State Antiquities Landmark (SAL) Eligibility Testing of Site 41BX1592, City of San Antonio, Bexar County, Texas

Antiquities Permit # 7017

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Abstract

At the request of Atkins and the City of San Antonio (COSA), Pape-Dawson conducted State Antiquities Landmark (SAL)-eligibility testing at site 41BX1592 within the Cathedral Rock Nature Park in San Antonio, Bexar County, Texas. COSA proposes to construct a new 10-foot (ft) (3 meters [m])-wide hike and bike trail section for the Culebra Creek Greenway. A portion of the proposed trail alignment falls within the boundaries of previously recorded archaeological site 41BX1592, which was considered potentially eligible for State Antiquities Landmark (SAL) designation. Following a preliminary background review of the project area, Pape-Dawson archaeologists consulted with COSA archaeologist Kay Hindes to determine the appropriate level of effort necessary for fieldwork. As a result of this coordination, it was determined that an intensive archaeological survey of the proposed trail alignment would not be undertaken. Instead, field efforts were to focus on SAL-eligibility testing of site 41BX1592 and to determine whether any significant deposits associated with the site would be impacted by the construction of the proposed project.

Site 41BX1592 and the proposed improvements are located on property owned by the COSA; therefore, compliance with the Antiquities Code of Texas (ACT) was required. Pape-Dawson applied for and received Texas Antiquities Permit No. 7017 prior to conducting fieldwork between September 11 and December 10, 2014. However, this project did not require any federal funding or permitting; therefore, compliance with Section 106 of the National Historic Preservation Act was not necessary. Site 41BX1592 was evaluated according to the criteria in Title 13 Texas Administrative Code Chapter 26.10 (13 TAC 26.10).

Site 41BX1592 was recorded as an open campsite that contains a prehistoric lithic scatter along with fire-cracked rock (FCR). Pape-Dawson's SAL-eligibility testing of site 41BX1592 consisted of a pedestrian survey with systematic shovel testing followed by the hand-excavation of one 1-x-1-meter (m) unit and two 1-x-0.5-m units. A total of 1,299 artifacts were recovered as a result of the testing effort and included 957 lithic artifacts, 337 pieces of FCR, and five historic artifacts. Lithic artifacts recovered from site 41BX1592 include 935 pieces of debitage, three cores, and 19 lithic tools, none of which are temporally diagnostic. These investigations also resulted in the identification of two burned rock features with carbonized wood fuel remains. Feature 1 likely represents a discard pile, while Feature 2 likely represents the remains of a hearth or earth oven. Despite the absence of diagnostic artifacts, radiocarbon analysis of the wood fuel remains returned 2-sigma calibrated date ranges of 1110 to 840 B.C. for Feature 1 and 1220 to 1060 B.C. for Feature 2.

The limited number of formal tools in the 41BX1592 artifact assemblage suggests limited occupational intensity at the site. In addition, the vertical distribution of artifacts at the site points to multiple occupations occurring on a landform with a slow sedimentation rate. Furthermore, the low diversity of the artifact assemblage recovered from site 41BX1592 indicates that these occupations were likely task-specific. Task-specific activities at the site include tool manufacturing and maintenance as evidenced by a high percentage of small, tertiary flakes within the artifact assemblage. Subsistence processing also likely occurred at the site given the presence of burned rock features. Based on the results of the

fieldwork and subsequent artifact analysis, site 41BX1592 appears to have largely resulted from a series of short-term, task-specific occupations occurring during the Late-Archaic period.

In accordance with the criteria in 13 TAC 26.10, Pape-Dawson's SAL-eligibility testing of site 41BX1592 has demonstrated that no significant deposits associated with site 41BX1592 were found within or adjacent to the proposed Green Valley Road/Culebra Creek Greenway trail alignment. As a result, Pape-Dawson recommends no further work for this portion of the site and that the trail construction be allowed to proceed within the proposed alignment. Pape-Dawson submitted an interim report in January 2015 with this recommendation. The Texas Historical Commission concurred with Pape-Dawson's recommendation on February 2, 2015, and allowed construction to proceed.

Importantly, the present investigation has also demonstrated that the central portion of the site, where shovel test investigations suggest additional burned rock features are likely located, may harbor significant data resources that warrant SAL designation. Pape-Dawson recommends that the central portion of the site is potentially eligible for SAL designation and that future impacts to this portion of the site be avoided. If this is not possible, then it is recommended that the central portion of site 41BX1592 be subjected to additional archaeological testing prior to construction.

Following the Texas Historical Commission's acceptance of the draft report, Pape-Dawson submitted a request to discard artifacts letter (Appendix A) to the Texas Historical Commission. The purpose of the letter was to request to curate a reduced number of artifacts collected during the testing effort. Specifically, Pape-Dawson proposed to curate all lithic tools and debitage collected from shovel tests and hand-excavated units as well as all tools collected from the surface. All lithic debitage collected from the surface as well as all fire-cracked rock, historic artifacts, and non-cultural material are to be discarded. The Texas Historical Commission concurred with this request on January 23, 2017. Select artifacts and original paperwork (e.g., photographs, shovel test logs) will be curated at the Center for Archeological Research (CAR) at the University of Texas at San Antonio.

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Management Summary

Pape-Dawson conducted State Antiquities Landmark-eligibility testing of site 41BX1592 located within the Cathedral Rock Nature Park in San Antonio, Bexar County, Texas. Fieldwork took place between September and December 2014. This work was performed to determine whether significant deposits, if present, would be impacted by the improvements that the City of San Antonio (COSA) proposes to make within the park. These improvements include the construction of new hike and bide trail segment along the Culebra Creek Greenway.

As the proposed improvements are located on property owned by the COSA, compliance with the Antiquities Code of Texas (ACT) was required. Pape-Dawson applied for and received Texas Antiquities Permit No. 7017 prior to the initiation of fieldwork. However, this project does not require any federal funding or permitting; therefore, compliance with Section 106 of the National Historic Preservation Act was not necessary.

As a sub-consultant to Atkins, Pape-Dawson conducted SAL-eligibility testing of site 41BX1592. Melanie Nichols served as Principal Investigator and was assisted in the field by Jacob Sullivan and Chris Heiligenstein. Following the field effort, artifacts were processed and analyzed by Robin Benson Barnes and Jacob Sullivan. Figures and illustrations were produced by Jacob Sullivan and Katie Hill, respectively. The macrobotanical analysis was conducted by Leslie Bush of Macrobotanical Analysis, and radiocarbon dating was conducted by Ugo Zoppi of DirectAMS.

Site 41BX1592 is an open campsite consisting of a prehistoric lithic scatter and burned rock features. Pape-Dawson's SAL-eligibility testing of the archaeological deposits of site 41BX1592 consisted of a pedestrian survey with systematic shovel testing followed by the hand-excavation of one 1-x-1-meter (m) unit and two 1-x-0.5-m units. Based on the results of the fieldwork and subsequent artifact analysis, site 41BX1592 appears to have largely resulted from a series of short-term, low-intensity occupations that occurred during the Late-Archaic period.

Pape-Dawson's SAL-eligibility testing of site 41BX1592 has demonstrated that no significant deposits associated with site 41BX1592 were found within or adjacent to the proposed Green Valley Road/Culebra Creek Greenway trail alignment. As a result, Pape-Dawson recommends the proposed construction of the trail can proceed without additional archaeological investigations. Pape-Dawson submitted an interim report in January 2015, with this recommendation. The Texas Historical Commission concurred with Pape-Dawson's recommendation, allowing construction to proceed.

Importantly, the present investigation has also demonstrated that the central portion of the site, where shovel test investigations suggest additional burned rock feature are likely located, may harbor significant data resources that warrant SAL designation. Pape-Dawson recommends that the central portion of the site is potentially eligible for SAL designation and that future impacts to this portion of the site be avoided. If this is not possible, then it is recommended that the central portion of site 41BX1592 be subjected to additional archaeological testing prior to construction.

I. Introduction

The City of San Antonio (COSA) proposes to construct a new 10-foot (ft) (3 meters [m])-wide hike and bike trail section for the Culebra Creek Greenway. Construction of the proposed trail will be divided into two separate projects (Old Grissom Road project and Culebra Creek Greenway from Cathedral Rock Park to Grissom Road project). While the Culebra Creek Greenway from Cathedral Rock Park to Grissom Road project will entail the construction of approximately 8,480 linear ft (2,585 m) of trail, the Old Grissom Road project will include the construction of an approximately 525-linear ft (160 m)- trail segment located near the center of the proposed trail where it approaches and crosses Old Grissom Road. This new hike and bike trail will ultimately connect to the Leon Creek Greenway Trail at its eastern terminus, while the western terminus will serve as a trailhead.

Although the section of the proposed trail north of Old Grissom Road falls within an area that has not yet been surveyed, recent and historic topographic maps and aerial photographs indicate that the northern section of the proposed trail has been extensively disturbed. While about half of the proposed northern trail alignment follows the path of an abandoned road labeled as Farm-to-Market (FM) 1957 on a series of topographic maps dating from 1959 to 1983, the other half falls within an area that has been impacted by land clearing activities within the past 30 years (National Environmental Title Research [NETR] Online 2011). In contrast, the section of the proposed trail south of Old Grissom Road is located within Cathedral Rock Nature Park, a less disturbed tract of land that was previously surveyed by Tierras Antiguas Archaeological Consulting in 2004. This survey resulted in the identification of six archaeological sites within the park area. Although most of these previously recorded sites will not be directly impacted by the proposed improvements, the current trial alignment partially falls within the boundaries of site 41BX1592, a potentially eligible State Antiquities Landmark (SAL) archaeological site (Figure 1).

Following a preliminary background review of the project area, Pape-Dawson archaeologists consulted with COSA archaeologist Kay Hindes to determine the appropriate level of effort necessary for fieldwork. As a result of this coordination, it was decided that an intensive archaeological survey of the proposed trail alignment would not be undertaken. Instead, field efforts were to focus on SAL-eligibility testing of site 41BX1592 and to determine whether any significant deposits associated with the site would be impacted by the construction of the proposed project.

As the proposed improvements are located on property owned by the COSA, compliance with the Antiquities Code of Texas (ACT) was required. Pape-Dawson applied for and received Texas Antiquities Permit No.7017. However, this project did not require any federal funding or permitting; therefore, compliance with Section 106 of the National Historic Preservation Act was not necessary.

At the request of Atkins, Pape-Dawson archaeologists conducted archaeological testing at site 41BX1592 between September and December, 2014 to assess SAL eligibility for the site and to determine whether significant archaeological deposits might be impacted by the proposed improvements. Preliminary results and recommendations based on the results of the investigation were presented in an interim report to the Texas Historical Commission (THC) on January 7, 2015, to allow project construction to

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proceed while the draft report was still in production. Concurrence with the preliminary findings was granted by the THC on February 2, 2015.

