late Middle Archaic sites.

Most researchers, following Weir (1976; see also Story 1985), suggest that human populations in the region increased during the Middle Archaic, a suggestion that may be derived from an increase in the number of components assigned to this period (Weir 1976). Note, however, that Collins (2004) suggests the intensity of occupation, especially in the early portion of the Middle Archaic, may have been reduced relative to earlier and later periods, implying higher mobility, especially early in the Middle Archaic.

Subsistence during the early portion of the Middle Archaic is said to involve the exploitation of bison, along with a variety of plant resources (see Black 1989b; Collins 2004; Johnson and Goode 1994; but see also Dillehay 1974). Several researchers (e.g., Creel 1986; Weir 1976) suggest that during the latter portion of the Middle Archaic, there was an expansion of oak in Central Texas that resulted in intensive acorn gathering by large groups, as well as the processing of acorns in burned rock middens (see also Creel 1986). Others (e.g., Acuna 2006; Black et al. 1997; Freeman 2007; Goode 1991; Mauldin et al. 2003) question this association between acorns and burned rock middens. Black et al. (1997), for example, suggest that the burned rock middens, initially used in the Early Archaic, did begin to accumulate in the Central Texas region during this period. However, they suggest these features were not focused on acorn processing. Rather, they argue that these features were used to bake a broad range of plants, including nuts, bulbs, and roots, as well as animal resources.

Isotopic data is available for 11 Middle Archaic individuals. Seven of these are from the work of Bement (1994) at 41KR241, and four are from recent work at Hitzfelder Cave in northern Bexar County (Munoz et al. 2013). Three of the 11 fall in the early portion of the Middle Archaic, dating to between 6500 and 5940 BP, and the remaining eight date near the close of the Middle Archaic, between 5100 and 4200 BP. The pattern in the early period is similar to that seen at the close of the Early Archaic. The three individuals average a -14.9‰ for carbon in collagen and a -7.6‰ for carbon in carbonate. The pattern for the late Middle Archaic individuals, however, shows a moderate move towards $C_3$ plants and animals, with average values of -16.6‰ for carbon from collagen, tracking protein intake, and -9.2‰ for carbon from carbonate, tracking whole diet. The higher $C_3$ intake is consistent with a move towards deer and away from bison and with an increased use of plants, such as geophytes and sotol.

With the possible exception of site 41BP390 discussed previously in the context of the Early Archaic, no Middle Archaic sites or diagnostic have been identified for Camp Swift (Nickels et al. 2005:Table 6-2). There is no evidence for use of the area for this 2,500-year period.

## Late Archaic (4200-1200 BP)

The final interval of the Archaic in Central Texas is the Late Archaic. Wide varieties of dart points are present in this sub-period. Styles common in the Central Texas area include Bulverde, Kinney, Pedernales, Williams, Marshall, Castroville, Montell, Marcos, Fairland, Frio, Ensor, and Darl (Collins 2004). In addition to these point styles, corner-tanged knives, biface caches, marine shell ornaments, and cylindrical stone pipes characterize the sub-period (Collins 2004; Hall 1981; Hester 2005). In Central Texas, Johnson and Goode (1994) divide the Late Archaic into two smaller units, termed Late Archaic I (ca. 4300-2500 BP), characterized by Bulverde, Pedernales, Marshall, Montell, and Castroville points, and Late Archaic II (ca. 2500-1350 BP), characterized by Marcos and later styles. The sub-period is well represented by excavated sites, including Anthon (Goode 2002), Loeve-Fox (Prewitt 1974), Panther Springs (Black and McGraw 1985), Bessie Kruze (Johnson 2000), Onion Creek excavations (Ricklis and Collins 1994), and sites in the Lower Pecos (Turpin 2004) such as Bonfire Shelter (see Dibble 1965; Dibble and Lorrian 1968).

During this period, large cemeteries are increasingly common in Central and South Texas, including Loma Sandia in South Texas (Taylor and Highley 1995), as well as Olmos Dam (Lukowski 1988) and Hitzfelder Cave (Munoz et al. 2013; see also Givens 1968) in Bexar County. These cemeteries may indicate larger, growing populations and the establishment of territories (Black and McGraw 1985; Story 1985). However, there is no consensus on the patterns of population growth during this time. Prewitt (1981, 1985; see also Weir 1976) suggests increased population relative to the Middle Archaic, while Black (1989a) believes populations were constant or even decreased during this sub-period. There is also disagreement as to the continuing use of burned rock middens. Prewitt (1981) suggests that burned rock midden use declined. There appears to be some evidence for this in the eastern portion of the region, though midden use clearly continues throughout the Late Archaic in other areas of Central Texas (see Acuna 2006; Black et al. 1997; Black and McGraw 1985; Goode 1991).

Bison are clearly present during this sub-period in Central Texas and form a component of subsistence (Collins 2004; Dillehay 1974; Mauldin et al. 2012), though some suggest that they were again scarce at the close of the Late Archaic (Dillehay 1974). Deer appear to have been widely pursued. Late in this sub-period, subsistence is assumed to reflect the use of a broad spectrum of resources (Black 1986), possibly focused on local plants and animals (e.g., Skelton 1977).

Because of increased interments of human remains during this sub-period, isotopic data on human subsistence are increasingly available for the Late Archaic in Central Texas. Bement (1994) reports data for seven individuals from 41KR241. Hard and Katzenberg (2011) list data for six Late Archaic individuals recovered from the Olmos Dam site (41BX1). Munoz, Mauldin, Paul, and Kemp (2011) present data for four individuals from Hays County that date to the Late Archaic, and Munoz et al. (2013) list isotopic results for 15 individuals from Hitzfelder Cave (41BX26). Fifteen of these 32 interments date prior to 2500 BP, while the remaining 17 date between 2500 and 800 BP. These early burials have an average $\delta^{13}C$ for collagen of -15.8‰ (range of -14.1‰ to -16.9‰) and an average carbon value in carbonate of -8.9‰ (range of -7‰ to -10.5‰). The 17 later interments have carbon values of -17.6‰ (range of -15.4‰ to -19.3‰) for collagen and -9.9‰ (range of -8.6‰ to -10.9‰) for carbonate. Comparing the early Late Archaic averages to those from the close of the Middle Archaic suggests a similar overall diet, with a slight increase in $C_4$/CAM proteins, possibly reflecting increased use of $C_4$ feeding bison. By the close of the Late Archaic, isotopic data once again reflect an increased dependence on $C_3$ resources, especially concerning protein intake. This is consistent with increased dependence on deer and other $C_3$ feeding animals relative to $C_4$/CAM protein sources, such as bison.

Projectile points diagnostic of the Late Archaic Period documented at Camp Swift include Pedernales, Frio, Ellis, and Ensor (Nickels et al. 2003; Robinson 2001; Robinson et al. 2001). In addition, several radiocarbon dates from features suggest increased Late Archaic presence. In all, data on file at CAR shows that there are 11 Late Archaic components recorded for Camp Swift as of 2012 (Munoz 2010, 2012).

## Late Prehistoric Period (1200-350 BP)

The Late Prehistoric Period (1200-350 BP) is defined primarily by the introduction of the bow and arrow, as well as associated shifts in projectile points (Black 1986; Collins 2004; Hester 2004). The period is traditionally divided into an early sub-period or interval termed Austin (1200-700 BP) and a late interval, termed Toyah (700-350 BP). Austin is often seen as an extension of the Late Archaic pattern (see Johnson and Goode 1994), while Toyah is viewed by many as a radically different adaptive pattern. Many see this as reflecting an influx of a new group of people following bison herds that moved back into the region following an absence during the preceding Austin interval (see Johnson 1994; Shafer 1977). The temporal distinction between the two intervals was originally proposed by Jelks (1962) based on excavations at the Kyle site (see also Black 1986; Johnson 1994; Kelley 1947; Ricklis 1994a, 1994b).

The Late Prehistoric is discussed in terms of these two temporal periods (i.e., Austin and Toyah) following much of the literature. Camp Swift component data, however, are discussed at the Late Prehistoric level, rather than by individual temporal intervals.

### Austin (1200-700 BP)

In Central Texas, the Austin Interval is defined primarily by the presence of Scallorn and Edwards arrow points (see Collins 2004; Johnson and Goode 1994; Prewitt 1981). With the exception of changes associated with the introduction of the bow and arrow, Austin lithic technology appears to have strong similarities to those in the Late Archaic (Johnson and Goode 1994; Prewitt 1981). Sites with Austin Interval material that have provided critical data include Loeve-Fox (Prewitt 1974), Kyle (Jelks 1962), Smith (Suhm 1957), Pat Parker (Greer and Benfer 1975), and Scorpion Cave (Highley et al. 1978).

Cemeteries are present during this period, including interments at Loeve-Fox (Prewitt 1974) and Pat Parker (Greer and Benfer 1975). Indicators of violent death also are present at this time, with several cases of Scallorn points either embedded in bone or found in close association with burials (e.g., Prewitt 1974:46).

Researchers have argued that burned rock middens, presumably involved primarily in plant processing, were used less frequently during this period (e.g., Houk and Lohse 1993), though others suggest that the use of these features peaked during this period (Acuna 2006; Black and Creel 1997; Mauldin et al. 2003). Deer also seem to be a focus during this period, possibly in response to what most researchers see as an absence, or at least a dramatic decline, in bison availability (Collins 2004; Dillehay 1974; but see Mauldin et al. 2012) relative to the Late Archaic.

Direct information on subsistence is available in terms of stable isotopes data from human burials. Huebner conducted isotopic work on 12 burials from the Austin component of the Loeve-Fox site (41WM230) in 1995. While details have never been published, data are on file at the Texas Archaeological Research Laboratory (TARL) for these 12 analyses and are reported by Mauldin et al. (2013). In addition, Cargill (1996) presents data for a single burial, dated to the Austin Interval, recovered at 41BX952. These 13 samples have an average $\delta^{13}C$ carbon signature of -19.2‰, with a range of -17.7‰ to -20.2‰, for collagen, and -13.1‰, with a range of -11.9‰ to -15.4‰ for carbon found in the carbonate. These data clearly show a heavy dependence on $C_3$ plants (e.g., geophytes, sotol) as well as animals dependent on these resources for food, such as deer. This represents an intensification of the pattern seen at the end of the Late Archaic. In fact, except for a slight shift seen in the early portion of the Late Archaic towards $C_4$/CAM resources, the isotopic record from the end of the Early Archaic through the Austin Interval of the Late Prehistoric shows a gradual pattern of increasing $C_3$ resource consumption.

## Toyah (700-350 BP)

The Toyah Interval (700-350 BP) is defined, in part, by the first widespread occurrence of pottery (bone-tempered brown ware) in the Central Texas region (Black 1989a). The period also is characterized by the use of flake/blade lithic technology that represents a departure from the more formal bifacial core reduction that dominated earlier periods. Toyah artifacts include Perdiz and Cliffton arrow points, previously mentioned bone-tempered ceramics, beveled knives, gravers, drills, and end scrapers (see Black 1986; Johnson 1994). Several critical excavations have contributed to the understanding of Toyah. The list includes work at the Rush site (Quigg and Peck 1995), the Rocky Branch site (Treece et al. 1993), the Hinijosa site (Black 1986), the Toyah Bluff site (Karbula 2003), Lehmann Rock shelter (Kelley 1947), the Rainey site (Henderson 2001), the Biensenbach site (Nickels 2000), the Buckhollow site (Johnson 1994), and many others. Kenmotsu and Boyd (eds. 2012) present additional background information regarding Toyah, along with summaries of recent research into this period.

Most researchers suggest that populations increased relative to earlier periods (Black 1989a). In addition, Collins (2004) suggests mobility during this period was extremely high. He infers high mobility given the assumption that populations during this period were dependent on bison. Collins is not alone in that assumption. Because of the frequent co-occurrence of a new set of lithic artifacts (e.g., Perdiz points, beveled knives, and end scrapers) with bison remains, researchers have long suggested that Toyah material reflected an association with bison, which were thought to have returned to Texas at roughly the same time as Toyah appeared (e.g., Dillehay 1974; Greer 1976; Hester 1975; Huebner 1991; Prewitt 1981). Some suggested that Toyah reflected the movement of people and their technology off the Plains to the north into Central and South Texas (e.g., Johnson 1994; Prewitt 1981; Shafer 1977). Prewitt (1985; see also Black 1989a) suggests, based on an early summary of radiocarbon dates, that the technological complex does move from north to south, but others suggest that it is the technology, geared to bison exploitation, that diffused among extant populations (Black 1986; Ricklis 1994b).

It is clear that bison were widely used during Toyah, being present on 83 percent of the 53 Toyah components recently reviewed for Central and South Texas (Mauldin et al. 2012; see also Huebner 1991). Deer, along with other animals, were also common in Toyah sites, as were the remains of local plant resources (Black 1986). Dering (2008) has recently reviewed subsistence data from Central Texas for this period. He concludes that Toyah subsistence was "based on a broad suite of plant and animal resources" (Dering 2008:59). A number of other studies, looking at proxy data for plant processing as well as faunal data, arrive at essentially the same conclusion (see Karbula 2003; Thoms 2008).

Isotopic data from burials that can directly inform on subsistence are somewhat limited for this late period. Cargill (1996), Munoz, Mauldin, Paul, and Kemp (2011), and Mauldin et al. (2013) each report data for single burials that date to Toyah. The bulk of the available data, consisting of isotopic remains from 11 adults and 6 children, comes from work on burials removed from the Coleman site in Bexar County (Mauldin et al. 2012; see also Potter 2005). Focusing on the 14 Central Texas adult burials, these data suggest a radical departure from the previous pattern. The Toyah isotopic data are bimodal, with a group of three burials that show a strong $C_4$/CAM diet, and a second group of 11 individuals, all from Coleman, that show a diet reminiscent of Late Archaic patterns (Mauldin et al. 2013). The $C_4$/CAM group has an average stable carbon isotopic value of -10‰ (values of -10.4‰, -10.0‰, -9.5‰) and carbon from carbonate that averages -5.8‰ (values of -7.4‰, -5.3‰, -4.7‰). The second group has collagen carbon values averaging -16.4‰ (range = -17.5‰ to -15.8‰) and carbonate stable carbon isotopes averaging -8.7‰ (range = -10.9‰ to -7.6‰).

While both groups show a significant departure from the $C_3$ dominated pattern seen in the Austin samples, only the three cases in the $C_4$/CAM dominated group appear to be consistent with a dependence on bison suggested by multiple researchers for this period. Closer reviews of these three cases suggest that they, in fact, may not be dependent on $C_4$ feeding bison. This suggestion comes from the high nitrogen values ($\delta^{15}N$) exhibited by these three individuals. In human bone, the stable isotopic ratio of nitrogen is primarily tracking protein intake, with the consumption of animal flesh being the primary protein source in most cases (Katzenberg 2008).

Nitrogen isotopic values tend to be enriched as a function of tropic level increases, with an increase of roughly 3‰ to 4‰ per tropic level. Bison during Toyah have an average $\delta^{15}N$ level of 6.2‰ ± 0.9 based on the analysis on 17 samples (Lohse et al. 2012). If bison were the primary source of protein in this second Toyah group, then human $\delta^{15}N$ values should average roughly 9.7‰, assuming an enrichment of 3.5‰ between bison and human values. The stable nitrogen values for the three $C_4$/CAM individuals are 11.7‰, 10.7‰, and 13.3‰ (see Mauldin et al. 2013; Munoz, Mauldin, Paul, and Kemp 2011; Munoz et al. 2013), all above the expected 9.7‰. While the consumption of other animals with high nitrogen sources, such as catfish, pond and soft-shelled turtles, and waterfowl, could raise the isotopic values of nitrogen in bison-consuming humans, these other sources tend to be $C_3$ in terms of carbon (see Hard and Katzenberg 2011). The consumption of these high nitrogen resources, then, would not be compatible with the strong $C_4$/CAM signature for carbon in the collagen of these three individuals. The nitrogen and carbon patterns, however, are consistent with a coastal diet, where marine sources tend to have high nitrogen and $C_4$ based carbon (Hard and Katzenberg 2011; Munoz, Mauldin, Paul, and Kemp 2011). While these isotopic values, then, suggest surprisingly low levels of bison dependence, they do imply that mobility levels increased late in time, with some evidence of coastal individuals dying in the interior.

As of 2012, 14 prehistoric components were assigned to the Late Prehistoric Period, encompassing both Austin and Toyah Intervals, on Camp Swift (see also Munoz 2012). These temporal assignments were made based on radiocarbon dates from features, as well as the recovery of Scallorn, Perdiz, and fragments of various arrow points from sites on the facility.

### Historic Period

While one of the sites investigated here (41BP776) has a historic component, previous investigators suggested that the material has little research value (Nickels, Bousman, and Hurley 2010; Nickels, Worrell, and Bousman 2010a); therefore, the discussion of this period is limited. The Historic Period in Texas, defined by the arrival of Europeans in the region, begins in AD 1528 when the survivors of the shipwrecked Narvaez expedition washed up along the Texas Coast (Cabeza de Vaca 1993). Cabeza de Vaca and three of his companions spent the period between 1528 and 1536 in what was to become Texas, as well as northern Mexico (Cabeza de Vaca 1993; Krieger 2002). Several other Spanish, as well as French, explorers conducted forays into the Central and Southern portions of Texas from the late sixteenth through the seventeenth century (Foster 1995, 1998, 2008; Wade 1998, 2003). Note that much of the early Historic Period overlaps with the end of the Toyah Interval of the Late Prehistoric (see Kenmotsu and Arnn 2012).

Several authors (see Haefner and Vaughan 2012; Marks 2010) review developments in Bastrop County. In addition, Leffler (2001; see also Sitton 2006; Skelton and Freeman 1979) provides a detailed account of the history of the Camp Swift area, including the creation of the Camp in the early 1940s.

## Archaeology at Camp Swift

Over the last 38 years, multiple archaeological investigations have been completed on the facility. These include surveys and testing projects. Details of most previous investigations at the Camp, which include surveys and testing projects, are provided in Munoz (2012; see also Nickels, Bousman, and Hurley 2010; Robinson et al. 2001). Overall, much of the roughly 11,500-acre facility has been surveyed, though at variable intensity. Large surveys include Skelton and Freeman's survey of 4,000 acres (Skelton and Freeman 1979), a 5,000-acre survey by the TMD conducted in 1996 and 1997 (Robinson et al. 2001), and the recent Nickels, Bousman, and Hurley (2010) investigation of 3,475 acres in which over 12,500 shovel tests were excavated. Intensive shovel testing, backhoe, and testing projects include the evaluation of 39 sites by Nickels et al. (2003) as well as 20 sites reported by Nickels and Lehman (2004; see also Lohse and Bousman 2006). The most extensive testing project was conducted by the Center for Archaeological Studies (CAS) on 20 sites in 2002 (Nickels and Bousman in prep.). As of 2013, these projects, and numerous other small surveys and testing efforts, had documented 306 archaeological sites at Camp Swift. At present, there are 209 sites with prehistoric components recorded. According to the TMD's database, seven prehistoric sites are currently eligible for NRHP listing. These are 41BP392, 41BP485, 41BP488, 41BP495, 41BP505, 41BP521, and 41BP529. A review of these records shows that all are open sites that tend to be in upland settings. They all have good preservation of organics, with many having faunal recovery and identifiable features that appear to be intact. They tend to have high debitage density, with a variety of recovered debitage and tools, and they all have chronological data or have the potential for radiocarbon dating.

Most of the prehistoric components on Camp Swift lack evidence of integrity and chronological potential. Of the 209 components, 86.1 percent lack diagnostic artifacts or radiocarbon dates and are simply classified as "unknown" temporally. A review of component assignments by Bousman et al. (2010:370-374) found that in 2010, only 34 diagnostic artifacts, from 21 sites, were collected from all of Camp Swift. While a variety of factors could affect this overall pattern, comparisons with other TMD facilities, which should have broadly similar site definitions and management histories, suggest that the lack of temporal diagnostics is significantly higher at Camp Swift, though the number of sites is not. Using data on file at CAR (see also TMD 2015), the number of prehistoric sites per acre recorded at Camp Swift (.0186 per acre) is identical to that from Camp Bowie (.0186) and is higher than that from either Camp Maxey (.0182) or Fort Wolters (.008). Yet, the temporally unassigned percentage (86.1) is low relative to other properties. At Camp Bowie, located in Brown County, the percentage of temporally unassigned components is 66.3 percent (n=163). At Camp Maxey, located in Lamar County, 69.2 percent of the 117 prehistoric components lack temporal designations. At Fort Wolters, in Parker and Palo Pinto counties, only 56.2 percent of the prehistoric components lack temporal designations (see also TMD 2015). Prior to the Late Archaic Period, there is minimal evidence for occupation within the current Camp Swift boundary. There are roughly three components with reasonable temporal placement for the first 8,800 years of the prehistoric sequence (Paleoindian through the Early and Middle Archaic). Over the subsequent 3,850 years, there are 25 components identified to a period, with 14 of these 25 occurring in the last 850 years. If these preliminary patterns are a somewhat accurate reflection of prehistoric use of the region, the intensity of use of Camp Swift was low for much of the prehistoric sequence. In addition, the pattern of use seems to have changed following the Late Archaic.

# Chapter 4: Field and Laboratory Methods

*Cynthia Munoz, Raymond Mauldin, and Leonard Kemp*

As part of the archaeological services provided to the Texas Military Department, and in accordance with the THC guidelines, CAR was contracted to conduct NRHP eligibility testing of eight previously recorded prehistoric archaeological sites on Camp Swift. This chapter presents the field and laboratory methods used during that testing.

## Field Methods

The CAR used standard field methods during the Phase II testing of the seven sites (41BP776, 41BP778, 41BP780, 41BP782, 41BP792, 41BP801, and 41BP802) at Camp Swift (Figure 4-1). A crew of four staff archaeologists, under the direct supervision of the Project Archaeologist, performed all work involved in the testing over two five-day and one ten-day session. The Project Manager, Dr. Raymond Mauldin, visited the sites and worked with the crew on the excavation of site 41BP802. The CAR followed the same field methods for the testing of 41BP487 using a crew of three who were supervised and assisted by the Project Archaeologist during a five-day session (Figure 4-1). Dr. Paul Shawn Marceaux visited site 41BP487 and assisted in the excavation. The investigations consisted of two stages: 1) test unit placement and mapping using a Sokkia total data station and 2) the subsequent hand-excavations of the units.

Redacted Image

*Figure 4-1. Aerial map showing sites in the two project areas.*

## Pre-Field

Prior to the start of fieldwork, the Project Manager and Project Archaeologist reviewed reports of previous investigations, topographic maps, and aerial photographs to evaluate the project area and as an aid for test unit placement. For the initial testing of the seven sites in 2012, CAR assessed the artifact density and overall depth of deposits on each site. It was determined that 36 1-x-1 m test units (TUs), five at 41BP776, five at 41BP776, three at 41BP778, four at 41BP780, seven at 41BP782, and four each at 41BP792, 41BP801, and 41BP802, should be excavated. During the week of October 1, 2012, the Project Manager, Project Archaeologist, and the crew chief began setup for the testing excavations. This involved locating each of the seven sites, finding site datums, and finding traces of the shovel tests previously excavated by Nickels, Bousman, and Hurley (2010). Trimble Geo XT GPS units, aerial maps, and site maps from the previous survey were referenced for site orientation. Test unit locations were selected based on artifact density and depth from the previously dug shovel tests. A Sokkia total data station with a Carlson data collector was used on each site to align the test units on a magnetic north grid (Figure 4-2). All excavation units were referred to by the grid coordinate of their southwestern corner. PVC pipes, measuring approximately 0.40 m, served as unit datum. Elevation data was collected for each datum and at the ground surface at each unit's southwest and northwest corners.

The pre-field planning for 41BP487 was based on a review of the previous investigation by Nickels, Bousman, and Hurley (2010). The Project Archaeologist determined that a minimum of five test units should be excavated at that site. On September 6 and 7, 2016, the Project Archaeologist and a field technician located the site and set up four units in the south-central portion of the site with the greatest artifact density using Trimble Geo XT GPS unit. A datum was established for each unit. Elevation data was collected for each of the datums and the four corners of each unit. A fifth unit and datum were established during the fieldwork phase.

## Testing

As previously noted, archaeological testing occurred during two different times, with seven sites tested in 2012 and a single site, 41BP487, tested in 2016. Overall, the archaeological investigations resulted in the hand-excavation of 41 test units. From October 30 through November 8, 2012, the Project Archaeologist with a crew of four commenced the hand-excavations of test units. The 20 1-x-1 m units set up in early October on sites 41BP776, 41BP778, 41BP780, 41BP801, and 41BP802 were completed during the ten days of fieldwork. One additional unit was set up and excavated at 41BP801 to explore an area with a high density of buried cultural material. The depths of these units spanned approximately 9-130 cm below the datum (cmbd) with

*Figure 4-2. Use of a Sokkia total data station to lay test units on a magnetic north grid.*

terminal depths, i.e., the emergence of red clay, of 110 cmbd at 41BP776, 100 cmbd at 41BP778, 115 cmbd at 41BP780, 80 cmbd at 41BP801, and 130 cmbd at 41BP802. Fieldwork continued from November 25 through November 29, 2012, on the 11 test units setup at sites 41BP782 and 41BP792. The depths of these units ranged from 9-80 cmbd. Four additional units were setup and excavated to explore an area of high artifact density and a possible burned rock feature at 41BP776, as well as a hearth feature and an accumulation of burned rock at 41BP802.

From September 12 through September 16, 2016, four 1-x-1 m units were excavated in the south-central portion of 41BP487. In addition, a single 1-x-1 m unit was excavated in the northern portion of the site to investigate the presence of a charred nutshell found during survey. A Sokkia total data station with a Carlson data collector was used on each site to align the test units on a magnetic north grid (Figure 4-2). The location and elevation of all excavation units and datums were recorded with the total data station. The depths of the excavated units ranged from 8-110 cmbd.

Field excavation methods included excavation in arbitrary 10-cm levels referenced to the unit datum, not the ground surface. Because the first level was excavated to the nearest even 10-cm increment, it was usually removed as a partial level so that excavations could proceed in even 10-cm increments for each subsequent level. Excavation was performed using shovel skimming. Troweling was used as necessary to expose features and in situ artifacts. Matrix from each level was sifted through ¼-inch hardware cloth (Figure 4-3). Artifacts found in the screen were collected in bags and labeled by provenience. Some artifacts were plotted in situ when discovered.

All cultural material, with the exception of ammunition, encountered in test units was collected and returned to the CAR laboratory for processing and analysis. A standardized test unit form was completed for each test unit level, even if no artifacts were recovered. Ammunition was noted as present when encountered. Plan views were drawn at the discretion of the Project Archaeologist. All units were photographed. A small 4-x-6 mm bag of soil was sampled from each level and returned to the CAR for Munsell color analysis. Magnetic Soil Susceptibility (MSS) samples were taken as a sample column from a profile of each test unit upon completion of excavation. Vials were inserted into a standard template with holes drilled at 5-cm increments. The template was placed against the profile wall, and the vials were tapped in. The vials were carefully removed from the test unit wall, labeled, and placed into separate bags for each unit (Figure 4-4). All test units were backfilled upon completion.

*Figure 4-3. Screening the matrix from TU 1 at 41BP801.*

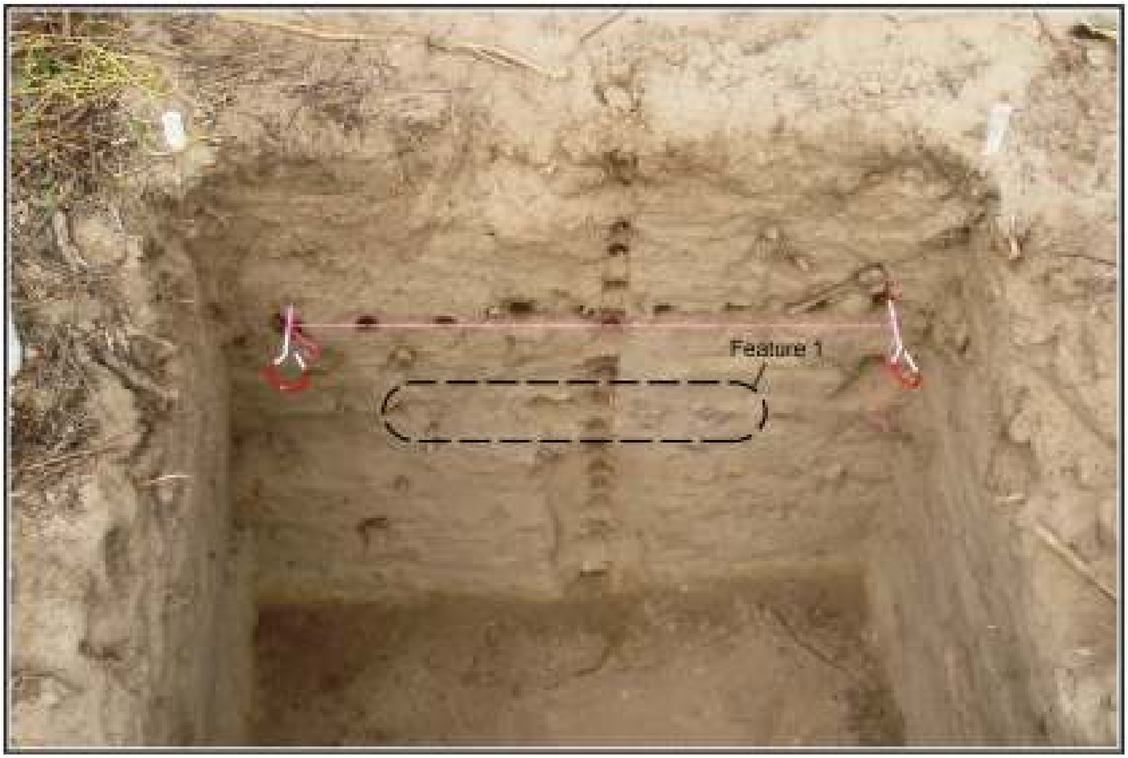


*Figure 4-4. Profile of Feature 1 on 41BP802 showing MSS impressions left by removal of samples.*

Prehistoric features were exposed to the extent necessary for sampling and characterization. Optically Stimulated Luminescence (OSL) samples were taken from the single feature that appeared to be intact. OSL samples were gathered using cut segments of PVC pipe with the end taped to avoid exposure to sunlight (Figure 4-5). When available, a 2.0-liter soil sample was collected from within the boundaries of each feature. A standardized form was filled out for each recorded feature.

## Laboratory Methods

Upon completion of fieldwork all recovered artifacts, sediment samples, and organic samples were transported to the CAR laboratory for processing. Proveniences for the materials were double checked by comparing field sack numbers to the field log. Prior to analysis, artifacts and small amounts of bone were washed, air-dried, and placed into zip-locking archival-quality bags. Each bag contained a label with provenience information and a corresponding lot number. The artifacts were then separated into appropriate categories (e.g., debitage, bifaces, and unifaces) for analysis.

### Sediment Analysis

Two different sets of sediment samples were collected on the project. Soil samples were collected from each level to provide consistent descriptions. A single individual assessed the dry Munsell colors for these samples under a consistent light source and background material. The second set of sediment samples were the MSS samples collected from unit profiles and associated with features.

MSS samples potentially provide information on the overall integrity of a profile and the stability of a given surface. The magnetic susceptibility of a sample can be thought of as a measure of how easily that sample can be magnetized (Dearing 1999). It is initially dependent on sample mineralogy, though a number of processes can result in an increase in MSS values. These include concentrations of organics as a result of the long term stability of a surface, impacts associated with wet/dry cycles, and ash associated with fire (see Bellomo 1983; McClean and Kean 1993; Reynolds and King 1995; Singer and Fine 1989). Cultural processes that result in the deposition of organic refuse, ash, and charcoal also produce significantly higher susceptibility values (see Mauldin 2003; Mauldin and Figueroa 2006; Takac and Gose 1998). In the CAR lab, MSS samples were air-dried, ground to a consistent particle size, and packed into pre-weighed 10-cm$^3$ plastic pots. The packed pots were then weighed, and the mass of the sample determined by subtracting the unpacked pot weights. Pots were then placed into a Bartington MS2 frequency sensor attached to a MS2 magnetic susceptibility meter. Low frequency volume susceptibility (kappa, κ) was measured on

*Figure 4-5. Optically Stimulated Luminescence (OSL) samples in Feature 1 profile at 41BP802.*

each sample. Two readings were taken, and the results were averaged. The mass corrected magnetic susceptibility (chi, $\chi$) values were then calculated using the sample mass (see Dearing 1999). These results are discussed in Chapter 7, and additional data are presented in Appendix B.

## Flotation

Flotation samples were taken from the fill of five features initially defined in the field on this project. Two of these, both on site 41BP776, were subsequently determined not to be features but representative of a mix of unburned rock, burned rock, and chipped stone concentrated at or near bedrock. Samples from these two deaccessioned features were screened at the lab, with no recovery. The third feature, Feature 1 on 41BP802, represented the remains of a hearth. Seven liters of sediment were removed from this feature and floated at the CAR lab. Flotation procedures at the lab used on this project have been tested with unburned poppy seeds, and recovery is over 90 percent. The recovered heavy fraction contained two small pieces of burned rock and three pieces of micro-debitage. The matrix from the light fraction was dried and examined with a binocular microscope. Several fragments of charcoal were removed. No identification was attempted on these small items, though they generally appeared to be wood charcoal. The remaining light fraction, roughly 40 ml in volume, was curated. Sediment samples were also collected from Features 1 and 2 from site 41BP487. In addition, the matrix surrounding the large bone found in TU 3 was collected at 41BP487. Unfortunately, there is no documentation of the volume for the floated samples. The recovered heavy fraction from Feature 1 contained one piece of micro-debitage and 0.37 g of charred material. The Feature 1 light fraction contained 0.04 g of charred material. The heavy fraction of Feature 2 contained 0.15 g of charred material, and the light fraction contained 0.01 g of charred material. The heavy fraction from TU 3 contained 0.11 g bone fragment and 0.09 charred material with the light fraction containing 0.01 g of bone and 0.01 g of charred material.

## Dating

Two different sets of chronometric data were collected for this project. Charcoal for possible radiocarbon dating was collected when observed in all contexts. Three samples associated with identified features on 41BP487 (Features 1 and 2) and 41BP802 (Feature 1) were submitted for radiocarbon analysis. These samples and their results are discussed in Chapter 6 (see also Appendix A). Remaining charcoal samples were placed in aluminum foil and curated.

OSL samples were also collected from Feature 1 on 41BP802 (see Figure 4-5). Following collection, these samples were stored under refrigeration at the CAR. They are currently stored at CAR at the direction of the TMD.

## Lithic and Other Artifact Analysis

Lithic artifacts recovered from the site consisted of small quantities of non-feature burned rock and heat spalls, moderate quantities of chipped stone debitage, a few pieces of ground stone, and a small number of chipped stone tools. In addition, four bone fragments were recovered during the excavations and identified to the highest level possible.

Chipped stone raw material, primarily consisting of chert but with a small quantity of quartzite, was identified. A hierarchical approach for material that combined color, texture, evidence of heating, and overall finish was used to create distinct raw material groups. The maximum size of each piece of debitage and an ordinal estimate of dorsal and platform cortex cover (0, 1-50%, 51-99%, 100%) were recorded to provide basic information on raw material use and reduction. Descriptions were made of each chipped and ground stone tool. Chipped stone was used in assessment of integrity by focusing on the overall area of items in levels of a given unit. Area was measured in mm$^2$ through digital photography and the use of SigmaScan© Pro (version 5) image processing and automatic measuring software. These data are presented and discussed in Chapter 6.

# Curation

All cultural materials and records obtained and/or generated during the project were prepared in accordance with federal regulation 36 CFR part 79 and THC requirements for State Held-in-Trust collections. The materials were curated in accordance with current CAR guidelines. Artifacts were stored in archival-quality bags with acid-free labels including a provenience and corresponding lot number. Materials needing extra support were double-bagged. Tools were labeled with permanent ink and covered by a clear coat of acrylic. In addition, most unmodified debitage from each lot was labeled with the appropriate provenience data. All artifacts were stored in acid-free boxes. At the request of the TMD, the OSL samples were maintained at the CAR.

Digital photographs were printed on acid-free paper, labeled with archivally appropriate materials, and placed in archival-quality sleeves. All field forms were completed with pencil. Field notes, forms, photographs, and drawings were printed on acid-free paper, placed in archival folders, and stored in acid-free boxes. A copy of this testing report and all computer media pertaining to the investigation were stored in an archival box and curated with the field notes and documents.

Subsequent to proper analyses and quantification, artifacts associated with this project possessing little scientific value were discarded pursuant to Chapter 26.27(g)(2) of the Antiquities Code of Texas and in consultation with both the TMD and the THC. Artifact classes to be discarded specific to this project included non-feature burned rock and heat spalls, and soil samples. In all instances, discarded materials were documented, and their counts were included in curation documentation. Discarded materials were disposed of using suitable disposal procedures.

# Chapter 5: Site Descriptions, Work Accomplished, and Material Recovered

*Cynthia Munoz and Leonard Kemp*

Archaeological testing was initially performed on seven sites in the south portion of Camp Swift, Bastrop County, Texas, during the fall of 2012. Work was conducted on 41BP776, 41BP778, 41BP780, 41BP782, 41BP792, 41BP801, and 41BP802 following procedures outlined in the previous chapter. Archaeological testing was conducted at 41BP487 during the fall of 2016. The eight sites are discussed in numerical order. Figures 5-1 through 5-4 show the sites on the LiDAR based elevation maps (Figure 5-1), hydrology (Figure 5-2), geology, (Figure 5-3) and soils (Figure 5-4) previously discussed in Chapter 2. This chapter provides an overview of these sites, discusses the work accomplished during this investigation, and provides a short summary of the recovered material. Additional information on each site is available in Nickels, Bousman, and Hurley (2010) and Nickels, Worrell, and Bousman (2010b).

Redacted Image

*Figure 5-1. LiDAR image of Camp Swift with site boundaries.*

Redacted Image

*Figure 5-2. Location of sites relative to drainages in the project area.*

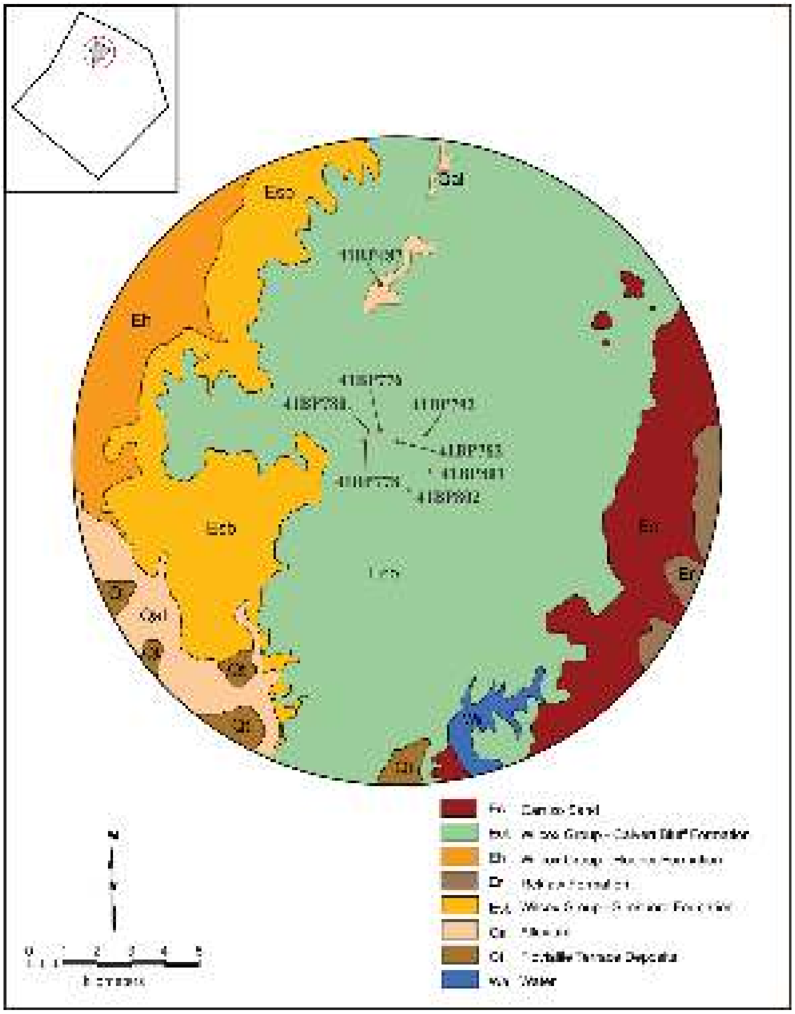


*Figure 5-3. Location of sites relative to geological formations.*

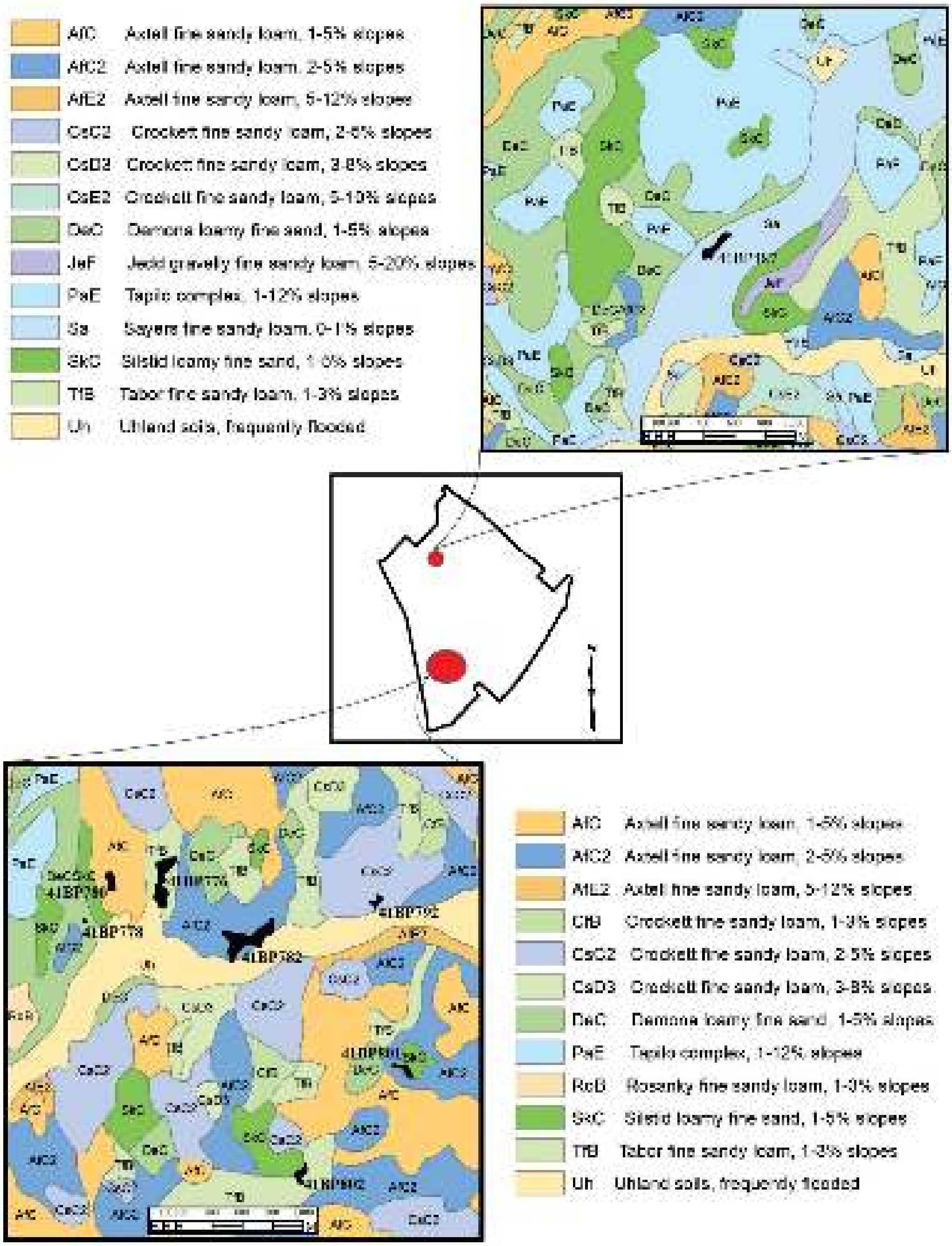


*Figure 5-4. Location of sites relative to soil types.*

## 41BP487

Site 41BP487 was initially recorded in 1997 by TMD archaeologists as a multi-component site (Haslouser-Kay et al. 1997). They excavated three shovel tests (STs) and recovered chipped stone and a cast iron stove fragment. Haslouser-Kay et al. (1997) characterized the site as a prehistoric open campsite and historic trash scatter. The site is located on the modern floodplain immediately adjacent to Big Sandy Creek (Figure 5-5) at approximately 128 m (420 ft.) AMSL (see Figures 5-1 and 5-2). It is in a formerly plowed field now heavily overgrown with grasses, grapevines, bull nettle, and prickly pear cactus. Surface visibility was extremely limited due to vegetation and ranged from 0 to 5 percent during the current testing phase. The site lies within the Quaternary alluvium formation (see Figure 5-3) with soils exclusively Sayer fine sandy loam (see Figure 5-4).

*Figure 5-5. View of 41BP487 from TU 1 - TU 4 to the south-southwest (left) and north-northwest (right). Big Sandy Creek is located along the tree line.*

## Background

Robinson et al. (2001) revisited 41BP487 and excavated three shovel tests with one of those shovel tests containing a small amount of chipped stone and fire-cracked rock (FCR). Based on these findings and the initial testing by TMD archaeologists, the site was recommended as ineligible for inclusion to the NRHP. In 2005, Nickels, Bousman, and Hurley (2010) reinvestigated the site, excavating 30 shovel tests, 21 of which were positive. Fifty-one pieces of chipped stone and 18 FCR greater than 2.54 cm (1 in.) were recovered in these tests (Nickels, Bousman, and Hurley 2010:Table 6-12). In addition, two heat spalls, a charred nutshell, and a large piece of ochre were found. Artifacts were recorded between Levels 1 through 8 (10-80 cmbs). Nickels, Bousman, and Hurley (2010) noted that, with the exception of two shovel tests, there was no indication of disturbance below the 30-cm plow zone. Nickels, Bousman, and Hurley (2010) redefined and enlarged the site boundary from the previous 3,600 $m^2$ to 10,561 $m^2$. Nickels, Bousman, and Hurley (2010) also recommended additional testing to determine the site's eligibility status suggesting the excavation of five 1-x-1 m units in the south-central portion of the site, an area that was positive for FCR, and in the north portion of the site, where a charred nutshell was recovered.

## Work Conducted

Modifying Nickels, Bousman, and Hurley's (2010) recommendation, the CAR set up four 1-x-1 m test units (TUs) in the south central portion of the site and a single unit in the northern portion of it. The units were excavated on September 12-16, 2016. The location of the five CAR excavated units and control points (CP), along with the CAS-Texas State determined site boundaries, site datum, and previously excavated CAS shovel tests are shown on Figure 5-6.

Test Units 1 through 4 are located in the southwestern portion of the site adjacent to a cluster of positive CAS shovel tests and in an area recommended by Nickels, Bousman, and Hurley (2010) for testing. In TU 1, nine levels of sediment (0.87 $m^3$) were excavated to a termination depth of 100 cm below the datum (cmbd). Artifacts, including chipped stone, FCR, ochre, and charcoal, were present in Levels 2 through 9 (20-100 cmbd). Test Unit 2 was excavated to 80 cmbd (0.67 $m^3$). Cultural materials were present in all seven levels. Feature 1, a FCR feature, was found in Levels 4 (40-50 cmbd) and 5 (50-60 cmbd). Test Unit 3 was excavated to 110 cmbd (0.94 $m^3$). Cultural material was found in Level 2 (20-30 cmbd) through Level 10 (110-120 cmbd). Cultural material included chipped stone, FCR, and charcoal. In addition, a large bone fragment likely that of a large/very large mammal was found in situ in Level 10 at 99-103 cmbd. Nine levels of soil matrix (0.91 $m^3$) were excavated in TU 4. Cultural material included a core, chipped stone, FCR, and charcoal. A small FCR feature was found in Levels 6 and 7 at 76-88 cmbd. Test Unit 5 was located at the north end of the site to investigate the discovery of a charred nutshell found in ST 25. The test unit was placed between STs 22 and 25, and it was excavated to 110 cmbd (0.97 $m^3$). Cultural material was minimal and found in Levels 3 through 9. The units were terminated at 100 cmbs, when the presence of artifacts significantly declined and because of time constraints.

CAR archaeologists excavated 4.36 $m^3$ of sediment at 41BP487. The sediment was an alluvial, fine, sandy loam primarily brown to pale brown, light brownish gray, and

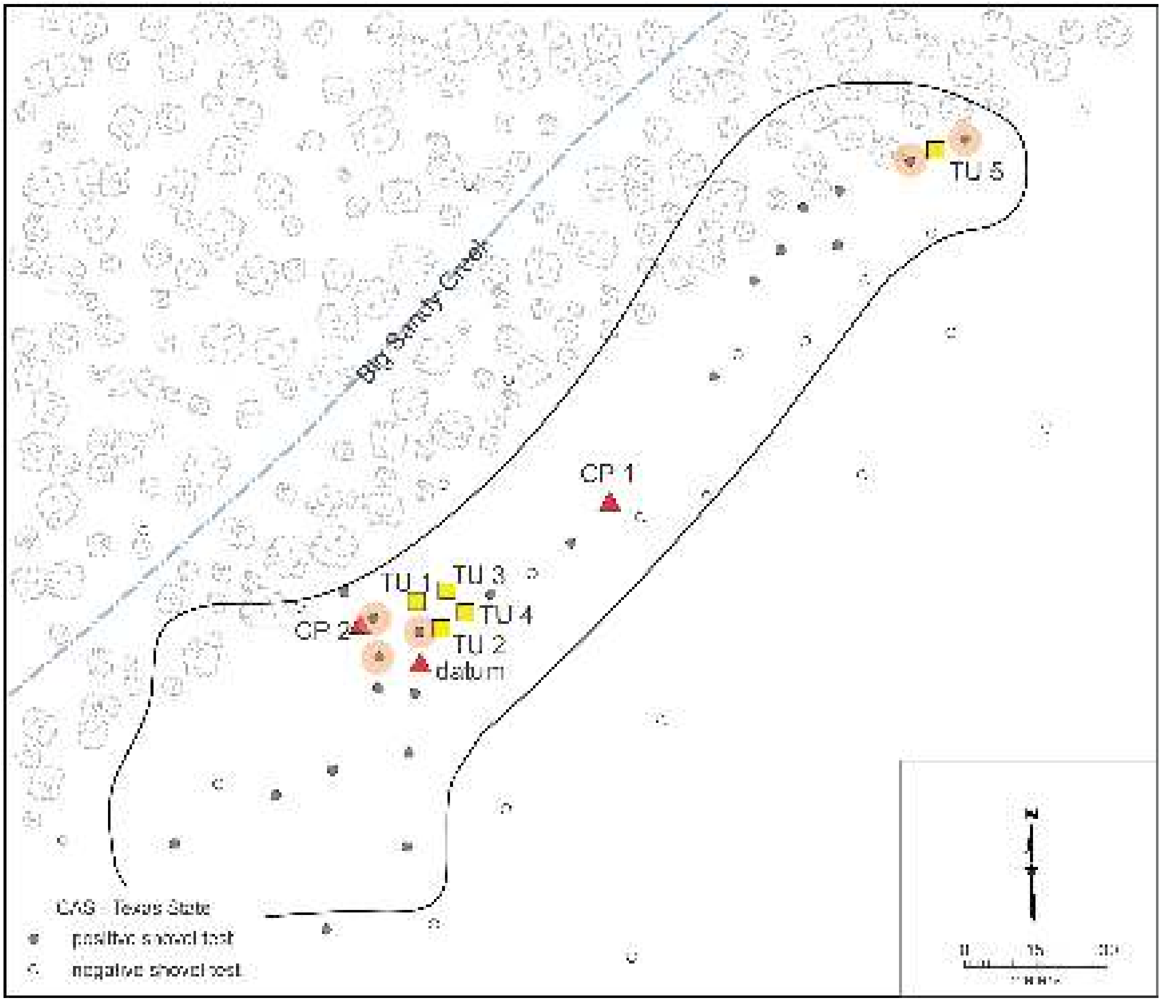


*Figure 5-6. Map of 41BP487 showing previous work (CAS-Texas State) and excavation units (CAR). The light orange highlighted shovel tests are locations Nickels, Bousman, and Hurley (2010) suggested for testing.*

grayish brown (10.5YR 5/3, 6/3, 6/2, 5/2). Roots were observed in all units with a large root mass found in TU 3. No calcium carbonate was noted in any of the profiles.

Testing recovered 118 pieces of chipped stone debitage, five chipped stone tools, and one core/core tool. As noted previously, two burned rock features were defined at this site. Feature 1 was found in TU 2 at 40-60 cmbd. It consists of 19 fire-cracked or burned rocks weighing approximately 2.2 kg. The feature's shape was irregular, measuring roughly 80-x-50 cm. Two biface fragments, one likely that of a broken projectile point stem, and 15 pieces of chipped stone debitage were found in the levels associated with the feature, and charred wood and nutshell were also recovered. Feature 2 was found in TU 4 at 76-88 cmbd. It consists of three fire-cracked and burned rocks weighing 0.73 kg and one piece of chert chipped stone debitage. In addition, two of the FCR recovered in the previous level are likely associated with the feature based on their proximity and depth. Five pieces of chipped stone debitage, charred wood, and nutshell were found in the levels associated with this feature. Exclusive of the two features, three edge-modified flakes, a core, and 1.45 kg of burned rock and heat spalls were recorded at 41BP487. Charred wood and nutshell were found throughout all of the five tested units in addition to the large/very large mammal bone found in TU 3.

## 41BP776

Originally reported by Nickels, Worrell, and Bousman (2010b:206-208), site 41BP776 contains both a historic component and prehistoric material. This investigation's concern is with the prehistoric material, which is primarily located in the southern portion of the site. Located below a modern surface that slopes between roughly 134 and 128 m (440 and 420 ft.) AMSL (Figure 5-1), the prehistoric material consists of buried chipped stone and FCR remains. The site is above an intermittent drainage that leads into Dogwood Branch Creek (Figure 5-2). At the time of the primary visit to the site during October and November of 2012, clusters of juniper and oak, with grapevines and mesquite present, dominated vegetation. Relatively open areas between clumps of trees and bushes had low shrubs, grass, and small forbs (Figures 5-7). Site 41BP776 is primarily on Tabor fine sandy loam soils (see Figure 5-4), a moderately well-drained soil often associated with stream terraces. The southwestern corner of the site sits on Uhland clay loam (Baker 1979). Geologically, the site sits within the Tertiary age (ECB) Wilcox Group on the Calvert Bluff Formation (Figure 5-3). The formation is dominated by mudstone and sandstone, with lignite deposits at depth. No chert deposits were noted in the formation. Chert is available in Quaternary age deposits (Qal, Qt) to the south and north of the site (Barnes 1974).

## Background

Nickels, Worrell, and Bousman (2010b:341-342) suggested that the historic component at 41BP776 has little research value. They recommended that this component was not eligible for NRHP listing, and no further work was proposed. Nickels, Worrell, and Bousman (2010b) were unable to determine the eligibility status of the prehistoric material. Prehistoric artifacts were recovered from eight of 17 positive shovel tests at a site level. Materials were distributed between Level 1 (0-10 cmbs) and Level 7 (60-70 cmbs) in the shovel tests. No surface prehistoric artifacts were noted. Overall, 29 prehistoric items were recovered, with 21 of these concentrated in STs X5, X6, and Z11. Materials observed included 21 pieces of chipped stone debris, seven FCR, and a chert biface (Nickels, Worrell, and Bousman 2010b:Table 7-66). Based on this shovel testing, Nickels, Worrell, and Bousman (2010b:208) suggested that the buried prehistoric material appeared to be undisturbed and that lithic material had a uniform distribution. They concluded that the location could have intact features and suggested that further investigations be conducted to clarify the eligibility status of the prehistoric material. Specifically, they recommended that three 1-x-1 m units be excavated in the vicinity of the three higher density shovel tests to clarify the NRHP eligibility status of 41BP776 (Nickels, Worrell, and Bousman 2010b:208).

## Work Conducted

After reviewing the results and recommendations of Nickels, Worrell, and Bousman (2010b) for this site, CAR archaeologists initially visited the project area in early October of 2012. At that time, the original CAS datum was relocated, and five 1-x-1 m test units (TUs), designated TU 1 through TU 5, were laid out. The excavation of these units began on October 30, 2012, and excavations and site clean-up were finished on November 1. Based on the results from

*Figure 5-7. Site vegetation on 41BP776 at time of initial CAR visit.*

these initial units, two additional 1-x-1 m units, TU 6 and TU 7, were excavated on November 28 and completed on November 29. Figure 5-8 shows the location of these seven CAR excavated units, along with the CAS determined site boundaries, site datum, and previously excavated CAS shovel tests in this portion of the site (Nickels, Worrell, and Bousman 2010b). The three high-density shovel tests (X5, X6, and Z11) that guided the initial unit placement are identified by light orange circles on the figure.

Test Unit 1 was located to the west of the site datum and was approximately 10 m northwest of positive ST X6 (see Figure 5-8). The unit, excavated to 120 cmbd in eleven 10-cm levels, removed 1.06 m$^3$ of sediment. Artifacts were recovered from each level. Lying about 24 m to the south-southwest of TU 1, TU 2 is approximately 18 m southeast of ST X5. Seven levels of sediment (0.54 m$^3$) were excavated to a termination of 73 cmbd at the beginning of red clayey deposits. Cultural material was found throughout the unit. Located 10 m to the north of the site datum, TU 3 was excavated until an orange/red clay was encountered at 48 cmbd. Like TU 1, the unit was near ST X6, but unlike TU 1, it contained shallow sediments. Artifacts were recovered from each level of the unit. Initially, a concentration of what appeared to be burned rock located on the west side of the unit was designated Feature 1 in Level 4. Feature 2, a similar concentration, was designated in Level 5. Test Unit 4 was placed at the approximate midpoint of STs X5, X6, and Z11. The unit terminated at red clayey sediments about 31 cmbd. Lithic material was found in Levels 1 and 2.

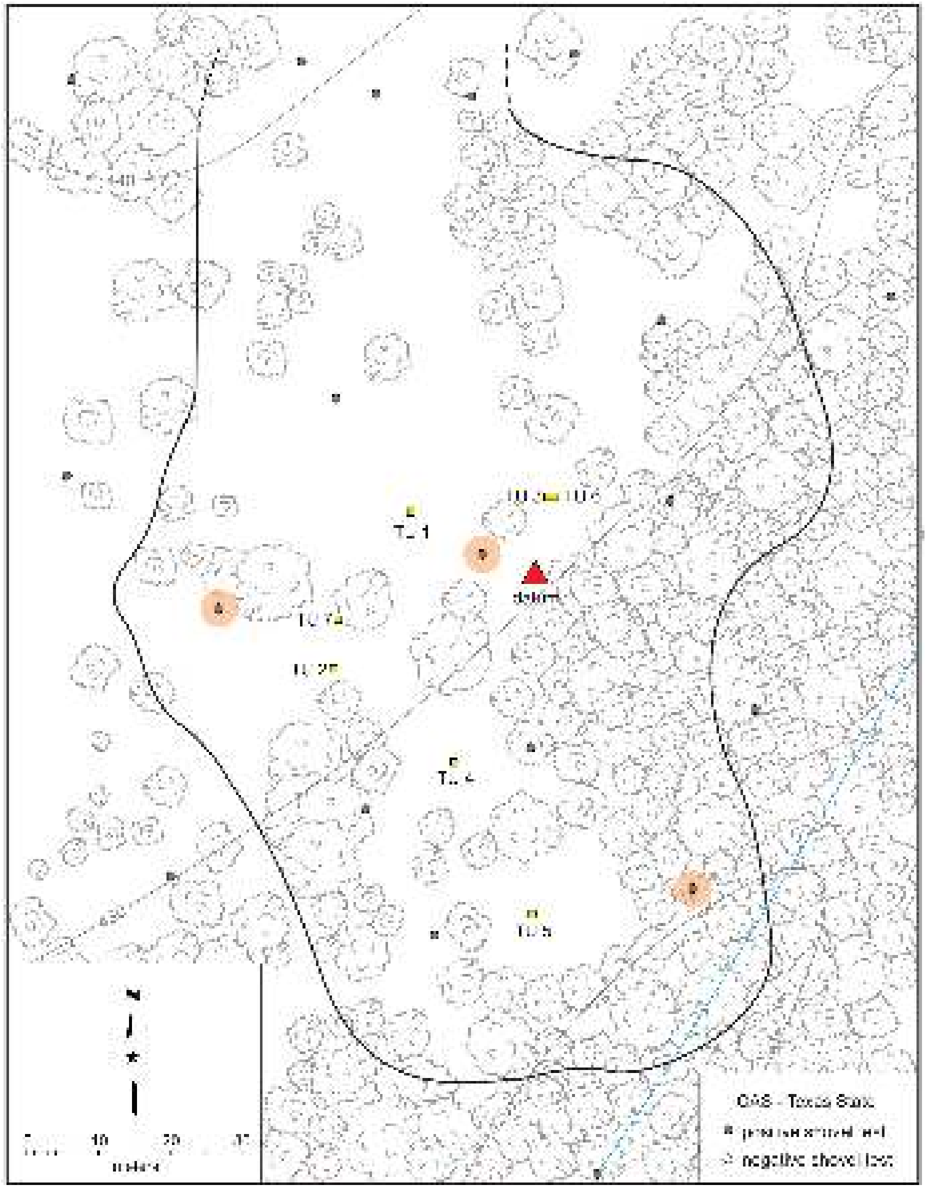


Figure 5-8. Map of 41BP766 showing previous work (CAS-Texas State) and excavation units (CAR). High-density shovel tests identified by light orange circles.

A total of 0.16 m$^3$ of soil was removed from the unit. The last of the initial five units, TU 5, was placed roughly 47 m to the south of the datum. Seven levels of sediments (0.62 m$^3$) were excavated to a termination depth of 75 cmbd. Artifacts were recorded in each level. The unit was located about 23 m to the west of ST Z11.

Two additional test units (TUs 6 and 7) were excavated in late November of 2012 (see Figure 5-8). Test Unit 6 was placed adjacent to the east side of TU 3 to explore the two possible rock features recorded in the lower levels. Sediments, consisting of four levels (0.33 m$^3$), were excavated to bedrock and clay (50 cmbd). Features 1 and 2 were subsequently determined to be primarily hematite deposits that were not burned. Test Unit 7 was placed 8 m north of TU 2 to explore the artifact density between TUs 1 and 2. The unit, excavated to 60 cmbd in four 10-cm levels, removed 0.4 m$^3$ of sediment. Artifacts were recovered from each level. Feature 3 was recorded near the bottom of TU 7. Like Features 1 and 2, the area contained primarily hematite deposits that were not burned, though heat spalls and burned rock were present. The feature designation for this concentration was subsequently removed.

CAR archaeologists excavated 3.48 m$^3$ of sediment on the site. Upper sediment at the site was primarily brown, grayish brown, brown, and pinkish gray (10YR 4/2, 5/2, 5/3, 7.5YR 6/2) sands in the upper levels. The lower levels trended towards brown (10YR 5/3) sand, with slight increases in clay and silt near the bottom of most excavations. Heavy clay underlies the 41BP776 sand sheets.

Testing recovered a variety of archaeological material, including 436 pieces of chipped stone debitage, 10 chipped stone tools, a ground stone fragment, and four cores. While ultimately no features were defined at this site, roughly 90 pieces of burned rock and heat spalls, weighing about 1.8 kg, were recorded at 41BP776.

## 41BP778

Site 41BP778, initially recorded by Nickels, Worrell, and Bousman (2010b:210-212), is a small, open campsite containing light, subsurface cultural deposits of debitage and burned rock. Located alongside a power line right-of-way, the site sits on a gentle slope of approximately 134-136 m ( 440-445 ft.) AMSL (see Figure 5-1). It is approximately 175 m to the west of an intermittent tributary of Dogwood Branch Creek (see Figure 5-2). The vegetation consists of groupings of oak and juniper, with grapevines, prickly pear, poison ivy, bull nettles, and various grasses (Figure 5-9). The soil on the site consists of Demona loamy fine sand (DeC), a slightly sloping soil found on side slopes, ridge tops, and drainages (Baker 1979; see Figure 5-4). As described above for site 41BP776, 41BP778 is within the Tertiary age (ECB) Wilcox Group on the Calvert Bluff Formation (see Figure 5-3).

*Figure 5-9. Site vegetation on 41BP778 at time of initial CAR visit.*

## Background

Three specimens of debitage and two pieces of burned rock were recovered from four of the five shovel tests excavated on the site (Nickels, Worrell, and Bousman 2010b:Table 7-68). The artifacts were recorded between Levels 2 and 6 (10-60 cmbs). No material was documented on the surface. Because the artifacts appeared intact with no evidence of disturbance, Nickels, Worrell, and Bousman (2010b) recommended the excavation of two 1-x-1 m units near STs 1 and 7 to explore the possibility that the material represents a single, short occupation.

## Work Conducted

After reviewing the previous work (Nickels, Worrell, and Bousman 2010b), CAR visited the site in early October 2012 to set up three 1-x-1 m test units (TUs 1, 2, and 3). These units were excavated on October 5-6, 2012. The location of the three CAR excavated units, along with the CAS determined site boundaries, site datum, and previously excavated CAS shovel tests are shown on Figure 5-10 (Nickels, Worrell, and Bousman 2010b).

Test Unit 1 lies approximately 5 m north of the site datum and 5 m southwest of ST 1. Seven levels of soil (0.7 $m^3$) were excavated to a termination depth of 80 cmbd at the start of red clayey deposits. Artifacts were present in Levels 2 through 6 (20-70 cmbd). Located roughly 5 m west of the site datum and 2 m east of ST 3, TU 2 was excavated to 100 cmbd (0.88 $m^3$). Cultural materials were present in four of nine levels: Levels 3 and 4 (30-50 cmbd) and Levels 6 and 7 (60-80 cmbd). Test Unit 3 was placed to the immediate west of ST YY1. Five levels of sediment were removed (0.45 $m^3$) with the unit terminating at the commencement of red clayey deposits (57 cmbd). Artifacts were limited to Level 3 (30-40 cmbd).

CAR excavated 2.03 $m^3$ of sediment at the site. Upper sediment at the site was primarily brown to dark brown, brown, and pinkish gray (7.5YR 4/4, 6/2, 5/3) sands. The lower levels trended towards light brown and brown (7.5YR 6/4, 5/3) sand.

Work at 41BP778 recovered only nine pieces of debitage. No burned rock, tools, or cores were recovered.

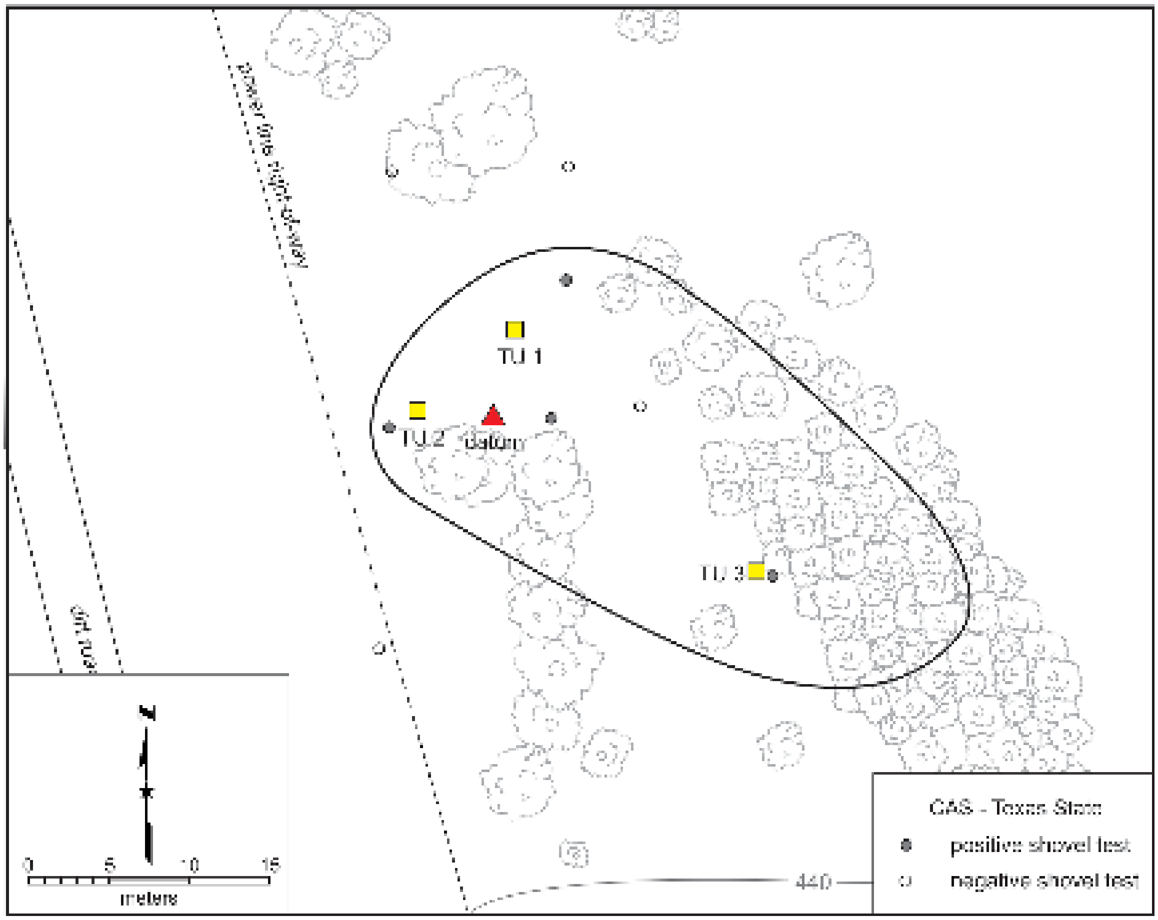


*Figure 5-10. Map of 41BP778 showing previous work (CAS-Texas State) and excavation units (CAR).*

# 41BP780

Recorded by Nickels, Worrell, and Bousman (2010b:213-214), site 41BP780 consists of an open campsite approximately 70 m to the east of an intermittent drainage leading into Dogwood Branch Creek (see Figure 5-2). It sits below a surface that gently slopes from approximately 133-469 m (435-445 ft.) AMSL (see Figure 5-1). The site is located on a relatively open area of low shrubs, forbs, and tall grasses surrounded by clumps of oaks, junipers, and pines (Figure 5-11). Site 41BP780 is on Axtell fine sandy loam (AfC), a gently sloping soil located on side slopes and ridge tops (Baker 1979; see Figure 5-4). Like the subsequently discussed sites (see Figure 5-3), it sits on Tertiary age (ECB) Wilcox Group on the Calvert Bluff Formation (see Figure 5-4; Baker 1979; Barnes 1974).

## Background

Nickels, Worrell, and Bousman (2010b:Table 7-70) recovered six specimens of debitage and three burned rocks from seven positive shovel tests. No surface artifacts were noted. The cultural material was distributed between Levels 3 and 7 (20-70 cmbs). Based on the presence of burned rock and undisturbed sediments in the shovel tests, Nickels, Worrell, and Bousman (2010b) concluded that the site might contain intact hearths. They recommended that three 1-x-1 m units be excavated in the immediate area of STs 1, 3, and DDD6 to determine the NRHP eligibility status of the site.

## Work Conducted

CAR visited the site in early October 2012 to set up four 1-x-1 m test units (TUs 1-4). The units were excavated from October 1-5, 2012. Figure 5-12 presents the location of the test units, along with the CAS determined site boundaries, site datum, and previously excavated CAS shovel tests in this portion of the site (Nickels, Worrell, and Bousman 2010b). The shovel tests containing burned rock (STs 1, 3, and DDD6) are highlighted on the figure.

Test Unit 1 was located approximately 18 m southeast of the site datum and to the immediate north of ST 3. Six levels of soil (0.57 $m^3$) were excavated to a termination depth of 69 cmbd at the commencement of red clayey sediment. Artifacts were only present in the top two layers (12-30 cmbd). Test Unit 2 was placed 5 m north of ST 1, approximately 38 m southeast of the site datum. Eight levels of sediment (0.8 $m^3$), terminating at 100 cmbd, produced cultural material in Level 1 (20-30 cmbd), Levels 3 and 4 (40-60 cmbd), and Levels 6 and 7 (70-90 cmbd). Lying about 55 m southeast of the site datum, TU 3 contained deep soils. Red clayey sediment was exposed in Level 12 at 115 cmbd. The 1.04 $m^3$ of excavated soil produced two concentrations of artifacts in Levels 2-5 (12-50 cmbd) and Levels 8-11 (70-110 cmbd). The last of the four units was placed roughly 78 m to the south of the datum. Ten levels of sediment (0.96 $m^3$) were excavated to a termination depth of 110 cmbd. With the exception of Level 2 (20-30 cmbd), cultural materials were recorded in each level. The unit was located roughly 4 m west of ST DDD6.

A total of 3.37 $m^3$ of sediment was excavated on the site. Sediment at the site was primarily brown and pinkish gray (7.5YR 5/2, 6/2, 7/2) sands.

CAR recovered 45 pieces of debitage, one core, one chipped stone tool, and a small number of burned rock and heat spalls. No features were designated, though charcoal was collected from the excavation at this site.

*Figure 5-11. Site vegetation on 41BP782 at time of initial CAR visit.*

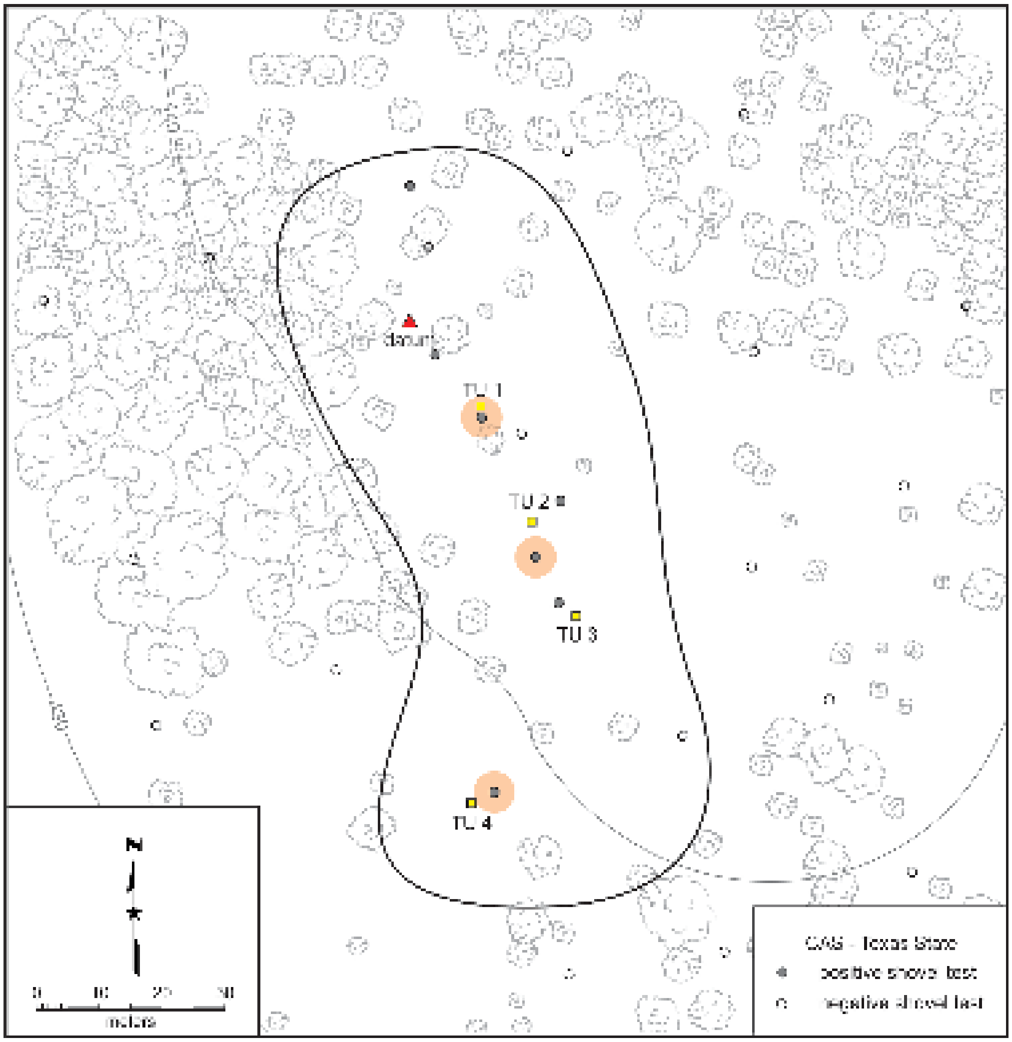


*Figure 5-12. Map of 41BP780 showing previous work (CAS-Texas State) and excavation units (CAR). High-density shovel tests identified by light orange circles.*

## 41BP782

Site 41BP782, originally recorded by Nickels, Worrell, and Bousman (2010b:216-218), is a large open campsite containing buried cultural deposits of debitage and burned rock. It sits on a slight slope of about 131-134 m (430-440 ft.) AMSL (see Figure 5-1) along a meander of Dogwood Branch Creek (see Figure 5-2). At the time of CAR's visit, heavy vegetation, consisting of juniper, oak, pine, and mesquite trees with low shrubs, tall grasses, and small forbs covered most of the site (Figure 5-13). Geologically, the site lies within the Tertiary age (ECB) Wilcox Group on the Calvert Bluff Formation (Barnes 1974; see Figure 5-3). The soil on 41BP782 primarily consists of Axtell fine sandy loam (AfC2), a sloping soil found mainly along deeply cut drainages in eroded areas. The southwest and southeast corners of the site lie on Uhland clay loam (Uh), an almost level, deep, loamy soil found on bottomlands along waterways (Baker 1979; see Figure 5-4).

### Background

Nickels, Worrell, and Bousman (2010b) excavated 27 shovel tests on site 41BP782. Prehistoric artifacts, distributed between Levels 1 and 6 (0-60 cmbs), were recovered from 14 of the 27 shovel tests. No surface artifacts were recorded. Altogether, 34 items were removed, including 25 pieces of debitage, one retouched uniface, six burned rocks, and two heat spalls (Nickels, Worrell, and Bousman 2010b:Table 7-72). Based on the shovel testing, Nickels, Worrell, and Bousman (2010b:217) concluded that the prehistoric material appeared to be undisturbed and that the recovery of lithic tools and burned rock suggests that associated hearths may be present. To evaluate the NRHP eligibility status of 41BP782, Nickels, Worrell, and Bousman (2010b) recommended the excavation of eight 1-x-1 m units in the eastern portion of the site in the vicinity of the five shovel tests with higher density recovery (STs K4, K5, L4, L5, and M9).