This report presents the results of Pape-Dawson's SAL-eligibility testing of site 41BX1592 located in San Antonio, Bexar County, Texas. Following this Introduction, Chapters II and III discuss the physical setting of the project area and situate it within the region's larger cultural context, respectively. The research design and methods employed in performing the investigations are detailed in Chapter IV. Chapter V presents the results of the investigations at site 41BX1592, and Chapter VI provides a summary and site recommendations. Appendix A presents the artifact specimen inventory followed by the Request to Discard Artifacts letter, while Appendix B and Appendix C are the lithic artifact analysis and the macrobotanical analysis, respectively. Appendix D is the radiocarbon dating analysis.

II. Environmental Setting

Site 41BX1592 is located northeast of downtown San Antonio within the 60-acre Cathedral Rock Nature Park. Site 41BX1592 is one of six recorded archaeological sites (41BX1592, 41BX1593, 41BX1594, 41BX1595, 41BX1596, and 41BX1597) located within the park and covers approximately 1.9 acres of land between Grissom Road and Culebra Creek. Situated on the margins of the Edwards Plateau and the Blackland Prairie (Wermund 1996), the landscape at site 41BX1592 is largely characterized as riparian and upland. More specifically, the site is primarily situated across a wooded terrace that emerges above the north bank of Culebra Creek, though a small portion of the site falls within the narrow Culebra Creek floodplain. A north-south flowing tributary to Culebra Creek cuts across the western half of the site. Large oak trees are scattered along the creek's edge, while a secondary-growth forest consisting of oak, elm, and cedar trees densely covers the upper terrace. The understory consists mostly of native grasses and prickly pear cacti. Though largely vegetated, portions of the site have been cleared to construct a series of paved hiking trails.

A review of historic and modern aerials ranging in date from 1955 to 2012 indicates that site 41BX1592 was cleared of its woody vegetation as early as 1955, except along Culebra Creek and its tributary. However, by 1963 trees encroached upon the land and by 2004, the entire site was densely forested. The map and aerial review also identified previous impacts that have occurred within the site boundary of 41BX1592. A power substation was constructed along the western edge of the site at some point between 1973 and 1986, and the aforementioned paved hiking trails were installed across portions of the eastern half of the site between 2004 and 2008 (NETR] Online 2011).

The underlying geology of site 41BX1592 is mapped as Pleistocene-age Fluviatile terrace deposits, which consists of gravel, sand, silt, and clay when located adjacent to the Edwards Plateau. These terraces are mostly above the flood level along entrenched streams (Bureau of Economic Geology [BEG] 1983). The soils that are mapped within site 41BX1592 belong to the Patrick (PaC) and Tinn and Frio (Tf) series. The dominant soil at site 41BX1592 is mapped as Patrick soils (3-5 percent slopes, rarely flooded). Patrick soils are taxonomically classified as Mollisols and are formed in clayey over gravelly sediments. These soils are typically found on nearly level to strongly sloping ancient terraces of uplands and are characterized by dark grayish brown clay (A-horizon) yielding to brown clay (B-horizon) at an average depth of 25 centimeters (cm) (10 inches) below the ground surface. The remainder of the soils is mapped as Tinn and Frio soils (0-1 percent slopes, frequently flooded). Tinn and Frio soils are classified as Vertisols and Mollisols, respectively, and are formed in calcareous clayey alluvium. These soils are on floodplains of streams that drain the Blackland Prairies. Tinn soils are characterized by black clay (A-horizon) overlying black clay (B-horizon) at an average depth of 46 cm (18 inches) below the ground surface, and Frio soils consist of dark grayish brown silty clay (A-horizon) yielding to grayish brown silty clay (B-horizon) at depths of approximately 102 cm (40 inches) below ground surface (Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture 2015).

III. Cultural Chronology

Bexar County falls within the Central Texas archaeological region of the Central and Southern Planning Region as delineated by the THC (Mercado-Allinger et al, 1996). Cultural developments in this region are typically classified by archaeologists according to four primary chronological time periods: Paleoindian, Archaic, Late Prehistoric, and Historic. These classifications have been defined primarily by changes in material culture and subsistence strategies over time as evidenced through information and artifacts recovered from archaeological sites. This cultural chronology provides a brief summary of each major cultural period with reference to significant archaeological work that has occurred within the region.

Paleoindian (11,500 B.P. – 8,800 B.P.)

Although there is some debate about whether pre-Clovis Paleoindian peoples lived in Texas, there is evidence of Paleoindian occupation within Texas by 11,500 B.P. Collins (1995:376, 381) has proposed dividing this period into early and late phases, with Dalton, San Patrice, and Plainview projectile points possibly providing the transition between them. Research has shown Paleoindians were gathering wild plants and hunting large mammals (mammoth, bison, etc.) as well as smaller terrestrial and aquatic animals (Collins 1995: 381; Bousman et al. 2004: 75). Projectile points characteristic of the Paleoindian period in Central Texas are lanceolate-shaped and include Clovis, Plainview, and Folsom (Turner and Hester 1993). In Texas, most Paleoindian sites are classified as procurement or consumption sites (Bousman et al. 2004: 76-78), but a few, such as the Wilson-Leonard site in Williamson County (Collins 1995) and the Pavo Real site in Bexar County (Henderson 1980), have produced in situ human burials (Collins 1995: 383). Other Paleoindian sites discovered within Bexar County include site 41BX47 on Leon Creek (Tennis 1996), the Richard Beene site (41BX831) (Thoms and Mandel 2007), and the St. Mary's Hall site (41BX229), which has provided insight into a more diverse diet for Paleoindian groups (Hester 1978),

As the climate warmed, the Paleoindian people began to shift away from hunting large animals. The changing environment, which led to extinction of the megafauna, likely influenced their decision to focus more on hunting small game animals, including deer and rabbit, as well as gathering edible roots, nuts, and fruits (Black 1989). This change in food supply, as well as a different set of stone tools, marks the transition into the Archaic Period.

Archaic (8,800 B.P. – 1,200 B.P.)

Usually divided into early, middle, late, and sometimes transitional sub-periods, the Archaic marks a gradual shift from hunting Megafauna and some smaller animals supplemented with wild plants to a focus on hunting and gathering medium and small animals and wild plants, and an eventual transition to agriculture. Beginning with Clear Fork gouges and Guadalupe bifaces in the Early Archaic (8500 B.P. – 6000 B.P.) (Turner and Hester 1993; Collins 1995), Early Archaic people produced a variety of point types. The variety of points and their scattered distribution over a large area in the Early Archaic may indicate smaller groups of people moving over larger territories (Prewitt 1981). Point types transition to Bell-Andice-Calf Creek, Taylor, and Nolan-Travis points in the Middle Archaic (6000 B.P. – 4000 B.P.) (Turner and Hester 1993; Collins 1995), and burned rock middens become an important characteristic. The Middle Archaic focus on constructing burned rock ovens to cook a diverse array of plant food (Black

1989) suggests a slightly more sedentary focus. The Bulverde, Pedernales, Ensor, Frio, and Marcos points in the Late Archaic (4000 B.P. – 1300 B.P.) (Turner and Hester 1993; Collins 1995) mirror the diversity of point types found in the Early Archaic. During the Late Archaic, cemeteries, especially associated with rock shelters, become common in central Texas (Dockall et al. 2006). In Bexar County, sites with Early Archaic components include the Housman Road site (41BX47), the Richard Beene site (41BX831) (Thoms and Mandel 2007), the Higgins site (41BX184) (Black et al. 1998), and the Panther Springs site (41BX228) (Black and McGraw 1985). While the Elm Waterhole site (41BX300) is representative of a Middle Archaic site within Bexar County (McNatt et al. 2000), the Granberg site (41BX17\41BX271) in San Antonio is a multi-component site with occupations from both the Middle and Late Archaic sub-periods.

Late Prehistoric (1,200 B.P. – 250 B.P.)

As the Archaic transitioned into the Late Prehistoric period, several technological changes become apparent. The most notable change is the use of the bow and arrow rather than the spear and atlatl, as evidenced by smaller dart points. Another significant innovation is the creation and use of ceramic vessels. Some groups began to practice consistent agriculture during this time as well; there is some evidence that peoples in Central Texas may have incorporated agriculture into their lives, but primarily remained hunter gatherers (Collins 1995). Also during this period, there are possible indications of major population movements, changes in settlement patterns and perhaps lower population densities (Black 1989). Archaeologists divide the Late Prehistoric into two phases: the Austin phase, followed by the Toyah.

IV. Research Design

Research Questions

The primary goals of the investigation were to (1) assess the age and horizontal and vertical extent of cultural deposits at the site; (2) assess the potential for the site to contain specific activity areas, buried and intact features, or archaeological components that are intact and stratigraphically isolated; and (3) access the effect of the proposed trail construction on the site, and—if site 41BX1592 was found to be eligible for SAL designation—provide site-specific recommendations for mitigation and avoidance.

Examples of the type of data that would constitute site significance and therefore a recommendation for site 41BX1592 as eligible for SAL designation include the discovery of in situ features such as hearths or earth ovens; human burials; cultural deposits with well-preserved organic material; definable and intact activity areas where tool manufacturing, plant processing or animal butchering took place; or stratigraphically isolable archaeological components representing a living surface or occupational layer.

Field Methods

Testing consisted of a pedestrian survey with systematic shoveling testing followed by the hand-excavation of a 1-x-1-m unit and two 1-x-0.5-m units. Pape-Dawson archaeologists conducted an archaeological pedestrian survey of previously recorded site 41BX1592. The survey consisted of a visual inspection of the ground surface supplemented by the systematic excavation of shovel tests in order to evaluate the distribution of cultural material across the site. Shovel tests were excavated in two phases. During the first phase, shovel tests were excavated at 30-m (98 ft) intervals across the site. Some shovel tests were precluded by the lack of soil or the location of natural features such as creek channels or erosional gullies. Once the horizontal site limits were defined, additional shovel tests were placed at 15-m (49 ft) grid intercepts to determine the limits of any high artifact concentration areas located during the first phase of shovel testing. Shovel tests were approximately 30 cm (0.98 ft) in diameter and were excavated in 10-cm (3.9-inch) levels to sterile substrate, bedrock, or a maximum of 80 cm (2.62 ft) below the ground surface (cmbs). Soil matrices were screened through ¼-inch mesh hardware cloth unless the matrix was dominated by clay. Clay matrices were finely divided by hand and visually inspected for cultural material. Shovel tests were mapped using a handheld Trimble GPS unit and were backfilled upon completion.

Based on the results of the pedestrian survey, one 1-x-1-m unit was excavated by hand in a high-artifact-density area. This unit revealed two possible intact burned rock features. As a result, two 1-x-0.5-m units were hand excavated adjacent to the north and south wall of the 1-x-1-m unit to further expose the features. Units were excavated in 10-cm (3.9-inch) levels, and all recovered cultural materials were collected by level provenience. Soil matrices were screened through a ¼-inch mesh hardware cloth. Unit level information was recorded on a standard unit level form detailing artifact content, soil characteristics, photographs, and feature association. One wall of each unit was photographed and profiled. Features were assigned a unique number, bisected, profiled, and recorded on a standard feature form. In addition two flotation samples were collected from each feature with one sample being collected from each half. Charcoal samples were also collected, when encountered.

Laboratory Analysis

Collected artifacts were brought back to Pape-Dawson in Austin for cleaning and analysis. Artifacts were washed in distilled water, air-dried on drying racks, and catalogued by provenience. As only five historic artifacts were recovered from the site, the focus of laboratory sorting and analysis fell upon the prehistoric artifact assemblage. The only prehistoric material type recovered during testing was lithic material.

Prehistoric Artifacts

All prehistoric lithic artifacts recovered from site 41BX1592 were initially classified as either tools or non-tools and were then sorted by raw material type. Tools were divided into three subcategories: biface, uniface, and edge-modified flake (EMF). Non-tools were categorized as debitage, core, or fire-cracked rock (FCR). The assemblage of lithic debitage as well as the collection of flake tools was further subdivided according to flake reduction stage (e.g. primary, secondary, and tertiary), and the assemblage of FCR was counted and weighed by provenience.

Additional lithic analysis was then conducted to determine the stage or stages of lithic reduction that most contributed to the formation of site 41BX1592, using an expedient method developed by Turnbow and Staley (1995). This method arose to streamline the analysis of large collections from lithic procurement areas, following a more detailed analysis of nearby sites of this type (Benson and Garcia 1994), as well as an experimental knapping experiment conducted by Collins (1975). The method developed by Turnbow and Staley (1995) is based on grading debitage by size. Lithic debitage and flake tools were categorized as Grade A (< 2 cm), Grade B (2 to 5 cm), Grade C (5 to 8 cm), or Grade D (> 8 cm) where grade size was determined from the length of the longest flake measurement. The size grade histogram typology used in this study and detailed by Turnbow and Staley (1995) is illustrated in Figure 2.

Tools

Bifaces exhibit negative flake scarring extending over a portion or the entirety of both faces of the tool, with both sides converging on a single edge that circumnavigates the entire artifact. There are several possible functions for bifaces including sources for usable flakes, chopping and cutting apparatuses, or as projectile points. Bifaces recovered from the site without recognizable haft elements were assigned to one of three bifacial reduction stages: early, middle, and late. The early-stage bifaces are largely characterized as edged bifaces with minimal to no thinning and with areas of cortex present near the midline or along one or more lateral edge. The middle-stage bifaces have no cortex and exhibit large flake scars that extend to the center of the biface with minimal to moderate thinning. The late-stage bifaces represent finished bifaces.

Unifaces are formalized tools that demonstrate flake reduction limited to a significant area or the entirety of one facial surface. Scrapers are one of the most common types of unifaces, although other specialized types of unifaces exist that serve a variety of functions such as woodworking, hide-working, cutting, and chopping. Uniface type was identified based on the overall morphology and discernable elemental features of the unifacial tools.

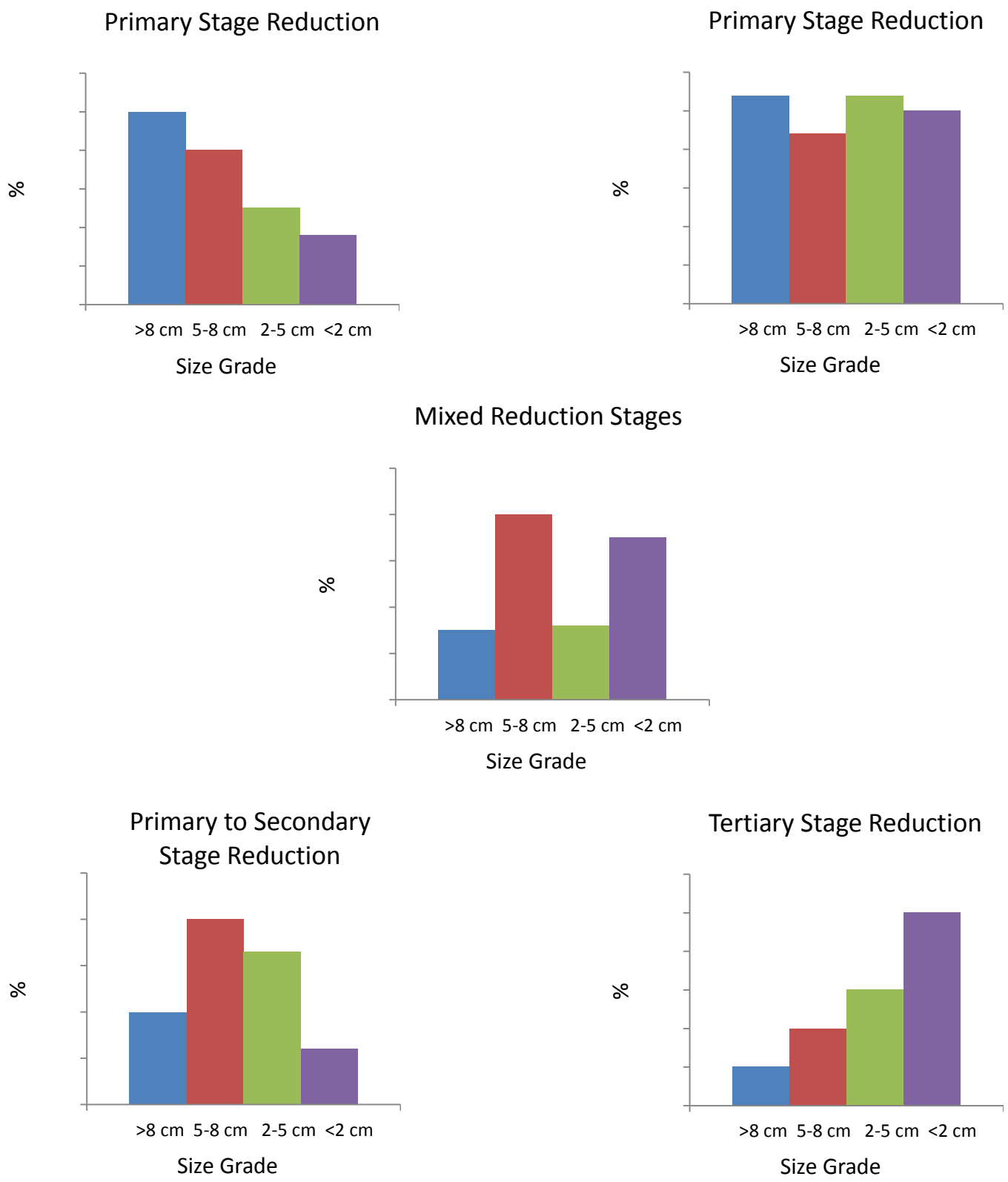

Figure 2. Size-grade Histogram Typology. Adapted from Turnbow and Staley (1995:69).

EMFs are identified as pieces of lithic debitage that exhibit intentional retouching along one or more edges in order to shape an edge for use as a tool. Flake tools are commonly referred to as expedient tools as they require less labor to create than a formal, specialized tool. Flake tools were subdivided based on the amount of cortex present on the dorsal surface into the following three categories: primary (100% of cortex remaining), secondary (between 1% and 99% cortex remaining), and tertiary (no cortex remaining).

Non-tools

Analysis of the nontool categories mainly focused on unmodified lithic debitage. However, FCR and a few cores were also recovered from site 41BX1592. Characteristics of each nontool category observed during analysis are summarized below.

Lithic Debitage includes all unmodified materials detached from an objective piece during core reduction or during the production of chipped tools. Lithic debitage was classified under the following categories: primary flakes, secondary flakes, tertiary flakes and shatter. As above, the criteria utilized to categorize these materials define primary flakes as initial reduction stage flakes retaining 100 percent of dorsal cortex. Secondary flakes denoted any flake exhibiting dorsal cortex ranging between 1 and 99 percent. Tertiary flakes were defined as non-cortical interior flakes. Lithic debitage lacking an observable striking platform as well as other morphologically discernable flake characteristics were categorized as shatter.

Fire-cracked rocks (FCR) are lithics that have been thermally altered from intentional heat exposure during the use of hot rocks for cooking and heating purposes. Characteristics associated with thermal alteration of lithic material include color change, increased luster, and heat fracturing. FCR is identified as a lithic specimen that exhibits all three forms of thermal alterations. Lithic specimens exhibiting a color change and/or an increase in luster but no fracturing due to heat are typically identified as burned rock, not FCR. However, no burned rock was collected during the testing of site 41BX1592.

A *core* represents any relatively large, homogenous lithic material exhibiting negative flake scarring on its surface owing to flake reduction activities. Andrefsky (1998) additionally categorizes cores as either unidirectional or multidirectional with respect to the directional mode of reduction. Unidirectional cores demonstrate flake reduction in one direction from a single striking platform, whereas multidirectional cores display flake reduction in variable directions and from different striking platforms.

Historic Artifacts

Historic artifacts were initially divided by material type. The material categories for the 41BX1592 assemblage consist of historic glass and metal. The historic artifact assemblage recovered during the current field effort includes a single body sherd from a light olive glass bottle, two cut nails, a metal fence staple, and a piece of wire.

Curation

Artifacts and original paperwork (e.g., photographs, shovel test logs, unit and feature forms) will be curated at the Center for Archaeological Research (CAR) at The University of Texas at San Antonio in accordance with their specified standards of preparation.

Special Studies

Special studies performed for the testing effort include macrobotanical analysis and radiocarbon dating.

Macrobotanical Analysis

Flotation samples were processed in a bucket-to-bucket flotation system and were sorted according to standard procedures (Pearsall 2000). Identifiable material removed from residue was counted, weighed, recorded, and labeled. Uncarbonized seeds and leaves were recorded on a presence/absence basis on laboratory forms. Wood charcoal identification was attempted for 20 specimens larger than 2 millimeter (mm) selected at random from each sample. When fewer than 20 fragments larger than 2 mm were present, identification was attempted for progressively smaller fragments until identification become impractical or until 20 fragments were identified. Botanical materials were identified to the lowest possible taxonomic level by comparison to materials in the Macrobotanical Analysis comparative collection and through the use of standard reference works (e.g. Core et al. 1979; Davis 1993; Hoadley 1990; InsideWood 2004; Martin and Barkley 1961; Musil 1963; Panshin and de Zeeuw 1980; Wheeler 2011).

A total of four soil samples, ranging in volume from 3.8 to 7.6 liters (1 to 2 gallons), was taken from Feature 1 and Feature 2 during the field effort and was submitted for analysis. The results of this work are summarized in Chapter 5.

Radiocarbon Dating

Radiocarbon dating is a technique for determining the age of organic remains based on the rate of decay of radioactive carbon (C-14). The radiocarbon dating method relies on radioactive carbon that is constantly being created in the atmosphere. Radioactive carbon is taken in by plants during the process of photosynthesis and is transferred to animals upon their consumption of plant material. When a plant or animals dies, it stops acquiring carbon from its environment and begins to lose C-14 at a constant rate through radioactive decay. Thus, by measuring the C-14 level in the remains of an organism, scientists can estimate the time of its death.

A total of three wood carbon samples recovered during flotation of feature matrix was submitted to DirectAMS for radiocarbon analysis. The results of this work are presented in Chapter 5.

V. Site 41BX1592

Previous Investigation

Initially recorded in 2004 by Tierras Antiguas Archaeological Consulting (TAAC), site 41BX1592 was described as an open prehistoric campsite with unknown temporal affiliation that spanned a wooded terrace overlooking Culebra Creek to the south. The site is dissected by a north-south trending tributary to Culebra Creek, isolating its western third. For management purposes, TAAC designated the portion of the site situated west of the tributary as Area A and the portion of the site situated east of the tributary as Area B (Nickels 2004).