*Figure 5-13. Site vegetation on 41BP782 at time of initial CAR visit.*

## Work Conducted

CAR visited the site in early October 2012 to set up seven 1-x-1 m units (TUs 1-7). The units were excavated November 25-26, 2012. The location of the test units, site datum, CAS determined site boundaries, and previously excavated CAS shovel tests are shown on Figure 5-12 (Nickels, Worrell, and Bousman 2010b). The five shovel tests with high-density recovery, all of which were located in the eastern portion of the site, are highlighted in light orange circles on Figure 5-14.

Test Unit 1 was located approximately 7 m to the south of the site datum and 4 m east of positive ST L5. The unit, excavated to 50 cmbd in four levels, removed 0.41 $m^3$ of sediment. Artifacts were recovered from each level. Lying about 47 m to the south of TU 1, TU 2 is approximately 12 m southwest of ST K4. Three levels of soil (0.3 $m^3$) were excavated to a termination of 40 cmbd at the beginning of red clayey deposits. Cultural material was found throughout the unit. Test Unit 3 was placed 10 m south of ST K5, approximately 48 m southwest of the site datum. Cultural material was recovered from all three levels of sediment (0.29 $m^3$). The shovel test was terminated at 44 cmbd. Located 4 m to the west of the ST L4, TU 4 was excavated to the commencement of red clayey sediment at 52 cmbd. Lithic material was found in all four levels. From TU 4, CAR removed 0.31 $m^3$ of sediment. Test Unit 5 was placed roughly 71 m to the northeast of the site datum. Four levels of sediment (0.36 $m^3$) were excavated to a termination depth of 46 cmbd. Artifacts were recorded in each level. The unit was located about 22 m to the southwest of ST M9. Located approximately 3 m from ST M9, TU 6 was excavated to 80 cmbd in seven levels (0.66 $m^3$). Artifacts were recovered from each level. The last test unit, TU 7, was located on the western portion of site 41BP782. The unit, excavated roughly 12 m to the southeast of ST H1, was placed approximately 203 m southwest of the site datum. The sediment, consisting of three levels (0.28 $m^3$), was excavated to red clay (50 cmbd). Artifacts were recovered from each level of the unit.

In total, CAR excavated 2.61 $m^3$ of sediment at 41BP782. Sediment at the site was primarily brown sands (7.5YR 5/2, 10YR 5/3), with pockets of light brown (7.5YR 6/4) and grayish brown (10YR 5/2) sands at depth. Slight increases in clay and silt near the bottom of most excavation units were noted before encountering solid clay.

Artifacts recovered included 173 chipped stone items, six chipped stone tools that included two projectile point stems, and three cores. No features were recorded. Less than 30 pieces of burned rock and heat spalls, weighing roughly 0.8 kg, were collected.

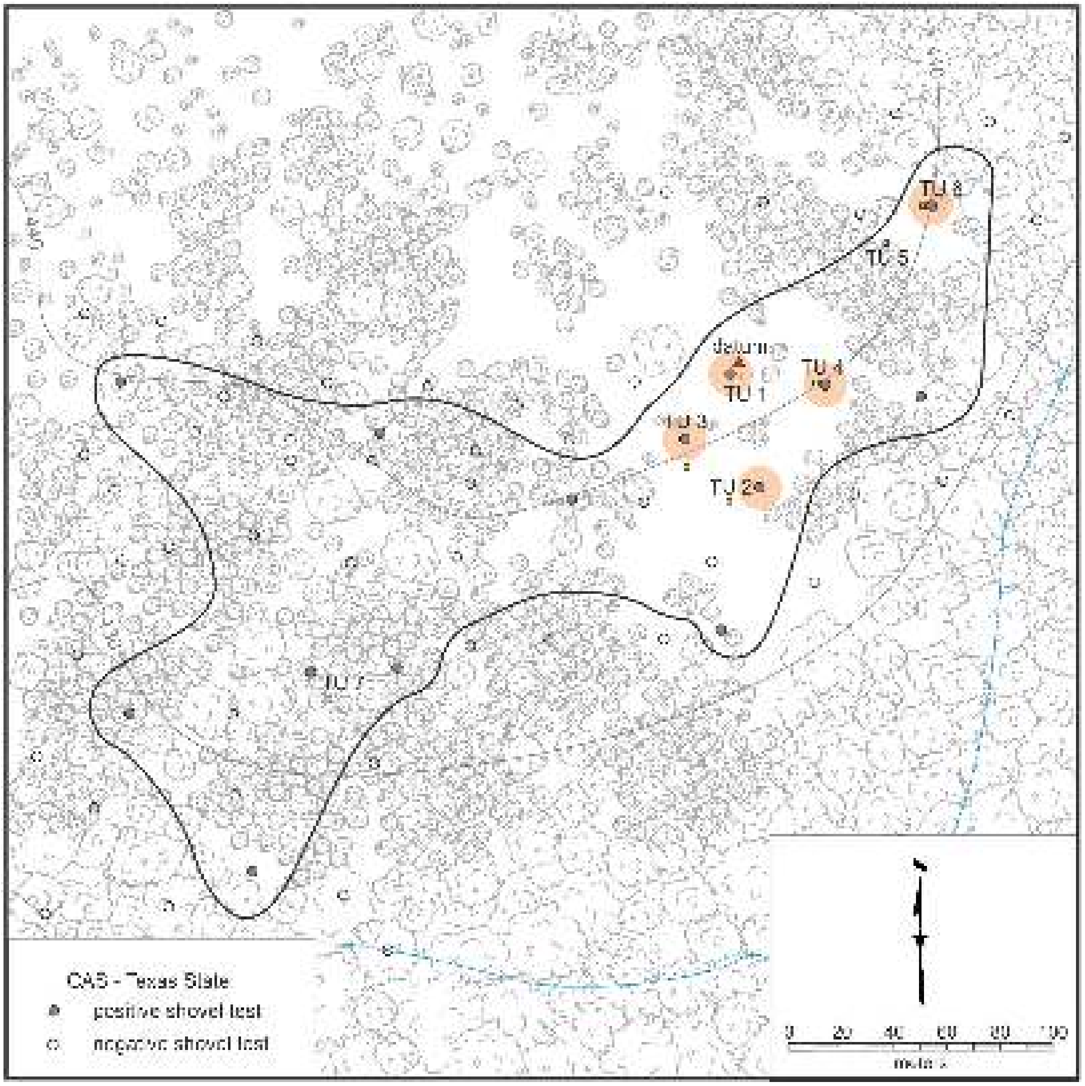


*Figure 5-14. Map of 41BP782 showing previous work (CAS-Texas State) and excavation units (CAR). High-density shovel tests identified by light orange circles.*

## 41BP792

Recorded by Nickels, Worrell, and Bousman (2010b:230-232), site 41BP792 consists of an open campsite approximately 100 m to the north of Dogwood Branch Creek (see Figure 5-2). It lies below a surface that gently slopes from approximately 134-137 m (440-450 ft.) AMSL (see Figure 5-1). The site is located on an open area of low shrubs, tall grasses, and small forbs surrounded by pines, oaks, junipers, and mesquites (Figure 5-15). Site 41BP792 lies on Crockett Series soils (CsC2), a deep, well-drained, loam, found on gentle to strong slopes (see Figure 5-4; Baker 1979) and is on Tertiary age (ECB) Wilcox Group on the Calvert Bluff Formation (see Figure 5-3; Barnes 1974).

### Background

Thirteen specimens of debitage and six pieces of burned rock were recovered from seven of the eight shovel tests dug on the site (Nickels, Worrell, and Bousman 2010b:Table 7-80). The artifacts were recorded between Levels 1 and 6 (0-60 cmbs). A possible mano made of sandstone was recorded on the surface near the southern boundary of the site. The shovel tests appeared to reveal relatively undisturbed deposits. In addition, burned rock was recovered in ST P16 suggesting that an intact hearth may be present. Nickels, Worrell, and Bousman (2010b) recommended the excavation of two 1-x-1 m units near ST 3 to evaluate the NRHP eligibility status of 41BP792.

*Figure 5-15. Site vegetation on 41BP792 at time of initial CAR visit.*

### Work Conducted

After reviewing the previous work (Nickels, Worrell, and Bousman 2010b), CAR visited the site in early October 2012 to set up four 1-x-1 m test units (TUs 1-4). These units were excavated on October 27 and 28, 2012. Figure 5-16 presents the location of the CAS determined site boundaries, site datum, previously excavated CAS shovel tests, the surface artifact, and the four CAR excavated units near highlighted shovel tests (Nickels, Worrell, and Bousman 2010b).

Test Unit 1 lies approximately 39 m west of the site datum and is between positive STs 1 and N5. Four levels of soil (0.4 $m^3$) were excavated to a termination depth of 60 cmbd at the start of red clayey deposits. Artifacts were present in Levels 2 through 4 (30-60 cmbd). Located roughly 30 m north-northwest of the site datum and 6 m from both positive STs 2 and 3, TU 2 was excavated to 63 cmbd (0.47 $m^3$). Cultural materials were present in five of six levels: Levels 1 through 4 (16-50 cmbd) and Level 6 (60-63 cmbd). Test Unit 3 was placed 2 m to the southeast of ST 3 and 25 m north of the site datum. Six levels of sediment were removed (0.61 $m^3$) with the unit terminating at the commencement of red clayey deposits at 72 cmbd. Artifacts were present in all levels except Level 5 (50-60 cmbd). The final unit excavated, TU 4, was located approximately 33 m to the northeast of the site datum and 5 m west of positive ST P16 (see Figure 5-16). The unit, excavated to 58 cmbd in five levels, removed 0.47 $m^3$ of sediment. Artifacts were recovered from each level.

CAR excavated 1.95 $m^3$ of sediment at this site. Sand in the upper portions of the site was primarily a light brown to pinkish gray in color (7.5YR 6/2, 6/4), shifting to a light gray and pale brown sand with increasing silt at lower depths (10YR 7/2, 7/3).

Fifty-nine pieces of debitage were recovered from the excavation. One core and seven chipped stone tools, including a single projectile point, were also recovered. No features were designated. Fifteen pieces of burned rock and heat spalls were recovered from this site. The weight of these items was roughly 0.3 kg. A small amount of charcoal was recovered from the excavation.

## 41BP801

Site 41BP801, initially recorded by Nickels, Worrell, and Bousman (2010b:239-240), is an open campsite located on a bladed, hummocky, partly wooded surface. Located alongside

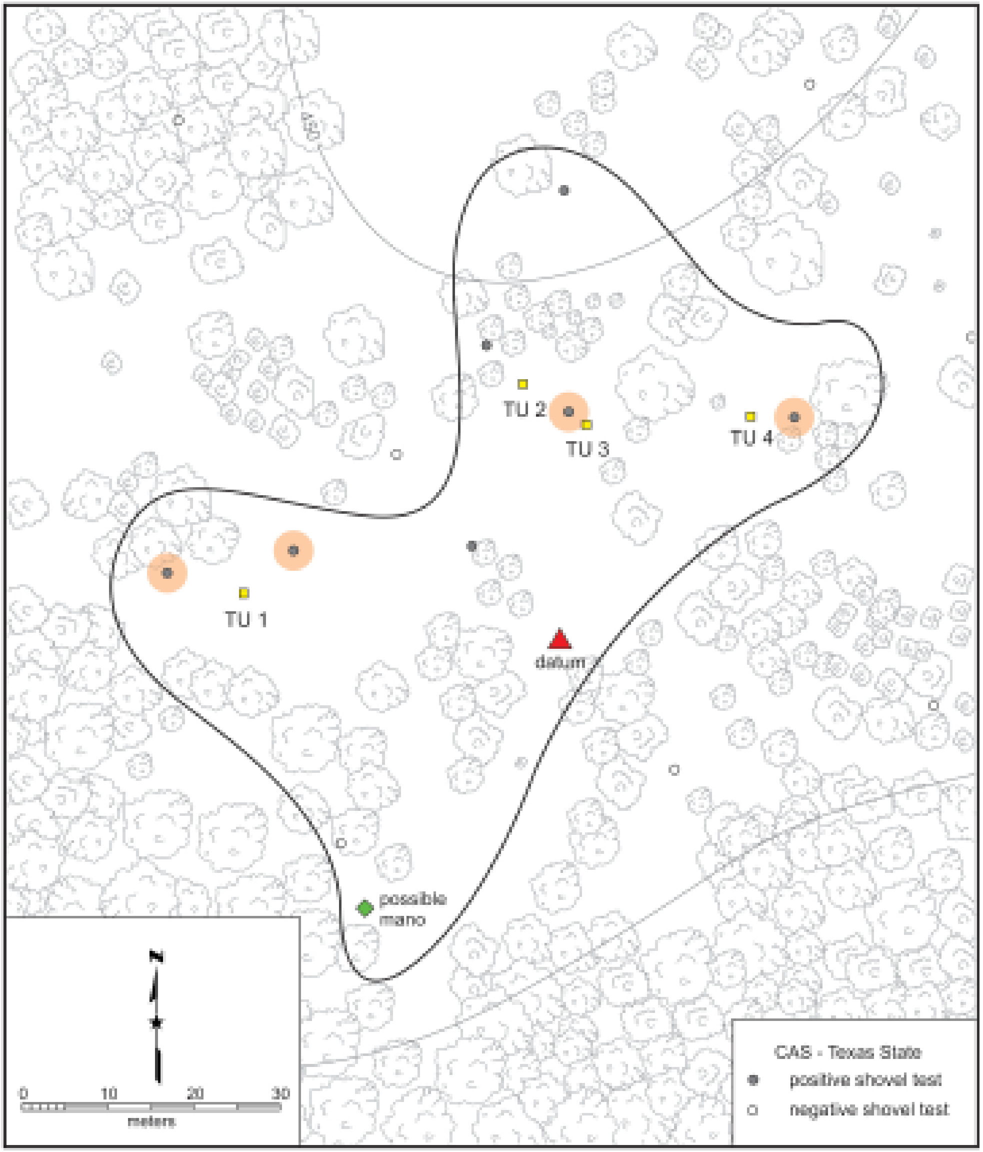


*Figure 5-16. Map of 41BP792 showing previous work (CAS-Texas State) and excavation units (CAR). High-density shovel tests identified by light orange circles.*

a facility road and barbed wire fence, the site sits on a gentle slope of approximately 143-148 m (470-487 ft.) AMSL (see Figure 5-1). It is approximately 170 m to the southwest of an intermittent tributary of Dogwood Branch Creek (see Figure 5-2). The vegetation consists of scatters of oaks and mesquites, with grapevines, poison ivy, bull nettles, and various grasses (Figure 5-17). The soil on 41BP801 primarily consists of Silsted loamy fine sand (SkC), a gently sloping soil located on uplands. The northwest corner of the site lies on Axtell fine sandy loam (AfC2), which are deep, well-drained, loamy soils found on eroded ridgetops and side slopes (see Figure 5-4; Baker 1979). As described for all the previous sites, 41BP801 is within the Tertiary age (ECB) Wilcox Group on the Calvert Bluff Formation (see Figure 5-3).

## Background

Nickels, Worrell, and Bousman (2010b) excavated four shovel tests on site 41BP801. Prehistoric artifacts, distributed between Levels 1 and 7 (0-70 cmbs), were recovered from three of the four shovel tests. A single surface artifact, a piece of debitage, was recorded. All but two flakes from the 48 prehistoric items recovered from the shovel tests came from ST I2. Distributed throughout 70 cm of excavated sediment, 20 burned rocks and 26 specimens of debitage were recovered from ST I2 (Nickels, Worrell, and Bousman 2010b:Table 7-86). Although evidence of disturbance was encountered in three of the shovel tests, ST I2 contained only sandy loam and cultural materials. Based

*Figure 5-17. Site vegetation on 41BP801 at time of initial CAR visit.*

on the results from this shovel test, Nickels, Worrell, and Bousman (2010b) suggested that the southern portion of 41BP801 around ST I2 is relatively undisturbed and may contain subsurface intact hearths. To evaluate the NRHP eligibility status of the site, Nickels, Worrell, and Bousman (2010b) recommended the excavation of two 1-x-1 m units in the area adjacent to ST I2.

## Work Conducted

CAR initially visited the site in early October 2012. At that time, the original CAS datum was located, and four 1-x-1 m test units were laid out, designated TU 1 through TU 4. The units were excavated from November 2-4, 2012. Based on the results from these initial units, CAR archaeologists excavated one additional 1-x-1 m unit (TU 5) to further explore the artifact density. Figure 5-18 shows the location of these five CAR excavated units, along with the CAS determined site boundaries, site datum, and previously excavated CAS shovel tests (Nickels, Worrell, and Bousman 2010b). The high-density shovel test (ST I2) that guided the initial unit placement is highlighted on the figure.

All five test units were located on the southern portion of the site approximately 112-131 m southeast of the site datum. Test Unit 1 was approximately 9 m northwest of positive ST I2. The unit, excavated to 63 cmbd in six levels, removed 0.48 $m^3$ of sediment. Artifacts were recovered from Levels 2 through 6 (20-63 cmbd). Lying about 5 m east of ST I2, TU 2 was excavated to a termination of 80 cmbd at the beginning of red clayey deposits. Cultural material was found throughout the seven levels of removed sediments (0.7 $m^3$). Located 11 m to the east of ST I2, TU 3 was excavated to the commencement of red clay at 78 cmbd (0.66 $m^3$). Artifacts were recovered from all seven levels of the unit. Test Unit 4 was placed approximately 5 m to the southwest of ST I2. The unit terminated at red clayey sediments at 49 cmbd. Cultural material was found in all five levels. A total of 0.4 $m^3$ of sediment was removed from the unit. The last of the five units was placed 3 m to the north of TU 1. Five levels of sediment (0.39 $m^3$) were excavated to a termination depth of 56 cmbd. Artifacts were recorded in each level.

CAR excavated 2.63 $m^3$ of sediment at this site. Sands at the site were brown to dark brown in color (7.5YR 4/2, 5/2), trending toward a light brown (7.5YR 6/4) and pinkish gray (7.5YR 6/2) with depth. Clay was encountered at the bottom of the excavation units.

Five hundred and nineteen pieces of debitage were recovered from the site. A single core, one piece of ground stone, one quartzite hammer stone, and six retouched items were also recovered. No features were recorded, although burned rock and heat spalls were common. CAR recovered 372 pieces of burned rock weighing roughly 4.9 kg. A small amount of bone and charcoal were also recovered from 41BP801.

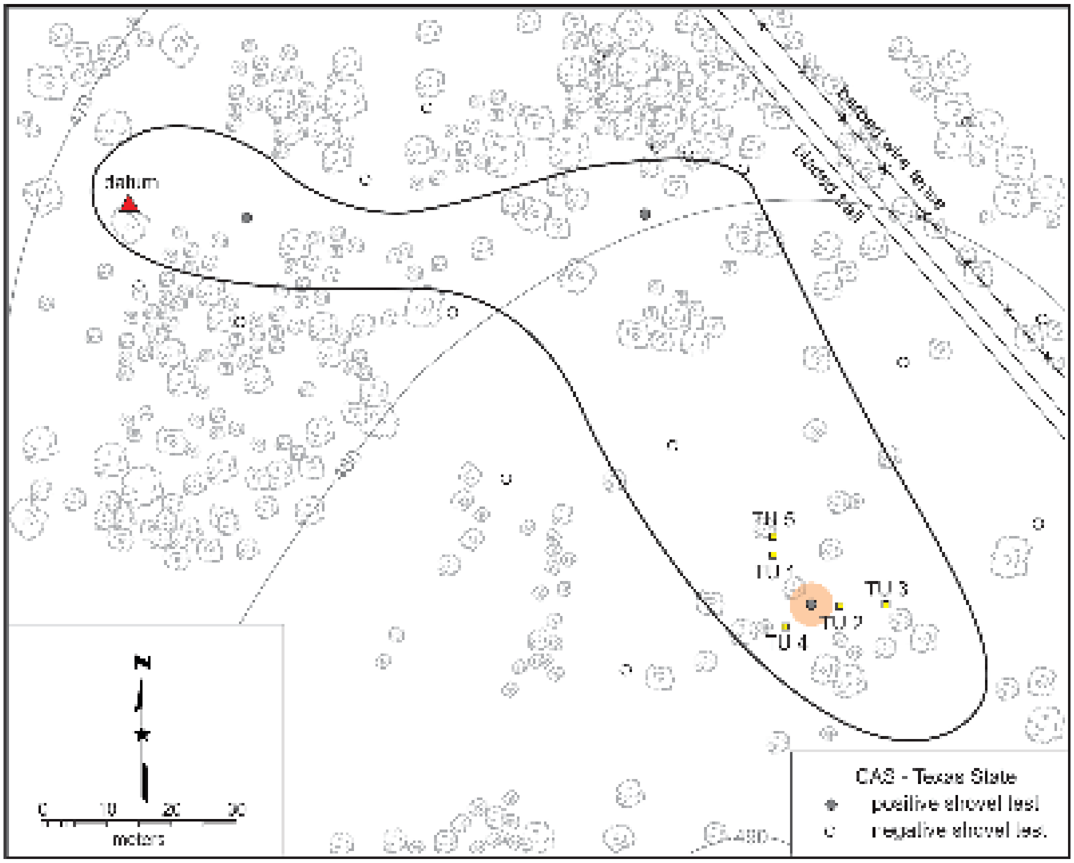


*Figure 5-18. Map of 41BP801 showing previous work (CAS-Texas State) and excavation units (CAR). High-density shovel test identified by light orange circle.*

# 41BP802

Initially recorded by Nickels, Worrell, and Bousman (2010b:241-242), site 41BP802 consists of an open campsite sitting below a surface that gently slopes from approximately 142-145 m (465-475 ft.) AMSL (see Figure 5-1). It is located approximately 20 m to the north of Harris Creek (see Figure 5-2). Site 41BP802 lies on Tertiary age (ECB) Wilcox Group on the Calvert Bluff Formation (see Figure 5-3; Barnes 1974) and on Tabor fine sandy loam (TfB), which are made up of gently sloping, deep loams found on broad uplands (see Figure 5-4; Baker 1979). The site is located on a previously cleared field surrounded by scatters of oaks and junipers. The relatively open field contains low shrubs, forbs, tall grasses, and grapevines (Figure 5-19). Push piles and depressions suggest previous disturbances to the surface. A jeep road, running northeast-southwest, bordering the eastern edge of a firing range lies roughly 100 m to the west.

## Background

Eight pieces of burned rock, 16 specimens of debitage, one core tool, and four pieces of red ocher were recovered from nine of the 10 shovel tests excavated on the site (Nickels, Worrell, and Bousman 2010b:Table 7-87). Nickels, Worrell, and Bousman (2010b) suggest that the artifacts, recorded from Levels 1-8 (0-80 cmbs), make up a cultural zone from 40 to 80 cmbs across the site. No material was documented on the surface. Because the disturbance noted previously is limited to the upper portion of the site and does not affect the zone of subsurface cultural material, Nickels, Worrell, and Bousman (2010b) recommended the excavation of three 1-x-1 m units near STs 6, 8, and O10 to evaluate the research potential of the site.

## Work Conducted

After reviewing the results and recommendations of Nickels, Worrell, and Bousman (2010b) for site 41BP802, CAR initially visited the project area in early October of 2012. At that time, the original CAS datum was located, and four 1-x-1 m test units, designated TU 1 through TU 4, were laid out. These units were excavated from November 6-8, 2012. Based on the results from these initial units, two additional 1-x-1 m units (TUs 5 and 6) were begun on November 27 and completed on November 29. The location of the test units, site datum, CAS determined site boundaries, and

*Figure 5-19. Site vegetation on 41BP802 at time of initial CAR visit.*

previously excavated CAS shovel tests are shown on Figure 5-20 (Nickels, Worrell, and Bousman 2010b). The three high-density CAS shovel tests (STs 6, 8, and O10) that guided the initial unit placement are identified with light orange highlights on the figure.

Test Unit 1 was located approximately 27 m southeast of the site datum and about 4 m northwest of positive ST 2. The unit, excavated to 82 cmbd in eight levels, removed 0.65 $m^3$ of sediment. Artifacts were only recovered from Level 2 (20-30 cmbd). Placed roughly 33 m to the northeast of the site datum, TU 2 is about 17 m southwest of positive ST 6. Twelve levels of soil (1.2 $m^3$) were excavated to a termination of 130 cmbd at the beginning of red clayey deposits. Cultural material was found throughout the unit. Located 86 m to the northeast of the site datum, TU 3 was excavated to the commencement of red clay at 108 cmbd (0.98 $m^3$). The unit was placed to the immediate east of positive ST O10. Artifacts were recovered from Levels 2 through 10 (20-108 cmbd), and a burned rock feature was recorded in Level 5 (54-61 cmbd). The last of the initial units excavated on 41BP802, TU 4 was located approximately 119 m to the northeast of the site datum and 4 m northeast of positive ST 8. The unit, excavated to 100 cmbd in nine levels, removed 0.9 $m^3$ of sediment. Artifacts were recovered from Levels 1 and 2 (10-30 cmbd), Levels 4 and 5 (40-60 cmbd), and Level 9 (90-100 cmbd).

Two additional test units (TUs 5 and 6) were excavated near TUs 3 and 2, respectively (see Figure 5-20). Test Unit 5 was placed adjacent to the north side of TU 3 to explore a burned rock feature recorded in the unit's middle levels. Sediments, consisting of six levels (0.5 $m^3$), were excavated to the base of the feature (55 cmbd). Cultural material was found in Levels 2 through 6 (11-55 cmbd). Test Unit 6 was placed adjacent to the west wall of TU 2 to explore a concentration of burned rock in its lower levels. The unit, excavated to 127 cmbd in 10 levels, removed 0.99 $m^3$ of sediment. Artifacts were recovered from each level.

CAR excavated 5.22 $m^3$ of sediments on site 41BP802. Upper sediment at the site was primarily brown, pinkish gray, and grayish brown (7.5YR 6/2, 5/2, 10YR 5/2, 5/3) sands. The lower levels trended towards brown and pinkish gray (7.5YR 7/2, 5/2) sands. As with most sites, there was an increase in silt towards the bottom of most excavations, with clay underlying the sand sheet.

Two hundred and sixteen pieces of debitage, six lithic tools, including one broken projectile point, and one overshot removal that may be from rejuvenating a small core were recovered from 41BP801. In addition, 226 heat spalls and burned rock items weighting 6.4 kg were collected. The

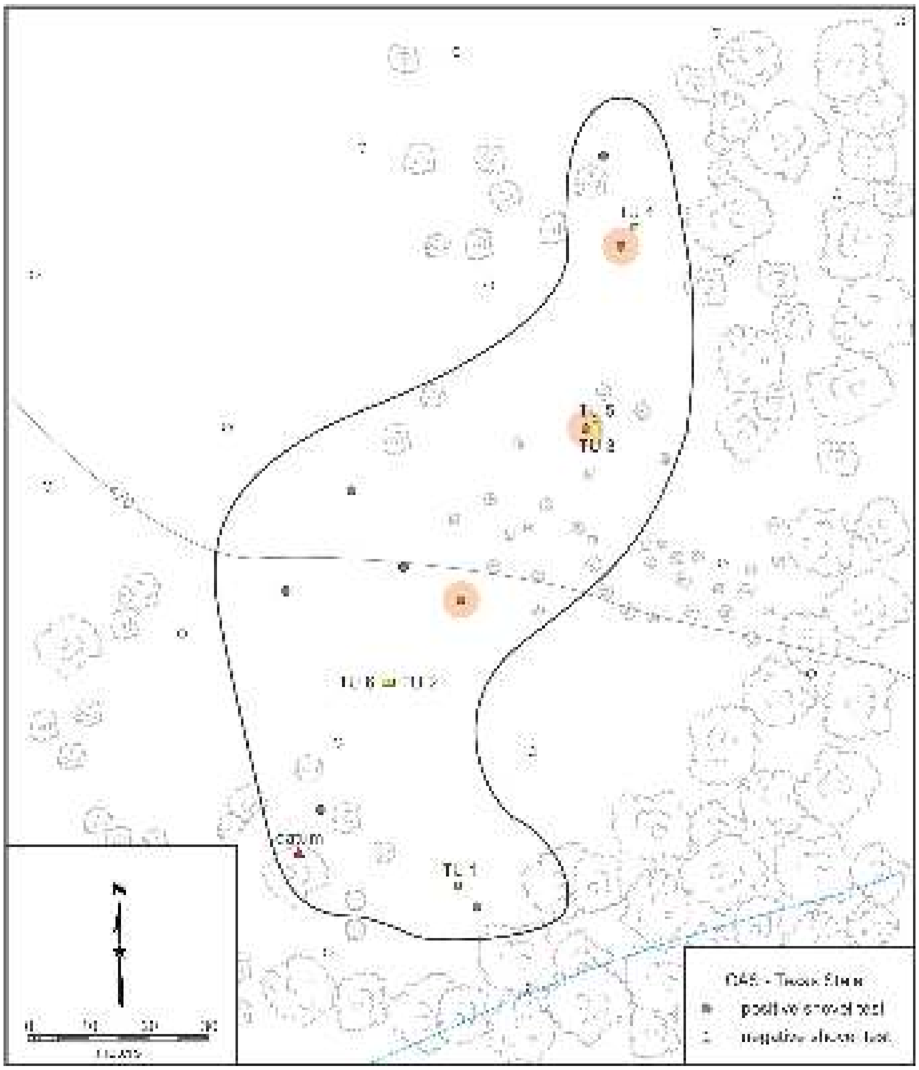


*Figure 5-20. Map of 41BP802 showing previous work (CAS-Texas State) and excavation units (CAR). High-density shovel tests identified by light orange circles.*

burned rock total included rock from a single feature (Feature 1) recovered from TU 3. Charcoal and bone were also recovered from this site.

## Summary

This chapter has provided site-specific background on the eight sites investigated on this project. That background included data on vegetation, soils, geology, and landform. Previous work was summarized, and details on the work accomplished by the CAR as part of the current project at these eight sites were provided. CAR archaeologists excavated 41 test units and screened 25.65 m$^3$ of deposits. Table 5-1 summarizes these efforts, including reasons for unit termination. Note that in 33 of the 36 units of the initial seven sites, the underlying clay was reached, and units were terminated at that point. In one unit, on 41BP778, excavation ceased at Level 7 because of a lack of artifacts. Test Unit 7 at 41BP776 was stopped at the bottom of the fourth level because of time constraints, as well as the presence of hematite deposits that had been encountered just above clay at this same site. Finally, TU 5 on 41BP802 was terminated at Level 6 after defining Feature 1 at that site (see Table 5-1). At 41BP487, units were terminated when artifacts significantly declined and due to time constraints.

The work recovered variable quantities of chipped stone debitage, burned rock, and lithic tools at these sites. Small quantities of charcoal, bone, and burned clay also were collected from several locations. Three features, consisting of two burned rock features at 41BP487 and one burned rock feature at 41BP802, were identified during the course of the project.

Table 5-1. Summary of Testing Effort

| Site | Test Unit | Number of Levels | Volume (m³) | Termination |
|---|---|---|---|---|
| 41BP487 | 1 | 9 | 0.87 | time constraints |
| 41BP487 | 2 | 7 | 0.67 | time constraints |
| 41BP487 | 3 | 10 | 0.94 | time constraints |
| 41BP487 | 4 | 9 | 0.91 | time constraints |
| 41BP487 | 5 | 10 | 0.97 | time constraints |
| 41BP776 | 1 | 11 | 1.06 | clay |
| 41BP776 | 2 | 7 | 0.54 | clay |
| 41BP776 | 3 | 5 | 0.37 | clay |
| 41BP776 | 4 | 3 | 0.16 | clay |
| 41BP776 | 5 | 7 | 0.62 | clay |
| 41BP776 | 6 | 4 | 0.33 | clay |
| 41BP776 | 7 | 4 | 0.4 | time constraints |
| 41BP778 | 1 | 7 | 0.7 | no artifacts |
| 41BP778 | 2 | 9 | 0.88 | clay |
| 41BP778 | 3 | 5 | 0.45 | clay |
| 41BP780 | 1 | 6 | 0.57 | clay |
| 41BP780 | 2 | 8 | 0.8 | clay |
| 41BP780 | 3 | 12 | 1.04 | clay |
| 41BP780 | 4 | 10 | 0.96 | clay |
| 41BP782 | 1 | 4 | 0.41 | clay |
| 41BP782 | 2 | 3 | 0.3 | clay |
| 41BP782 | 3 | 3 | 0.29 | clay |
| 41BP782 | 4 | 4 | 0.31 | clay |
| 41BP782 | 5 | 4 | 0.36 | clay |
| 41BP782 | 6 | 7 | 0.66 | clay |
| 41BP782 | 7 | 3 | 0.28 | clay |
| 41BP792 | 1 | 4 | 0.4 | clay |
| 41BP792 | 2 | 6 | 0.47 | clay |
| 41BP792 | 3 | 6 | 0.61 | clay |
| 41BP792 | 4 | 5 | 0.47 | clay |
| 41BP801 | 1 | 6 | 0.48 | clay |
| 41BP801 | 2 | 7 | 0.7 | clay |
| 41BP801 | 3 | 7 | 0.66 | clay |
| 41BP801 | 4 | 5 | 0.4 | clay |
| 41BP801 | 5 | 5 | 0.39 | clay |
| 41BP802 | 1 | 8 | 0.65 | clay |
| 41BP802 | 2 | 12 | 1.2 | clay |
| 41BP802 | 3 | 10 | 0.98 | clay |
| 41BP802 | 4 | 9 | 0.9 | clay |
| 41BP802 | 5 | 6 | 0.5 | Feature 1 |
| 41BP802 | 6 | 10 | 0.99 | clay |

# Chapter 6: Chronological Research Issues

*Raymond Mauldin, Cynthia Munoz, and Leonard Kemp*

This is the first of three chapters that explore the implications of the results of the work conducted by CAR summarized in the previous chapter in terms of NRHP eligibility. Here, chronological research issues are considered. Specifically, chronological placement, or the potential for chronological placement, of the assemblages associated with the seven sites tested at Camp Swift is considered. Chronological placement is a critical component of most prehistoric NRHP determinations. While it is possible that certain prehistoric sites without established chronologies could still make significant contributions to the understanding of prehistory, the lack of a firm temporal placement dramatically restricts the problems that can be addressed using the data recovered from a site.

## Chronology and Chronological Potential at the Tested Sites

As discussed in Chapter 3, the chronology, or pattern of use at Camp Swift, is not well developed. Most assemblages lack any chronological indicators. For the Camp Swift sites in the current investigation, chronology is discussed at both a relative and an absolute scale. Relative temporal placement is primarily through a consideration of the types and overall distribution of tools that researchers suggest are temporally diagnostic. In addition, CAR suggests that sites with higher density of material or with a high variety of tools have more potential for future investigations to recover diagnostic artifacts. Only site 41BP487 (Features 1 and 2) and 41BP802 (Feature 1) returned radiocarbon dates.

### 41BP487

Two unidentifiable point fragments were found at 41BP487, TU 2 Level 5 (50-60 cmbd), and associated with Feature 1, a burned rock feature. A charred nutshell was recovered from a soil matrix sample extracted from Feature 1 and dated by accelerator mass spectrometry (AMS) technique. Figure 6-1 presents the date acquired from that feature, which calibrates to AD 428 to 619 (D-AMS-019862; see Appendix A) a transitional period at the end of the Late Archaic Period.

A small, burned rock feature was found in TU 4 at 76-88 cmbd. A charred nutshell was recovered from this level and dated by AMS technique. Figure 6-2 presents that date, which calibrates to AD 861 to 988 (D-AMS 019863; see Appendix A), placing it in the early Late Prehistoric. In addition, a core tool was found at 43 cmbd in TU 4. Three other lithic tools, all edge-modified flakes, were found in TUs 1 (1) and 5 (2). While the debitage recovery was relatively low, with only 27 items per cubic meter of excavation, the two dated features, the presence of charcoal and charred nutshell noted in the previous chapter, and tools suggest the presence of additional features and possibly diagnostic tools.

### 41BP776

A single diagnostic projectile point was recovered from this site. Shown in Figure 6-3, the point is broken, not finished, and likely represents a reworking of an earlier form. The base is consistent with a Late Prehistoric arrow point, probably a Perdiz form (see Turner and Hester 1999:227; Suhm and Jelks 1962:283-284). The point was recovered from TU 2, Level 2. As discussed in subsequent chapters, this location is associated with an increase in debitage and a jump in magnetic susceptibility, both of which suggest a stable surface. The site has a variety of tools and cores, and it has the second highest density of debitage on the project, with just over 125 items recovered per cubic meter of excavation. These densities and the recovered tool variety suggest that the recovery of additional diagnostic tools from the site is likely.

No charcoal was recovered from the site, and the three features assigned in the field were subsequently determined to not reflect prehistoric heating events. However, both burned rock and heat spalls are present at several locations in low-to-moderate quantities, providing direct evidence of burning. Thus, there is some potential that charcoal may be present that could provide radiocarbon dates. Finally, note that no bone or other organics that could potentially provide an absolute date were recovered.

### 41BP778

As summarized in the previous chapter, the site had the lowest recovery on the project, with a density of only 4.4 items of debitage per cubic meter of excavation. In addition, no tools, no features, and no burned rock were recovered. No charcoal was observed in the investigation, and no bone or other organic material that could be dated were recovered. At present, this site cannot be placed chronologically. The pattern of recovery at the site suggests that there is little or no potential that future investigations will recover any chronological information.

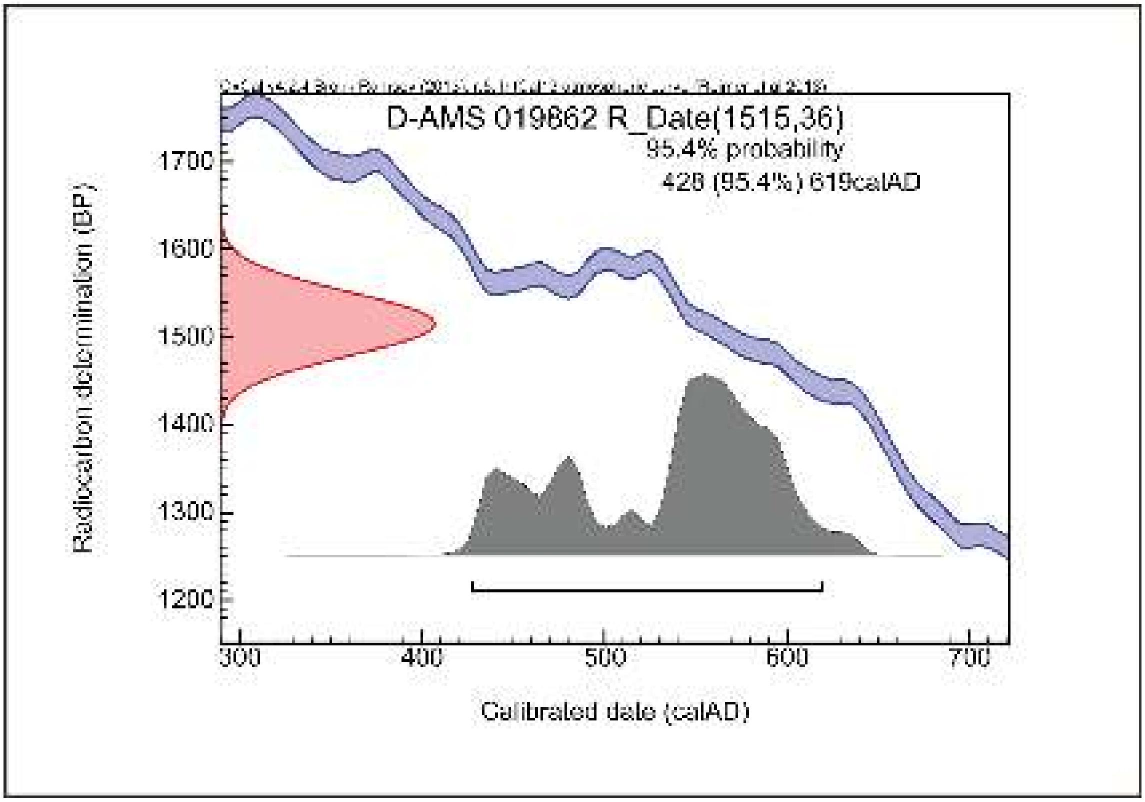


*Figure 6-1. Calibrated date from Feature 1 at 41BP487.*

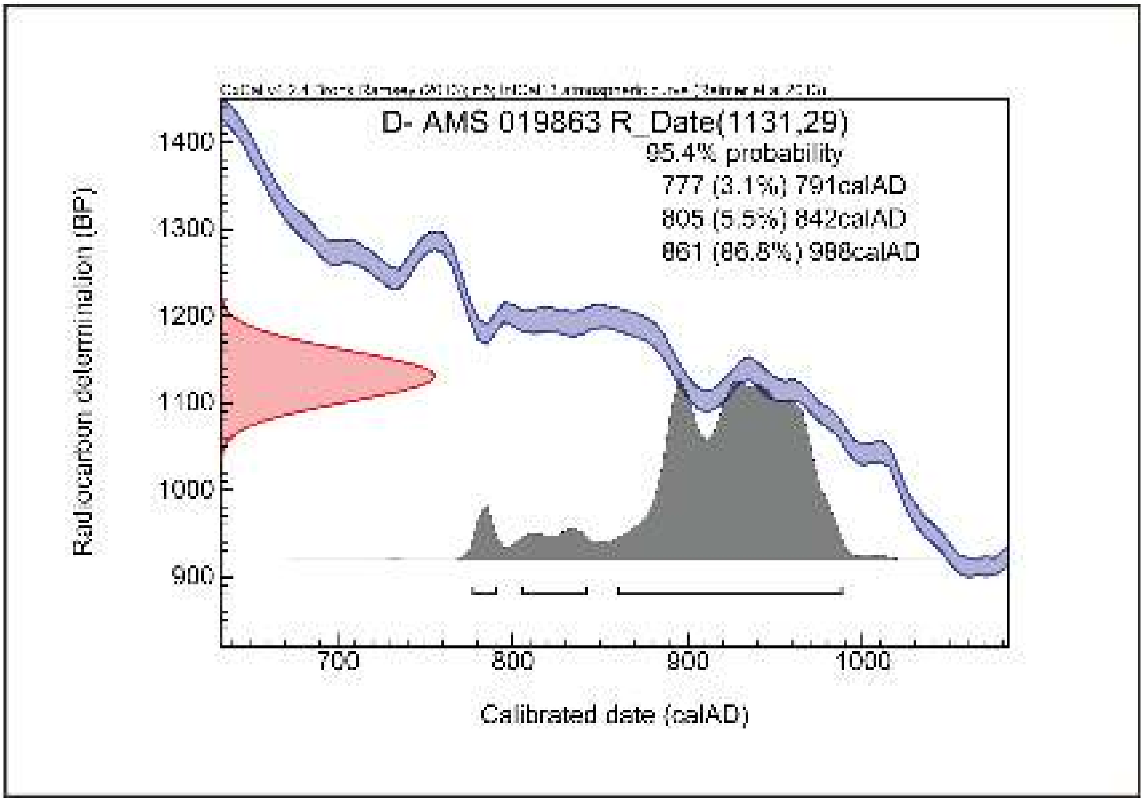


*Figure 6-2. Calibrated date from Feature 2 at 41BP487.*

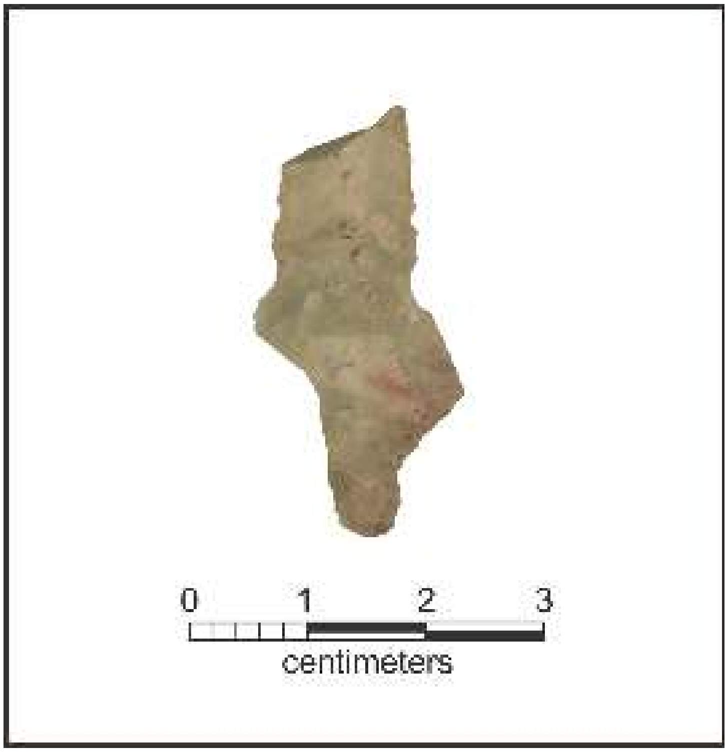


*Figure 6-3. Perdiz-like projectile point recovered from 41BP776.*

## 41BP780

No temporally diagnostic artifacts were recovered from the testing at site 41BP780. A low density of debitage, one piece of which was utilized/retouched, and a core were recovered. Consequently, the likelihood of recovering diagnostic tools with additional work seems low.

Charcoal was recovered from the site at a depth of 60-70 cmbd in TU 2. At the site level, no features were recorded. Although burned rock and heat spalls were noted, the overall number is less than 10 items. The recovered charcoal could provide a radiocarbon date, though artifact recovery is minimal at this location. Finally, note that no bone or other organics that could potentially provide additional absolute dates were recovered.

## 41BP782

Two projectile point stem fragments were recovered from the work at 41BP782 (Figure 6-4). Both of these are consistent with arrow point stems, suggesting a likely Late Prehistoric date range (Turner and Hester 1999; Turner et al. 2011). The point stems were recovered from TU 6, Level 4, on the far northeastern section of the site and TU 7, Level 3, on the western section (see Figure 5-14). In addition to the two stem fragments, four other tools were recovered, along with three cores. The site had a moderate density of debitage, with 66.3 items recovered per cubic meter of excavation. These densities, the recovered tool variety, and the arrow point stems suggest that the recovery of additional diagnostics tools from the site is likely.

No charcoal, bone, or other organics that could be radiocarbon dated were recovered. No features were identified. Burned rock and heat spalls were present at several locations, providing direct evidence of burning, though the overall frequency is less than 30 items. CAR suggests that additional work at this site would have a low potential for the acquisition of charcoal or bone that could provide absolute dates.

## 41BP792

At this site, excavations recovered a single projectile point (Figure 6-5). The point is consistent with a Late Prehistoric arrow point, probably a Scallorn (see Suhm and Jelks 1962:285-286; Turner and Hester 1999:230). The point was recovered from TU 2, Level 4. Debitage recovery was low, with 30.3 items per cubic meter of excavation. In addition to the single projectile point, six other tools and a core were recovered. In spite of the low recovery of debitage, the tool variety and the arrow point suggest that the recovery of additional diagnostics tools at 41BP792 is likely.

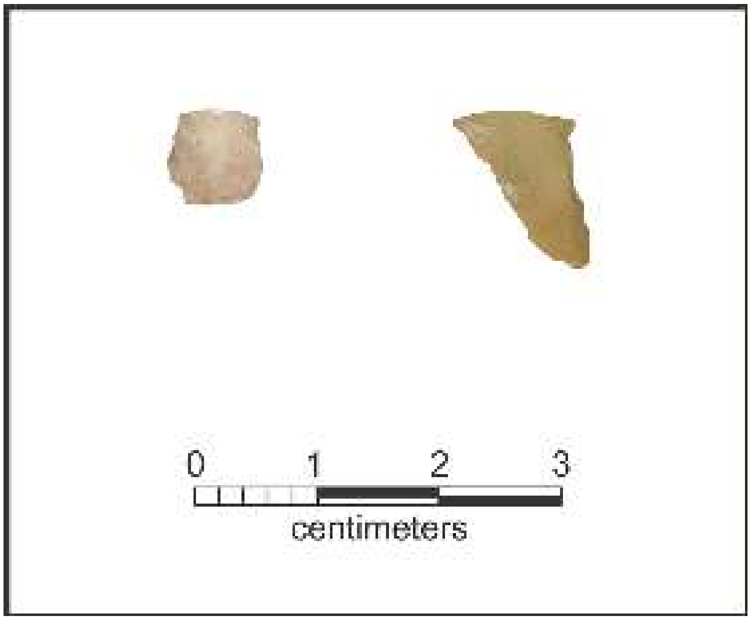


*Figure 6-4. Two arrow point stems collected from 41BP782.*

*Figure 6-5. A Scallorn-like projectile point collected from 41BP792.*

Charcoal was recovered from the site in TU 1 at 40-50 cmbd. Burned rock and heat spalls were present at several locations, though overall numbers total less than 20 items. No bone was recovered. The presence of charcoal and evidence of heating at other locations suggest that additional recovery of datable material may be possible.

## 41BP801

No temporally diagnostic artifacts were recovered from testing at site 41BP801. Five chipped stone tools, two cores, a hammer stone, and a ground stone fragment were recovered. Debitage was common, with a density of 197.3 items per cubic meter of excavation. This was the highest on the current project. Given these patterns of tool diversity and the high frequency of debitage, it is likely that additional work will recover temporally diagnostic artifacts from this site.

Charcoal is present in TU 3 at 30-40 cmbd and in TU 4 at 40-50 cmbd. Bone was recovered from TU 4 at 30-40 cmbd. Burned rock and heat spalls are common at the site, with over 370 items recorded. All excavation units returned burned rock and heat spalls, with the lowest total noted in TU 2 with 44 pieces. Burned rock is most common in TU 4, with over 100 items present. This is the same unit with bone and charcoal present. As discussed in the subsequent chapter, this unit is associated with several increases in magnetic susceptibility suggesting a stable surface. The presence of charcoal and bone and the widespread evidence of heating at this site indicate that additional recovery of datable material is likely.

## 41BP802

A single projectile point was recovered from this site, though the stem is broken (Figure 6-6). The dart point is broad, triangular, and corner-notched with prominent descending barbs. It could fit with several different types (e.g., Ellis, Marcos). The overall form likely dates to something in the Late Archaic (see Turner and Hester 1999; Turner et al. 2011). This point was recovered from TU 2, Level 10. In addition to the point, a broken biface and four retouched items were noted for 41BP802. An overshot flake, probably related to rejuvenation of a small blade core or biface, was also recovered from this site. Debitage densities are moderate, with 41.4 items per cubic meter of excavated sediment. Given these density and tool patterns, temporally diagnostic tools are likely to be recovered with additional excavation.

Charcoal was recovered from TU 6 at 60-70 cmbd, and bone was recovered from TU 3 at 30-40 cmbd. In addition, charcoal was recovered from a matrix sample extracted from Feature 1, a small, burned rock feature located in TUs 3 and 5 at 50-55 cmbd. Figure 6-7 presents the date acquired from that feature, which calibrates to AD 900 to 990 (Beta-362162; see Appendix A) in the Late Prehistoric. A series of OSL samples were collected from the immediate vicinity of the feature. However, these were not run given the less expensive alternative of radiocarbon dating. Burned rock and heat spalls were common on the site, with over 225 pieces recorded outside of Feature 1. There is, then, potential that charcoal may be present from other areas of the site that may provide additional absolute dates.

*Figure 6-6. A Late Archaic-like dart point collected from 41BP802.*

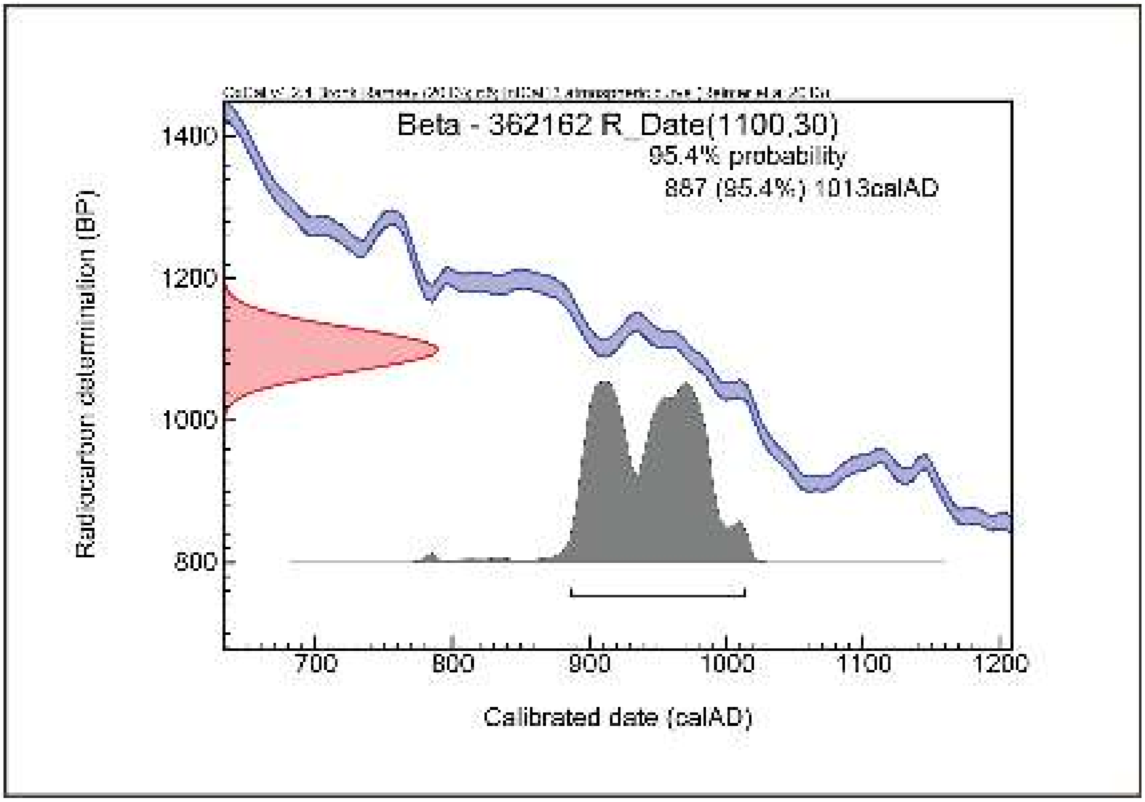


*Figure 6-7. Calibrated date from Feature 1 at 41BP802.*

## Summary

At a general level, Late Prehistoric occupations were documented at five sites, one site with a transitional Late Archaic to early Late Prehistoric occupation and a Late Archaic occupation at a single site. In addition, there is no evidence of material dating prior to the Late Archaic. This pattern is strikingly similar to that seen for Camp Swift as a whole, which was presented in Chapter 3.

The addition of three radiocarbon dates associated with features brings the total number of dates on Camp Swift to 16 (see Bousman et al. 2010). While this is a surprisingly small number, summed probability distributions of the dates in OxCAL (see Bronk Ramsey 2009) show a similar pattern (Figure 6-8) as the diagnostic artifacts. The data suggest no use of the region for roughly 3,800 years (6555-2755 BP), with intensive use from about 1250 to about 350 BP.

Table 6-1 summarizes the chronological data present on the eight individual sites investigated here. An overall assessment of the chronological potential is included in the table. Diagnostic artifacts associated with temporal periods were recovered from 41BP776, 41BP782, 41BP792, and 41BP802. Sites 41BP487, 41BP778, 41BP780, and 41BP801 lacked any temporally diagnostic artifacts. Charcoal was recovered from 41BP487, 41BP780, 41BP792, 41BP801, and 41BP802. Bone was recovered from sites 41BP487, 41BP801, and 41BP802. Only site 41BP778 lacked diagnostic tools, charcoal, or bone. Site 41BP778 had low debitage frequencies, no tools, and no evidence of burning. Clearly, there is little potential that a chronological framework can be developed for this site. Site 41BP780 is similar, though charcoal was recovered from a single context. Sites 41BP776, 41BP782, 41BP792, and 41BP801 are in the middle, with some chronological evidence and moderate-to-high potential for the development of chronology. At the other end of the continuum are sites 41BP487 and 41BP802. Site 41BP487 returned two dates. One represents a transitional date from the Late Archaic to the early Late Prehistoric, and the other dates to the early Late Prehistoric. Charcoal was common, and preserved bone was also found. At 41BP802, a Late Prehistoric radiocarbon date from charcoal associated with a feature was acquired. Both charcoal and bone are present from other contexts. A single Late Archaic point was recovered from a different context, and there is extensive evidence of heating at multiple locations within this site.

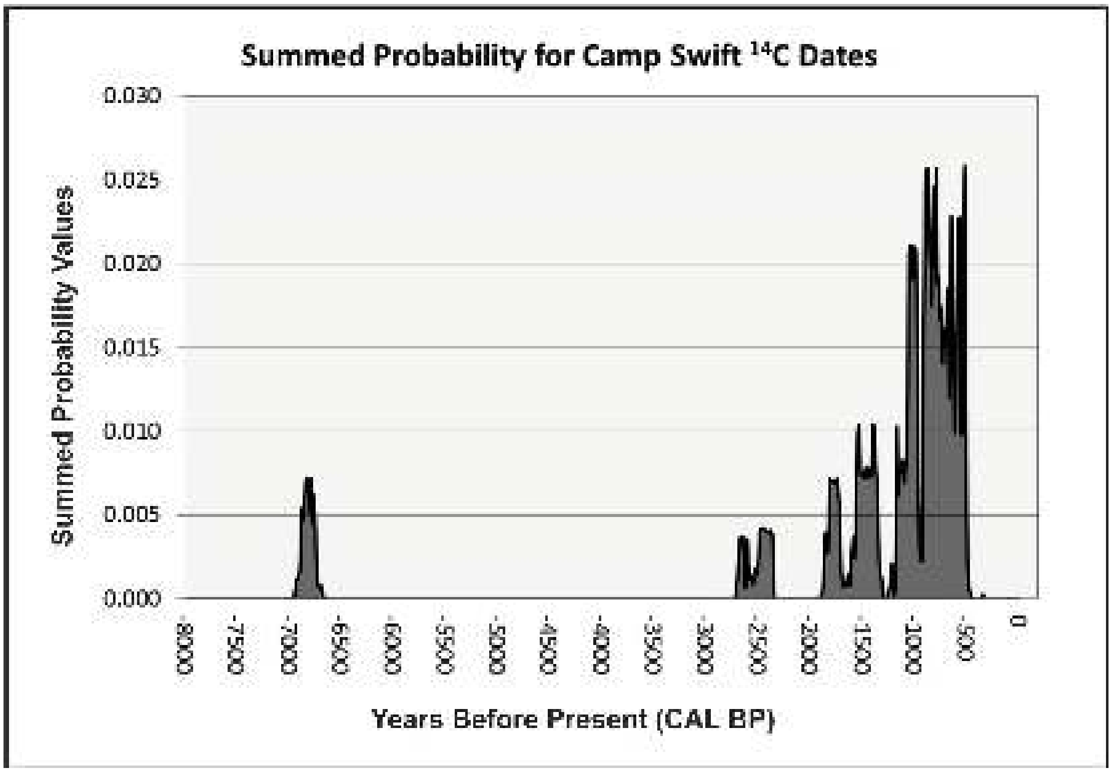


*Figure 6-8. Summed probability for all 16 radiocarbon dates from Camp Swift. Data are from Bousman et al. 2010:373 and the current investigation. While sample size limits conclusions, the pattern broadly matches the distribution of temporally diagnostic tools.*

Table 6-1. Chronological Potential of Tested Sites

| **Site** | **Features Present** | **Diagnostics** | **Debitage Density (#/$m^3$ excavated)** | **Lithic Tools and Cores (#)** | **Charcoal** | **Bone** | **Burned Rock/ Heat Spalls (#; wt)** | **Burned Rock (wt/$m^3$ excavated)** | **Radiocarbon Date** | **Chronological Potential** |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP487 | Yes | None | 27.06 | 7 | Yes | Yes | 168; 4.4 kg | 1.01 kg | Late Archaic and Late Prehistoric | Very High |
| 41BP776 | No | Late Prehistoric | 125.3 | 15 | No | No | 98; 1.8 kg | 0.51 kg | None | High |
| 41BP778 | No | None | 4.4 | 0 | No | No | 0; 0 | 0 | None | Very Low |
| 41BP780 | No | None | 13.4 | 2 | Yes | No | 6; 0.1 kg | 0.02 kg | None | Low |
| 41BP782 | No | Late Prehistoric | 66.3 | 9 | No | No | 29; 0.8 kg | 0.3 kg | None | Moderate |
| 41BP792 | No | Late Prehistoric | 30.3 | 8 | Yes | No | 15; 0.3 kg | 0.15 kg | None | Moderate |
| 41BP801 | No | None | 197.3 | 8 | Yes | Yes | 372; 4.9 kg | 1.8 kg | None | High |
| 41BP802 | Yes | Late Archaic | 41.4 | 7 | Yes | Yes | 226; 6.4 kg | 1.2 kg | Late Prehistoric | Very High |

This page intentionally left blank.

# Chapter 7: Site Integrity

*Leonard Kemp, Raymond Mauldin, Cynthia Munoz, and Cyndi Dickey*

The second research issue concerns site integrity. Viewing the integrity of archaeological sites as existing along a continuum, at one extreme are concentrations of artifacts and features that have not been impacted by any post-depositional disturbances. At the other end of the continuum are concentrations of artifacts and burned rocks that lack all context and are associated by non-human factors. All sites are somewhere along that continuum. In terms of integrity, all prehistoric sites have been impacted by post-depositional disturbance to some degree. As archaeological deposits and their spatial relationships are increasingly degraded by a variety of processes, their potential to contribute information to the resolution of significant archaeological questions for a region is decreased. Consequently, an assessment of the integrity of deposits is a critical initial step to determine whether or not an archaeological site warrants additional investigation and/or protection.

Camp Swift is located in a geologic and archaeological area known as the Sandy Mantle, a designation that has implications for the integrity of any archaeological site within Camp Swift. The Sandy Mantle is located in the Atlantic Plain Province stretching north from the Yucatan Peninsula along the Gulf and Atlantic Coasts north to Cape Cod. In Texas, it is characterized by unconsolidated quartzite sands (A and E horizon) over a sandy clay/clay (Bt horizon). There is ongoing debate as to how the Sandy Mantle was formed and, by implication, the integrity of cultural material found in this landform (Ahr et al. 2012; Boulter et al. 2006; Bruseth and Martin 2001; Frederick and Bateman 2001; Frederick et al. 2002).

Two conflicting models are proposed for the origins of the Sandy Mantle in Texas: the pedogenic model and the geomorphic model (Figure 7-1). The pedogenic model hypothesizes that the Sandy Mantle and the argillic horizons are derived in situ from weathering Tertiary bedrock (Ahr et al. 2012; Bruseth and Martin 2001). Based on this hypothesis, the archaeological landscape is pre-Holocene in origin with artifacts moving downwards via bioturbation. This viewpoint assumes that artifacts are in secondary contexts with limited to no research or preservation value. The geomorphic model

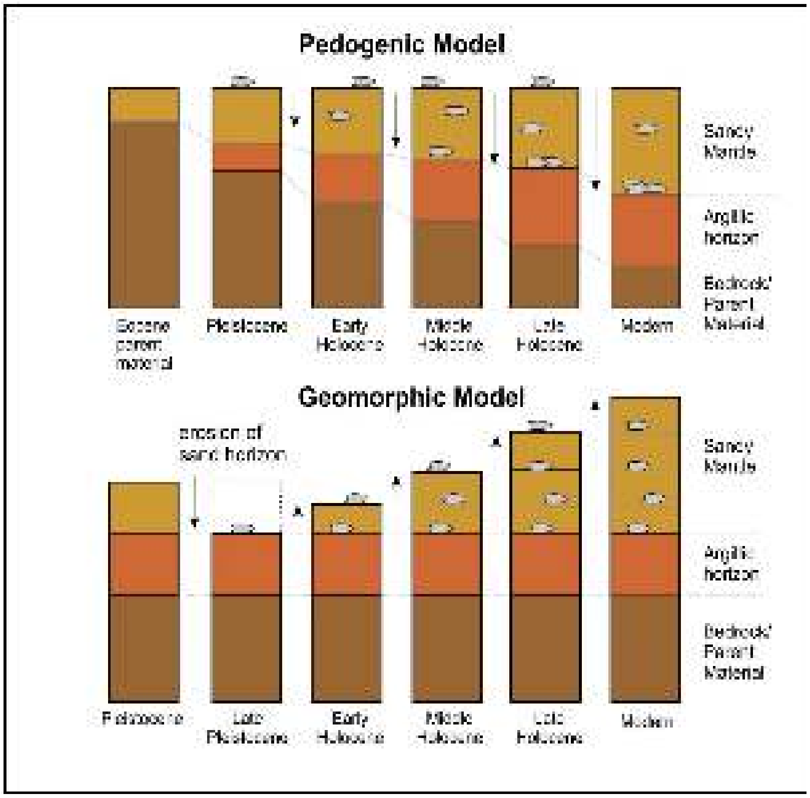


*Figure 7-1. Models of pedogenic and geomorphic formation process for the Texas Sandy Mantle (Ahr et al. 2012).*

proposes that the Sandy Mantle is Holocene age eolian and colluvial deposits overlaying the developed argillic horizon. If that scenario is accurate then archaeological deposits may be within a datable stratified context and may have both research and preservation value (Bousman and Fields 1991; Frederick and Bateman 2001). As Ahr et al. (2012) suggest, the geomorphology is complex, and multiple formation processes are likely to be present, including eolian and colluvial processes at discrete and local scales. These could potentially preserve aspects of the archaeological record.

This chapter's discussion of the investigations at Camp Swift with the observation that an assemblage resulting from a given occupation is, with few exceptions, deposited on a single surface. Subsequently, a variety of biological and geomorphic processes impact that surface. Sometimes, these processes preserve those relationships, such as in the context of rapid, gentle sediment deposition, thereby preserving the assemblage integrity. Sometimes these processes disrupt those relationships, such as through erosion and bioturbaton, and degrade that integrity (see Rapp and Hill 2006:100-102; Waters 1992:185-213, 306-316). To assess the integrity of these archaeological assemblages at the eight Camp Swift sites investigated here, CAR focused on the presence of animal burrows and roots, the distribution and characteristics of artifacts and features, and the patterning in magnetic soil susceptibility (MSS) values that help characterize landscape stability and disturbance (see Dearing 1999).

## Assessing Bioturbation

The degree of bioturbation is a function of the type, depth, and rate of disturbance that could potentially mix or segregate artifacts (Frederick et al. 2002). Sandy sediments, dunes, and sand sheets are generally more prone to bioturbation due to the unconsolidated nature of sand deposits (Boulter et al. 2006; Frederick et al. 2002). Two primary processes, the disruption of archaeological material by plants (floralturbation) and the disruption by animals (faunalturbation), can significantly influence site integrity. Multiple reports discuss the impact of worms, insects, fossorial mammals, and plants that can mix and/or unearth archaeological deposits (e.g., Butzer 1982; Schiffer 1987; Wood and Johnson 1978). In terms of plant impacts, Waters (1992:306-316) identifies tree falls, root decay and collapse, root growth, and tree sway as processes that can move or loosen sediment, alter artifact location, and disrupt feature patterns.

At Camp Swift, there is evidence for both floralturbation and faunalturbation. Roots were present in all test units excavated on the project. The roots ranged in size from less than 1 cm to over 20 cm in diameter (Figure 7-2). Though often concentrated in the upper 20-30 cm of a profile (Figure 7-2, left), there were several instances of substantial roots occurring at depth (Figure 7-2, right).

While the impacts of plants are difficult to directly document for a given assemblage, evidence for impacts by burrowing animals can be directly observed in many cases. In Bastrop County, pocket gophers (*Geomys attwateri*) are the most likely animal to cause significant damage to an archaeological site by burrowing (Davis and Schmidly 1997). Pocket gophers are abundant in grassland settings, burrowing from 15-30 cm below the surface (Bocek 1986). Without rapid burial of a surface to a depth exceeding 30 cm, pocket gophers and other rodents can have a significant impact on the landscape. This can be seen in Figure 7-3, which shows rodent burrows after a recent controlled burn at Camp Swift.

Small rodent mounds were observed on several of the surfaces of the eight sites investigated here, and collapsed rodent burrows, filled with loose sediment, were common,

*Figure 7-2. Finished test units showing the presence of roots in the wall of TU 3 at 41BP802 (left) and a large vertical root in TU 3 at 41BP487 (right).*

especially in the upper 30 cm of excavation units. Excavations of TU 1 at site 41BP802 provided an opportunity to observe the potential impacts of rodent burrowing on sediment integrity. Prior to breaking for lunch, a unit was completed and prepared for photography, including the placement of a photo board on the unit floor (Figure 7-4, left). Upon return 30 minutes later, a rodent(s) had displaced a significant amount of sediment (Figure 7-4, right). Active animal burrows were not commonly observed, but evidence of recent burrows were present at 41BP487, 41BP782, 41BP801, and 41BP802.

## Artifact and Feature Distributions

The presence of roots and rodent activity certainly has impacted the distribution of archaeological material on the eight sites tested by CAR. Roots, and especially rodents, will differentially move smaller items. While rodents can, on occasion, push small items up in a profile while cleaning out a tunnel, most items will, over the long run, descend. Larger items are undercut, and as rodent tunnels collapse or as roots decay leaving voids, items will tend to move down in a profile (Bocek 1986). The distribution, number, and size of items, then, provide additional information on the integrity of assemblages at a site level. Here the degree of bioturbation is explored by looking directly at these attributes, as well as the presence of recognizable features. The analysis focuses on five sites that have more than 100 pieces of chipped stone debitage (41BP487, 41BP776, 41BP782, 41BP801, and 41BP802), eliminating 41BP778 (n=9), 41BP780 (n=45), and 41BP792 (n=59) from consideration in this section. The 100-item threshold reduces impacts associated with small sample sizes.

Figure 7-3. Rodent burrows after a controlled burn at Camp Swift.

Figure 7-4. Before and after photos showing the results of burrowing by unknown rodent(s).

The initial goal of this investigation is to look for peaks in distributions that might reflect occupations with some integrity, as well as to identify areas that lacked those peaks. Traditionally, comparisons would be made within a given unit, or across units, grouping material by levels below the surface or by comparable stratigraphic zones. However, surface elevations vary significantly within a site, and there is no visible stratigraphy within the sands. In this section, materials are compared by reference to the underlying clay. It is suspected that at a landscape level the contours of the surface reflect the contours of the underlying clay. Yet at smaller scales, such as within a site, there may be substantial variation. For example, on site 41BP792, the relative elevation of the ground surface on the seven excavated units varied between 100.49 m (TU 5) and 99.44 m (TU 2). The underlying clay level also varied at these locations, with clay encountered at 36 cmbs (100.13 m) in TU 5 and 30 cmbs (99.14 m) in TU 2. However, in TU 6, clay was located at a relative elevation of 99.71 m, 65 cmbs, while in TU 7, clay was present at 100 m, only 26 cmbs. Given these apparent differences in depositional history across a site, the clay level will be used as a baseline, and the distribution of materials for site units will be calculated by grouping material by their distance above the clay. Artifact material will not penetrate the clay. High levels of turbation over time should result in artifacts increasingly concentrated near or on the clay surface. At one extreme, all of an assemblage would be concentrated at the clay level, forming a single peak on that surface. At the other extreme, if a single site assemblage had not been bioturbated, one isolated peak, some distance above the clay, should be present. Most assemblages will fall between these extreme cases.

At site 41BP487, the depth of the clay horizon is unknown. However, for the four other sites with samples sizes above 100 items, clay was encountered in most excavated units. Figure 7-5 presents distributional data on the number of items recovered within levels above the clay at each of these four sites. Sites 41BP776 and 41BP782 display roughly similar patterns with the highest numbers of chipped stone in the levels immediately above the clay (Figure 7-5). It is probable, then, that artifacts are descending through the sand profile, likely as a function of bioturbation, and increasingly resting on or near the clay base. This pattern is similar to what is suggested by the pedogenic model in Figure 7-1 and suggests that some of these artifacts are in secondary contexts and have low integrity. The patterns at sites 41BP801 and 41BP802 are more complicated. At 41BP801 there is a peak in the middle of the profile, with lower artifact frequency at depth. The distributional data suggest that in this case some level of integrity may be present at this site. The 41BP802 patterns shows three distinctive peaks located in the upper, middle, and lower portions of the overall site profile, with some material recovered near the clay base. The distributional data at 41BP802 suggests multiple occupations, again with some integrity remaining.

As referenced earlier, none of the five units excavated at 41BP487 encountered the clay horizon, and when probed at the final level, it appears that sand continues for at least another 30 cm. Prochnow (2001) estimated that the clay horizon could be as deep as 2.5 m below the surface at locations adjacent to Big Sandy Creek. Site 41BP487 (Figure 7-6) exhibits a different pattern from the other four sites with an increase in chipped stone in the middle and then a slight decrease followed by an increase in the lower excavation levels. This pattern may suggest that there may be periods of stability, one in the lower level and the second in the middle of the profile, though it is difficult to interpret in the context of the current discussion as the depth to clay is not known.

As suggested previously (see Bocek 1986), size sorting in artifacts may be present as rodents undercut larger items, causing them to move down a sand dominated profile, while rodents may push up smaller items as they clean or dig tunnels. Because the clay layer should not be subject to extensive tunnel or root impacts, over time larger items should be differentially present at that clay layer if deposits were extensively turbated. To consider this possibility for the four sites with clay data, the focus is on artifact area rather than maximum length or weight. Area was calculated from photographs using SigmaScan© Pro (version 5.0) and is reported here as square mm. As with earlier figures in this section, material is plotted above the clay layer.

Figure 7-7 considers the distribution of artifact area for debitage in sites 41BP776 and 41BP778, the two sites that had similar distribution data in the previous section (see Figure 7-5). While there are certainly larger items in the upper deposits at both sites, those individual items with the greatest area are located on the clay layer. Overall, larger items tend to be deeper in the profile. This is consistent with the expectations for deposits that have been subject to high levels of bioturbation.

Figure 7-8 depicts the distribution of artifact area for debitage at the two remaining sites in Figure 7-5, 41BP801 and 41BP802. In these two cases, the larger items are not concentrated at the bottom. Though in the case of 41BP802, the distribution is trending in that direction. Overall, the distribution of larger items does not conform to the expectations for deposits that have been subject to significant amounts of bioturbation.

For those sites with adequate sample size, the patterns of artifact distribution and the overall area of debitage relative

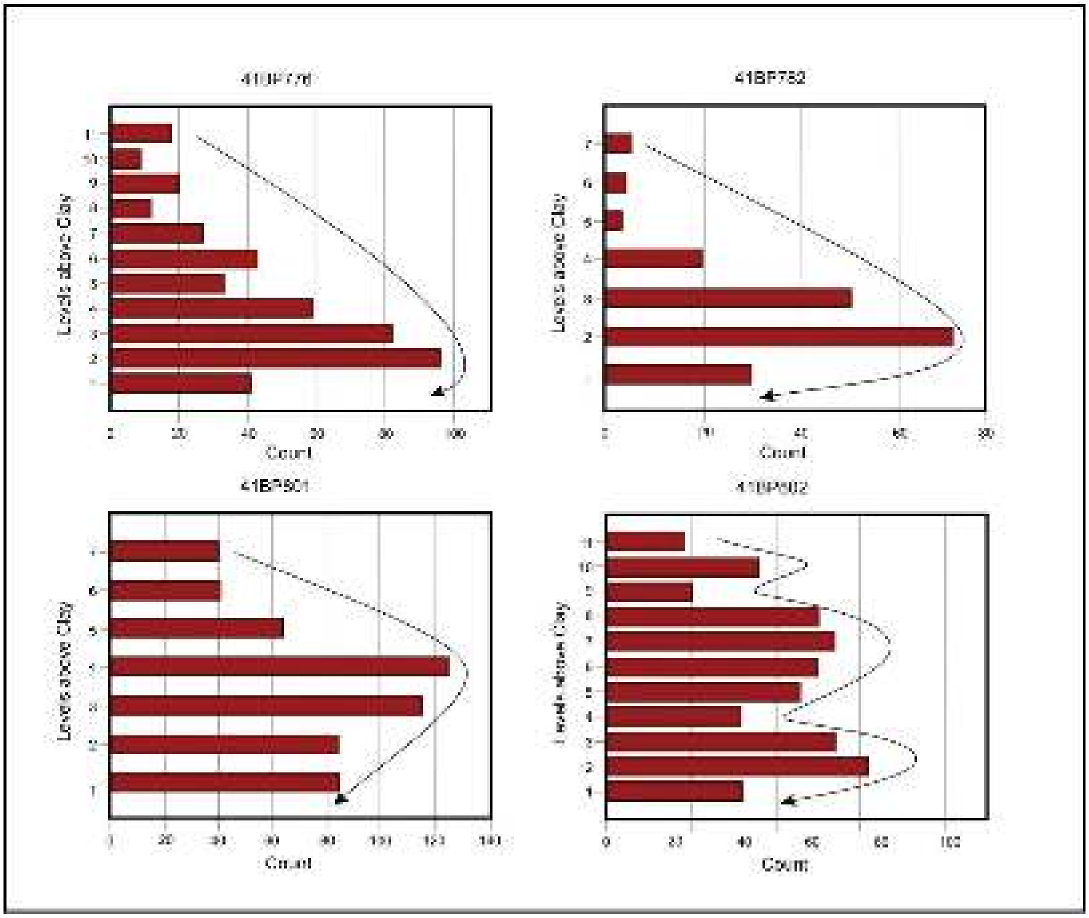


Figure 7-5. Distribution of chipped stone debitage at 41BP776, 41BP782, 41BP801, and 41BP802. Two patterns are suggested. In the first, artifacts cluster at the units near the clay at 41BP776 and 41BP782. The other pattern suggests some degree of integrity where a peak is shown mid-profile (41BP801) or in the case of 41BP802 where several peaks are represented through the profile above the clay base.

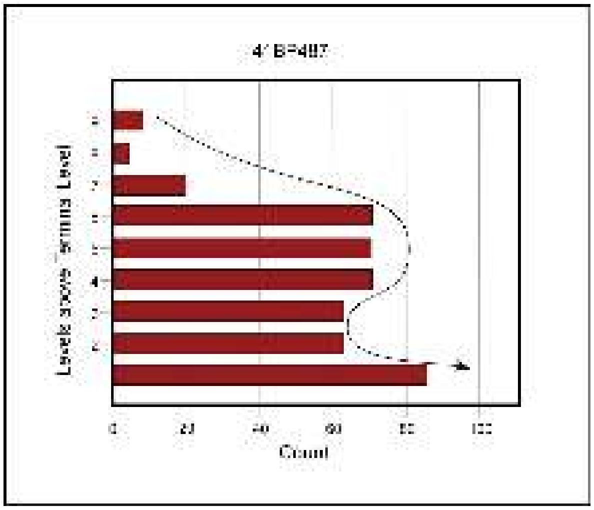


Figure 7-6. Artifact distribution at 41BP487 shows two patterns. One in which artifacts are found in mid-profile, and the other where artifacts are found towards the bottom of the unit. The depth to clay is not known at this site.

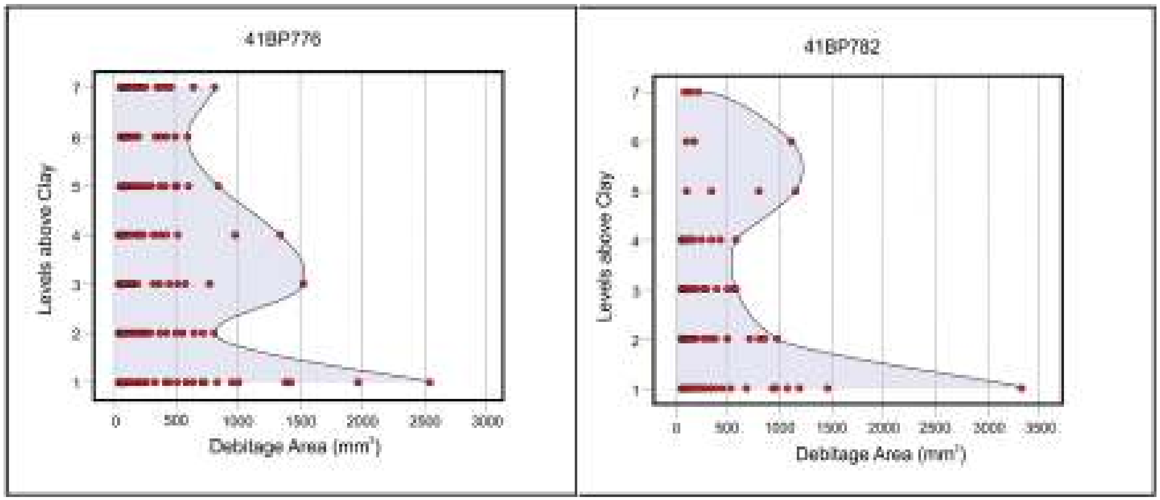


*Figure 7-7. The distribution of debitage area (mm²) by levels above clay at sites 41BP776 and 41BP782. Note that items with the largest area are resting on the clay at both sites.*

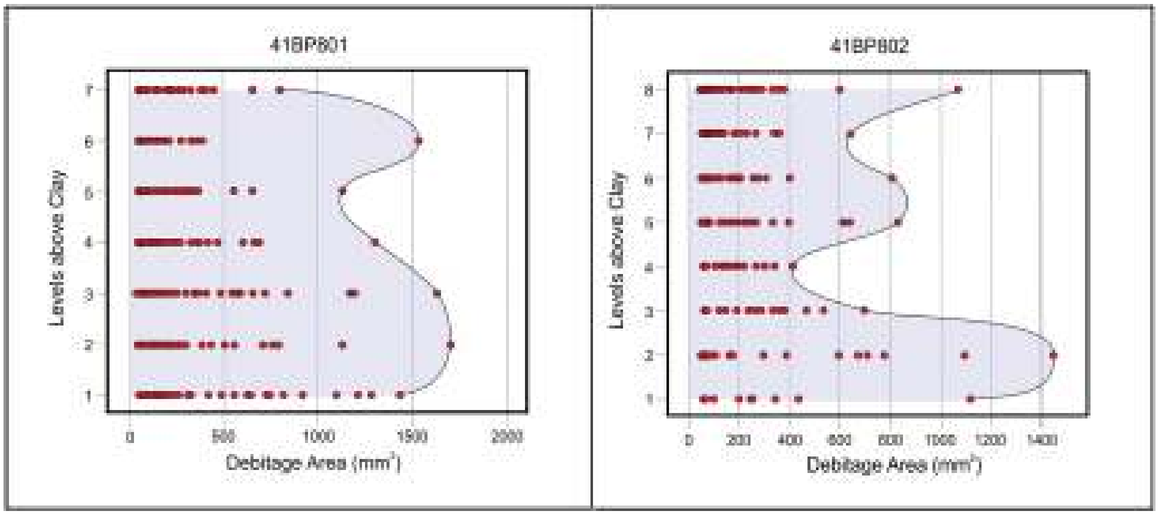


*Figure 7-8. The distribution of debitage area (mm²) by levels above clay at sites 41BP801 and 41BP802. Note that the items with the largest area are above the clay layer at both sites.*

to the underlying clay layer suggests that bioturbation has significantly impacted artifact distributions at sites 41BP776 and 41BP782. Conversely, the evidence at 41BP801 and 41BP802 is ambiguous with regard to the impacts, as is the case with 41BP487 where the depth to clay is unknown. However, additional information on the distributional integrity of deposits at 41BP487, as well as 41BP802, is provided by the presence of recognizable thermal features at both sites.

For 41BP487, two features, designated 1 and 2, were present. Feature 1 (Figure 7-9) is a loose cluster of burned rock in TU 2. Discovered at 42 cmbd (27 cmbs), the feature extended down to 54 cmbd. The feature was roughly 80 cm across, consisted of 15 to 20 pieces of burned rock, and contained charcoal that dated to the end of the Late Archaic Period (see Chapter 6 and Appendix A). Excavators noted that rodent disturbance was present the top of the feature, though the level of rodent disturbance was not sufficient to significantly scatter the rocks. The feature has been degraded, but it clearly retains sufficient cohesion both to be recognized as a thermal feature and to supply a radiocarbon date.

Feature 2 at site 41BP487 was located in TU 4 between 76 and 88 cmbd (55 and 67 cmbs). The feature consists of a concentration of roughly four burned rocks and a burned lithic in a 30-x-10 cm pocket (Figure 7-10). Charcoal was collected from the area, though not directly from the feature outline, and produced a date of AD 777 to 988. No rodent or root disturbance was noted. It is unclear if the feature represents a hearth or a secondary disposal area of hearth contents. However, the fact that CAR was able to define the feature suggests that some level of integrity remains.

*Figure 7-9. Feature 1, a scatter of burned rock located approximately 27-39 cmbs in TU 2. Charcoal in the feature dated to the end of the Late Archaic (AD 428-619).*

*Figure 7-10. Feature 2 at 41BP487. Found in TU 4, the feature is located roughly 55-67 cmbs. A radiocarbon date for this level yielded a Late Prehistoric date.*

Figure 7-11 shows the dense, coherent clustering of burned rock clearly defining Feature 1 on 41BP802. The burned rock feature is roughly 50 cmbs and about 40 cm above the clay. Root disturbance is present. However, the tight clustering of over 40 pieces of burned quartzite, as well as data on magnetic susceptibility to be discussed in the following section, clearly suggests that the feature, which has a radiocarbon date of AD 887-1013 (see Chapter 6 and Appendix A), is intact.

For the five sites with sufficient sample sizes of artifacts, the distributions and size characteristics of material, as well as the presence/absence of recognizable features, suggest that sites 41BP801, 41BP802, and 41BP487 all maintain deposits with sufficient integrity to investigate a variety of research topics. Conversely, the deposits at sites 41BP776 and 41BP782 appear to have been significantly degraded, limiting their research potential. In addition, these two sites, as well as those sites with smaller sample sizes of artifacts (41BP778, 41BP780, and 41BP792), lacked any recognizable concentrations of burned rock that could be defined as features. It is likely, then, that deposits at a sites 41BP776, 41BP778, 41BP780, 41BP782, and 41BP792 may have been significantly impacted by bioturbation.

## Magnetic Soil Susceptibility

The suggestions regarding integrity of deposits and features presented up to this point have been based on patterning at the site level. However, the history of the Sandy Mantle deposits at Camp Swift is complex, resulting in highly localized patterns of erosion, turbation, and deposition. It is possible, then, to have evidence of an intact feature (Figure 7-11) and artifact stability (Figures 7-5 and 7-8) at a site level, while also having evidence of extensive rodent disturbance (Figure 7-4) at the same site. The final consideration of the integrity of deposits uses patterning in Magnetic Soil Susceptibility (MSS) values and can provide evidence of more localized, intra-site level patterns. As outlined in Chapter 4, CAR routinely collected MSS samples from profiles following the excavation of individual test units. While interpretations of resulting patterns are complicated, in part by issues of equifinality, MSS patterns are useful in identifying stability and disturbance in Camp Swift sediments at the level of individual test units.

MSS values can be thought of as a measure of how easily a sediment sample can be magnetized. Values are primarily a function of the concentration and grain size of ferro and

*Figure 7-11. Feature 1, a cluster of burned rock in TU 5, at 41BP802. The feature was originally located in TU 3, to the south, and is radiocarbon dated to the Late Prehistoric.*

ferromagnetic minerals such as iron, magnetite, maghemite, and other iron oxides (Dearing 1999). As such, MSS values are tied to the mineralogy and geological history of an area. Beyond that, however, a variety of processes can shift MSS values in sediment. These processes include human activity, such as the creation of cooking fires or the deposition of organic debris on a surface (see Bellomo 1983; Crowther 2003; Mauldin and Figueroa 2006; McClean and Kean 1993), as well as geomorphic and pedogenic processes, including organic decay and microbial activity (see Crockford and Willett 2001; Reynolds and King 1995; Singer et al. 1996). While the following discussion of MSS values is framed in terms of geological rather than anthropogenic processes, the observed patterns are complex (e.g., Liu et al. 2004), especially in a potentially active geomorphic setting such as the sands of Camp Swift that have several thousand years of human use. While it is the case that the same MSS values can be produced by a variety of different processes that are difficult to clearly separate, the goal is to identify general patterns that have broad implications for site integrity.

As an initial step in pursuing that goal a review of several previous MSS studies, both at Camp Swift (e.g., Munoz 2012; Nickels 2005) and elsewhere in the region (e.g., Gose and Nickels 2001; Mauldin 2001), was initiated. Figure 7-12 plots four hypothetical patterns of MSS values down soil profiles that resulted from that review. The pattern in the upper left plot (A) is one that likely reflects consistent sediment deposition with recent stability, indicated by increased values just below the surface. Archaeological material could occur at various points along this profile. Consistent deposition below the current surface would suggest that at any given point the surface was not exposed for sufficient time to accumulate organic debris. Hypothetically, archaeological material in this setting could possess good integrity, though the density of material would be low. Plot B shows a similar situation but with indicators of two surfaces. The upper increase reflects the modern surface as in Plot A. The buried surface, probably around level eight or nine in the plot, would have high potential for archaeological material in good context, provided that the burial by the upper sediments was relatively rapid. Rapid burial would reduce the potential for overprinting by later occupations. Plot C presents a pattern that likely would be produced by extensive bioturbation, essentially diffusing any pattern and degrading any higher values. The integrity of archaeological material present along this profile would be suspect. The final plot (D) shows a pattern similar to ones seen in a small number of cases in this review. Extremely high values, usually indicated by a single sample, are present. Sometimes these occur at multiple locations along a profile. In the case of Camp Swift, it is likely that these values reflect the presence of small particles of iron oxides, such as hematite, in the individual sample. These particles have moderate-to-strong positive susceptibility (see Dearing 1999:36-38). A profile characterized by the pattern shown in Plot D may be

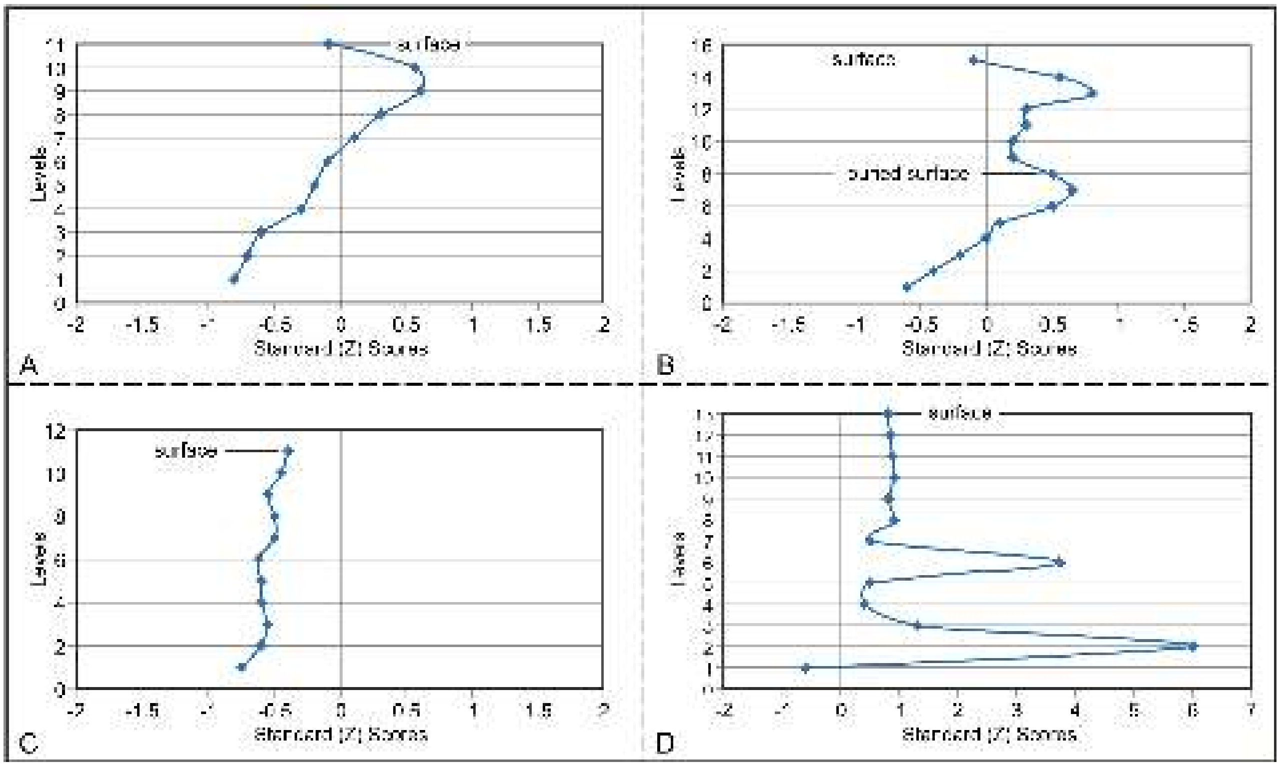


Figure 7-12. Four hypothetical patterns of MSS values.

the result of a series of erosional events where particles are concentrated through the removal of lighter sand particles, or the pattern may simply reflect the presence of these particles in the sediments. Iron oxide particles that are relatively common in some sediment at Camp Swift further complicate interpretations of some profiles. Note that the Figure 7-12 plots are idealized representations of specific patterns that generally can be tied to an interpretation. In reality, a given profile can have components of all of these, as well as several other patterns that are not easily interpreted. Nevertheless, MSS patterns can be used to potentially eliminate locations that have profiles that are similar to Plot C.

On the current project, 495 sediment samples were processed from 33 of the 41 units excavated on the eight sites. These were collected using procedures outlined in Chapter 4. Test Unit 6 at 41BP776 was not sampled, though profile samples were taken from an adjoining unit (TU 3). Similarly, TU 6 at 41BP802 was not sampled, but samples were collected from adjoining TU 2. Samples were not collected from TU 5 at site 41BP802 as this unit was terminated at the top of Feature 1. The adjoining unit (TU 3) was sampled at this location, as was the profile for that feature. For presentation and to facilitate comparisons, the MSS values of 391 samples collected from the seven sites located to the south of the facility were converted to standard scores (Z-scores), with an overall mean value of 0 and a standard deviation of 1. The Z-score conversion was tabulated separately for samples from site 41BP487, as this was located in the northern portion of Camp Swift and potentially reflected a different sediment history being located adjacent to Big Sandy Creek (see Chapters 2 and 5). The raw data and additional information on the 495 MSS samples used in the test unit discussions are presented in Appendix B. Below, the focus is on indicators of buried surfaces at depths below 20 cm (Figure 7-12, Plot B) and on evidence of extensive bioturbation (Figure 7-12, Plot C).

## 41BP487

MSS samples were taken from all five TUs excavated at 41BP487, with multiple sample profiles collected from samples taken from TU 2 and TU 4, both of which had features. Figure 7-13 presents the locations of all five TUs, as well as their resulting MSS values. The signatures of all five TUs are roughly similar, with decreasing values near the surface, a pattern consistent with rapid deposition, and several smaller peaks present at depth suggesting some periods of stability. Note that the high, single value near the bottom of TU 4 is consistent with the presence of iron oxide particles in a sample (see Figure 7-12, Plot D). This may also be the case in sample 4 near the bottom of TU 3, though the value is not extreme.

The four units located in the southwestern portion of the site (TUs 1, 2, 3, and 4) all seem to have two peaks, identified by red symbols, present in the mid-to-lower profile levels. The

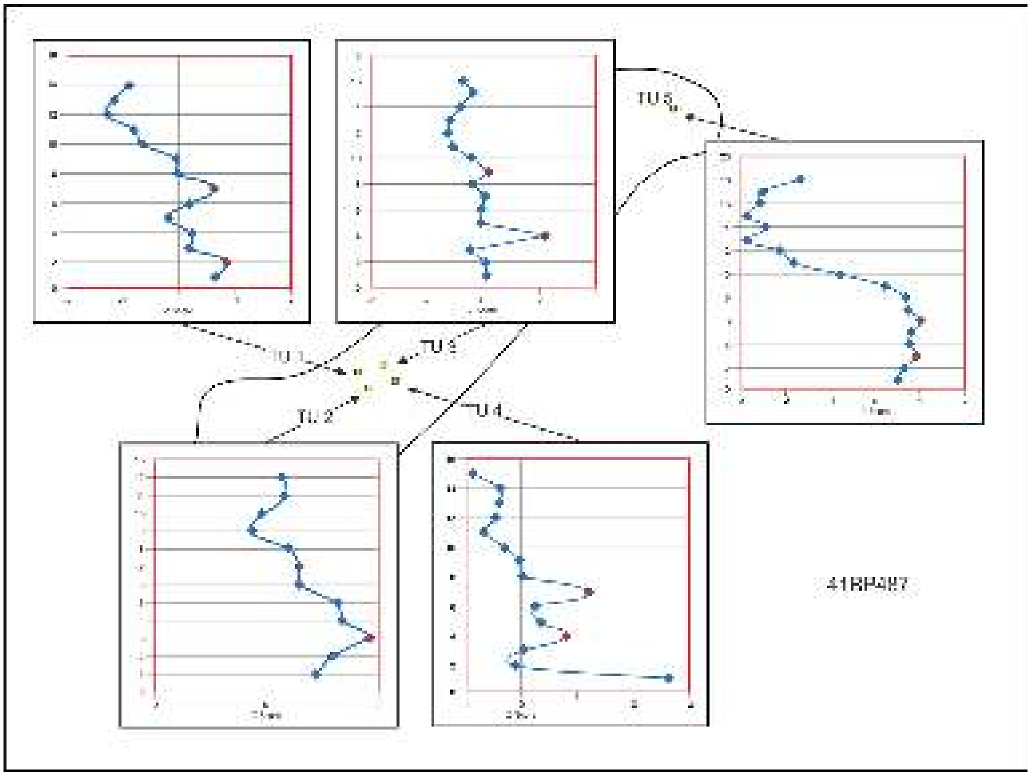


*Figure 7-13. MSS values and locations of TUs sampled at 41BP487.*

upper peak in MSS values, present between 30 and 45 cmbs in these units, corresponds to the general depth of Feature 1 (27-39 cmbs) TU 2. The lower peak, present at 50 to 65 cmbs, corresponds to the depth of Feature 2 (55-67 cmbs) in TU 4. The presence of the peaks and the associated features suggest that these increased MSS values likely represent surfaces with some stability. Note, however, that the radiocarbon dates are reversed, with the feature associated with the higher peak (Feature 1) dating slightly earlier than Feature 2, associated with the lower peak. There may be several explanations for this minor reversal. The Feature 2 date comes from a piece of charcoal associated with the level, not necessarily the feature, which could date earlier than the charcoal. The feature also could have been excavated from the upper surface, or the surfaces may not be equivalent over the roughly 10 m separating the two test units. In spite of the dating differences, the association of the signatures with the features suggests both some level of landscape stability in this southwestern portion of the site, as well as relatively low levels of bioturbation.

Test Unit 5, located at the northeastern end of the site, has an upper profile that suggests a recent period of rapid aggradation in which there was not sufficient time to develop an organic signature in any one sample. There are also two minor peaks identified in this TU (red symbols), with one at 65 cmbs and one at 80 cmbs. These could reflect the same two peaks seen in the northern cluster, especially given the rapid deposition indicated in the upper profile. Overall, the patterns within the MSS signatures suggest that at both the individual units, as well as the site level, rapid deposition, with episodes of landscape stability and low levels of disturbance, are present at 41BP487.

## 41BP776

Figure 7-14 summarizes the MSS values for five units at 41BP776. Unlike 41BP487, there is significant variability between units. The upper deposits in TUs 1 and 3, and all of TU 7, lack evidence of buried surfaces. The distributions in these sections of the units are similar to Plot C in Figure 7-12, consistent with what would be expected for bioturbation. Test Unit 1 has an increase in samples 9 and 10 (ca. 60 and 65 cmbs), suggestive of a buried surface, as well as two cases of single high spikes at depth. The two bottom cases may reflect the presence of iron concretions given the magnitude of the shifts. Test Unit 3 has indications of a buried surface at roughly 40 cmbs, slightly higher than TU 1, while TU 5 has a small increase in sample 3 (15 cmbs), possibly associated with the modern surface. Test Unit 2 has the most interesting profile on the site, with a small increase at sample 3, possibly reflecting organics associated with the modern surface, and a larger increase at sample 4 (45 cmbs) that is maintained up through sample 6 (35 cmbs), before declining. This is consistent with a buried surface present in this portion of the site. Overall, the MSS signatures for 41BP776 suggest

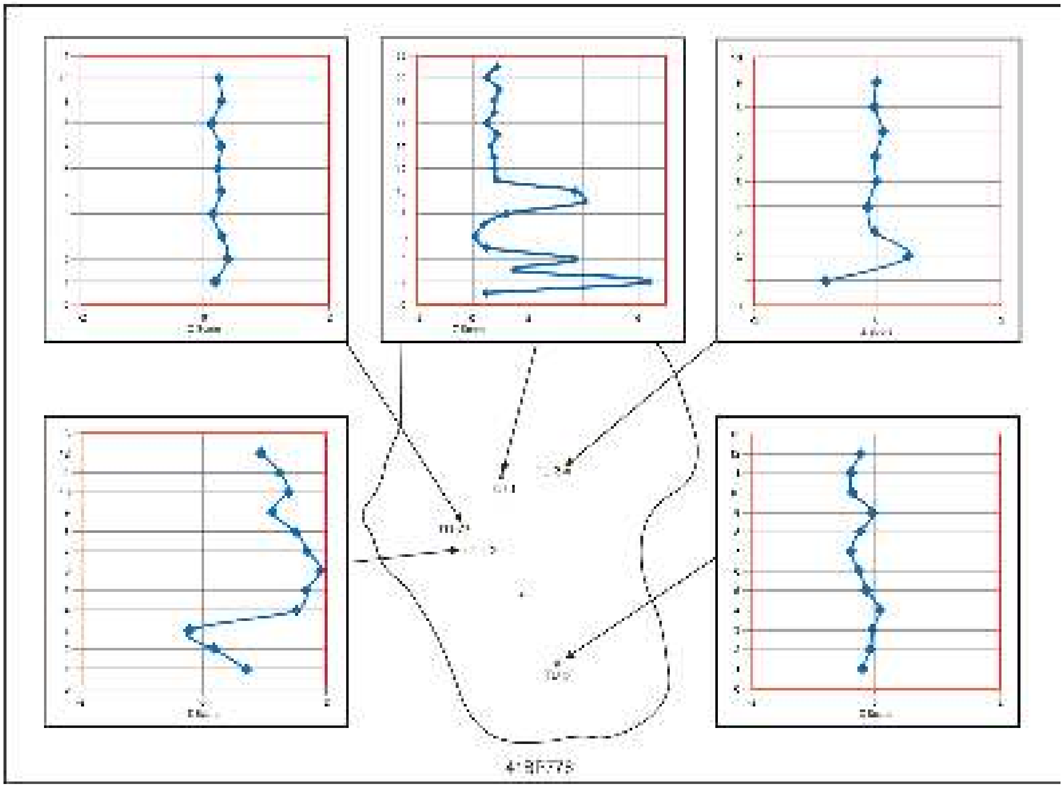


*Figure 7-14. MSS values and locations of TUs sampled at 41BP776.*

that some form of turbation is common in many of the upper deposits, though there are isolated areas within the site that appear to have levels with integrity at lower depths.

## 41BP778

Figure 7-15 presents the MSS values for the units sampled at 41BP778 (Figure 7-15). Test Unit 1 displays increased signatures at samples 2 and 3 (40 to 45 cmbs), followed by high signature fluctuations throughout the rest of the profile. This lower spike is consistent with a buried surface, while the upper spikes are suggestive of iron oxides given the magnitude and isolation. Test Unit 2 has a minor increase at 35 cmbs, as does TU 3 (sample 3, 35 cmbs), that may identify an intact lower surface. Spikes in values near the top of TUs 2 and 3 are probably reflecting the modern surface. Overall, the MSS values at this site suggest stability at 35 to 40 cmbs.

## 41BP780

MSS values of profiles for the four units sampled at 41BP780 are shown in Figure 7-16. Overall, the four profiles share relative low susceptibility signatures. The fluctuating signatures in TU 2 may suggest mixing, although this review did not previously identify this particular signature. In TUs 1 and 4, small increases at 25 and 20 cmbs are present, as well as several deeper levels. Though only defined by single samples, the samples in TU 4 at 75 cmbs (sample 6) and in TU 3 at 65 cmbs may highlight a stable surface at this depth in this portion of the site.

## 41BP782

Seven units were sampled at 41BP782 (Figure 7-17). The signatures from TUs 2, 4, and 7 are relatively uniform, with no indications of buried stable surfaces. Test Units 1, 3, 5, and 6 all have indicators of stability, though most occur within the upper 20-25 cm of the deposits. These are probably reflecting organics associated with the modern surface. Only TU 1 has a high value at depth (ca. 35 cmbs) that could reflect a buried surface.

## 41BP792

MSS samples were collected from four units at 41BP792 (Figure 7-18). The signatures from TUs 1 through 4 trend towards to more positive values in the lower levels followed by a decrease in the MSS signature. This pattern suggests a gradual aggradation followed by a period that suggests a shift to a more rapid buildup. All four units have shifts in the upper 20-25 cm. There are no isolated peaks at depth.

## 41BP801

Five units were sampled at 41BP801 (Figure 7-19). The fluctuating pattern in TU 3 is reminiscent of the pattern seen earlier at TU 2 on 41BP780 (see Figure 7-16). Test Units 1, 2, and 4 all have some indicators of buried surfaces between 35 and 40 cmbs. Test Unit 4 is especially interesting, as the unit had burned rock, charcoal, and bone in association with these

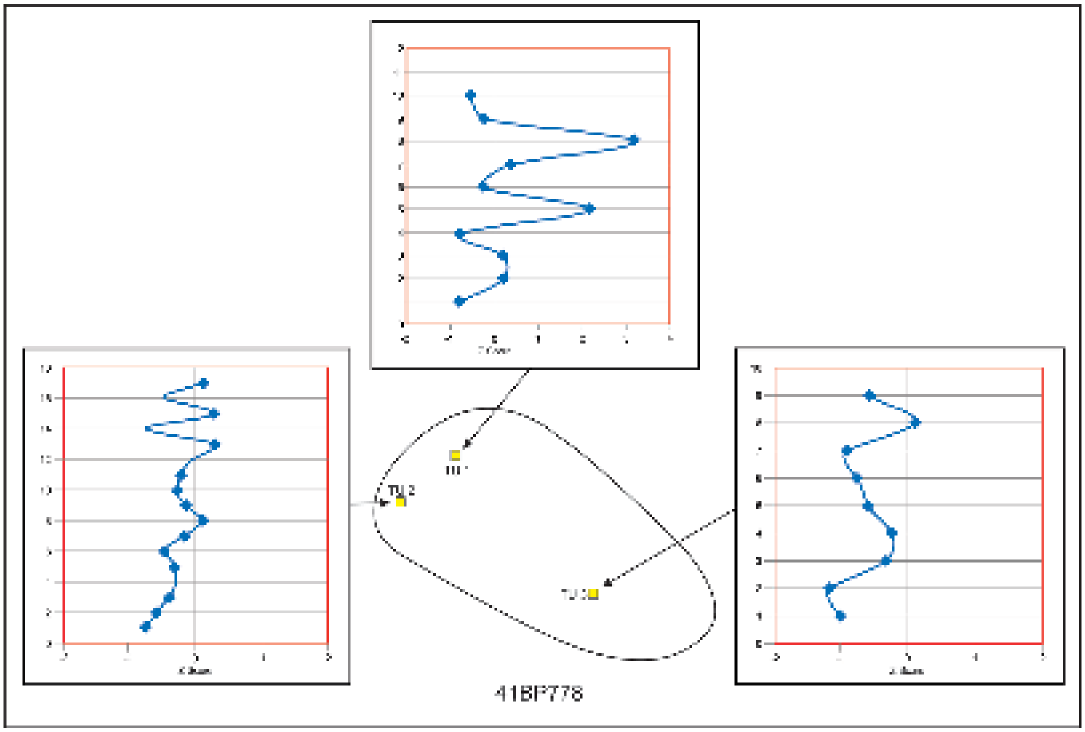


*Figure 7-15. MSS values and locations of TUs sampled at 41BP778.*

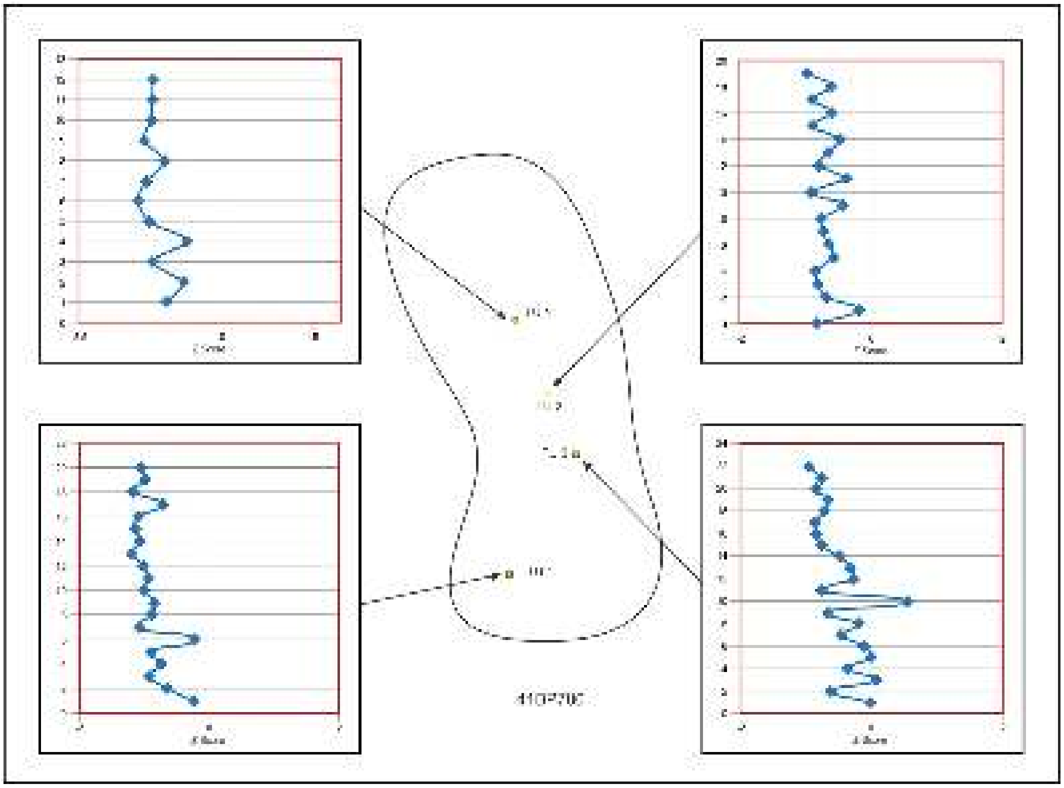


*Figure 7-16. MSS values and locations of TUs sampled at 41BP780.*

high values, which would suggest a stable surface, possibly in association with a nearby feature. Test Unit 5 has also has a shift at 40 cmbs (sample 2), though deposition rates appear uniform after that period. The upper spike in TU 1 at 15 cmbs is probably reflecting the modern surface.

## 41BP802

Finally, four units were sampled at 41BP802 (Figure 7-20). The MSS signature from TUs 1, 3, and 4 are very similar and show a consistent, uniform pattern that suggests bioturbation. Note the TU 1 profile, with both uniform and low MSS signatures, is the unit identified previously (Figure 7-4) as having active rodent burrowing. Test Unit 2 has a spike at 65 cmbs, suggestive of a buried surface, though the upper portion of this unit shows a uniform pattern, likely indicating bioturbation.

There is a slight increase in TU 3 at 45 cmbs. This is interesting in that Feature 1, a cluster of burned rock shown previously (see Figure 7-11), is in this unit at a depth of roughly 50 cmbs. This cluster should be associated with a stable surface, though such a surface is only hinted at in the MSS profile from this unit shown in Figure 7-20. It is unclear what TU 3 profile was sampled in Figure 7-20, but it does not appear to have been the north wall of the test unit where the feature was identified. However, two additional sets of samples that focused on the feature are available for this unit. One set of samples is from the surface to the clay along the north profile of TU 3, through the feature, and a second set is above the feature, moving from east to west, at a depth of roughly 40 cmbs. The second set of samples, taken at 10-cm intervals, was designed to look for indications of a pit, dug from the current surface and simply not visible in the sands, accounted for the burned rock cluster. Figure 7-21 shows these sample locations, as well as the results of the MSS analysis. Note that these samples have not been standardized.

The Figure 7-21 patterns suggest that the feature is likely excavated from a surface present at around 45 or 50 cmbs (vertical samples 10 and 11). This is the approximate depth of the stable surface indicated in the Figure 7-20 profile for this test unit. There are no clear indications of a pit excavation in the horizontal values above the feature at 40 cmbs. If a pit was excavated from the surface, uniform high or low values would be expected in the pit matrix (samples 2, 3, 4, 5, 6, and 7), depending on the nature of the pit fill, and consistent values in portions outside the pit (samples 1, 8, and 9). While the values outside the hypothetical pit are consistent, the supposed matrix samples are not patterned. In addition, the values for the upper portion of the profile in the vertical column (samples 12 through 19) are consistent with an aggrading surface rather than one that has been extensively disturbed.

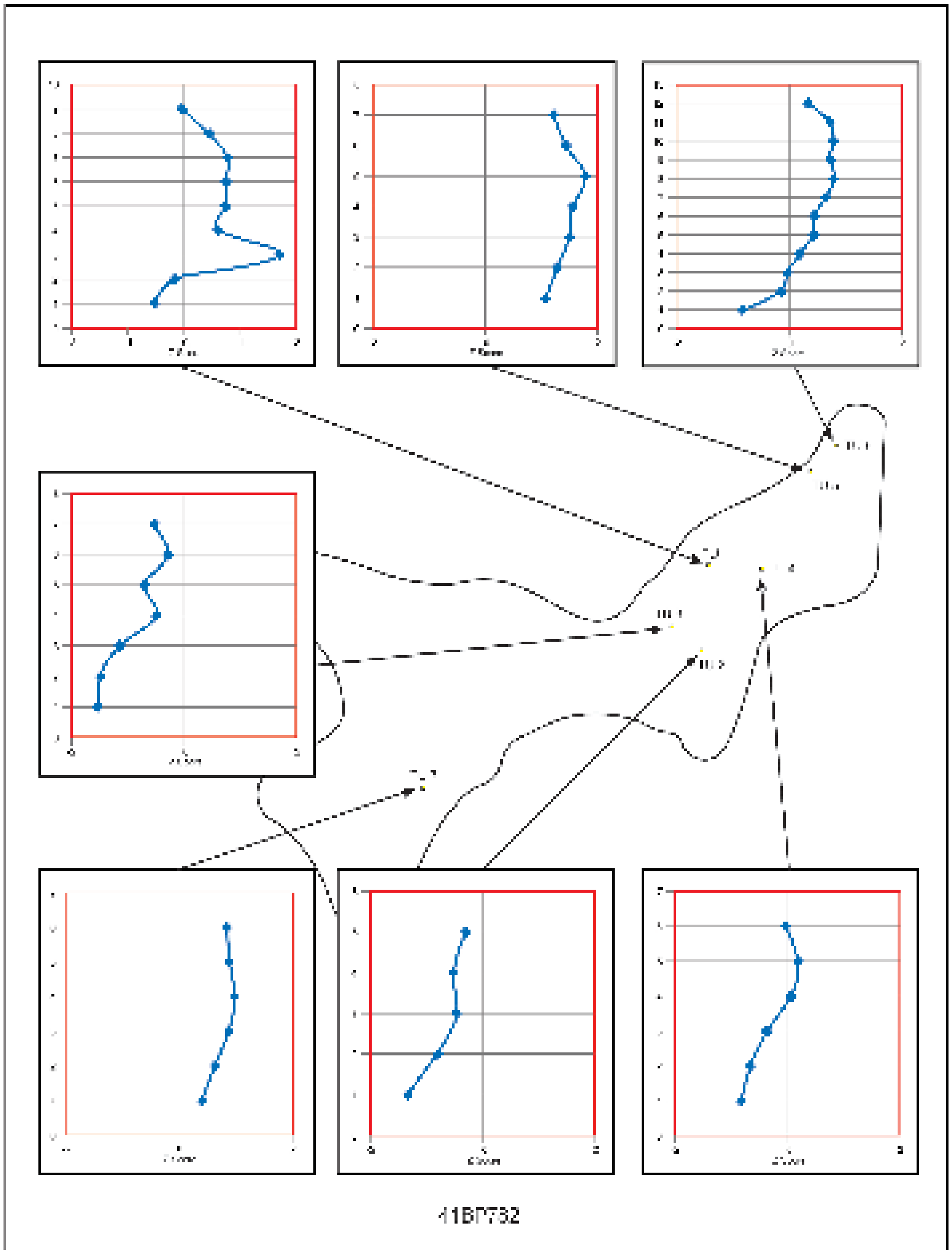


*Figure 7-17. MSS values and locations of TUs sampled at 41BP782.*

## MSS Site Level Summary

With few exceptions, the MSS data presented above suggest that there is extensive bioturbation present in most of the upper deposits across these sites. At the same time, these data suggest that specific units within sites, as well as specific depths within units, have evidence of local surface stability. Table 7-1 provides summary data on the MSS patterning, along with an overall assessment at the site level. Three sites, 41BP487, 41BP778, and 41BP792, all have indicators of high integrity. While portions of a profile at these sites may be disturbed, the CAR's interpretation is that all have evidence of at least one stable surface present, with minimal turbation. Note, however, that in the case of 41BP778 only nine pieces of chipped stone were recovered, and no features were recovered. Consequently, while the MSS values indicate that a stable surface may be present, that in and of itself is no assurance that people occupied that surface. At the other extreme, sites 41BP782 and 41BP802 have a low frequency of stable surfaces at depth and have a high incidence of turbation suggesting low integrity. In the case of site 41BP802, however, there is evidence that a portion of the site that contains Feature 1 maintains good integrity, in spite of impacts elsewhere on the site. Finally, sites 41BP780 and 41BP801 are both classified as having moderate integrity, with a mix of buried surfaces and turbation.

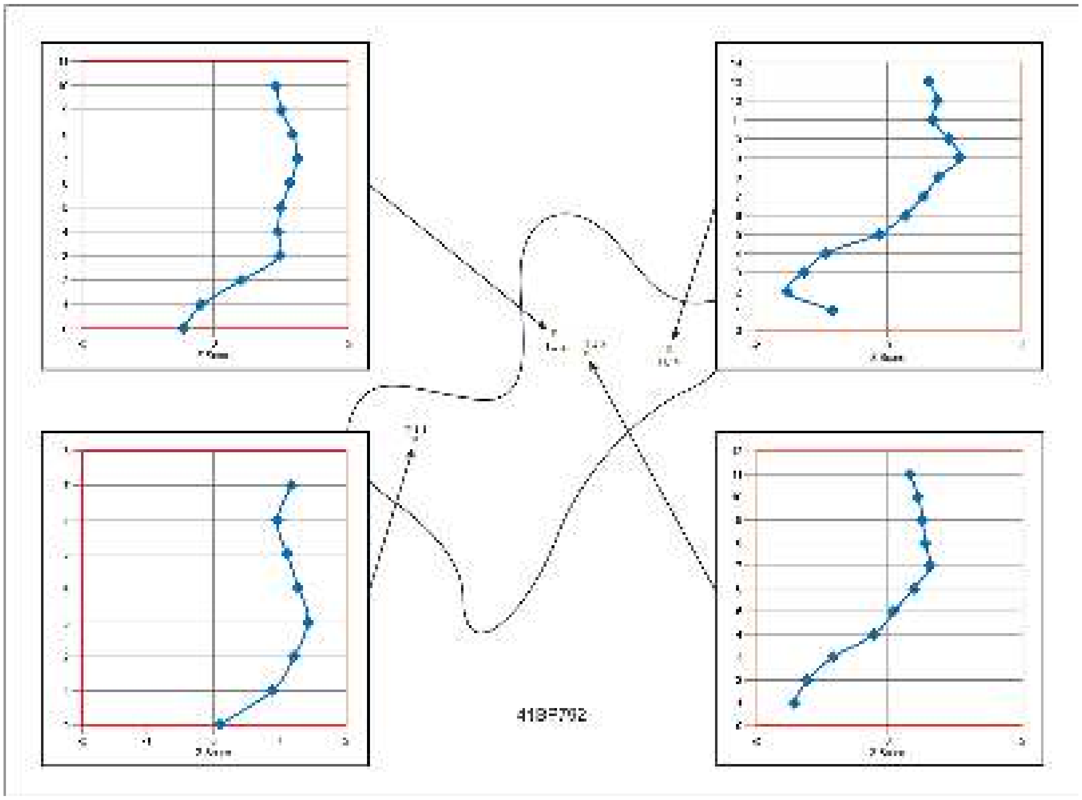


*Figure 7-18. MSS values and locations of TUs sampled at 41BP792.*

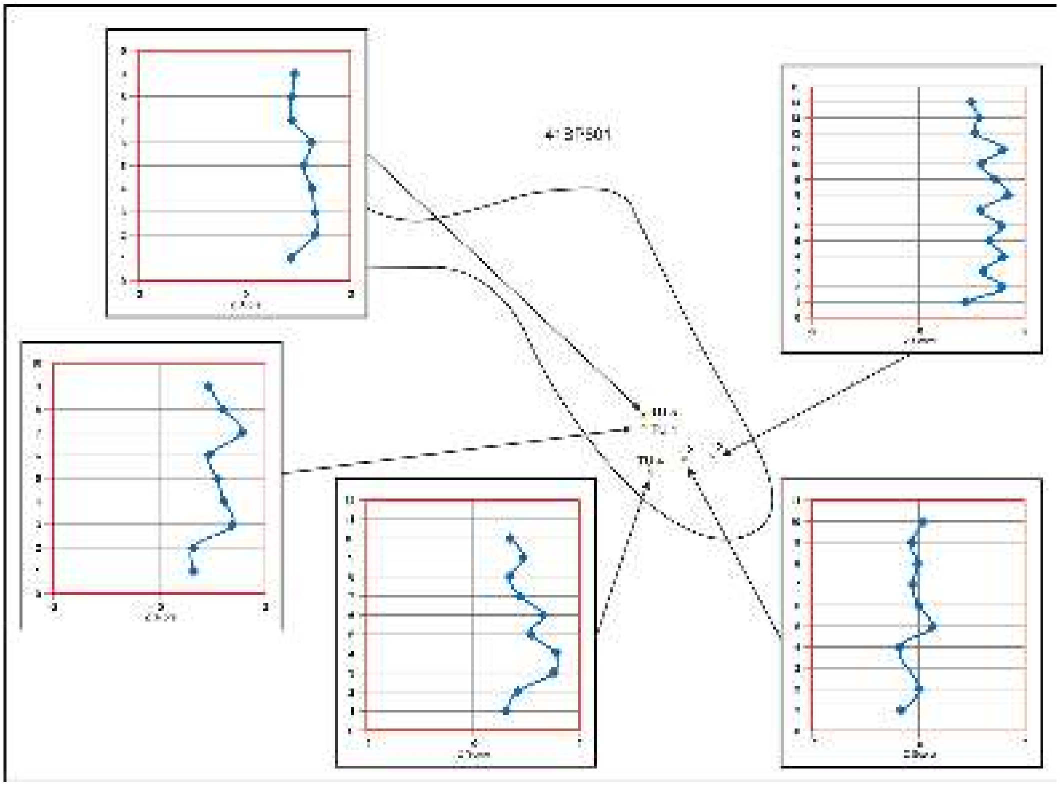


*Figure 7-19. MSS values and locations of TUs sampled at 41BP801.*

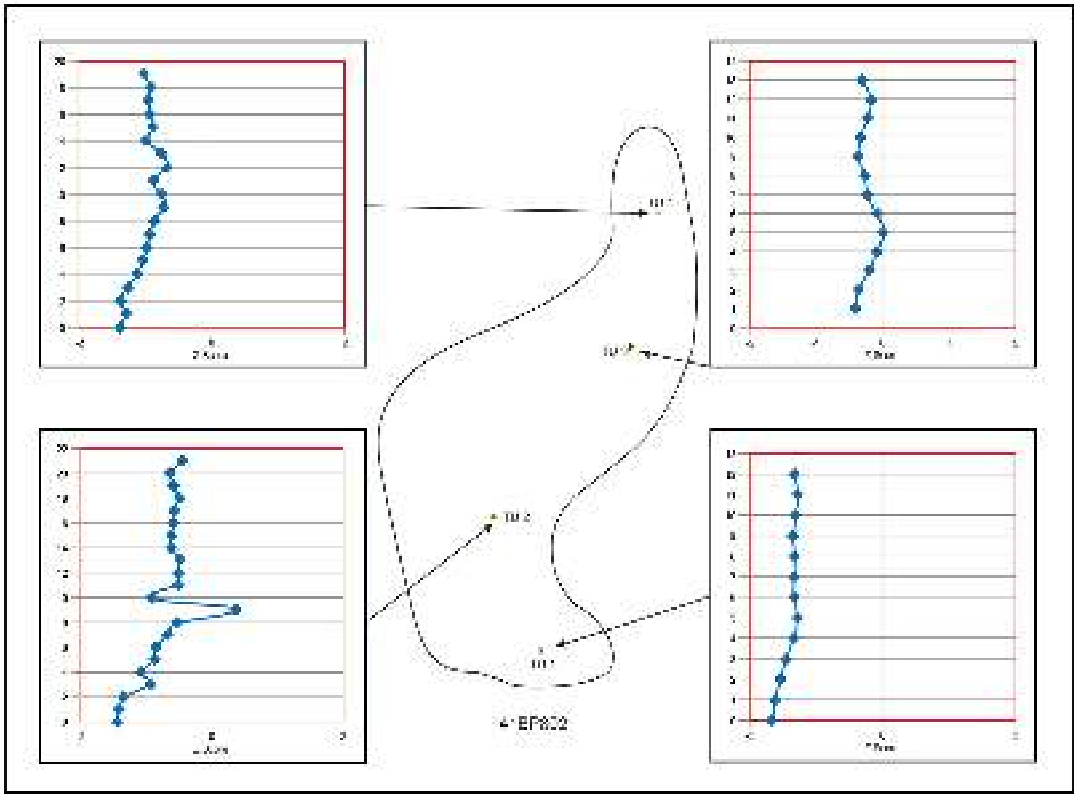


Figure 7-20. MSS values and locations of TUs sampled at 41BP802.

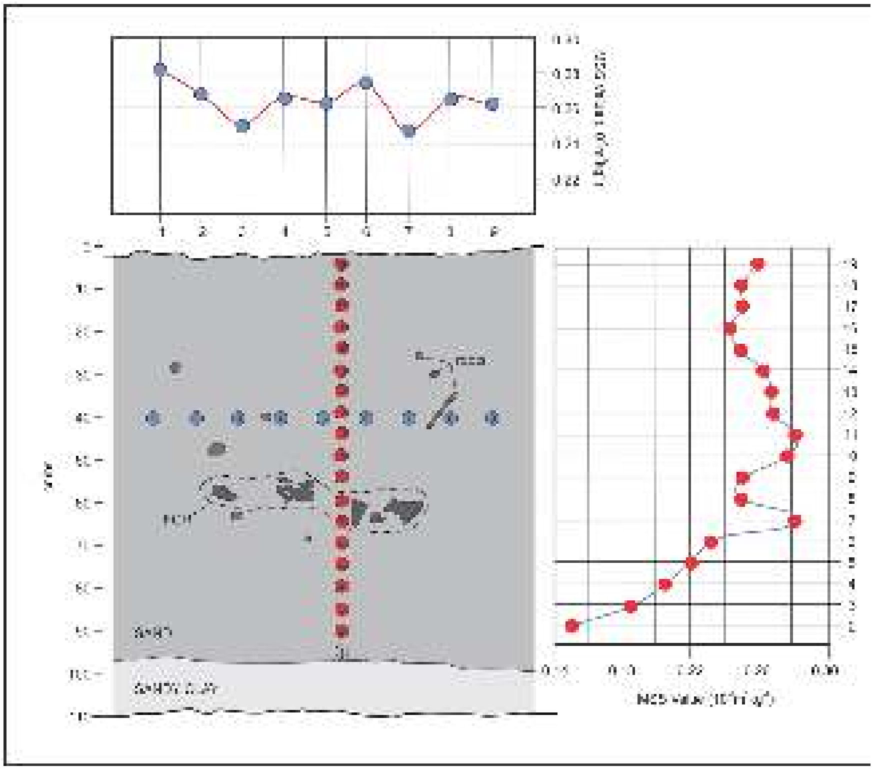


Figure 7-21. MSS samples from Feature 1 profile (TU 3, north wall, 41BP802). Feature 1 is identified by dotted line. Note that the MSS value for vertical sample 1 at the base of the sand is not shown because the value of 12.6 ($10^{-6}m^3kg^1$) was not easily accommodated given the graphics format.

Table 7-1. MSS Summary Data from Unit Profiles

| **Site** | **Number of Units Assessed** | **Number with Potential Surfaces** | **Percentage with Potential Surfaces** | **Percentage with Extensive Bioturbation** | **Overall Integrity Assessment** |
|---|---|---|---|---|---|
| 41BP487 | 5 | 5 | 100% | 0% | High |
| 41BP776 | 5 | 3 | 60% | 40% | Low |
| 41BP778 | 3 | 3 | 100% | 0% | High |
| 41BP780 | 2 | 4 | 50% | 25% | Moderate |
| 41BP782 | 2 | 7 | 29% | 29% | Low |
| 41BP792 | 4 | 4 | 100% | 0% | High |
| 41BP801 | 5 | 3 | 60% | 20% | Moderate |
| 41BP802 | 1 | 4 | 25% | 50% | Low |

## Conclusions

As prefaced at the beginning of this chapter, characterizing site integrity falls along a continuum from perfectly preserved sites to one in which there is no context. The eight Camp Swift sites are located in the Texas Sandy Mantle, an area where cultural resources are often assumed to lack sufficient stratigraphic integrity due to formation processes (see Bruseth and Martin 2001). Recent and ongoing research has challenged this assumption, acknowledging that there may be sites with intact deposits as suggested by Boulter et al. (2006), Frederick et al. (2002), and Frederick and Bateman (2001). The first approach to assessing a site's integrity was qualitative in that it used the archaeologist's observations of bioturbation. All sites and units, to some degree, exhibited bioturbation via vegetation, primarily roots. Four of the eight sites, 41BP487, 41BP782, 41BP801, and 41BP802, had active or recent rodent activity.

The second approach was more quantitative in that artifact distribution was analyzed to discern whether there were intact surfaces as defined by the deposition relative to the terminal clay horizon and if patterns in debitage area reflected extensive size sorting. CAR examined sites with assemblages larger than 100 items to reduce the impacts associated with small sample sizes. These sites were 41BP487, 41BP776, 41BP782, 41BP801, and 41BP802. Two patterns were observed. One in which artifacts tended to settle towards the bottom suggesting bioturbation and possibly reflecting the pedogenic model. This pattern was shown in 41BP776 and 41BP782. The other pattern is one in which artifacts were higher in the profile suggesting some degree of surface stability and reflecting the geomorphic model of possible intact deposits within the Sandy Mantle. This pattern was observed at 41BP487, 41BP801, and 41BP802. In addition, thermal features were observed at both sites 41BP487 and 41BP802, and site 41BP801 had charcoal, burned rock, and bone all in association with a possible buried surface.

The final method used to assess integrity relied on patterning in magnetic soil susceptibility samples from profiles and features at a site. While MSS interpretation is qualified by the fact that multiple explanations can account for the same signal, and while interpretations can vary, the MSS signal provides a quantitative measure that can be used to assess aspects of stability and turbation. Three of the eight sites, 41BP487, 41BP778, and 41BP792, had patterns that suggested possible intact surfaces at various depths. Sites 41BP780 and 41BP801 were judged to have moderate integrity, with sections of these sites having evidence for buried surfaces and other areas of the site having extensive disturbance. The remaining sites, 41BP782 and 41BP802, have low integrity at a site level, with patterns suggestive of bioturbation in most, though not all, locations, as well as low indications of stable surfaces.

This page intentionally left blank.

# Chapter 8: Site Content

*Raymond Mauldin, Leonard Kemp, Cynthia Munoz, and Kirsten Verostick*

The last research domain concerns the content of the eight sites investigated. The site level descriptions of content are to assess the degree to which site assemblages may contribute to answering current and future research questions. At a general level, larger, more diverse assemblages would seem to have a higher likelihood of contributing information to a broader set of questions. However, larger assemblages have a greater probability of resulting from multiple, overprinted occupations, a situation that would reduce integrity. These palimpsests may be difficult to recognize and impossible to separate into distinct assemblages. Conversely, smaller, isolated assemblages have a higher probability of providing direct evidence of a narrower range of activities without overprinting and providing a more focused understanding of activities. Yet, small sample sizes are subject to random variation that can drastically alter patterns and mislead researchers. This sample size variability should be less of an issue as sample sizes increase.

As suggested in the Chapter 3 review, the current understanding of the timing and nature of prehistoric adaptations at Camp Swift is limited. There are few absolute dates. There is a low frequency of sites with temporally diagnostic items, and there appear to be long periods with no occupation. Researchers have made progress on understanding aspects of the depositional environment (e.g., Ahr et al. 2012; Frederick and Bateman 2001; Frederick et al. 2002; Nickels and Lehman 2004) and on documenting sites (Munoz 2012; Nickels, Bousman, and Hurley 2010; Nickels, Worrell, and Bousman 2010b). However, there has been no significant work on documenting or understanding how prehistoric groups were using the area, let alone how, why, or if that use changed over time. At this point, CAR suggests that these macro scale questions may be more efficiently investigated with larger, more diverse assemblages, though it is acknowledged that detailed patterns may be obscured in larger assemblages, especially at the site level discussed here.

## Material Density and Site Content

Details on site-specific content have been presented in Chapters 5, 6, and 7, and Table 8-1 provides summary data by site including the amount of excavation and the number of debitage, cores, lithic tools, and non-feature burned rock recovered. Also included is the weight of burned rock (kg), and presence/absence data on charcoal, bone, features, and other material such as ocher (41BP487) or burned clay (41BP801).

The number of items recovered in each of these various categories results both from the activities conducted in the past, as well as the amount of excavation that CAR conducted at each site. Consequently, the amount of excavation at each site is provided in the table. Table 8-2 uses the Table 8-1 data to calculate density (items per m$^3$) values for chipped stone debitage, lithic tools and cores, non-feature burned rock, and non-feature burned rock weight.

Table 8-1. Site Contents and Excavation Volumes

| Site | Excavated (m$^3$) | Debitage | Cores | Lithic Tools | Number of Non-feature Burned Rock | Non-feature Burned Rock Weight | Charcoal* | Bone* | Features* | Other Material* |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP487 | 4.36 | 118 | 1 | 6 | 146 | 1.45 kg | 1 | 1 | 1 | 1 |
| 41BP776 | 3.48 | 436 | 4 | 11 | 98 | 1.8 kg | 0 | 0 | 0 | 0 |
| 41BP778 | 2.03 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 41BP780 | 3.37 | 45 | 1 | 1 | 6 | 0.1 kg | 1 | 0 | 0 | 0 |
| 41BP782 | 2.61 | 174 | 3 | 6 | 29 | 0.8 kg | 0 | 0 | 0 | 0 |
| 41BP792 | 1.95 | 59 | 1 | 7 | 15 | 0.3 kg | 1 | 0 | 0 | 0 |
| 41BP801 | 2.63 | 519 | 0 | 9 | 372 | 4.9 kg | 1 | 1 | 0 | 1 |
| 41BP802 | 5.22 | 217 | 0 | 7 | 196 | 3.55 kg | 1 | 1 | 1 | 0 |

* presence/absence designation: 1=present, 0=absent

Table 8-2. Density Measures for Selected Artifact Classes

| Site | Debitage per $m^3$ | Lithic Tools and Cores per $m^3$ | Number of Burned Rock per $m^3$ | Weight of Non-feature Burned Rock $m^3$ |
|---|---|---|---|---|
| 41BP487 | 27.06 | 1.61 | 33.49 | 0.33 kg |
| 41BP776 | 125.29 | 4.31 | 28.16 | 0.52 kg |
| 41BP778 | 4.43 | 0 | 0 | 0 |
| 41BP780 | 13.35 | 0.59 | 1.78 | 0.03 kg |
| 41BP782 | 66.67 | 3.45 | 11.11 | 0.31 kg |
| 41BP792 | 30.26 | 4.1 | 7.69 | 0.15 kg |
| 41BP801 | 197.34 | 3.42 | 141.44 | 1.86 kg |
| 41BP802 | 41.57 | 1.34 | 37.55 | 0.68 kg |

The two tables show that chipped stone debitage was the most commonly recovered category of material at each site. The highest density was found at site 41BP801, with nearly 200 items per cubic meter of excavation, and at 41BP776, with roughly 125 items per cubic meter. No other sites had densities above 70 items per cubic meter. The lowest density was at 41BP778, with only 4.4 items per cubic meter produced by the recovery of only 9 pieces of debitage. Site 41BP780 also had low returns, with 45 pieces of chipped stone debitage recovered from 3.37 $m^3$ (13.35 items $m^3$).

Considered in more detail in the following section, lithic tools and cores recovered from the project included projectile points, other bifaces, retouched and utilized flakes, gravers, several pieces of ground stone, and a hammer stone. Four sites (41BP776, 41BP792, 41BP782, and 41BP801) had densities of above 3.4 items per cubic meter, with site 41BP776 having the highest density (4.31 per $m^3$). As with the debitage, site 41BP778, with no recovered items, and site 41BP780, with only 0.59 items per cubic meter, had the lowest tool and core densities on the project.

Burned rock features were recovered at two sites, 41BP487 and 41BP802. Outside of the feature context, burned rock was present at all sites except 41BP778. The lowest burned rock density outside of features on the remaining seven sites was at 41BP780, with less than two pieces of burned rock per cubic meter. Site 41BP801 had the highest density, with roughly 141 burned rocks weighing over 1.8 kg recovered per cubic meter. This was substantially more than the next highest sites, 41BP802 and 41BP487, with a non-feature density of roughly 37.6 and 33.5 items per cubic meter.

As noted, burned rock features were present at sites 41BP487 and 41BP802. In addition, charcoal fragments were present on all sites with the exception of 41BP776, 41BP778, and 41BP782. At site 41BP487, charcoal reflected both burned wood and burned nut fragments. Small quantities of bone were present on site 41BP487 and were recovered from 41BP801 and 41BP802. Finally, burned clay was recovered from site 41BP801 and ochre from site 41BP487.

Overall, site 41BP778 had a low density of debitage and lacked cores, tools, burned rock, features, charcoal, bone, and other items. Site 41BP780 had a low density of debitage, cores, lithic tools, and burned rock. The site lacked features, and while charcoal is present, bone and other materials are lacking. In terms of content, these two sites have little to offer and, as such, have low significance for this research domain. At the other extreme, several sites have high densities of artifacts, including sites 41BP776 and 41BP801. Sites 41BP487 and 41BP802 all have high-to-moderate densities, but they also both have features present. In addition, sites 41BP487, 41BP801, and 41BP802 all have charcoal and bone recovered. Because of the quantities and the variety of materials, it is likely that these four sites have data that can potentially address multiple research questions. The two remaining sites, 41BP782 and 41BP792, both have moderate densities in most artifact categories, but they lack features. Site 41BP782 lacks charcoal, bone, or other material. Site 41BP792 has charcoal present but lacks bone and other material. Assemblages from these sites are limited, but they may be able to address more focused research concerns.

## Lithic Tools and Core Variety

The previous section primarily considered the density of various material classes, as well as overall presence/absence data of rare items and features. This section focuses on lithic tools and cores, and it looks in more detail at the variety of types represented. Some information on this topic has been presented previously in Chapter 6, which focused on potentially temporal diagnostic projectile points. In addition, Appendix E provides photographs and additional summaries of the remaining tools and cores at a site level.

Overall, these items were not common on the project, with only 10 cores and 47 tools recovered from the eight sites. Table 8-3 provides summary data on the number of cores, number of tools, and the types of tools at a site level. Site 41BP776 had the greatest number of tools and cores, while 41BP778 had no tools or cores recovered.

Figure 8-1 plots the variety of tool types relative to the number of tools at a site level. A higher variety of tools may reflect a higher variety of site activities. Of course, a given tool type can be used in more than one type of activity, and the location of discard is not necessarily the location of use. Nevertheless, there should be a general relationship between tool variety and the variety of activities conducted. The three groups are defined based on the Figure 8-1 plot. Four sites (41BP776, 41BP792, 41BP801, and 41BP802), with a high variety of tools, as well as a high overall number of tools, are identified as high-variety cases. These may identify occupations that had multiple activities represented, and these assemblages could potentially provide data to answer a variety of research questions. At the other extreme, sites 41BP778 and 41BP780 have low variety, with little or no potential for addressing research questions. Finally, sites 41BP487 and 41BP782 fall between the two extremes. These two sites may provide data on a more limited number of research questions.

## Site Level Debitage Patterning

The final data set considered in this chapter is broad patterns in chipped stone debitage. This was the largest artifact class recovered during CAR's Camp Swift testing, accounting for over 1,500 specimens. Debitage was analyzed with multiple criteria. These included recording the maximum length of a piece (mm) and the percentage of cortex on the dorsal surface of an item (0%, 1-50%, 51-99%, 100%). In an effort to characterize tool stone sources, a series of other attributes were also recorded. For a given piece, CAR recorded finish (matte=1; translucent=2), evidence of heating (present=1; absent=0), the grain of the item (1=fine; 2=coarse), and the color of the item. Color was initially recorded by sorting material into groups based on similar appearance under normal light. Groups were then resorted and adjusted until all items fit into one of 10 different color categories (0 to 9) with each number referencing a general color (e.g., 0=purple; 1=black; 2=moderate to dark brown, etc.). These variables (finish, heating, grain, and color) were then combined to form a four-digit description potentially identifying a material group. For example, a specimen characterized as having a matte finish (1) with no evidence of heating (0), a fine grained surface (1), and being black in color (1) would form group 1011. Using this approach, there are 55 different raw material groups represented by debitage on the eight sites. Patterning in cortex, debitage size, and material groups, along with additional investigations of color using short and long wave ultraviolet light patterning (see Frederick et al. 1994) are explored in the following chapter, and raw data are

Table 8-3. Cores and Lithic Tool Types by Site

| Site | Total Tools | Total Cores | Projectile Points | Other Bifaces | Utilized/Retouched Items | Gravers | Other Chipped Stone Tools | Ground Stone | Hammer Stone |
|---|---|---|---|---|---|---|---|---|---|
| 41BP487 | 6 | 1 | 2 | 0 | 3 | 0 | 1 | 0 | 0 |
| 41BP776 | 11 | 4 | 1 | 4 | 3 | 1 | 1 | 1 | 0 |
| 41BP778 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 41BP780 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 41BP782 | 6 | 3 | 2 | 1 | 3 | 0 | 0 | 0 | 0 |
| 41BP792 | 7 | 1 | 1 | 1 | 3 | 1 | 1 | 0 | 0 |
| 41BP801 | 9 | 0 | 0 | 1 | 5 | 1 | 0 | 1 | 1 |
| 41BP802 | 7 | 0 | 1 | 1 | 1 | 3 | 1 | 0 | 0 |

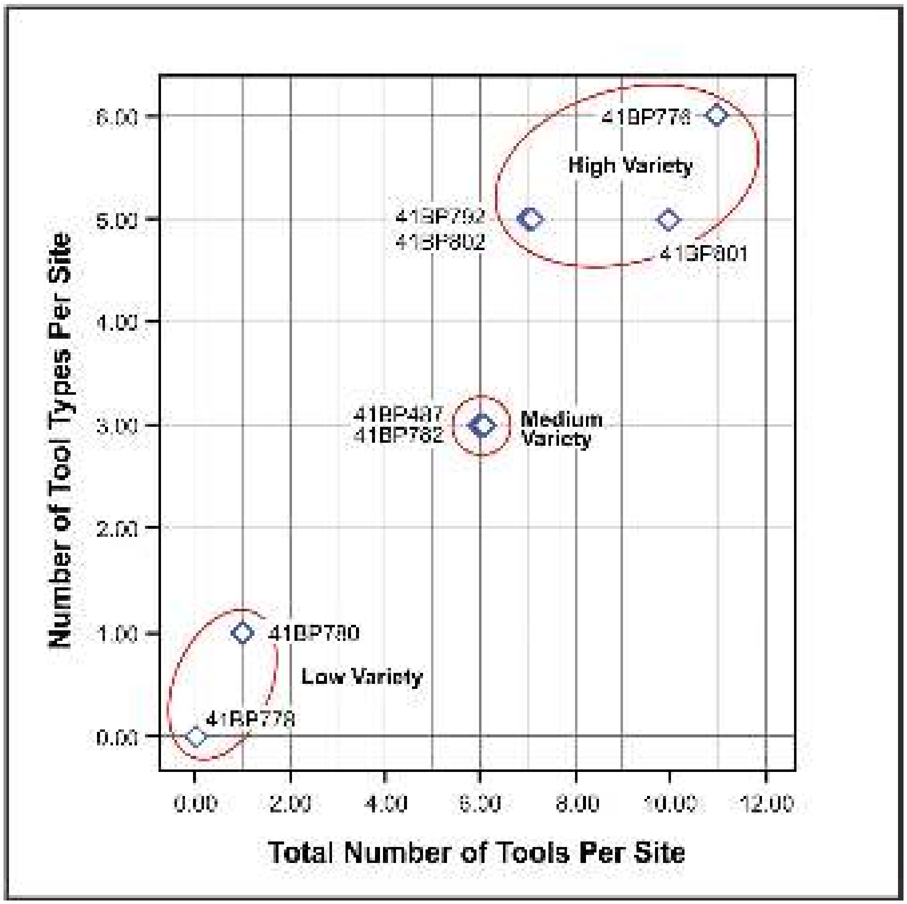


*Figure 8-1. Camp Swift sites grouped by measure of lithic tool variety and sample size.*

presented in Appendix C. Here the focus is on summaries of raw material categories represented in debitage collections at a site level. CAR suggests that sites with a greater variety of raw material types and sites with larger sample sizes for those individual raw material types have the potential to answer a greater variety of research questions.

Sample size ranged from nine items at 41BP778 to 518 items at 41BP801 (see Table 8-1). Figure 8-2 plots the number of raw material groups by sample size for the eight sites. Not surprisingly, the number of different raw material groups roughly correlates with the number of debitage present. Focusing on the number of types, three groups are defined in the figure. The first group, identified by red markers, includes sites 41BP801, 41BP776, 41BP802, and 41BP487. These all have from 26 to 34 raw material groups present in their assemblage. A second group, identified by orange markers, is composed of sites 41BP782, 41BP792, and 41BP780. These have between 11 and 18 raw material types present. Finally, site 41BP778, identified by the blue marker, has only five different raw material types present.

Figure 8-3 plots the relative frequency of the five most common raw material groups at a given site to assess the evenness of the material available for study. Evenness is defined as how close in relative frequency raw material types contribute to a site total. A site in which a single raw material dominates the assemblage, even though a high number of types are present, likely can answer fewer questions when compared to sites with similar variety but a more even distribution. While data from 41BP778 is not used, as only nine pieces of debitage were recovered (see Table 8-1), three patterns are defined in the Figure 8-3 plot. The first pattern is composed of a single site, 41BP780, with 45 items present representing 11 raw material groups (see Table 8-1; Figure 8-2). However, as is shown in Figure 8-3, a single raw material (2012) dominates the site, comprising 42 percent of the assemblage. Other raw material groups are not well represented. Group 2, identified in red, contains sites 41BP782, 41BP802, and 41BP487. These have a more even distribution. Finally, Group 3, composed of sites 41BP801, 41BP776, and 41BP802, has both an even distribution, with no single type accounting for more than 15.3 percent of any of these assemblages.

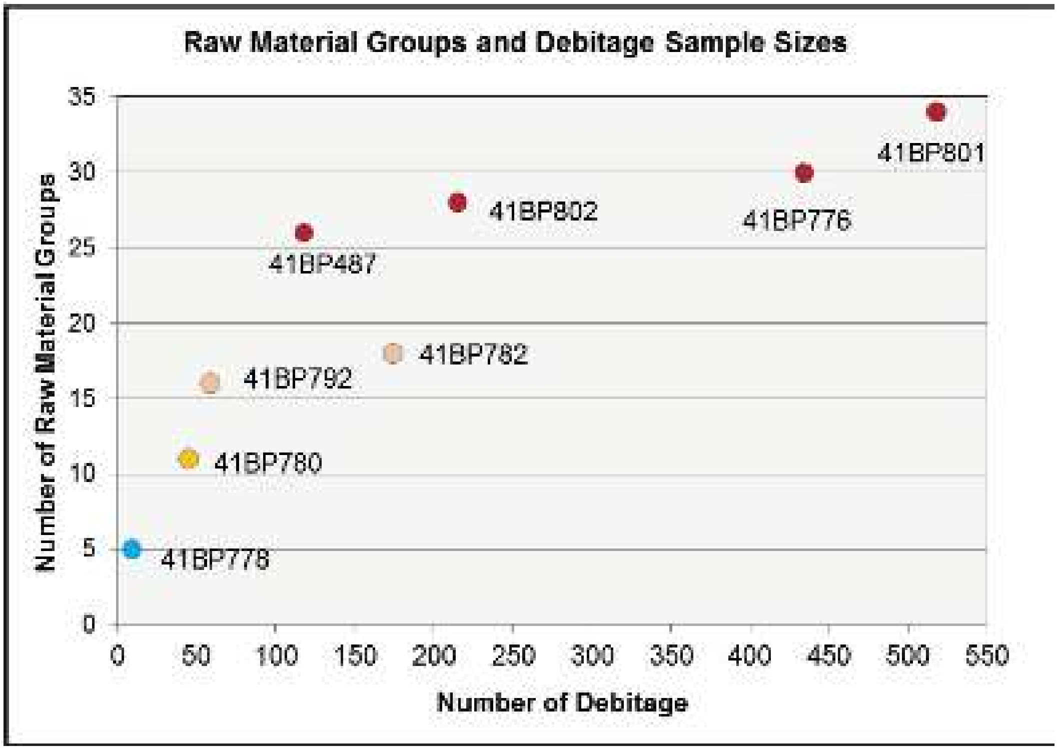


*Figure 8-2. Bivariate plot of number of debitage by number of raw material groups represented at tested sites.*

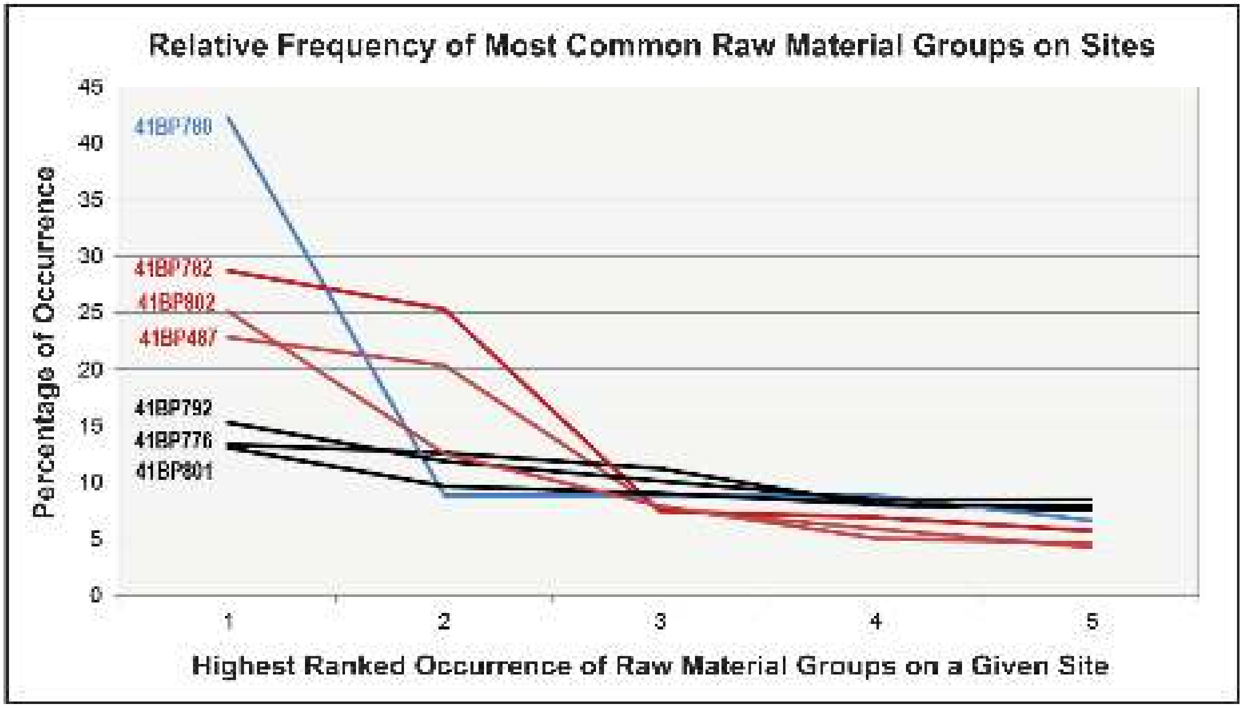


*Figure 8-3. Relative frequencies of the top five raw material groups present in debitage at a given site. Note that site 41BP778 is not included in the graph, as only nine items were recovered.*

## Summary

This chapter focused on the site content. Specifically, it explored several data sets in an attempt to characterize the degree to which site assemblages have the potential to address current and future research questions. CAR suggested that sample size, density and variety in lithic assemblages, presence/absence data in features, bone, and charcoal, lithic tool variety, and measures of variety and evenness in raw material types could all provide some general measure of the utility of site content for addressing research questions. Two sites, 41BP778 and 41BP780, consistently had low values on the various measurement scales. Five sites, 41BP802, 41BP801, 41BP792, 41BP776, and 41BP487, consistently had high-to-moderate scores. In addition, 41BP802 and 41BP478 were the only sites to have features, bone, and charcoal present. Finally, site 41BP782 had variable results, with moderate density measures, no features, bone, charcoal, or other material, moderate tool and raw material type variety, and moderate evenness in the representation of tool stone.

In Chapter 10, these results, along with those assessing site chronology (Chapter 6) and integrity (Chapter 7), are used to make NRHP eligibility recommendations for the eight tested sites. The following chapter is not directly involved in determining the eligibility for these sites. Rather, it uses analyses on lithics from these sites and focuses on project scale patterns that might help better define subsequent research questions.

# Chapter 9: Patterns in Lithic Raw Material Use

*Raymond Mauldin, Leonard Kemp, and Cynthia Munoz*

Chipped stone was the most commonly recorded artifact category on the project. Yet, access to high-quality raw material for tool stone production appears, based on the geological review, to be limited on Camp Swift. This chapter explores the chipped stone category in detail, focusing primarily on patterns in raw material use at the project level. The goal of this analysis is to identify patterns in raw material use that can frame subsequent investigations at Camp Swift. In that sense, it attempts to build on earlier work by Kay and Tomka (2001). The principal data used in this chapter are provided in Appendices C and D. A review of the available stone resources on Camp Swift, as well as cortex, size, and quality measures of the archaeological debitage, suggests that the vast majority of raw materials on this project were transported into the region. An analysis considering short and long wave ultraviolet light fluorescence of Camp Swift debitage suggests that much of this material likely derived from the Edwards Plateau.

## Tool Stone Availability at Camp Swift

On Camp Swift, raw materials suitable for tool production appear to be limited to gravel deposits. As noted in Chapter 2, Camp Swift is located primarily in the Wilcox Group deposits (see also Figure 5-3). Available stone associated within this group includes coarse-grained sandstone, ironstone, mudstone, and mudstone conglomerate. These deposits have little cryptocrystalline stone suitable for stone tool production, and chert is not listed for this deposit. Holocene and Late Pleistocene age deposits lie to the north and the south of the project area (Barnes 1974). The deposits along the Colorado River, roughly 9.6-11 km to the southwest of Camp Swift, contain chert gravel carried from upstream chert-bearing Edwards Limestone formations. Barnes (1974) reports that Quaternary age alluvium to the north along Big Sandy Creek contains chert and quartzite gravel. However, the principal source of locally available stone appears to be from Uvalde Gravel deposits.

Plummer (1966:776-779) suggests that Uvalde Gravels are composed of “rounded flint cobbles” with smaller amounts of limestone, quartz, and caliche, most of which are less than 2.5 cm in diameter, though some items range up to 15.2 cm in size. Following earlier researchers, Plummer suggests that these deposits are associated with streams draining the Edwards Plateau (1966:778). Kay and Tomka (2001:164) also suggest that Uvalde Gravels are derived from the Edwards Plateau and that they are composed of “chert cobbles, with pieces of limestone and quartz and chert pebbles set in a matrix of chalky marl and caliche.” However, Byrd (1971), in the most detailed study of the geological origins and composition of Uvalde Gravels, concludes that the deposits are primarily related to the Ogallala Formation of the Llano Estacado in west Texas and southeastern New Mexico (see Hurst et al. 2010). While composition varies by location, Byrd suggests that the gravels commonly consist of “chert, quartz, quartzite, and limestone cobbles” that usually occur on “inter-stream divides” and high terraces (Byrd 1971:13, Figure 1).

Kay and Tomka (2001) note that Uvalde Gravels are the principal source of stone at Camp Swift. They suggest that while the material is of “poor quality” it is abundant and that the abundance of the gravels “no doubt contributed to the attractiveness of this area to indigenous people” (Kay and Tomka 2001:164). Skelton (1979:5-7), working on Camp Swift, also suggests that these gravels are the primary local source. He lists quartzite as the major component of these deposits and states that the cherts present are “poor quality” with numerous “inclusions as well as fracture planes” (Skelton 1979:7). Kelly and Roemer (1981), working just to the north of Camp Swift along Big Sandy Creek, report that Uvalde Gravels were not common in their survey areas. They note that “experiments in knapping the lithics…indicate that the Uvalde Gravels fractured erratically because of numerous inclusions” and that “artifacts of fine quality chert…would be … from outside the area” (Kelly and Roemer 1981:4).