During site recording, a total of 16 shovel tests (7 within Area A and 9 within Area B) was excavated to determine the 5-acre (2-hectare [ha]) site boundary. Eleven were positive for cultural material, which was recovered from the ground surface and from 0 to 70 cmbs (0 to 2.3 ft) from within positive shovel tests. Cultural material observed at the site included non-diagnostic lithic debitage and FCR. No diagnostic artifacts were found in association with the site; however, buried hearth features were discovered within four of the nine shovel tests placed within Area B (Nickels 2004).

Despite noting deep disturbances within Area A, TAAC concluded that Area A of site 41BX1592 possessed moderate research potential, while Area B possessed high research potential as it appeared to contain potentially intact and significant cultural deposits (e.g. buried hearth features). Additional investigations were recommended for both Area A and B if proposed impacts to the site could not be avoided (Nickels 2004).

Testing Results

Pape-Dawson archaeologists conducted SAL-eligibility testing of site 41BX1592 between September 11 and December 10, 2014, with Melanie Nichols serving as Principal Investigator and Jacob Sullivan and Chris Heiligenstein assisting with fieldwork. Testing consisted of a pedestrian survey with systematic shovel testing followed by the hand-excavation of one 1-x-1-m unit and two 1-x-0.5-m units. This testing effort resulted in the excavation of 23.75 cubic meters (m^3) of matrix and the recovery of 1,294 prehistoric artifacts and five historic artifacts. The location of all excavations conducted as part of the current archaeological investigation at site 41BX1592 can be seen on Figure 3.

Pedestrian Survey

During the pedestrian survey of site 41BX1592, archaeologists encountered a low-density surface scatter of non-diagnostic lithic debitage and burned limestone cobbles. This prehistoric surface scatter was observed across a series of moderately sloping upper terraces, rising above a narrow floodplain that abuts the north bank of Culebra Creek (Figures 4 and 5). No artifacts associated with the site were observed on the surface within the floodplain. Surface artifacts on the upper terraces were interspersed among a scatter of non-burned limestone cobbles and gravel (Figure 6). Ground surface visibility was limited across the entire site by tall grasses and leaf litter on the upper terraces, and by dense clusters of tall grasses and flood debris across the alluvial plain.

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Figure 4: View of stream terraces from the Culebra Creek floodplain, facing northwest

Figure 5: Overview of Site 41BX1592 across upper stream terraces, facing northeast

Figure 6: Overview of burned (gray cobbles) and non-burned (white cobbles) limestone cobbles scattered across the surface at site 41BX1592, facing north

Disturbances to the site have resulted from both artificial and natural impacts. Observed artificial disturbances include the construction of a power substation adjacent to the site's western boundary; a gravel road and a sewer line within a north-south oriented, contoured drainage within the western half of the site; and the installation of the existing system of park trails within the eastern half of the site. Construction and maintenance of Grissom Road and Old Grissom Road located just to the north of site 41BX1592 may have also impacted portions of the site. Additionally, the vast majority of the site was previously cleared and possibly plowed as evidenced by a 1955 aerial photograph of the area (NETR Online 2014). The dominance of saplings presently dispersed across the landscape also attests to this prior disturbance. Natural impacts to the site include erosion of material downslope as well as bioturbation caused primarily by root activity.

Surface collection at 41BX1592 yielded a total of 48 prehistoric artifacts. The surface artifact assemblage includes two bifaces, two EMFs, one core, three pieces of FCR, and 40 pieces of non-diagnostic lithic debitage. While surface artifacts were collected across the length of the site, a large majority of the surface finds were recovered within 30 m (98 ft) of Shovel Test (ST) 24 near the center of the site (see Figure 3).

Shovel Testing

Along with the pedestrian survey, Pape-Dawson archaeologists conducted shovel test investigations to re-access the site boundaries and to identify any high artifact concentration areas that may exist within

the site. Shovel testing was undertaken in two phases. During the first phase, 37 shovel tests were excavated across the site along a 30-m grid. A few shovel tests were precluded by prior disturbances or steepness of slope. Of these 37 shovel tests, 17 were positive for cultural material, yielding 101 prehistoric artifacts and two historic artifacts. Prehistoric artifacts recovered from shovel tests include 85 pieces of lithic debitage, 15 pieces of FCR, and one core recovered at depths ranging from 0 to 50 cmbs. Historic artifacts consist of one cut nail from Level 1 (0 to 10 cmbs) of ST 46 and one piece of metal wire from Level 3 (20 to 30 cmbs) of ST 14.

During the second shovel testing phase, eight additional shovel tests (STs 17, 18, 19, 23, 25, 28, 29, and 30) were excavated at 15-m (49 ft) grid intercepts near the most prolific shovel test (ST 24) encountered during the first phase of shovel testing. Seven of the eight shovel tests were culturally positive, resulting in the recovery of one biface, one EMF, 52 pieces of lithic debitage, and one piece of FCR from depths between 0 and 55 cmbs. Furthermore, two additional shovel tests (ST 20 and ST 31) were judgmentally placed along the proposed trail alignment to further investigate the proposed alignment's potential to impact significant deposits associated with site 41BX1592. Of these two, only ST 20 was positive for cultural material, yielding one piece of lithic debitage from Level 7 (60 to 70 cmbs).

In total, 47 shovel tests (see Figure 3) were excavated to investigate the entirety of the site, of which 25 were culturally positive. Five of the 47 shovel tests (STs 20, 31, 32, 40, and 43) were excavated along the portion of the proposed trail alignment that falls within the boundary of site 41BX1592. Of the five, only one (ST 20) was positive, as previously mentioned.

All positive shovel tests except one were located across the upper terraces north of Culebra Creek. ST 20 was the only positive shovel test located within the narrow Culebra Creek floodplain. Shovel tests placed across the upland terraces typically exposed very dark grayish brown (10YR3/2), gravelly clay loam with a gravel content that increased with depth. Shovel tests were terminated at varying depths of 30 to 55 cmbs upon encountering sterile subsoil or the presence of large limestone cobbles. Shovel tests excavated within the floodplain of Culebra Creek typically revealed brown (10YR4/3) silty loam and were terminated between 60 and 70 cmbs. Shovel test investigations at site 41BX1592 demonstrated that cultural deposits extended to the north beyond the original site boundary; therefore, the 41BX1592 site boundary was expanded and the total site size was increased from roughly 5 to 7.6 acres (2 to 3 ha).

Lithic debitage was the most common class of cultural material recovered on-site through shovel testing (Table 1). Cultural material was recovered at depths ranging from 0 to 70 cm below the surface. The concentration of cultural material within Levels 1, 2, and 3 suggest these levels represent cultural zones that likely are near and/or contain one or more living surfaces. Below Level 3, the recovery rate for cultural material at site 41BX1592 quickly diminishes. The distribution of cultural material in Levels 4 through 7 is likely attributed, at least in part, to bioturbation from root activity associated with secondary tree growth.

Table 1: Cultural Material from Shovel Tests by Level

Level	Biface	EMF	Core	FCR	Debitage	Historic Metal	**Grand Total**
1 (0-10 cmbs)				8	45	1	54
2 (10-20 cmbs)	1	1	1	5	40		48
3 (20-30 cmbs)				2	32	1	35
4 (30-40 cmbs)				1	4		5
5 (40-50 cmbs)					14		14
6 (50-60 cmbs)					1		1
7 (60-70 cmbs)					1		1
Grand Total	1	1	1	16	137	2	**158**

The distribution and density of prehistoric finds per shovel test are presented in Figures 7 and 8. This information suggests the presence of a high-artifact-concentration area located near the center of the site, and the distribution of surface artifacts also lends support to this notion. The high-artifact-concentration area lies on a series of upper terraces situated on the north side of Culebra Creek. Pape-Dawson archaeologists observed a significant increase in density and diversity of prehistoric material within this area as compared to the rest of the site. The surface and shovel test prehistoric artifact assemblage from the high-artifact-concentration area consists of one biface, three EMFs, one core, 13 pieces of FCR, and 132 pieces of non-diagnositic lithic debitage. These 150 prehistoric artifacts constitute 73.5 percent of the total number (n=204) of prehistoric artifacts recovered as a result of the combined pedestrian survey (n=48) and shovel testing efforts (n=156).

Hand Excavation

Based on the results of shovel testing, a 1-x-1-m unit (Unit 1) was excavated by hand near ST 24 and within the high-artifact-concentration area. A burned rock feature was identified within Level 4 of this unit. The feature extended into the northern and southern walls of Unit 1; therefore, two 1-x-0.5-m units identified as Unit 2 and Unit 3 were excavated to further expose the feature material to the north and to the south of Unit 1, respectively (see Figure 3). In all, 23.75 m^3 of matrix was excavated by hand. Once fully exposed across the three units, the burned rock appeared to form two distinct clusters representing two separate features. From this point forward, cultural material associated with the burned rock deposits was collected as either part of Feature 1 or Feature 2.

The vertical distribution of cultural material recovered through hand excavation of all three units is presented in Table 2. Prior to unit excavation, artifacts observed on the surface within the designated unit perimeters were collected and recorded as surface finds. Cultural material recovered within unit excavations includes eight bifaces, four unifaces, one EMF, one core, 318 pieces of FCR, 758 pieces of non-diagnostic lithic debitage, 2.35 grams (g) of charcoal, and three historic artifacts (a glass shard, cut nail, and fence staple). The vertical distribution of artifacts within hand-excavated units generally parallels that obtained through shovel testing. Lithic debitage was the most common class of cultural material recovered within the units, and the greatest concentration of cultural materials was recovered from Levels 1 through 4. The remaining levels exhibit a gradual decrease in artifacts with vertical distance from Level 4. Although FCR was distributed throughout the vertical column from Levels 1 through 6, the highest rate of recovery for this class of material was obtained in Level 4, which contains

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Table 2: Cultural Material from Hand Excavated Units by Level

Level	Biface	Uniface	EMF	Core	FCR	Debitage	Charcoal (g)	Historic Artifact	**Grand Total**
1	2	1	1		17	150		2	173
2	3	1			25	217		1	247
3	1	1			52	202			257
4				1	116	111	1.29		228
5	1				69	70	0.86		140
6		1			39	8	0.2		48
Grand Total	8	4	1	1	318	758	2.35	3	**1,093**

the majority of the two burned rock features encountered during unit excavation.