To help clarify questions of abundance, availability, and quality of tool stone, CAR conducted a reconnaissance of a small area on Camp Swift to locate raw materials that focused on upland locations in the northern section of the base (Figure 9-1), including terraces along Big Sandy Creek and isolated high ridges. Nodules were observed in several areas, including along both terraces and small ridges, and eroding from cuts adjacent to roadways. The focus was on cobbles greater than roughly 5 cm in diameter. Ultimately, CAR collected 101 samples weighing 41.6 kg from five different locations that had moderate densities of cobbles (Figure 9-1). Cobbles were transported to the CAR lab where their maximum dimension, weight, and material type were determined. These data are listed in Appendix D.

Location 1 was a low terrace associated with a major drainage into Big Sandy Creek, which is roughly 430 m to the southeast. The collection area was at an approximate elevation of 137 m (449.5 ft.) AMSL. From this location, CAR collected 22

Redacted Image

*Figure 9-1. Location of raw material collection areas within Camp Swift.*

cobbles. Quartzite was the principle material represented, accounting for 77 percent of the collection. Also present were two cobbles of chert, one piece of sandstone, and two items that could not be sourced to a material type. The chert cobbles had maximum dimensions of 5 and 9 cm.

Locations 2 and 3 (Figures 9-1 and 9-2) are on a ridge and roughly 35 m apart, with elevations of 134 m (439.6 ft.) and 137 m (449.5 ft.) AMSL. From these two locations, 35 cobbles were collected, 80 percent (n=28) of which were quartzite. There were two items of chert measuring 6.5 cm and 9 cm in maximum dimension, three pieces of petrified wood, and two pieces of ironstone.

Twenty-two nodules were collected from Location 4 on a terrace above a small drainage (Figure 9-1). The material recovered from this location was dominated by ironstone, which made up roughly 55 percent (n=12) of the collection. Quartzite accounted for nine nodules, with limestone (n=1) and an unknown material completing the collection. There was no chert collected from this area, a location that was at a higher elevation of roughly 155 m (508.5 ft.) AMSL relative to other collection areas. Ironstone is not a listed material for summaries of Uvalde Gravels. However, beds of ironstone are listed in this area as a component of the Wilcox Group, while chert is not recorded as present (Chapter 2; see also Barnes 1974). It is likely, then, that Location 4 is not exclusively sampling Uvalde Gravels. It is, however, a sampling of gravels that were likely available to prehistoric populations.

Finally, Location 5 was at an approximate elevation of 140 m (449.5 ft.) AMSL. The material was exposed in a road cut just below a small ridge. Twenty-one nodules were collected, with quartzite accounting for 90 percent (n=19) of the collection. One piece of chert, 5.5 cm in size, and a piece of petrified wood completed this collection.

*Figure 9-2. Collection Locations 2 and 3. Location 3 was roughly 35 m away from and about 3 m higher in elevation than Location 2.*

Overall, while gravels were plentiful, chert was not. Nodules of chert were present in only three of the five locations and accounted for only five percent of the material collected. Chert nodules were generally small, ranging in size from 5.5-9 cm, with an average of 7 cm in maximum dimension (see Appendix D). While it may be the case that these local chert resources have been extensively used, in effect exhausting the resource, it may also be the case that chert was never common in these deposits. Quartzite was the dominant raw material, accounting for over 70 percent of the nodules collected. Figure 9-3 presents the size distribution of quartzite nodules, which average roughly 2 cm larger than the small number of chert nodules collected. While the raw material analysis conducted on the archaeological material was focused on characterizing material quality rather than assigning stone to a geological classification, a secondary review of all coarse-grained material in the debitage suggests that quartzite comprises roughly two percent of the archaeological material observed on this project. Quartzite, however, does figure prominently in raw materials used for burned rock.

Based on these data, while small quantities of chert may be present within the available gravels, chert is not abundant on the Camp Swift landscape nor is the material of excellent quality, as noted by Kelly and Roemer (1981) and Skelton (1979). Some portion of the material recovered from archaeological sites on this project, then, was likely brought in from outside of the immediate project area. In situations with low-quality, low-density tool stone, two broad strategies to provide adequate raw materials can be envisioned. In the first strategy, stone could be transported into the area from locations with high availability, most likely in partially reduced or even finished tool form. In the second strategy, occupants would rely on locally available stone. The initial strategy should result in an assemblage dominated by high-quality materials. Much of the debitage should lack cortex, and flakes should fall in the smaller size ranges. In the second strategy, materials should be more variable in quality and non-cortical flakes should be less common. In cases where local nodules are small, the percentage of cortical flakes should be exacerbated, and the overall size range of flakes should be restricted. In most situations, recovered assemblages probably reflect a mix of these two strategies.

## Archaeological Patterns

To consider these two possible strategies in the case of Camp Swift, CAR investigated various aspects of cortex, size, and raw material quality generated from this project. In addition, patterning in short and long wave ultraviolet light fluorescence of raw materials was used to identify, tentatively, Edwards Group chert, stone that ultimately was derived from the Edward Plateau. It is likely that the vast majority of raw materials on this project were transported to Camp Swift from that region.

Table 9-1 provides summary data for the eight sites tested on this project. These data, which inform much of the analysis in this section, include data on the relative frequency of non-cortical items, the incidence of heating observed, the amount of fine-grained material, and measures on the size of the assemblages.

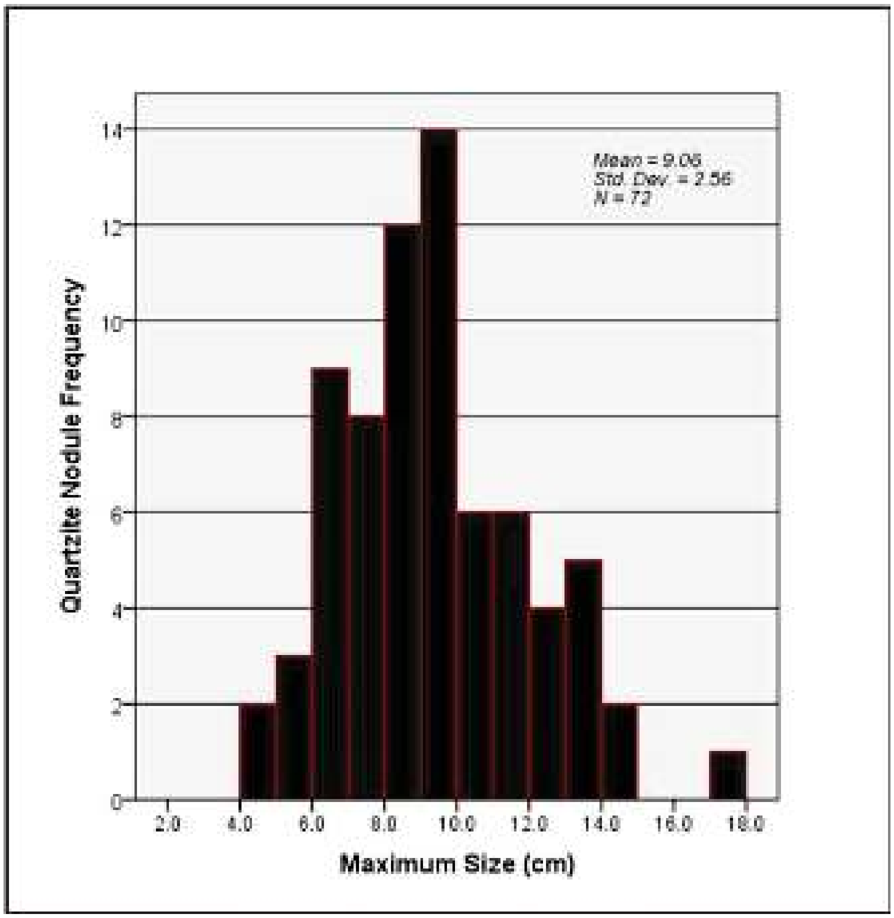


*Figure 9-3. Size distribution of quartzite nodules collected from Figure 9-1 locations on Camp Swift. Note that one large item (21.5 cm) is not shown on the graph (see Appendix D).*

Table 9-1. Summary Data on Chipped Stone Debitage by Site

| **Site** | **Number of Debitage** | **Percent Non-Cortical** | **Heated** | **Fine-Grained** | **Mean Flake Length (mm)** | **Length at 90th Percentile (mm)** |
|---|---|---|---|---|---|---|
| 41BP487 | 118 | 97.40% | 26.30% | 92.90% | 16.79 | 25.15 |
| 41BP776 | 434 | 82.30% | 25.80% | 98.60% | 19.88 | 33.3 |
| 41BP778 | 9 | 55.60% | 33.30% | 100% | 23.89 | n/a |
| 41BP780 | 45 | 91.10% | 22.20% | 100% | 21.64 | 43.1 |
| 41BP782 | 174 | 83.90% | 14.40% | 92% | 21.04 | 31.18 |
| 41BP792 | 59 | 78.00% | 25.40% | 93.20% | 20.21 | 31.26 |
| 41BP801 | 518 | 82.00% | 31.90% | 94.80% | 19.27 | 30.49 |
| 41BP802 | 215 | 88.80% | 32.10% | 95.30% | 19.18 | 29.88 |
| Total | 1,572* | 84.40% | 25.90% | 95.70% | 19.56 | 31.16 |

*sample size varies slightly depending on variable reported

Focusing initially on cortex and discounting site 41BP778 from which only nine items were recovered, six of the seven sites have non-cortical frequencies exceeding 80 percent (see Table 9-1). These high frequencies of non-cortical debitage, highlighted by site 41BP487 on which 115 of the 118 pieces of debitage lacked cortex, are surprising. At a project level, over 84 percent of the items recovered lacked cortex (see Table 9-1). High non-cortical debitage values, like those in Table 9-1, are likely related to either some form of staging or to the extensive reduction of larger nodules. Here, the use of "staging" refers to the initial removal of large cortical flakes that likely occurred at another location prior to reduction or use of the stone at the location of interest. This would result in relatively high incidences of non-cortical material at the second location. Alternatively, a focus on extensive reduction of large nodules would produce relatively more non-cortical (internal) flakes relative to cortical (external) flakes. The reduction of smaller nodules would generate higher percentages of cortical to non-cortical flakes when compared to a similar reduction of larger nodules (see Figueroa et al. 2009; Mauldin and Figueroa 2006:83-87).

Figure 9-4, taken from Mauldin and Figueroa (2006:85-86), provides comparative data for interpreting the non-cortical percentages listed in Table 9-1. The data are from 41 different projects, with chert availability loosely based on geological information regarding the primary distribution of Edwards Group chert (see Fredrick and Ringstaff 1994:135) as well as secondary deposition of chert by major rivers. The figure suggests a generally positive relationship between non-cortical percentages and availability. Data from Mauldin and Figueroa (2006:85) show that assemblages in areas characterized as having high availability (n=17) have an average of 79.1 percent non-cortical flakes, with 9 of the 17 projects having more than 80 percent non-cortical flakes. Those designated as having moderate availability (n=10) average a non-cortical percentage of 70 percent, with no individual cases above 80 percent. Finally, those with low availability average 64.7 percent non-cortical recovery, and there are two of 14 cases over 80 percent. The Camp Swift data, which CAR has suggested based on this raw material review clearly falls in the low availability group, averaged 84.4 percent, and six of the seven sites with adequate sample

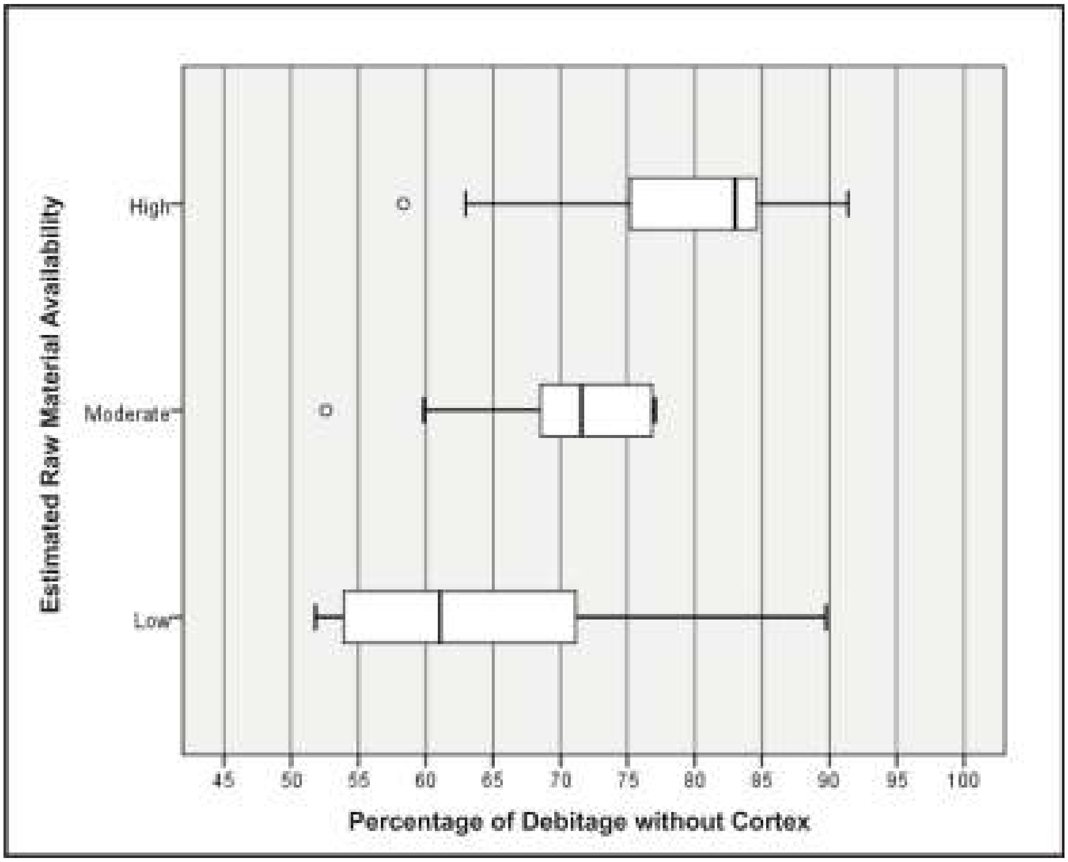


*Figure 9-4. Box plot of non-cortical percentages for 41 different projects categorized by availability to tool stone (after Mauldin and Figueroa 2006:Figure 9-2). Note that box plots are on percentages, are for display only, and should not be used for any inferential statistical comparisons.*

sizes have an average non-cortical percentage of above 80 percent (see Table 9-1). These percentages on Camp Swift look similar to the percentages shown by Mauldin and Figueroa (2006:85-86) for their high availability group.

Figure 9-5 presents a histogram of the low availability group in which the seven Camp Swift cases have been added to the 14 previous cases of low availability summarized in Mauldin and Figueroa (2006). The pattern suggests a bimodal distribution. Site/projects with less than roughly 70 percent non-cortical debitage in low availability settings may be coping with raw material stress by focusing on these locally available sources. Those with more than the 75 percent non-cortical percentages may be increasingly relying on the use of non-local resources. In some cases, these non-local materials may have been partially reduced prior to transport into the low raw material area. Camp Swift sites clearly define this second mode.

If these suggestions are accurate, then it can be expected that cases that relied on local raw materials, especially when those local materials are composed primarily of small nodules, will have different non-cortical size distributions when compared to the sizes of those assemblages composed of non-local cherts. In these cases, non-local materials, especially in the upper size ranges, would be expected to be larger, in spite of some reduction at the primary source location, as the parent material should be substantially larger than available local sources. Figure 9-6 visually presents this possibility by contrasting non-cortical percentages and mean debitage size for the Camp Swift sites and site 41PR44 located at Fort Wolters in North Texas. Excavated in 2006, 41PR44 is located in a raw material poor area (Mauldin and Figueroa 2006). While not all material could be assigned to either a local or non-local group, Mauldin and Figueroa (2006:92) suggest that at least 36 percent of the 41PR44 debitage was local, while at least 37 percent was from outside the Fort Wolters area. Site 41PR44 provides a debitage pattern that likely represents a mix of material procurement strategies and that contrasts with the Camp Swift sites in terms of both debitage size and non-cortical percentages.

The final variable considered here is material quality. This is a somewhat subjective category, which is difficult to quantify, however, this analysis attempts to do so by considering grain size. While there is a lack comparative data from other regions, Table 9-1 does provide a summary of the relative frequency of fine-grained material in the assemblages. Overall, 95.7 percent of the assemblage was classified as "fine grained," and all sites were above 90 percent on this characterization. The principal source of tool stone within Camp Swift, however, has little chert, and the available chert is likely of poor quality, with erratic fracture patterns (Kelly and Roemer 1981:4; Skelton 1979:5-7). As with the cortical and size patterns noted previously, the quality of the

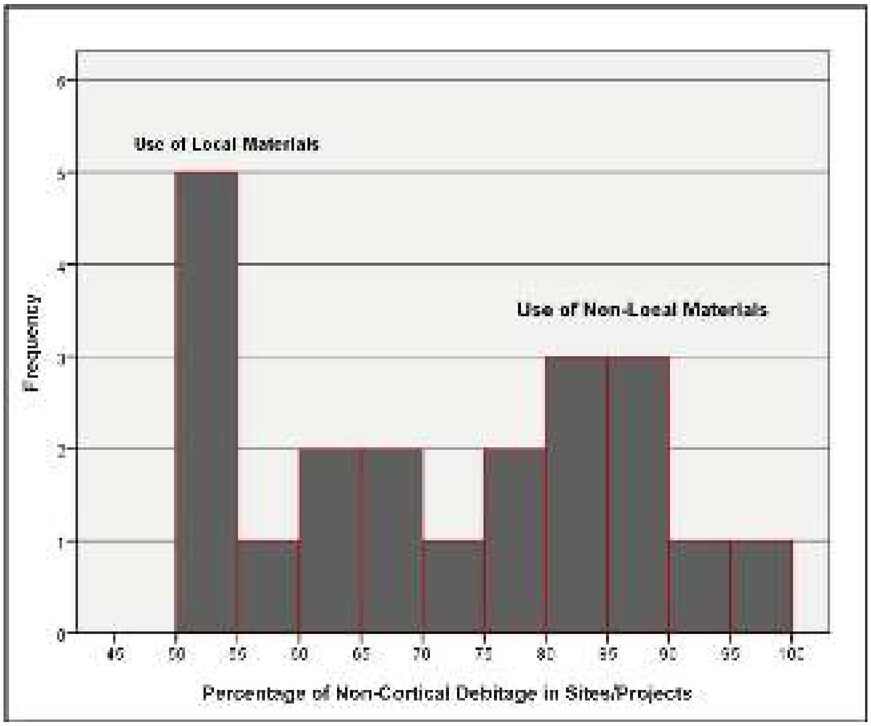


*Figure 9-5. Non-cortical debitage percentages for 21 cases in areas where raw material availability is low.*

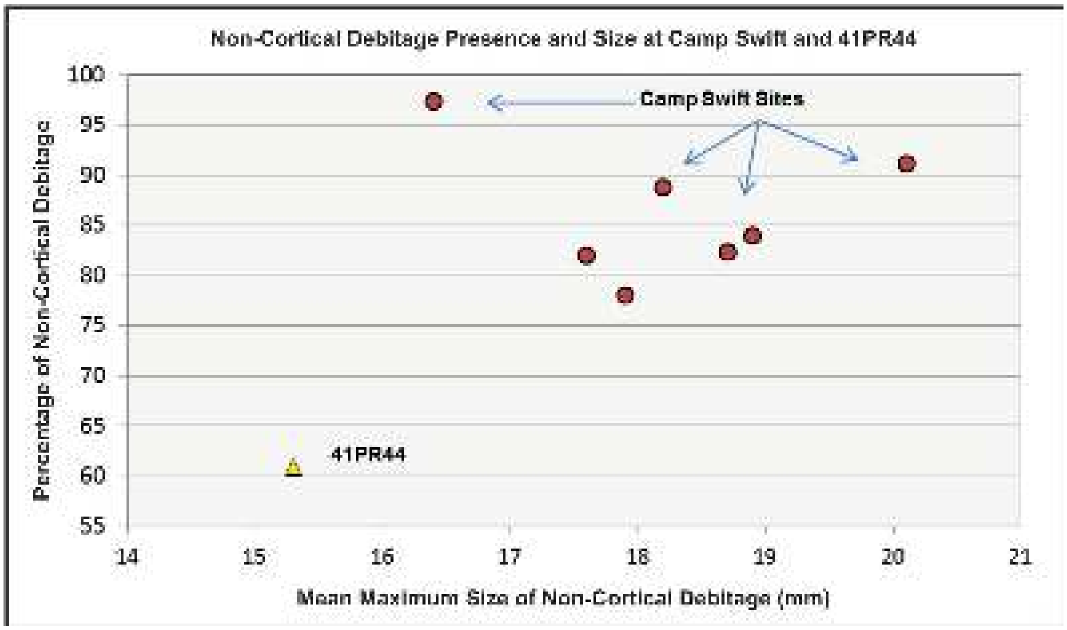


*Figure 9-6. Non-cortical debitage mean size and percentages for Camp Swift sites and site 41PR44. Camp Swift sites likely reflect extensive use of non-local tool stone. Mauldin and Figueroa (2006) argue that 41PR44 likely represents the use of both local and non-local materials.*

archaeological debitage suggests that much of the tool stone recovered on the project comes from outside the project area. The source for a significant amount of this non-local stone is likely to be the Edwards Plateau.

## Defining Non-Local Raw Materials

A final exploration of the archaeological debitage briefly considers patterns in short and long wave fluorescence of materials under ultraviolet light. The use of ultraviolet fluorescence (UVF) as a tentative method to identify raw materials from different geological sources has been used with apparent success by several researchers (e.g., Frederick et al. 1994; Hofman et al. 1991; Newlander and Speth 2009). As noted previously, cherts from the Edwards Group are likely located to the southwest of Camp Swift as secondary gravels associated with the Colorado River and to the west as primary sources on the Edwards Plateau. Previous studies suggest that these cherts have a distinctive glow pattern under UV light. Hofman et al. (1991:302) note that "Edwards Chert from central Texas…has a consistently amber-orange-yellow range of fluorescence," and Newlander and Speth (2009:49) state that these cherts "invariably fluoresce orange/yellow under UV light." Both of these sources cite an unpublished study by Collins and Headrick that looked at 257 samples of chert from 47 different outcrops on the Edwards Plateau and concluded that 92 percent of the samples fluoresced in the orange and orange-yellow color range.

To assess the occurrence of these color ranges on the Camp Swift debitage, CAR used a Raytech UV light applying both short wave (2500 wavelength - angstrom units) and the long wave (mean of 3500 wavelength - angstrom units) sources independently. Table 9-2 list the results from this analysis for 1,564 pieces of debitage from the Camp Swift sites (see Appendix C). Those specimens that reacted in the orange or yellow-orange ranges on either the short wave or the long wave frequencies were assigned to an Edwards source with the exceptions of specimens with green or yellow-green glows. This Edwards Group, which accounts for 1,290 items or 82.5 percent of the collection, is highlighted in orange in the table.

For comparison, the five chert nodules CAR collected in its study of available local cherts summarized above were also fluoresced (see Appendix D). Four of the five local chert samples fluoresced yellow in both the short and long wave frequencies, with a fifth sample fluorescing dark red in both the short and the long wave registers. The yellow fluorescence in both short and long wave was not recorded in any of the archaeological debitage analyzed. However, it will be assumed that any non-Edwards Group sample that fluoresced dark red in both wavelengths had no reaction in both wavelengths, had no reaction under long wave sources but fluoresced dark red under short wave, or fluoresced a yellow-dark red paring, was local. These cases are highlighted in yellow in Table 9-2. Using this procedure, which should

Table 9-2. Patterning in Ultraviolet Fluorescence

| Long Wave | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Colors | Dark Red | Green | No Reaction | Orange | Purple | Red | Yellow-Orange | Total |
| Short Wave | Dark Red | 10 | 0 | 3 | 0 | 0 | 0 | 0 | 13 |
| | Light Red | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| | No Reaction | 175 | 0 | 22 | 15 | 0 | 2 | 2 | 216 |
| | Orange | 40 | 0 | 6 | 41 | 0 | 1 | 0 | 88 |
| | Red | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 4 |
| | Yellow | 7 | 0 | 0 | 112 | 0 | 1 | 27 | 147 |
| | Yellow-Green | 10 | 0 | 1 | 36 | 0 | 0 | 1 | 48 |
| | Yellow-Orange | 49 | 1 | 16 | 959 | 0 | 5 | 17 | 1,047 |
| | Total | 293 | 1 | 48 | 1,163 | 1 | 11 | 47 | 1,564 |
| | | **Edwards Group Sources** | | | **Local Gravels** | | **Other Non-Local Sources** | | |

maximize the potential for a "local" assignment, roughly 13.7 percent of the assemblage on the project may be derived from local gravels. Note, however, that the actual percentage is probably less.

Finally, there were multiple cells, highlighted in green in Table 9-2, that were not assigned to either the local or the Edwards Group. These 60 items (3.8 percent) are likely from non-local sources, though those sources are not in the Edwards Group.

Given the strong non-local patterns shown in the Table 9-2 debitage, 29 chipped stone tools and cores were reviewed for UVF. While the sample size is small, 26 (89.7 percent) of the 29 items looked at were consistent with the Edwards Group glow patterns fluorescing orange or yellow-orange in one or both wavelengths. The remaining three items had signatures not consistent with Edwards, glowing in the green, yellow-green, and red ranges. None of the 29 had signatures consistent with the local materials.

## Summary

CAR's review of available stone resources on Camp Swift, as well as patterns in cortex, size, and quality measures of the archaeological debitage suggests that over 86 percent of the recovered debitage are not from Camp Swift. An analysis considering short and long wave ultraviolet light fluorescence of the debitage suggests that much of the material likely derived from the Edwards Plateau. While sample sizes are small, UVF patterns in tools and cores produce a similar conclusion. The high frequencies of external sources indicated by the UVF patterns, as well as the surprisingly low frequency of cortex at several of the sites, suggest that raw materials may have been transported into the region in a finished, or nearly finished, form. Clearly, no reduction of cortex covered items occurred at locations such as 41BP780, 41BP802, or 41BP487, where non-cortical percentages exceeded 88 percent.

# Chapter 10: Summary, Recommendations, and Future Research Initiatives

*Raymond Mauldin and Leonard Kemp*

The Center for Archaeological Research (CAR) at The University of Texas at San Antonio (UTSA) conducted fieldwork associated with National Register of Historic Places (NRHP) eligibility testing on eight prehistoric sites located on Camp Swift in Bastrop County, Texas. CAR carried out the work in accordance with Section 106 of the National Historic Preservation Act (NHPA) of 1966. The archaeological testing was conducted at two different intervals. The first interval was in late October through December of 2012 with seven sites tested (41BP776, 41BP778, 41BP780, 41BP782, 41BP792, 41BP801, and 41BP802), and the second interval was in September of 2016 with the testing of 41BP487. During these investigations, CAR excavated 41 1-x-1 m test units and screened roughly 26.65 m$^3$ of deposits from these eight sites. CAR identified roughly 1,575 pieces of chipped stone debitage, 10 cores, and a small number of chipped stone tools including bifaces, edge modified flakes, and projectile points. CAR identified three thermal features, one at site 41BP802 and two at site 41BP487, and collected close to 19 kg of burned rock.

CAR's literature review of ecological, climate, and paleoclimate data suggests that the Camp Swift area had a low diversity of both floral and faunal resources commonly used by hunter-gatherers. These subsistence options were further hampered by an unpredictable climate. Perhaps not surprising given the low level of resources, previous investigations at Camp Swift identified significant gaps in documentation of hunter-gather land use. While sample sizes are surprisingly small, both temporally diagnostic projectile points and radiocarbon dates suggest similar patterns, with little use of the area prior to the close of the Late Archaic. The three radiocarbon dates, collected in association with the three features excavated, as well as a handful of diagnostic artifacts, follow this previously established pattern of use late in the prehistoric sequence.

The eight sites considered here had, for the most part, low densities of material, limited tool diversity, and few features. In several instances, CAR documented evidence of bioturbation that have compromised the integrity of deposits. There are also cases that have good integrity, as suggested by artifact distribution patterns, the presence of recognizable features, and by patterns in magnetic soil susceptibility measures.

At a project level, CAR's analysis of chipped stone and its investigation of locally available tool stone resources suggest that much of the materials recovered from these eight sites does not reflect significant use of locally available raw material. Raw material seems to be primarily derived from the Edwards Plateau. Data suggests that in many cases, these materials arrived at Camp Swift following early reduction at another location.

## Recommendations

CAR's recommendations regarding eligibility for inclusion to the NRHP hinges on sites having significance under criteria d of 36 CFR 60.4. Under this criteria, a site would have significance if it has "integrity of location…setting, materials,…and association" and has yielded, "or may be likely to yield, information important to prehistory…" (NPS 2016). To assist with that determination, CAR focused on three interrelated research domains. These domains consist of the chronological potential of a site, discussed in Chapter 6, the integrity of a site, discussed in Chapter 7, and the content of a site, discussed in Chapter 8.

After reviewing these sections, CAR recommends that three sites, 41BP487, 41BP801, and 41BP802, should be considered as eligible for listing on the NRHP. CAR also recommends that the remaining five sites, 41BP776, 41BP778, 41BP780, 41BP782, and 41BP792, should be considered not eligible for NRHP listing. The Texas Historical Commission concurred with these recommendations on November 27, 2017. In addition, the TMD provided copies of the draft report to consulting Federally Recognized Tribal Nations for comment. It did not receive any formal comments back from the consulted tribes. If future review by Tribal Historic Preservation staff of this final report results in any need to edit or revise this report, TMD will work with Tribes and SHPO to prepare an updated publication. Table 10-1 summarizes the findings of each of these domains, as well as CAR's eligibility recommendations. Highlighted cells identify those elements that contribute positively (orange) or negatively (blue) to the three domains, as well as the overall eligibility determination for the site.

In making the decisions represented in Table 10-1, CAR focused on all three criteria, looking for sites that had good measures of integrity, chronology, and content. Sites that were lacking in one or more of these areas were judged to have little or no potential to contribute to resolutions of broader research questions, and therefore, they would not

Table 10-1. Summary of Archaeological Sites and NRHP Eligibility Recommendations

| | | | | **Chronological Potential** | | **Site Integrity** | | **Site Content** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site | Site Size (ha) | Test Units Excavated | Amount Excavated (m$^3$) | Temporal Diagnostics | Radiocarbon Dates/Potential | Artifact Patterning | MSS Assessment of Integrity | Number of Tools; Variety of Tool Type | Raw Material Groups/Number and Evenness | Debitage Density (m$^3$) | Number of Features; Burned Rock Density | NRHP Eligibility Recommendation |
| 41BP487 | 1.06 | 5 | 4.36 | None | Yes; High | Good | High | 6; Medium | High; Skewed | 27.03 | 2; 1.00 | Eligible |
| 41BP776 | 2.36 | 7 | 3.48 | Late Prehistoric | Good | Poor | Low | 11; High | High; Even | 125.03 | 0; 0.51 | Not Eligible |
| 41BP778 | 0.06 | 3 | 2.03 | None | Poor | N/A | High | 0; None | Low; N/A | 4.4 | 0; 0.0 | Not Eligible |
| 41BP780 | 0.6 | 4 | 3.37 | None | Poor | N/A | Moderate | 1; Low | Very low; Very skewed | 13.4 | 0; 0.02 | Not Eligible |
| 41BP782 | 3.48 | 7 | 2.61 | Late Prehistoric | Moderate | Poor | Low | 6; Medium | Moderate; Skewed | 66.3 | 0; 0.3 | Not Eligible |
| 41BP792 | 0.36 | 4 | 1.95 | Late Prehistoric | Moderate | N/A | High | 7; High | Moderate; Even | 30.3 | 0; 0.15 | Not Eligible |
| 41BP801 | 0.47 | 5 | 2.63 | None | Good | Good | Moderate | 10; High | High; Even | 197.3 | 0; 1.8 | Eligible |
| 41BP802 | 0.58 | 6 | 5.22 | Late Archaic/ Late Prehistoric | Yes; High | Good | Low | 7; High | High; Skewed | 41.4 | 1; 1.2 | Eligible |

yield information important in prehistory. For example, both sites 41BP778 and 41BP780 lacked any indicators of chronological potential, and while both sites had some indications supporting integrity, the low site content limits the utility of these deposits (see Table 10-1). While sites 41BP776 and 41BP782 had good content and chronological potential, both had integrity concerns, and although 41BP792 had a temporal diagnostic point and good integrity, site content was moderate (see Table 10-1).

In contrast, sites 41BP487 and 41BP802 both had features that returned radiocarbon dates. While no radiocarbon dates were obtained from 41BP801, chronological potential was good as indicated by the recovery of charcoal and bone, as well as high densities of burned rock that is suggestive of features and relatively high tool frequency. All three sites had sections that appeared to have high integrity as judged by the presence of recognizable features, artifact patterning and, in the case of 41BP487, MSS indicators (see Table 10-1). Finally, none of these three sites had any negative scores on site content. In CAR's view, the combination of good chronology and integrity, combined with diverse archaeological content at these three locations warrants their NRHP listing. If these recommendations are supported, then these three locations should be considered in any future development or activities that have the potential to cause primary or secondary impacts to the archaeological material. The sites should be avoided if possible. If avoidance is not possible, then additional excavation may be warranted.

## Future Research Initiatives

As noted at various points in this report, much of the research on Camp Swift has focused on understanding the depositional integrity of deposits in the Sandy Mantle. That focus is certainly understandable, as it has implications for site integrity well beyond Camp Swift, and while aspects of this issue remain unclear, what is clear is that is some cases prehistoric archaeological sites in the Sandy Mantle do have depositional integrity. Beyond the Sandy Mantle, a focus on several other research areas now seems appropriate.

Foremost among these other research areas are questions centered on the timing and nature of past occupation at Camp Swift. As noted in Chapter 3, Camp Swift and Camp Bowie have comparable site densities with 0.0186 sites per acre. This density is higher than that of Fort Wolters or Camp Maxey. While sites are relatively common on Camp Swift, over 86 percent of prehistoric sites lack a temporal designation. Temporally diagnostic artifacts, primarily projectile points, are rare, with Bousman et al. (2010:370-374) reporting only 34 such artifacts for the 11,500-acre facility. The 16 radiocarbon dates from the facility suggest that, with a single exception, occupation really did not begin until the close of Late Archaic, with most dates falling between 1200 and 500 BP, a pattern that appears consistent with the diagnostic artifacts. The pattern is unlikely to be the result of a lack of investigation, given the number of projects conducted on the facility. It is also, in CAR's view, unlikely to be a true representation of the prehistoric use.

Though certainly not the only possible explanation for the pattern, one scenario that might account for these patterns involves the nature of use and changes in that use at Camp Swift. If the region was, for much of the prehistoric sequence, used for a restricted number of tasks, then depending on the nature of those tasks and the length of occupation, that use could have low chronological visibility. For example, in this particular geomorphic setting, recognized features are likely to contain burned rock, and these features are more likely to preserve charcoal that can be dated. In fact, 12 of the 16 dates from Camp Swift are on burned rock features (Bousman et al. 2010; see also Chapter 6). As Black (2003) and others (e.g., Thoms 2008, 2009; Wandsnider 1997) have shown, rock in features is probably related to long-term cooking of specific types of plants, rather than to the production of heat or light. If these types of plants either were not available in the region or were not a focus of activities, then few of these feature types would be generated, and fewer still would be preserved, recognized, and dated. An emphasis on non-feature radiocarbon dates, including direct dates on bone and charcoal, would provide additional information on the utility of these suggestions.

A similar argument can be advanced for the low frequency of diagnostics. Activities that focused on hunting may not have been the focus of prehistoric use at Camp Swift, at least prior to the introduction of the bow and arrow in the Late Prehistoric. These suggestions are consistent with both the characterization of the Post Oak Savannah as having restricted faunal inventory (see Chapter 2) and the patterns of non-local raw material use and low on-site reduction highlighted in the previous chapter. That is, to the degree that a specific set of tasks can be anticipated, tools could be fashioned prior to venturing off the Edwards Plateau or up from the Colorado River, to accomplish that task. If those tasks did not involve hunting, then projectile points may not have been a focus of the anticipated use.

The lack of chronological data, then, may be related to the nature of prehistoric use at Camp Swift for much of the prehistoric sequence rather than reflecting the actual pattern of use. If that scenario is at all useful, then late in time the nature of that use may have changed near the end of the Late Archaic with either longer occupations or occupations that had a generic focus.

This page intentionally left blank.

# References Cited:

Acuna, L.I.

2006 The Economic Contribution of Root Foods and Other Geophytes in Prehistoric Texas. Unpublished Master's thesis, Department of Anthropology, Texas State University, San Marcos.

Ahr, S.W., L.C. Nordt, and S.G. Driese

2012 Assessing Lithologic Discontinuities and Parent Material Uniformity within the Texas Sandy Mantle and Implications for Archaeological Burial and Preservation Potential in Upland Settings. *Quaternary Research* 78:60-71.

Alley, W.M.

1984 The Palmer Drought Severity Index: Limitations and Applications. *Journal of Climate and Applied Meteorology* 23:1100-1109.

Amick, D.S.

1994 *Folsom Diet Breadth and Land Use in the American Southwest*. Ph.D. dissertation, Department of Anthropology, The University of New Mexico, Albuquerque.

1995 Patterns of Technological Variation among Folsom and Midland Projectile Points in the American Southwest. *Plains Anthropologist* 40:23-38.

Anderson, D.G.

1996 Models of Paleo-Indian and Early Archaic Settlement in the Lower Southeast. In *The Paleoindian and Early Archaic Southeast*, edited by D.G. Anderson and K.E. Sassaman, pp. 29-57. University of Alabama Press, Tuscaloosa.

Andrews, B.N., J.M. Labelle, and J.D. Seebach

2008 Spatial Variability in the Folsom Archaeological Record: A Multi-scalar Approach. *American Antiquity* 73:464-490.

Baker, F.E.

1979 *Soil Survey of Bastrop County, Texas*. Soil Conservation Service, U.S. Department of Agriculture, Washington, D.C.

Barnes, V.E.

1974 Geological Atlas of Texas. Austin Sheet. Francis Luther Whitney Memorial ed. Bureau of Economic Geology, The University of Texas at Austin.

Bateman, M.D., C.H. Boulter, A.S. Carr, C.D. Frederick, D. Peter, and M. Wilder

2007 Preserving the Palaeoenvironmental Record in Drylands: Bioturbation and Its Significance for Luminiescence-Derived Chronologies. *Sedimentary Geology* 195:5-19.

Bellomo, R.V.

1983 A Methodological Approach to Identifying Archaeological Evidence of Fire Resulting from Human Activities. *Journal of Archaeological Science* 20:523-553.

Bement, L.C.

1986 *Excavations of the Late Pleistocene Deposits of Bonfire Shelter, Val Verde County, Texas*. Archeology Series 1. Texas Archeological Survey, The University of Texas at Austin.

1994 *Hunter and Gatherer Mortuary Practices during the Central Texas Archaic*. University of Texas Press, Austin.

Bever, M.R., and D.J. Meltzer

2007 Exploring Variation in Paleoindian Lifeways: The Third Revised Edition of the Texas Clovis Fluted Point Survey. *Bulletin of the Texas Archeological Society* 78:65-99.

Black, S.L.

1986 *The Clemente and Herminia Hinojosa Site, 41JW8: A Toyah Horizon Campsite in Southern Texas*. Special Report No. 18. Center for Archaeological Research, The University of Texas at San Antonio.

1989a Central Texas Plateau Prairie. In *From the Gulf Coast to the Rio Grande: Human Adaptation in Central, South and Lower Pecos Texas*, edited by T.R. Hester, S.L. Black, D.G. Steele, B.W. Olive, A.A. Fox, K.J. Reinhard, and L.C. Bement, pp. 17-38. Research Series No. 33. Arkansas Archeological Survey, Fayetteville.

1989b Environmental Setting. In *From the Gulf Coast to the Rio Grande: Human Adaptation in the Central, South, and Lower Pecos Texas*, edited by T.R. Hester, S.L. Black, D.G. Steele, B.W. Olive, A.A. Fox, K.J. Reinhard, and L.C. Bement, pp. 5-17. Research Series No. 33. Arkansas Archeological Survey, Fayetteville.

2003 Research Module 2: Studying the Hearths of the Greater Edwards Plateau. In *Pavo Real (41BX52): A Paleoindian and Archaic Camp and Workshop on the Balcones Escarpment, South-Central Texas*, by M.B. Collins, D.R. Hudler, and S.L. Black, pp. 375-405. Studies in Archeology 41. Texas Archeological Research Laboratory, The University of Texas at Austin.

Black, S.L., and D.G. Creel

1997 The Central Texas Burned Rock Midden Reconsidered. In *Hot Rock Cooking on the Greater Edwards Plateau: Four Burned Rock Midden Sites in West Central Texas*, by S.L. Black, L.W. Ellis, D.G. Creel, and G.T. Goode, pp. 446-515. Studies in Archeology 22. Texas Archeological Research Laboratory, The University of Texas at Austin; Texas Department of Transportation Environmental Affairs Department, Archeology Studies Program, Report 2.

Black, S.L., L.W. Ellis, D.G. Creel, and G.T. Goode

1997 *Hot Rock Cooking on the Greater Edwards Plateau: Four Burned Rock Midden Sites in West Central Texas*. Studies in Archeology 22. Texas Archeological Research Laboratory, The University of Texas at Austin; Texas Department of Transportation Environmental Affairs Department, Archeology Studies Program, Report 2.

Black, S.L., and A.J. McGraw

1985 *The Panther Springs Creek Site: Cultural Change and Continuity in the Upper Salado Creek Drainage, South-Central Texas*. Archaeological Survey Report, No 100. Center for Archaeological Research, The University of Texas at San Antonio.

Blair, W.F.

1950 The Biotic Provinces of Texas. *The Texas Journal of Science* 2(1):93-117.

Bocek, B.

1986 Rodent Ecology and Burrowing Behavior: Predicted Effects on Archaeological Site Formation. *American Antiquity* 51:589-603.

Bonnichsen, R., and K.L. Turnmire (editors)

1991 *Clovis: Origins and Adaptations*. Center for the Study of the First Americans. Oregon State University, Corvallis.

Boulter, C., M.D. Bateman, A.S. Carr, and C.D. Frederick

2006 Assessment of Archaeological Site Integrity of Sandy Substrates Using Luminescence Dating. *Society of Archaeological Sciences Bulletin* 29(2):8-12.

Boulter, C., M.D. Bateman, and C.D. Frederick

2010 Understanding Geomorphic Responses to Environmental Change: A 19,000-year Case Study from Semi-arid Central Texas, USA. *Journal of Quaternary Science* 25(6):889-902.

Bousman, C.B.

1998 Paleoenvironmental Change in Central Texas: The Palynological Evidence. *Plains Anthropologist* 43(164):201-219.

Bousman, C.B., B.W. Baker, and A.C. Kerr
2004 Paleoindian Archeology in Texas. In *The Prehistory of Texas*, edited by T.K. Perttula, pp. 15-97. Texas A&M University Press, College Station.

Bousman, C.B., and R.C. Fields
1988 Results of the Geoarcheological Investigations. In *Archeological Survey of the 1989-1993 Permit Area, Jewitt Mine Project, Freestone and Leon Counties, Texas*, edited by R.C. Fields, pp. 195-237. Reports of Investigations No. 63. Prewitt and Associates, Inc., Austin.

1991 Environmental Setting. In *Excavations at the Bottoms, Rena Branch, and Moccasin Springs Sites, Jewett Mine Project, Freestone and Leon Counties, Texas*, edited by R.C. Fields, pp. 5-20. Reports of Investigations No. 82. Prewitt and Associates, Inc., Austin.

Bousman, C.B., D. Nickels, and D.P. Stone
2010 Results of the Investigation and Project Summary. In *An Archaeological Survey of 3,475 Acres at Camp Swift, Bastrop County, Texas*, assembled by D.L. Nickels, C.B. Bousman, and J.L. Hurley, pp. 361-377. Archaeological Studies Report No. 11. Center for Archaeological Studies, Texas State University, San Marcos.

Bousman, C.B., and M. Quigg
2006 Stable Carbon Isotopes from Archaic Human Remains in the Chihuahuan Desert and Central Texas. *Plains Anthropologist* 51(198):123-139.

Bradley, B.A., M.B. Collins, and A. Hemmings
2010 *Clovis Technology*. Archaeological Series 17. International Monographs in Prehistory, Ann Arbor.

Bronk Ramsey, C.
2009 Bayesian Analysis of Radiocarbon Dates. *Radiocarbon* 51:337-360.

Brown, D.O.
1998 Late Holocene Climates of North-Central Texas. *Plains Anthropologist* 43:157-172.

Bruseth, J.E., and W.A. Martin
2001 OSL Dating and Sandy Mantle Sites in East Texas. *Current Archeology in Texas* 3:12-17.

Bryson, R.A.
1989 Modeling the NW Indian Monsoon for the Last 40,000 Years. *Climate Dynamics* 3:169-177.

1992 A Macrophysical Model of the Holocene Intertropical Convergence and Jetstream Positions and Rainfall for the Saharan Region. *Meteorology and Atmospheric Physics* 47:247-258.

1994 On Integrating Climatic Change and Cultural Change Studies. *Human Ecology* 22:115-128.

2005 Archeoclimatology. In *Encyclopedia of World Climatology*, edited by J.E. Oliver, pp. 58-63. Encyclopedia of Earth Science Series, Springer, New York.

Bryson, R.A., and R.U. Bryson
1997 Macrophysical Climate Modeling of Africa's Late Quaternary Climate: Site-Specific, High-Resolution Applications for Archaeology. *African Archaeological Review* 14:143-160.

Bryson, R.A., and K.M. DeWall
2007 An Introduction to the Archaeoclimatology Macrophysical Climate Model. In *A Paleoclimatology Workbook: High Resolution, Site-Specific, Macrophysical Climate Modeling*, edited by R.A. Bryson and K.M. DeWall, pp. 3-10. The Mammoth Site of Hot Springs, South Dakota, Inc.

Bryson, R.A., and B.M. Goodman

1986 Milankovitch and Global Ice Volume Simulation. *Theoretical and Applied Climatology* 37:22-28.

Bryson, R.U., R.A. Bryson, and A.H. Ruter

2007 A Calibrated Radiocarbon Database of Late Quaternary Volcanic Eruptions. In *A Paleoclimatology Workbook: High Resolution, Site-Specific, Marcophypsical Climate Modeling*, edited by R.A. Bryson and K.M. DeWall, pp. 27-31. The Mammoth Site of Hot Springs, South Dakota, Inc.

Butzer, K.W.

1982 *Archaeology as Human Ecology*. Cambridge University Press, Oxford.

Byrd, C.E.

1971 *Origin and History of the Uvalde Gravels of Central Texas*. Baylor Geological Studies No. 20. Department of Geology, Baylor University, Waco, Texas.

Cabeza de Vaca, A.N.

1993 *The Account and Commentaries of Governor Alvar Nunez Cabeza De Vaca, of What Occurred on the Two Journeys that He made to the Indies*. Translation and annotation by M.A. Favata and J.B. Fernandez. Arte Publico Press Houston.

Camper, H.A.

1991 Pollen Analysis of Patschke Bog. Unpublished Master's thesis, Department of Botany, Texas A&M University, College Station.

Cargill, D.A.

1996 Stable Isotope Analysis at Mission San Juan De Capistrano, San Antonio, Texas. Unpublished Master's thesis, Department of Anthropology, The University of Texas at San Antonio.

Chadderdon, M.F.

1983 *Baker Cave, Val Verde County, Texas: The 1976 Excavations*. Special Report 13. Center for Archaeological Research, The University of Texas at San Antonio.

Collins, M.B.

1995 Forty Years of Archeology in Central Texas. *Bulletin of the Texas Archeological Society* 66:361-400.

1998 *Wilson-Leonard: An 11,000 Year Archeological Record of Hunter-Gatherers in Central Texas*. Studies in Archeology 31. Texas Archeological Research Laboratory, The University of Texas at Austin.

1999a *Clovis Blade Technology*. University of Texas Press, Austin.

1999b Gault Site. In *The Handbook of Texas*, edited by R.R. Barkley, pp. 117-118. Texas State Historical Association, Austin.

2003 Gault Site Dates and Findings. *Newsletter of the Friends of the Texas Archeological Laboratory* May:8-10.

2004 Archeology in Central Texas. In *The Prehistory of Texas*, edited by T.K. Perttula, pp. 205-265. Texas A&M University Press, College Station.

Collins, M.B., D. Hudler, and S.L. Black

2003 *Pavo Real (41BX52): A Paleoindian and Archaic Camp and Workshop on the Balcones Escarpment, South-Central Texas*. Studies in Archeology 41. Texas Archaeological Research Laboratory, The University of Texas at Austin; Archeological Studies Program, Report 50. Environmental Affairs Division, Texas Department of Transportation, Austin.

Cook, E.R., and P.J. Krusic
2004 The North American Drought Atlas. Lamont-Doherty Earth Observatory and the National Science Foundation. Columbia University, Palisades, New York. Electronic document, http://iridl.ldeo.columbia.edu/SOURCES/.LDEO/.TRL/.NADA2004/.pdsi-atlas.html, accessed November 2013.

Cooke, M.J.
2005 *Soil Formation and Erosion in Central Texas: Insights from Relict Soil and Cave Deposits*. Ph.D. dissertation, The University of Texas at Austin.

Creel, D.G.
1986 *Study of Prehistoric Burned Rock Middens in West Central Texas*. Ph.D. dissertation, The University of Arizona, Tucson.

Crockford, R.H., and I.R.Willett
2001 Application of Mineral Magnetism to Describe Profile Development of Topo Sequences of a Sedimentary Soil in South-eastern Australia. *Australian Journal of Soil Research* 39:927-949.

Crowther, J.
2003 Potential Magnetic Susceptibility and Fractional Conversion Studies of Archaeological Soils and Sediments. *Archaeometry* 45:685-701.

Davis, W.B., and D.J. Schmidly
1997 The Mammals of Texas - Online Edition. Texas Tech University and Texas Parks and Wildlife Department, Nongame and Urban Program, Austin. Electronic document, http://www.nsrl.ttu.edu/tmot1/Default.htm, accessed 2012.

Dean, J.S.
1988 Dendrochronology and Paleoenvironmental Reconstruction on the Colorado Plateau. In *The Anasazi in a Changing Environment*, edited by G.J. Gummerman, pp. 119-167. Cambridge University Press, New York.

Dearing, J.
1999 *Environmental Magnetic Susceptibility*. Chi Publishing, Kenilworth, England.

Dering, J.P.
1999 Earth Oven Processing in Archaic Period Economics: An Example from a Semi-Arid Savannah in South-Central North America. *American Antiquity* 64(4):659–674.

2008 Late Prehistoric Subsistence Economy on the Edwards Plateau. *Plains Anthropologist* 53(205):59-77.

DeWall, K.M.
2007 Questions and Answers: Troubleshooting. In *A Paleoclimatology Workbook: High Resolution, Site-Specific, Macrophysical Climate Modeling*, edited by R.A. Bryson and K.M. DeWall, pp. 69-72. The Mammoth Site of Hot Springs, South Dakota, Inc.

Dibble, D.S.
1965 *Bonfire Shelter: A Stratified Bison Kill Site in the Amistad Reservoir Area, Val Verde County, Texas*. Texas Archeological Salvage Project Miscellaneous Papers 3. The University of Texas, Austin.

Dibble, D.S., and D. Lorrain
1968 *Bonfire Shelter: A Stratified Bison Kill Site, Val Verde County, Texas*. Miscellaneous Papers 1. Texas Memorial Museum, Austin.

Dillehay, T.
1974 Late Quaternary Bison Population Changes on the Southern Plains. *Plains Anthropologist* 19(64):180-196.

Ellis, L.W.

1997 Hot Rock Technology. In *Hot Rock Cooking on the Greater Edwards Plateau: Four Burned Rock Midden Sites in West Texas*, Vol. 1, by S.L. Black, L.W. Ellis, D.G. Creel, and G.T. Goode, pp. 43-81. Studies in Archeology 22, Texas Archeological Research Laboratory, The University of Texas at Austin; Archeology Studies Program Report 2, Texas Department of Transportation, Austin.

Ellis, L.W., G.L. Ellis, and C.D. Frederick

1995 Implications of Environmental Diversity in the Central Texas Archeological Region. *Bulletin of the Texas Archeological Society* 66:401-426.

Ferring, C.R.

2001 *Archaeology and Paleoecology of the Aubrey Clovis Site (41DN479), Denton County, Texas*. Center for Environmental Archaeology, Department of Geography, University of North Texas.

Figueroa, A.L., C. Munoz, S. Smith, and R. Mauldin.

2009 Exploring the Impacts of Raw Material Availability and Size on Prehistoric Chipped Stone Assemblages in Central and South Texas. Paper presented at the Texas Academy of Sciences Annual Meeting, Junction.

Foster, W.C.

1995 *Spanish Expeditions into Texas, 1689-1768*. University of Texas Press, Austin.

1998 *The La Salle Expedition to Texas: The Journal of Henri Joutel 1664-1687*. Texas State Historical Association, Austin.

2008 *Historic Native Peoples of Texas*. University of Texas Press, Austin.

Frederick, C.D., and M.D. Bateman

2001 OSL Dating and Sandy-Mantle Sites in East Texas: A Reply. *Current Archeology in Texas* 3(2):14-18.

Frederick, C.D., M.D. Bateman, and R. Rogers

2002 Evidence for Eolian Deposition in the Sandy Uplands of East Texas and the Implications for Archaeological Site Integrity. *Geoarchaeology: An International Journal* 17(2):191-217.

Frederick, C.D., M.D. Glascock, H. Neff, and C.M. Stevenson

1994 *Evaluation of Chert Patination as a Dating Technique: A Case Study from Fort Hood, Texas*. Archaeological Resource Management Series, Research Report No. 32. United States Army, Fort Hood.

Frederick, C.D., and C. Ringstaff

1994 Lithic Resources at Fort Hood: Further Investigations. In *Archaeological Investigations on 571 Prehistoric Sites at Fort Hood, Bell and Coryell Counties, Texas*, edited by W.N. Trierweiler, pp. 125-183. Archaeological Resource Management Series, Research Report No. 31. United States Army, Fort Hood.

Freeman, J.

2007 *Energy, Intensification, and Subsistence Change: Hunter Gatherer Earth Ovens and Alternatives to Plant Domestication in Central Texas*. Master's thesis, The University of Texas at San Antonio.

Fritz, H.C.

1976 *Tree-Rings and Climate*. Academic Press, New York.

1991 *Reconstructing Large-scale Climatic Patterns from Tree-Ring Data*. The University of Arizona, Tucson.

Givens, R.D.

1968 A Preliminary Report on Excavations at Hitzfelder Cave. *Bulletin of the Texas Archeological Society* 38:47-50.

Goebel, T., M.R. Waters, and D.H. O'Rourke

2008 The Late Pleistocene Dispersal of Modern Humans in the Americas. *Science* 319:1497-1502.

Goode, G.T.

1991 Late Prehistoric Burned Rock Middens in Central Texas. In *The Burned Rock Middens of Texas: An Archaeological Symposium*, edited by T.R. Hester, pp. 71-93. Studies in Archeology 13. Texas Archeological Research Laboratory, The Universtiy of Texas at Austin.

2002 *The Anton Site: A Prehistoric Encampment in Southern Uvalde County*. Archeological Studies Program, Report 38. Texas. Environmental Affairs Division. Texas Department of Transportation, Austin.

Gose, W.A., and D.L. Nickels

2001 Archaeomagnetic and Magnetic Susceptibility Analyses. In *Test Excavations at the Culebra Creek Site, 41BX126, Bexar County, Texas*, by D.L. Nickels, C.B. Bousman, J.D. Leach, and D.A. Cargill. Archaeological Survey Report, No. 265. Center for Archaeological Research, The University of Texas at San Antonio.

Gould, F.W.

1975 *Texas Plants-A Checklist and Ecological Summary*. Bulletin MP 585:5-14. Texas Agricultural Experimentation Station, College Station.

Gould, F.W., G.O. Hoffman, and C.A. Rechenthin

1960 *Vegetation Areas of Texas*. Texas Agricultural Experimentation Station Leaflet No. 492. Texas A&M University, College Station.

Greer, J.W.

1976 Notes on Bison in Val Verde County, Texas: Additions to Dillehay. *Plains Anthropologist* 21:21-71.

Greer, J.W., and R.A. Benfer

1975 Austin Phase Burials at the Pat Parker Site, Travis County, Texas. *Bulletin of the Texas Archeological Society* 46:189-216.

Haefner, J., V. Galen, S. Champion, S. Barnett, H. Vaughan, and G. Cestaro

2012 *Intensive Archeological Survey at Bastrop and Buescher State Parks*. Archeology Series No. 239. Hicks & Company, Austin.

Haefner, J., and H. Vaughan

2012 Cultural Background. In *Intensive Archeological Survey at Bastrop and Buescher State Parks*, by J. Haefner, V. Galan, S. Champion, S. Barnett, H. Vaughan, and G. Cestaro, pp. 15-38. Archeology Series No. 239. Hicks & Company, Austin.

Hall, G.D.

1981 *Allens Creek: A Study in the Cultural Prehistoric of the Brazos River Valley*. Research Report 61. Texas Archeological Survey, The University of Texas at Austin.

Hall, S.A.

1990 Channel Trenching and Climatic Change in the Southern U.S. Great Plains. *Geology* 18:342-345.

Hard, R.J., and M.A. Katzenberg

2011 Stable Isotope Study of Hunter-Gatherer-Fisher Diet, Mobility, and Intensification on the Texas Gulf Coastal Plain. *American Antiquity* 76:709-751.

Haslouer-Kay, L., D. Kay, and T.M. Meade

1997 State of Texas Trinomial Form-41BP487. Texas Historical Commission. Electronic document, http://pedernales.thc.state.tx.us, accessed January 2016.

Hatch, S.L., K.N. Gandhi, and L.E. Brown

1990 *Checklist of the Vascular Plants of Texas*. The Texas Agricultural Experiment Station. Publication MP-1655. Texas A&M University, College Station.

Henderson, J.

2001 *Excavations at the Rainey Site (41BN33): A Late Prehistoric Sinkhole Site in Bandera County, Texas*. Archeological Studies Program Report 5. Texas Department of Transportation, Environmental Affairs Division, Austin.

Hester, T.R.

1970 Burned Rock Middens on the Southwestern Edge of the Edwards Plateau, Texas. *Plains Anthropologist* 15:237-250.

1971 Archeological Investigations at the La Jita Site, Uvalde County, Texas. *Bulletin of the Texas Archeological* Society 42:51-148.

1973 The Formation of a Burned Rock Midden: A California Example. *The Record* 30(1):4.

1975 Late Prehistoric Cultural Patterns along the Lower Rio Grande of Texas. *Bulletin of the Texas Archeological Society* 46:107-126.

1983 Late Paleo-Indian Occupations at Baker Cave, Southwestern Texas. *Bulletin of the Texas Archeological Society* 53:101-119.

1989 Introduction. In *From the Gulf Coast to the Rio Grande: Human Adaptation in Central, South and Lower Pecos Texas*, edited by T.R. Hester, S.L. Black, D.G. Steele, B.W. Olive, A.A. Fox, K.J. Reinhard, and L.C. Bement, pp. 1-4. Research Series No. 33. Arkansas Archeological Survey, Fayetteville.

2004 The Prehistory of South Texas. In *The Prehistory of Texas*, edited by T.K. Perttula, pp. 127-151. Texas A&M Press, College Station.

2005 An Overview of the Late Archaic in Southern Texas. In *The Late Archaic Across the Borderlands: From Foraging to Farming*, edited by B.J. Vierra, pp. 259-278. University of Texas Press, Austin.

Hester, T.R. (editor)

1991 *The Burned Rock Middens of Texas: An Archeological Symposium*. Studies in Archeology 13. Texas Archeological Research Laboratory, The University of Texas at Austin.

Highley, L., C. Graves, and G. Judson

1978 Archeological Investigations at Scorpion Cave (41ME7), Medina County, Texas. *Bulletin of the Texas Archeological Society* 49:139-194.

Hofman, J.L.

1995 Dating Folsom Occupations of the Southern Plains: The Lipscomb and Waugh Sites. *Journal of Field Archaeology* 22:421-437.

Hofman, J.L., L.C. Todd, and M.B. Collins

1991 Identification of Central Texas Edwards Chert at the Folsom and Lindenmeier Sites. *Plains Anthropologist* 36:297-308.

Holliday, V.T.

1989 Middle Holocene Drought on the Southern Plains. *Quaternary Research* 31:74-82.

Holliday, V.T., C.V. Haynes, Jr., J.L. Hofman, and D.J. Meltzer

1994 Geoarchaeology and Geochronology of the Miami (Clovis) Site, Southern High Plains of Texas. *Quaternary Research* 41:234-244.

Houk, B.A., and J.C. Lohse
1993 Archaeological Investigations at the Mingo Site, Bandera County, Texas. *Bulletin of the Texas Archeological Society* 61:193-247.

Houk, B.A., K.A. Miller, and E.R. Oksanen
2009 The Gatlin Site and Early-to-Middle Archaic Chronology of the Southern Edwards Plateau, Texas. *Bulletin of the Texas Archeological Society* 80:51-75.

Howard, M.A.
1983 A Quantitative Study of the Booker Site and Other Burned Rock Midden Sites of the Lake Travis Basin, Central Texas. Unpublished Master's thesis, Department of Anthropology, The University of Texas at Austin.

1991 Burned Rock Midden Excavations, Hearths and Botanical Remains. In *The Burned Rock Middens of Texas: An Archaeological Symposium*, edited by T.R. Hester, pp. 45-69. Studies in Archeology 13. Texas Archeological Research Laboratory, The University of Texas at Austin.

Huebner, J.A.
1991 Late Prehistoric Bison Populations in Central and Southern Texas. *Plains Anthropologist* 6(137):343-358.

Hurst, S., E. Johnson, Z.M. McCoy, and D. Cunningham
2010 The Lithology of Ogallala Gravels and Hunter-Gatherer Procurement Strategies along the Southern High Plains Eastern Escarpment of Texas, USA. *Geoarchaeology* 25(1):96-121.

Jelks, E.B.
1962 *The Kyle Site: A Stratified Central Texas Aspect Site in Hill Country, Texas*. Archeology Series 5. Department of Anthropology, The University of Texas at Austin.

Jennings, T.A.
2012 Clovis, Folsom, and Midland Components at the Debra L. Friedkin Site, Texas: Context, Chronology, and Assemblages. *Journal of Archaeological Science* 39:3239-3247.

Johnson, E. (editor)
1987 *Lubbock Lake: Late Quaternary Studies on the Southern High Plains*. Texas A&M University, College Station.

Johnson, E., and V.T. Holliday
1989 Lubbock Lake: Late Quaternary Cultural and Environmental Change on the Southern High Plains, USA. *Journal of Quaternary Science* 4:145-165.

Johnson, L., Jr.
1991 *Early Archaic Life at the Sleeper Archaeological Site 41BC65 of the Texas Hill Country, Blanco County, Texas*. Publications in Archaeology, Report No. 39. Texas State Department of Highways and Public Transportation, Austin.

1994 *The Life and Times of Toyah-Culture Folk as Seen from the Buckhollow Encampment, Site 41KM16, of Kimble County, Texas*. Office of the State Archeologist Report, No. 38. Texas Department of Transportation and Texas Historical Commission, Austin.

1995 *Past Cultures and Climates at Jonas Terrace, 41ME29, Medina County, Texas*. Office of the State Archeologist Report 40. Texas Department of Transportation and Texas Historical Commission, Austin.

2000 *Life and Death as Seen at the Bessie Kruze Site (41WM13) on the Blackland Prairie of Williamson County, Texas*. Archeological Studies Program, Report 22. Environmental Affairs Division, Austin.

Johnson, L., and G. Goode
1994 A New Try at Dating and Characterizing Holocene Climates, as well as Archaeological Periods, on the Eastern Edwards Plateau. *Bulletin of the Texas Archeological Society* 65:1-15.

Karbula, J.W.

2003 Toyah Bluff Site (41TV441): Changing Notions of Late Prehistoric Subsistence in the Blackland Prairie, Travis County, Texas. *Bulletin of the Texas Archeological Society* 74:55-81.

Karl, T.R.

1986 The Sensitivity of the Palmer Drought Severity Index and Palmer's Z-Index to Their Calibration Coefficients Including Potential Evapotranspiration. *Journal of Climate and Applied Meteorology* 25:77-86.

Katzenberg, M.A.

2008 Stable Isotope Analysis: A Tool for Studying Past Diet, Demography, and Life History. In *Biological Anthropology of the Human Skeleton*, edited by M.A. Katzenberg and S.R. Saunders, pp. 413-441. Wiley-Liss, Hoboken, New Jersey.

Kay, L.H., and S.A. Tomka

2001 Prehistoric Lithic Technology. In *An Archaeological Inventory of Camp Swift, Bastrop County, Texas*, by D.G. Robinson, T.M. Meade, L. Haslouer-Kay, L. Gassaway, and D. Kay, pp. 160-177. Archaeological Survey Report, No. 316. Center for Archaeological Research, The University of Texas at San Antonio.

Kelley, J.C.

1947 The Lehman Rockshelter: A Stratified Site of the Toyah, Uvalde and Round Rock Foci. *Bulletin of the Texas Archeological and Paleontological Society* 18:115-128.

Kelley, J.C., and T.N. Campbell

1942 What Are the Burnt Rock Mounds of Texas? *American Antiquity* 7:319-322.

Kelly, T.C., and E. Roemer, Jr.

1981 *Archaeological and Historical Investigations in Bastrop and Lee Counties, Texas*. Archaeological Survey Report, No. 101. Center for Archaeological Research, The University of Texas at San Antonio.

Kemp, L., C.M. Munoz, R.P. Mauldin, D. Paul, and G. Skrzypek

2008 Appropriate Scales and Bunny Tales: Using Small Herbivores from Archaeological Sites in Ecological Reconstruction. Paper presented at the 2008 Meetings of the Texas Academy of Sciences, Corpus Christi.

Kenmotsu, N.A., and J.W. Arnn

2012 The Toyah Phase and the Ethnohistoric Record: A Case for Population Aggregation. In *The Toyah Phase of Central Texas: Late Prehistoric Economic and Social Processes*, edited by N.A. Kenmotsu and D.K. Boyd, pp. 19-43. Texas A&M University, College Station.

Kenmotsu, N.A., and D.K. Boyd (editors)

2012 *The Toyah Phase of Central Texas: Late Prehistoric Economic and Social Processes*. Texas A&M University College Station.

Krieger, A.D.

2002 *We Came Naked and Barefoot, the Journey of Cabeza de Vaca across North America*. Edited by M.H. Krieger. University of Texas Press, Austin.

Largent, F.B., Jr.

1995 Some New Additions to the Texas Folsom Point Data Base. *Plains Anthropologist* 40:69-71.

Largent, F.B., Jr., M.R. Waters, and D.L. Carlson

1991 The Spatiotemporal Distribution and Characteristics of Folsom Projectile Points in Texas. *Plains Anthropologist* 36:323-341.

Leatherwood, A.
2010 Camp Swift. Handbook of Texas Online. Texas State Historical Association. Electronic document, http://www.tshaonline.org/handbook/online/articles/qbc27, accessed January 2017.

Leffler, J.J.
2001 The History of the Camp Swift Area, 1830-1950. In *An Archaeological Inventory of Camp Swift, Bastrop County, Texas*, by D.G. Robinson, T.M. Meade, L. Haslouer-Kay, L. Gassaway, and D. Kay, pp. 14-30. Archaeological Survey Report, No. 316. Center for Archaeological Research, The University of Texas at San Antonio.

Leigh, D.S.
1998 Evaluating Artifact Burial by Eolian Versus Bioturbation Processes, South Carolina Sandhills, USA. *Geoarchaeology: An International Journal* 13(3):309-330.

Liu, Q., M.J. Jackson, S.K. Banerjee, B.A. Maher, C. Deng, Y. Pan, and R. Zhu
2004 Mechanism of the Magnetic Susceptibility Enhancements of the Chinese Loess. *Journal of Geophysical Research* 109(B12107):1-16.

Lohse, J.C., and C.B. Bousman
2006 *National Register Evaluation of Eight Sites at Camp Swift Army National Guard Training Center, Bastrop County, Texas: Swift V*. Archaeological Studies Report No. 8. Center for Archaeological Studies, Texas State University, San Marcos.

Lohse, J.C., D.J. Kennett, B.J. Culleton, and C.L. Timperley
2012 Middle-to-Late Holocene Bison Chronology and Ecology in the South-Central United States. Paper presented at the 77th Annual Meeting of the Society for American Archaeology, Memphis.

Lukowski, P.D.
1988 *Archaeological Investigations at 41BX1, Bexar County, Texas*. Archaeological Survey Report, No. 135. Center for Archaeological Research, The University of Texas at San Antonio.

Mallouf, R.J., and R.D. Mandel
1997 Horace Rivers: A Late-Plainview Component in the Northeastern Texas Panhandle. *Current Research in the Pleistocene* 14:50-52.

Marks, P.M.
2010 Bastrop County. The Handbook of Texas Online. Texas State Historical Association. Electronic document, http://www.tshaonline.org/handbook/online/articles/hcb03, accessed February 2012.

Mauldin, R.P.
2001 Assessments and Recommendations. In *An Archaeological Inventory of Camp Swift, Bastrop County, Texas*, by D.G. Robinson, T.M. Meade, L.H. Kay, L. Gassaway, and D. Kay, pp. 175-186. Archaeological Survey Report, No. 316. Center for Archaeological Research, The University of Texas at San Antonio.

2003 Development of Burned Rock Middens. In *Archaeological Testing to Determine the National Register Eligibility Status of 18 Prehistoric Sites on Camp Bowie, Brown County, Texas*, 2 vols., by R.P. Mauldin, D.L. Nickels, and C.J. Broehm, pp. 175-196. Archaeological Survey Report, No. 334. Center for Archaeological Research, The University of Texas at San Antonio.

Mauldin, R.P., and A.L. Figueroa
2006 *Data Recovery Excavations at 41PR44, Fort Wolters, Parker County, Texas*. Archaeological Report, No. 369. Center for Archaeological Research, The University of Texas at San Antonio.

Mauldin, R.P., R.J. Hard, C.M. Munoz, J.Z. Rice, K. Verostick, D. Potter, and N. Dollar
2013 Carbon and Nitrogen Stable Isotope Analysis of Hunter-gathers from the Coleman Site, a Late Prehistoric Cemetery in Central Texas. *Journal of Archaeological Science* 40:1369-1381.

Mauldin, R.P., D.L. Nickels, and C.J. Broehm

2003 *Archaeological Testing to Determine the National Register Eligibility Status of 18 Prehistoric Sites on Camp Bowie, Brown County, Texas*. Archaeological Survey Report, No. 334. Center for Archaeological Research, The University of Texas at San Antonio.

Mauldin, R., J. Thompson, and L. Kemp

2012 Reconsidering the Role of Bison in the Terminal Late Prehistoric (Toyah) Period in Texas. In *The Toyah Phase of Central Texas: Late Prehistoric Economic and Social Processes*, edited by N.A. Kenmotsu and D.K. Boyd, pp. 90-110. Texas A&M University Press, College Station.

McClean, R.G., and W.F. Kean

1993 Contributions of Wood Ash Magnetism to Archeomagnetic Properties of Fire Pits and Hearths. *Earth and Planetary Science Letters* 119:387-394.

McDonald, J.N.

1981 *North American Bison: Their Classification and Evolution*. University of California Press, Berkeley.

Moerman, D.

2005 North American Ethnobotany: A Database of Foods, Drugs, Dyes and Fibers of Native American Peoples, Derived from Plants. Dearborn College of Arts and Sciences, University of Michigan. Electronic document, http://herb.umd.umich.edu/, accessed December 2005.

Munoz, C.M.

2010 Archaeological Phase I Testing of 41BP854 at the Texas Military Force's Camp Swift Facility in Bastrop County, Texas. Manuscript on file, Center for Archaeological Research, The University of Texas at San Antonio.

2012 *A Cultural Resource Inventory of 550 Previously Surveyed Acres on Campo Swift, Bastrop County, Texas*. Archaeological Report, No. 423. Center for Archaeological Research, The University of Texas at San Antonio.

Munoz, C.M., and R.P. Mauldin

2011 Subsistence Strategies. In *Archeological Significance Testing at 41BX17/271, the Granberg Site: A Multi-Component Site along the Salado Creek in Bexar County, Texas*, by C.M. Munoz, R.P. Mauldin, J.L. Thompson, and S.C. Caran pp. 105-130. Archaeological Report, No. 393. Center for Archaeological Research, The University of Texas at San Antonio; Archeological Studies Program, Report No. 140, Environmental Affairs Division, Texas Department of Transportation, Austin.

2012 Macrophysical Climate Models. In *A Cultural Resource Inventory of 550 Previously Surveyed Acres on Camp Swift, Bastrop County, Texas*, by C.M. Munoz, pp. 10-16. Archaeological Report, No. 423. Center for Archaeological Research, The University of Texas at San Antonio.

Munoz, C.M., R. Mauldin, and R.J. Hard

2011 Stable Isotope Analysis of Human Skeletal Remains from 41HY163, with Comparative Analysis of Remains from 41HY161. In *Prehistoric Life, Labor, and Residence in Southeast Central Texas: Results of Data Recovery at 41HY163, the Zatopec Site, San Marcos, Texas*, edited by J.C. Lohse, pp. 343-350. Archaeological Studies Report 18. Center for Archaeological Studies, Texas State University, San Marcos.

Munoz, C.M., R.P. Mauldin, D. Paul, and L. Kemp

2011 Monitoring Paleovegetation Shifts through Stable Carbon Isotope Variability in Archaeologically Recovered Leporids. *Texas Journal of Science* 63(1):1-27.

Munoz, C.M, R.P. Mauldin, J.L. Thompson, and S.C. Caran

2011 *Archeological Significance Testing at 41BX17/271, the Granberg Site: A Multi-Component Site along the Salado Creek in Bexar County, Texas*. Archaeological Report No. 393, Center for Archaeological Research, The

University of Texas at San Antonio; Archeological Studies Program, Report No. 140. Environmental Affairs Division, Texas Department of Transportation, Austin.

Munoz, C.M., J.L.Z. Rice, K. Verostick, R.J. Hard, and R. Mauldin
2013 A Stable Isotope Analysis of Hunter-Gatherers from Hitzfelder Cave, Texas. Paper presented at the Texas Academy of Science, Kerrville.

National Oceanic and Atmospheric Administration (NOAA)
2002 *Monthly Station Normals of Temperature, Precipitation, and Heating and Cooling Degree Days 1971-2000, 41 Texas*. Climatography of the United States No. 81. National Climate Data Center, NESDIS/NOAA, Asheville, North Carolina.

2004 *Climatography of the United States No. 20, Monthly Station Climate Summaries, 1971-2000, Texas*. National Climate Data Center, Asheville, North Carolina.

National Parks Service (NPS)
2016 Title 36-Parks, Forests, and Public Property. Part 60-National Register of Historic Places. National Park Service, Department of the Interior. Electronic document, https://www.nps.gov/nr/regulations.htm#604, accessed January 2017.

Newlander, K., and J.D. Speth
2009 Interaction Patterns in the Southern Plains as Seen through Ultraviolet Fluorescence (UVF): Study of Cherts from Late Prehistoric Villages in the Pecos Valley, New Mexico. In *Quince: Papers from the 15th Biennial Jornada Mogollon Conference*, edited by M. Thompson, pp. 43-60. El Paso Museum of Archaeology.

Nickels, D.L.
2000 The Beisenbach Site (41WN88): A Case Study in Diet Breadth. Unpublished Master's thesis, The University of Texas at San Antonio.

2005 Research Design Issues. In *An Archaeological Survey of 307 Acres at Camp Swift, Bastrop County, Texas: 2003*, by D.L. Nickels, A.E. Padilla, and J.E. Barrera, pp. 73-94. Archaeological Studies Report No. 6. Center for Archaeological Studies, Texas State University, San Marcos.

Nickels, D.L., and C.B. Bousman
in prep *Archaeological Excavations on 20 Prehistoric Sites at Camp Swift, Bastrop County, Texas: 2002*. Archaeological Studies Report No. 12. Center for Archaeological Studies, Texas State University, San Marcos.

Nickels, D.L., C.B. Bousman, and J.L. Hurley
2010 *An Archaeological Survey of 3,475 Acres at Camp Swift, Bastrop County, Texas*. Archaeological Studies Report No. 11. Center for Archaeological Studies, Texas State University, San Marcos.

Nickels, D.L., and M. Lehman
2004 *Archaeological Evaluation of Sandy Mantle Prehistoric and Historic Sites at Camp Swift: Bastrop County, Texas: 2003*. Archaeological Studies Report No. 5. Center for Archaeological Studies, Texas State University, San Marcos.

Nickels, D.L., M.L. Lehman, and C.B. Bousman
2003 *Archaeological Evaluation of 39 Category V Sites at Camp Swift, Bastrop County, Texas: 2001*. Archaeological Studies Report No. 3. Center for Archaeological Studies, Southwest Texas State University, San Marcos.

Nickels, D.L., and R.P. Mauldin
2001 The Project Environment. In *Archaeological Survey of Twin Buttes Reservoir, Tom Green County, Texas, Volume 1*, by R.P. Mauldin and D.L. Nickels, pp. 25-38. Archaeological Survey Report, No. 300. Center for Archaeological Research, The University of Texas at San Antonio.

Nickels, D.L., A.E. Padilla, and J.E. Barrera

2005 *An Archaeological Survey of 307 Acres at Camp Swift, Bastrop County, Texas: 2003*. Archaeological Studies Report No. 6. Center for Archaeological Studies, Texas State University, San Marcos.

Nickels, D.L., D.E. Worrell, and C.B. Bousman

2010a New Historic Component Sites. In *An Archaeological Survey of 3,475 Acres at Camp Swift, Bastrop County, Texas*, assembled by D.L. Nickels, C.B. Bousman, and J.L. Hurley, pp. 301-352. Archaeological Studies Report No. 11. Center for Archaeological Studies, Texas State University, San Marcos.

2010b New Prehistoric Component Sites. In *An Archaeological Survey of 3,475 Acres at Camp Swift, Bastrop County, Texas*, assembled by D.L. Nickels, C.B. Bousman, and J.L. Hurley, pp. 99-243. Archaeological Studies Report No. 11. Center for Archaeological Studies, Texas State University, San Marcos.

Nordt, L.C., T.W. Boutton, J.S. Jacob, and R. Mandel

1994 *Late Quaternary Climates of Central Texas Based on the Stable Isotope Composition of Organic Carbon. Program and Abstracts*. 52nd Plains Conference, 65th Annual Meeting of the Texas Archeological Society, Lubbock.

2002 $C_4$ Plant Productivity and Climate-$CO_2$ Variations in South-Central Texas during the Late Quaternary. *Quaternary Research* 58(2):182-188.

Oksanen, E.

2008 *Archaeological Investigations at the Icehouse Site, 41HY161: A Reevaluation of Early Archaic Technology, Subsistence and Settlement along the Balcones Escarpment and Central Texas*. Master's thesis, Department of Anthropology, Texas State University, San Marcos.

Owen, J.G., and D.J. Schmidly

1986 Environmental Variables of Biological Importance in Texas. *Texas Journal of Science* 38:99-117.

Palmer, W.C.

1965 *Meteorological Drought*. Research Paper No. 45. U.S. Weather Bureau, Washington, D.C.

Pearce, J.E.

1919 Indian Mounds and Other Relics of Indian Life in Texas. *American Anthropologist* 21:223–234.

1932 The Present Status of Texas Archeology. *Bulletin of the Texas Archeological and Paleontological Society* 4:44–54.

Plummer, F.B.

1966 Cenozoic Systems in Texas. In *The Geology of Texas, Volume 1, Stratigraphy*, by E.H. Sellards, W.S. Adkins, and F.B. Plummer, pp. 519-818. Originally published 1932, The University of Texas Bulletin No. 3232. Bureau of Economic Geology, Austin.

Potter, D.R.

2005 Salvage Excavations at the Coleman Site. *La Tierra* 32:19-26.

Prewitt, E.R.

1974 *Archeological Investigations at the Loeve-Fox Site, Williams County, Texas*. Research Report 49. Texas Archeological Survey, The University of Texas at Austin.

1981 Culture Chronology in Central Texas. *Bulletin of the Texas Archeological Society* 52:65-89.

1985 From Circleville to Toyah: Comments on Central Texas Chronology. *Bulletin of the Texas Archeological Society* 54:201-238.

1991 Burned Rock Middens: A Summary of Previous Investigations and Interpretations. In *The Burned Rock Middens of Texas: An Archeological Symposium*, edited by T.R. Hester, pp. 25-32. Studies in Archeology 13. Texas Archeological Research Laboratory, The University of Texas at Austin.

Prochnow, S.

2001 Geoarchaeological Assessment. In *An Archaeological Inventory of Camp Swift, Bastrop County, Texas*, by D.G. Robinson, T.M. Meade, L.H. Kay, L. Gassaway, and D. Kay, pp. 31-37. Archaeological Survey Report, No. 316. Center for Archaeological Research, The University of Texas at San Antonio.

Quigg, J.M., J.D. Owens, P.M. Matchen, R.A. Ricklis, G.D. Smith, C.D. Frederick, and M.C. Cody

2008 *The Varga Site: A Multicomponent, Stratified Campsite in the Canyonlands of Edwards County, Texas*. TRC Technical Report 35319; Archeological Studies Program Report No. 110. Environmental Affairs Division, Texas Department of Transportation, Austin.

Quigg, J.M., and J. Peck

1995 *The Rush Site (41TG346): A Stratified Late Prehistoric Locale in Tom Green County, Texas*. Technical Report, No. 816C. TRC Mariah Associates, Austin.

Rapp, G., and C.L. Hill

2006 *Geoarchaeology*. Yale University Press, New Haven.

Reynolds, R.L., and J.W. King

1995 Magnetic Records of Climate Change. U.S. National Report to I.U.G.G., 1991-1994. Supplement. *Reviews of Geophysics* 33:101-110.

Ricklis, R.A.

1994a Occupations in the Project Area during the Austin Interval, or Early Part of the Late Prehistoric Period. In *Archaic and Late Prehistoric Human Ecology in the Middle Onion Creek Valley, Hays County, Texas*, edited by R.A. Ricklis and M.B. Collins, pp. 191-205. Studies in Archeology 19. Texas Archeological Research Laboratory, The University of Texas at Austin.

1994b Toyah Components: Evidence for Occupations in the Project Area during the Latter Part of the Late Prehistoric Period. In *Archaic and Late Prehistoric Human Ecology in the Middle Onion Creek Valley, Hays County, Texas*, edited by R.A. Ricklis and M. Collins, pp. 207-316. Studies in Archeology 19. Vol. 1. Texas Archeological Research Laboratory, The University of Texas at Austin.

Ricklis, R.A., and M.B. Collins

1994 *Archaic and Late Prehistoric Human Ecology in the Middle Onion Creek Valley, Hays County, Texas*. Studies in Archeology 19. 2 vols. Texas Archeological Research Laboratory, The University of Texas at Austin.

Ricklis, R.A., R.A. Weinstein, and D.C. Wells (editors)

2012 *Archaeology and Bioarchaeology of the Buckeye Knoll Site (41VT98), Victoria County, Texas*. 3 vols. Coastal Environments, Inc., Corpus Christi.

Riley, T.

2008 Diet and Seasonality in the Lower Pecos: Evaluating Coprolite Data Sets with Cluster Analysis. *Journal of Archaeological Science* 35(10):2726-2741.

2012 Assessing Diet and Seasonality in the Lower Pecos Canyonlands: An Evaluation of Coprolite Specimens as Records of Individual Dietary Decisions. *Journal of Archaeological Science* 39(1):145.

Robinson, D.G.

2001 Historic Contexts for Camp Swift. In *An Archaeological Inventory of Camp Swift, Bastrop County, Texas*, by D.G. Robinson, T.M. Meade, L.H. Kay, L. Gassaway, and D. Kay, pp. 155-159. Archaeological Survey Report, No. 316. Center for Archaeological Research, The University of Texas at San Antonio.

Robinson, D.G., T.M. Meade, L.H. Kay, L. Gassaway, and D. Kay

2001 *An Archaeological Inventory of Camp Swift, Bastrop County, Texas*. Archaeological Survey Report, No. 316. Center for Archaeological Research, The University of Texas at San Antonio.

Schiffer, M.B.
1987 *Formation Processes of the Archaeological Record*. University of New Mexico Press, Albuquerque.

Shafer, H.
1977 Late Prehistory of Central Texas. *South Plains Archeological Society* 3:18-27.

Singer, M.J., and P. Fine
1989 Pedogenic Factors Affecting Magnetic Susceptibility of Northern California Soils. *Soil Science of America Journal* 53:1119-1127

Singer, M.J., K.L. Verosub, P. Fine, and J.D. TenPas
1996 A Conceptual Model for the Enhancement of Magnetic Susceptibility in Soils. *Quaternary International* 34-36:243-248.

Sitton, T.
2006 *Sandyland Farmers: Life in the Countryside before Camp Swift, 1920-1942*. Archaeological Studies Report No. 9. Center for Archaeological Studies, Texas State University, San Marcos.

Skelton, D.W.
1977 *Archaeological Investigations at the Fayette Power Project, Fayette County, Texas*. Research Report No. 60. Texas Archeological Survey, The University of Texas at Austin.

1979 Part 1: Prehistoric Resources. In *A Cultural Resource Inventory and Assessment at Camp Swift, Texas*, by D.W. Skelton and M.D. Freeman, pp. 3-80. Report No. 72. Texas Archeological Survey, The University of Texas at Austin.

Skelton, D.W., and M.D. Freeman
1979 *A Cultural Resource Inventory and Assessment at Camp Swift, Texas*. Report No. 72. Texas Archeological Survey, The University of Texas at Austin.

Smith, C.S.
2011 *Stable Carbon Isotope Analysis of Modern Leporids to Assess their Usefulness as Fine-Grained Ecological Proxies to Reconstruct Local Paleoecology*. Master's thesis, The University of Texas at San Antonio.

Smith, S., R. Mauldin, C.M. Munoz, R. Hard, D. Paul, G. Skrzypek, P. Villanueva, and L. Kemp
2014 Exploring the Use of Stable Carbon Isotope Ratios in Short-lived Leporids for Local Paleoecological Reconstruction. *Open Journal of Archaeometry* 2:81-87.

Sorrow, W.M.
1969 *Archaeological Investigations at the John Ischy Site: A Burnt Rock Midden in Williamson County, Texas*. Papers of the Texas Archeological Salvage Project No. 18. Texas Archeological Salvage Project, The University of Texas at Austin.

Sorrow, W.M., H. Shafer, and R.E. Ross
1967 *Excavations at Stillhouse Hollow Reservoir*. Papers of the Texas Archeological Salvage Project. Texas Archeological Salvage Project, The University of Texas at Austin.

Speer, R.D.
1990 History of the Plainview Site. In *Guidebook to the Quaternary History of the Llano Estacado*, edited by V.T. Holliday and E. Johnson, pp. 79-92. Lubbock Lake Landmark Quaternary Research Series 2. Texas Tech University, Lubbock.

Story, D.A.
1985 Adaptive Strategies of Archaic Cultures of the West Gulf Coastal Plain. In *Prehistoric Food Production in North America*, edited by R.I. Ford, pp. 19-56. Anthropological Papers No. 75. Museum of Anthropology. University of Michigan, Ann Arbor.

Suhm, D.A.
1957 Excavations at the Smith Rockshelter, Travis County, Texas. *Texas Journal of Science* 9:26-58.

Suhm, D.A. and E.B. Jelks
1962 *Handbook of Texas Archeology: Type Descriptions*. Texas Archeological Society and the Texas Memorial Museum, Austin.

Takac, P.R., and W.A. Gose
1998 Magnetic Susceptibility of Sediments. In *Wilson-Leonard. An 11,000-year Archeological Record of Hunter-Gatherers in Central Texas. Volume IV: Archeological Features and Technical Analyses*, edited by M.B. Collins, pp. 1329-1341. Studies in Archeology 31. Texas Archeological Research Laboratory, University of Texas at Austin; Archeology Studies Program, Report 10. Texas Department of Transportation, Environmental Affairs Division, Austin.

Taylor, A.J., and C.L. Highley
1995 *Archaeological Investigations at the Loma Sandia Site (41LK28): A Prehistoric Campsite in Live Oak County, Texas*. Studies in Archeology No. 20. Texas Archeological Research Laboratory, The University of Texas at Austin.

Texas Military Department (TMD)
2015 *Integrated Cultural Resources Management Plan for Installations of the Texas Army National Guard, 2015-2020*. NGTX-FE/Cultural Resources, Austin.

Texas Parks and Wildlife (TPWD)
2013 Biotic Provinces of Texas. Texas Parks and Wildlife Department GIS Lab. Electronic document, http://www.tpwd.state.tx.us/publications/pwdpubs/media/pwd_mp_e0100_1070ae_08.pdf, accessed March 2013.

Texas Water Development Board
2013 Precipitation and Lake Evaporation Data for Texas. Electronic document, http://midgewater.twdb. state.tx.us/evaporation/evap.html, accessed March 2013.

Thompson, J.L., R.P. Mauldin, S.A. Tomka, and E. Oksanen
2012 *Archeological Testing and Data Recovery at the Flatrock Road Site, 41KM69, Kimble County, Texas*. Archaeological Report, No. 419. Center for Archaeological Research, The University of Texas at San Antonio; Archeological Studies Program, Report No. 133. Environmental Affairs Division, Texas Department of Transportation, Austin.

Thoms, A.V.
2007 Fire-Cracked Rock Features on Sandy Landforms in the Northern Rocky Mountains: Toward Establishing Reliable Frames of Reference for Assessing Site Integrity. *Geoarchaeology: An International Journal* 22(5):477-510.

2008 Ancient Savannah Roots of the Carbohydrate Revolution in South-Central North America. *Plains Anthropologist* 53(205):121-136.

2009 Rocks of Ages: Propagation of Hot-Rock Cookery in Western North America. *Journal of Archaeological Science* 36:573–591.

Thoms, A.V., D.D. Keuhn, B.W. Olive, J.E. Dockall, P.A. Clabaugh, and R.D. Mandel
1996 Early and Middle Holocene Occupations at the Richard Beene Site: The 1995 Southern Texas Archaeological Association Field School Project. *La Tierra* 23(4):8-36.

Toomey, R.S.
1993 Late Pleistocene and Holocene Faunal Environmental Changes at Hall’s Cave, Kerr County, Texas. Unpublished Ph.D. dissertation, The University of Texas at Austin.

Treece, A.C., C. Lintz, W.N. Trierweiler, J.M. Quigg, and K.A. Miller

1993 *Cultural Resources Investigations in the O.H. Ivie Reservoir, Concho, Coleman, and Runnels Counties, Texas. Volume IV Data Recovery from Ceramic Sites*. Technical Report 346-IV. Texas Mariah Associates, Austin.

Turner, S.E., and T.R. Hester

1999 *A Field Guide to Stone Artifacts of Texas Indians*. Third ed. Gulf Publishing, Houston.

Turner, S.E., T.R. Hester, and R.L. McReynolds

2011 *Stone Artifacts of Texas Indians*. Taylor Trade Publishing, Boulder, Colorado.

Turpin, S.A.

2004 The Lower Pecos River Region of Texas and Northern Mexico. In *The Prehistory of Texas*, edited by T.K. Perttula, pp. 266-280. Texas A&M University Press, College Station.

Wade, M.F.

1998 *The Native Americans of the Texas Edwards Plateau and Related Areas, 1582-1799*. Ph.D. dissertation, The University of Texas at Austin.

2003 *The Native Americans of the Texas Edwards Plateau, 1582–1799*. University of Texas Press, Austin.

Waguespack, N.M., and T.A. Surovell

2003 Clovis Hunting Strategies, or How to Make Out on Plentiful Resources. *American Antiquity* 68:333-352.

Wandsnider, L.

1997 The Roasted and the Boiled: Food Composition and Heat Treatment with Special Emphasis on Pit-Hearth Cooking. *Journal of Anthropological Archaeology* 16:1-48.

Waters, M.R.

1992 *Principles of Geoarchaeology*. University of Arizona Press, Tucson.

Waters, M.R., S.L. Forman, T.A. Jennings, L.C. Nordt, S.G. Driese, J.M. Feinberg, J.L Keene, J. Halligan, A. Lindquist, J. Pierson, C.T. Hallmark, M.B. Collins, and J.E. Wiederhold

2011 The Buttermilk Creek Complex and the Origins of Clovis at the Debra L. Friedkin Site, Texas. *Science* 331:1599-1603.

Weir, F.A.

1976 *The Central Texas Archaic*. Ph.D. dissertation, Washington State University, Pullman.

Wood, W.R., and D.L. Johnson

1978 *A Survey of Disturbance Processes in Archaeological Site Formation*. Advances in Archaeological Method and Theory 1. Academic Press, New York.

Wormington, H.M.

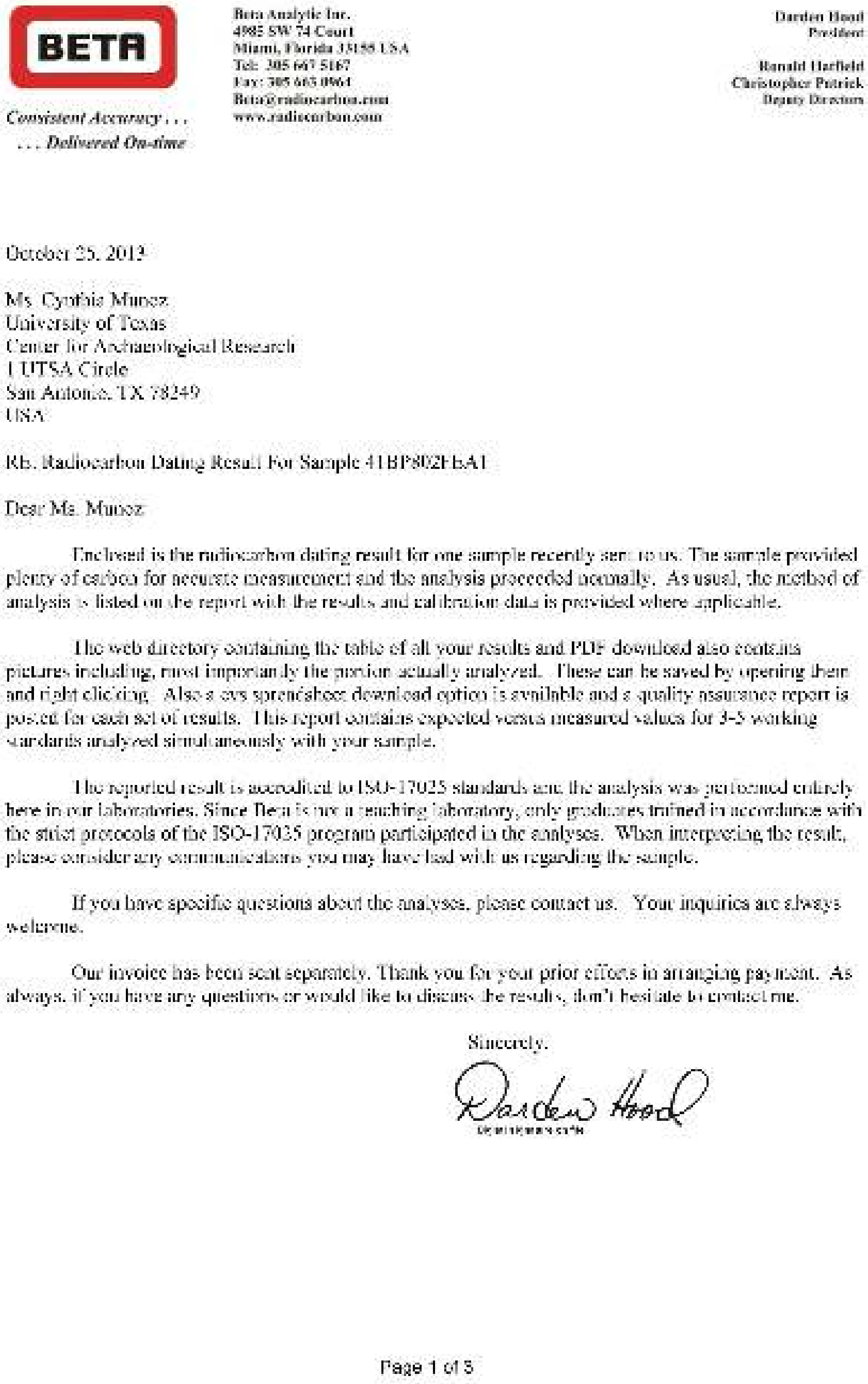
1957 *Ancient Man in North America*. Fourth ed. Denver Museum of Natural History, Colorado.

Yelacic, D.M., and J.C. Lohse

2011 Environmental Setting, Previous Investigations, Culture History. In *Prehistoric Life, Labor, and Residence in Southeast Central Texas*, edited by J.C. Lohse, pp. 59-76. Archaeological Studies Report No. 18. Center for Archaeological Studies, Texas State University, San Marcos.

# Appendix A: Radiocarbon Dates

This page intentionally left blank.



BETA
*Consistent Accuracy . . .*
*. . . Delivered On-time*

**Beta Analytic Inc.**
**4985 SW 74 Court**
**Miami, Florida 33155 USA**
**Tel: 305 667 5167**
**Fax: 305 663 0964**
**Beta@radiocarbon.com**
**www.radiocarbon.com**

**Darden Hood**
**President**

**Ronald Hatfield**
**Christopher Patrick**
**Deputy Directors**

October 25, 2013

Ms. Cynthia Munoz
University of Texas
Center for Archaeological Research
1 UTSA Circle
San Antonio, TX 78249
USA

RE: Radiocarbon Dating Result For Sample 41BP802FBA1

Dear Ms. Munoz:

Enclosed is the radiocarbon dating result for one sample recently sent to us. The sample provided plenty of carbon for accurate measurement and the analysis proceeded normally. As usual, the method of analysis is listed on the report with the results and calibration data is provided where applicable.

The web directory containing the table of all your results and PDF download also contains pictures including, most importantly the portion actually analyzed. These can be saved by opening them and right clicking. Also a cvs spreadsheet download option is available and a quality assurance report is posted for each set of results. This report contains expected versus measured values for 3-5 working standards analyzed simultaneously with your sample.

The reported result is accredited to ISO-17025 standards and the analysis was performed entirely here in our laboratories. Since Beta is not a teaching laboratory, only graduates trained in accordance with the strict protocols of the ISO-17025 program participated in the analyses. When interpreting the result, please consider any communications you may have had with us regarding the sample.

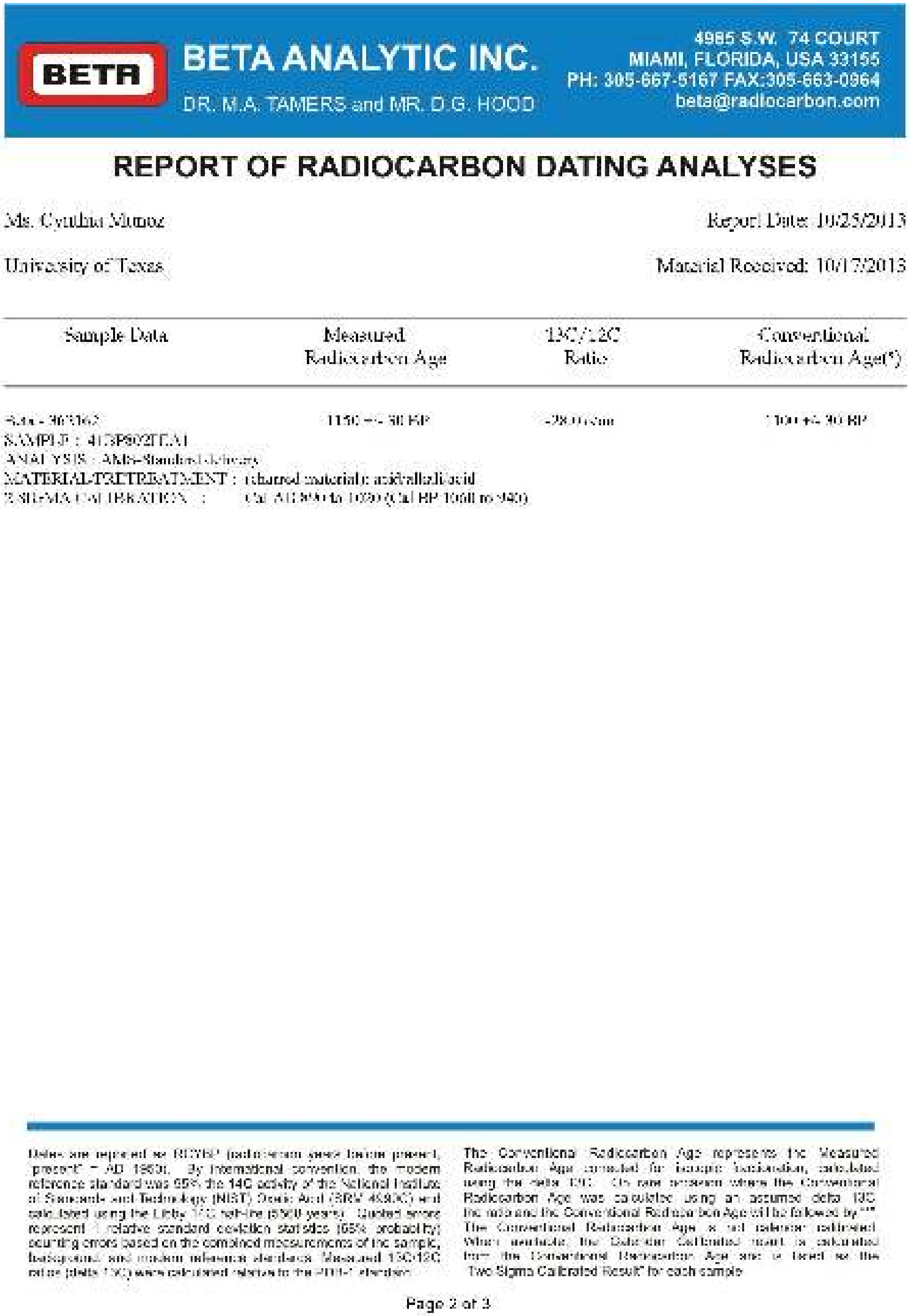
If you have specific questions about the analyses, please contact us. Your inquiries are always welcome.

Our invoice has been sent separately. Thank you for your prior efforts in arranging payment. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,

Darden Hood

Page 1 of 3



**BETA ANALYTIC INC.**
DR. M.A. TAMERS and MR. D.G. HOOD

4985 S.W. 74 COURT
MIAMI, FLORIDA, USA 33155
PH: 305-667-5167 FAX:305-663-0964
beta@radiocarbon.com

## REPORT OF RADIOCARBON DATING ANALYSES

Ms. Cynthia Munoz
University of Texas

Report Date: 10/25/2013
Material Received: 10/17/2013

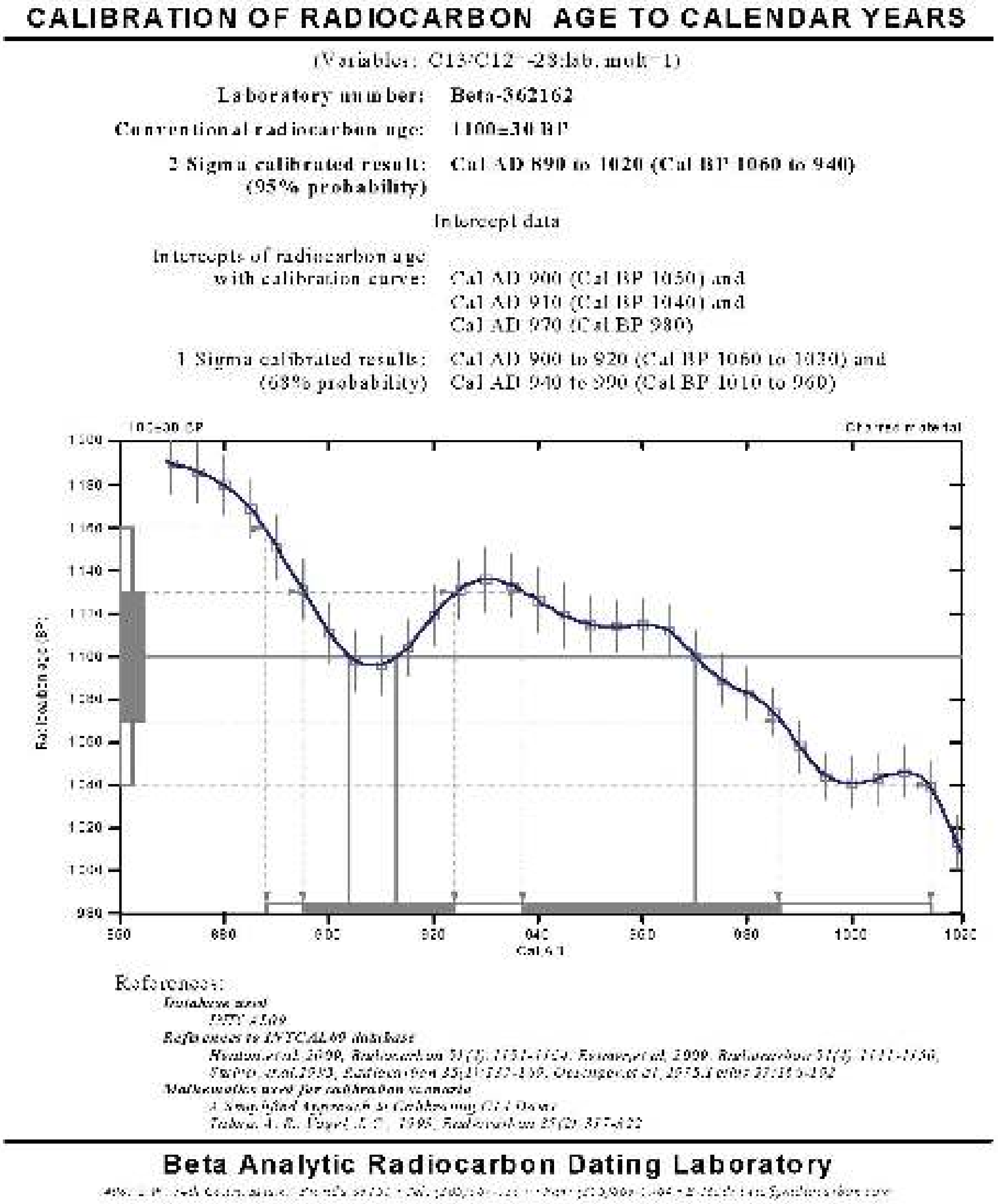
| Sample Data | Measured Radiocarbon Age | 13C/12C Ratio | Conventional Radiocarbon Age(*) |
|---|---|---|---|
| Beta - 363162 | 1150 +/- 30 BP | -28.0 o/oo | 1100 +/- 30 BP |

SAMPLE : 41BP802TEA1
ANALYSIS : AMS-Standard delivery
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid
2 SIGMA CALIBRATION : Cal AD 890 to 1010 (Cal BP 1060 to 940)

Dates are reported as RCYBP (radiocarbon years before present, "present" = AD 1950). By international convention, the modern reference standard was 95% the 14C activity of the National Institute of Standards and Technology (NIST) Oxalic Acid (SRM 4990C) and calculated using the Libby 14C half-life (5568 years). Quoted errors represent 1 relative standard deviation statistics (68% probability) counting errors based on the combined measurements of the sample, background, and modern reference standards. Measured 13C/12C ratios (delta 13C) were calculated relative to the PDB-1 standard.

The Conventional Radiocarbon Age represents the Measured Radiocarbon Age corrected for isotopic fractionation, calculated using the delta 13C. On rare occasion where the Conventional Radiocarbon Age was calculated using an assumed delta 13C, the ratio and the Conventional Radiocarbon Age will be followed by "*". The Conventional Radiocarbon Age is not calendar calibrated. When available, the Calendar Calibrated result is calculated from the Conventional Radiocarbon Age and is listed as the "Two Sigma Calibrated Result" for each sample.

Page 2 of 3



# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-23:lab. mult=1)

| | |
|---|---|
| **Laboratory number:** | **Beta-362162** |
| **Conventional radiocarbon age:** | **1100±30 BP** |
| **2 Sigma calibrated result: (95% probability)** | **Cal AD 890 to 1020 (Cal BP 1060 to 940)** |

Intercept data

| | |
|---|---|
| Intercepts of radiocarbon age with calibration curve: | Cal AD 900 (Cal BP 1050) and<br>Cal AD 910 (Cal BP 1040) and<br>Cal AD 970 (Cal BP 980) |
| 1 Sigma calibrated results: (68% probability) | Cal AD 900 to 920 (Cal BP 1060 to 1030) and<br>Cal AD 940 to 990 (Cal BP 1010 to 960) |

References:

*Database used*

*INTCAL09*

*References to INTCAL09 database*

*Heaton et al. 2009, Radiocarbon 51(4):1151-1164, Reimer et al, 2009, Radiocarbon 51(4):1111-1150, Stuiver et al. 1993, Radiocarbon 35(1):137-189, Oeschger et al., 1975, Tellus 27:168-192*

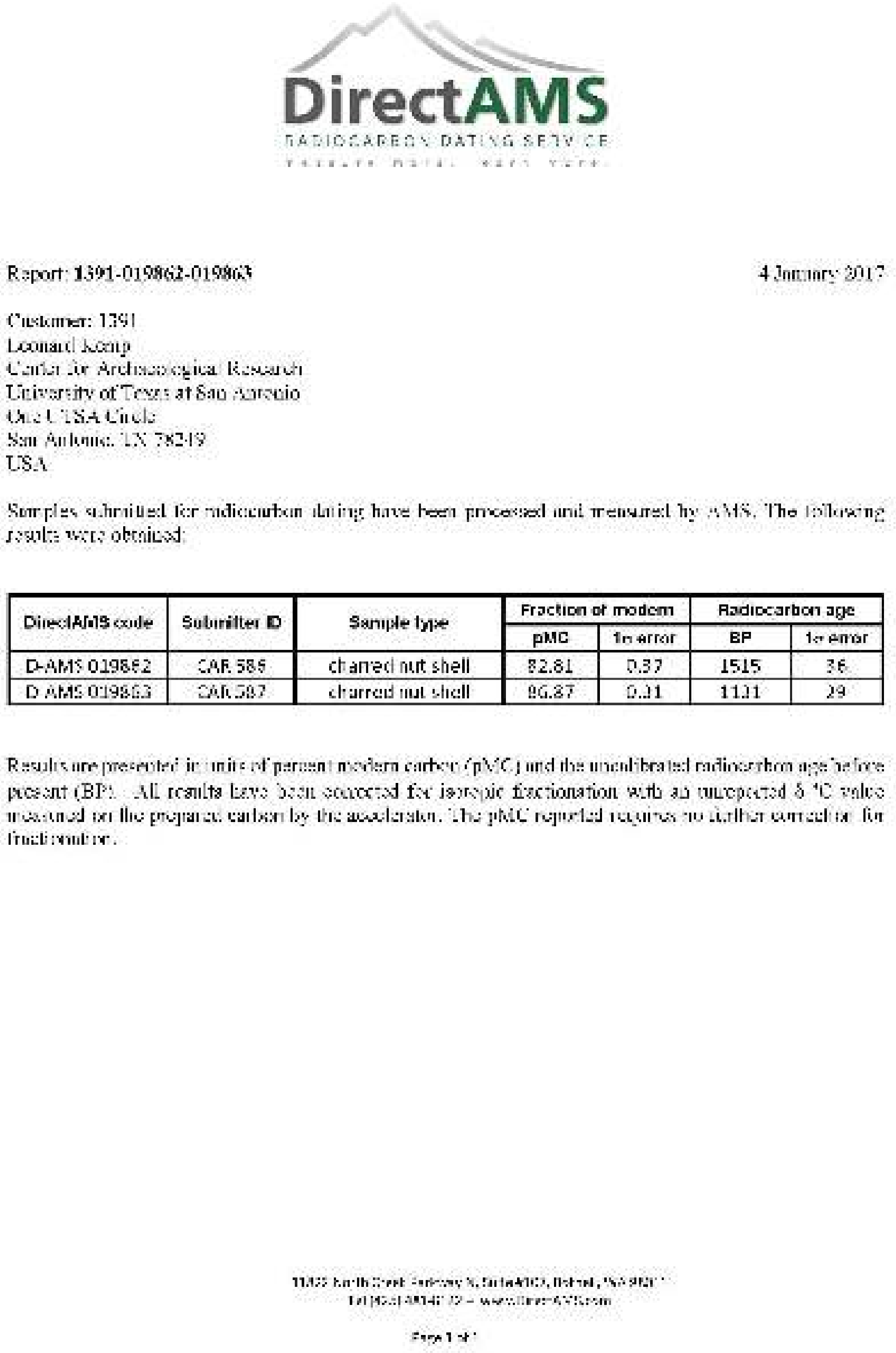
*Mathematics used for calibration scenario*

*A Simplified Approach to Calibrating C14 Dates*

*Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322*

**Beta Analytic Radiocarbon Dating Laboratory**

Page 3 of 3



DirectAMS
RADIOCARBON DATING SERVICE

Report: 1391-019862-019863

4 January 2017

Customer: 1391
Leonard Kemp
Center for Archaeological Research
University of Texas at San Antonio
One UTSA Circle
San Antonio, TX 78249
USA

Samples submitted for radiocarbon dating have been processed and measured by AMS. The following results were obtained:

| DirectAMS code | Submitter ID | Sample type | Fraction of modern | | Radiocarbon age | |
|---|---|---|---|---|---|---|
| | | | pMC | 1σ error | BP | 1σ error |
| D-AMS 019862 | CAR 585 | charred nut shell | 82.81 | 0.37 | 1515 | 36 |
| D-AMS 019863 | CAR 587 | charred nut shell | 86.87 | 0.31 | 1131 | 29 |

Results are presented in units of percent modern carbon (pMC) and the uncalibrated radiocarbon age before present (BP). All results have been corrected for isotopic fractionation with an unreported $\delta^{13}C$ value measured on the prepared carbon by the accelerator. The pMC reported requires no further correction for fractionation.

Page 1 of 1

# Appendix B: MSS Sampling Information

This page intentionally left blank.

Table B-1. MSS Sampling Information

| Site | Sample Number | Test Unit | Total Weight (g) | VSS #1 | VSS #2 | Average VSS | Sample Weight (g) | MSS Value |
|---|---|---|---|---|---|---|---|---|
| 41BP801 | 9 | 1 | 14.2 | 47.4 | 46 | 46.7 | 11.2 | 0.417 |
| 41BP801 | 8 | 1 | 14.4 | 51.5 | 51.8 | 51.65 | 11.4 | 0.453 |
| 41BP801 | 7 | 1 | 15.1 | 59.6 | 61.4 | 60.5 | 12.1 | 0.5 |
| 41BP801 | 6 | 1 | 15.2 | 51.4 | 51.4 | 51.4 | 12.2 | 0.421 |
| 41BP801 | 5 | 1 | 14.9 | 52.6 | 52 | 52.3 | 11.9 | 0.439 |
| 41BP801 | 4 | 1 | 15.3 | 56 | 56.3 | 56.15 | 12.3 | 0.457 |
| 41BP801 | 3 | 1 | 15.6 | 59.6 | 60.6 | 60.1 | 12.6 | 0.477 |
| 41BP801 | 2 | 1 | 14.8 | 45.1 | 45.1 | 45.1 | 11.8 | 0.382 |
| 41BP801 | 1 | 1 | 15.6 | 47.1 | 49.1 | 48.1 | 12.6 | 0.382 |
| 41BP801 | 10 | 2 | 16.7 | 42.5 | 41.8 | 42.15 | 13.7 | 0.308 |
| 41BP801 | 9 | 2 | 15.9 | 36.2 | 35.7 | 35.95 | 12.9 | 0.279 |
| 41BP801 | 8 | 2 | 15.1 | 35.4 | 35.6 | 35.5 | 12.1 | 0.293 |
| 41BP801 | 7 | 2 | 16.3 | 36.7 | 38.2 | 37.45 | 13.3 | 0.282 |
| 41BP801 | 6 | 2 | 17.1 | 41.5 | 41.8 | 41.65 | 14.1 | 0.295 |
| 41BP801 | 5 | 2 | 17 | 46.5 | 46.1 | 46.3 | 14 | 0.331 |
| 41BP801 | 4 | 2 | 16.8 | 32.9 | 36.1 | 34.5 | 13.8 | 0.25 |
| 41BP801 | 2 | 2 | 17 | 45.2 | 38.2 | 41.7 | 14 | 0.298 |
| 41BP801 | 1 | 2 | 16.9 | 34.7 | 36 | 35.35 | 13.9 | 0.254 |
| 41BP801 | 14 | 3 | 12.8 | 42 | 41 | 41.5 | 9.8 | 0.423 |
| 41BP801 | 13 | 3 | 14.1 | 48.9 | 49.5 | 49.2 | 11.1 | 0.443 |
| 41BP801 | 12 | 3 | 12.5 | 41 | 41.1 | 41.05 | 9.5 | 0.432 |
| 41BP801 | 11 | 3 | 12.2 | 46.2 | 46.2 | 46.2 | 9.2 | 0.502 |
| 41BP801 | 10 | 3 | 14.4 | 50.4 | 51.8 | 51.1 | 11.4 | 0.448 |
| 41BP801 | 9 | 3 | 14.3 | 53.3 | 55.7 | 54.5 | 11.3 | 0.482 |
| 41BP801 | 8 | 3 | 14.2 | 57.6 | 57.5 | 57.55 | 11.2 | 0.514 |
| 41BP801 | 7 | 3 | 15.9 | 57.4 | 57.6 | 57.5 | 12.9 | 0.446 |
| 41BP801 | 6 | 3 | 15.9 | 60.9 | 67.5 | 64.2 | 12.9 | 0.498 |
| 41BP801 | 5 | 3 | 15.9 | 60.2 | 61 | 60.6 | 12.9 | 0.47 |
| 41BP801 | 4 | 3 | 16 | 65.2 | 64.9 | 65.05 | 13 | 0.5 |
| 41BP801 | 3 | 3 | 15.9 | 57.1 | 59.3 | 58.2 | 12.9 | 0.451 |
| 41BP801 | 2 | 3 | 15.7 | 62.2 | 64.4 | 63.3 | 12.7 | 0.498 |
| 41BP801 | 1 | 3 | 15.2 | 49.6 | 50.5 | 50.05 | 12.2 | 0.41 |
| 41BP801 | 10 | 4 | 13.2 | 39.1 | 39.9 | 39.5 | 10.2 | 0.387 |
| 41BP801 | 9 | 4 | 14.3 | 46.9 | 48.4 | 47.65 | 11.3 | 0.422 |
| 41BP801 | 8 | 4 | 13.6 | 41 | 40.6 | 40.8 | 10.6 | 0.385 |
| 41BP801 | 7 | 4 | 15 | 48.9 | 49.6 | 49.25 | 12 | 0.41 |
| 41BP801 | 6 | 4 | 13.6 | 49.9 | 49.1 | 49.5 | 10.6 | 0.467 |
| 41BP801 | 5 | 4 | 15.2 | 54 | 52.8 | 53.4 | 12.2 | 0.438 |
| 41BP801 | 4 | 4 | 14 | 54.7 | 55.2 | 54.95 | 11 | 0.5 |

Table B-1. MSS Sampling Information, continued...

| Site | Sample Number | Test Unit | Total Weight (g) | VSS #1 | VSS #2 | Average VSS | Sample Weight (g) | MSS Value |
|---|---|---|---|---|---|---|---|---|
| 41BP801 | 3 | 4 | 14.9 | 58.2 | 59.3 | 58.75 | 11.9 | 0.494 |
| 41BP801 | 2 | 4 | 15.8 | 53.6 | 50.6 | 52.1 | 12.8 | 0.407 |
| 41BP801 | 1 | 4 | 16.3 | 50.7 | 50.1 | 50.4 | 13.3 | 0.379 |
| 41BP801 | 9 | 5 | 12.9 | 41.9 | 41.2 | 41.55 | 9.9 | 0.42 |
| 41BP801 | 8 | 5 | 14.1 | 46.1 | 45.4 | 45.75 | 11.1 | 0.412 |
| 41BP801 | 7 | 5 | 14.2 | 45.9 | 46.3 | 46.1 | 11.2 | 0.412 |
| 41BP801 | 6 | 5 | 13.2 | 47.5 | 46.1 | 46.8 | 10.2 | 0.459 |
| 41BP801 | 5 | 5 | 14.5 | 50.6 | 51 | 50.8 | 11.5 | 0.442 |
| 41BP801 | 4 | 5 | 14.5 | 54.2 | 51.7 | 52.95 | 11.5 | 0.46 |
| 41BP801 | 3 | 5 | 14.9 | 55.7 | 55.8 | 55.75 | 11.9 | 0.468 |
| 41BP801 | 2 | 5 | 14.6 | 54.9 | 54 | 54.45 | 11.6 | 0.469 |
| 41BP801 | 1 | 5 | 15.2 | 50.2 | 49.7 | 49.95 | 12.2 | 0.409 |
| 41BP780 | 12 | 1 | 15.7 | 18.2 | 17.4 | 17.8 | 12.7 | 0.14 |
| 41BP780 | 11 | 1 | 15.3 | 17.3 | 16.8 | 17.05 | 12.3 | 0.139 |
| 41BP780 | 10 | 1 | 14.8 | 15.4 | 16.8 | 16.1 | 11.8 | 0.136 |
| 41BP780 | 9 | 1 | 14.1 | 13.2 | 14.1 | 13.65 | 11.1 | 0.123 |
| 41BP780 | 8 | 1 | 13.4 | 17 | 17.5 | 17.25 | 10.4 | 0.166 |
| 41BP780 | 7 | 1 | 12.9 | 12.4 | 12.8 | 12.6 | 9.9 | 0.127 |
| 41BP780 | 6 | 1 | 13.8 | 10.4 | 12.9 | 11.65 | 10.8 | 0.108 |
| 41BP780 | 5 | 1 | 13.6 | 15.6 | 12.6 | 14.1 | 10.6 | 0.133 |
| 41BP780 | 4 | 1 | 12.2 | 20.1 | 19.4 | 19.75 | 9.2 | 0.215 |
| 41BP780 | 3 | 1 | 12.2 | 12.4 | 13.5 | 12.95 | 9.2 | 0.141 |
| 41BP780 | 2 | 1 | 14.5 | 24 | 24 | 24 | 11.5 | 0.209 |
| 41BP780 | 1 | 1 | 14.9 | 20.8 | 19.9 | 20.35 | 11.9 | 0.171 |
| 41BP780 | 19 | 2 | 15.5 | 21.5 | 21.1 | 21.3 | 12.5 | 0.17 |
| 41BP780 | 18 | 2 | 14.3 | 24.3 | 25 | 24.65 | 11.3 | 0.218 |
| 41BP780 | 17 | 2 | 13.4 | 18.9 | 18.6 | 18.75 | 10.4 | 0.18 |
| 41BP780 | 16 | 2 | 14.1 | 24.9 | 23.5 | 24.2 | 11.1 | 0.218 |
| 41BP780 | 15 | 2 | 15.1 | 20.9 | 23 | 21.95 | 12.1 | 0.181 |
| 41BP780 | 14 | 2 | 13 | 23.4 | 23.4 | 23.4 | 10 | 0.234 |
| 41BP780 | 13 | 2 | 16.1 | 26.5 | 29 | 27.75 | 13.1 | 0.212 |
| 41BP780 | 12 | 2 | 13.7 | 20.8 | 20.5 | 20.65 | 10.7 | 0.193 |
| 41BP780 | 11 | 2 | 14.7 | 29.5 | 28.6 | 29.05 | 11.7 | 0.248 |
| 41BP780 | 10 | 2 | 12.7 | 17.3 | 17.5 | 17.4 | 9.7 | 0.179 |
| 41BP780 | 9 | 2 | 13.2 | 24.6 | 24.5 | 24.55 | 10.2 | 0.241 |
| 41BP780 | 8 | 2 | 12.8 | 19.6 | 19.3 | 19.45 | 9.8 | 0.198 |
| 41BP780 | 7 | 2 | 13.7 | 21.6 | 21.9 | 21.75 | 10.7 | 0.203 |
| 41BP780 | 6 | 2 | 13.2 | 21.6 | 22.1 | 21.85 | 10.2 | 0.214 |
| 41BP780 | 5 | 2 | 12.4 | 20.6 | 21.4 | 21 | 9.4 | 0.223 |

Table B-1. MSS Sampling Information, continued...

| Site | Sample Number | Test Unit | Total Weight (g) | VSS #1 | VSS #2 | Average VSS | Sample Weight (g) | MSS Value |
|---|---|---|---|---|---|---|---|---|
| 41BP780 | 4 | 2 | 13.9 | 20.5 | 20.4 | 20.45 | 10.9 | 0.188 |
| 41BP780 | 3 | 2 | 13.1 | 19.3 | 19.5 | 19.4 | 10.1 | 0.192 |
| 41BP780 | 2 | 2 | 15.6 | 26.2 | 26.2 | 26.2 | 12.6 | 0.208 |
| 41BP780 | 1 | 2 | 14.8 | 29.8 | 34.6 | 32.2 | 11.8 | 0.273 |
| 41BP780 | 0 | 2 | 13.7 | 18.5 | 22.3 | 20.4 | 10.7 | 0.191 |
| 41BP780 | 22 | 3 | 16.1 | 22.6 | 23.1 | 22.85 | 13.1 | 0.174 |
| 41BP780 | 21 | 3 | 14.9 | 24.1 | 23.4 | 23.75 | 11.9 | 0.2 |
| 41BP780 | 20 | 3 | 15.9 | 24.3 | 24 | 24.15 | 12.9 | 0.187 |
| 41BP780 | 19 | 3 | 15.1 | 26.2 | 25.3 | 25.75 | 12.1 | 0.213 |
| 41BP780 | 18 | 3 | 14.8 | 25 | 23.3 | 24.15 | 11.8 | 0.205 |
| 41BP780 | 17 | 3 | 15.4 | 23.3 | 23.1 | 23.2 | 12.4 | 0.187 |
| 41BP780 | 16 | 3 | 13.8 | 20 | 20.8 | 20.4 | 10.8 | 0.189 |
| 41BP780 | 15 | 3 | 15.9 | 25.8 | 25.7 | 25.75 | 12.9 | 0.2 |
| 41BP780 | 14 | 3 | 14.9 | 27.9 | 28.1 | 28 | 11.9 | 0.235 |
| 41BP780 | 13 | 3 | 13.4 | 26.5 | 26.9 | 26.7 | 10.4 | 0.257 |
| 41BP780 | 12 | 3 | 15.6 | 33.1 | 32.8 | 32.95 | 12.6 | 0.262 |
| 41BP780 | 11 | 3 | 15.4 | 24.7 | 24.7 | 24.7 | 12.4 | 0.199 |
| 41BP780 | 10 | 3 | 15.4 | 45.7 | 45.7 | 45.7 | 12.4 | 0.369 |
| 41BP780 | 9 | 3 | 16.6 | 29.5 | 28.1 | 28.8 | 13.6 | 0.212 |
| 41BP780 | 8 | 3 | 16.7 | 36.9 | 37.6 | 37.25 | 13.7 | 0.272 |
| 41BP780 | 7 | 3 | 17.6 | 34.4 | 35.3 | 34.85 | 14.6 | 0.239 |
| 41BP780 | 6 | 3 | 16.7 | 40.2 | 37.3 | 38.75 | 13.7 | 0.283 |
| 41BP780 | 5 | 3 | 16.7 | 40.1 | 41.3 | 40.7 | 13.7 | 0.297 |
| 41BP780 | 4 | 3 | 16.7 | 33.3 | 35.6 | 34.45 | 13.7 | 0.251 |
| 41BP780 | 3 | 3 | 17 | 42 | 44 | 43 | 14 | 0.307 |
| 41BP780 | 2 | 3 | 17.5 | 32.2 | 30.9 | 31.55 | 14.5 | 0.218 |
| 41BP780 | 1 | 3 | 16.7 | 40.7 | 40.5 | 40.6 | 13.7 | 0.296 |
| 41BP780 | 20 | 4 | 15.8 | 20.5 | 20.5 | 20.5 | 12.8 | 0.16 |
| 41BP780 | 19 | 4 | 14.6 | 19.1 | 19.9 | 19.5 | 11.6 | 0.168 |
| 41BP780 | 18 | 4 | 15 | 17.7 | 16.8 | 17.25 | 12 | 0.144 |
| 41BP780 | 17 | 4 | 16.1 | 26.7 | 26.9 | 26.8 | 13.1 | 0.205 |
| 41BP780 | 16 | 4 | 12.7 | 14.9 | 15.2 | 15.05 | 9.7 | 0.155 |
| 41BP780 | 15 | 4 | 13.4 | 15.6 | 15.4 | 15.5 | 10.4 | 0.149 |
| 41BP780 | 14 | 4 | 12.1 | 14.2 | 14.6 | 14.4 | 9.1 | 0.158 |
| 41BP780 | 13 | 4 | 11.3 | 11.4 | 12.1 | 11.75 | 8.3 | 0.142 |
| 41BP780 | 12 | 4 | 12 | 14.8 | 15 | 14.9 | 9 | 0.166 |
| 41BP780 | 11 | 4 | 12.8 | 17.7 | 16.8 | 17.25 | 9.8 | 0.176 |
| 41BP780 | 10 | 4 | 13.4 | 16.8 | 18 | 17.4 | 10.4 | 0.167 |
| 41BP780 | 9 | 4 | 14.2 | 21 | 21 | 21 | 11.2 | 0.188 |

Table B-1. MSS Sampling Information, continued...

| Site | Sample Number | Test Unit | Total Weight (g) | VSS #1 | VSS #2 | Average VSS | Sample Weight (g) | MSS Value |
|---|---|---|---|---|---|---|---|---|
| 41BP780 | 8 | 4 | 15.2 | 22.1 | 22.5 | 22.3 | 12.2 | 0.183 |
| 41BP780 | 7 | 4 | 13.9 | 17 | 17.3 | 17.15 | 10.9 | 0.157 |
| 41BP780 | 6 | 4 | 12.1 | 28.5 | 20.4 | 24.45 | 9.1 | 0.269 |
| 41BP780 | 5 | 4 | 12.3 | 17.2 | 16.4 | 16.8 | 9.3 | 0.181 |
| 41BP780 | 4 | 4 | 16.2 | 26.9 | 26.3 | 26.6 | 13.2 | 0.202 |
| 41BP780 | 3 | 4 | 15.2 | 21.9 | 21.4 | 21.65 | 12.2 | 0.177 |
| 41BP780 | 2 | 4 | 16.4 | 28.9 | 28.5 | 28.7 | 13.4 | 0.214 |
| 41BP780 | 1 | 4 | 14.8 | 32.1 | 30.9 | 31.5 | 11.8 | 0.267 |
| 41BP778 | 10 | 1 | 15.8 | 28.8 | 28.9 | 28.85 | 12.8 | 0.225 |
| 41BP778 | 9 | 1 | 16.2 | 34.8 | 35.6 | 35.2 | 13.2 | 0.267 |
| 41BP778 | 8 | 1 | 15 | 86 | 84.8 | 85.4 | 12 | 0.712 |
| 41BP778 | 7 | 1 | 15 | 41.9 | 41.4 | 41.65 | 12 | 0.347 |
| 41BP778 | 6 | 1 | 15.8 | 33.7 | 34.2 | 33.95 | 12.8 | 0.265 |
| 41BP778 | 5 | 1 | 14.7 | 65.7 | 69.6 | 67.65 | 11.7 | 0.578 |
| 41BP778 | 4 | 1 | 15.1 | 24.2 | 24.1 | 24.15 | 12.1 | 0.2 |
| 41BP778 | 3 | 1 | 15.4 | 40.7 | 40.2 | 40.45 | 12.4 | 0.326 |
| 41BP778 | 2 | 1 | 14.5 | 38.2 | 36.8 | 37.5 | 11.5 | 0.326 |
| 41BP778 | 1 | 1 | 16.7 | 26.6 | 27 | 26.8 | 13.7 | 0.196 |
| 41BP778 | 17 | 2 | 13.7 | 32.5 | 34.4 | 33.45 | 10.7 | 0.313 |
| 41BP778 | 16 | 2 | 13.5 | 23.4 | 26.4 | 24.9 | 10.5 | 0.237 |
| 41BP778 | 15 | 2 | 13.7 | 35.1 | 36.5 | 35.8 | 10.7 | 0.335 |
| 41BP778 | 14 | 2 | 14 | 20.4 | 24.9 | 22.65 | 11 | 0.206 |
| 41BP778 | 13 | 2 | 13 | 32.1 | 34.8 | 33.45 | 10 | 0.335 |
| 41BP778 | 12 | 2 | 12.4 | 26.6 | 28.5 | 27.55 | 9.4 | 0.293 |
| 41BP778 | 11 | 2 | 12.1 | 24.1 | 25 | 24.55 | 9.1 | 0.27 |
| 41BP778 | 10 | 2 | 12.8 | 25.4 | 26.1 | 25.75 | 9.8 | 0.263 |
| 41BP778 | 9 | 2 | 12.2 | 26.1 | 25.1 | 25.6 | 9.2 | 0.278 |
| 41BP778 | 8 | 2 | 13.7 | 33.5 | 33.5 | 33.5 | 10.7 | 0.313 |
| 41BP778 | 7 | 2 | 13.2 | 28.4 | 27.9 | 28.15 | 10.2 | 0.276 |
| 41BP778 | 6 | 2 | 12.5 | 21.2 | 23.7 | 22.45 | 9.5 | 0.236 |
| 41BP778 | 5 | 2 | 13.1 | 25.9 | 25.9 | 25.9 | 10.1 | 0.256 |
| 41BP778 | 4 | 2 | 14.8 | 30.1 | 31.7 | 30.9 | 11.8 | 0.262 |
| 41BP778 | 3 | 2 | 15.3 | 30 | 30.6 | 30.3 | 12.3 | 0.246 |
| 41BP778 | 2 | 2 | 15.1 | 29.6 | 24 | 26.8 | 12.1 | 0.221 |
| 41BP778 | 1 | 2 | 15.9 | 25.8 | 26 | 25.9 | 12.9 | 0.201 |
| 41BP778 | 9 | 3 | 14.6 | 26.4 | 25.6 | 26 | 11.6 | 0.224 |
| 41BP778 | 8 | 3 | 14.2 | 34.8 | 34.8 | 34.8 | 11.2 | 0.311 |
| 41BP778 | 7 | 3 | 14.1 | 20.8 | 19.4 | 20.1 | 11.1 | 0.181 |
| 41BP778 | 6 | 3 | 14.6 | 22.9 | 23.6 | 23.25 | 11.6 | 0.2 |

Table B-1. MSS Sampling Information, continued...

| Site | Sample Number | Test Unit | Total Weight (g) | VSS #1 | VSS #2 | Average VSS | Sample Weight (g) | MSS Value |
|---|---|---|---|---|---|---|---|---|
| 41BP778 | 5 | 3 | 15.2 | 26.9 | 26.9 | 26.9 | 12.2 | 0.22 |
| 41BP778 | 4 | 3 | 13.4 | 27.6 | 28.1 | 27.85 | 10.4 | 0.268 |
| 41BP778 | 3 | 3 | 12.5 | 24.5 | 24.3 | 24.4 | 9.5 | 0.257 |
| 41BP778 | 2 | 3 | 13.7 | 15.8 | 15.7 | 15.75 | 10.7 | 0.147 |
| 41BP778 | 1 | 3 | 14.1 | 18.9 | 18.3 | 18.6 | 11.1 | 0.168 |
| 41BP776 | 21 | 1 | 13.2 | 41.9 | 41.7 | 41.8 | 10.2 | 0.41 |
| 41BP776 | 20 | 1 | 14.6 | 42.5 | 42 | 42.25 | 11.6 | 0.364 |
| 41BP776 | 19 | 1 | 13.6 | 45 | 45 | 45 | 10.6 | 0.425 |
| 41BP776 | 18 | 1 | 13.8 | 44.4 | 41.5 | 42.95 | 10.8 | 0.398 |
| 41BP776 | 17 | 1 | 14.8 | 47.7 | 46.9 | 47.3 | 11.8 | 0.401 |
| 41BP776 | 16 | 1 | 14.3 | 41.5 | 41.7 | 41.6 | 11.3 | 0.368 |
| 41BP776 | 15 | 1 | 14.4 | 47.1 | 47.2 | 47.15 | 11.4 | 0.414 |
| 41BP776 | 14 | 1 | 15.5 | 47.9 | 47.9 | 47.9 | 12.5 | 0.383 |
| 41BP776 | 13 | 1 | 15.6 | 50.6 | 50 | 50.3 | 12.6 | 0.399 |
| 41BP776 | 12 | 1 | 15 | 48.2 | 48.8 | 48.5 | 12 | 0.404 |
| 41BP776 | 11 | 1 | 14.2 | 45.4 | 46.5 | 45.95 | 11.2 | 0.41 |
| 41BP776 | 10 | 1 | 14.1 | 85.7 | 87.2 | 86.45 | 11.1 | 0.779 |
| 41BP776 | 9 | 1 | 14.03 | 89 | 92.6 | 90.8 | 11.03 | 0.823 |
| 41BP776 | 8 | 1 | 15.3 | 55 | 57.4 | 56.2 | 12.3 | 0.457 |
| 41BP776 | 7 | 1 | 14.8 | 41 | 41.1 | 41.05 | 11.8 | 0.348 |
| 41BP776 | 6 | 1 | 14 | 30.7 | 37.7 | 34.2 | 11 | 0.311 |
| 41BP776 | 5 | 1 | 15.1 | 43.9 | 43.4 | 43.65 | 12.1 | 0.361 |
| 41BP776 | 4 | 1 | 15.6 | 97.7 | 98.4 | 98.05 | 12.6 | 0.778 |
| 41BP776 | 3 | 1 | 15.5 | 61.4 | 61.3 | 61.35 | 12.5 | 0.491 |
| 41BP776 | 2 | 1 | 14.2 | 129.3 | 122 | 125.65 | 11.2 | 1.122 |
| 41BP776 | 1 | 1 | 14.9 | 43.1 | 42.6 | 42.85 | 11.9 | 0.36 |
| 41BP776 | 12 | 2 | 13.1 | 41.2 | 43 | 42.1 | 10.1 | 0.417 |
| 41BP776 | 11 | 2 | 13 | 45.6 | 45.6 | 45.6 | 10 | 0.456 |
| 41BP776 | 10 | 2 | 14.9 | 56.9 | 56.1 | 56.5 | 11.9 | 0.475 |
| 41BP776 | 9 | 2 | 14.1 | 48.9 | 48.7 | 48.8 | 11.1 | 0.44 |
| 41BP776 | 8 | 2 | 13.5 | 51.2 | 52.1 | 51.65 | 10.5 | 0.492 |
| 41BP776 | 7 | 2 | 14 | 56.7 | 56.5 | 56.6 | 11 | 0.515 |
| 41BP776 | 6 | 2 | 15.1 | 66.2 | 66.3 | 66.25 | 12.1 | 0.548 |
| 41BP776 | 5 | 2 | 15.1 | 62.6 | 61.7 | 62.15 | 12.1 | 0.514 |
| 41BP776 | 4 | 2 | 14.4 | 56.1 | 56.3 | 56.2 | 11.4 | 0.493 |
| 41BP776 | 3 | 2 | 16.9 | 37.5 | 37.5 | 37.5 | 13.9 | 0.27 |
| 41BP776 | 2 | 2 | 15.5 | 39.9 | 40.4 | 40.15 | 12.5 | 0.321 |
| 41BP776 | 1 | 2 | 14 | 42.4 | 43.2 | 42.8 | 11 | 0.389 |
| 41BP776 | 9 | 3 | 15 | 33.8 | 36.7 | 35.25 | 12 | 0.294 |

Table B-1. MSS Sampling Information, continued...

| Site | Sample Number | Test Unit | Total Weight (g) | VSS #1 | VSS #2 | Average VSS | Sample Weight (g) | MSS Value |
|---|---|---|---|---|---|---|---|---|
| 41BP776 | 8 | 3 | 15.4 | 36.6 | 35.3 | 35.95 | 12.4 | 0.29 |
| 41BP776 | 7 | 3 | 16 | 39.7 | 40 | 39.85 | 13 | 0.307 |
| 41BP776 | 6 | 3 | 16.1 | 37.7 | 38.9 | 38.3 | 13.1 | 0.292 |
| 41BP776 | 5 | 3 | 16.6 | 40.1 | 39.9 | 40 | 13.6 | 0.294 |
| 41BP776 | 4 | 3 | 13.9 | 31 | 29.5 | 30.25 | 10.9 | 0.278 |
| 41BP776 | 3 | 3 | 17.1 | 40.4 | 41.9 | 41.15 | 14.1 | 0.292 |
| 41BP776 | 2 | 3 | 16 | 49.9 | 45 | 47.45 | 13 | 0.365 |
| 41BP776 | 1 | 3 | 14.2 | 21.6 | 21.2 | 21.4 | 11.2 | 0.191 |
| 41BP776 | 3 | 4 | 15.1 | 30.1 | 31 | 30.55 | 12.1 | 0.252 |
| 41BP776 | 2 | 4 | 16 | 35.3 | 35.4 | 35.35 | 13 | 0.272 |
| 41BP776 | 1 | 4 | 14.8 | 32.6 | 33.6 | 33.1 | 11.8 | 0.281 |
| 41BP776 | 12 | 5 | 16.1 | 34.6 | 35 | 34.8 | 13.1 | 0.266 |
| 41BP776 | 11 | 5 | 15.7 | 30.8 | 31.4 | 31.1 | 12.7 | 0.245 |
| 41BP776 | 10 | 5 | 16.3 | 32.4 | 33.6 | 33 | 13.3 | 0.248 |
| 41BP776 | 9 | 5 | 16 | 38.1 | 37.6 | 37.85 | 13 | 0.291 |
| 41BP776 | 8 | 5 | 16.6 | 36 | 35.7 | 35.85 | 13.6 | 0.264 |
| 41BP776 | 7 | 5 | 14.9 | 29.5 | 29.1 | 29.3 | 11.9 | 0.246 |
| 41BP776 | 6 | 5 | 16.1 | 34.6 | 34.1 | 34.35 | 13.1 | 0.262 |
| 41BP776 | 5 | 5 | 15.4 | 34 | 35.4 | 34.7 | 12.4 | 0.28 |
| 41BP776 | 4 | 5 | 16.5 | 40.8 | 42.3 | 41.55 | 13.5 | 0.308 |
| 41BP776 | 3 | 5 | 16.3 | 38.8 | 38.9 | 38.85 | 13.3 | 0.292 |
| 41BP776 | 2 | 5 | 16.2 | 37.7 | 38 | 37.85 | 13.2 | 0.287 |
| 41BP776 | 1 | 5 | 16.6 | 35.7 | 37.8 | 36.75 | 13.6 | 0.27 |
| 41BP776 | 10 | 7 | 15.7 | 43.1 | 39.5 | 41.3 | 12.7 | 0.325 |
| 41BP776 | 9 | 7 | 16 | 42.6 | 43.4 | 43 | 13 | 0.331 |
| 41BP776 | 8 | 7 | 16.2 | 40.9 | 41.2 | 41.05 | 13.2 | 0.311 |
| 41BP776 | 7 | 7 | 16 | 42.9 | 43.3 | 43.1 | 13 | 0.332 |
| 41BP776 | 6 | 7 | 16.6 | 44.4 | 43.5 | 43.95 | 13.6 | 0.323 |
| 41BP776 | 5 | 7 | 16.5 | 45.1 | 44.2 | 44.65 | 13.5 | 0.331 |
| 41BP776 | 4 | 7 | 14.2 | 35.3 | 35.3 | 35.3 | 11.2 | 0.315 |
| 41BP776 | 3 | 7 | 16.2 | 44.5 | 43.8 | 44.15 | 13.2 | 0.334 |
| 41BP776 | 2 | 7 | 16.5 | 46.7 | 46.8 | 46.75 | 13.5 | 0.346 |
| 41BP776 | 1 | 7 | 16.4 | 43.2 | 42.7 | 42.95 | 13.4 | 0.321 |
| 41BP792 | 7 | 1 | 13.9 | 49.2 | 49 | 49.1 | 10.9 | 0.45 |
| 41BP792 | 6 | 1 | 15 | 50.8 | 50.7 | 50.75 | 12 | 0.423 |
| 41BP792 | 5 | 1 | 15.8 | 56.5 | 56.7 | 56.6 | 12.8 | 0.442 |
| 41BP792 | 4 | 1 | 16.7 | 63.3 | 63.6 | 63.45 | 13.7 | 0.463 |
| 41BP792 | 3 | 1 | 15.7 | 61.4 | 61.5 | 61.45 | 12.7 | 0.484 |
| 41BP792 | 2 | 1 | 15 | 54.7 | 54.8 | 54.75 | 12 | 0.456 |

Table B-1. MSS Sampling Information, continued...

| Site | Sample Number | Test Unit | Total Weight (g) | VSS #1 | VSS #2 | Average VSS | Sample Weight (g) | MSS Value |
|---|---|---|---|---|---|---|---|---|
| 41BP792 | 1 | 1 | 15.1 | 50 | 50.3 | 50.15 | 12.1 | 0.414 |
| 41BP792 | 0 | 1 | 14.2 | 34.8 | 34.7 | 34.75 | 11.2 | 0.31 |
| 41BP792 | 10 | 2 | 15.4 | 51.5 | 51.8 | 51.65 | 12.4 | 0.417 |
| 41BP792 | 9 | 2 | 15.6 | 53.9 | 53.8 | 53.85 | 12.6 | 0.427 |
| 41BP792 | 8 | 2 | 16.4 | 60.1 | 60.3 | 60.2 | 13.4 | 0.449 |
| 41BP792 | 7 | 2 | 16.1 | 60.1 | 60.1 | 60.1 | 13.1 | 0.459 |
| 41BP792 | 6 | 2 | 16.4 | 59.6 | 59.5 | 59.55 | 13.4 | 0.444 |
| 41BP792 | 5 | 2 | 16.5 | 57.7 | 57.7 | 57.7 | 13.5 | 0.427 |
| 41BP792 | 4 | 2 | 16.6 | 57.5 | 57.4 | 57.45 | 13.6 | 0.422 |
| 41BP792 | 3 | 2 | 14.7 | 49.7 | 49.7 | 49.7 | 11.7 | 0.425 |
| 41BP792 | 2 | 2 | 16.4 | 47.4 | 47.2 | 47.3 | 13.4 | 0.353 |
| 41BP792 | 1 | 2 | 16.4 | 36.8 | 37.1 | 36.95 | 13.4 | 0.276 |
| 41BP792 | 0 | 2 | 13.7 | 25.5 | 25.7 | 25.6 | 10.7 | 0.239 |
| 41BP792 | 13 | 3 | 13.7 | 40.3 | 40.4 | 40.35 | 10.7 | 0.377 |
| 41BP792 | 12 | 3 | 16 | 51.3 | 51.1 | 51.2 | 13 | 0.394 |
| 41BP792 | 11 | 3 | 15.6 | 48.6 | 48.6 | 48.6 | 12.6 | 0.386 |
| 41BP792 | 10 | 3 | 16.2 | 54.9 | 54.8 | 54.85 | 13.2 | 0.416 |
| 41BP792 | 9 | 3 | 16 | 56.7 | 56.9 | 56.8 | 13 | 0.437 |
| 41BP792 | 8 | 3 | 16 | 51.3 | 51.5 | 51.4 | 13 | 0.395 |
| 41BP792 | 7 | 3 | 15.8 | 47 | 47.2 | 47.1 | 12.8 | 0.368 |
| 41BP792 | 6 | 3 | 16.2 | 43.6 | 43.9 | 43.75 | 13.2 | 0.331 |
| 41BP792 | 5 | 3 | 15.8 | 35.7 | 35.9 | 35.8 | 12.8 | 0.28 |
| 41BP792 | 4 | 3 | 15.9 | 23 | 23.1 | 23.05 | 12.9 | 0.179 |
| 41BP792 | 3 | 3 | 16 | 17.6 | 17.7 | 17.65 | 13 | 0.136 |
| 41BP792 | 2 | 3 | 16.6 | 13.9 | 14.2 | 14.05 | 13.6 | 0.103 |
| 41BP792 | 1 | 3 | 14.2 | 21.4 | 21.6 | 21.5 | 11.2 | 0.192 |
| 41BP792 | 11 | 4 | 14.9 | 40 | 40.2 | 40.1 | 11.9 | 0.337 |
| 41BP792 | 10 | 4 | 15.1 | 42.5 | 42.8 | 42.65 | 12.1 | 0.352 |
| 41BP792 | 9 | 4 | 15 | 43.4 | 43.5 | 43.45 | 12 | 0.362 |
| 41BP792 | 8 | 4 | 15.9 | 47.3 | 47.4 | 47.35 | 12.9 | 0.367 |
| 41BP792 | 7 | 4 | 15.2 | 45.9 | 46 | 45.95 | 12.2 | 0.377 |
| 41BP792 | 6 | 4 | 15.9 | 44.7 | 44.6 | 44.65 | 12.9 | 0.346 |
| 41BP792 | 5 | 4 | 13.8 | 33.1 | 33.3 | 33.2 | 10.8 | 0.307 |
| 41BP792 | 4 | 4 | 15.2 | 32.9 | 32.9 | 32.9 | 12.2 | 0.27 |
| 41BP792 | 3 | 4 | 14.7 | 22.1 | 22.2 | 22.15 | 11.7 | 0.189 |
| 41BP792 | 2 | 4 | 14.9 | 16.6 | 16.7 | 16.65 | 11.9 | 0.14 |
| 41BP792 | 1 | 4 | 13.7 | 12.2 | 12.1 | 12.15 | 10.7 | 0.114 |
| 41BP782 | 9 | 1 | 13.9 | 31.8 | 31.8 | 31.8 | 10.9 | 0.292 |
| 41BP782 | 8 | 1 | 14.6 | 41.1 | 41.1 | 41.1 | 11.6 | 0.354 |

Table B-1. MSS Sampling Information, continued...

| Site | Sample Number | Test Unit | Total Weight (g) | VSS #1 | VSS #2 | Average VSS | Sample Weight (g) | MSS Value |
|---|---|---|---|---|---|---|---|---|
| 41BP782 | 7 | 1 | 15.5 | 49.5 | 49.5 | 49.5 | 12.5 | 0.396 |
| 41BP782 | 6 | 1 | 16.1 | 51.3 | 51.5 | 51.4 | 13.1 | 0.392 |
| 41BP782 | 5 | 1 | 14.7 | 45.8 | 45.9 | 45.85 | 11.7 | 0.392 |
| 41BP782 | 4 | 1 | 15.6 | 47.1 | 47.3 | 47.2 | 12.6 | 0.375 |
| 41BP782 | 3 | 1 | 15.6 | 64.8 | 65.2 | 65 | 12.6 | 0.516 |
| 41BP782 | 2 | 1 | 14.6 | 32.1 | 31.8 | 31.95 | 11.6 | 0.275 |
| 41BP782 | 1 | 1 | 11.3 | 19.2 | 19.2 | 19.2 | 8.3 | 0.231 |
| 41BP782 | 5 | 2 | 15 | 31.1 | 30.8 | 30.95 | 12 | 0.258 |
| 41BP782 | 4 | 2 | 15 | 27.3 | 27.6 | 27.45 | 12 | 0.229 |
| 41BP782 | 3 | 2 | 15.3 | 29.3 | 29.3 | 29.3 | 12.3 | 0.238 |
| 41BP782 | 2 | 2 | 10.5 | 14.7 | 14.5 | 14.6 | 7.5 | 0.195 |
| 41BP782 | 1 | 2 | 13.8 | 13.4 | 13.6 | 13.5 | 10.8 | 0.125 |
| 41BP782 | 7 | 3 | 15.2 | 27.8 | 28 | 27.9 | 12.2 | 0.229 |
| 41BP782 | 6 | 3 | 14 | 28.5 | 28.6 | 28.55 | 11 | 0.26 |
| 41BP782 | 5 | 3 | 13.6 | 21.7 | 21.8 | 21.75 | 10.6 | 0.205 |
| 41BP782 | 4 | 3 | 13.7 | 24.9 | 25.1 | 25 | 10.7 | 0.234 |
| 41BP782 | 3 | 3 | 14.4 | 16.8 | 17.1 | 16.95 | 11.4 | 0.149 |
| 41BP782 | 2 | 3 | 14.5 | 12.1 | 12.1 | 12.1 | 11.5 | 0.105 |
| 41BP782 | 1 | 3 | 13.6 | 10.4 | 10.5 | 10.45 | 10.6 | 0.099 |
| 41BP782 | 6 | 4 | 13.6 | 31.1 | 31.3 | 31.2 | 10.6 | 0.294 |
| 41BP782 | 5 | 4 | 13.5 | 33.8 | 33.7 | 33.75 | 10.5 | 0.321 |
| 41BP782 | 4 | 4 | 12.6 | 29.1 | 29.4 | 29.25 | 9.6 | 0.305 |
| 41BP782 | 3 | 4 | 12.3 | 23.2 | 23.2 | 23.2 | 9.3 | 0.249 |
| 41BP782 | 2 | 4 | 12.5 | 20.2 | 20.2 | 20.2 | 9.5 | 0.213 |
| 41BP782 | 1 | 4 | 13 | 19.1 | 19.1 | 19.1 | 10 | 0.191 |
| 41BP782 | 7 | 5 | 14.5 | 52.4 | 52.5 | 52.45 | 11.5 | 0.456 |
| 41BP782 | 6 | 5 | 15.8 | 62 | 62.2 | 62.1 | 12.8 | 0.485 |
| 41BP782 | 5 | 5 | 15.3 | 65.1 | 65.1 | 65.1 | 12.3 | 0.529 |
| 41BP782 | 4 | 5 | 16.5 | 67.4 | 67.7 | 67.55 | 13.5 | 0.5 |
| 41BP782 | 3 | 5 | 15.2 | 60.2 | 60.3 | 60.25 | 12.2 | 0.494 |
| 41BP782 | 2 | 5 | 15.2 | 56.7 | 56.8 | 56.75 | 12.2 | 0.465 |
| 41BP782 | 1 | 5 | 14.8 | 51.5 | 51.8 | 51.65 | 11.8 | 0.438 |
| 41BP782 | 12 | 6 | 16 | 44.3 | 44.4 | 44.35 | 13 | 0.341 |
| 41BP782 | 11 | 6 | 15.9 | 50.4 | 50.5 | 50.45 | 12.9 | 0.391 |
| 41BP782 | 10 | 6 | 15.7 | 50.7 | 50.9 | 50.8 | 12.7 | 0.4 |
| 41BP782 | 9 | 6 | 14.9 | 46.5 | 46.7 | 46.6 | 11.9 | 0.392 |
| 41BP782 | 8 | 6 | 15.7 | 51 | 50.6 | 50.8 | 12.7 | 0.4 |
| 41BP782 | 7 | 6 | 14.9 | 45.5 | 45.6 | 45.55 | 11.9 | 0.383 |
| 41BP782 | 6 | 6 | 15.9 | 45.8 | 45.8 | 45.8 | 12.9 | 0.355 |

Table B-1. MSS Sampling Information, continued...

| Site | Sample Number | Test Unit | Total Weight (g) | VSS #1 | VSS #2 | Average VSS | Sample Weight (g) | MSS Value |
|---|---|---|---|---|---|---|---|---|
| 41BP782 | 5 | 6 | 15.5 | 44 | 44.5 | 44.25 | 12.5 | 0.354 |
| 41BP782 | 4 | 6 | 15.9 | 41.4 | 41.8 | 41.6 | 12.9 | 0.322 |
| 41BP782 | 3 | 6 | 16.5 | 39.7 | 39.7 | 39.7 | 13.5 | 0.294 |
| 41BP782 | 2 | 6 | 16.6 | 37.8 | 38 | 37.9 | 13.6 | 0.279 |
| 41BP782 | 1 | 6 | 15.5 | 23.8 | 23.9 | 23.85 | 12.5 | 0.191 |
| 41BP782 | 6 | 7 | 15.8 | 51.8 | 51.9 | 51.85 | 12.8 | 0.405 |
| 41BP782 | 5 | 7 | 14.7 | 48 | 48 | 48 | 11.7 | 0.41 |
| 41BP782 | 4 | 7 | 15.7 | 53.9 | 53.7 | 53.8 | 12.7 | 0.424 |
| 41BP782 | 3 | 7 | 15.6 | 51.4 | 51.5 | 51.45 | 12.6 | 0.408 |
| 41BP782 | 2 | 7 | 14.8 | 44.6 | 44.6 | 44.6 | 11.8 | 0.378 |
| 41BP782 | 1 | 7 | 9.8 | 23.7 | 23.9 | 23.8 | 6.8 | 0.35 |
| 41BP802 | 21 | 2 | 15.6 | 30 | 30.1 | 30.05 | 12.6 | 0.238 |
| 41BP802 | 20 | 2 | 14.6 | 24.8 | 24.8 | 24.8 | 11.6 | 0.214 |
| 41BP802 | 19 | 2 | 15.7 | 27.9 | 28.1 | 28 | 12.7 | 0.22 |
| 41BP802 | 18 | 2 | 14.9 | 27.7 | 27.6 | 27.65 | 11.9 | 0.232 |
| 41BP802 | 17 | 2 | 14.4 | 25.3 | 25.4 | 25.35 | 11.4 | 0.222 |
| 41BP802 | 16 | 2 | 14.6 | 25.8 | 25.9 | 25.85 | 11.6 | 0.223 |
| 41BP802 | 15 | 2 | 13.9 | 23.5 | 23.7 | 23.6 | 10.9 | 0.217 |
| 41BP802 | 14 | 2 | 15.6 | 27.3 | 27.4 | 27.35 | 12.6 | 0.217 |
| 41BP802 | 13 | 2 | 17 | 32.9 | 32.8 | 32.85 | 14 | 0.235 |
| 41BP802 | 12 | 2 | 16.8 | 31.8 | 32 | 31.9 | 13.8 | 0.231 |
| 41BP802 | 11 | 2 | 17.8 | 34.1 | 34.1 | 34.1 | 14.8 | 0.23 |
| 41BP802 | 10 | 2 | 16 | 23 | 23.2 | 23.1 | 13 | 0.178 |
| 41BP802 | 9 | 2 | 17.3 | 49.2 | 49.2 | 49.2 | 14.3 | 0.344 |
| 41BP802 | 8 | 2 | 17.3 | 32.5 | 32.5 | 32.5 | 14.3 | 0.227 |
| 41BP802 | 7 | 2 | 14.8 | 24.6 | 24.8 | 24.7 | 11.8 | 0.209 |
| 41BP802 | 6 | 2 | 16.6 | 25.5 | 25.5 | 25.5 | 13.6 | 0.188 |
| 41BP802 | 5 | 2 | 16.8 | 25.5 | 25.6 | 25.55 | 13.8 | 0.185 |
| 41BP802 | 4 | 2 | 16.5 | 21 | 21.1 | 21.05 | 13.5 | 0.156 |
| 41BP802 | 3 | 2 | 15.4 | 21.8 | 21.9 | 21.85 | 12.4 | 0.176 |
| 41BP802 | 2 | 2 | 14.7 | 14.4 | 14.4 | 14.4 | 11.7 | 0.123 |
| 41BP802 | 1 | 2 | 16.5 | 15.3 | 15.5 | 15.4 | 13.5 | 0.114 |
| 41BP802 | 0 | 2 | 17.2 | 15.8 | 15.8 | 15.8 | 14.2 | 0.111 |
| 41BP802 | 12 | 1 | 16.2 | 16.2 | 16.4 | 16.3 | 13.2 | 0.123 |
| 41BP802 | 11 | 1 | 16.7 | 18.2 | 17.7 | 17.95 | 13.7 | 0.131 |
| 41BP802 | 10 | 1 | 16.4 | 17 | 17.1 | 17.05 | 13.4 | 0.127 |
| 41BP802 | 9 | 1 | 16.2 | 15.9 | 16.3 | 16.1 | 13.2 | 0.122 |
| 41BP802 | 8 | 1 | 16.3 | 16.8 | 16.8 | 16.8 | 13.3 | 0.126 |
| 41BP802 | 7 | 1 | 16.6 | 16.8 | 16.9 | 16.85 | 13.6 | 0.124 |