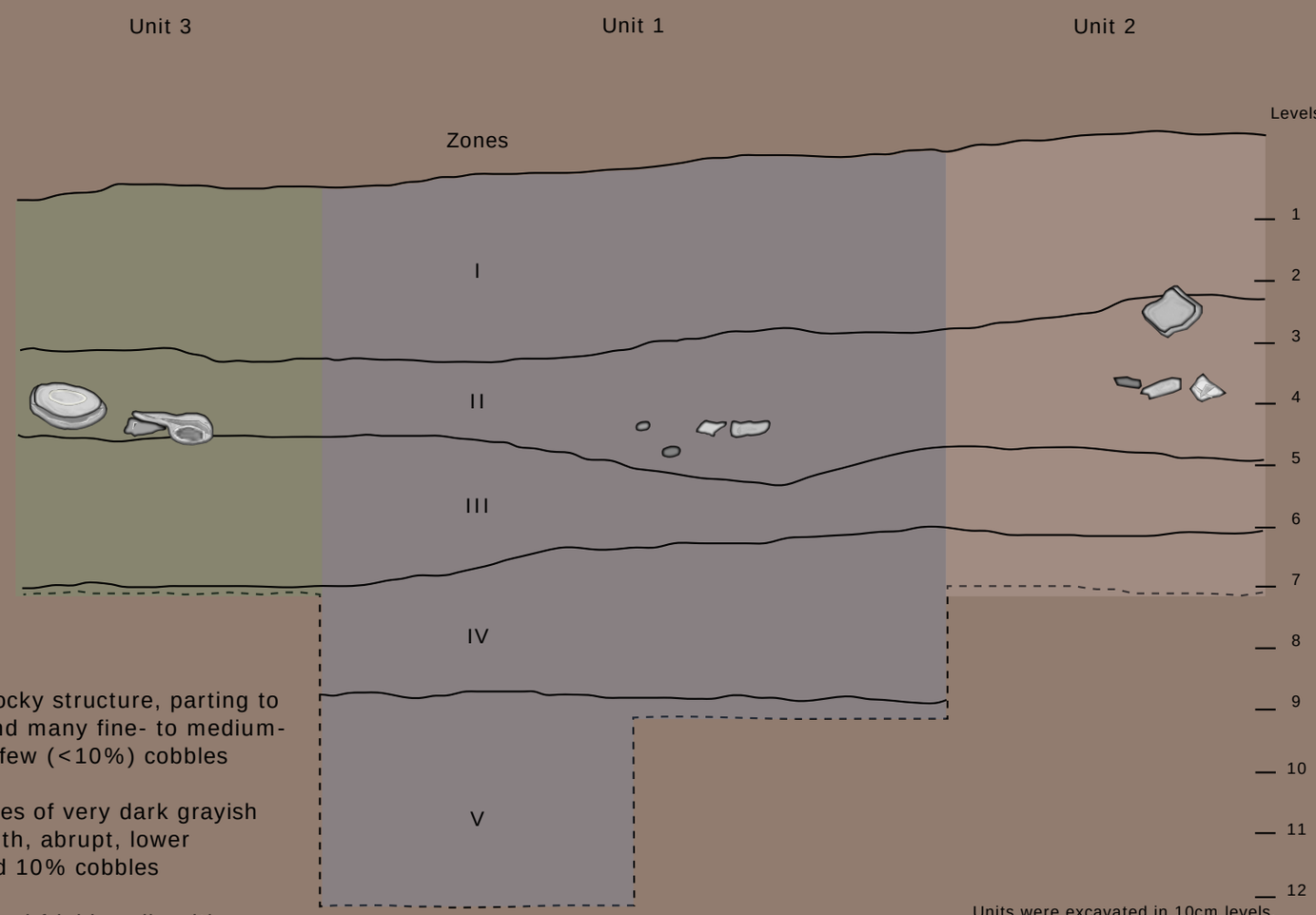
In addition to cultural material, Cretaceous-age, ram's horn oyster fossils were encountered within the soil matrix of Levels 1 through 3 within the hand excavated units. Interestingly, these fossils were located above the cultural features and within a landform whose underlying geology dates to the much younger Pleistocene Epoch. However, Upper Cretaceous-age Austin Chalk is mapped as the underlying geology of an upland rise located just north and upslope from site 41BX1592 (BEG 1983). The presence of Cretaceous-age fossils as well as angular and sub-angular gravel that were noted within the soil matrices of the aforementioned levels suggest that the burned rock features and any subsequent living surfaces have been buried in part as a result of upslope erosion and colluvial aggradation.

When sedimentation at a site is rapid, archaeological assemblages from different occupations will be vertically separated or stratigraphically isolated from one another. However, when the rate of sedimentation is slow, archaeological assemblages from different occupations may be mixed or only thinly separated within the vertical column (Waters 1996). Based on the vertical distribution of artifacts at site 41BX1592, it appears that the site likely resulted from multiple short-term occupations situated upon a landform with a slow sedimentation rate.

Unit 1

Unit 1 was a 1-x-1-m unit situated near ST 24 within a high-artifact-concentration area defined during shovel testing (see Figure 3). This unit (Figure 9) was excavated through a total of 12 levels including several layers of calcareous clay loam, silty clay loam, and silt loam with high concentrations of gravel. Unit 1 was excavated as a 1-x-1-m unit to the bottom of Level 9. Then, the unit size was reduced to 50-x-50 cm, and the unit was excavated through three additional levels to investigate the potential for deeply buried cultural material.

Artifacts were recovered only from Levels 1 through 6 (Table 3). Excavation of this unit resulted in the recovery of three bifaces, three unifaces, one EMF, 140 pieces of FCR, 348 pieces of lithic debitage, 0.45 g of charcoal, and one historic artifact (a glass bottle shard). Fifteen pieces of FCR collected from Level 5 represent part of Feature 1, a burned rock feature located within the northern half of the unit.



Soil Description

I. Very dark grayish brown (10YR3/2) clay loam, with angular, blocky structure, parting to grandular, friable soils with a smooth, clear, lower boundary, and many fine- to medium-sized roots, many angular to subangular (30-40%) gravel and few (<10%) cobbles

II. Brown (10YR4/3) clay loam with common, medium-sized mottles of very dark grayish brown (10YR3/2), granular structure, very friable soils, a smooth, abrupt, lower boundary and 50% angular to subangular, pea-sized gravel and 10% cobbles

III. Brown (7.5YR4/3) silty clay with blocky, subangular structure and friable soils with a smooth, abrupt, lower boundary and few, soft $CaC0_3$ flecks

IV. Brown (7.5YR4/4) silty loam with a smooth, clear, lower boundary, granular structure, 30% limestone gravel and $CaC0_3$ nodules

V. Brown (7.5YR4/4) silty loam with 50% gravel and $CaC0_3$ nodules, including many small masses increasing with depth, and no lower boundary encountered

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Figure 9 : Site 41BX1592, Units 1-3, West Wall Profile

Table 3: Cultural Material from Unit 1 by Level

Level	Biface	Uniface	EMF	Core	FCR	Debitage	Charcoal (g)	Historic Artifact	**Grand Total**
1	1	1	1		7	76			86
2	1	1			15	80		1	98
3	1				10	80			91
4					33	56	0.16		89
Feature 2 (Level 4)					20	2			22
Feature 1 (Level 4)							0.29		
Feature 1 (Level 5)					15	5			20
5					13	43			56
6		1			27	6			34
Grand Total	3	3	1		140	348	0.45	1	**496**

Twenty pieces of FCR collected from Level 4 represent part of Feature 2, a burned rock feature situated in the southern half of the unit. Additional cultural material recovered within Level 4 (33 pieces of FCR and 56 of debitage) represent a mixture of Feature 1 and Feature 2 materials, as these artifacts were collected before the horizontal distribution of burned rock across this level was determined to be associated with multiple features.

Unit 2

Unit 2 was a 1-x-0.5-m unit placed adjacent to the northern wall of Unit 1 to further expose Feature 1 (see Figure 3). This unit (see Figure 9) was excavated down a total of 7 levels through several layers of calcareous clay loam and silty clay loam with high concentrations of gravel. Artifacts were recovered from within the upper 6 levels (Table 4). Level 7 was sterile and did not contain any cultural materials. Excavation of this unit resulted in the recovery of one biface, one uniface, 93 pieces of FCR, 243 pieces of non-diagnostic lithic debitage, 1.9 g of charcoal, and two historic artifacts (a cut nail and a fence staple). Within Unit 2, Feature 1 consisted of 40 pieces of the FCR and 35 pieces of debitage vertically distributed throughout Level 4 and into the upper half of Level 5.

Table 4: Cultural Material from Unit 2 by Level

Level	Biface	Uniface	EMF	Core	FCR	Debitage	Charcoal (g)	Historic Artifact	**Grand Total**
1					9	62		2	73
2					6	70			76
3		1			24	67			92
Feature 1 (Level 4)					22	33	0.84		55
Feature 1 (Level 5)					18	2			20
5	1				7	9	0.86		17
6					7		0.2		7
Grand Total	1	1			93	243	1.9	2	**340**

Unit 3

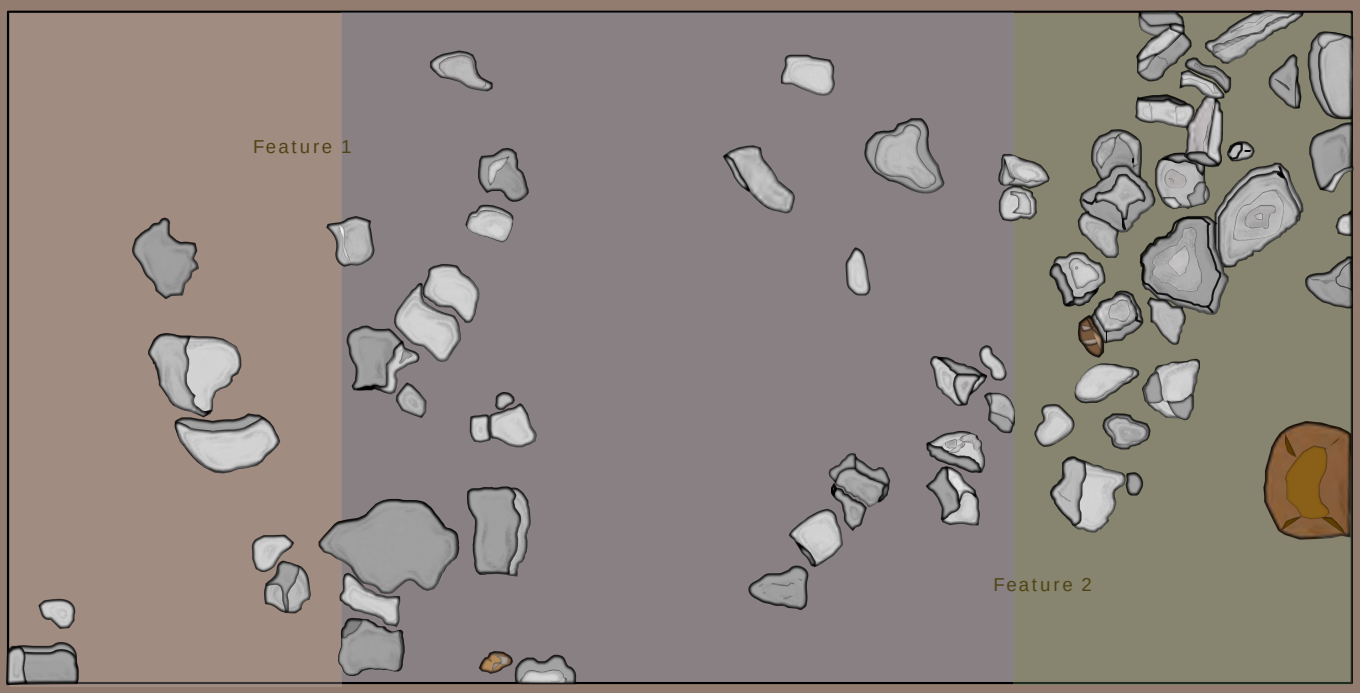
Unit 3 was a 1-x-0.5-m unit excavated south of Unit 1 to further expose Feature 2 (see Figure 3). This unit (see Figure 9) was excavated through seven levels including several layers of calcareous clay loam and silty clay loam with high concentrations of gravel. Artifacts were recovered from within Levels 1 through 6 (Table 5). Level 7 was sterile and did not contain any cultural materials. Excavation of this unit resulted in the recovery of four bifaces, one core, 85 pieces of FCR, and 167 pieces of non-diagnostic lithic debitage. Within Unit 3, Feature 2 consisted of all material recovered within Level 4, including one core, 41 pieces of FCR, and 20 pieces of lithic debitage.