Table B-1. MSS Sampling Information, continued...

| Site | Sample Number | Test Unit | Total Weight (g) | VSS #1 | VSS #2 | Average VSS | Sample Weight (g) | MSS Value |
|---|---|---|---|---|---|---|---|---|
| 41BP802 | 6 | 1 | 16.7 | 17 | 17.1 | 17.05 | 13.7 | 0.124 |
| 41BP802 | 5 | 1 | 16.3 | 17.4 | 17.5 | 17.45 | 13.3 | 0.131 |
| 41BP802 | 4 | 1 | 16.1 | 16.3 | 16.2 | 16.25 | 13.1 | 0.124 |
| 41BP802 | 3 | 1 | 17 | 15.1 | 15.3 | 15.2 | 14 | 0.109 |
| 41BP802 | 2 | 1 | 16.4 | 13.2 | 13.2 | 13.2 | 13.4 | 0.099 |
| 41BP802 | 1 | 1 | 17 | 12.3 | 12.3 | 12.3 | 14 | 0.088 |
| 41BP802 | 0 | 1 | 14.1 | 9.1 | 9.1 | 9.1 | 11.1 | 0.082 |
| 41BP802 | 13 | 3 | 15.4 | 31.7 | 32.3 | 32 | 12.4 | 0.258 |
| 41BP802 | 12 | 3 | 15.8 | 35.6 | 35.2 | 35.4 | 12.8 | 0.277 |
| 41BP802 | 11 | 3 | 15.7 | 34 | 34.2 | 34.1 | 12.7 | 0.269 |
| 41BP802 | 10 | 3 | 16.1 | 33.3 | 33.6 | 33.45 | 13.1 | 0.255 |
| 41BP802 | 9 | 3 | 16.5 | 33.8 | 34 | 33.9 | 13.5 | 0.251 |
| 41BP802 | 8 | 3 | 15.9 | 33.8 | 34 | 33.9 | 12.9 | 0.263 |
| 41BP802 | 7 | 3 | 16.1 | 35.1 | 35.1 | 35.1 | 13.1 | 0.268 |
| 41BP802 | 6 | 3 | 15.9 | 37.1 | 37 | 37.05 | 12.9 | 0.287 |
| 41BP802 | 5 | 3 | 16.1 | 39.3 | 39.5 | 39.4 | 13.1 | 0.301 |
| 41BP802 | 4 | 3 | 16.2 | 37.8 | 38 | 37.9 | 13.2 | 0.287 |
| 41BP802 | 3 | 3 | 16.6 | 37.1 | 37.2 | 37.15 | 13.6 | 0.273 |
| 41BP802 | 2 | 3 | 16.6 | 34.4 | 34.2 | 34.3 | 13.6 | 0.252 |
| 41BP802 | 1 | 3 | 16.7 | 33.5 | 33.7 | 33.6 | 13.7 | 0.245 |
| 41BP802 | 19 | 4 | 15.8 | 21 | 21.1 | 21.05 | 12.8 | 0.164 |
| 41BP802 | 18 | 4 | 16 | 23 | 23.1 | 23.05 | 13 | 0.177 |
| 41BP802 | 17 | 4 | 16.3 | 23 | 23.4 | 23.2 | 13.3 | 0.174 |
| 41BP802 | 16 | 4 | 15.3 | 21.6 | 21.8 | 21.7 | 12.3 | 0.176 |
| 41BP802 | 15 | 4 | 16.1 | 23.7 | 23.9 | 23.8 | 13.1 | 0.182 |
| 41BP802 | 14 | 4 | 16.1 | 22 | 21.9 | 21.95 | 13.1 | 0.168 |
| 41BP802 | 13 | 4 | 17 | 27.6 | 27.8 | 27.7 | 14 | 0.198 |
| 41BP802 | 12 | 4 | 16.5 | 28.2 | 28.6 | 28.4 | 13.5 | 0.21 |
| 41BP802 | 11 | 4 | 16.2 | 24.3 | 24 | 24.15 | 13.2 | 0.183 |
| 41BP802 | 10 | 4 | 16.4 | 26.4 | 26.6 | 26.5 | 13.4 | 0.198 |
| 41BP802 | 9 | 4 | 16.6 | 27.6 | 27.4 | 27.5 | 13.6 | 0.202 |
| 41BP802 | 8 | 4 | 15.6 | 23.2 | 23.3 | 23.25 | 12.6 | 0.185 |
| 41BP802 | 7 | 4 | 16.7 | 24.2 | 24.2 | 24.2 | 13.7 | 0.177 |
| 41BP802 | 6 | 4 | 16.7 | 23.1 | 23.4 | 23.25 | 13.7 | 0.17 |
| 41BP802 | 5 | 4 | 17.1 | 23.2 | 22.9 | 23.05 | 14.1 | 0.163 |
| 41BP802 | 4 | 4 | 16.3 | 20.2 | 20.3 | 20.25 | 13.3 | 0.152 |
| 41BP802 | 3 | 4 | 17.2 | 19 | 19 | 19 | 14.2 | 0.134 |
| 41BP802 | 2 | 4 | 16.5 | 16.1 | 16.2 | 16.15 | 13.5 | 0.12 |
| 41BP802 | 1 | 4 | 16.4 | 17.6 | 17.7 | 17.65 | 13.4 | 0.132 |

Table B-1. MSS Sampling Information, continued...

| **Site** | **Sample Number** | **Test Unit** | **Total Weight (g)** | **VSS #1** | **VSS #2** | **Average VSS** | **Sample Weight (g)** | **MSS Value** |
|---|---|---|---|---|---|---|---|---|
| 41BP802 | 0 | 4 | 15.9 | 15.2 | 15.4 | 15.3 | 12.9 | 0.119 |
| 41BP487 | 43.001 | 1_north wall | 14.8 | 26 | 26 | 26 | 11.6 | 0.224 |
| 41BP487 | 43.002 | 1_north wall | 12.8 | 22 | 22 | 22 | 9.6 | 0.229 |
| 41BP487 | 43.003 | 1_north wall | 13.8 | 22 | 23 | 22.5 | 10.6 | 0.212 |
| 41BP487 | 43.004 | 1_north wall | 13.5 | 22 | 22 | 22 | 10.3 | 0.214 |
| 41BP487 | 43.005 | 1_north wall | 12.8 | 19 | 20 | 19.5 | 9.6 | 0.203 |
| 41BP487 | 43.006 | 1_north wall | 13.8 | 23 | 22 | 22.5 | 10.6 | 0.212 |
| 41BP487 | 43.007 | 1_north wall | 14.4 | 24 | 26 | 25 | 11.2 | 0.223 |
| 41BP487 | 43.008 | 1_north wall | 13.1 | 21 | 20 | 20.5 | 9.9 | 0.207 |
| 41BP487 | 43.009 | 1_north wall | 12.9 | 20 | 20 | 20 | 9.7 | 0.206 |
| 41BP487 | 43.01 | 1_north wall | 13.4 | 19 | 20 | 19.5 | 10.2 | 0.191 |
| 41BP487 | 43.011 | 1_north wall | 13.6 | 20 | 19 | 19.5 | 10.4 | 0.188 |
| 41BP487 | 43.012 | 1_north wall | 12.9 | 17 | 17 | 17 | 9.7 | 0.175 |
| 41BP487 | 43.013 | 1_north wall | 13 | 17 | 18 | 17.5 | 9.8 | 0.179 |
| 41BP487 | 43.014 | 1_north wall | 13.7 | 20 | 19 | 19.5 | 10.5 | 0.186 |
| 41BP487 | 38.001 | 2_north wall | 13.7 | 22 | 23 | 22.5 | 10.5 | 0.214 |
| 41BP487 | 38.002 | 2_north wall | 13.8 | 24 | 25 | 24.5 | 10.6 | 0.231 |
| 41BP487 | 38.003 | 2_north wall | 13.7 | 23 | 23 | 23 | 10.5 | 0.219 |
| 41BP487 | 38.004 | 2_north wall | 13.9 | 24 | 24 | 24 | 10.7 | 0.224 |
| 41BP487 | 38.005 | 2_north wall | 13.4 | 24 | 25 | 24.5 | 10.2 | 0.24 |
| 41BP487 | 38.006 | 2_north wall | 14 | 25 | 25 | 25 | 10.8 | 0.231 |
| 41BP487 | 38.007 | 2_north wall | 13.7 | 23 | 21 | 22 | 10.5 | 0.21 |
| 41BP487 | 38.008 | 2_north wall | 13.4 | 22 | 22 | 22 | 10.2 | 0.216 |
| 41BP487 | 38.009 | 2_north wall | 13.3 | 20 | 20 | 20 | 10.1 | 0.198 |
| 41BP487 | 38.01 | 2_north wall | 13.6 | 22 | 22 | 22 | 10.4 | 0.212 |
| 41BP487 | 38.011 | 2_north wall | 13.8 | 22 | 23 | 22.5 | 10.6 | 0.212 |
| 41BP487 | 38.012 | 2_north wall | 13.6 | 22 | 23 | 22.5 | 10.4 | 0.216 |
| 41BP487 | 38.013 | 2_north wall | 13.4 | 22 | 22 | 22 | 10.2 | 0.216 |
| 41BP487 | 41.001 | 2_east wall | 13.2 | 23 | 23 | 23 | 10 | 0.23 |
| 41BP487 | 41.002 | 2_east wall | 13.7 | 25 | 25 | 25 | 10.5 | 0.238 |
| 41BP487 | 41.003 | 2_east wall | 13.4 | 26 | 26 | 26 | 10.2 | 0.255 |
| 41BP487 | 41.004 | 2_east wall | 13.5 | 25 | 25 | 25 | 10.3 | 0.243 |
| 41BP487 | 41.005 | 2_east wall | 13.4 | 25 | 24 | 24.5 | 10.2 | 0.24 |
| 41BP487 | 41.006 | 2_east wall | 13.3 | 22 | 23 | 22.5 | 10.1 | 0.223 |
| 41BP487 | 41.007 | 2_east wall | 13.5 | 23 | 23 | 23 | 10.3 | 0.223 |
| 41BP487 | 41.008 | 2_east wall | 13.5 | 22 | 23 | 22.5 | 10.3 | 0.218 |
| 41BP487 | 41.009 | 2_east wall | 13.6 | 21 | 21 | 21 | 10.4 | 0.202 |
| 41BP487 | 41.01 | 2_east wall | 13.4 | 21 | 21 | 21 | 10.2 | 0.206 |
| 41BP487 | 41.011 | 2_east wall | 13.6 | 22 | 23 | 22.5 | 10.4 | 0.216 |

Table B-1. MSS Sampling Information, continued...

| Site | Sample Number | Test Unit | Total Weight (g) | VSS #1 | VSS #2 | Average VSS | Sample Weight (g) | MSS Value |
|---|---|---|---|---|---|---|---|---|
| 41BP487 | 41.012 | 2_east wall | 13.7 | 23 | 22 | 22.5 | 10.5 | 0.214 |
| 41BP487 | 44.001 | 3_south wall | 13.6 | 22 | 22 | 22 | 10.4 | 0.212 |
| 41BP487 | 44.002 | 3_south wall | 13.7 | 22 | 22 | 22 | 10.5 | 0.21 |
| 41BP487 | 44.003 | 3_south wall | 13.4 | 20 | 20 | 20 | 10.2 | 0.196 |
| 41BP487 | 44.004 | 3_south wall | 13.6 | 27 | 28 | 27.5 | 10.4 | 0.264 |
| 41BP487 | 44.005 | 3_south wall | 13.6 | 22 | 21 | 21.5 | 10.4 | 0.207 |
| 41BP487 | 44.006 | 3_south wall | 13.6 | 21 | 22 | 21.5 | 10.4 | 0.207 |
| 41BP487 | 44.007 | 3_south wall | 13.5 | 21 | 22 | 21.5 | 10.3 | 0.209 |
| 41BP487 | 44.008 | 3_south wall | 13.5 | 21 | 20 | 20.5 | 10.3 | 0.199 |
| 41BP487 | 44.009 | 3_south wall | 13.3 | 22 | 21 | 21.5 | 10.1 | 0.213 |
| 41BP487 | 44.01 | 3_south wall | 13.6 | 21 | 20 | 20.5 | 10.4 | 0.197 |
| 41BP487 | 44.011 | 3_south wall | 13.8 | 19 | 19 | 19 | 10.6 | 0.179 |
| 41BP487 | 44.012 | 3_south wall | 13.4 | 18 | 18 | 18 | 10.2 | 0.176 |
| 41BP487 | 44.013 | 3_south wall | 13.5 | 18 | 19 | 18.5 | 10.3 | 0.18 |
| 41BP487 | 44.014 | 3_south wall | 13.5 | 20 | 19 | 19.5 | 10.3 | 0.189 |
| 41BP487 | 44.015 | 3_south wall | 13.5 | 21 | 20 | 20.5 | 10.3 | 0.199 |
| 41BP487 | 44.016 | 3_south wall | 13.7 | 20 | 20 | 20 | 10.5 | 0.19 |
| 41BP487 | 48.001 | 4_south wall | 13.4 | 28 | 28 | 28 | 10.2 | 0.275 |
| 41BP487 | 48.002 | 4_south wall | 13.7 | 21 | 22 | 21.5 | 10.5 | 0.205 |
| 41BP487 | 48.003 | 4_south wall | 13.5 | 21 | 22 | 21.5 | 10.3 | 0.209 |
| 41BP487 | 48.004 | 4_south wall | 13.3 | 23 | 23 | 23 | 10.1 | 0.228 |
| 41BP487 | 48.005 | 4_south wall | 13.6 | 23 | 22 | 22.5 | 10.4 | 0.216 |
| 41BP487 | 48.006 | 4_south wall | 13.5 | 22 | 22 | 22 | 10.3 | 0.214 |
| 41BP487 | 48.007 | 4_south wall | 13.5 | 24 | 25 | 24.5 | 10.3 | 0.238 |
| 41BP487 | 48.008 | 4_south wall | 13.3 | 21 | 21 | 21 | 10.1 | 0.208 |
| 41BP487 | 48.009 | 4_south wall | 13.6 | 22 | 21 | 21.5 | 10.4 | 0.207 |
| 41BP487 | 48.01 | 4_south wall | 13.7 | 20 | 22 | 21 | 10.5 | 0.2 |
| 41BP487 | 48.011 | 4_south wall | 13.7 | 20 | 20 | 20 | 10.5 | 0.19 |
| 41BP487 | 48.012 | 4_south wall | 13.4 | 20 | 20 | 20 | 10.2 | 0.196 |
| 41BP487 | 48.013 | 4_south wall | 13.6 | 21 | 20 | 20.5 | 10.4 | 0.197 |
| 41BP487 | 48.014 | 4_south wall | 13.3 | 20 | 20 | 20 | 10.1 | 0.198 |
| 41BP487 | 48.015 | 4_south wall | 13.8 | 19 | 20 | 19.5 | 10.6 | 0.184 |
| 41BP487 | 108.001 | 5_north wall | 13.4 | 22 | 23 | 22.5 | 10.2 | 0.221 |
| 41BP487 | 108.002 | 5_north wall | 13.7 | 24 | 23 | 23.5 | 10.5 | 0.224 |
| 41BP487 | 108.003 | 5_north wall | 13.4 | 23 | 24 | 23.5 | 10.2 | 0.23 |
| 41BP487 | 108.004 | 5_north wall | 13.8 | 24 | 24 | 24 | 10.6 | 0.226 |
| 41BP487 | 108.005 | 5_north wall | 13.7 | 24 | 24 | 24 | 10.5 | 0.229 |
| 41BP487 | 108.006 | 5_north wall | 13.5 | 24 | 24 | 24 | 10.3 | 0.233 |
| 41BP487 | 108.007 | 5_north wall | 13.4 | 23 | 23 | 23 | 10.2 | 0.225 |

Table B-1. MSS Sampling Information, continued....

| Site | Sample Number | Test Unit | Total Weight (g) | VSS #1 | VSS #2 | Average VSS | Sample Weight (g) | MSS Value |
|---|---|---|---|---|---|---|---|---|
| 41BP487 | 108.008 | 5_north wall | 13.7 | 24 | 23 | 23.5 | 10.5 | 0.224 |
| 41BP487 | 108.009 | 5_north wall | 13.3 | 21 | 22 | 21.5 | 10.1 | 0.213 |
| 41BP487 | 108.01 | 5_north wall | 13.6 | 19 | 20 | 19.5 | 10.4 | 0.188 |
| 41BP487 | 108.011 | 5_north wall | 13.4 | 16 | 17 | 16.5 | 10.2 | 0.162 |
| 41BP487 | 108.012 | 5_north wall | 13.6 | 16 | 16 | 16 | 10.4 | 0.154 |
| 41BP487 | 108.013 | 5_north wall | 13.6 | 14 | 14 | 14 | 10.4 | 0.135 |
| 41BP487 | 108.014 | 5_north wall | 13.5 | 15 | 15 | 15 | 10.3 | 0.146 |
| 41BP487 | 108.015 | 5_north wall | 13.8 | 14 | 14 | 14 | 10.6 | 0.132 |
| 41BP487 | 108.016 | 5_north wall | 13.4 | 14 | 15 | 14.5 | 10.2 | 0.142 |
| 41BP487 | 108.017 | 5_north wall | 13.6 | 15 | 15 | 15 | 10.4 | 0.144 |
| 41BP487 | 108.018 | 5_north wall | 13.5 | 17 | 17 | 17 | 10.3 | 0.165 |
| 41BP487 | 45.001 | 4_west wall | 13.4 | 27 | 26 | 26.5 | 10.2 | 0.26 |
| 41BP487 | 45.002 | 4_west wall | 13.8 | 22 | 22 | 22 | 10.6 | 0.208 |
| 41BP487 | 45.003 | 4_west wall | 13.6 | 22 | 22 | 22 | 10.4 | 0.212 |
| 41BP487 | 45.004 | 4_west wall | 13.5 | 24 | 23 | 23.5 | 10.3 | 0.228 |
| 41BP487 | 45.005 | 4_west wall | 13.6 | 23 | 22 | 22.5 | 10.4 | 0.216 |
| 41BP487 | 45.006 | 4_west wall | 13.5 | 23 | 23 | 23 | 10.3 | 0.223 |
| 41BP487 | 45.007 | 4_west wall | 13.4 | 20 | 21 | 20.5 | 10.2 | 0.201 |
| 41BP487 | 45.008 | 4_west wall | 13.5 | 24 | 24 | 24 | 10.3 | 0.233 |
| 41BP487 | 45.009 | 4_west wall | 13.4 | 21 | 21 | 21 | 10.2 | 0.206 |
| 41BP487 | 45.01 | 4_west wall | 13.4 | 20 | 22 | 21 | 10.2 | 0.206 |
| 41BP487 | 45.011 | 4_west wall | 13.3 | 21 | 20 | 20.5 | 10.1 | 0.203 |
| 41BP487 | 45.012 | 4_west wall | 13.6 | 21 | 22 | 21.5 | 10.4 | 0.207 |
| 41BP487 | 45.013 | 4_west wall | 13.4 | 20 | 21 | 20.5 | 10.2 | 0.201 |
| 41BP487 | 45.014 | 4_west wall | 13.7 | 21 | 22 | 21.5 | 10.5 | 0.205 |
| 41BP487 | 45.015 | 4_west wall | 13.7 | 21 | 21 | 21 | 10.5 | 0.2 |
| 41BP487 | 45.016 | 4_west wall | 13.8 | 22 | 21 | 21.5 | 10.6 | 0.203 |

This page intentionally left blank.

# Appendix C: Chipped Stone Data

This page intentionally left blank.

Table C-1. Chipped Stone Data

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP487 | 1 | 979 | 959 | 2 | 20-30 | 2013 | Yellow-Orange | Orange | 0 | 12.29 |
| 41BP487 | 1 | 979 | 959 | 3 | 30-40 | 2013 | Yellow-Orange | Orange | 0 | 10.78 |
| 41BP487 | 1 | 979 | 959 | 3 | 30-40 | 2013 | Yellow-Orange | Orange | 0 | 15.57 |
| 41BP487 | 1 | 979 | 959 | 3 | 30-40 | 2112 | Yellow-Orange | Orange | 0 | 24.05 |
| 41BP487 | 1 | 979 | 959 | 3 | 30-40 | 1126 | Yellow-Orange | Orange | 0 | 11.66 |
| 41BP487 | 1 | 979 | 959 | 4 | 40-50 | 2013 | No Fluorescence | Dark Red | 0 | 10.65 |
| 41BP487 | 1 | 979 | 959 | 4 | 40-50 | 1022 | Orange | Dark Red | 0 | 29 |
| 41BP487 | 1 | 979 | 959 | 4 | 40-50 | 1013 | Yellow-Orange | Orange | 0 | 10.92 |
| 41BP487 | 1 | 979 | 959 | 5 | 50-60 | 2013 | Orange | Dark Red | 0 | 18.29 |
| 41BP487 | 1 | 979 | 959 | 5 | 50-60 | 2116 | Orange | Dark Red | 0 | 8.48 |
| 41BP487 | 1 | 979 | 959 | 5 | 50-60 | 2013 | Yellow-Orange | Orange | 0 | 19.77 |
| 41BP487 | 1 | 979 | 959 | 5 | 50-60 | 1113 | Yellow-Orange | Orange | 0 | 14.74 |
| 41BP487 | 1 | 979 | 959 | 7 | 70-80 | 2013 | No Fluorescence | Dark Red | 0 | 28.2 |
| 41BP487 | 1 | 979 | 959 | 7 | 70-80 | 2013 | No Fluorescence | Dark Red | 0 | 12.69 |
| 41BP487 | 1 | 979 | 959 | 7 | 70-80 | 1113 | No Fluorescence | Dark Red | 0 | 9.68 |
| 41BP487 | 1 | 979 | 959 | 7 | 70-80 | 2013 | Yellow-Orange | Orange | 0 | 20.88 |
| 41BP487 | 1 | 979 | 959 | 8 | 80-90 | 1013 | No Fluorescence | Dark Red | 0 | 11.25 |
| 41BP487 | 1 | 979 | 959 | 8 | 80-90 | 2013 | Yellow-Orange | Orange | 0 | 8.3 |
| 41BP487 | 1 | 979 | 959 | 9 | 90-100 | 1117 | Dark Red | Dark Red | 0 | 22.45 |
| 41BP487 | 1 | 979 | 959 | 9 | 90-100 | 1022 | Orange | Dark Red | 0 | 21.78 |
| 41BP487 | 1 | 979 | 959 | 9 | 90-100 | 1023 | Orange | Orange | 0 | 16.09 |
| 41BP487 | 1 | 979 | 959 | 9 | 90-100 | 2013 | Yellow | Dark Red | 25 | 35.37 |
| 41BP487 | 1 | 979 | 959 | 9 | 90-100 | 2013 | Yellow | Yellow-Orange | 0 | 19.15 |
| 41BP487 | 1 | 979 | 959 | 9 | 90-100 | 1112 | Yellow-Orange | Orange | 0 | 21.66 |
| 41BP487 | 1 | 979 | 959 | 9 | 90-100 | 2012 | Yellow-Orange | Orange | 0 | 19.69 |
| 41BP487 | 1 | 979 | 959 | 9 | 90-100 | 2012 | Yellow-Orange | Orange | 0 | 19.97 |
| 41BP487 | 1 | 979 | 959 | 9 | 90-100 | 2113 | Yellow-Orange | Orange | 0 | 12.43 |
| 41BP487 | 2 | 973 | 964 | 1 | 8-20 | 2013 | not done | not done |  | 23.11 |
| 41BP487 | 2 | 973 | 964 | 1 | 8-20 | 2012 | not done | not done |  | 13.61 |
| 41BP487 | 2 | 973 | 964 | 2 | 20-30 | 1013 | No Fluorescence | Dark Red | 0 | 27.93 |
| 41BP487 | 2 | 973 | 964 | 2 | 20-30 | 1012 | No Fluorescence | Dark Red | 0 | 18.22 |
| 41BP487 | 2 | 973 | 964 | 2 | 20-30 | 2012 | No Fluorescence | Dark Red | 0 | 14.51 |
| 41BP487 | 2 | 973 | 964 | 2 | 20-30 | 2012 | Yellow | Dark Red | 0 | 8.63 |
| 41BP487 | 2 | 973 | 964 | 2 | 20-30 | 2013 | Yellow-Orange | Orange | 0 | 32.98 |
| 41BP487 | 2 | 973 | 964 | 2 | 20-30 | 2012 | Yellow-Orange | Orange | 0 | 20.02 |
| 41BP487 | 2 | 973 | 964 | 2 | 20-30 | 2012 | Yellow-Orange | Orange | 0 | 14.95 |
| 41BP487 | 2 | 973 | 964 | 2 | 20-30 | 2012 | Yellow-Orange | Orange | 0 | 14.39 |
| 41BP487 | 2 | 973 | 964 | 3 | 30-40 | 1117 | No Fluorescence | Dark Red | 0 | 11.16 |
| 41BP487 | 2 | 973 | 964 | 3 | 30-40 | 1012 | Orange | Orange | 0 | 13.1 |
| 41BP487 | 2 | 973 | 964 | 3 | 30-40 | 2015 | Yellow-Green | Orange | 0 | 21.55 |
| 41BP487 | 2 | 973 | 964 | 3 | 30-40 | 2013 | Yellow-Orange | Orange | 0 | 13.61 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP487 | 2 | 973 | 964 | 3 | 30-40 | 2013 | Yellow-Orange | Orange | 0 | 12.55 |
| 41BP487 | 2 | 973 | 964 | 3 | 30-40 | 2013 | Yellow-Orange | Orange | 0 | 13.13 |
| 41BP487 | 2 | 973 | 964 | 3 | 30-40 | 2013 | Yellow-Orange | Orange | 0 | 11.19 |
| 41BP487 | 2 | 973 | 964 | 4 | 40-50 | 1112 | No Fluorescence | Dark Red | 0 | 33.24 |
| 41BP487 | 2 | 973 | 964 | 4 | 40-50 | 1112 | No Fluorescence | Dark Red | 0 | 22.04 |
| 41BP487 | 2 | 973 | 964 | 4 | 40-50 | 2011 | No Fluorescence | Dark Red | 0 | 21.18 |
| 41BP487 | 2 | 973 | 964 | 4 | 40-50 | 1112 | No Fluorescence | Dark Red | 0 | 10.91 |
| 41BP487 | 2 | 973 | 964 | 4 | 40-50 | 2012 | Yellow | Yellow-Orange | 0 | 21.47 |
| 41BP487 | 2 | 973 | 964 | 4 | 40-50 | 2012 | Yellow | Orange | 0 | 16.09 |
| 41BP487 | 2 | 973 | 964 | 4 | 40-50 | 2011 | Yellow | Orange | 0 | 11.13 |
| 41BP487 | 2 | 973 | 964 | 4 | 40-50 | 2015 | Yellow-Orange | Orange | 0 | 9.91 |
| 41BP487 | 2 | 973 | 964 | 5 | 50-60 | 1112 | No Fluorescence | Dark Red | 0 | 14.98 |
| 41BP487 | 2 | 973 | 964 | 5 | 50-60 | 1112 | No Fluorescence | Dark Red | 0 | 15.07 |
| 41BP487 | 2 | 973 | 964 | 5 | 50-60 | 1015 | Yellow | Orange | 0 | 14.92 |
| 41BP487 | 2 | 973 | 964 | 5 | 50-60 | 1012 | Yellow-Orange | Orange | 0 | 23.84 |
| 41BP487 | 2 | 973 | 964 | 5 | 50-60 | 2012 | Yellow-Orange | Orange | 0 | 21.33 |
| 41BP487 | 2 | 973 | 964 | 6 | 60-70 | 1019 | Yellow | Orange | 0 | 24.95 |
| 41BP487 | 2 | 973 | 964 | 6 | 60-70 | 2112 | Yellow | Orange | 0 | 12.46 |
| 41BP487 | 2 | 973 | 964 | 6 | 60-70 | 1116 | Yellow-Orange | Orange | 0 | 22.55 |
| 41BP487 | 2 | 973 | 964 | 6 | 60-70 | 1112 | Yellow-Orange | Orange | 0 | 16.47 |
| 41BP487 | 2 | 973 | 964 | 6 | 60-70 | 1023 | Yellow-Orange | Orange | 0 | 12.49 |
| 41BP487 | 2 | 973 | 964 | 7 | 70-80 | 1112 | Dark Red | Dark Red | 0 | 22.56 |
| 41BP487 | 2 | 973 | 964 | 7 | 70-80 | 2012 | Yellow | Orange | 0 | 18.99 |
| 41BP487 | 2 | 973 | 964 | 7 | 70-80 | 2015 | Yellow | Yellow-Orange | 0 | 9.57 |
| 41BP487 | 2 | 973 | 964 | 7 | 70-80 | 2102 | Yellow-Orange | Orange | 0 | 24.07 |
| 41BP487 | 2 | 973 | 964 | 7 | 70-80 | 2012 | Yellow-Orange | Orange | 0 | 21.8 |
| 41BP487 | 2 | 973 | 964 | 7 | 70-80 | 2012 | Yellow-Orange | Orange | 0 | 14.18 |
| 41BP487 | 2 | 973 | 964 | 7 | 70-80 | 2117 | Yellow-Orange | Orange | 0 | 9.75 |
| 41BP487 | 2 | 973 | 964 | 7 | 70-80 | 1015 | Yellow-Orange | Orange | 0 | 12.51 |
| 41BP487 | 2 | 973 | 964 | 7 | 70-80 | 2012 | Yellow-Orange | Orange | 0 | 11.94 |
| 41BP487 | 3 | 981 | 967 | 2 | 20-30 | 2011 | Yellow | Orange | 0 | 8.7 |
| 41BP487 | 3 | 981 | 967 | 3 | 30-40 | 2025 | Dark Red | Dark Red | 0 | 15.49 |
| 41BP487 | 3 | 981 | 967 | 3 | 30-40 | 1011 | Orange | Orange | 0 | 11.06 |
| 41BP487 | 3 | 981 | 967 | 4 | 40-50 | 2013 | not done | not done | 0 | 14.44 |
| 41BP487 | 3 | 981 | 967 | 4 | 40-50 | 2013 | not done | not done | 0 | 7.58 |
| 41BP487 | 3 | 981 | 967 | 5 | 50-60 | 1025 | No Fluorescence | Orange | 0 | 12.42 |
| 41BP487 | 3 | 981 | 967 | 5 | 50-60 | 1013 | No Fluorescence | Orange | 0 | 12.53 |
| 41BP487 | 3 | 981 | 967 | 5 | 50-60 | 2013 | Yellow-Green | Orange | 0 | 14.95 |
| 41BP487 | 3 | 981 | 967 | 5 | 50-60 | 2013 | Yellow-Orange | Orange | 0 | 14.01 |
| 41BP487 | 3 | 981 | 967 | 6 | 60-70 | 2013 | Yellow | Orange | 0 | 11.08 |
| 41BP487 | 3 | 981.2 | 967.15 | 6 | 60 | 2012 | Yellow | Yellow-Orange | 0 | 21.78 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP487 | 3 | 981 | 967 | 9 | 90-100 | 2013 | Yellow-Orange | Orange | 0 | 10.44 |
| 41BP487 | 3 | 981 | 967 | 9 | 90-100 | 1012 | Yellow-Orange | Orange | 0 | 9.75 |
| 41BP487 | 3 | 981 | 967 | 9 | 90-100 | 1012 | Yellow-Orange | Orange | 0 | 9.09 |
| 41BP487 | 3 | 981.24 | 967.72 | 10 | 103 | 1015 | Yellow | Orange | 0 | 26.94 |
| 41BP487 | 3 | 981.22 | 967.42 | 10 | 103 | 1012 | Yellow-Orange | Orange | 0 | 15.12 |
| 41BP487 | 4 | 977 | 970 | 1 | 20-30 | 1019 | Yellow | Orange | 0 | 15.97 |
| 41BP487 | 4 | 977 | 970 | 1 | 20-30 | 2112 | Yellow | Orange | 0 | 18.32 |
| 41BP487 | 4 | 977 | 970 | 2 | 30-40 | 1019 | Yellow-Orange | Orange | 0 | 10.88 |
| 41BP487 | 4 | 977 | 970 | 3 | 40-50 | 1111 | No Fluorescence | Dark Red | 0 | 16.81 |
| 41BP487 | 4 | 977 | 970 | 4 | 50-60 | 2012 | No Fluorescence | Dark Red | 0 | 13.46 |
| 41BP487 | 4 | 977 | 970 | 4 | 50-60 | 1015 | Yellow-Orange | Orange | 0 | 9.75 |
| 41BP487 | 4 | 977 | 970 | 4 | 50-60 | 2013 | Yellow-Orange | Orange | 0 | 10.2 |
| 41BP487 | 4 | 977 | 970 | 4 | 50-60 | 2112 | Yellow-Orange | Orange | 0 | 11.04 |
| 41BP487 | 4 | 977 | 970 | 5 | 60-70 | 2012 | Yellow | Orange | 0 | 15.95 |
| 41BP487 | 4 | 977 | 970 | 5 | 60-70 | 2012 | Yellow | Orange | 0 | 15.23 |
| 41BP487 | 4 | 977 | 970 | 5 | 60-70 | 1112 | Yellow | Orange | 0 | 16.57 |
| 41BP487 | 4 | 977 | 970 | 5 | 60-70 | 1117 | Yellow-Orange | Orange | 25 | 22.61 |
| 41BP487 | 4 | 977 | 970 | 6 | 70-80 | 2116 | Orange | Orange | 0 | 15.38 |
| 41BP487 | 4 | 977 | 970 | 7 | 80-90 | 2012 | Yellow | Yellow-Orange | 0 | 23.86 |
| 41BP487 | 4 | 977 | 970 | 7 | 80-90 | 1025 | Yellow-Orange | Orange | 0 | 32.37 |
| 41BP487 | 4 | 977 | 970 | 7 | 80-90 | 2117 | Yellow-Orange | Orange | 0 | 12.72 |
| 41BP487 | 4 | 977 | 970 | 7 | 80-90 | 2013 | Yellow-Orange | Orange | 0 | 8.68 |
| 41BP487 | 4 | 977.5 | 970.21 | 7 | 80-82 | 1119 | Yellow-Orange | Orange | 25 | 33.42 |
| 41BP487 | 4 | 977.3 | 970.6 | 8 | 98 | 1015 | Orange | Orange | 0 | 32.57 |
| 41BP487 | 4 | 977 | 970 | 8 | 90-100 | 1012 | Yellow | Orange | 0 | 46.89 |
| 41BP487 | 4 | 977 | 970 | 9 | 100-110 | 1117 | Yellow-Orange | Orange | 0 | 12.03 |
| 41BP487 | 5 | 1077 | 1066 | 3 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 21.63 |
| 41BP487 | 5 | 1077 | 1066 | 4 | 40-50 | 1013 | Yellow-Orange | Orange | 0 | 13.66 |
| 41BP487 | 5 | 1077 | 1066 | 4 | 40-50 | 2013 | Yellow-Orange | Orange | 0 | 13.2 |
| 41BP487 | 5 | 1077 | 1066 | 5 | 50-59 | 2012 | Yellow-Orange | Orange | 0 | 24.13 |
| 41BP487 | 5 | 1077 | 1066 | 6 | 60-70 | 2116 | Orange | Orange | 0 | 8.39 |
| 41BP487 | 5 | 1077 | 1066 | 6 | 60-70 | 1018 | Yellow-Orange | Orange | 0 | 17.17 |
| 41BP487 | 5 | 1077 | 1066 | 6 | 60-70 | 2012 | Yellow-Orange | Orange | 0 | 13.5 |
| 41BP487 | 5 | 1077 | 1066 | 6 | 60-70 | 2012 | Yellow-Orange | Orange | 0 | 10.17 |
| 41BP487 | 5 | 1077 | 1066 | 8 | 80-90 | 2117 | Yellow | Yellow-Orange | 0 | 15.03 |
| 41BP487 | 5 | 1077 | 1066 | 8 | 80-90 | 2015 | Yellow-Orange | Orange | 0 | 13.29 |
| 41BP776 | 1 | 1020 | 999 | 1 | 10-20 | 2012 | No Fluorescence | Dark Red | 0 | 25.43 |
| 41BP776 | 1 | 1020 | 999 | 1 | 10-20 | 2117 | No Fluorescence | No Fluorescence | 25 | 12.96 |
| 41BP776 | 1 | 1020 | 999 | 1 | 10-20 | 1016 | Yellow-Orange | Orange | 0 | 13.56 |
| 41BP776 | 1 | 1020 | 999 | 1 | 10-20 | 1016 | Yellow-Orange | Orange | 0 | 13.62 |
| 41BP776 | 1 | 1020 | 999 | 1 | 10-20 | 1019 | Yellow-Orange | Orange | 0 | 20.62 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP776 | 1 | 1020 | 999 | 1 | 10-20 | 1019 | Yellow-Orange | Orange | 25 | 21.08 |
| 41BP776 | 1 | 1020 | 999 | 1 | 10-20 | 1110 | Yellow-Orange | Orange | 0 | 26.04 |
| 41BP776 | 1 | 1020 | 999 | 1 | 10-20 | 1117 | Yellow-Orange | Dark Red | 25 | 23.93 |
| 41BP776 | 1 | 1020 | 999 | 1 | 10-20 | 2013 | Yellow-Orange | Orange | 0 | 10.92 |
| 41BP776 | 1 | 1020 | 999 | 1 | 10-20 | 2013 | Yellow-Orange | Orange | 0 | 11.27 |
| 41BP776 | 1 | 1020 | 999 | 1 | 10-20 | 2013 | Yellow-Orange | Orange | 0 | 12.04 |
| 41BP776 | 1 | 1020 | 999 | 1 | 10-20 | 2013 | Yellow-Orange | Orange | 0 | 12.47 |
| 41BP776 | 1 | 1020 | 999 | 1 | 10-20 | 2013 | Yellow-Orange | Orange | 0 | 13.89 |
| 41BP776 | 1 | 1020 | 999 | 1 | 10-20 | 2013 | Yellow-Orange | Orange | 25 | 18.99 |
| 41BP776 | 1 | 1020 | 999 | 1 | 10-20 | 2013 | Yellow-Orange | Orange | 0 | 21.59 |
| 41BP776 | 1 | 1020 | 999 | 1 | 10-20 | 2013 | Yellow-Orange | Orange | 0 | 31.15 |
| 41BP776 | 1 | 1020 | 999 | 2 | 20-30 | 1025 | No Fluorescence | No Fluorescence | 25 | 36.33 |
| 41BP776 | 1 | 1020 | 999 | 2 | 20-30 | 2013 | No Fluorescence | Dark Red | 0 | 14.67 |
| 41BP776 | 1 | 1020 | 999 | 2 | 20-30 | 1016 | Yellow | Orange | 0 | 18.73 |
| 41BP776 | 1 | 1020 | 999 | 2 | 20-30 | 2019 | Yellow | Orange | 0 | 30.8 |
| 41BP776 | 1 | 1020 | 999 | 2 | 20-30 | 1013 | Yellow-Orange | Orange | 0 | 18.75 |
| 41BP776 | 1 | 1020 | 999 | 2 | 20-30 | 2013 | Yellow-Orange | Orange | 0 | 13.4 |
| 41BP776 | 1 | 1020 | 999 | 2 | 20-30 | 2019 | Yellow-Orange | Orange | 0 | 11.72 |
| 41BP776 | 1 | 1020 | 999 | 2 | 20-30 | 2019 | Yellow-Orange | Orange | 0 | 17.47 |
| 41BP776 | 1 | 1020 | 999 | 2 | 20-30 | 2019 | Yellow-Orange | Orange | 0 | 36.62 |
| 41BP776 | 1 | 1020 | 999 | 3 | 30-40 | 2012 | No Fluorescence | Dark Red | 0 | 17.77 |
| 41BP776 | 1 | 1020 | 999 | 3 | 30-40 | 2116 | No Fluorescence | No Fluorescence | 0 | 10.26 |
| 41BP776 | 1 | 1020 | 999 | 3 | 30-40 | 1013 | Orange | Orange | 0 | 34.39 |
| 41BP776 | 1 | 1020 | 999 | 3 | 30-40 | 2013 | Orange | Dark Red | 0 | 11.51 |
| 41BP776 | 1 | 1020 | 999 | 3 | 30-40 | 2019 | Yellow | Orange | 0 | 15.57 |
| 41BP776 | 1 | 1020 | 999 | 3 | 30-40 | 2012 | Yellow-Green | Orange | 0 | 11.1 |
| 41BP776 | 1 | 1020 | 999 | 3 | 30-40 | 2012 | Yellow-Green | Orange | 0 | 25.02 |
| 41BP776 | 1 | 1020 | 999 | 3 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 13.52 |
| 41BP776 | 1 | 1020 | 999 | 3 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 20.37 |
| 41BP776 | 1 | 1020 | 999 | 3 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 30.19 |
| 41BP776 | 1 | 1020 | 999 | 3 | 30-40 | 1014 | Yellow-Orange | Orange | 0 | 12.82 |
| 41BP776 | 1 | 1020 | 999 | 3 | 30-40 | 1014 | Yellow-Orange | Orange | 0 | 13.23 |
| 41BP776 | 1 | 1020 | 999 | 3 | 30-40 | 1014 | Yellow-Orange | Orange | 0 | 29.5 |
| 41BP776 | 1 | 1020 | 999 | 3 | 30-40 | 1116 | Yellow-Orange | Red | 0 | 8.7 |
| 41BP776 | 1 | 1020 | 999 | 3 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 22.37 |
| 41BP776 | 1 | 1020 | 999 | 3 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 28.41 |
| 41BP776 | 1 | 1020 | 999 | 3 | 30-40 | 2013 | Yellow-Orange | Orange | 0 | 9.42 |
| 41BP776 | 1 | 1020 | 999 | 3 | 30-40 | 2013 | Yellow-Orange | Orange | 0 | 22.8 |
| 41BP776 | 1 | 1020 | 999 | 3 | 30-40 | 2019 | Yellow-Orange | Orange | 0 | 14.74 |
| 41BP776 | 1 | 1020 | 999 | 3 | 30-40 | 2116 | Yellow-Orange | Orange | 0 | 18.81 |
| 41BP776 | 1 | 1020 | 999 | 4 | 40-50 | 1117 | Dark Red | No Fluorescence | 25 | 15.54 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP776 | 1 | 1020 | 999 | 4 | 40-50 | 1013 | No Fluorescence | No Fluorescence | 0 | 8.46 |
| 41BP776 | 1 | 1020 | 999 | 4 | 40-50 | 2117 | No Fluorescence | Dark Red | 25 | 13.35 |
| 41BP776 | 1 | 1020 | 999 | 4 | 40-50 | 1013 | Yellow | Orange | 0 | 10.85 |
| 41BP776 | 1 | 1020 | 999 | 4 | 40-50 | 2018 | Yellow | Orange | 0 | 21.82 |
| 41BP776 | 1 | 1020 | 999 | 4 | 40-50 | 1013 | Yellow-Orange | Orange | 0 | 14.65 |
| 41BP776 | 1 | 1020 | 999 | 4 | 40-50 | 1013 | Yellow-Orange | Orange | 0 | 39.32 |
| 41BP776 | 1 | 1020 | 999 | 4 | 40-50 | 1016 | Yellow-Orange | Orange | 0 | 10.83 |
| 41BP776 | 1 | 1020 | 999 | 4 | 40-50 | 1016 | Yellow-Orange | Orange | 0 | 9.56 |
| 41BP776 | 1 | 1020 | 999 | 4 | 40-50 | 2011 | Yellow-Orange | Orange | 25 | 17.8 |
| 41BP776 | 1 | 1020 | 999 | 4 | 40-50 | 2013 | Yellow-Orange | Orange | 0 | 8.36 |
| 41BP776 | 1 | 1020 | 999 | 4 | 40-50 | 2013 | Yellow-Orange | Orange | 0 | 11.1 |
| 41BP776 | 1 | 1020 | 999 | 5 | 50-60 | 1013 | Orange | Orange | 0 | 36.72 |
| 41BP776 | 1 | 1020 | 999 | 5 | 50-60 | 2013 | Yellow | Orange | 0 | 13.27 |
| 41BP776 | 1 | 1020 | 999 | 5 | 50-60 | 2013 | Yellow | Orange | 0 | 13.32 |
| 41BP776 | 1 | 1020 | 999 | 5 | 50-60 | 2013 | Yellow | Orange | 0 | 14.43 |
| 41BP776 | 1 | 1020 | 999 | 5 | 50-60 | 1013 | Yellow-Green | No Fluorescence | 0 | 10.05 |
| 41BP776 | 1 | 1020 | 999 | 5 | 50-60 | 1013 | Yellow-Orange | Orange | 0 | 8 |
| 41BP776 | 1 | 1020 | 999 | 5 | 50-60 | 1013 | Yellow-Orange | Orange | 0 | 17.53 |
| 41BP776 | 1 | 1020 | 999 | 5 | 50-60 | 1013 | Yellow-Orange | Orange | 0 | 23.7 |
| 41BP776 | 1 | 1020 | 999 | 5 | 50-60 | 1013 | Yellow-Orange | Orange | 0 | 30.92 |
| 41BP776 | 1 | 1020 | 999 | 5 | 50-60 | 1016 | Yellow-Orange | Orange | 0 | 20.16 |
| 41BP776 | 1 | 1020 | 999 | 5 | 50-60 | 1110 | Yellow-Orange | No Fluorescence | 0 | 36.95 |
| 41BP776 | 1 | 1020 | 999 | 5 | 50-60 | 2012 | Yellow-Orange | Orange | 0 | 13.33 |
| 41BP776 | 1 | 1020 | 999 | 5 | 50-60 | 2012 | Yellow-Orange | Yellow-Orange | 0 | 14.06 |
| 41BP776 | 1 | 1020 | 999 | 5 | 50-60 | 2012 | Yellow-Orange | Orange | 25 | 15.78 |
| 41BP776 | 1 | 1020 | 999 | 5 | 50-60 | 2012 | Yellow-Orange | Orange | 0 | 22.08 |
| 41BP776 | 1 | 1020 | 999 | 5 | 50-60 | 2012 | Yellow-Orange | Orange | 0 | 27.6 |
| 41BP776 | 1 | 1020 | 999 | 5 | 50-60 | 2012 | Yellow-Orange | Orange | 25 | 27.65 |
| 41BP776 | 1 | 1020 | 999 | 5 | 50-60 | 2013 | Yellow-Orange | Orange | 0 | 12.35 |
| 41BP776 | 1 | 1020 | 999 | 5 | 50-60 | 2013 | Yellow-Orange | Orange | 0 | 15.25 |
| 41BP776 | 1 | 1020 | 999 | 5 | 50-60 | 2117 | Yellow-Orange | Orange | 0 | 17.1 |
| 41BP776 | 1 | 1020 | 999 | 6 | 60-70 | 1116 | No Fluorescence | No Fluorescence | 0 | 12.6 |
| 41BP776 | 1 | 1020 | 999 | 6 | 60-70 | 1117 | No Fluorescence | No Fluorescence | 25 | 15.52 |
| 41BP776 | 1 | 1020 | 999 | 6 | 60-70 | 1019 | Orange | Orange | 25 | 31.99 |
| 41BP776 | 1 | 1020 | 999 | 6 | 60-70 | 2117 | Orange | No Fluorescence | 0 | 20.62 |
| 41BP776 | 1 | 1020 | 999 | 6 | 60-70 | 2014 | Red | Red | 0 | 11.04 |
| 41BP776 | 1 | 1020 | 999 | 6 | 60-70 | 1013 | Yellow | Orange | 0 | 18.23 |
| 41BP776 | 1 | 1020 | 999 | 6 | 60-70 | 1013 | Yellow | Yellow-Orange | 0 | 35.92 |
| 41BP776 | 1 | 1020 | 999 | 6 | 60-70 | 1018 | Yellow | Orange | 0 | 12.58 |
| 41BP776 | 1 | 1020 | 999 | 6 | 60-70 | 2110 | Yellow | Dark Red | 25 | 18.31 |
| 41BP776 | 1 | 1020 | 999 | 6 | 60-70 | 1013 | Yellow-Orange | Orange | 0 | 7.9 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP776 | 1 | 1020 | 999 | 6 | 60-70 | 1013 | Yellow-Orange | Orange | 0 | 13.73 |
| 41BP776 | 1 | 1020 | 999 | 6 | 60-70 | 1117 | Yellow-Orange | No Fluorescence | 0 | 26.62 |
| 41BP776 | 1 | 1020 | 999 | 6 | 60-70 | 2013 | Yellow-Orange | Orange | 0 | 19.54 |
| 41BP776 | 1 | 1020 | 999 | 6 | 60-70 | 2013 | Yellow-Orange | Orange | 0 | 22.41 |
| 41BP776 | 1 | 1020 | 999 | 6 | 60-70 | 2019 | Yellow-Orange | Orange | 0 | 13.46 |
| 41BP776 | 1 | 1020 | 999 | 6 | 60-70 | 2019 | Yellow-Orange | Orange | 0 | 15.26 |
| 41BP776 | 1 | 1020 | 999 | 6 | 60-70 | 2019 | Yellow-Orange | Orange | 0 | 15.95 |
| 41BP776 | 1 | 1020 | 999 | 6 | 60-70 | 2117 | Yellow-Orange | Orange | 25 | 16.37 |
| 41BP776 | 1 | 1020 | 999 | 6 | 60-70 | 2117 | Yellow-Orange | Dark Red | 0 | 20.02 |
| 41BP776 | 1 | 1020 | 999 | 7 | 70-80 | 2117 | Orange | Dark Red | 0 | 18.74 |
| 41BP776 | 1 | 1020 | 999 | 7 | 70-80 | 2010 | Yellow | Dark Red | 0 | 10.08 |
| 41BP776 | 1 | 1020 | 999 | 7 | 70-80 | 1013 | Yellow-Orange | Yellow-Orange | 0 | 26.91 |
| 41BP776 | 1 | 1020 | 999 | 7 | 70-80 | 2013 | Yellow-Orange | Orange | 0 | 13.55 |
| 41BP776 | 1 | 1020 | 999 | 8 | 80-90 | 2019 | Dark Red | Dark Red | 0 | 18.24 |
| 41BP776 | 1 | 1020 | 999 | 8 | 80-90 | 1117 | No Fluorescence | No Fluorescence | 0 | 13.51 |
| 41BP776 | 1 | 1020 | 999 | 8 | 80-90 | 2010 | Yellow | Orange | 0 | 14.28 |
| 41BP776 | 1 | 1020 | 999 | 8 | 80-90 | 2010 | Yellow | Red | 25 | 11.46 |
| 41BP776 | 1 | 1020 | 999 | 8 | 80-90 | 2018 | Yellow | Yellow-Orange | 0 | 12.09 |
| 41BP776 | 1 | 1020 | 999 | 8 | 80-90 | 2018 | Yellow | Yellow-Orange | 0 | 33.17 |
| 41BP776 | 1 | 1020 | 999 | 8 | 80-90 | 2019 | Yellow | Orange | 0 | 16.54 |
| 41BP776 | 1 | 1020 | 999 | 8 | 80-90 | 2010 | Yellow-Orange | Yellow-Orange | 0 | 9.5 |
| 41BP776 | 1 | 1020 | 999 | 8 | 80-90 | 2019 | Yellow-Orange | Orange | 0 | 8.35 |
| 41BP776 | 1 | 1020 | 999 | 9 | 90-100 | 1117 | No Fluorescence | No Fluorescence | 25 | 20.88 |
| 41BP776 | 1 | 1020 | 999 | 9 | 90-100 | 1117 | Orange | Dark Red | 0 | 20.49 |
| 41BP776 | 1 | 1020 | 999 | 9 | 90-100 | 2012 | Yellow-Green | Dark Red | 25 | 10.81 |
| 41BP776 | 1 | 1020 | 999 | 9 | 90-100 | 1110 | Yellow-Orange | No Fluorescence | 0 | 18.38 |
| 41BP776 | 1 | 1020 | 999 | 9 | 90-100 | 1117 | Yellow-Orange | No Fluorescence | 0 | 11.13 |
| 41BP776 | 1 | 1020 | 999 | 9 | 90-100 | 1117 | Yellow-Orange | No Fluorescence | 0 | 11.39 |
| 41BP776 | 1 | 1020 | 999 | 9 | 90-100 | 2012 | Yellow-Orange | Orange | 0 | 21.98 |
| 41BP776 | 1 | 1020 | 999 | 9 | 90-100 | 2012 | Yellow-Orange | Orange | 25 | 27.26 |
| 41BP776 | 1 | 1020 | 999 | 9 | 90-100 | 2012 | Yellow-Orange | Orange | 0 | 28.55 |
| 41BP776 | 1 | 1020 | 999 | 9 | 90-100 | 2013 | Yellow-Orange | Orange | 0 | 20.53 |
| 41BP776 | 1 | 1020 | 999 | 9 | 90-100 | 2019 | Yellow-Orange | Orange | 0 | 16.65 |
| 41BP776 | 1 | 1020 | 999 | 9 | 90-100 | 2019 | Yellow-Orange | Orange | 0 | 37.94 |
| 41BP776 | 1 | 1020 | 999 | 9 | 90-100 | 2110 | Yellow-Orange | Orange | 0 | 30.16 |
| 41BP776 | 1 | 1020 | 999 | 9 | 90-100 | 2111 | Yellow-Orange | Dark Red | 0 | 11.19 |
| 41BP776 | 1 | 1020 | 999 | 9 | 90-100 | 2116 | Yellow-Orange | Orange | 0 | 12.92 |
| 41BP776 | 1 | 1020 | 999 | 9 | 90-100 | 2117 | Yellow-Orange | No Fluorescence | 0 | 11.03 |
| 41BP776 | 1 | 1020 | 999 | 9 | 90-100 | 2117 | Yellow-Orange | Orange | 0 | 20.99 |
| 41BP776 | 1 | 1020 | 999 | 10 | 100-110 | 1015 | No Fluorescence | Dark Red | 25 | 8.81 |
| 41BP776 | 1 | 1020 | 999 | 10 | 100-110 | 1025 | No Fluorescence | No Fluorescence | 0 | 12.79 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP776 | 1 | 1020 | 999 | 10 | 100-110 | 2110 | No Fluorescence | Dark Red | 0 | 13.43 |
| 41BP776 | 1 | 1020 | 999 | 10 | 100-110 | 2110 | No Fluorescence | Dark Red | 0 | 26.99 |
| 41BP776 | 1 | 1020 | 999 | 10 | 100-110 | 2116 | Orange | Orange | 0 | 8.93 |
| 41BP776 | 1 | 1020 | 999 | 10 | 100-110 | 1018 | Red | Red | 0 | 13.28 |
| 41BP776 | 1 | 1020 | 999 | 10 | 100-110 | 1013 | Yellow-Orange | Orange | 0 | 34.88 |
| 41BP776 | 1 | 1020 | 999 | 10 | 100-110 | 1014 | Yellow-Orange | Orange | 0 | 29.53 |
| 41BP776 | 1 | 1020 | 999 | 10 | 100-110 | 1017 | Yellow-Orange | Orange | 0 | 21.24 |
| 41BP776 | 1 | 1020 | 999 | 10 | 100-110 | 2013 | Yellow-Orange | Orange | 0 | 9.83 |
| 41BP776 | 1 | 1020 | 999 | 10 | 100-110 | 2013 | Yellow-Orange | Orange | 0 | 10.92 |
| 41BP776 | 1 | 1020 | 999 | 10 | 100-110 | 2013 | Yellow-Orange | Orange | 0 | 12.03 |
| 41BP776 | 1 | 1020 | 999 | 10 | 100-110 | 2013 | Yellow-Orange | Orange | 0 | 15.59 |
| 41BP776 | 1 | 1020 | 999 | 10 | 100-110 | 2013 | Yellow-Orange | Orange | 0 | 19.6 |
| 41BP776 | 1 | 1020 | 999 | 10 | 100-110 | 2013 | Yellow-Orange | Orange | 0 | 19.97 |
| 41BP776 | 1 | 1020 | 999 | 10 | 100-110 | 2013 | Yellow-Orange | Orange | 0 | 23.49 |
| 41BP776 | 1 | 1020 | 999 | 10 | 100-110 | 2013 | Yellow-Orange | Orange | 0 | 25.17 |
| 41BP776 | 1 | 1020 | 999 | 10 | 100-110 | 2019 | Yellow-Orange | Orange | 0 | 8.15 |
| 41BP776 | 1 | 1020 | 999 | 10 | 100-110 | 2019 | Yellow-Orange | Orange | 0 | 9.11 |
| 41BP776 | 1 | 1020 | 999 | 10 | 100-110 | 2116 | Yellow-Orange | Orange | 0 | 14.64 |
| 41BP776 | 1 | 1020 | 999 | 11 | 110-120 | 1018 | Yellow | Orange | 0 | 11.08 |
| 41BP776 | 1 | 1020 | 999 | 11 | 110-120 | 1014 | Yellow-Orange | Orange | 0 | 16.19 |
| 41BP776 | 1 | 1020 | 999 | 11 | 110-120 | 1019 | Yellow-Orange | Orange | 25 | 16.72 |
| 41BP776 | 2 | 998 | 988 | 1 | 19-22 | 1010 | Yellow-Orange | Orange | 0 | 16.69 |
| 41BP776 | 2 | 998 | 988 | 1 | 19-22 | 1010 | Yellow-Orange | Orange | 25 | 25.93 |
| 41BP776 | 2 | 998 | 988 | 1 | 19-22 | 1016 | Yellow-Orange | Orange | 0 | 16.47 |
| 41BP776 | 2 | 998 | 988 | 1 | 19-22 | 2012 | Yellow-Orange | Orange | 0 | 14.02 |
| 41BP776 | 2 | 998 | 988 | 1 | 19-22 | 2116 | Yellow-Orange | Orange | 25 | 21.58 |
| 41BP776 | 2 | 998 | 988 | 2 | 22-30 | 2012 | No Fluorescence | Dark Red | 25 | 25.2 |
| 41BP776 | 2 | 998 | 988 | 2 | 22-30 | 1010 | Orange | No Fluorescence | 0 | 22.18 |
| 41BP776 | 2 | 998 | 988 | 2 | 22-30 | 1019 | Orange | Orange | 0 | 23.62 |
| 41BP776 | 2 | 998 | 988 | 2 | 22-30 | 1117 | Orange | No Fluorescence | 0 | 39.4 |
| 41BP776 | 2 | 998 | 988 | 2 | 22-30 | 1115 | Red | Dark Red | 100 | 16.21 |
| 41BP776 | 2 | 998 | 988 | 2 | 22-30 | 1115 | Yellow | Dark Red | 0 | 17.42 |
| 41BP776 | 2 | 998 | 988 | 2 | 22-30 | 2019 | Yellow-Green | Dark Red | 25 | 31.07 |
| 41BP776 | 2 | 998 | 988 | 2 | 22-30 | 1013 | Yellow-Orange | Orange | 0 | 14.01 |
| 41BP776 | 2 | 998 | 988 | 2 | 22-30 | 1013 | Yellow-Orange | Orange | 0 | 13.2 |
| 41BP776 | 2 | 998 | 988 | 2 | 22-30 | 1020 | Yellow-Orange | Dark Red | 0 | 15.97 |
| 41BP776 | 2 | 998 | 988 | 2 | 22-30 | 1117 | Yellow-Orange | Orange | 0 | 20.85 |
| 41BP776 | 2 | 998 | 988 | 2 | 22-30 | 1117 | Yellow-Orange | Orange | 25 | 28.26 |
| 41BP776 | 2 | 998 | 988 | 2 | 22-30 | 2012 | Yellow-Orange | Orange | 0 | 20.6 |
| 41BP776 | 2 | 998 | 988 | 2 | 22-30 | 2012 | Yellow-Orange | Orange | 0 | 24.17 |
| 41BP776 | 2 | 998 | 988 | 2 | 22-30 | 2012 | Yellow-Orange | Orange | 25 | 37.2 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP776 | 2 | 998 | 988 | 2 | 22-30 | 2019 | Yellow-Orange | Orange | 0 | 13.72 |
| 41BP776 | 2 | 998 | 988 | 2 | 22-30 | 2019 | Yellow-Orange | Orange | 0 | 14.03 |
| 41BP776 | 2 | 998 | 988 | 2 | 22-30 | 2117 | Yellow-Orange | No Fluorescence | 0 | 22.4 |
| 41BP776 | 2 | 998 | 988 | 2 | 22-30 | 2117 | Yellow-Orange | Orange | 0 | 22.44 |
| 41BP776 | 2 | 998 | 988 | 3 | 30-40 | 1014 | Orange | Orange | 75 | 29.66 |
| 41BP776 | 2 | 998 | 988 | 3 | 30-40 | 1014 | Orange | Dark Red | 75 | 37.53 |
| 41BP776 | 2 | 998 | 988 | 3 | 30-40 | 1117 | Orange | Orange | 0 | 14.48 |
| 41BP776 | 2 | 998 | 988 | 3 | 30-40 | 1115 | Red | Dark Red | 0 | 19.9 |
| 41BP776 | 2 | 998 | 988 | 3 | 30-40 | 1012 | Yellow | Orange | 0 | 23.54 |
| 41BP776 | 2 | 998 | 988 | 3 | 30-40 | 1115 | Yellow-Green | Dark Red | 0 | 12.93 |
| 41BP776 | 2 | 998 | 988 | 3 | 30-40 | 2010 | Yellow-Green | Orange | 25 | 16.05 |
| 41BP776 | 2 | 998 | 988 | 3 | 30-40 | 2012 | Yellow-Green | Orange | 0 | 16.26 |
| 41BP776 | 2 | 998 | 988 | 3 | 30-40 | 1116 | Yellow-Orange | Orange | 0 | 15.9 |
| 41BP776 | 2 | 998 | 988 | 3 | 30-40 | 1117 | Yellow-Orange | Dark Red | 0 | 19.11 |
| 41BP776 | 2 | 998 | 988 | 3 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 13.02 |
| 41BP776 | 2 | 998 | 988 | 3 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 20.54 |
| 41BP776 | 2 | 998 | 988 | 3 | 30-40 | 2012 | Yellow-Orange | Orange | 25 | 20.89 |
| 41BP776 | 2 | 998 | 988 | 3 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 25.01 |
| 41BP776 | 2 | 998 | 988 | 3 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 29.91 |
| 41BP776 | 2 | 998 | 988 | 3 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 30.31 |
| 41BP776 | 2 | 998 | 988 | 3 | 30-40 | 2012 | Yellow-Orange | Orange | 25 | 58.16 |
| 41BP776 | 2 | 998 | 988 | 3 | 30-40 | 2019 | Yellow-Orange | Orange | 0 | 23.54 |
| 41BP776 | 2 | 998 | 988 | 3 | 30-40 | 2116 | Yellow-Orange | Orange | 0 | 11.97 |
| 41BP776 | 2 | 998 | 988 | 4 | 40-50 | 1118 | No Fluorescence | Dark Red | 0 | 15.93 |
| 41BP776 | 2 | 998 | 988 | 4 | 40-50 | 2010 | Orange | Red | 0 | 14.49 |
| 41BP776 | 2 | 998 | 988 | 4 | 40-50 | 2014 | Yellow | Orange | 0 | 36.67 |
| 41BP776 | 2 | 998 | 988 | 4 | 40-50 | 1010 | Yellow-Orange | Orange | 25 | 21.26 |
| 41BP776 | 2 | 998 | 988 | 4 | 40-50 | 1013 | Yellow-Orange | Yellow-Orange | 25 | 29.9 |
| 41BP776 | 2 | 998 | 988 | 4 | 40-50 | 1014 | Yellow-Orange | No Fluorescence | 0 | 46.97 |
| 41BP776 | 2 | 998 | 988 | 4 | 40-50 | 1014 | Yellow-Orange | Orange | 25 | 48.94 |
| 41BP776 | 2 | 998 | 988 | 4 | 40-50 | 2010 | Yellow-Orange | Green | 25 | 30.23 |
| 41BP776 | 2 | 998 | 988 | 4 | 40-50 | 2012 | Yellow-Orange | Orange | 25 | 36.73 |
| 41BP776 | 2 | 998 | 988 | 4 | 40-50 | 2013 | Yellow-Orange | Orange | 0 | 7.59 |
| 41BP776 | 2 | 998 | 988 | 5 | 50-60 | 1019 | Orange | Orange | 0 | 20.99 |
| 41BP776 | 2 | 998 | 988 | 5 | 50-60 | 1018 | Yellow | Orange | 0 | 13.35 |
| 41BP776 | 2 | 998 | 988 | 5 | 50-60 | 2011 | Yellow-Green | Dark Red | 0 | 20.22 |
| 41BP776 | 2 | 998 | 988 | 5 | 50-60 | 1014 | Yellow-Orange | Orange | 0 | 35.2 |
| 41BP776 | 2 | 998 | 988 | 5 | 50-60 | 1018 | Yellow-Orange | Orange | 0 | 23.03 |
| 41BP776 | 2 | 998 | 988 | 5 | 50-60 | 2012 | Yellow-Orange | Orange | 25 | 25.63 |
| 41BP776 | 2 | 998 | 988 | 5 | 50-60 | 2019 | Yellow-Orange | Orange | 0 | 8.42 |
| 41BP776 | 2 | 998 | 988 | 6 | 60-70 | 1018 | Yellow-Orange | Orange | 0 | 36.94 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP776 | 2 | 998 | 988 | 6 | 60-70 | 2013 | Yellow-Orange | Orange | 0 | 27.34 |
| 41BP776 | 2 | 998 | 988 | 6 | 60-70 | 2018 | Yellow-Orange | Orange | 0 | 11.81 |
| 41BP776 | 2 | 998 | 988 | 7 | 70-73 | 2010 | Yellow-Green | Orange | 25 | 91.34 |
| 41BP776 | 3 | 1023 | 1018 | 2 | 11-20 | 1019 | Yellow-Orange | Orange | 0 | 16.61 |
| 41BP776 | 3 | 1023 | 1018 | 2 | 11-20 | 2013 | Yellow-Orange | Orange | 0 | 36.99 |
| 41BP776 | 3 | 1023 | 1018 | 3 | 20-30 | 1018 | Yellow | Orange | 0 | 17.99 |
| 41BP776 | 3 | 1023 | 1018 | 3 | 20-30 | 1116 | Yellow | Yellow-Orange | 0 | 9.35 |
| 41BP776 | 3 | 1023 | 1018 | 3 | 20-30 | 2011 | Yellow | Orange | 0 | 12.35 |
| 41BP776 | 3 | 1023 | 1018 | 3 | 20-30 | 1018 | Yellow-Orange | Orange | 0 | 9.92 |
| 41BP776 | 3 | 1023 | 1018 | 3 | 20-30 | 1018 | Yellow-Orange | Orange | 0 | 17.81 |
| 41BP776 | 3 | 1023 | 1018 | 3 | 20-30 | 2012 | Yellow-Orange | Orange | 0 | 9.07 |
| 41BP776 | 3 | 1023 | 1018 | 3 | 20-30 | 2012 | Yellow-Orange | Orange | 0 | 9.38 |
| 41BP776 | 3 | 1023 | 1018 | 3 | 20-30 | 2012 | Yellow-Orange | Orange | 0 | 14.77 |
| 41BP776 | 3 | 1023 | 1018 | 4 | 30-40 | 1117 | Orange | No Fluorescence | 0 | 15.29 |
| 41BP776 | 3 | 1023 | 1018 | 4 | 30-40 | 2010 | Yellow | Orange | 25 | 14.25 |
| 41BP776 | 3 | 1023 | 1018 | 4 | 30-40 | 2010 | Yellow | Yellow-Orange | 25 | 32.82 |
| 41BP776 | 3 | 1023 | 1018 | 4 | 30-40 | 2116 | Yellow | Orange | 0 | 14.39 |
| 41BP776 | 3 | 1023 | 1018 | 4 | 30-40 | 2117 | Yellow | Dark Red | 0 | 24.17 |
| 41BP776 | 3 | 1023 | 1018 | 4 | 30-40 | 1014 | Yellow-Orange | Orange | 25 | 53.81 |
| 41BP776 | 3 | 1023 | 1018 | 4 | 30-40 | 1116 | Yellow-Orange | Red | 0 | 10.99 |
| 41BP776 | 3 | 1023 | 1018 | 4 | 30-40 | 1116 | Yellow-Orange | Orange | 0 | 12.61 |
| 41BP776 | 3 | 1023 | 1018 | 4 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 12.92 |
| 41BP776 | 3 | 1023 | 1018 | 4 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 16.53 |
| 41BP776 | 3 | 1023 | 1018 | 4 | 30-40 | 2018 | Yellow-Orange | Orange | 0 | 11.53 |
| 41BP776 | 3 | 1023 | 1018 | 4 | 30-40 | 2019 | Yellow-Orange | Orange | 0 | 11.25 |
| 41BP776 | 3 | 1023 | 1018 | 4 | 30-40 | 2019 | Yellow-Orange | Orange | 0 | 11.63 |
| 41BP776 | 3 | 1023 | 1018 | 4 | 30-40 | 2019 | Yellow-Orange | Orange | 0 | 15.94 |
| 41BP776 | 3 | 1023 | 1018 | 4 | 30-40 | 2019 | Yellow-Orange | Orange | 0 | 19.74 |
| 41BP776 | 3 | 1023 | 1018 | 4 | 30-40 | 2019 | Yellow-Orange | Orange | 0 | 23.11 |
| 41BP776 | 3 | 1023 | 1018 | 4 | 30-40 | 2019 | Yellow-Orange | Dark Red | 25 | 30.36 |
| 41BP776 | 3 | 1023 | 1018 | 4 | 30-40 | 2019 | Yellow-Orange | Orange | 0 | 33.63 |
| 41BP776 | 3 | 1023 | 1018 | 4 | 30-40 | 2019 | Yellow-Orange | Orange | 0 | 43.43 |
| 41BP776 | 3 | 1023 | 1018 | 5 | 40-48 | 2012 | Yellow-Orange | Orange | 0 | 46.77 |
| 41BP776 | 4 | 985 | 1005 | 1 | 15-20 | 1019 | Orange | Orange | 0 | 30.21 |
| 41BP776 | 4 | 985 | 1005 | 1 | 15-20 | 1117 | Orange | Orange | 0 | 34.07 |
| 41BP776 | 4 | 985 | 1005 | 1 | 15-20 | 2014 | Yellow-Orange | Orange | 0 | 12.27 |
| 41BP776 | 4 | 985 | 1005 | 2 | 20-30 | 1117 | Dark Red | No Fluorescence | 0 | 9.56 |
| 41BP776 | 4 | 985 | 1005 | 2 | 20-30 | 1117 | Dark Red | No Fluorescence | 0 | 16.13 |
| 41BP776 | 4 | 985 | 1005 | 2 | 20-30 | 1013 | No Fluorescence | No Fluorescence | 0 | 9.36 |
| 41BP776 | 4 | 985 | 1005 | 2 | 20-30 | 1013 | Orange | Orange | 0 | 49.91 |
| 41BP776 | 4 | 985 | 1005 | 2 | 20-30 | 2010 | Yellow-Orange | Orange | 0 | 16.03 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP776 | 4 | 985 | 1005 | 2 | 20-30 | 2013 | Yellow-Orange | Orange | 0 | 10.15 |
| 41BP776 | 4 | 985 | 1005 | 2 | 20-30 | 2013 | Yellow-Orange | Orange | 0 | 11.45 |
| 41BP776 | 5 | 964 | 1016 | 1 | 13-20 | 2012 | Yellow-Orange | Orange | 0 | 10.67 |
| 41BP776 | 5 | 964 | 1016 | 1 | 13-20 | 2117 | Yellow-Orange | Dark Red | 0 | 24.91 |
| 41BP776 | 5 | 964 | 1016 | 2 | 20-30 | 1019 | Orange | Orange | 0 | 29.44 |
| 41BP776 | 5 | 964 | 1016 | 2 | 20-30 | 1019 | Yellow-Orange | Orange | 0 | 14.26 |
| 41BP776 | 5 | 964 | 1016 | 2 | 20-30 | 1019 | Yellow-Orange | Orange | 25 | 16.86 |
| 41BP776 | 5 | 964 | 1016 | 2 | 20-30 | 1019 | Yellow-Orange | Orange | 25 | 42.19 |
| 41BP776 | 5 | 964 | 1016 | 2 | 20-30 | 2013 | Yellow-Orange | Orange | 0 | 11.66 |
| 41BP776 | 5 | 964 | 1016 | 2 | 20-30 | 2019 | Yellow-Orange | Orange | 0 | 17.01 |
| 41BP776 | 5 | 964 | 1016 | 3 | 30-40 | 2012 | Orange | Dark Red | 0 | 10.41 |
| 41BP776 | 5 | 964 | 1016 | 3 | 30-40 | 2014 | Yellow | Orange | 0 | 14.83 |
| 41BP776 | 5 | 964 | 1016 | 3 | 30-40 | 2116 | Yellow | Orange | 0 | 17.83 |
| 41BP776 | 5 | 964 | 1016 | 3 | 30-40 | 2010 | Yellow-Orange | Orange | 0 | 17.52 |
| 41BP776 | 5 | 964 | 1016 | 3 | 30-40 | 2013 | Yellow-Orange | Orange | 0 | 17.31 |
| 41BP776 | 5 | 964 | 1016 | 3 | 30-40 | 2014 | Yellow-Orange | Orange | 0 | 18.23 |
| 41BP776 | 5 | 964 | 1016 | 3 | 30-40 | 2019 | Yellow-Orange | Orange | 0 | 25.76 |
| 41BP776 | 5 | 964 | 1016 | 3 | 30-40 | 2117 | Yellow-Orange | Dark Red | 0 | 13.6 |
| 41BP776 | 5 | 964 | 1016 | 4 | 40-50 | 1012 | Yellow | Orange | 0 | 17.42 |
| 41BP776 | 5 | 964 | 1016 | 4 | 40-50 | 2018 | Yellow | Orange | 0 | 10.37 |
| 41BP776 | 5 | 964 | 1016 | 4 | 40-50 | 1014 | Yellow-Orange | No Fluorescence | 75 | 13.62 |
| 41BP776 | 5 | 964 | 1016 | 4 | 40-50 | 2010 | Yellow-Orange | Orange | 0 | 7.56 |
| 41BP776 | 5 | 964 | 1016 | 4 | 40-50 | 2012 | Yellow-Orange | Orange | 0 | 14.44 |
| 41BP776 | 5 | 964 | 1016 | 5 | 50-60 | 1117 | Orange | No Fluorescence | 0 | 10.06 |
| 41BP776 | 5 | 964 | 1016 | 5 | 50-60 | 1117 | Orange | Dark Red | 0 | 34.02 |
| 41BP776 | 5 | 964 | 1016 | 5 | 50-60 | 2014 | Yellow | Orange | 0 | 15.23 |
| 41BP776 | 5 | 964 | 1016 | 5 | 50-60 | 1013 | Yellow-Orange | Orange | 0 | 15.8 |
| 41BP776 | 5 | 964 | 1016 | 5 | 50-60 | 1013 | Yellow-Orange | Orange | 0 | 19.91 |
| 41BP776 | 5 | 964 | 1016 | 5 | 50-60 | 1016 | Yellow-Orange | Orange | 0 | 19.66 |
| 41BP776 | 5 | 964 | 1016 | 5 | 50-60 | 2013 | Yellow-Orange | Orange | 0 | 14.03 |
| 41BP776 | 5 | 964 | 1016 | 5 | 50-60 | 2014 | Yellow-Orange | Red | 0 | 24.26 |
| 41BP776 | 5 | 964 | 1016 | 6 | 60-70 | 2010 | Orange | Orange | 0 | 33.43 |
| 41BP776 | 5 | 964 | 1016 | 6 | 60-70 | 2014 | Yellow | Orange | 0 | 18.67 |
| 41BP776 | 5 | 964 | 1016 | 6 | 60-70 | 2014 | Yellow-Green | Yellow-Orange | 0 | 48.28 |
| 41BP776 | 5 | 964 | 1016 | 6 | 60-70 | 1013 | Yellow-Orange | Yellow-Orange | 75 | 46.57 |
| 41BP776 | 5 | 964 | 1016 | 6 | 60-70 | 1016 | Yellow-Orange | Dark Red | 0 | 15.66 |
| 41BP776 | 5 | 964 | 1016 | 6 | 60-70 | 2014 | Yellow-Orange | Orange | 0 | 16.04 |
| 41BP776 | 5 | 964 | 1016 | 7 | 70-75 | 2012 | Yellow-Orange | Yellow-Orange | 0 | 34.55 |
| 41BP776 | 6 | 1023 | 1019 | 2 | 20-30 | 2110 | No Fluorescence | Dark Red | 0 | 21.59 |
| 41BP776 | 6 | 1023 | 1019 | 2 | 20-30 | 1019 | Orange | Orange | 0 | 10.71 |
| 41BP776 | 6 | 1023 | 1019 | 2 | 20-30 | 1019 | Yellow-Orange | Orange | 0 | 13.43 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP776 | 6 | 1023 | 1019 | 2 | 20-30 | 1116 | Yellow-Orange | Orange | 0 | 11.21 |
| 41BP776 | 6 | 1023 | 1019 | 2 | 20-30 | 2010 | Yellow-Orange | Orange | 0 | 27.49 |
| 41BP776 | 6 | 1023 | 1019 | 2 | 20-30 | 2013 | Yellow-Orange | Orange | 25 | 18.61 |
| 41BP776 | 6 | 1023 | 1019 | 2 | 20-30 | 2019 | Yellow-Orange | Orange | 0 | 17.11 |
| 41BP776 | 6 | 1023 | 1019 | 3 | 30-38 | 1019 | Orange | Orange | 0 | 18.95 |
| 41BP776 | 6 | 1023 | 1019 | 3 | 30-38 | 1117 | Orange | Dark Red | 0 | 36.29 |
| 41BP776 | 6 | 1023 | 1019 | 3 | 30-38 | 1019 | Yellow-Green | Orange | 0 | 21.03 |
| 41BP776 | 6 | 1023 | 1019 | 3 | 30-38 | 1019 | Yellow-Orange | Orange | 0 | 32.32 |
| 41BP776 | 6 | 1023 | 1019 | 3 | 38-40 | 1019 | Yellow-Orange | Orange | 0 | 33.78 |
| 41BP776 | 6 | 1023 | 1019 | 3 | 30-38 | 2012 | Yellow-Orange | Orange | 0 | 18.71 |
| 41BP776 | 6 | 1023 | 1019 | 3 | 30-38 | 2012 | Yellow-Orange | Orange | 0 | 41.94 |
| 41BP776 | 6 | 1023 | 1019 | 3 | 38-40 | 2013 | Yellow-Orange | Orange | 0 | 36.57 |
| 41BP776 | 6 | 1023 | 1019 | 3 | 30-38 | 2018 | Yellow-Orange | Orange | 0 | 12.16 |
| 41BP776 | 6 | 1023 | 1019 | 3 | 30-38 | 2018 | Yellow-Orange | Orange | 0 | 12.31 |
| 41BP776 | 6 | 1023 | 1019 | 4 | 40-50 | 1020 | No Fluorescence | Dark Red | 0 | 28.14 |
| 41BP776 | 6 | 1023 | 1019 | 4 | 40-50 | 1013 | Yellow | Orange | 0 | 23.6 |
| 41BP776 | 6 | 1023 | 1019 | 4 | 40-50 | 1013 | Yellow-Orange | Orange | 0 | 14.67 |
| 41BP776 | 6 | 1023 | 1019 | 4 | 40-50 | 2013 | Yellow-Orange | Orange | 0 | 20.08 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 1013 | No Fluorescence | No Fluorescence | 0 | 15.8 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 2012 | No Fluorescence | Dark Red | 0 | 15.05 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 1013 | Orange | Dark Red | 0 | 28.11 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 1019 | Orange | Orange | 25 | 11.68 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 1117 | Orange | No Fluorescence | 0 | 26.87 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 2117 | Orange | Dark Red | 25 | 13.27 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 1013 | Yellow | Orange | 0 | 14.26 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 2012 | Yellow-Green | Orange | 25 | 14.85 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 1013 | Yellow-Orange | Yellow-Orange | 0 | 13.98 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 1013 | Yellow-Orange | Orange | 0 | 11.58 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 1013 | Yellow-Orange | Orange | 0 | 12.35 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 1013 | Yellow-Orange | Orange | 0 | 12.97 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 1013 | Yellow-Orange | Orange | 0 | 16.48 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 1013 | Yellow-Orange | Yellow-Orange | 0 | 26.21 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 1016 | Yellow-Orange | Orange | 0 | 17.43 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 1016 | Yellow-Orange | Orange | 25 | 24.32 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 1018 | Yellow-Orange | Orange | 0 | 19.09 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 1019 | Yellow-Orange | Orange | 0 | 9.65 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 1019 | Yellow-Orange | Orange | 0 | 11.76 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 1019 | Yellow-Orange | Orange | 25 | 16.29 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 1019 | Yellow-Orange | Orange | 0 | 17.66 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 1019 | Yellow-Orange | Orange | 0 | 23.76 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 1116 | Yellow-Orange | Red | 0 | 9.4 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 1116 | Yellow-Orange | Orange | 0 | 13.15 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 1116 | Yellow-Orange | Orange | 0 | 16.33 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 1117 | Yellow-Orange | No Fluorescence | 0 | 11.16 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 1117 | Yellow-Orange | Dark Red | 25 | 36.32 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 2012 | Yellow-Orange | Orange | 0 | 13.22 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 2012 | Yellow-Orange | Orange | 0 | 28.83 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 2012 | Yellow-Orange | Orange | 0 | 36.23 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 2117 | Yellow-Orange | Orange | 0 | 10.69 |
| 41BP776 | 7 | 1006 | 988 | 1 | 20-30 | 2117 | Yellow-Orange | Orange | 0 | 14.25 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1116 | No Fluorescence | No Fluorescence | 0 | 16.37 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1118 | No Fluorescence | Dark Red | 0 | 13.88 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 2028 | No Fluorescence | Red | 0 | 14.43 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1016 | Orange | Orange | 25 | 13.9 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1016 | Orange | Dark Red | 0 | 15.89 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1019 | Orange | Dark Red | 0 | 17.49 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1010 | Yellow | Yellow-Orange | 0 | 23.85 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1016 | Yellow | Orange | 0 | 15.04 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 2013 | Yellow | Orange | 0 | 13.22 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 21.75 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 12.31 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1014 | Yellow-Orange | Dark Red | 0 | 13.63 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1014 | Yellow-Orange | Orange | 0 | 14.63 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1014 | Yellow-Orange | Orange | 0 | 15.37 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1014 | Yellow-Orange | Orange | 25 | 16.96 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1014 | Yellow-Orange | Orange | 0 | 20.1 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1014 | Yellow-Orange | Orange | 0 | 20.57 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1014 | Yellow-Orange | Orange | 0 | 21.34 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1014 | Yellow-Orange | Orange | 0 | 23.55 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1014 | Yellow-Orange | Orange | 75 | 49.89 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1016 | Yellow-Orange | Orange | 0 | 12.37 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1016 | Yellow-Orange | Orange | 0 | 16.23 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1016 | Yellow-Orange | Orange | 0 | 22.88 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1019 | Yellow-Orange | Orange | 0 | 12.86 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1019 | Yellow-Orange | Orange | 25 | 17.31 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1116 | Yellow-Orange | Orange | 0 | 13.89 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 1117 | Yellow-Orange | No Fluorescence | 0 | 19.8 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 8.41 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 11.44 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 15.73 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 30.2 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 2013 | Yellow-Orange | Orange | 0 | 13.81 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 2013 | Yellow-Orange | Orange | 0 | 16.32 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 2117 | Yellow-Orange | Orange | 0 | 10.98 |
| 41BP776 | 7 | 1006 | 988 | 2 | 30-40 | 2117 | Yellow-Orange | Orange | 0 | 17.21 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 1014 | No Fluorescence | No Fluorescence | 0 | 13.88 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 1027 | No Fluorescence | Dark Red | 0 | 21.78 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 1010 | Orange | Orange | 0 | 16.27 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 1010 | Orange | Orange | 25 | 19.08 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 1019 | Orange | Orange | 0 | 15.1 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 1019 | Orange | Orange | 100 | 29.19 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 1117 | Orange | Dark Red | 25 | 21.43 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 1010 | Yellow | Yellow-Orange | 0 | 22.43 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 1010 | Yellow | Orange | 0 | 17.29 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 2010 | Yellow | Orange | 0 | 18.69 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 2013 | Yellow | Orange | 0 | 26.2 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 2019 | Yellow | Orange | 25 | 20.85 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 2018 | Yellow-Green | Orange | 25 | 22.6 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 2018 | Yellow-Green | Orange | 0 | 25.78 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 1010 | Yellow-Orange | Orange | 0 | 16.83 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 1013 | Yellow-Orange | Orange | 0 | 23.84 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 1013 | Yellow-Orange | Orange | 25 | 25.75 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 1013 | Yellow-Orange | Orange | 25 | 27.5 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 1013 | Yellow-Orange | Orange | 0 | 41.79 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 1014 | Yellow-Orange | Orange | 25 | 25.15 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 1014 | Yellow-Orange | Yellow-Orange | 75 | 25.78 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 1014 | Yellow-Orange | Orange | 25 | 46.36 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 1016 | Yellow-Orange | Orange | 0 | 10.59 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 1016 | Yellow-Orange | Orange | 0 | 21.97 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 1019 | Yellow-Orange | Orange | 0 | 16.88 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 2010 | Yellow-Orange | Orange | 0 | 19.72 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 2012 | Yellow-Orange | Orange | 0 | 12.82 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 2013 | Yellow-Orange | Orange | 0 | 14.29 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 2013 | Yellow-Orange | Orange | 0 | 16.77 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 2013 | Yellow-Orange | Orange | 0 | 17.41 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 2013 | Yellow-Orange | Orange | 0 | 17.82 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 2013 | Yellow-Orange | Orange | 0 | 22.49 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 2116 | Yellow-Orange | Orange | 0 | 16.35 |
| 41BP776 | 7 | 1006 | 988 | 3 | 40-50 | 2116 | Yellow-Orange | Orange | 0 | 16.48 |
| 41BP776 | 7 | 1006 | 988 | 4 | 50-60 | 1013 | No Fluorescence | No Fluorescence | 75 | 26.03 |
| 41BP776 | 7 | 1006 | 988 | 4 | 50-60 | 1111 | No Fluorescence | Red | 75 | 24.1 |
| 41BP776 | 7 | 1006 | 988 | 4 | 50-60 | 1019 | Orange | Orange | 25 | 15.3 |
| 41BP776 | 7 | 1006 | 988 | 4 | 50-60 | 1019 | Orange | Orange | 25 | 39.95 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP776 | 7 | 1006 | 988 | 4 | 50-60 | 2010 | Orange | Orange | 25 | 22.91 |
| 41BP776 | 7 | 1006 | 988 | 4 | 50-60 | 1116 | Yellow | Orange | 0 | 14.43 |
| 41BP776 | 7 | 1006 | 988 | 4 | 50-60 | 2013 | Yellow | Orange | 0 | 17.83 |
| 41BP776 | 7 | 1006 | 988 | 4 | 50-60 | 2013 | Yellow-Green | Orange | 0 | 12.57 |
| 41BP776 | 7 | 1006 | 988 | 4 | 50-60 | 1013 | Yellow-Orange | No Fluorescence | 0 | 12.64 |
| 41BP776 | 7 | 1006 | 988 | 4 | 50-60 | 1013 | Yellow-Orange | Orange | 0 | 17.91 |
| 41BP776 | 7 | 1006 | 988 | 4 | 50-60 | 1019 | Yellow-Orange | Orange | 25 | 9.8 |
| 41BP776 | 7 | 1006 | 988 | 4 | 50-60 | 1019 | Yellow-Orange | Orange | 0 | 17.26 |
| 41BP776 | 7 | 1006 | 988 | 4 | 50-60 | 1019 | Yellow-Orange | Orange | 25 | 19.31 |
| 41BP776 | 7 | 1006 | 988 | 4 | 50-60 | 1116 | Yellow-Orange | Red | 0 | 12.49 |
| 41BP776 | 7 | 1006 | 988 | 4 | 50-60 | 1117 | Yellow-Orange | No Fluorescence | 25 | 23.79 |
| 41BP776 | 7 | 1006 | 988 | 4 | 50-60 | 1117 | Yellow-Orange | Orange | 25 | 26.75 |
| 41BP776 | 7 | 1006 | 988 | 4 | 50-60 | 2012 | Yellow-Orange | Orange | 0 | 16.08 |
| 41BP776 | 7 | 1006 | 988 | 4 | 50-60 | 2012 | Yellow-Orange | Orange | 0 | 18.7 |
| 41BP776 | 7 | 1006 | 988 | 4 | 50-60 | 2013 | Yellow-Orange | Orange | 0 | 18.99 |
| 41BP776 | 7 | 1006 | 988 | 4 | 50-60 | 2013 | Yellow-Orange | Orange | 0 | 18.95 |
| 41BP776 | 7 | 1006 | 988 | 4 | 50-60 | 2013 | Yellow-Orange | Orange | 0 | 22.26 |
| 41BP776 | 7 | 1006 | 988 | 4 | 50-60 | 2013 | Yellow-Orange | Orange | 0 | 29.76 |
| 41BP776 | 7 | 1006 | 988 | 4 | 50-60 | 2117 | Yellow-Orange | Dark Red | 0 | 18.31 |
| 41BP778 | 1 | 1002 | 996 | 4 | 40-50 | 1012 | Yellow | Dark Red | 25 | 20.56 |
| 41BP778 | 1 | 1002 | 996 | 5 | 50-60 | 2010 | Yellow-Orange | Dark Red | 25 | 14.54 |
| 41BP778 | 1 | 1002 | 996 | 6 | 60-70 | 2010 | Yellow | Orange | 25 | 39.87 |
| 41BP778 | 2 | 987 | 1011 | 3 | 30-40 | 1117 | No Fluorescence | Dark Red | 0 | 22.1 |
| 41BP778 | 2 | 997 | 990 | 4 | 40-50 | 2116 | Yellow | Orange | 0 | 26.92 |
| 41BP778 | 2 | 997 | 990 | 4 | 40-50 | 1019 | Yellow-Orange | Orange | 0 | 11.94 |
| 41BP778 | 2 | 997 | 990 | 6 | 60-70 | 2010 | Yellow | Yellow-Orange | 0 | 15.24 |
| 41BP778 | 2 | 997 | 990 | 7 | 70-80 | 1019 | Yellow-Orange | Dark Red | 25 | 49.23 |
| 41BP778 | 3 | 987 | 1011 | 3 | 30-40 | 1117 | No Fluorescence | Dark Red | 0 | 14.64 |
| 41BP780 | 1 | 999 | 989 | 1 | 10-20 | 2012 | Yellow | Orange | 0 | 18.14 |
| 41BP780 | 1 | 999 | 989 | 2 | 20-30 | 1014 | Yellow-Orange | Orange | 0 | 19.39 |
| 41BP780 | 2 | 982 | 1000 | 1 | 20-30 | 1015 | No Fluorescence | Dark Red | 0 | 12.89 |
| 41BP780 | 2 | 982 | 1000 | 1 | 20-30 | 2012 | No Fluorescence | No Fluorescence | 0 | 22.52 |
| 41BP780 | 2 | 982 | 1000 | 1 | 20-30 | 2112 | Yellow-Orange | Orange | 0 | 9.28 |
| 41BP780 | 2 | 982 | 1000 | 4 | 50-60 | 2012 | Yellow-Orange | Orange | 0 | 13.61 |
| 41BP780 | 2 | 982 | 1000 | 6 | 70-80 | 2012 | Yellow | Orange | 0 | 25.67 |
| 41BP780 | 2 | 982 | 1000 | 6 | 70-80 | 2012 | Yellow | Yellow-Orange | 0 | 21.45 |
| 41BP780 | 3 | 968 | 1009 | 2 | 10-20 | 1115 | No Fluorescence | Dark Red | 0 | 11.43 |
| 41BP780 | 3 | 968 | 1009 | 2 | 10-20 | 2019 | Yellow-Orange | Orange | 0 | 9.75 |
| 41BP780 | 3 | 968 | 1009 | 2 | 10-20 | 2019 | Yellow-Orange | Orange | 0 | 19.04 |
| 41BP780 | 3 | 968 | 1009 | 3 | 20-30 | 2012 | Yellow-Orange | Orange | 0 | 31.28 |
| 41BP780 | 3 | 968 | 1009 | 3 | 20-30 | 2012 | Yellow-Orange | Orange | 0 | 12.14 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP780 | 3 | 968 | 1009 | 4 | 30-40 | 1117 | No Fluorescence | Dark Red | 0 | 22.08 |
| 41BP780 | 3 | 968 | 1009 | 4 | 30-40 | 2012 | No Fluorescence | No Fluorescence | 25 | 18.38 |
| 41BP780 | 3 | 968 | 1009 | 4 | 30-40 | 2012 | Yellow | Orange | 0 | 22.91 |
| 41BP780 | 3 | 968 | 1009 | 4 | 30-40 | 1019 | Yellow-Orange | Dark Red | 0 | 24.86 |
| 41BP780 | 3 | 968 | 1009 | 8 | 70-80 | 1117 | No Fluorescence | Dark Red | 25 | 29.88 |
| 41BP780 | 3 | 968 | 1009 | 8 | 70-80 | 1014 | Yellow | Yellow-Orange | 25 | 49.37 |
| 41BP780 | 3 | 968 | 1009 | 8 | 70-80 | 2012 | Yellow-Orange | Orange | 0 | 35.63 |
| 41BP780 | 3 | 968 | 1009 | 8 | 70-80 | 2012 | Yellow-Orange | Orange | 0 | 18.96 |
| 41BP780 | 3 | 968 | 1009 | 9 | 80-90 | 1019 | Yellow | Yellow-Orange | 0 | 9.49 |
| 41BP780 | 3 | 968 | 1009 | 9 | 80-90 | 1014 | Yellow-Orange | Orange | 0 | 13.8 |
| 41BP780 | 3 | 968 | 1009 | 10 | 90-100 | 1117 | No Fluorescence | Dark Red | 0 | 10.27 |
| 41BP780 | 3 | 968 | 1009 | 10 | 90-100 | 2012 | Yellow-Orange | Orange | 0 | 17.71 |
| 41BP780 | 3 | 968 | 1009 | 11 | 100-110 | 2012 | Yellow-Orange | Orange | 0 | 31.25 |
| 41BP780 | 4 | 936 | 997 | 1 | 10-20 | 2013 | Yellow-Green | Orange | 0 | 15.94 |
| 41BP780 | 4 | 936 | 997 | 1 | 10-20 | 1116 | Yellow-Orange | Orange | 0 | 24.28 |
| 41BP780 | 4 | 936 | 997 | 3 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 17.51 |
| 41BP780 | 4 | 936 | 997 | 4 | 40-50 | 1115 | No Fluorescence | Dark Red | 0 | 17.37 |
| 41BP780 | 4 | 936 | 997 | 4 | 40-50 | 2012 | Yellow | Orange | 0 | 20.78 |
| 41BP780 | 4 | 936 | 997 | 4 | 40-50 | 1018 | Yellow-Orange | Orange | 0 | 14.94 |
| 41BP780 | 4 | 936 | 997 | 5 | 50-60 | 2012 | Yellow | Orange | 0 | 14.25 |
| 41BP780 | 4 | 936 | 997 | 5 | 50-60 | 1019 | Yellow-Orange | Dark Red | 0 | 19.3 |
| 41BP780 | 4 | 936 | 997 | 6 | 60-70 | 2019 | Yellow | Orange | 0 | 12.41 |
| 41BP780 | 4 | 936 | 997 | 6 | 60-70 | 1019 | Yellow-Green | Dark Red | 0 | 18.11 |
| 41BP780 | 4 | 936 | 997 | 7 | 70-80 | 2012 | Yellow | Orange | 0 | 10.69 |
| 41BP780 | 4 | 936 | 997 | 7 | 70-80 | 2012 | Yellow-Orange | Orange | 0 | 14.98 |
| 41BP780 | 4 | 936 | 997 | 8 | 80-90 | 1115 | No Fluorescence | Dark Red | 0 | 17.04 |
| 41BP780 | 4 | 936 | 997 | 8 | 80-90 | 1014 | Yellow | Orange | 75 | 51.15 |
| 41BP780 | 4 | 936 | 997 | 8 | 80-90 | 1015 | Yellow-Orange | Orange | 0 | 41.8 |
| 41BP780 | 4 | 936 | 997 | 9 | 90-100 | 2019 | Yellow-Orange | Orange | 0 | 14.6 |
| 41BP780 | 4 | 936 | 997 | 9 | 90-100 | 2112 | Yellow-Orange | Orange | 0 | 45.05 |
| 41BP780 | 4 | 936 | 997 | 10 | 100-110 | 1018 | Yellow | Yellow-Orange | 0 | 53.65 |
| 41BP780 | 4 | 936 | 997 | 10 | 100-110 | 2012 | Yellow-Orange | Orange | 0 | 18.56 |
| 41BP782 | 1 | 1023 | 1006 | 1 | 8-20 | 2014 | Yellow-Orange | Orange | 25 | 25.22 |
| 41BP782 | 1 | 1023 | 1006 | 1 | 8-20 | 2014 | Yellow-Orange | Orange | 0 | 16.92 |
| 41BP782 | 1 | 1023 | 1006 | 1 | 8-20 | 2014 | Yellow-Orange | Orange | 0 | 12.47 |
| 41BP782 | 1 | 1023 | 1006 | 1 | 8-20 | 2019 | Yellow-Orange | Orange | 0 | 12.71 |
| 41BP782 | 1 | 1023 | 1006 | 1 | 8-20 | 2019 | Yellow-Orange | Orange | 0 | 9.84 |
| 41BP782 | 1 | 1023 | 1006 | 1 | 8-20 | 2019 | Yellow-Orange | Orange | 25 | 22.72 |
| 41BP782 | 1 | 1023 | 1006 | 2 | 20-30 | 1127 | Yellow-Orange | Orange | 0 | 31.16 |
| 41BP782 | 1 | 1023 | 1006 | 2 | 20-30 | 2012 | Yellow-Orange | Orange | 0 | 14.63 |
| 41BP782 | 1 | 1023 | 1006 | 2 | 20-30 | 2012 | Yellow-Orange | Orange | 0 | 34.87 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP782 | 1 | 1023 | 1006 | 4 | 40-50 | 2012 | Yellow | Yellow-Orange | 0 | 20.25 |
| 41BP782 | 1 | 1023 | 1006 | 4 | 40-50 | 2012 | Yellow-Orange | Orange | 0 | 19.54 |
| 41BP782 | 1 | 1023 | 1006 | 4 | 40-50 | 2014 | Yellow-Orange | Orange | 0 | 30.26 |
| 41BP782 | 2 | 976 | 1005 | 1 | 10-20 | 1013 | Yellow-Orange | Orange | 0 | 10.12 |
| 41BP782 | 2 | 976 | 1005 | 1 | 10-20 | 1014 | Yellow-Orange | Orange | 25 | 25.17 |
| 41BP782 | 2 | 976 | 1005 | 1 | 10-20 | 1018 | Yellow-Orange | Orange | 0 | 10.12 |
| 41BP782 | 2 | 976 | 1005 | 1 | 10-20 | 2013 | Yellow-Orange | Orange | 25 | 32.78 |
| 41BP782 | 2 | 976 | 1005 | 1 | 10-20 | 2013 | Yellow-Orange | Orange | 0 | 20.77 |
| 41BP782 | 2 | 976 | 1005 | 1 | 10-20 | 2013 | Yellow-Orange | Orange | 0 | 20.66 |
| 41BP782 | 2 | 976 | 1005 | 1 | 10-20 | 2014 | Yellow-Orange | Orange | 0 | 17.41 |
| 41BP782 | 2 | 976 | 1005 | 2 | 20-30 | 1013 | Yellow-Orange | Orange | 0 | 21.77 |
| 41BP782 | 2 | 976 | 1005 | 2 | 20-30 | 1014 | Yellow-Orange | Orange | 25 | 42.72 |
| 41BP782 | 2 | 976 | 1005 | 2 | 20-30 | 1014 | Yellow-Orange | Orange | 0 | 22.37 |
| 41BP782 | 2 | 976 | 1005 | 2 | 20-30 | 2012 | Yellow-Orange | Orange | 0 | 13.22 |
| 41BP782 | 2 | 976 | 1005 | 2 | 20-30 | 2012 | Yellow-Orange | Orange | 0 | 14.15 |
| 41BP782 | 2 | 976 | 1005 | 2 | 20-30 | 2012 | Yellow-Orange | Orange | 0 | 16.2 |
| 41BP782 | 2 | 976 | 1005 | 2 | 20-30 | 2019 | Yellow-Orange | Orange | 0 | 10.95 |
| 41BP782 | 2 | 976 | 1005 | 3 | 30-40 | 2014 | Yellow-Orange | Orange | 25 | 31.19 |
| 41BP782 | 3 | 988 | 981 | 1 | 10-25 | 2012 | No Fluorescence | Orange | 0 | 16.25 |
| 41BP782 | 3 | 988 | 981 | 1 | 10-25 | 2012 | No Fluorescence | Orange | 25 | 20.88 |
| 41BP782 | 3 | 988 | 981 | 1 | 10-25 | 2012 | Yellow | Orange | 0 | 15.06 |
| 41BP782 | 3 | 988 | 981 | 1 | 10-25 | 2012 | Yellow | Orange | 0 | 16.67 |
| 41BP782 | 3 | 988 | 981 | 1 | 10-25 | 2012 | Yellow | Yellow-Orange | 0 | 25.03 |
| 41BP782 | 3 | 988 | 981 | 1 | 10-25 | 1012 | Yellow-Orange | Dark Red | 75 | 20.15 |
| 41BP782 | 3 | 988 | 981 | 1 | 10-25 | 2012 | Yellow-Orange | Orange | 0 | 10.53 |
| 41BP782 | 3 | 988 | 981 | 1 | 10-25 | 2012 | Yellow-Orange | Orange | 0 | 13.56 |
| 41BP782 | 3 | 988 | 981 | 1 | 10-25 | 2012 | Yellow-Orange | Orange | 0 | 15.78 |
| 41BP782 | 3 | 988 | 981 | 1 | 10-25 | 2012 | Yellow-Orange | Orange | 0 | 12.95 |
| 41BP782 | 3 | 988 | 981 | 1 | 10-25 | 2014 | Yellow-Orange | Orange | 0 | 27.52 |
| 41BP782 | 3 | 988 | 981 | 2 | 25-35 | 1025 | No Fluorescence | Dark Red | 0 | 23.76 |
| 41BP782 | 3 | 988 | 981 | 2 | 25-35 | 2014 | Yellow | Orange | 0 | 16.03 |
| 41BP782 | 3 | 988 | 981 | 2 | 25-35 | 1013 | Yellow-Orange | Orange | 0 | 17.42 |
| 41BP782 | 3 | 988 | 981 | 2 | 25-35 | 2014 | Yellow-Orange | Orange | 0 | 15.53 |
| 41BP782 | 3 | 988 | 981 | 2 | 25-35 | 2014 | Yellow-Orange | Orange | 0 | 20.63 |
| 41BP782 | 3 | 988 | 981 | 2 | 25-35 | 2014 | Yellow-Orange | Orange | 0 | 13.5 |
| 41BP782 | 3 | 988 | 981 | 2 | 25-35 | 2014 | Yellow-Orange | Orange | 0 | 15.91 |
| 41BP782 | 3 | 988 | 981 | 2 | 25-35 | 2117 | Yellow-Orange | Orange | 0 | 46.34 |
| 41BP782 | 3 | 988 | 981 | 3 | 35-43 | 2014 | No Fluorescence | Dark Red | 0 | 16.15 |
| 41BP782 | 3 | 988 | 981 | 3 | 35-43 | 1012 | Yellow-Orange | Dark Red | 75 | 24.49 |
| 41BP782 | 3 | 988 | 981 | 3 | 35-43 | 2014 | Yellow-Orange | Orange | 0 | 19.98 |
| 41BP782 | 3 | 988 | 981 | 3 | 35-43 | 2014 | Yellow-Orange | Orange | 0 | 13.98 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP782 | 4 | 1023 | 1035 | 1 | 20-30 | 2014 | No Fluorescence | Dark Red | 0 | 14.59 |
| 41BP782 | 4 | 1023 | 1035 | 1 | 20-30 | 2014 | Orange | Orange | 0 | 14.3 |
| 41BP782 | 4 | 1023 | 1035 | 1 | 20-30 | 1013 | Yellow-Orange | Orange | 0 | 24.94 |
| 41BP782 | 4 | 1023 | 1035 | 1 | 20-30 | 1029 | Yellow-Orange | Dark Red | 100 | 29.54 |
| 41BP782 | 4 | 1023 | 1035 | 1 | 20-30 | 2014 | Yellow-Orange | Orange | 0 | 20.17 |
| 41BP782 | 4 | 1023 | 1035 | 1 | 20-30 | 2116 | Yellow-Orange | Orange | 0 | 16.31 |
| 41BP782 | 4 | 1023 | 1035 | 2 | 30-40 | 1024 | Yellow-Orange | Orange | 0 | 20.29 |
| 41BP782 | 4 | 1023 | 1035 | 2 | 30-40 | 2116 | Yellow-Orange | Orange | 0 | 17.72 |
| 41BP782 | 4 | 1023 | 1035 | 3 | 40-50 | 1014 | Yellow-Orange | Dark Red | 0 | 29.63 |
| 41BP782 | 4 | 1023 | 1035 | 3 | 40-50 | 1019 | Yellow-Orange | Dark Red | 75 | 30.36 |
| 41BP782 | 4 | 1023 | 1035 | 3 | 40-50 | 2012 | Yellow-Orange | Orange | 25 | 17.38 |
| 41BP782 | 4 | 1023 | 1035 | 3 | 40-50 | 2012 | Yellow-Orange | Orange | 25 | 29.32 |
| 41BP782 | 4 | 1023 | 1035 | 3 | 40-50 | 2014 | Yellow-Orange | Orange | 0 | 14.45 |
| 41BP782 | 4 | 1023 | 1035 | 3 | 40-50 | 2019 | Yellow-Orange | Orange | 0 | 15.6 |
| 41BP782 | 4 | 1023 | 1035 | 4 | 50-60 | 1025 | Yellow-Orange | Orange | 25 | 42.72 |
| 41BP782 | 4 | 1023 | 1035 | 4 | 50-60 | 2014 | Yellow-Orange | Orange | 0 | 18.16 |
| 41BP782 | 5 | 1078 | 1058 | 1 | 10-20 | 1024 | No Fluorescence | Dark Red | 0 | 19.78 |
| 41BP782 | 5 | 1078 | 1058 | 1 | 10-20 | 1013 | Yellow-Orange | Orange | 0 | 26.26 |
| 41BP782 | 5 | 1078 | 1058 | 1 | 10-20 | 1013 | Yellow-Orange | Orange | 0 | 14.87 |
| 41BP782 | 5 | 1078 | 1058 | 1 | 10-20 | 2012 | Yellow-Orange | Orange | 0 | 12.3 |
| 41BP782 | 5 | 1078 | 1058 | 1 | 10-20 | 2012 | Yellow-Orange | Orange | 0 | 36.77 |
| 41BP782 | 5 | 1078 | 1058 | 2 | 20-30 | 2014 | No Fluorescence | Dark Red | 0 | 12.69 |
| 41BP782 | 5 | 1078 | 1058 | 2 | 20-30 | 2014 | Yellow-Orange | Orange | 0 | 13.56 |
| 41BP782 | 5 | 1078 | 1058 | 2 | 20-30 | 2014 | Yellow-Orange | Orange | 0 | 23.19 |
| 41BP782 | 5 | 1078 | 1058 | 2 | 20-30 | 2014 | Yellow-Orange | Orange | 0 | 30.82 |
| 41BP782 | 5 | 1078 | 1058 | 2 | 20-30 | 2019 | Yellow-Orange | Orange | 0 | 15.67 |
| 41BP782 | 5 | 1078 | 1058 | 2 | 20-30 | 2117 | Yellow-Orange | Orange | 25 | 29.95 |
| 41BP782 | 5 | 1078 | 1058 | 3 | 30-40 |  | not done | not done |  |  |
| 41BP782 | 5 | 1078 | 1058 | 3 | 30-40 | 2014 | Orange | Orange | 25 | 31.09 |
| 41BP782 | 5 | 1078 | 1058 | 3 | 30-40 | 2014 | Yellow | Orange | 25 | 16.88 |
| 41BP782 | 5 | 1078 | 1058 | 3 | 30-40 | 2014 | Yellow-Green | Orange | 0 | 16.81 |
| 41BP782 | 5 | 1078 | 1058 | 3 | 30-40 | 1011 | Yellow-Orange | Dark Red | 0 | 16.95 |
| 41BP782 | 5 | 1078 | 1058 | 3 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 17.21 |
| 41BP782 | 5 | 1078 | 1058 | 3 | 30-40 | 1019 | Yellow-Orange | Orange | 0 | 26.62 |
| 41BP782 | 5 | 1078 | 1058 | 3 | 30-40 | 1127 | Yellow-Orange | Dark Red | 100 | 12.99 |
| 41BP782 | 5 | 1078 | 1058 | 3 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 18.61 |
| 41BP782 | 5 | 1078 | 1058 | 3 | 30-40 | 2014 | Yellow-Orange | Orange | 0 | 14.51 |
| 41BP782 | 5 | 1078 | 1058 | 3 | 30-40 | 2014 | Yellow-Orange | Orange | 0 | 16.08 |
| 41BP782 | 5 | 1078 | 1058 | 3 | 30-40 | 2014 | Yellow-Orange | Orange | 0 | 17.64 |
| 41BP782 | 5 | 1078 | 1058 | 3 | 30-40 | 2014 | Yellow-Orange | Orange | 0 | 13.36 |
| 41BP782 | 5 | 1078 | 1058 | 3 | 30-40 | 2116 | Yellow-Orange | Orange | 0 | 16.16 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP782 | 5 | 1078 | 1058 | 4 | 40-50 | 1014 | Yellow-Orange | Orange | 0 | 29.08 |
| 41BP782 | 5 | 1078 | 1058 | 4 | 40-50 | 1014 | Yellow-Orange | Orange | 25 | 89.11 |
| 41BP782 | 5 | 1078 | 1058 | 4 | 40-50 | 1014 | Yellow-Orange | Orange | 0 | 28.22 |
| 41BP782 | 5 | 1078 | 1058 | 4 | 40-50 | 2014 | Yellow-Orange | Orange | 0 | 12.83 |
| 41BP782 | 5 | 1078 | 1058 | 4 | 40-50 | 2117 | Yellow-Orange | Orange | 0 | 40.69 |
| 41BP782 | 5 | 1078 | 1058 | 4 | 40-50 | 2117 | Yellow-Orange | Orange | 0 | 20.18 |
| 41BP782 | 6 | 1093 | 1071 | 1 | 11-20 | 1127 | No Fluorescence | Dark Red | 0 | 20.54 |
| 41BP782 | 6 | 1093 | 1071 | 1 | 11-20 | 2014 | No Fluorescence | Dark Red | 0 | 14.71 |
| 41BP782 | 6 | 1093 | 1071 | 1 | 11-20 | 2014 | Yellow-Orange | Orange | 0 | 14.41 |
| 41BP782 | 6 | 1093 | 1071 | 1 | 11-20 | 2116 | Yellow-Orange | Orange | 0 | 16.2 |
| 41BP782 | 6 | 1093 | 1071 | 1 | 11-20 | 2117 | Yellow-Orange | Orange | 0 | 16.08 |
| 41BP782 | 6 | 1093 | 1071 | 2 | 20-30 | 2012 | Yellow-Orange | Orange | 0 | 16.51 |
| 41BP782 | 6 | 1093 | 1071 | 2 | 20-30 | 2012 | Yellow-Orange | Orange | 0 | 18.89 |
| 41BP782 | 6 | 1093 | 1071 | 2 | 20-30 | 2014 | Yellow-Orange | Orange | 0 | 14.21 |
| 41BP782 | 6 | 1093 | 1071 | 3 | 30-40 | 1127 | No Fluorescence | Dark Red | 25 | 25.83 |
| 41BP782 | 6 | 1093 | 1071 | 3 | 30-40 | 1018 | Yellow-Orange | Orange | 25 | 52.98 |
| 41BP782 | 6 | 1093 | 1071 | 3 | 30-40 | 2117 | Yellow-Orange | Orange | 0 | 14.21 |
| 41BP782 | 6 | 1093 | 1071 | 4 | 40-50 | 1012 | Yellow-Orange | Dark Red | 0 | 25.52 |
| 41BP782 | 6 | 1093 | 1071 | 4 | 40-50 | 1013 | Yellow-Orange | Orange | 0 | 24 |
| 41BP782 | 6 | 1093 | 1071 | 4 | 40-50 | 1013 | Yellow-Orange | Orange | 0 | 16.6 |
| 41BP782 | 6 | 1093 | 1071 | 4 | 40-50 | 1014 | Yellow-Orange | Orange | 0 | 41.03 |
| 41BP782 | 6 | 1093 | 1071 | 4 | 40-50 | 1014 | Yellow-Orange | Orange | 0 | 27.47 |
| 41BP782 | 6 | 1093 | 1071 | 4 | 40-50 | 1127 | Yellow-Orange | Dark Red | 0 | 18.03 |
| 41BP782 | 6 | 1093 | 1071 | 4 | 40-50 | 2012 | Yellow-Orange | Orange | 0 | 27.14 |
| 41BP782 | 6 | 1093 | 1071 | 4 | 40-50 | 2012 | Yellow-Orange | Orange | 0 | 27.15 |
| 41BP782 | 6 | 1093 | 1071 | 5 | 50-60 | 2014 | not done | not done | 0 | 13.95 |
| 41BP782 | 6 | 1093 | 1071 | 5 | 50-60 | 1014 | Yellow-Orange | Dark Red | 75 | 28.74 |
| 41BP782 | 6 | 1093 | 1071 | 5 | 50-60 | 2012 | Yellow-Orange | Orange | 0 | 24.54 |
| 41BP782 | 6 | 1093 | 1071 | 5 | 50-60 | 2012 | Yellow-Orange | Orange | 0 | 26.33 |
| 41BP782 | 6 | 1093 | 1071 | 5 | 50-60 | 2116 | Yellow-Orange | Orange | 0 | 11.36 |
| 41BP782 | 6 | 1093 | 1071 | 6 | 60-70 | 1127 | Orange | Dark Red | 75 | 23.39 |
| 41BP782 | 6 | 1093 | 1071 | 6 | 60-70 | 1127 | Yellow-Orange | Dark Red | 0 | 17.29 |
| 41BP782 | 6 | 1093 | 1071 | 6 | 60-70 | 2012 | Yellow-Orange | Orange | 0 | 25.94 |
| 41BP782 | 6 | 1093 | 1071 | 6 | 60-70 | 2012 | Yellow-Orange | Yellow-Orange | 0 | 41.74 |
| 41BP782 | 6 | 1093 | 1071 | 6 | 60-70 | 2116 | Yellow-Orange | Orange | 0 | 14.12 |
| 41BP782 | 6 | 1093 | 1071 | 6 | 60-70 | 2116 | Yellow-Orange | Orange | 0 | 26.8 |
| 41BP782 | 6 | 1093 | 1071 | 7 | 70-80 | 1014 | Yellow-Orange | Orange | 75 | 51.78 |
| 41BP782 | 6 | 1093 | 1071 | 7 | 70-80 | 1014 | Yellow-Orange | Orange | 25 | 67.35 |
| 41BP782 | 6 | 1093 | 1071 | 7 | 70-80 | 2012 | Yellow-Orange | Orange | 0 | 39.47 |
| 41BP782 | 7 | 1008 | 1002 | 1 | 20-30 | 1115 | No Fluorescence | Dark Red | 0 | 13.97 |
| 41BP782 | 7 | 1008 | 1002 | 1 | 20-30 | 1127 | No Fluorescence | Dark Red | 100 | 11.06 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP782 | 7 | 1008 | 1002 | 1 | 20-30 | 2014 | No Fluorescence | Dark Red | 0 | 9.46 |
| 41BP782 | 7 | 1008 | 1002 | 1 | 20-30 | 1013 | Yellow-Orange | Orange | 0 | 25.54 |
| 41BP782 | 7 | 1008 | 1002 | 1 | 20-30 | 1013 | Yellow-Orange | Orange | 0 | 18.33 |
| 41BP782 | 7 | 1008 | 1002 | 1 | 20-30 | 1019 | Yellow-Orange | Orange | 0 | 28.98 |
| 41BP782 | 7 | 1008 | 1002 | 1 | 20-30 | 2012 | Yellow-Orange | Orange | 0 | 11.2 |
| 41BP782 | 7 | 1008 | 1002 | 1 | 20-30 | 2012 | Yellow-Orange | Orange | 0 | 11.58 |
| 41BP782 | 7 | 1008 | 1002 | 1 | 20-30 | 2012 | Yellow-Orange | Orange | 0 | 13.46 |
| 41BP782 | 7 | 1008 | 1002 | 1 | 20-30 | 2012 | Yellow-Orange | Orange | 0 | 17.13 |
| 41BP782 | 7 | 1008 | 1002 | 1 | 20-30 | 2012 | Yellow-Orange | Orange | 0 | 20.31 |
| 41BP782 | 7 | 1008 | 1002 | 1 | 20-30 | 2014 | Yellow-Orange | Orange | 0 | 17.82 |
| 41BP782 | 7 | 1008 | 1002 | 2 | 30-40 | 1111 | No Fluorescence | Dark Red | 0 | 12.46 |
| 41BP782 | 7 | 1008 | 1002 | 2 | 30-40 | 2014 | No Fluorescence | Dark Red | 0 | 18.5 |
| 41BP782 | 7 | 1008 | 1002 | 2 | 30-40 | 2014 | Yellow | Orange | 0 | 9.04 |
| 41BP782 | 7 | 1008 | 1002 | 2 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 21.47 |
| 41BP782 | 7 | 1008 | 1002 | 2 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 11.94 |
| 41BP782 | 7 | 1008 | 1002 | 2 | 30-40 | 1024 | Yellow-Orange | Orange | 25 | 46.09 |
| 41BP782 | 7 | 1008 | 1002 | 2 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 12.63 |
| 41BP782 | 7 | 1008 | 1002 | 2 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 17.75 |
| 41BP782 | 7 | 1008 | 1002 | 2 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 17.82 |
| 41BP782 | 7 | 1008 | 1002 | 2 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 18.24 |
| 41BP782 | 7 | 1008 | 1002 | 2 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 22.73 |
| 41BP782 | 7 | 1008 | 1002 | 2 | 30-40 | 2013 | Yellow-Orange | Orange | 0 | 13.53 |
| 41BP782 | 7 | 1008 | 1002 | 2 | 30-40 | 2013 | Yellow-Orange | Orange | 0 | 12.88 |
| 41BP782 | 7 | 1008 | 1002 | 2 | 30-40 | 2014 | Yellow-Orange | Orange | 0 | 32.19 |
| 41BP782 | 7 | 1008 | 1002 | 2 | 30-40 | 2014 | Yellow-Orange | Orange | 0 | 12.72 |
| 41BP782 | 7 | 1008 | 1002 | 2 | 30-40 | 2014 | Yellow-Orange | Orange | 0 | 20.03 |
| 41BP782 | 7 | 1008 | 1002 | 2 | 30-40 | 2014 | Yellow-Orange | Orange | 0 | 18.43 |
| 41BP782 | 7 | 1008 | 1002 | 2 | 30-40 | 2014 | Yellow-Orange | Orange | 0 | 14.37 |
| 41BP782 | 7 | 1008 | 1002 | 2 | 30-40 | 2014 | Yellow-Orange | Orange | 0 | 15.11 |
| 41BP782 | 7 | 1008 | 1002 | 2 | 30-40 | 2014 | Yellow-Orange | Orange | 0 | 13.59 |
| 41BP782 | 7 | 1008 | 1002 | 2 | 30-40 | 2014 | Yellow-Orange | Orange | 0 | 12.09 |
| 41BP782 | 7 | 1008 | 1002 | 2 | 30-40 | 2117 | Yellow-Orange | Orange | 0 | 9.81 |
| 41BP782 | 7 | 1008 | 1002 | 2 | 30-40 | 2117 | Yellow-Orange | Orange | 25 | 15.23 |
| 41BP782 | 7 | 1008 | 1002 | 3 | 40-50 | 2012 | Yellow-Orange | Orange | 0 | 12.46 |
| 41BP782 | 7 | 1008 | 1002 | 3 | 40-50 | 2012 | Yellow-Orange | Orange | 0 | 14.42 |
| 41BP782 | 7 | 1008 | 1002 | 3 | 40-50 | 2012 | Yellow-Orange | Orange | 0 | 18.8 |
| 41BP782 | 7 | 1008 | 1002 | 3 | 40-50 | 2012 | Yellow-Orange | Orange | 0 | 20.4 |
| 41BP782 | 7 | 1008 | 1002 | 3 | 40-50 | 2014 | Yellow-Orange | Orange | 0 | 18.04 |
| 41BP782 | 7 | 1008 | 1002 | 3 | 40-50 | 2014 | Yellow-Orange | Orange | 0 | 17.9 |
| 41BP782 | 7 | 1008 | 1002 | 3 | 40-50 | 2019 | Yellow-Orange | Orange | 0 | 17.93 |
| 41BP782 | 7 | 1008 | 1002 | 3 | 40-50 | 2019 | Yellow-Orange | Orange | 0 | 13.37 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP782 | 7 | 1008 | 1002 | 3 | 40-50 | 2019 | Yellow-Orange | Orange | 0 | 17.35 |
| 41BP782 | 7 | 1008 | 1002 | 3 | 40-50 | 2019 | Yellow-Orange | Orange | 0 | 24.15 |
| 41BP792 | 1 | 987 | 977 | 2 | 30-40 | 2013 | Yellow | Orange | 0 | 16.42 |
| 41BP792 | 1 | 987 | 977 | 2 | 30-40 | 1010 | Yellow-Orange | Orange | 25 | 26.06 |
| 41BP792 | 1 | 987 | 977 | 2 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 26.32 |
| 41BP792 | 1 | 987 | 977 | 2 | 30-40 | 1018 | Yellow-Orange | Orange | 0 | 15.44 |
| 41BP792 | 1 | 987 | 977 | 2 | 30-40 | 1116 | Yellow-Orange | Orange | 25 | 35.77 |
| 41BP792 | 1 | 987 | 977 | 2 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 24.21 |
| 41BP792 | 1 | 987 | 977 | 2 | 30-40 | 2013 | Yellow-Orange | Orange | 0 | 16.64 |
| 41BP792 | 1 | 987 | 977 | 3 | 40-50 | 1014 | Yellow-Orange | Dark Red | 25 | 32.27 |
| 41BP792 | 1 | 987 | 977 | 3 | 40-50 | 2016 | Yellow-Orange | Orange | 0 | 13.21 |
| 41BP792 | 1 | 987 | 977 | 4 | 50-60 | 1115 | Yellow | Orange | 0 | 31.26 |
| 41BP792 | 1 | 987 | 977 | 4 | 50-60 | 2012 | Yellow-Orange | Orange | 0 | 23.13 |
| 41BP792 | 2 | 1015 | 1007 | 1 | 16-20 | 2012 | Yellow-Orange | Orange | 0 | 17.05 |
| 41BP792 | 2 | 1015 | 1007 | 2 | 20-30 | 1117 | Dark Red | Dark Red | 75 | 30.46 |
| 41BP792 | 2 | 1015 | 1007 | 2 | 20-30 | 1013 | Yellow-Orange | Orange | 0 | 14.37 |
| 41BP792 | 2 | 1015 | 1007 | 2 | 20-30 | 1015 | Yellow-Orange | Orange | 0 | 15.41 |
| 41BP792 | 2 | 1015 | 1007 | 2 | 20-30 | 1116 | Yellow-Orange | Orange | 0 | 15.42 |
| 41BP792 | 2 | 1015 | 1007 | 2 | 20-30 | 2012 | Yellow-Orange | Orange | 0 | 13.3 |
| 41BP792 | 2 | 1015 | 1007 | 2 | 20-30 | 2116 | Yellow-Orange | Orange | 0 | 14.69 |
| 41BP792 | 2 | 1015 | 1007 | 3 | 30-40 | 1015 | Yellow-Orange | Dark Red | 0 | 16.68 |
| 41BP792 | 2 | 1015 | 1007 | 3 | 30-40 | 1116 | Yellow-Orange | Orange | 0 | 19.34 |
| 41BP792 | 2 | 1015 | 1007 | 4 | 40-50 | 1015 | Dark Red | Dark Red | 0 | 14.44 |
| 41BP792 | 2 | 1015 | 1007 | 4 | 40-50 | 1117 | Dark Red | Dark Red | 0 | 13.71 |
| 41BP792 | 2 | 1015 | 1007 | 4 | 40-50 | 1013 | No Fluorescence | Dark Red | 25 | 19.66 |
| 41BP792 | 2 | 1015 | 1007 | 4 | 40-50 | 1117 | No Fluorescence | Dark Red | 25 | 11.18 |
| 41BP792 | 2 | 1015 | 1007 | 4 | 40-50 | 1125 | No Fluorescence | Dark Red | 0 | 15.63 |
| 41BP792 | 2 | 1015 | 1007 | 4 | 40-50 | 1125 | No Fluorescence | Dark Red | 0 | 20.75 |
| 41BP792 | 2 | 1015 | 1007 | 4 | 40-50 | 1015 | Orange | Dark Red | 25 | 29.21 |
| 41BP792 | 2 | 1015 | 1007 | 4 | 40-50 | 2116 | Yellow-Green | Orange | 0 | 19.71 |
| 41BP792 | 2 | 1015 | 1007 | 4 | 40-50 | 2012 | Yellow-Orange | Orange | 0 | 17.09 |
| 41BP792 | 2 | 1015 | 1007 | 4 | 40-50 | 2012 | Yellow-Orange | Orange | 0 | 10.54 |
| 41BP792 | 3 | 1011 | 1015 | 1 | 11-20 | 1011 | No Fluorescence | Dark Red | 0 | 19.68 |
| 41BP792 | 3 | 1011 | 1015 | 1 | 11-20 | 1117 | No Fluorescence | Dark Red | 0 | 16.67 |
| 41BP792 | 3 | 1011 | 1015 | 1 | 11-20 | 1125 | No Fluorescence | Dark Red | 0 | 13.52 |
| 41BP792 | 3 | 1011 | 1015 | 1 | 11-20 | 1125 | No Fluorescence | Dark Red | 0 | 15.41 |
| 41BP792 | 3 | 1011 | 1015 | 1 | 11-20 | 2016 | No Fluorescence | No Fluorescence | 0 | 10.2 |
| 41BP792 | 3 | 1011 | 1015 | 1 | 11-20 | 1013 | Yellow-Orange | Orange | 0 | 22.28 |
| 41BP792 | 3 | 1011 | 1015 | 1 | 11-20 | 1013 | Yellow-Orange | Orange | 0 | 23.39 |
| 41BP792 | 3 | 1011 | 1015 | 1 | 11-20 | 1019 | Yellow-Orange | Orange | 100 | 25.45 |
| 41BP792 | 3 | 1011 | 1015 | 1 | 11-20 | 2010 | Yellow-Orange | No Fluorescence | 0 | 10.13 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP792 | 3 | 1011 | 1015 | 1 | 11-20 | 2010 | Yellow-Orange | Orange | 0 | 13.4 |
| 41BP792 | 3 | 1011 | 1015 | 1 | 11-20 | 2010 | Yellow-Orange | Orange | 0 | 14.62 |
| 41BP792 | 3 | 1011 | 1015 | 1 | 11-20 | 2010 | Yellow-Orange | Orange | 25 | 24.23 |
| 41BP792 | 3 | 1011 | 1015 | 1 | 11-20 | 2012 | Yellow-Orange | Orange | 0 | 14.69 |
| 41BP792 | 3 | 1011 | 1015 | 1 | 11-20 | 2012 | Yellow-Orange | Orange | 0 | 11.76 |
| 41BP792 | 3 | 1011 | 1015 | 1 | 11-20 | 2012 | Yellow-Orange | Orange | 0 | 9.32 |
| 41BP792 | 3 | 1011 | 1015 | 3 | 31-40 | 1013 | Yellow-Orange | Yellow-Orange | 0 | 25.77 |
| 41BP792 | 3 | 1011 | 1015 | 3 | 31-40 | 1014 | Yellow-Orange | Orange | 0 | 42.55 |
| 41BP792 | 3 | 1011 | 1015 | 6 | 60-72 | 1014 | Yellow-Orange | Orange | 25 | 34.67 |
| 41BP792 | 4 | 1015 | 1033 | 1 | 11-20 | 1010 | Yellow-Orange | Orange | 0 | 24.6 |
| 41BP792 | 4 | 1015 | 1033 | 1 | 11-20 | 2013 | Yellow-Orange | Orange | 0 | 16.22 |
| 41BP792 | 4 | 1015 | 1033 | 2 | 20-30 | 1014 | Yellow-Orange | Orange | 0 | 14.11 |
| 41BP792 | 4 | 1015 | 1033 | 2 | 20-30 | 1014 | Yellow-Orange | Orange | 0 | 10.97 |
| 41BP792 | 4 | 1015 | 1033 | 2 | 20-30 | 1116 | Yellow-Orange | Orange | 0 | 24.01 |
| 41BP792 | 4 | 1015 | 1033 | 2 | 20-30 | 1116 | Yellow-Orange | Orange | 25 | 27.06 |
| 41BP792 | 4 | 1015 | 1033 | 2 | 20-30 | 1116 | Yellow-Orange | Orange | 75 | 23.59 |
| 41BP792 | 4 | 1015 | 1033 | 3 | 30-40 | 1010 | Yellow-Orange | Orange | 25 | 48.06 |
| 41BP792 | 4 | 1015 | 1033 | 3 | 30-40 | 2116 | Yellow-Orange | Orange | 0 | 21.89 |
| 41BP792 | 4 | 1015 | 1033 | 4 | 40-50 | 2010 | Yellow-Orange | Orange | 0 | 26.74 |
| 41BP792 | 4 | 1015 | 1033 | 5 | 50-58 | 1013 | Yellow-Orange | Orange | 0 | 18.03 |
| 41BP801 | 1 | 1017 | 1007 | 2 | 20-30 | 1117 | No Fluorescence | Dark Red | 0 | 8.76 |
| 41BP801 | 1 | 1017 | 1007 | 2 | 20-30 | 1117 | No Fluorescence | Yellow-Orange | 0 | 17.01 |
| 41BP801 | 1 | 1017 | 1007 | 2 | 20-30 | 1014 | Yellow-Orange | Orange | 0 | 10.61 |
| 41BP801 | 1 | 1017 | 1007 | 2 | 20-30 | 1014 | Yellow-Orange | Orange | 0 | 11.41 |
| 41BP801 | 1 | 1017 | 1007 | 2 | 20-30 | 1014 | Yellow-Orange | Orange | 0 | 12.94 |
| 41BP801 | 1 | 1017 | 1007 | 2 | 20-30 | 1014 | Yellow-Orange | Orange | 0 | 17.95 |
| 41BP801 | 1 | 1017 | 1007 | 2 | 20-30 | 1014 | Yellow-Orange | Orange | 0 | 20.08 |
| 41BP801 | 1 | 1017 | 1007 | 2 | 20-30 | 1014 | Yellow-Orange | Orange | 0 | 35.02 |
| 41BP801 | 1 | 1017 | 1007 | 2 | 20-30 | 1014 | Yellow-Orange | Orange | 75 | 47.53 |
| 41BP801 | 1 | 1017 | 1007 | 2 | 20-30 | 1016 | Yellow-Orange | Orange | 0 | 12.33 |
| 41BP801 | 1 | 1017 | 1007 | 2 | 20-30 | 1115 | Yellow-Orange | Orange | 0 | 21.21 |
| 41BP801 | 1 | 1017 | 1007 | 2 | 20-30 | 1116 | Yellow-Orange | Orange | 0 | 13.38 |
| 41BP801 | 1 | 1017 | 1007 | 2 | 20-30 | 1116 | Yellow-Orange | Orange | 0 | 13.78 |
| 41BP801 | 1 | 1017 | 1007 | 2 | 20-30 | 1116 | Yellow-Orange | Dark Red | 0 | 20.01 |
| 41BP801 | 1 | 1017 | 1007 | 2 | 20-30 | 1123 | Yellow-Orange | Orange | 25 | 25.62 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 1019 | No Fluorescence | Dark Red | 0 | 16.16 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 1111 | No Fluorescence | Dark Red | 25 | 16.53 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 1120 | No Fluorescence | Dark Red | 0 | 22.89 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 1014 | Orange | Orange | 100 | 22.83 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 1013 | Yellow | Orange | 0 | 15.73 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 1018 | Yellow | Orange | 0 | 17.01 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 2012 | Yellow | Orange | 0 | 34.44 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 2013 | Yellow | Orange | 0 | 19.99 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 1014 | Yellow-Green | Orange | 0 | 13.08 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 1019 | Yellow-Green | Orange | 75 | 23.01 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 14.22 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 17.75 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 1014 | Yellow-Orange | Orange | 0 | 11.36 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 1014 | Yellow-Orange | Orange | 0 | 13.31 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 1014 | Yellow-Orange | Orange | 0 | 16.49 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 1014 | Yellow-Orange | Orange | 0 | 29.53 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 1016 | Yellow-Orange | Orange | 0 | 19.49 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 1016 | Yellow-Orange | Orange | 0 | 21.33 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 1018 | Yellow-Orange | Orange | 0 | 9.72 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 1018 | Yellow-Orange | Orange | 0 | 13.28 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 1110 | Yellow-Orange | Orange | 25 | 25.19 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 18.34 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 21.1 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 32.05 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 2014 | Yellow-Orange | Orange | 0 | 22.21 |
| 41BP801 | 1 | 1017 | 1007 | 3 | 30-40 | 2113 | Yellow-Orange | Orange | 0 | 16.42 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 2013 | not done | not done | 0 | 15.28 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1010 | No Fluorescence | Dark Red | 0 | 14.24 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1013 | No Fluorescence | Dark Red | 0 | 11.23 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1116 | No Fluorescence | Dark Red | 0 | 15.61 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1117 | No Fluorescence | Dark Red | 75 | 13.25 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 2014 | No Fluorescence | Dark Red | 25 | 12.62 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1014 | Orange | Orange | 0 | 18.39 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1013 | Yellow | Orange | 0 | 22.36 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1014 | Yellow | Orange | 0 | 16.07 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1010 | Yellow-Orange | Orange | 0 | 13.12 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1013 | Yellow-Orange | Orange | 0 | 12.17 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1013 | Yellow-Orange | Orange | 0 | 13.11 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1013 | Yellow-Orange | Orange | 0 | 17.92 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1013 | Yellow-Orange | Orange | 0 | 18.14 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1013 | Yellow-Orange | Orange | 0 | 18.19 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1013 | Yellow-Orange | Orange | 0 | 19.18 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1013 | Yellow-Orange | Orange | 0 | 19.52 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1014 | Yellow-Orange | Orange | 0 | 12.14 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1014 | Yellow-Orange | Orange | 0 | 19.74 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1014 | Yellow-Orange | Orange | 0 | 19.8 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1014 | Yellow-Orange | Orange | 25 | 26.3 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1014 | Yellow-Orange | Orange | 0 | 31.74 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1014 | Yellow-Orange | Orange | 75 | 44.37 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1018 | Yellow-Orange | Orange | 0 | 13.69 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1116 | Yellow-Orange | Dark Red | 0 | 10.14 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1116 | Yellow-Orange | Dark Red | 0 | 13.27 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1123 | Yellow-Orange | Orange | 0 | 43.33 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 2010 | Yellow-Orange | Yellow-Orange | 0 | 12.71 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 2012 | Yellow-Orange | Dark Red | 0 | 30.43 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 2012 | Yellow-Orange | Orange | 25 | 36.23 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 2014 | Yellow-Orange | Orange | 0 | 15.38 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 2014 | Yellow-Orange | Orange | 25 | 16.73 |
| 41BP801 | 1 | 1017 | 1007 | 4 | 40-50 | 1012 | Yellow-Orange | Orange | 0 | 15.66 |
| 41BP801 | 1 | 1017 | 1007 | 5 | 50-60 | 2012 | Yellow | Orange | 0 | 17 |
| 41BP801 | 1 | 1017 | 1007 | 5 | 50-60 | 1014 | Yellow-Orange | Orange | 0 | 23.7 |
| 41BP801 | 1 | 1017 | 1007 | 5 | 50-60 | 1112 | Yellow-Orange | Orange | 0 | 12.52 |
| 41BP801 | 1 | 1017 | 1007 | 5 | 50-60 | 1112 | Yellow-Orange | Orange | 25 | 25.97 |
| 41BP801 | 1 | 1017 | 1007 | 5 | 50-60 | 2012 | Yellow-Orange | Orange | 25 | 32.26 |
| 41BP801 | 1 | 1017 | 1007 | 5 | 50-60 | 2014 | Yellow-Orange | Orange | 0 | 15.52 |
| 41BP801 | 1 | 1017 | 1007 | 5 | 50-60 | 2014 | Yellow-Orange | Orange | 0 | 22.56 |
| 41BP801 | 1 | 1017 | 1007 | 5 | 50-60 | 2014 | Yellow-Orange | Orange | 0 | 28.41 |
| 41BP801 | 1 | 1017 | 1007 | 5 | 50-60 | 2014 | Yellow-Orange | Orange | 25 | 46.47 |
| 41BP801 | 1 | 1017 | 1007 | 6 | 60-63 | 1127 | No Fluorescence | Dark Red | 0 | 29.08 |
| 41BP801 | 1 | 1017 | 1007 | 6 | 60-63 | 2013 | Yellow-Green | Orange | 0 | 11.95 |
| 41BP801 | 1 | 1017 | 1007 | 6 | 60-63 | 1116 | Yellow-Orange | Orange | 0 | 18.2 |
| 41BP801 | 1 | 1017 | 1007 | 6 | 60-63 | 1117 | Yellow-Orange | Orange | 0 | 15.56 |
| 41BP801 | 1 | 1017 | 1007 | 6 | 60-63 | 1127 | Yellow-Orange | Orange | 0 | 18.99 |
| 41BP801 | 1 | 1017 | 1007 | 6 | 60-63 | 2013 | Yellow-Orange | Orange | 0 | 10.97 |
| 41BP801 | 1 | 1017 | 1007 | 6 | 60-63 | 2013 | Yellow-Orange | Orange | 0 | 12.35 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 1110 | No Fluorescence | Dark Red | 0 | 11.68 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 1115 | No Fluorescence | Dark Red | 0 | 27.68 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 1117 | No Fluorescence | Dark Red | 0 | 14.77 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 1117 | No Fluorescence | Dark Red | 0 | 24.43 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 1117 | No Fluorescence | Dark Red | 25 | 27.27 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 1123 | No Fluorescence | Dark Red | 25 | 20.62 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 2015 | Yellow | Orange | 0 | 16.7 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 2015 | Yellow | Orange | 75 | 28.45 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 1013 | Yellow-Orange | Orange | 0 | 12.67 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 1013 | Yellow-Orange | Orange | 0 | 17.01 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 1014 | Yellow-Orange | Orange | 0 | 13.59 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 1014 | Yellow-Orange | Orange | 0 | 20.69 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 1019 | Yellow-Orange | Orange | 0 | 8.19 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 1019 | Yellow-Orange | Orange | 0 | 13.56 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 1019 | Yellow-Orange | Orange | 25 | 18.06 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 1019 | Yellow-Orange | Orange | 100 | 52.28 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 1110 | Yellow-Orange | Orange | 0 | 25.73 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 1116 | Yellow-Orange | Dark Red | 0 | 8.32 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 1116 | Yellow-Orange | Orange | 25 | 17.91 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 1117 | Yellow-Orange | Orange | 0 | 15.9 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 1123 | Yellow-Orange | Orange | 0 | 17.08 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 1123 | Yellow-Orange | Orange | 75 | 19.54 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 2019 | Yellow-Orange | Orange | 0 | 12.37 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 2019 | Yellow-Orange | Orange | 0 | 13.17 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 2019 | Yellow-Orange | Orange | 0 | 15.45 |
| 41BP801 | 2 | 1010 | 1018 | 2 | 20-30 | 2113 | Yellow-Orange | Orange | 0 | 24.65 |
| 41BP801 | 2 | 1010 | 1018 | 3 | 30-40 | 1010 | No Fluorescence | Dark Red | 0 | 9.65 |
| 41BP801 | 2 | 1010 | 1018 | 3 | 30-40 | 1127 | No Fluorescence | Dark Red | 0 | 23.01 |
| 41BP801 | 2 | 1010 | 1018 | 3 | 30-40 | 2010 | No Fluorescence | Dark Red | 0 | 12.96 |
| 41BP801 | 2 | 1010 | 1018 | 3 | 30-40 | 2010 | No Fluorescence | Dark Red | 0 | 19.13 |
| 41BP801 | 2 | 1010 | 1018 | 3 | 30-40 | 1116 | Orange | Dark Red | 0 | 22.83 |
| 41BP801 | 2 | 1010 | 1018 | 3 | 30-40 | 1018 | Yellow | Orange | 0 | 15.47 |
| 41BP801 | 2 | 1010 | 1018 | 3 | 30-40 | 2015 | Yellow | Orange | 0 | 24.41 |
| 41BP801 | 2 | 1010 | 1018 | 3 | 30-40 | 1010 | Yellow-Orange | Orange | 0 | 16.05 |
| 41BP801 | 2 | 1010 | 1018 | 3 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 12.58 |
| 41BP801 | 2 | 1010 | 1018 | 3 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 12.96 |
| 41BP801 | 2 | 1010 | 1018 | 3 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 13.08 |
| 41BP801 | 2 | 1010 | 1018 | 3 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 14.59 |
| 41BP801 | 2 | 1010 | 1018 | 3 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 17.91 |
| 41BP801 | 2 | 1010 | 1018 | 3 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 19.21 |
| 41BP801 | 2 | 1010 | 1018 | 3 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 19.75 |
| 41BP801 | 2 | 1010 | 1018 | 3 | 30-40 | 1018 | Yellow-Orange | Orange | 0 | 29.33 |
| 41BP801 | 2 | 1010 | 1018 | 3 | 30-40 | 1117 | Yellow-Orange | No Fluorescence | 0 | 24.28 |
| 41BP801 | 2 | 1010 | 1018 | 3 | 30-40 | 2014 | Yellow-Orange | Orange | 0 | 9.26 |
| 41BP801 | 2 | 1010 | 1018 | 3 | 30-40 | 2014 | Yellow-Orange | Orange | 0 | 16.03 |
| 41BP801 | 2 | 1010 | 1018 | 3 | 30-40 | 2019 | Yellow-Orange | Orange | 0 | 14.75 |
| 41BP801 | 2 | 1010 | 1018 | 3 | 30-40 | 2019 | Yellow-Orange | Orange | 0 | 20.75 |
| 41BP801 | 2 | 1010 | 1018 | 3 | 30-40 | 2110 | Yellow-Orange | Orange | 0 | 11.58 |
| 41BP801 | 2 | 1010 | 1018 | 4 | 40-50 | 1013 | No Fluorescence | Orange | 25 | 12.41 |
| 41BP801 | 2 | 1010 | 1018 | 4 | 40-50 | 1117 | No Fluorescence | Dark Red | 0 | 17.63 |
| 41BP801 | 2 | 1010 | 1018 | 4 | 40-50 | 1117 | No Fluorescence | Dark Red | 0 | 17.63 |
| 41BP801 | 2 | 1010 | 1018 | 4 | 40-50 | 1117 | No Fluorescence | Orange | 0 | 18.75 |
| 41BP801 | 2 | 1010 | 1018 | 4 | 40-50 | 2010 | No Fluorescence | Dark Red | 0 | 14.7 |
| 41BP801 | 2 | 1010 | 1018 | 4 | 40-50 | 1014 | Orange | Dark Red | 0 | 24.38 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP801 | 2 | 1010 | 1018 | 4 | 40-50 | 1013 | Yellow-Orange | Orange | 0 | 13.33 |
| 41BP801 | 2 | 1010 | 1018 | 4 | 40-50 | 1013 | Yellow-Orange | Orange | 0 | 17.11 |
| 41BP801 | 2 | 1010 | 1018 | 4 | 40-50 | 1013 | Yellow-Orange | Orange | 0 | 18.46 |
| 41BP801 | 2 | 1010 | 1018 | 4 | 40-50 | 1013 | Yellow-Orange | Orange | 0 | 19.83 |
| 41BP801 | 2 | 1010 | 1018 | 4 | 40-50 | 1018 | Yellow-Orange | Orange | 0 | 18.15 |
| 41BP801 | 2 | 1010 | 1018 | 4 | 40-50 | 1019 | Yellow-Orange | Orange | 0 | 9.86 |
| 41BP801 | 2 | 1010 | 1018 | 4 | 40-50 | 1019 | Yellow-Orange | Orange | 0 | 19.82 |
| 41BP801 | 2 | 1010 | 1018 | 4 | 40-50 | 1019 | Yellow-Orange | Orange | 0 | 20.08 |
| 41BP801 | 2 | 1010 | 1018 | 4 | 40-50 | 1019 | Yellow-Orange | Orange | 0 | 28.01 |
| 41BP801 | 2 | 1010 | 1018 | 4 | 40-50 | 1019 | Yellow-Orange | Orange | 0 | 30.34 |
| 41BP801 | 2 | 1010 | 1018 | 4 | 40-50 | 1116 | Yellow-Orange | Orange | 25 | 11.86 |
| 41BP801 | 2 | 1010 | 1018 | 4 | 40-50 | 2010 | Yellow-Orange | Orange | 0 | 13.51 |
| 41BP801 | 2 | 1010 | 1018 | 4 | 40-50 | 2112 | Yellow-Orange | Orange | 0 | 16.76 |
| 41BP801 | 2 | 1010 | 1018 | 4 | 40-50 | 2113 | Yellow-Orange | Orange | 0 | 16.54 |
| 41BP801 | 2 | 1010 | 1018 | 5 | 50-60 | 1115 | No Fluorescence | Dark Red | 0 | 17.71 |
| 41BP801 | 2 | 1010 | 1018 | 5 | 50-60 | 1116 | No Fluorescence | Dark Red | 0 | 11.15 |
| 41BP801 | 2 | 1010 | 1018 | 5 | 50-60 | 1120 | No Fluorescence | Dark Red | 0 | 21.17 |
| 41BP801 | 2 | 1010 | 1018 | 5 | 50-60 | 1013 | Yellow | Orange | 0 | 16.02 |
| 41BP801 | 2 | 1010 | 1018 | 5 | 50-60 | 1018 | Yellow | Orange | 0 | 26 |
| 41BP801 | 2 | 1010 | 1018 | 5 | 50-60 | 1014 | Yellow-Orange | Orange | 0 | 15.4 |
| 41BP801 | 2 | 1010 | 1018 | 5 | 50-60 | 1019 | Yellow-Orange | Orange | 0 | 13.68 |
| 41BP801 | 2 | 1010 | 1018 | 5 | 50-60 | 1019 | Yellow-Orange | Orange | 0 | 26.27 |
| 41BP801 | 2 | 1010 | 1018 | 5 | 50-60 | 1019 | Yellow-Orange | Orange | 25 | 43.33 |
| 41BP801 | 2 | 1010 | 1018 | 5 | 50-60 | 2013 | Yellow-Orange | Orange | 0 | 20.1 |
| 41BP801 | 2 | 1010 | 1018 | 5 | 50-60 | 2014 | Yellow-Orange | Orange | 0 | 10.53 |
| 41BP801 | 2 | 1010 | 1018 | 5 | 50-60 | 2014 | Yellow-Orange | Orange | 0 | 14.18 |
| 41BP801 | 2 | 1010 | 1018 | 5 | 50-60 | 2014 | Yellow-Orange | Orange | 0 | 14.87 |
| 41BP801 | 2 | 1010 | 1018 | 5 | 50-60 | 2014 | Yellow-Orange | Dark Red | 0 | 14.88 |
| 41BP801 | 2 | 1010 | 1018 | 5 | 50-60 | 2014 | Yellow-Orange | Orange | 0 | 18.2 |
| 41BP801 | 2 | 1010 | 1018 | 5 | 50-60 | 2014 | Yellow-Orange | Orange | 0 | 32.85 |
| 41BP801 | 2 | 1010 | 1018 | 5 | 50-60 | 2112 | Yellow-Orange | Orange | 0 | 14.65 |
| 41BP801 | 2 | 1010 | 1018 | 5 | 50-60 | 2113 | Yellow-Orange | Orange | 0 | 18.81 |
| 41BP801 | 2 | 1010 | 1018 | 5 | 50-60 | 1012 | Yellow-Orange | Orange | 25 | 20.9 |
| 41BP801 | 2 | 1010 | 1018 | 6 | 60-70 | 1014 | Orange | Orange | 25 | 41.16 |
| 41BP801 | 2 | 1010 | 1018 | 6 | 60-70 | 1116 | Orange | Dark Red | 0 | 11.38 |
| 41BP801 | 2 | 1010 | 1018 | 6 | 60-70 | 1012 | Orange | Dark Red | 0 | 10.47 |
| 41BP801 | 2 | 1010 | 1018 | 6 | 60-70 | 1014 | Yellow-Orange | Orange | 25 | 31.4 |
| 41BP801 | 2 | 1010 | 1018 | 6 | 60-70 | 1019 | Yellow-Orange | Orange | 25 | 13.68 |
| 41BP801 | 2 | 1010 | 1018 | 6 | 60-70 | 1019 | Yellow-Orange | Dark Red | 75 | 18.26 |
| 41BP801 | 2 | 1010 | 1018 | 6 | 60-70 | 1019 | Yellow-Orange | Orange | 25 | 32.84 |
| 41BP801 | 2 | 1010 | 1018 | 6 | 60-70 | 1116 | Yellow-Orange | Orange | 0 | 21.25 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP801 | 2 | 1010 | 1018 | 6 | 60-70 | 2013 | Yellow-Orange | Orange | 0 | 12.66 |
| 41BP801 | 2 | 1010 | 1018 | 6 | 60-70 | 2014 | Yellow-Orange | Orange | 25 | 43.42 |
| 41BP801 | 2 | 1010 | 1018 | 7 | 70-80 | 1021 | No Fluorescence | Dark Red | 25 | 29.18 |
| 41BP801 | 2 | 1010 | 1018 | 7 | 70-80 | 1014 | Orange | Orange | 75 | 56.27 |
| 41BP801 | 2 | 1010 | 1018 | 7 | 70-80 | 1116 | Yellow | Orange | 0 | 17.33 |
| 41BP801 | 2 | 1010 | 1018 | 7 | 70-80 | 1014 | Yellow-Orange | Orange | 0 | 9.61 |
| 41BP801 | 2 | 1010 | 1018 | 7 | 70-80 | 1014 | Yellow-Orange | Orange | 75 | 13.01 |
| 41BP801 | 2 | 1010 | 1018 | 7 | 70-80 | 1014 | Yellow-Orange | Orange | 0 | 16.86 |
| 41BP801 | 2 | 1010 | 1018 | 7 | 70-80 | 1014 | Yellow-Orange | Orange | 75 | 36.83 |
| 41BP801 | 2 | 1010 | 1018 | 7 | 70-80 | 1014 | Yellow-Orange | Orange | 75 | 43.14 |
| 41BP801 | 2 | 1010 | 1018 | 7 | 70-80 | 1014 | Yellow-Orange | Orange | 100 | 46.04 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 1116 | No Fluorescence | Dark Red | 25 | 10.53 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 1116 | No Fluorescence | Dark Red | 0 | 11.92 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 1117 | No Fluorescence | Dark Red | 0 | 11.07 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 1117 | No Fluorescence | No Fluorescence | 0 | 19.48 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 1117 | No Fluorescence | Dark Red | 0 | 20.31 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 1117 | No Fluorescence | Dark Red | 75 | 25.91 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 1120 | No Fluorescence | Dark Red | 0 | 11.46 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 1120 | No Fluorescence | Dark Red | 0 | 18.82 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 2015 | No Fluorescence | Dark Red | 0 | 9.4 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 2110 | No Fluorescence | Dark Red | 0 | 8.59 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 1116 | Orange | Orange | 0 | 15.61 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 2013 | Yellow | Orange | 0 | 18.38 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 1014 | Yellow-Orange | Orange | 0 | 10.8 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 1014 | Yellow-Orange | Orange | 0 | 13.68 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 1019 | Yellow-Orange | Orange | 0 | 11.91 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 1019 | Yellow-Orange | Orange | 0 | 12.26 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 1019 | Yellow-Orange | Orange | 0 | 17.88 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 1019 | Yellow-Orange | Orange | 0 | 25.92 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 1019 | Yellow-Orange | Orange | 0 | 24.24 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 1019 | Yellow-Orange | Orange | 0 | 38.3 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 1019 | Yellow-Orange | Orange | 75 | 41.6 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 1028 | Yellow-Orange | Orange | 0 | 33 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 1115 | Yellow-Orange | Dark Red | 0 | 18.15 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 1116 | Yellow-Orange | Orange | 0 | 16.15 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 1116 | Yellow-Orange | Orange | 0 | 23.08 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 1116 | Yellow-Orange | Dark Red | 25 | 32.51 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 2012 | Yellow-Orange | Orange | 0 | 16.35 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 2012 | Yellow-Orange | Orange | 0 | 24.95 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 2013 | Yellow-Orange | Orange | 0 | 9.11 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 2013 | Yellow-Orange | Orange | 0 | 9.76 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 2013 | Yellow-Orange | Orange | 0 | 9.82 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 2013 | Yellow-Orange | Orange | 0 | 21.28 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 2013 | Yellow-Orange | Orange | 0 | 25.84 |
| 41BP801 | 3 | 1011 | 1025 | 1 | 12-21 | 2015 | Yellow-Orange | Orange | 0 | 19.2 |
| 41BP801 | 3 | 1011 | 1025 | 2 | 21-30 | 1116 | No Fluorescence | Dark Red | 0 | 14.17 |
| 41BP801 | 3 | 1011 | 1025 | 2 | 21-30 | 1118 | No Fluorescence | Dark Red | 0 | 22.22 |
| 41BP801 | 3 | 1011 | 1025 | 2 | 21-30 | 1119 | No Fluorescence | Orange | 25 | 29.44 |
| 41BP801 | 3 | 1011 | 1025 | 2 | 21-30 | 2013 | No Fluorescence | Orange | 0 | 14.09 |
| 41BP801 | 3 | 1011 | 1025 | 2 | 21-30 | 2013 | Yellow | Orange | 0 | 12.24 |
| 41BP801 | 3 | 1011 | 1025 | 2 | 21-30 | 2110 | Yellow-Green | Dark Red | 0 | 16.65 |
| 41BP801 | 3 | 1011 | 1025 | 2 | 21-30 | 2117 | Yellow-Green | Dark Red | 0 | 17.89 |
| 41BP801 | 3 | 1011 | 1025 | 2 | 21-30 | 1018 | Yellow-Orange | Orange | 0 | 12.44 |
| 41BP801 | 3 | 1011 | 1025 | 2 | 21-30 | 1018 | Yellow-Orange | Orange | 0 | 15.45 |
| 41BP801 | 3 | 1011 | 1025 | 2 | 21-30 | 1116 | Yellow-Orange | Orange | 0 | 10.76 |
| 41BP801 | 3 | 1011 | 1025 | 2 | 21-30 | 2012 | Yellow-Orange | Orange | 0 | 13.93 |
| 41BP801 | 3 | 1011 | 1025 | 2 | 21-30 | 2012 | Yellow-Orange | Orange | 0 | 25.33 |
| 41BP801 | 3 | 1011 | 1025 | 2 | 21-30 | 2117 | Yellow-Orange | Orange | 0 | 15.21 |
| 41BP801 | 3 | 1011 | 1025 | 3 | 30-40 | 1115 | No Fluorescence | Dark Red | 0 | 14.21 |
| 41BP801 | 3 | 1011 | 1025 | 3 | 30-40 | 1115 | No Fluorescence | Dark Red | 0 | 16.92 |
| 41BP801 | 3 | 1011 | 1025 | 3 | 30-40 | 1115 | No Fluorescence | Dark Red | 0 | 19.36 |
| 41BP801 | 3 | 1011 | 1025 | 3 | 30-40 | 1117 | No Fluorescence | Dark Red | 0 | 16.13 |
| 41BP801 | 3 | 1011 | 1025 | 3 | 30-40 | 2010 | No Fluorescence | Dark Red | 0 | 18.83 |
| 41BP801 | 3 | 1011 | 1025 | 3 | 30-40 | 1126 | Orange | Dark Red | 0 | 15.04 |
| 41BP801 | 3 | 1011 | 1025 | 3 | 30-40 | 1010 | Yellow-Orange | Orange | 0 | 21.34 |
| 41BP801 | 3 | 1011 | 1025 | 3 | 30-40 | 1014 | Yellow-Orange | Orange | 0 | 8.61 |
| 41BP801 | 3 | 1011 | 1025 | 3 | 30-40 | 1014 | Yellow-Orange | Orange | 0 | 9.8 |
| 41BP801 | 3 | 1011 | 1025 | 3 | 30-40 | 1116 | Yellow-Orange | Orange | 0 | 29.1 |
| 41BP801 | 3 | 1011 | 1025 | 3 | 30-40 | 1118 | Yellow-Orange | Orange | 0 | 29.7 |
| 41BP801 | 3 | 1011 | 1025 | 3 | 30-40 | 1119 | Yellow-Orange | Orange | 0 | 12.94 |
| 41BP801 | 3 | 1011 | 1025 | 3 | 30-40 | 1119 | Yellow-Orange | Orange | 0 | 17.39 |
| 41BP801 | 3 | 1011 | 1025 | 3 | 30-40 | 1119 | Yellow-Orange | Orange | 0 | 17.68 |
| 41BP801 | 3 | 1011 | 1025 | 3 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 12.06 |
| 41BP801 | 3 | 1011 | 1025 | 3 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 19.02 |
| 41BP801 | 3 | 1011 | 1025 | 3 | 30-40 | 2012 | Yellow-Orange | Orange | 0 | 21.56 |
| 41BP801 | 3 | 1011 | 1025 | 3 | 30-40 | 2014 | Yellow-Orange | Orange | 25 | 13.45 |
| 41BP801 | 3 | 1011 | 1025 | 3 | 30-40 | 2014 | Yellow-Orange | Orange | 0 | 14.06 |
| 41BP801 | 3 | 1011 | 1025 | 3 | 30-40 | 2110 | Yellow-Orange | Orange | 0 | 16 |
| 41BP801 | 3 | 1011 | 1025 | 3 | 30-40 | 2116 | Yellow-Orange | Orange | 0 | 15.2 |
| 41BP801 | 3 | 1011 | 1025 | 3 | 30-40 | 2116 | Yellow-Orange | Orange | 0 | 16.04 |
| 41BP801 | 3 | 1011 | 1025 | 4 | 40-50 | 1115 | No Fluorescence | Dark Red | 0 | 12.47 |
| 41BP801 | 3 | 1011 | 1025 | 4 | 40-50 | 1116 | No Fluorescence | Dark Red | 0 | 13.88 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP801 | 3 | 1011 | 1025 | 4 | 40-50 | 2013 | No Fluorescence | Orange | 0 | 12.82 |
| 41BP801 | 3 | 1011 | 1025 | 4 | 40-50 | 1012 | No Fluorescence | Dark Red | 0 | 13.08 |
| 41BP801 | 3 | 1011 | 1025 | 4 | 40-50 | 2013 | Yellow | Orange | 0 | 16.54 |
| 41BP801 | 3 | 1011 | 1025 | 4 | 40-50 | 1014 | Yellow-Orange | Orange | 25 | 14.19 |
| 41BP801 | 3 | 1011 | 1025 | 4 | 40-50 | 1019 | Yellow-Orange | Orange | 0 | 9.88 |
| 41BP801 | 3 | 1011 | 1025 | 4 | 40-50 | 1019 | Yellow-Orange | Dark Red | 75 | 13.57 |
| 41BP801 | 3 | 1011 | 1025 | 4 | 40-50 | 1019 | Yellow-Orange | Orange | 0 | 19.03 |
| 41BP801 | 3 | 1011 | 1025 | 4 | 40-50 | 1115 | Yellow-Orange | Orange | 0 | 9.44 |
| 41BP801 | 3 | 1011 | 1025 | 4 | 40-50 | 2012 | Yellow-Orange | Dark Red | 0 | 15.82 |
| 41BP801 | 3 | 1011 | 1025 | 4 | 40-50 | 2012 | Yellow-Orange | Orange | 0 | 16.93 |
| 41BP801 | 3 | 1011 | 1025 | 4 | 40-50 | 2012 | Yellow-Orange | Orange | 0 | 24.19 |
| 41BP801 | 3 | 1011 | 1025 | 4 | 40-50 | 2013 | Yellow-Orange | Orange | 0 | 9.85 |
| 41BP801 | 3 | 1011 | 1025 | 4 | 40-50 | 2013 | Yellow-Orange | Orange | 0 | 12.84 |
| 41BP801 | 3 | 1011 | 1025 | 4 | 40-50 | 2013 | Yellow-Orange | Orange | 0 | 15.26 |
| 41BP801 | 3 | 1011 | 1025 | 4 | 40-50 | 2013 | Yellow-Orange | Orange | 0 | 15.8 |
| 41BP801 | 3 | 1011 | 1025 | 4 | 40-50 | 1012 | Yellow-Orange | Orange | 75 | 52.88 |
| 41BP801 | 3 | 1011 | 1025 | 4 | 40-50 | 1012 | Yellow-Orange | Orange | 75 | 20.25 |
| 41BP801 | 3 | 1011 | 1025 | 5 | 50-60 | 1115 | Dark Red | Dark Red | 0 | 21.16 |
| 41BP801 | 3 | 1011 | 1025 | 5 | 50-60 | 1013 | No Fluorescence | Orange | 0 | 14.84 |
| 41BP801 | 3 | 1011 | 1025 | 5 | 50-60 | 1127 | No Fluorescence | Dark Red | 75 | 30.29 |
| 41BP801 | 3 | 1011 | 1025 | 5 | 50-60 | 1014 | Yellow | Orange | 0 | 19.94 |
| 41BP801 | 3 | 1011 | 1025 | 5 | 50-60 | 1115 | Yellow-Green | Dark Red | 0 | 13.14 |
| 41BP801 | 3 | 1011 | 1025 | 5 | 50-60 | 1010 | Yellow-Orange | Orange | 0 | 16.06 |
| 41BP801 | 3 | 1011 | 1025 | 5 | 50-60 | 1013 | Yellow-Orange | Orange | 0 | 12.2 |
| 41BP801 | 3 | 1011 | 1025 | 5 | 50-60 | 1014 | Yellow-Orange | Orange | 0 | 19.66 |
| 41BP801 | 3 | 1011 | 1025 | 5 | 50-60 | 1014 | Yellow-Orange | Orange | 75 | 31.12 |
| 41BP801 | 3 | 1011 | 1025 | 5 | 50-60 | 1018 | Yellow-Orange | Orange | 0 | 41.11 |
| 41BP801 | 3 | 1011 | 1025 | 5 | 50-60 | 1019 | Yellow-Orange | Orange | 0 | 13.04 |
| 41BP801 | 3 | 1011 | 1025 | 5 | 50-60 | 1110 | Yellow-Orange | Orange | 0 | 16.6 |
| 41BP801 | 3 | 1011 | 1025 | 5 | 50-60 | 1116 | Yellow-Orange | Orange | 0 | 11.44 |
| 41BP801 | 3 | 1011 | 1025 | 5 | 50-60 | 1117 | Yellow-Orange | Orange | 25 | 40.33 |
| 41BP801 | 3 | 1011 | 1025 | 5 | 50-60 | 1119 | Yellow-Orange | Orange | 25 | 12.74 |
| 41BP801 | 3 | 1011 | 1025 | 5 | 50-60 | 1119 | Yellow-Orange | Orange | 25 | 25.15 |
| 41BP801 | 3 | 1011 | 1025 | 5 | 50-60 | 2012 | Yellow-Orange | Orange | 0 | 18.07 |
| 41BP801 | 3 | 1011 | 1025 | 5 | 50-60 | 2012 | Yellow-Orange | Dark Red | 0 | 26.04 |
| 41BP801 | 3 | 1011 | 1025 | 5 | 50-60 | 2012 | Yellow-Orange | Orange | 0 | 29.08 |
| 41BP801 | 3 | 1011 | 1025 | 5 | 50-60 | 2013 | Yellow-Orange | Orange | 0 | 17.45 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 1018 | No Fluorescence | No Fluorescence | 0 | 10.76 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 1116 | No Fluorescence | Dark Red | 0 | 18.55 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 1117 | No Fluorescence | Dark Red | 0 | 11.05 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 1117 | No Fluorescence | Orange | 0 | 14.14 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 1117 | No Fluorescence | Dark Red | 0 | 15.22 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 1117 | No Fluorescence | Dark Red | 0 | 30.18 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 1014 | Orange | Orange | 75 | 59.42 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 2014 | Yellow | Orange | 0 | 10.59 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 2015 | Yellow | Orange | 0 | 10.56 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 1014 | Yellow-Orange | Orange | 0 | 10.11 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 1014 | Yellow-Orange | Orange | 0 | 19.39 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 1014 | Yellow-Orange | Orange | 25 | 20.45 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 1018 | Yellow-Orange | Orange | 0 | 10.19 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 1018 | Yellow-Orange | Orange | 0 | 19.36 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 1018 | Yellow-Orange | Orange | 0 | 22.86 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 1116 | Yellow-Orange | Orange | 0 | 16.43 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 1117 | Yellow-Orange | Orange | 0 | 17.71 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 1119 | Yellow-Orange | Orange | 25 | 12.74 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 2012 | Yellow-Orange | Orange | 0 | 12.98 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 2012 | Yellow-Orange | Orange | 0 | 14.02 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 2012 | Yellow-Orange | Orange | 75 | 14.37 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 2012 | Yellow-Orange | Orange | 0 | 21.16 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 2012 | Yellow-Orange | Orange | 25 | 24.58 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 2014 | Yellow-Orange | Orange | 0 | 9.91 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 2014 | Yellow-Orange | Orange | 25 | 16.07 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 2014 | Yellow-Orange | Orange | 25 | 23.13 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 2014 | Yellow-Orange | Orange | 0 | 24.16 |
| 41BP801 | 3 | 1011 | 1025 | 6 | 60-70 | 2015 | Yellow-Orange | Orange | 0 | 20.74 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 1015 | No Fluorescence | No Fluorescence | 0 | 8.54 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 1117 | No Fluorescence | Dark Red | 0 | 12.81 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 1120 | No Fluorescence | Dark Red | 0 | 34.91 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 2014 | No Fluorescence | Dark Red | 0 | 11.17 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 1014 | Orange | Orange | 100 | 24.64 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 1018 | Yellow | Orange | 0 | 16.02 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 2014 | Yellow | Orange | 0 | 14.09 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 1013 | Yellow-Orange | Orange | 0 | 19.75 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 1013 | Yellow-Orange | Orange | 0 | 47 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 1014 | Yellow-Orange | Orange | 25 | 25.41 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 1014 | Yellow-Orange | Orange | 0 | 29.31 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 1014 | Yellow-Orange | Orange | 75 | 32.26 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 1014 | Yellow-Orange | Orange | 25 | 44.61 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 1015 | Yellow-Orange | Orange | 0 | 12.95 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 1016 | Yellow-Orange | Orange | 0 | 13.9 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 1018 | Yellow-Orange | Orange | 0 | 10.31 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 1018 | Yellow-Orange | Orange | 0 | 12.38 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 1018 | Yellow-Orange | Orange | 0 | 15.78 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 1018 | Yellow-Orange | Orange | 0 | 17.33 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 1018 | Yellow-Orange | Orange | 0 | 18.8 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 1018 | Yellow-Orange | Orange | 0 | 20.68 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 1019 | Yellow-Orange | Dark Red | 0 | 13.18 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 1019 | Yellow-Orange | Orange | 0 | 16.61 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 1019 | Yellow-Orange | Orange | 75 | 40.79 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 1112 | Yellow-Orange | Orange | 25 | 20.46 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 1117 | Yellow-Orange | No Fluorescence | 0 | 17.9 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 2014 | Yellow-Orange | Orange | 0 | 9.72 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 2014 | Yellow-Orange | Orange | 0 | 11.2 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 2014 | Yellow-Orange | Orange | 0 | 11.26 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 2014 | Yellow-Orange | Orange | 0 | 11.29 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 2014 | Yellow-Orange | Orange | 0 | 12.04 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 2014 | Yellow-Orange | Orange | 0 | 12.61 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 2014 | Yellow-Orange | Orange | 0 | 13.17 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 2014 | Yellow-Orange | Orange | 0 | 13.74 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 2014 | Yellow-Orange | Orange | 25 | 14.11 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 2014 | Yellow-Orange | Orange | 0 | 14.31 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 2014 | Yellow-Orange | Orange | 0 | 17.51 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 2014 | Yellow-Orange | Orange | 0 | 17.94 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 2014 | Yellow-Orange | Orange | 25 | 43.78 |
| 41BP801 | 3 | 1011 | 1025 | 7 | 70-78 | 2014 | Yellow-Orange | Orange | 75 | 55.01 |
| 41BP801 | 4 | 1006 | 1010 | 2 | 10-20 | 1019 | Dark Red | Dark Red | 75 | 21.43 |
| 41BP801 | 4 | 1006 | 1010 | 2 | 10-20 | 1115 | No Fluorescence | Dark Red | 0 | 16.86 |
| 41BP801 | 4 | 1006 | 1010 | 2 | 10-20 | 1117 | No Fluorescence | Dark Red | 75 | 12.95 |
| 41BP801 | 4 | 1006 | 1010 | 2 | 10-20 | 1127 | No Fluorescence | Dark Red | 75 | 15.65 |
| 41BP801 | 4 | 1006 | 1010 | 2 | 10-20 | 1127 | No Fluorescence | Dark Red | 0 | 26.11 |
| 41BP801 | 4 | 1006 | 1010 | 2 | 10-20 | 1116 | Orange | Dark Red | 0 | 11.53 |
| 41BP801 | 4 | 1006 | 1010 | 2 | 10-20 | 1116 | Orange | Dark Red | 0 | 36.62 |
| 41BP801 | 4 | 1006 | 1010 | 2 | 10-20 | 1014 | Yellow-Orange | Orange | 0 | 9.43 |
| 41BP801 | 4 | 1006 | 1010 | 2 | 10-20 | 1014 | Yellow-Orange | Orange | 0 | 27.42 |
| 41BP801 | 4 | 1006 | 1010 | 2 | 10-20 | 1014 | Yellow-Orange | Orange | 0 | 37.15 |
| 41BP801 | 4 | 1006 | 1010 | 2 | 10-20 | 1019 | Yellow-Orange | Orange | 0 | 15.01 |
| 41BP801 | 4 | 1006 | 1010 | 2 | 10-20 | 1019 | Yellow-Orange | Orange | 0 | 30.7 |
| 41BP801 | 4 | 1006 | 1010 | 2 | 10-20 | 1110 | Yellow-Orange | Dark Red | 25 | 21.43 |
| 41BP801 | 4 | 1006 | 1010 | 2 | 10-20 | 1123 | Yellow-Orange | Orange | 0 | 18.07 |
| 41BP801 | 4 | 1006 | 1010 | 2 | 10-20 | 2012 | Yellow-Orange | Orange | 0 | 13.76 |
| 41BP801 | 4 | 1006 | 1010 | 2 | 10-20 | 2012 | Yellow-Orange | Orange | 0 | 23.68 |
| 41BP801 | 4 | 1006 | 1010 | 2 | 10-20 | 2013 | Yellow-Orange | Orange | 0 | 10.22 |
| 41BP801 | 4 | 1006 | 1010 | 2 | 10-20 | 2013 | Yellow-Orange | Orange | 0 | 11.25 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP801 | 4 | 1006 | 1010 | 3 | 20-30 | 1116 | No Fluorescence | Dark Red | 0 | 17.58 |
| 41BP801 | 4 | 1006 | 1010 | 3 | 20-30 | 1116 | No Fluorescence | Dark Red | 0 | 20.07 |
| 41BP801 | 4 | 1006 | 1010 | 3 | 20-30 | 1117 | No Fluorescence | No Fluorescence | 0 | 13.18 |
| 41BP801 | 4 | 1006 | 1010 | 3 | 20-30 | 1117 | No Fluorescence | Dark Red | 0 | 16.31 |
| 41BP801 | 4 | 1006 | 1010 | 3 | 20-30 | 2010 | No Fluorescence | Dark Red | 0 | 14.32 |
| 41BP801 | 4 | 1006 | 1010 | 3 | 20-30 | 2010 | No Fluorescence | Dark Red | 0 | 21.75 |
| 41BP801 | 4 | 1006 | 1010 | 3 | 20-30 | 2019 | No Fluorescence | Dark Red | 0 | 13.31 |
| 41BP801 | 4 | 1006 | 1010 | 3 | 20-30 | 1116 | Orange | Orange | 0 | 13.33 |
| 41BP801 | 4 | 1006 | 1010 | 3 | 20-30 | 1116 | Orange | Dark Red | 25 | 28.31 |
| 41BP801 | 4 | 1006 | 1010 | 3 | 20-30 | 1014 | Yellow-Green | Orange | 75 | 50.68 |
| 41BP801 | 4 | 1006 | 1010 | 3 | 20-30 | 1123 | Yellow-Green | Orange | 0 | 16.51 |
| 41BP801 | 4 | 1006 | 1010 | 3 | 20-30 | 1018 | Yellow-Orange | Orange | 0 | 26.01 |
| 41BP801 | 4 | 1006 | 1010 | 3 | 20-30 | 1028 | Yellow-Orange | Orange | 0 | 34.41 |
| 41BP801 | 4 | 1006 | 1010 | 3 | 20-30 | 1116 | Yellow-Orange | Orange | 0 | 12.54 |
| 41BP801 | 4 | 1006 | 1010 | 3 | 20-30 | 1116 | Yellow-Orange | Dark Red | 0 | 17.65 |
| 41BP801 | 4 | 1006 | 1010 | 3 | 20-30 | 2013 | Yellow-Orange | Orange | 0 | 19.04 |
| 41BP801 | 4 | 1006 | 1010 | 3 | 20-30 | 2014 | Yellow-Orange | Orange | 0 | 13.41 |
| 41BP801 | 4 | 1006 | 1010 | 3 | 20-30 | 2019 | Yellow-Orange | Orange | 0 | 9.36 |
| 41BP801 | 4 | 1006 | 1010 | 3 | 20-30 | 2019 | Yellow-Orange | Orange | 0 | 11.77 |
| 41BP801 | 4 | 1006 | 1010 | 3 | 20-30 | 2019 | Yellow-Orange | Orange | 0 | 11.94 |
| 41BP801 | 4 | 1006 | 1010 | 3 | 20-30 | 2019 | Yellow-Orange | Orange | 0 | 14.51 |
| 41BP801 | 4 | 1006 | 1010 | 3 | 20-30 | 2019 | Yellow-Orange | Orange | 0 | 14.75 |
| 41BP801 | 4 | 1006 | 1010 | 3 | 20-30 | 1012 | Yellow-Orange | Orange | 0 | 19.97 |
| 41BP801 | 4 | 1006 | 1010 | 4 | 30-40 | 1019 | No Fluorescence | Dark Red | 0 | 22.09 |
| 41BP801 | 4 | 1006 | 1010 | 4 | 30-40 | 1116 | No Fluorescence | Dark Red | 0 | 19.46 |
| 41BP801 | 4 | 1006 | 1010 | 4 | 30-40 | 1127 | No Fluorescence | Dark Red | 100 | 20.19 |
| 41BP801 | 4 | 1006 | 1010 | 4 | 30-40 | 2010 | No Fluorescence | Orange | 0 | 9.96 |
| 41BP801 | 4 | 1006 | 1010 | 4 | 30-40 | 2010 | No florescence | Dark Red | 0 | 11.72 |
| 41BP801 | 4 | 1006 | 1010 | 4 | 30-40 | 1121 | No Fluorescence | Dark Red | 0 | 15.73 |
| 41BP801 | 4 | 1006 | 1010 | 4 | 30-40 | 1121 | No Fluorescence | Dark Red | 0 | 26.32 |
| 41BP801 | 4 | 1006 | 1010 | 4 | 30-40 | 1110 | Yellow-Green | Dark Red | 0 | 23.77 |
| 41BP801 | 4 | 1006 | 1010 | 4 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 10.73 |
| 41BP801 | 4 | 1006 | 1010 | 4 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 11.89 |
| 41BP801 | 4 | 1006 | 1010 | 4 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 13.76 |
| 41BP801 | 4 | 1006 | 1010 | 4 | 30-40 | 1013 | Yellow-Orange | Orange | 25 | 15.29 |
| 41BP801 | 4 | 1006 | 1010 | 4 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 17.2 |
| 41BP801 | 4 | 1006 | 1010 | 4 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 20.41 |
| 41BP801 | 4 | 1006 | 1010 | 4 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 23.28 |
| 41BP801 | 4 | 1006 | 1010 | 4 | 30-40 | 1013 | Yellow-Orange | Orange | 0 | 30.47 |
| 41BP801 | 4 | 1006 | 1010 | 4 | 30-40 | 1018 | Yellow-Orange | Orange | 0 | 33.88 |
| 41BP801 | 4 | 1006 | 1010 | 4 | 30-40 | 1019 | Yellow-Orange | Orange | 75 | 17.09 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP801 | 4 | 1006 | 1010 | 4 | 30-40 | 2010 | Yellow-Orange | Orange | 0 | 12.19 |
| 41BP801 | 4 | 1006 | 1010 | 4 | 30-40 | 2019 | Yellow-Orange | Orange | 0 | 19.95 |
| 41BP801 | 4 | 1006 | 1010 | 4 | 30-40 | 2019 | Yellow-Orange | Orange | 0 | 22.7 |
| 41BP801 | 4 | 1006 | 1010 | 5 | 40-49 | 1115 | No Fluorescence | Dark Red | 25 | 25.59 |
| 41BP801 | 4 | 1006 | 1010 | 5 | 40-49 | 1116 | No Fluorescence | Dark Red | 0 | 11.43 |
| 41BP801 | 4 | 1006 | 1010 | 5 | 40-49 | 1116 | No Fluorescence | Dark Red | 0 | 11.85 |
| 41BP801 | 4 | 1006 | 1010 | 5 | 40-49 | 1118 | No Fluorescence | Dark Red | 25 | 18.07 |
| 41BP801 | 4 | 1006 | 1010 | 5 | 40-49 | 1014 | Yellow | Orange | 25 | 37.55 |
| 41BP801 | 4 | 1006 | 1010 | 5 | 40-49 | 1110 | Yellow-Orange | Orange | 0 | 18.74 |
| 41BP801 | 4 | 1006 | 1010 | 5 | 40-49 | 1116 | Yellow-Orange | Orange | 0 | 12.34 |
| 41BP801 | 4 | 1006 | 1010 | 5 | 40-49 | 1116 | Yellow-Orange | Dark Red | 0 | 22.65 |
| 41BP801 | 4 | 1006 | 1010 | 5 | 40-49 | 2013 | Yellow-Orange | Orange | 0 | 16.22 |
| 41BP801 | 4 | 1006 | 1010 | 5 | 40-49 | 2013 | Yellow-Orange | Orange | 0 | 24.98 |
| 41BP801 | 4 | 1006 | 1010 | 5 | 40-49 | 2014 | Yellow-Orange | Orange | 0 | 23.52 |
| 41BP801 | 5 | 1020 | 1007 | 1 | 17-20 | 1117 | No Fluorescence | Yellow-Orange | 25 | 38.16 |
| 41BP801 | 5 | 1020 | 1007 | 1 | 17-20 | 2014 | Yellow-Green | Orange | 25 | 25.84 |
| 41BP801 | 5 | 1020 | 1007 | 1 | 17-20 | 1014 | Yellow-Orange | Orange | 0 | 23.71 |
| 41BP801 | 5 | 1020 | 1007 | 1 | 17-20 | 1117 | Yellow-Orange | Orange | 0 | 12.48 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 1013 | No Fluorescence | Dark Red | 0 | 17.02 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 1110 | No Fluorescence | Dark Red | 0 | 14.44 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 1115 | No Fluorescence | Dark Red | 0 | 20.23 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 1117 | No Fluorescence | Dark Red | 0 | 22.54 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 1118 | No Fluorescence | No Fluorescence | 0 | 12.76 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 2019 | No Fluorescence | Dark Red | 0 | 13.58 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 1116 | Orange | Dark Red | 0 | 16.84 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 1116 | Orange | Dark Red | 25 | 18.3 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 1014 | Yellow | Orange | 0 | 13.46 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 2013 | Yellow | Orange | 0 | 14.5 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 1014 | Yellow-Green | Orange | 0 | 11.72 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 1010 | Yellow-Orange | Orange | 0 | 30.31 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 1010 | Yellow-Orange | Orange | 0 | 38.11 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 1013 | Yellow-Orange | Orange | 0 | 18.41 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 1014 | Yellow-Orange | Orange | 0 | 15.25 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 1014 | Yellow-Orange | Orange | 0 | 18.08 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 1014 | Yellow-Orange | Orange | 0 | 19.36 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 1014 | Yellow-Orange | Orange | 0 | 25.14 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 1014 | Yellow-Orange | Orange | 0 | 21.81 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 1016 | Yellow-Orange | Orange | 0 | 17.43 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 1116 | Yellow-Orange | Orange | 0 | 9.26 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 1116 | Yellow-Orange | Orange | 0 | 10.88 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 1116 | Yellow-Orange | Orange | 0 | 11.04 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 1116 | Yellow-Orange | Orange | 0 | 14.48 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 1116 | Yellow-Orange | Orange | 0 | 15.94 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 2010 | Yellow-Orange | Orange | 0 | 17.22 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 2013 | Yellow-Orange | Orange | 25 | 14.91 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 2019 | Yellow-Orange | Orange | 25 | 22.8 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 2112 | Yellow-Orange | Orange | 0 | 13.35 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 2112 | Yellow-Orange | Orange | 0 | 15.06 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 2112 | Yellow-Orange | Orange | 0 | 16.67 |
| 41BP801 | 5 | 1020 | 1007 | 2 | 20-30 | 2112 | Yellow-Orange | Orange | 0 | 17.8 |
| 41BP801 | 5 | 1020 | 1007 | 3 | 30-40 | 2012 | not done | not done | 0 | 26.3 |
| 41BP801 | 5 | 1020 | 1007 | 3 | 30-40 | 1116 | No Fluorescence | Dark Red | 0 | 10.54 |
| 41BP801 | 5 | 1020 | 1007 | 3 | 30-40 | 1117 | No Fluorescence | Dark Red | 0 | 21.69 |
| 41BP801 | 5 | 1020 | 1007 | 3 | 30-40 | 2012 | Yellow | Orange | 0 | 39.31 |
| 41BP801 | 5 | 1020 | 1007 | 3 | 30-40 | 1014 | Yellow-Green | Orange | 0 | 66.85 |
| 41BP801 | 5 | 1020 | 1007 | 3 | 30-40 | 1014 | Yellow-Orange | Orange | 25 | 32.29 |
| 41BP801 | 5 | 1020 | 1007 | 3 | 30-40 | 1018 | Yellow-Orange | Orange | 0 | 32.17 |
| 41BP801 | 5 | 1020 | 1007 | 3 | 30-40 | 1019 | Yellow-Orange | Dark Red | 0 | 15.92 |
| 41BP801 | 5 | 1020 | 1007 | 3 | 30-40 | 1019 | Yellow-Orange | Orange | 0 | 18.68 |
| 41BP801 | 5 | 1020 | 1007 | 3 | 30-40 | 1019 | Yellow-Orange | Orange | 0 | 20.95 |
| 41BP801 | 5 | 1020 | 1007 | 3 | 30-40 | 1119 | Yellow-Orange | Orange | 25 | 22.64 |
| 41BP801 | 5 | 1020 | 1007 | 3 | 30-40 | 2012 | Yellow-Orange | Orange | 25 | 17.72 |
| 41BP801 | 5 | 1020 | 1007 | 3 | 30-40 | 2012 | Yellow-Orange | Orange | 25 | 20.18 |
| 41BP801 | 5 | 1020 | 1007 | 3 | 30-40 | 2013 | Yellow-Orange | Orange | 0 | 17.64 |
| 41BP801 | 5 | 1020 | 1007 | 4 | 40-50 | 1115 | No Fluorescence | Dark Red | 75 | 11.83 |
| 41BP801 | 5 | 1020 | 1007 | 4 | 40-50 | 1117 | No Fluorescence | Orange | 0 | 12.36 |
| 41BP801 | 5 | 1020 | 1007 | 4 | 40-50 | 1117 | No Fluorescence | Dark Red | 0 | 14.77 |
| 41BP801 | 5 | 1020 | 1007 | 4 | 40-50 | 2010 | No Fluorescence | Dark Red | 0 | 10.78 |
| 41BP801 | 5 | 1020 | 1007 | 4 | 40-50 | 2010 | No Fluorescence | Dark Red | 0 | 16.93 |
| 41BP801 | 5 | 1020 | 1007 | 4 | 40-50 | 1013 | Yellow-Orange | Orange | 0 | 21.22 |
| 41BP801 | 5 | 1020 | 1007 | 4 | 40-50 | 1019 | Yellow-Orange | Orange | 0 | 11.53 |
| 41BP801 | 5 | 1020 | 1007 | 4 | 40-50 | 1110 | Yellow-Orange | Orange | 0 | 9.81 |
| 41BP801 | 5 | 1020 | 1007 | 4 | 40-50 | 1116 | Yellow-Orange | Orange | 75 | 37.86 |
| 41BP801 | 5 | 1020 | 1007 | 4 | 40-50 | 2012 | Yellow-Orange | Orange | 0 | 15.26 |
| 41BP801 | 5 | 1020 | 1007 | 4 | 40-50 | 2012 | Yellow-Orange | Orange | 0 | 11.28 |
| 41BP801 | 5 | 1020 | 1007 | 4 | 40-50 | 2014 | Yellow-Orange | Orange | 0 | 17.13 |
| 41BP801 | 5 | 1020 | 1007 | 5 | 50-56 | 1117 | No Fluorescence | Dark Red | 75 | 10.2 |
| 41BP801 | 5 | 1020 | 1007 | 5 | 50-56 | 2019 | No Fluorescence | Dark Red | 0 | 10.26 |
| 41BP801 | 5 | 1020 | 1007 | 5 | 50-56 | 2014 | Orange | Orange | 0 | 24.9 |
| 41BP801 | 5 | 1020 | 1007 | 5 | 50-56 | 1014 | Yellow | Orange | 0 | 26.26 |
| 41BP801 | 5 | 1020 | 1007 | 5 | 50-56 | 1018 | Yellow-Green | Orange | 0 | 17.98 |
| 41BP801 | 5 | 1020 | 1007 | 5 | 50-56 | 1018 | Yellow-Orange | Orange | 0 | 16.23 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP801 | 5 | 1020 | 1007 | 5 | 50-56 | 1019 | Yellow-Orange | Orange | 0 | 19.45 |
| 41BP801 | 5 | 1020 | 1007 | 5 | 50-56 | 2013 | Yellow-Orange | Orange | 0 | 12.8 |
| 41BP801 | 5 | 1020 | 1007 | 5 | 50-56 | 2013 | Yellow-Orange | Orange | 0 | 18.55 |
| 41BP801 | 5 | 1020 | 1007 | 5 | 50-56 | 2014 | Yellow-Orange | Orange | 0 | 9.65 |
| 41BP801 | 5 | 1020 | 1007 | 5 | 50-56 | 2014 | Yellow-Orange | Orange | 0 | 13.3 |
| 41BP802 | 1 | 989 | 1013 | 2 | 20-30 | 1019 | Orange | Dark Red | 0 | 36.8 |
| 41BP802 | 2 | 1021 | 998 | 2 | 20-30 | 1117 | No Fluorescence | Dark Red | 0 | 12.91 |
| 41BP802 | 2 | 1021 | 998 | 2 | 20-30 | 1117 | No Fluorescence | Dark Red | 0 | 22.95 |
| 41BP802 | 2 | 1021 | 998 | 2 | 20-30 | 1019 | Orange | Dark Red | 0 | 11.38 |
| 41BP802 | 2 | 1021 | 998 | 2 | 20-30 | 1116 | Orange | Dark Red | 0 | 11.2 |
| 41BP802 | 2 | 1021 | 998 | 2 | 20-30 | 1018 | Yellow-Orange | Orange | 0 | 16.75 |
| 41BP802 | 2 | 1021 | 998 | 2 | 20-30 | 1018 | Yellow-Orange | Orange | 0 | 31.65 |
| 41BP802 | 2 | 1021 | 998 | 2 | 20-30 | 2019 | Yellow-Orange | Orange | 0 | 9.56 |
| 41BP802 | 2 | 1021 | 998 | 2 | 20-30 | 2019 | Yellow-Orange | Orange | 0 | 11.8 |
| 41BP802 | 2 | 1021 | 998 | 2 | 20-30 | 2116 | Yellow-Orange | Orange | 0 | 14.54 |
| 41BP802 | 2 | 1021 | 998 | 3 | 30-40 | 1117 | No Fluorescence | Dark Red | 25 | 14.19 |
| 41BP802 | 2 | 1021 | 998 | 3 | 30-40 | 1113 | Yellow | Orange | 0 | 10.98 |
| 41BP802 | 2 | 1021 | 998 | 3 | 30-40 | 2013 | Yellow | Orange | 0 | 10.65 |
| 41BP802 | 2 | 1021 | 998 | 3 | 30-40 | 1113 | Yellow-Orange | Orange | 0 | 21.16 |
| 41BP802 | 2 | 1021 | 998 | 3 | 30-40 | 2013 | Yellow-Orange | Orange | 0 | 18.65 |
| 41BP802 | 2 | 1021 | 998 | 3 | 30-40 | 2116 | Yellow-Orange | Orange | 0 | 12.16 |
| 41BP802 | 2 | 1021 | 998 | 4 | 40-50 | 1117 | No Fluorescence | Dark Red | 0 | 23.6 |
| 41BP802 | 2 | 1021 | 998 | 4 | 40-50 | 1013 | Yellow-Orange | Orange | 0 | 13.32 |
| 41BP802 | 2 | 1021 | 998 | 4 | 40-50 | 1013 | Yellow-Orange | Orange | 0 | 13.79 |
| 41BP802 | 2 | 1021 | 998 | 4 | 40-50 | 1018 | Yellow-Orange | Orange | 0 | 21.64 |
| 41BP802 | 2 | 1021 | 998 | 4 | 40-50 | 2013 | Yellow-Orange | Orange | 0 | 12.17 |
| 41BP802 | 2 | 1021 | 998 | 5 | 50-60 | 1118 | Light Red | Purple | 0 | 17.55 |
| 41BP802 | 2 | 1021 | 998 | 5 | 50-60 | 2013 | Yellow | Orange | 0 | 12.52 |
| 41BP802 | 2 | 1021 | 998 | 5 | 50-60 | 2013 | Yellow-Green | Orange | 0 | 11.71 |
| 41BP802 | 2 | 1021 | 998 | 5 | 50-60 | 1013 | Yellow-Orange | Orange | 0 | 12.77 |
| 41BP802 | 2 | 1021 | 998 | 5 | 50-60 | 1019 | Yellow-Orange | Orange | 0 | 15.83 |
| 41BP802 | 2 | 1021 | 998 | 5 | 50-60 | 1110 | Yellow-Orange | Orange | 0 | 13.8 |
| 41BP802 | 2 | 1021 | 998 | 5 | 50-60 | 1110 | Yellow-Orange | Orange | 0 | 13.99 |
| 41BP802 | 2 | 1021 | 998 | 5 | 50-60 | 1113 | Yellow-Orange | Orange | 0 | 13.33 |
| 41BP802 | 2 | 1021 | 998 | 5 | 50-60 | 1113 | Yellow-Orange | Orange | 0 | 25.5 |
| 41BP802 | 2 | 1021 | 998 | 6 | 60-70 | 1124 | No Fluorescence | Dark Red | 25 | 19.77 |
| 41BP802 | 2 | 1021 | 998 | 6 | 60-70 | 1013 | Yellow-Orange | Orange | 0 | 18.7 |
| 41BP802 | 2 | 1021 | 998 | 6 | 60-70 | 1018 | Yellow-Orange | Orange | 0 | 11.56 |
| 41BP802 | 2 | 1021 | 998 | 6 | 60-70 | 1018 | Yellow-Orange | Orange | 0 | 27.48 |
| 41BP802 | 2 | 1021 | 998 | 6 | 60-70 | 1019 | Yellow-Orange | Orange | 0 | 11.28 |
| 41BP802 | 2 | 1021 | 998 | 6 | 60-70 | 1019 | Yellow-Orange | Orange | 0 | 13.11 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP802 | 2 | 1021 | 998 | 6 | 60-70 | 1116 | Yellow-Orange | Orange | 0 | 12.39 |
| 41BP802 | 2 | 1021 | 998 | 6 | 60-70 | 1116 | Yellow-Orange | Orange | 0 | 17.2 |
| 41BP802 | 2 | 1021 | 998 | 6 | 60-70 | 1116 | Yellow-Orange | Orange | 0 | 17.64 |
| 41BP802 | 2 | 1021 | 998 | 6 | 60-70 | 2013 | Yellow-Orange | Orange | 0 | 15.73 |
| 41BP802 | 2 | 1021 | 998 | 6 | 60-70 | 2013 | Yellow-Orange | Orange | 0 | 21.34 |
| 41BP802 | 2 | 1021 | 998 | 7 | 70-80 | 2013 | Yellow | Orange | 0 | 13.06 |
| 41BP802 | 2 | 1021 | 998 | 7 | 70-80 | 2013 | Yellow | Orange | 0 | 16.38 |
| 41BP802 | 2 | 1021 | 998 | 7 | 70-80 | 2012 | Yellow-Green | Orange | 0 | 27.68 |
| 41BP802 | 2 | 1021 | 998 | 7 | 70-80 | 2013 | Yellow-Green | Orange | 0 | 10.85 |
| 41BP802 | 2 | 1021 | 998 | 7 | 70-80 | 1018 | Yellow-Orange | Orange | 0 | 10.75 |
| 41BP802 | 2 | 1021 | 998 | 7 | 70-80 | 1019 | Yellow-Orange | Orange | 25 | 38.62 |
| 41BP802 | 2 | 1021 | 998 | 7 | 70-80 | 1114 | Yellow-Orange | Orange | 25 | 28.16 |
| 41BP802 | 2 | 1021 | 998 | 7 | 70-80 | 1116 | Yellow-Orange | Orange | 25 | 37.41 |
| 41BP802 | 2 | 1021 | 998 | 7 | 70-80 | 2013 | Yellow-Orange | Orange | 0 | 10.82 |
| 41BP802 | 2 | 1021 | 998 | 7 | 70-80 | 2013 | Yellow-Orange | Orange | 0 | 13.5 |
| 41BP802 | 2 | 1021 | 998 | 7 | 70-80 | 2019 | Yellow-Orange | Orange | 0 | 29.07 |
| 41BP802 | 2 | 1021 | 998 | 8 | 80-90 | 2019 | Yellow | Orange | 0 | 22.19 |
| 41BP802 | 2 | 1021 | 998 | 8 | 80-90 | 2019 | Yellow | Orange | 0 | 27.52 |
| 41BP802 | 2 | 1021 | 998 | 8 | 80-90 | 1019 | Yellow-Orange | Orange | 0 | 10.85 |
| 41BP802 | 2 | 1021 | 998 | 8 | 80-90 | 1019 | Yellow-Orange | Orange | 0 | 19.08 |
| 41BP802 | 2 | 1021 | 998 | 8 | 80-90 | 1019 | Yellow-Orange | Orange | 25 | 32.17 |
| 41BP802 | 2 | 1021 | 998 | 8 | 80-90 | 1110 | Yellow-Orange | Orange | 0 | 9.33 |
| 41BP802 | 2 | 1021 | 998 | 8 | 80-90 | 1110 | Yellow-Orange | Orange | 0 | 11.29 |
| 41BP802 | 2 | 1021 | 998 | 8 | 80-90 | 1110 | Yellow-Orange | Orange | 0 | 15.06 |
| 41BP802 | 2 | 1021 | 998 | 8 | 80-90 | 2015 | Yellow-Orange | Orange | 0 | 10.8 |
| 41BP802 | 2 | 1021 | 998 | 9 | 90-100 | 1125 | No Fluorescence | Dark Red | 75 | 18.49 |
| 41BP802 | 2 | 1021 | 998 | 9 | 90-100 | 2116 | Yellow-Orange | Orange | 0 | 11.1 |
| 41BP802 | 2 | 1021 | 998 | 10 | 100-110 | 1014 | No Fluorescence | Dark Red | 0 | 24.45 |
| 41BP802 | 2 | 1021 | 998 | 10 | 100-110 | 1019 | No Fluorescence | Dark Red | 25 | 32 |
| 41BP802 | 2 | 1021 | 998 | 10 | 100-110 | 1019 | Orange | Dark Red | 0 | 18.39 |
| 41BP802 | 2 | 1021 | 998 | 10 | 100-110 | 1019 | Orange | Dark Red | 0 | 34.82 |
| 41BP802 | 2 | 1021 | 998 | 10 | 100-110 | 2110 | Orange | Dark Red | 0 | 16.39 |
| 41BP802 | 2 | 1021 | 998 | 10 | 100-110 | 1014 | Yellow | Orange | 0 | 37 |
| 41BP802 | 2 | 1021 | 998 | 10 | 100-110 | 1014 | Yellow | Orange | 0 | 39.26 |
| 41BP802 | 2 | 1021 | 998 | 10 | 100-110 | 2014 | Yellow | Orange | 0 | 10.18 |
| 41BP802 | 2 | 1021 | 998 | 10 | 100-110 | 2014 | Yellow | Orange | 0 | 24.6 |
| 41BP802 | 2 | 1021 | 998 | 10 | 100-110 | 2019 | Yellow | Orange | 0 | 25.43 |
| 41BP802 | 2 | 1021 | 998 | 10 | 100-110 | 1018 | Yellow-Orange | Orange | 0 | 21.81 |
| 41BP802 | 2 | 1021 | 998 | 10 | 100-110 | 1117 | Yellow-Orange | Orange | 0 | 11.01 |
| 41BP802 | 2 | 1021 | 998 | 10 | 100-110 | 2014 | Yellow-Orange | Orange | 0 | 23.41 |
| 41BP802 | 2 | 1021 | 998 | 11 | 110-120 | 2117 | No Fluorescence | Dark Red | 0 | 13.75 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP802 | 2 | 1021 | 998 | 11 | 110-120 | 1019 | Orange | Dark Red | 0 | 39.32 |
| 41BP802 | 2 | 1021 | 998 | 11 | 110-120 | 2019 | Yellow | Orange | 0 | 12.38 |
| 41BP802 | 2 | 1021 | 998 | 11 | 110-120 | 2019 | Yellow | Orange | 0 | 15.53 |
| 41BP802 | 2 | 1021 | 998 | 11 | 110-120 | 2015 | Yellow-Green | Orange | 0 | 12.9 |
| 41BP802 | 2 | 1021 | 998 | 11 | 110-120 | 1019 | Yellow-Orange | Orange | 0 | 22.25 |
| 41BP802 | 2 | 1021 | 998 | 11 | 110-120 | 1117 | Yellow-Orange | Orange | 0 | 16.72 |
| 41BP802 | 2 | 1021 | 998 | 11 | 110-120 | 2013 | Yellow-Orange | Orange | 0 | 10.52 |
| 41BP802 | 2 | 1021 | 998 | 11 | 110-120 | 2013 | Yellow-Orange | Orange | 0 | 10.95 |
| 41BP802 | 2 | 1021 | 998 | 11 | 110-120 | 2019 | Yellow-Orange | Orange | 0 | 14.4 |
| 41BP802 | 2 | 1021 | 998 | 11 | 110-120 | 2117 | Yellow-Orange | Orange | 0 | 11.28 |
| 41BP802 | 2 | 1021 | 998 | 12 | 120-130 | 1027 | No Fluorescence | Dark Red | 25 | 24.86 |
| 41BP802 | 2 | 1021 | 998 | 12 | 120-130 | 1117 | No Fluorescence | Dark Red | 0 | 10.93 |
| 41BP802 | 2 | 1021 | 998 | 12 | 120-130 | 2013 | Yellow-Orange | Orange | 0 | 10.1 |
| 41BP802 | 2 | 1021 | 998 | 12 | 120-130 | 2013 | Yellow-Orange | Orange | 0 | 12.58 |
| 41BP802 | 3 | 1067 | 1028 | 2 | 20-30 | 1019 | No Fluorescence | Dark Red | 0 | 16.7 |
| 41BP802 | 3 | 1067 | 1028 | 2 | 20-30 | 1125 | No Fluorescence | Dark Red | 0 | 18.38 |
| 41BP802 | 3 | 1067 | 1028 | 2 | 20-30 | 1125 | No Fluorescence | Dark Red | 0 | 22.83 |
| 41BP802 | 3 | 1067 | 1028 | 2 | 20-30 | 1113 | Yellow | Yellow-Orange | 0 | 14.49 |
| 41BP802 | 3 | 1067 | 1028 | 2 | 20-30 | 1013 | Yellow-Orange | Orange | 0 | 13.09 |
| 41BP802 | 3 | 1067 | 1028 | 2 | 20-30 | 1018 | Yellow-Orange | Orange | 0 | 10.7 |
| 41BP802 | 3 | 1067 | 1028 | 2 | 20-30 | 1019 | Yellow-Orange | Orange | 0 | 15.95 |
| 41BP802 | 3 | 1067 | 1028 | 2 | 20-30 | 1113 | Yellow-Orange | Orange | 0 | 23.41 |
| 41BP802 | 3 | 1067 | 1028 | 2 | 20-30 | 1116 | Yellow-Orange | Orange | 0 | 13.03 |
| 41BP802 | 3 | 1067 | 1028 | 2 | 20-30 | 1117 | Yellow-Orange | Dark Red | 0 | 12.27 |
| 41BP802 | 3 | 1067 | 1028 | 2 | 20-30 | 2113 | Yellow-Orange | Orange | 0 | 14.01 |
| 41BP802 | 3 | 1067 | 1028 | 2 | 20-30 | 2113 | Yellow-Orange | Orange | 0 | 26.55 |
| 41BP802 | 3 | 1067 | 1028 | 3 | 30-40 | 1117 | No Fluorescence | Orange | 0 | 29.3 |
| 41BP802 | 3 | 1067 | 1028 | 3 | 30-40 | 1124 | No Fluorescence | Dark Red | 0 | 15.13 |
| 41BP802 | 3 | 1067 | 1028 | 3 | 30-40 | 1124 | No Fluorescence | Dark Red | 0 | 12.06 |
| 41BP802 | 3 | 1067 | 1028 | 3 | 30-40 | 2013 | Yellow-Green | Orange | 0 | 13.59 |
| 41BP802 | 3 | 1067 | 1028 | 3 | 30-40 | 2013 | Yellow-Orange | Orange | 0 | 10.6 |
| 41BP802 | 3 | 1067 | 1028 | 3 | 30-40 | 2117 | Yellow-Orange | Orange | 0 | 11.38 |
| 41BP802 | 3 | 1067 | 1028 | 4 | 40-50 | 1019 | not done | not done | 25 | 22.11 |
| 41BP802 | 3 | 1067 | 1028 | 4 | 40-50 | 1117 | Dark Red | Dark Red | 0 | 12.19 |
| 41BP802 | 3 | 1067 | 1028 | 4 | 40-50 | 1012 | No Fluorescence | Dark Red | 75 | 11.93 |
| 41BP802 | 3 | 1067 | 1028 | 4 | 40-50 | 1117 | No Fluorescence | Dark Red | 0 | 11.26 |
| 41BP802 | 3 | 1067 | 1028 | 4 | 40-50 | 2013 | No Fluorescence | Orange | 25 | 26.07 |
| 41BP802 | 3 | 1067 | 1028 | 4 | 40-50 | 2014 | Yellow | Yellow-Orange | 0 | 32.32 |
| 41BP802 | 3 | 1067 | 1028 | 4 | 40-50 | 1019 | Yellow-Orange | Orange | 0 | 9.64 |
| 41BP802 | 3 | 1067 | 1028 | 4 | 40-50 | 1019 | Yellow-Orange | Orange | 0 | 11.55 |
| 41BP802 | 3 | 1067 | 1028 | 4 | 40-50 | 1019 | Yellow-Orange | Orange | 0 | 26.7 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP802 | 3 | 1067 | 1028 | 4 | 40-50 | 1019 | Yellow-Orange | Yellow-Orange | 25 | 28.53 |
| 41BP802 | 3 | 1067 | 1028 | 4 | 40-50 | 1117 | Yellow-Orange | Dark Red | 0 | 12.39 |
| 41BP802 | 3 | 1067 | 1028 | 5 | 50-60 | 1019 | Yellow-Orange | Orange | 0 | 26.44 |
| 41BP802 | 3 | 1067 | 1028 | 5 | 50-60 | 2013 | Yellow-Orange | Orange | 0 | 16.69 |
| 41BP802 | 3 | 1067 | 1028 | 6 | 60-70 | 1019 | Yellow-Orange | Orange | 0 | 16.51 |
| 41BP802 | 3 | 1067 | 1028 | 6 | 60-70 | 1019 | Yellow-Orange | Orange | 0 | 22.46 |
| 41BP802 | 3 | 1067 | 1028 | 6 | 60-70 | 1110 | Yellow-Orange | Orange | 25 | 26.87 |
| 41BP802 | 3 | 1067 | 1028 | 7 | 70-81 | 2015 | Yellow-Green | Orange | 0 | 16.29 |
| 41BP802 | 3 | 1067 | 1028 | 8 | 81-91 | 2013 | Yellow | Orange | 0 | 17.66 |
| 41BP802 | 3 | 1067 | 1028 | 8 | 81-91 | 2015 | Yellow-Orange | Orange | 0 | 53.95 |
| 41BP802 | 3 | 1067 | 1028 | 9 | 91-101 | 1014 | Yellow | Orange | 0 | 19.68 |
| 41BP802 | 4 | 1102 | 1031 | 1 | 10-20 | 1110 | Yellow-Orange | Orange | 0 | 21.48 |
| 41BP802 | 4 | 1102 | 1031 | 2 | 20-30 | 2014 | Yellow | Orange | 0 | 11.16 |
| 41BP802 | 4 | 1102 | 1031 | 4 | 40-50 | 1012 | Yellow-Orange | Orange | 0 | 16.52 |
| 41BP802 | 4 | 1102 | 1031 | 4 | 40-50 | 1019 | Yellow-Orange | Orange | 0 | 29.87 |
| 41BP802 | 4 | 1102 | 1031 | 5 | 50-60 | 1013 | Yellow-Orange | Orange | 25 | 19.31 |
| 41BP802 | 4 | 1102 | 1031 | 9 | 90-100 | 1012 | Yellow-Orange | Orange | 0 | 25.35 |
| 41BP802 | 4 | 1102 | 1031 | 9 | 90-100 | 1014 | Yellow-Orange | Orange | 25 | 46.9 |
| 41BP802 | 5 | 1068 | 1028 | 2 | 11-20 | 1019 | Yellow-Orange | Orange | 0 | 13.24 |
| 41BP802 | 5 | 1068 | 1028 | 2 | 11-20 | 1019 | Yellow-Orange | Orange | 0 | 13.83 |
| 41BP802 | 5 | 1068 | 1028 | 2 | 11-20 | 1019 | Yellow-Orange | Orange | 0 | 16.91 |
| 41BP802 | 5 | 1068 | 1028 | 2 | 11-20 | 1019 | Yellow-Orange | Orange | 0 | 20.37 |
| 41BP802 | 5 | 1068 | 1028 | 2 | 11-20 | 1019 | Yellow-Orange | Orange | 75 | 20.93 |
| 41BP802 | 5 | 1068 | 1028 | 2 | 11-20 | 1019 | Yellow-Orange | Orange | 0 | 28.91 |
| 41BP802 | 5 | 1068 | 1028 | 2 | 11-20 | 2012 | Yellow-Orange | Orange | 0 | 12.51 |
| 41BP802 | 5 | 1068 | 1028 | 3 | 20-30 | 1019 | Orange | Dark Red | 0 | 24.39 |
| 41BP802 | 5 | 1068 | 1028 | 3 | 20-30 | 1019 | Yellow | Yellow-Orange | 0 | 26.33 |
| 41BP802 | 5 | 1068 | 1028 | 3 | 20-30 | 1018 | Yellow-Orange | Orange | 0 | 16.55 |
| 41BP802 | 5 | 1068 | 1028 | 3 | 20-30 | 1019 | Yellow-Orange | Dark Red | 0 | 15.13 |
| 41BP802 | 5 | 1068 | 1028 | 3 | 20-30 | 1019 | Yellow-Orange | Yellow-Orange | 0 | 20.64 |
| 41BP802 | 5 | 1068 | 1028 | 3 | 20-30 | 2013 | Yellow-Orange | Orange | 0 | 14.61 |
| 41BP802 | 5 | 1068 | 1028 | 4 | 30-40 | 1014 | No Fluorescence | Dark Red | 0 | 10.93 |
| 41BP802 | 5 | 1068 | 1028 | 4 | 30-40 | 2014 | Yellow-Green | Orange | 0 | 27.22 |
| 41BP802 | 5 | 1068 | 1028 | 4 | 30-40 | 1015 | Yellow-Orange | Orange | 0 | 12.75 |
| 41BP802 | 5 | 1068 | 1028 | 4 | 30-40 | 1116 | Yellow-Orange | Orange | 0 | 17.68 |
| 41BP802 | 5 | 1068 | 1028 | 4 | 30-40 | 2113 | Yellow-Orange | Orange | 0 | 13.31 |
| 41BP802 | 5 | 1068 | 1028 | 4 | 30-40 | 2117 | Yellow-Orange | Orange | 0 | 22.82 |
| 41BP802 | 5 | 1068 | 1028 | 5 | 40-50 | 1025 | No Fluorescence | Dark Red | 0 | 12.9 |
| 41BP802 | 5 | 1068 | 1028 | 5 | 40-50 | 1117 | No Fluorescence | Dark Red | 0 | 17.49 |
| 41BP802 | 5 | 1068 | 1028 | 5 | 40-50 | 1018 | Yellow-Orange | Orange | 0 | 13.53 |
| 41BP802 | 5 | 1068 | 1028 | 5 | 40-50 | 1018 | Yellow-Orange | Orange | 0 | 16.76 |