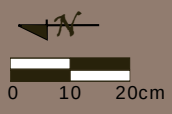
Table 5: Cultural Material from Unit 3 by Level

Level	Biface	Uniface	EMF	Core	FCR	Debitage	Charcoal (g)	Historic Artifact	**Grand Total**
1	1				1	12			14
2	2				4	67			73
3	1				18	55			74
Feature 2 (Level 4)				1	41	20			62
5					16	11			27
6					5	2			7
Grand Total	4			1	85	167			**257**

Features

Feature 1 (Figure 10) was initially encountered at the bottom of Level 3 within Unit 1. As the feature appeared to extend into the north wall of Unit 1, a second unit (Unit 2) was opened to further expose the northern limits of the feature. Although the top of the feature was exposed within Level 3, Feature 1 was largely encountered and contained within Levels 4 and 5 of Unit 2 and the northern half of Unit 1.





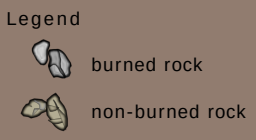


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Figure 10 : Features 1 and 2

Feature 1 consists of a roughly oval arrangement of burned limestone rocks measuring approximately 94 cm (3.1 ft), east to west, and 60 cm (1.9 ft), north to south, along the major and minor axes of the feature, respectively. The feature was evidenced only by the burned rock; no soil discoloration was present. The feature likely represents the remains of a small discarded pile of burned rocks. In total, 55 pieces of FCR, 40 pieces of non-diagnostic lithic debitage, and 1.13 g of charcoal were collected in the field in association with Feature 1. One piece of FCR exhibits a small circular indentation on one surface that is similar to those present on pitted cobbles, sometimes referred to as nutting stones or anvil stones (Figure 11). Two flotation samples were taken from the soil amidst the burned rocks and were submitted to Macrobotanical Analysis in Austin for analysis.

Feature 2 (see Figure 10) was also initially encountered at the base of Level 3 within Unit 1. As this feature appeared to extend into the south wall of Unit 1, a third unit (Unit 3) was opened south of Unit 1 to further expose the feature's horizontal extent. While the top of the feature was exposed within Level 3, Feature 2 was largely encountered and contained within Level 4 of Unit 3 and the southern half of Unit 1. Feature 2 consists of a roughly circular arrangement of burned limestone rocks clustered within the southeast corner of Unit 3. The feature measures at least 95 cm (3.1 ft) north to south-by-90 cm (2.9 ft) east to west; however, the horizontal limits of the feature were not fully defined as the feature was observed extending into the southern and eastern walls of Unit 3. Feature 2 was evidenced only by the presence of burned rock; no soil discoloration was noted. Feature 2 appears to represent either the remains of a hearth or earth oven. In total, 61 pieces of FCR, 22 pieces of non-diagnostic lithic debitage, and one core was collected in associated with Feature 2. Two flotation samples were taken from the soil amidst the burned rocks and were submitted to Macrobotanical Analysis in Austin for analysis.

Figure 11: Possible pitted cobble; black arrows outline the circular depression

Artifact Assemblage

The assemblage of artifacts recovered from site 41BX1592 during SAL-eligibility testing is composed of 1,294 prehistoric artifacts and 5 historic artifacts. A total of 1,251 artifacts (96 percent) was recovered from subsurface deposits during shovel testing (n=158) and unit excavation (n=1,093). The historic artifact assemblage recovered during the current field effort includes a body sherd from a light olive glass bottle, two cut nails, a metal fence staple, and a piece of wire. Results of the prehistoric artifact analysis are presented below.

Lithic Analysis

Tools

The assemblage of lithic tools includes 11 bifaces, four unifaces (scrapers), and four EMFs. All of the lithic tools recovered from site 41BX1592 are made from chert.

Bifaces

Bifaces (Figure 12) were recovered from the surface (n=2) and from subsurface deposits (n=9) ranging in depth from 0 to 50 cmbs during the current field effort. Of the 11 bifaces recovered, one is an early-stage biface (Specimen 33.01), two are middle-stage bifaces (Specimens 72.02 and 81.01), and three are late-stage bifaces (Specimens 71.01, 72.01, and 63.01). The remaining five bifaces are too fragmentary to be assigned to a reduction stage. All of the bifaces recovered from 41BX1592 are broken and incomplete, except Specimen 33.01. Most of the bifaces have flaws that would have prevented further reduction. Flaws include material defects, breaks, and step and hinge fractures. Two of the bifaces (Specimens 61.02 and 81.01) exhibit signs of thermal alteration.

Figure 12: Bifaces recovered at site 41BX1592

Specimen 3.01 is a distal fragment of a light brownish-gray chert biface with minimal thinning and a high medial ridge discernable on one face. The distal tip is rounded, and the fragment is thick compared to its width. No evidence of utilization was observed, suggesting this specimen was abandoned following a manufacturing failure. This specimen is too fragmentary to be assigned to a reduction stage. Though incomplete, it measures 24.68 mm in length by 22.66 mm in width with a maximum thickness of 9.53 mm.

Specimen 33.01 is a complete, early-stage butted biface that has been formed from a grayish-white chert cobble. The distal tip is pointed, and the base is rounded with cortex covering much of its surface. A high medial ridge is present on one face, extending from the distal tip to roughly two-thirds the total length of the specimen. This crudely-made biface exhibits large flake scars and little to no bifacial thinning. It measures 136.34 mm in length by 74.83 mm in width with a maximum thickness of 50.37 mm.

Specimen 41.01 is a distal fragment of a grayish-brown chert biface. It appears to have been formed from a flake that has undergone bifacial retouching along its edges. As such, no cortex is present and the flakes scars present along the blade edges do not extend to the midline on either face. The distal tip is rounded, and the proximal end of the biface is missing as a result of a snap fracture that occurred during manufacturing or use. This specimen is too fragmentary to be assigned to a reduction stage. Though incomplete, it measures 30.37 mm in length by 23.82 mm in width with a maximum thickness of 6.78 mm.

Specimen 61.02 is a medial biface fragment containing one lateral edge. Small flake scars associated with pressure flaking are present on the extant lateral edge of the brown chert tool. The presence of a snap fracture and evidence of thermal alteration indicated that the specimen was broken and then heated/burned after discard. This specimen is too fragmentary to be assigned to a reduction stage. Though incomplete, it measures 21.24 mm in length by 20.07 mm in width with a maximum thickness of 6.38 mm.

Specimen 62.02 is a small medial fragment of a bifacially-worked edge. Its small size and wedge shape suggests it may have resulted from a “bird’s foot” snap caused by end shock to the tool during manufacturing. It is brown in color and is too fragmentary to be assigned to a reduction state. Though incomplete, it measures 11.46 mm in length by 14.75 mm in width with a maximum thickness of 7.59 mm.

Specimen 63.01 is a proximal fragment of a brown chert biface. The specimen is thin compared to its width and appears to have been finely flaked. Thus, it is considered a late-stage biface. The proximal fragment also exhibits basal thinning that gives it a wedge-shaped appearance. The specimen is thought to have failed during manufacture as a snap fracture is present at the site of an impurity/inclusion within the chert. Though incomplete, it measures 17.56 mm in length by 26.15 mm in width with a maximum thickness of 6.73 mm.

Specimen 71.01 is a medial fragment of a late-stage biface. This specimen is missing its base and distal tip from snap fractures that have occurred at each end. In addition, there are stacked hinge/step

fractures on one face that radiate down from the distal snap fracture. The broken tip in conjunction with the stacked hinge/step fractures indicates that the biface was likely utilized and damaged by striking something hard enough to have snap and crushed its tip. Made of grayish-white chert, this specimen has been thinned across both faces with no trace of a medial ridge. Though incomplete, it measures 31.57 mm in length by 33.63 mm in width with a maximum thickness of 7.92 mm.

Specimen 72.01 is a distal fragment of a late-stage biface. This specimen is missing its basal end due to a perverse fracture, which is indicative of a failure during tool manufacturing. It is made of brown chert and has a rounded distal tip. The biface has been finely flaked, and signs of pressuring flaking are evident along the lateral edges. The specimen exhibits thinning across both faces with no medial ridge. Though incomplete, it measures 49.90 mm in length by 32.98 mm in width with a maximum thickness of 5.83 mm.

Specimen 72.02 is a proximal fragment of a middle-stage biface with moderate thinning and large flake scars. There is no evidence of a medial ridge on either face or any cortex remaining on the dorsal surface. The stem is crudely made and rounded with a notch on one side. This specimen is missing its proximal end due to a perverse fracture that likely occurred during tool manufacturing. It is made of brown chert. Though incomplete, it measures 53.63 mm in length by 39.71 mm in width with a maximum thickness of 8.93 mm.

Specimen 73.01 is either a distal tip of a biface or a barb of a projectile point. Made of whitish-gray chert, the tip/barb is pointed and has been separated from the body of the tool by a snap fracture. This specimen is too fragmentary to be assigned to a reduction stage. Though incomplete, it measures 11.08 mm in length by 11.24 mm in width with a maximum thickness of 3.42 mm.

Specimen 81.01 is a medial fragment of a middle-stage biface with moderate thinning and large flake scars. There is no evidence of a medial ridge on either face or cortex remaining on the dorsal surface. This specimen is missing its base and distal tip from snap fractures that have occurred at each end. The specimen is thought to have failed during manufacture due to its stage of reduction and the location of the distal snap fracture at the site of an impurity/inclusion within the chert. Made of whitish-gray chert with black mottles, the medial fragment exhibits signs of thermal alteration. Though incomplete, it measures 30.80 mm in length by 39.20 mm in width with a maximum thickness of 11.64 mm.

Unifaces

Four unifaces/scrapers (Figure 13) were recovered from subsurface deposits during unit excavation at depths ranging from 0 to 60 cmbs. All of the unifaces are broken and incomplete, except for one. None of the unifaces show signs of having been thermally altered.

Specimen 61.01 is a complete uniface scraper with a triangular-shaped body. This specimen has 30 percent cortex remaining on its dorsal surface and is heavily patinated. Made of light gray chert, it measures 59.39 mm in length by 44.15 mm in width with a maximum thickness of 14.76 mm.

Figure 13: Unifaces recovered at site 41BX1592

Specimen 62.01 is a brown chert uniface scraper with damage to it hafting element. It is thin and irregularly shaped. Though incomplete, it measures 37.64 mm in length by 37.80 mm in width with a maximum thickness of 6.82 mm.

Specimen 69.01 is a uniface scraper fragment of light gray chert. There is cortex on the dorsal surface except for the flake scars along the edges. Though incomplete, it measures 39.10 mm in length by 46.63 mm in width with a maximum thickness of 15.44 mm.

Specimen 76.01 is body of a uniface scraper of light gray chert. Its hafting element has been lost to snap fractures, and its proximal end appears to exhibit damage, suggesting this specimen was broken as a result of use and discarded. Though incomplete, it measures 38.54 mm in length by 39.90 mm in width with a maximum thickness of 8.48 mm.

Edge-Modified Flakes

Four pieces of lithic debitage recovered from the site were identified as EMF tools. These specimens exhibit signs indicative of intentional retouch along one or more lateral edges. The flake tools were recovered from the surface (n=2) and subsurface deposits (n=2) at depths ranging from 0 to 10 cmbs. This assemblage includes one secondary flake tool and three tertiary flake tools. All of the flake tools are incomplete, and one has been thermally altered as evidenced by the presence of a potlid. All four of the

EMF tools exhibit unifacial retouching, with two exhibiting unifacial retouching along one lateral edge, while the other two exhibit unifacial retouching along two lateral edges.

Non-tools

The assemblage of non-tool lithic artifacts consists of 935 pieces of unmodified debitage, three cores, and 337 pieces of FCR. Chert is the only raw material type present in the debitage and core assemblages. The FCR assemblage consists almost entirely of limestone (n=327), but chert (n=10) is also represented. The unmodified debitage includes five primary flakes, 119 secondary flakes, 576 tertiary flakes, and 235 pieces of shatter. The majority of the unmodified debitage was recovered from subsurface deposits during unit excavation (n=758, 81 percent) and shovel testing (n=137, 15 percent), while 40 pieces (4 percent) were collected from the surface level during the pedestrian survey. Cores were also recovered from subsurface (n=2) and surface deposits (n=1) at the site. The core assemblage consists of three multidirectional chert cores. Like the unmodified debitage, the FCR pieces were largely recovered from subsurface deposits (99 percent) at the site during unit excavations (n=758) and shovel testing (n=16). The remaining 1 percent (n=3) was collected from the site's surface during the field effort. As mentioned, a piece of FCR collected as part of Feature 1 exhibits a small circular indentation on one surface and may represent a discarded pitted cobble, sometimes referred to as a nutting stone or anvil stone (see Figure 11).

Flake Tools and Debitage Analysis

The EMF tools and unmodified flakes recovered at site 41BX1592 during testing were further analyzed to identify which stage of lithic reduction appears to have most commonly occurred at the site. Unmodified debitage classified as shatter was not included in the study. An expedient method developed by Turnbow and Staley (1995) is based on grading flakes by size and was employed for this analysis. Figure 2 shows that different manufacturing stages are characterized by variations in size-grade proportions. In general, flake size decreases as the lithic reduction process progresses.

The analyzed assemblage included four flake tools and 700 pieces of unmodified flakes. Of these, the majority (82 percent) are tertiary flakes. Primary and secondary core flakes constitute 1 and 17 percent of the assemblage, respectively. Flake sizes are small with 72 percent of the sample falling within size grade A (less than 2 cm in size) (Figure 14). This size-grade histogram for site 41BX1592 is consistent with the expected histogram shown in Figure 2 representing Tertiary Stage Reduction as defined by Turnbow and Staley (1995).

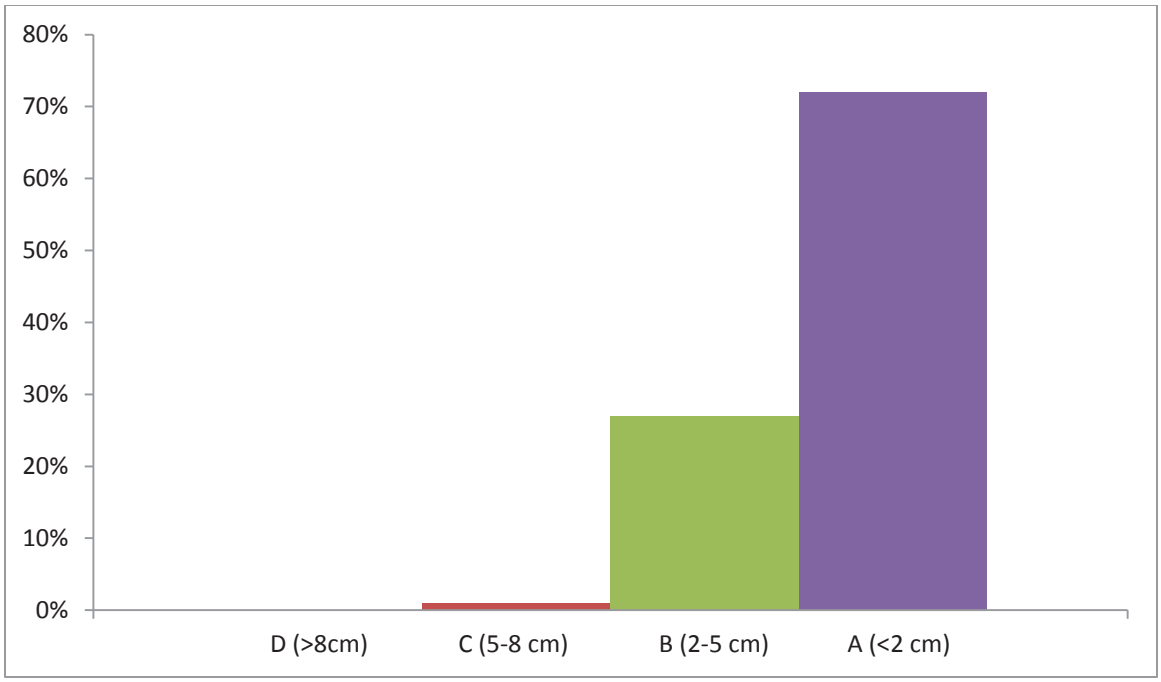

Figure 14: Size-grade Histogram for 41BX1592 flake tools and debitage

As a cautionary note, the results of this study may be somewhat skewed. For example, the larger size-grade D and C flakes might be slightly underrepresented as these larger primary and secondary flakes are sometimes further reduced or shaped into tools such as bifaces (Turnbow and Staley 1995). However, the lack of tested cobbles, cores, and raw material observed at the site in conjunction with the lack of recovered primary and secondary flakes suggests that site 41BX1592 was not utilized primarily for lithic procurement or core reduction. Rather, the lithic artifact assemblage appears to have largely resulted from bifacial thinning and the trimming and retouching of existing tools as evidenced by the presence of bifaces and an abundance of small tertiary flakes. In addition to tool manufacturing, the presence of burned rock features indicates that subsistence processing likely occurred at the site as well.

Macrobotanical Analysis

Two soil samples were collected from Feature 1, and two soil samples were taken from Feature 2 during the field effort. Following completion of fieldwork, these samples were submitted to Macrobotanical Analysis in Austin for flotation and analysis to determine whether potential subsistence and/or wood fuel remains were present within the feature matrices.

No evidence of subsistence was identified; however, ancient wood charcoal was encountered in the samples, with 86 fragments (1.18 g) of identifiable size recovered (Appendix C). Identification was attempted for 32 wood charcoal fragments, of which 18 could be identified to family, genus, or species. Fourteen of the identifiable specimens were either mesquite (*Prosopis glandulosa*) or catclaw acacia (*Acacia greggii*), but live oak (*Quercus fusiformis*) and hackberry (*Celtis* sp.) were also present. A fragment of unidentifiable plant material and a fragment of an unidentifiable seed were also recovered.

Radiocarbon Analysis

Three wood charcoal samples recovered from site 41BX1592 were submitted to DirectAMS for radiocarbon analysis. Specimens were recovered from Levels 4 and 5 of adjoining hand-excavated Units 1 and 2. Two of the wood charcoal samples (live oak and species undetermined) were recovered by Macrobotanical Analysis from Feature 1 flotation samples, while the other wood charcoal sample (hardwood, indeterminable) was recovered by Macrobotanical Analysis from a Feature 2 flotation sample (see Appendix C). Results of the radiocarbon analysis (Appendix D) have been rounded to the nearest 10-yr interval and are presented in Table 6.

Table 6: Site 41BX1592 Radiocarbon Analysis Results

Sample ID	Lot No.	Unit	Feature	Level	Depth (cmbs)	Identification (wood charcoal)	Median Probability (B.C.)	2-Sigma, cal (B.C.)
DAMS-015101	86	1	1	5	40-45	Live Oak	1006	1110-930
DAMS-015102	88	2	2	4	30-40	Hardwood Indeterminable	1158	1220-1060
DAMS-015103	89	1	1	5	40-50	Not examined for Species	906	970-840

All three samples returned dates that fall within the Late Archaic era. The calibrated 2-sigma ranges for specimens collected from Feature 1 overlap between 970 and 930 B.C. The specimen from Feature 2 has a 2-sigma calibrated range of 1220 to 1060 B.C. These charcoal samples suggest that Feature 1 and Feature 2 likely represent two cooking episodes separated by one to two centuries.

VI. Site Summary and Recommendations

Between September 11 and December 10, 2014, Pape-Dawson conducted archaeological testing at site 41BX1592 to further assess SAL eligibility for the site and to determine whether significant deposits could be impacted by the proposed trail alignment. The testing program included a pedestrian survey with systematic shovel testing followed by the hand-excavation of one 1-x-1-m unit and two 1-x-0.5-m units, for a volume of 23.75 m^3 of matrix. A total of 1,294 prehistoric artifacts and five historic-age artifacts were recovered. The prehistoric assemblage from site 41BX1592 includes 935 pieces of debitage, 337 pieces of FCR, three cores, and 19 non-diagnostic lithic tools. The historic artifact assemblage recovered during the current field effort includes a body sherd from a light olive glass bottle, two cut nails, a metal fence staple, and a piece of wire.

Of the total 1,299 artifacts, 48 artifacts were recovered from the surface and a total of 1,251 artifacts (96 percent) were recovered from subsurface deposits during shovel testing (n=158) and unit excavation (n=1,093). Pedestrian survey and shovel testing at the site revealed that the site was larger than originally recorded, and therefore, the horizontal boundaries of the site were expanded to encompass on area totaling approximately 7.6 acres (2 ha). Shovel testing and unit excavation revealed that the site is largely subsurface and that the site's archaeological deposits have been buried in part as a result of erosional and colluvial processes.

The patterned distribution and density of prehistoric material across the site helped define a discrete area of concentrated artifacts located near the center of the site. The high-artifact-concentration area lies on upper terraces situated on the north side of Culebra Creek. Pape-Dawson archaeologists observed a significant increase in density and diversity of prehistoric material within this area as compared to the rest of the site. The prehistoric artifact assemblage from surface collection and shovel testing within the high concentration area consists of one biface, three EMFs, one core, 13 pieces of FCR, and 132 pieces of non-diagnostic lithic debitage. These 150 prehistoric artifacts constitute 73.5 percent of the total number (n=204) of prehistoric artifacts recovered as a result of the combined pedestrian survey and shovel testing efforts.