Table C-1. Chipped Stone Data, continued...

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP802 | 5 | 1068 | 1028 | 5 | 40-50 | 1116 | Yellow-Orange | Orange | 0 | 14.4 |
| 41BP802 | 5 | 1068 | 1028 | 6 | 50-55 | 1019 | Yellow-Orange | Orange | 0 | 19.51 |
| 41BP802 | 6 | 1021 | 997 | 1 | 28-40 | 1110 | No Fluorescence | Dark Red | 0 | 11.75 |
| 41BP802 | 6 | 1021 | 997 | 1 | 28-40 | 1113 | No Fluorescence | Dark Red | 0 | 11.56 |
| 41BP802 | 6 | 1021 | 997 | 1 | 28-40 | 1019 | Orange | Dark Red | 0 | 13.81 |
| 41BP802 | 6 | 1021 | 997 | 1 | 28-40 | 1117 | Orange | Dark Red | 0 | 11.06 |
| 41BP802 | 6 | 1021 | 997 | 1 | 28-40 | 1012 | Yellow-Green | Orange | 25 | 42.88 |
| 41BP802 | 6 | 1021 | 997 | 1 | 28-40 | 1019 | Yellow-Orange | Orange | 0 | 17.59 |
| 41BP802 | 6 | 1021 | 997 | 1 | 28-40 | 1019 | Yellow-Orange | Orange | 25 | 24.28 |
| 41BP802 | 6 | 1021 | 997 | 1 | 28-40 | 2116 | Yellow-Orange | Orange | 0 | 25.24 |
| 41BP802 | 6 | 1021 | 997 | 2 | 40-51 | 1019 | Yellow | Yellow-Orange | 0 | 23.98 |
| 41BP802 | 6 | 1021 | 997 | 2 | 40-51 | 1019 | Yellow-Green | Orange | 0 | 23.55 |
| 41BP802 | 6 | 1021 | 997 | 2 | 40-51 | 1110 | Yellow-Orange | Orange | 0 | 11.94 |
| 41BP802 | 6 | 1021 | 997 | 2 | 40-51 | 2015 | Yellow-Orange | Orange | 0 | 12.81 |
| 41BP802 | 6 | 1021 | 997 | 2 | 40-51 | 2119 | Yellow-Orange | Orange | 0 | 11.13 |
| 41BP802 | 6 | 1021 | 997 | 3 | 51-60 | 1117 | No Fluorescence | Dark Red | 0 | 20.8 |
| 41BP802 | 6 | 1021 | 997 | 3 | 51-60 | 1117 | No Fluorescence | Dark Red | 0 | 24.8 |
| 41BP802 | 6 | 1021 | 997 | 3 | 51-60 | 2013 | Yellow-Orange | Orange | 0 | 15.5 |
| 41BP802 | 6 | 1021 | 997 | 4 | 60-70 | 1014 | No Fluorescence | Dark Red | 0 | 14.9 |
| 41BP802 | 6 | 1021 | 997 | 4 | 60-70 | 1117 | Orange | Dark Red | 0 | 27.6 |
| 41BP802 | 6 | 1021 | 997 | 4 | 60-70 | 2015 | Yellow-Green | Orange | 0 | 12.9 |
| 41BP802 | 6 | 1021 | 997 | 4 | 60-70 | 1019 | Yellow-Orange | Orange | 0 | 15.95 |
| 41BP802 | 6 | 1021 | 997 | 4 | 60-70 | 1019 | Yellow-Orange | Orange | 0 | 17.55 |
| 41BP802 | 6 | 1021 | 997 | 4 | 60-70 | 2013 | Yellow-Orange | Orange | 0 | 25.78 |
| 41BP802 | 6 | 1021 | 997 | 4 | 60-70 | 2015 | Yellow-Orange | Orange | 0 | 12.2 |
| 41BP802 | 6 | 1021 | 997 | 4 | 60-70 | 2015 | Yellow-Orange | Orange | 25 | 18.44 |
| 41BP802 | 6 | 1021 | 997 | 4 | 60-70 | 2117 | Yellow-Orange | Orange | 0 | 16.07 |
| 41BP802 | 6 | 1021 | 997 | 5 | 70-80 | 1127 | No Fluorescence | Dark Red | 0 | 34.72 |
| 41BP802 | 6 | 1021 | 997 | 5 | 70-80 | 2013 | Yellow-Orange | Orange | 0 | 12.38 |
| 41BP802 | 6 | 1021 | 997 | 6 | 80-90 | 2015 | Yellow-Green | Orange | 0 | 14.95 |
| 41BP802 | 6 | 1021 | 997 | 6 | 80-90 | 2015 | Yellow-Green | Orange | 25 | 17.95 |
| 41BP802 | 6 | 1021 | 997 | 6 | 80-90 | 1014 | Yellow-Orange | Orange | 0 | 17.95 |
| 41BP802 | 6 | 1021 | 997 | 6 | 80-90 | 1019 | Yellow-Orange | Orange | 0 | 13.61 |
| 41BP802 | 6 | 1021 | 997 | 6 | 80-90 | 1019 | Yellow-Orange | Orange | 0 | 14.57 |
| 41BP802 | 6 | 1021 | 997 | 6 | 80-90 | 1019 | Yellow-Orange | Orange | 0 | 36.02 |
| 41BP802 | 6 | 1021 | 997 | 6 | 80-90 | 1110 | Yellow-Orange | Orange | 0 | 13.56 |
| 41BP802 | 6 | 1021 | 997 | 6 | 80-90 | 2019 | Yellow-Orange | Orange | 0 | 15.5 |
| 41BP802 | 6 | 1021 | 997 | 7 | 90-100 | 1019 | Yellow | Yellow-Orange | 0 | 27.6 |
| 41BP802 | 6 | 1021 | 997 | 7 | 90-100 | 2110 | Yellow-Green | Dark Red | 0 | 15.21 |
| 41BP802 | 6 | 1021 | 997 | 7 | 90-100 | 2119 | Yellow-Orange | Orange | 25 | 25.66 |
| 41BP802 | 6 | 1021 | 997 | 8 | 100-110 | 1019 | Yellow-Orange | Orange | 0 | 26.74 |

Table C-1. Chipped Stone Data, continued....

| Site | Test Unit | Northing | Easting | Level | Depth (cmbd) | Material Code | Short Wave Length Color | Long Wave Length Cover | Cortex % | Maximum Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 41BP802 | 6 | 1021 | 997 | 8 | 100-110 | 1019 | Yellow-Orange | Orange | 25 | 28.54 |
| 41BP802 | 6 | 1021 | 997 | 8 | 100-110 | 2013 | Yellow-Orange | Orange | 0 | 17.39 |
| 41BP802 | 6 | 1021 | 997 | 8 | 100-110 | 2116 | Yellow-Orange | Orange | 0 | 11.19 |
| 41BP802 | 6 | 1021 | 997 | 9 | 110-119 | 1019 | Orange | Dark Red | 0 | 28.28 |
| 41BP802 | 6 | 1021 | 997 | 9 | 110-119 | 2014 | Yellow | Yellow-Orange | 0 | 12.4 |
| 41BP802 | 6 | 1021 | 997 | 9 | 110-119 | 2014 | Yellow | Yellow-Orange | 0 | 26.63 |
| 41BP802 | 6 | 1021 | 997 | 9 | 110-119 | 1019 | Yellow-Orange | Yellow-Orange | 25 | 32.94 |
| 41BP802 | 6 | 1021 | 997 | 9 | 110-119 | 1019 | Yellow-Orange | Yellow-Orange | 0 | 36.62 |
| 41BP802 | 6 | 1021 | 997 | 9 | 110-119 | 1019 | Yellow-Orange | Orange | 0 | 59.09 |
| 41BP802 | 6 | 1021 | 997 | 9 | 110-119 | 2013 | Yellow-Orange | Orange | 0 | 14.11 |
| 41BP802 | 6 | 1021 | 997 | 9 | 110-119 | 2014 | Yellow-Orange | Orange | 0 | 9.53 |
| 41BP802 | 6 | 1021 | 997 | 9 | 110-119 | 2014 | Yellow-Orange | Yellow-Orange | 0 | 38.74 |
| 41BP802 | 6 | 1021 | 997 | 10 | 119-127 | 1019 | Yellow-Orange | Orange | 0 | 28.3 |
| 41BP802 | 6 | 1021 | 997 | 10 | 119-127 | 1028 | Yellow-Orange | Orange | 0 | 29.89 |
| 41BP802 | 6 | 1021 | 997 | 10 | 119-127 | 2116 | Yellow-Orange | Orange | 0 | 13.92 |

This page intentionally left blank.

# Appendix D: Raw Material Collection at Camp Swift

This page intentionally left blank.

Table D-1. Collected Camp Swift Lithic Nodules

| Map Location (Figure 9-1) | Specimen Number | Maximum Length (cm) | Weight (kg) | Material Type | Short Wave UV | Long Wave UV |
|---|---|---|---|---|---|---|
| 1 | 1 | 9 | 0.25 | Quartzite | | |
| 1 | 2 | 5 | 0.04 | Chert | yellow | yellow |
| 1 | 3 | 5.5 | 0.105 | Quartzite | | |
| 1 | 4 | 6 | 0.12 | Quartzite | | |
| 1 | 5 | 7.5 | 0.155 | Quartzite | | |
| 1 | 6 | 9 | 0.245 | Chert | yellow | yellow |
| 1 | 7 | 7.5 | 0.165 | Quartzite | | |
| 1 | 8 | 6.5 | 0.155 | Quartzite | | |
| 1 | 9 | 6 | 0.115 | Unknown | | |
| 1 | 10 | 7.5 | 0.125 | Quartzite | | |
| 1 | 11 | 10 | 0.34 | Quartzite | | |
| 1 | 12 | 8 | 0.315 | Unknown | | |
| 1 | 13 | 8.5 | 0.35 | Quartzite | | |
| 1 | 14 | 9 | 0.15 | Quartzite | | |
| 1 | 15 | 9 | 0.305 | Quartzite | | |
| 1 | 16 | 9 | 0.255 | Quartzite | | |
| 1 | 17 | 8 | 0.42 | Quartzite | | |
| 1 | 18 | 9.5 | 0.355 | Quartzite | | |
| 1 | 19 | 11.5 | 0.495 | Quartzite | | |
| 1 | 20 | 9 | 0.28 | Quartzite | | |
| 1 | 21 | 11 | 0.47 | Quartzite | | |
| 1 | 22 | 12 | 0.29 | Sandstone | | |
| 2 | 1 | 13 | 0.975 | Quartzite | | |
| 2 | 2 | 13 | 1.08 | Quartzite | | |
| 2 | 3 | 17 | 2.255 | Quartzite | | |
| 2 | 4 | 10 | 0.34 | Quartzite | | |
| 2 | 5 | 8 | 0.36 | Quartzite | | |
| 2 | 6 | 9 | 0.395 | Quartzite | | |
| 2 | 7 | 12 | 0.79 | Quartzite | | |
| 2 | 8 | 7 | 0.21 | Quartzite | | |
| 2 | 9 | 10 | 0.4 | Quartzite | | |
| 2 | 10 | 8 | 0.285 | Quartzite | | |
| 2 | 11 | 9.5 | 0.435 | Quartzite | | |
| 2 | 12 | 6.5 | 0.145 | Quartzite | | |
| 2 | 13 | 9 | 0.27 | Quartzite | | |
| 2 | 14 | 9 | 0.32 | Chert | yellow | yellow |
| 2 | 15 | 5.5 | 0.16 | Petrified wood | | |

Table D-1. Collected Camp Swift Lithic Nodules, continued...

| Map Location (Figure 9-1) | Specimen Number | Maximum Length (cm) | Weight (kg) | Material Type | Short Wave UV | Long Wave UV |
|---|---|---|---|---|---|---|
| 2 | 16 | 9 | 0.25 | Quartzite | | |
| 2 | 17 | 9 | 0.31 | Quartzite | | |
| 2 | 18 | 8.5 | 0.205 | Quartzite | | |
| 2 | 19 | 6 | 0.13 | Quartzite | | |
| 2 | 20 | 13 | 0.97 | Quartzite | | |
| 2 | 21 | 14 | 1.095 | Quartzite | | |
| 2 | 22 | 6.5 | 0.075 | Chert | dark red | dark red |
| 3 | 1 | 7 | 0.195 | Petrified wood | | |
| 3 | 2 | 4 | 0.087 | Quartzite | | |
| 3 | 3 | 6 | 0.105 | Quartzite | | |
| 3 | 4 | 7 | 0.15 | Quartzite | | |
| 3 | 5 | 8.5 | 0.16 | Quartzite | | |
| 3 | 6 | 11.5 | 0.36 | Quartzite | | |
| 3 | 7 | 8.5 | 0.308 | Quartzite | | |
| 3 | 8 | 9 | 0.275 | Quartzite | | |
| 3 | 9 | 9.5 | 0.24 | Ironstone | | |
| 3 | 10 | 12 | 0.485 | Petrified wood | | |
| 3 | 11 | 9.5 | 0.54 | Quartzite | | |
| 3 | 12 | 11.5 | 0.81 | Quartzite | | |
| 3 | 13 | 13 | 1.141 | Ironstone | | |
| 4 | 1 | 14 | 1.195 | Quartzite | | |
| 4 | 2 | 16.5 | 0.63 | Ironstone | | |
| 4 | 3 | 12 | 0.74 | Quartzite | | |
| 4 | 4 | 13 | 0.515 | limestone | | |
| 4 | 5 | 10 | 0.295 | Ironstone | | |
| 4 | 6 | 8 | 0.325 | Ironstone | | |
| 4 | 7 | 12.5 | 0.615 | Quartzite | | |
| 4 | 8 | 14.5 | 0.535 | Ironstone | | |
| 4 | 9 | 6.5 | 0.11 | Ironstone | | |
| 4 | 10 | 7 | 0.13 | Ironstone | | |
| 4 | 11 | 5 | 0.07 | Quartzite | | |
| 4 | 12 | 7 | 0.145 | Quartzite | | |
| 4 | 13 | 6.5 | 0.12 | Quartzite | | |
| 4 | 14 | 4.5 | 0.11 | Quartzite | | |
| 4 | 15 | 5 | 0.055 | Ironstone | | |
| 4 | 16 | 5 | 0.8 | Ironstone | | |
| 4 | 17 | 10.5 | 0.325 | Ironstone | | |

Table D-1. Collected Camp Swift Lithic Nodules, continued.....

| Map Location (Figure 9-1) | Specimen Number | Maximum Length (cm) | Weight (kg) | Material Type | Short Wave UV | Long Wave UV |
|---|---|---|---|---|---|---|
| 4 | 18 | 9 | 0.355 | Quartzite | | |
| 4 | 19 | 6.5 | 0.12 | Quartzite | | |
| 4 | 20 | 9 | 0.245 | Unknown | | |
| 4 | 21 | 8 | 0.17 | Ironstone | | |
| 4 | 22 | 8 | 0.105 | Ironstone | | |
| 4 | 23 | 8.5 | 0.22 | Ironstone | | |
| 5 | 1 | 21.5 | 5.255 | Quartzite | | |
| 5 | 2 | 10 | 0.305 | Quartzite | | |
| 5 | 3 | 7.5 | 0.145 | Quartzite | | |
| 5 | 4 | 6 | 0.125 | Quartzite | | |
| 5 | 5 | 8 | 0.11 | Quartzite | | |
| 5 | 6 | 5.5 | 0.06 | Chert | yellow | yellow |
| 5 | 7 | 5.5 | 0.105 | Quartzite | | |
| 5 | 8 | 6.5 | 0.17 | Quartzite | | |
| 5 | 9 | 8 | 0.31 | Quartzite | | |
| 5 | 10 | 8 | 0.235 | Quartzite | | |
| 5 | 11 | 7 | 0.165 | Quartzite | | |
| 5 | 12 | 8 | 0.365 | Quartzite | | |
| 5 | 13 | 8 | 0.475 | Quartzite | | |
| 5 | 14 | 13.5 | 0.805 | Quartzite | | |
| 5 | 15 | 10 | 0.51 | Quartzite | | |
| 5 | 16 | 11.5 | 0.39 | Quartzite | | |
| 5 | 17 | 12 | 0.325 | Quartzite | | |
| 5 | 18 | 11 | 0.56 | Quartzite | | |
| 5 | 19 | 10.5 | 0.65 | Quartzite | | |
| 5 | 20 | 13 | 0.63 | Quartzite | | |
| 5 | 21 | 7.5 | 0.165 | Petrified wood | | |

This page intentionally left blank.

# Appendix E: Examples of Tools Collected from Camp Swift

This page intentionally left blank.

# 41BP487

Six tools and one core were recovered from 41BP487, including two biface fragments, a core tool, and three edge-modified flakes.

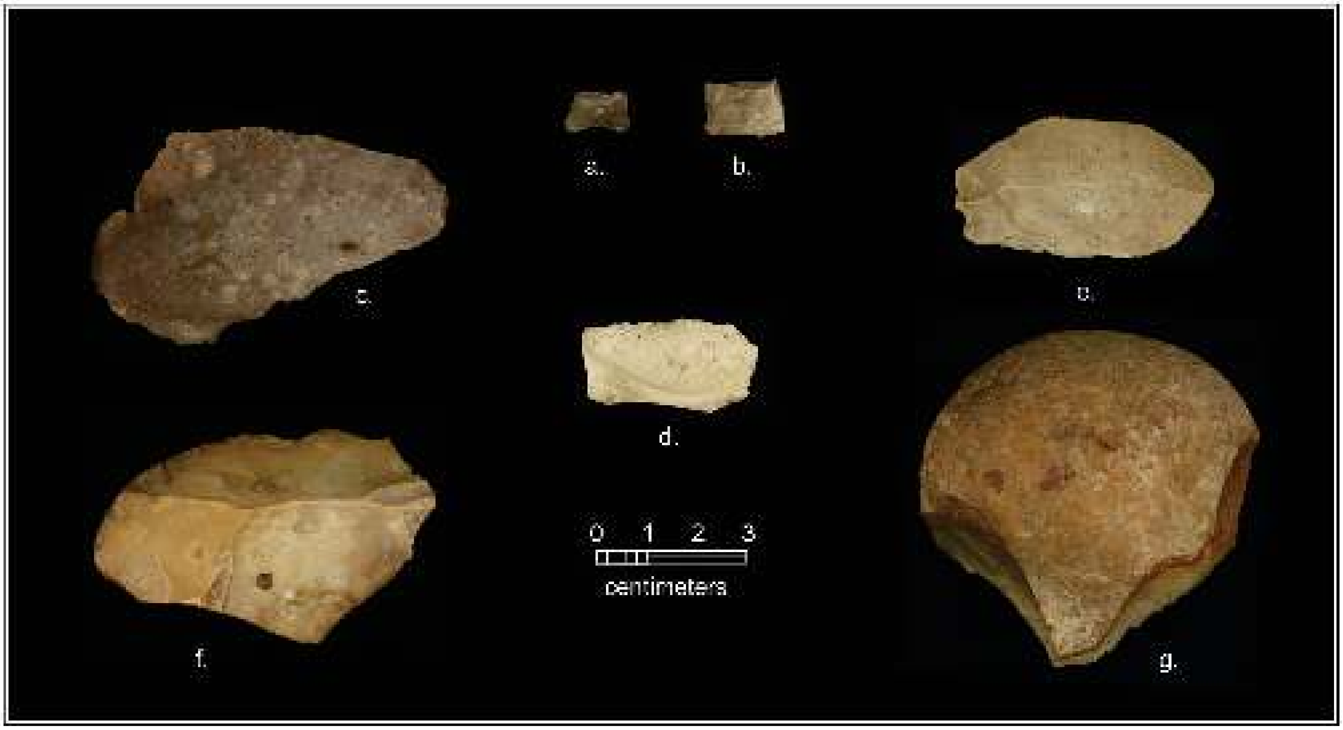


*Figure E-1. Tools and cores from 41BP487: a., b.) bifaces, possibly point bases; c., d., e.) utilized/retouched flakes; f.) core; and g.) core tool.*

# 41BP776

Eleven tools and four cores, reflecting a variety of activities, were recovered from excavations at 41BP778. The tools include one small ground stone fragment, a core tool, four small retouched/utilized tools, and five bifaces, including the single point. One of the tools has been retouched to form two graver tips.

*Figure E-2. Selected tools and cores from 41BP776: a.) graver; b., c.) utilized/retouched flakes; d., e., f.) bifaces; g., h., i., j.) cores; and k.) ground stone fragment.*

## 41BP780

One core and a utilized/retouched flake was recovered from site 41BP780.

*Figure E-3. From 41BP780: a.) core and b.) utilized/ retouched flake.*

## 41BP782

Two projectile point stems fragments were recovered from CAR's work at 41BP782. In addition to the two stem fragments, a biface midsection and three retouched/utilized items were recovered, along with three cores.

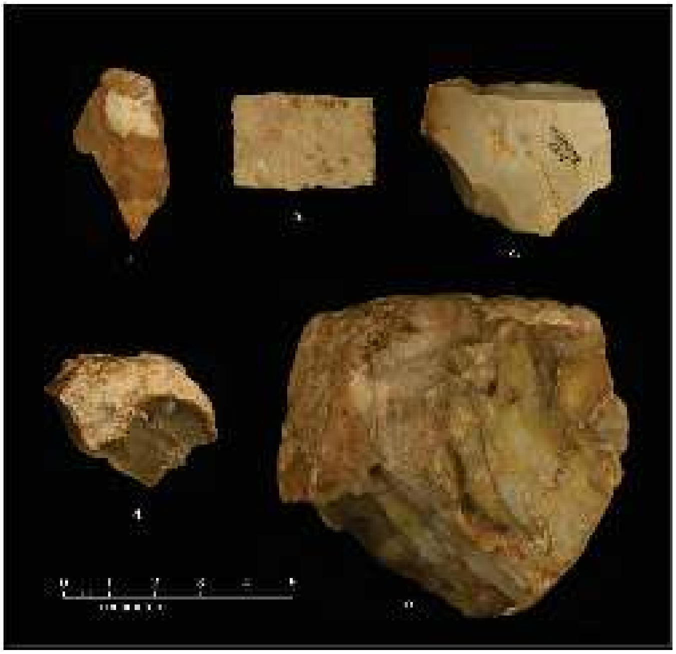


*Figure E-4. Selected tools and cores from 41BP782: a.) utilized/ retouched flakes; b.) biface; and c., d., e.) cores.*

# 41BP792

At this site, CAR excavations recovered a single projectile point (see Figure 6-3), a biface, a single core, and five retouched/utilized items. The retouched items included one piece that was reworked to produce two graver tips and a second that was retouched to produce a steep end scraper.

*Figure E-5. Selected tools and cores from 41BP792: a.) graver; b., c.) utilized/retouched flakes; d.) bifaces; and e.) core.*

# 41BP801

Five retouched/utilized items were recovered at 41BP801 including one that was retouched to form a graver tip. Two cores, one hammer stone, and one ground stone fragment were also present.

*Figure E-6. Selected tools from 41BP801: a.) graver; b., c.) utilized/retouched flakes; e.) biface; f.) hammer stone and worked edge; and g.) ground stone fragment.*

# 41BP802

A single projectile point was recovered from this site, though the stem is broken (see Figure 6-4). In addition to the point, a broken biface and four retouched items were noted for 41BP802. Three of these tools had graver tips present. An overshot flake, probably related to rejuvenation of a small blade core or biface, was also recovered from this site.

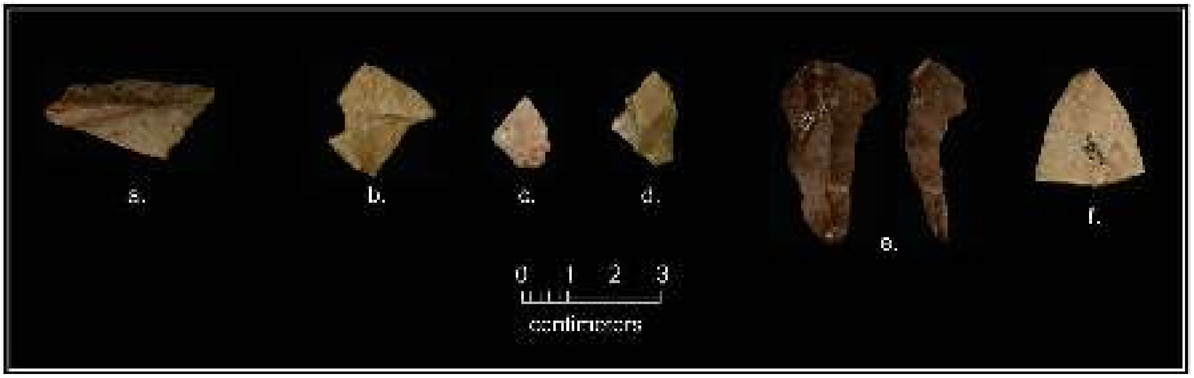


*Figure E-7. Tools from 41BP802: a.) utilized/retouched flake; b., c., d.) gravers; e.) overshot flake; and f.) biface.*