All three hand-excavated units were placed within this high-artifact-concentration area. The vertical distribution of artifacts within hand-excavated units revealed that the greatest concentration of cultural materials was recovered from Levels 1 through 4 (0 to 40 cmbs). In addition to cultural artifacts, unit excavation at the site also resulted in the identification of two burned rock features with carbonized wood fuel remains. Feature 1 likely represents a discard pile and was largely contained within Levels 4 and 5 (30 to 50 cmbs) of Unit 2 and the northern half of Unit 1. Feature 2 likely represents the remains of a hearth or earth oven and was mainly encountered within Level 4 of Unit 3 and the southern half of Unit 1. Despite the absence of diagnostic artifacts, radiocarbon analysis of samples of the wood fuel remains returned a 2-sigma date range of 1110 to 840 B.C for Feature 1 and 1220 to 1060 B.C. for Feature 2.

The limited number of formal tools in the 41BX1592 artifact assemblage suggests limited occupational intensity at the site. In addition, the vertical distribution of artifacts at the site points to multiple occupations occurring on a landform with a slow sedimentation rate. Furthermore, the low diversity of

the artifact assemblage recovered from site 41BX1592 indicates that these occupations were likely task-specific. Task specific activities at the site include tool manufacturing and maintenance as evidenced by a high percentage of small, tertiary flakes within the artifact assemblage. Subsistence processing also likely occurred at the site given the presence of burned rock features. Based on the results of the fieldwork and subsequent artifact analysis, site 41BX1592 appears to have largely resulted from a series of short-term, task-specific occupations occurring during the Late-Archaic period.

In accordance with the criteria in 13 TAC 26.10, Pape-Dawson's SAL-eligibility testing of site 41BX1592 has demonstrated that no significant deposits associated with site 41BX1592 were found within or adjacent to the proposed Green Valley Road/Culebra Creek Greenway trail alignment. As a result, Pape-Dawson recommends no further work for this portion of the site. Pape-Dawson submitted an interim report in January 2015 with this recommendation. The Texas Historical Commission concurred with Pape-Dawson's recommendation on February 2, 2015, and allowed construction to proceed.

Importantly, the present investigation has also demonstrated that the central portion of the site, where shovel test investigations suggest additional burned rock features are likely located, may harbor significant data resources that warrant SAL designation. Pape-Dawson recommends that the central portion of the site (Figure 15) is potentially eligible for SAL designation and that future impacts to this portion of the site be avoided. If this is not possible, then it is recommended that the central portion of site 41BX1592 be subjected to additional archaeological testing prior to construction.

Following the Texas Historical Commission's acceptance of the draft report, Pape-Dawson submitted a request to discard artifacts letter (Appendix A) to the Texas Historical Commission. The purpose of the letter was to request to curate a reduced number of artifacts collected during the testing effort. Specifically, Pape-Dawson proposed to curate all lithic tools and debitage collected from shovel tests and hand-excavated units as well as all tools collected from the surface. All lithic debitage collected from the surface as well as all fire-cracked rock, historic artifacts, and non-cultural material are to be discarded. The Texas Historical Commission concurred with this request on January 23, 2017. Select artifacts and original paperwork (e.g., photographs, shovel test logs) will be curated at the Center for Archeological Research (CAR) at the University of Texas at San Antonio.

This page has been redacted as it contains restricted information

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Appendix A

Specimen Inventory and Request to Discard Artifacts Letter

Artifact Specimen Inventory for Site 41BX1592

Lot	Unit or ST	SST	Feature	Level	Additional	Depth		Prehistoric			Historic		
No.	No.	No.	No.	(10cm)	Provenience	(cmbs)	(cmbd)	Lithic	FCR	Charcoal	Glass	Metal	Comments
1				0	near ST37	Surface		1					
2	MN4	ST46		1		0-10		1	1			1	
3				0	near ST46	Surface		3					1 biface
4	MN5	ST38		3		20-30		1					
5	JS2	ST45		2		10-20		2					
6	JS4	ST39		1		0-10							
7	JS4	ST39		3		20-30		2					
8	JS7	ST35		1		0-10		2	1				
9	JS7	ST35		2		10-20		2					
10	JS7	ST35		5		40-50		5					
11	JS8	ST24		1		0-10		2	1				
12	JS8	ST24		2		10-20		11	1				
13	JS8	ST24		3		20-30		5					
14	JS8	ST24		4		30-40		3	1				
15	JS8	ST24		5		40-50		7					
16	MN11	ST26		1		0-10		1					
17	MN12	ST22		2		10-20		1					
18	MN14	ST13		1		0-10			3				
19	MN14	ST13		2		10-20		1	1				
20	JS9	ST14		1		0-10		9					
21	JS9	ST14		2		10-20		4					1 core
22	JS9	ST14		3		20-30		11	2			1	
23	JS10	ST11		4		30-40		1					
24	JS11	ST8		1		0-10		1	2				
25	JS11	ST8		2		10-20			2				

Lot	Unit or ST	SST	Feature	Level	Additional	Depth		Prehistoric			Historic		
No.	No.	No.	No.	(10cm)	Provenience	(cmbs)	(cmbd)	Lithic	FCR	Charcoal	Glass	Metal	Comments
26	JS11	ST8		3		20-30		1					
27	JS13	ST4		1		0-10		1					
28	JS13	ST4		2		10-20		1					
29				0	near ST9	Surface		1					
30	MN15	ST15		1		0-10		6					
31	MN16	ST16		1		0-10		2					
32	MN19	ST6		1		0-10		1					
33				0	near ST3	Surface		1					1 biface
34	MN21	ST3		2		10-20		1					
35				0	near ST23	Surface		10	1				1 edge-modified flake
36	MN24	ST23		1		0-10		2					
37	MN24	ST23		2		10-20		1					
38	MN24	ST23		3		20-30		3					
39				0	near ST28	Surface		1					
40	MN25	ST28		1		0-10		3					
41	MN25	ST28		2		10-20		2					1 biface, 1 edge-modified flake
42	MN25	ST28		3		20-30		7					
43				0	near ST29	Surface		2					
44	MN26	ST29		1		0-10		2					
45	MN26	ST29		2		10-20		2					
46	MN28	ST20		7		60-70		1					
47				0	near ST17	Surface		6					1 edge-modified flake
48	JS15	ST17		1		0-10		10					
49	JS15	ST17		2		10-20		5	1				
50	JS15	ST17		3		20-30		2					
51				0	near ST25	Surface		3	1				1 core
52	JS16	ST25		1		0-10		2					
53	JS16	ST25		2		10-20		4					

Lot	Unit or ST	SST	Feature	Level	Additional	Depth		Prehistoric			Historic		
No.	No.	No.	No.	(10cm)	Provenience	(cmbs)	(cmbd)	Lithic	FCR	Charcoal	Glass	Metal	Comments
54	JS16	ST25		3		20-30							
55				0	near ST18	Surface		1	1				
56	JS17	ST18		2		10-20		1					
57	JS18	ST19		2		10-20		5					
58	JS18	ST19		5		40-50		2					
59	JS18	ST19		6		50-55		1					
60	1			0		Surface		12					
61	1			1			8-20	79	7				1 biface, 1 uniface, 1 edge-modified flake
62	1			2			20-30	82	15		1		1 biface, 1 uniface
63	1			3			30-40	81	10				1 biface
64	1		1&2	4			40-50	56	33	1			
65	1		1	4			40-50			1			
66	2			0		Surface		2					
67	2			1			5-20	62	9			2	
68	2			2			20-30	70	6				
69	2			3			30-40	68	24				1 uniface
70	3			0		Surface		2					
71	3			1			13-20	13	1				1 biface
72	3			2			20-30	69	4				2 bifaces
73	3			3			30-40	56	18				1 biface
74	1			5			50-60	43	13				
75	1		1(S1/2)	5			50-55	5	15				
76	1			6			60-70	7	27				1 uniface
77	1&3		2(SW1/2)	4			40-50		11				
77	1&3		2(SW1/2)	4			40-50	3	6				
78	1&3		2(NE1/2)	4			40-50	2	25				
78	1&3		2(NE1/2)	4			40-50		6				
79	2		1	4			40-50	33	22	1			

Lot	Unit or ST	SST	Feature	Level	Additional	Depth		Prehistoric			Historic		
No.	No.	No.	No.	(10cm)	Provenience	(cmbs)	(cmbd)	Lithic	FCR	Charcoal	Glass	Metal	Comments
80	2		1(N1/2)	5			50-55	2	18				
81	2			5			55-60	10	7	1			1 biface
82	6			6			60-70		7	1			
83	3		2	4			40-50	18	13				1 core
84	3			5			50-60	11	16				
85	3			6			60-70	2	5				
86	1		1(S1/2)	5			50-55						soil sample
87	1&3		2(NE1/2)	4			40-50						soil sample
88	1&3		2(SW1/2)	4			40-50						soil sample
89	2		1(N1/2)	5			50-60						soil sample

PAPE-DAWSON ENGINEERS

RECEIVED
JAN 09 2017

January 4, 2017

Brad Jones
Texas Historical Commission
1511 Colorado Street
Austin, TX 78701

RE: State Antiquities Landmark (SAL) Eligibility Testing of Site 41BX1592, San Antonio, Bexar County, Texas; Antiquities Permit #7017

Dear Mr. Jones:

Pape-Dawson received regulatory clearance from the THC for State Antiquities Landmark (SAL) Eligibility Testing of Site 41BX1592 in San Antonio (TAC Permit #7017) on December 21, 2016. This testing project found that no SAL-eligible archaeological properties will be adversely affected by the proposed project.

Pape-Dawson archaeologists collected a total of 1,299 artifacts, including 957 lithic artifacts, 337 pieces of fire-cracked rock, and five historic artifacts. Lithic artifacts recovered from site 41BX1592 include 935 pieces of debitage, three cores, and 19 lithic tools, none of which are temporally diagnostic. Based on the size of the artifact assemblage recovered as part of the current testing effort, Pape-Dawson requests that THC agree to curation for a reduced number of artifacts. More specifically, Pape-Dawson proposed to curate all lithic tools and debitage collected from shovel tests and test units as well as all tools collected from the surface. All lithic debitage collected from the surface as well as all fire-cracked rock, historic artifacts, and non-cultural material will be discarded.

With the submission, Pape-Dawson requests concurrence with our recommendations regarding the discard of certain artifacts. Enclosed please find a list of artifacts proposed for discard that were collected during the testing of the above-referenced project area. As this project was undertaken in compliance with both the Texas Antiquities Permit #7017 and with the Historic Preservation and Urban Design Section of the City of San Antonio's (COSA) Unified Development Code, a copy of this letter has also been submitted to the COSA Archaeologist Kay Hindes for her review.

Sincerely,
Pape-Dawson Engineers, Inc.
Texas Board of Professional Engineers, Firm Registration #470

Melanie Nichols
Senior Archaeologist

CONCUR
by William A. Martin
for Mark Wolfe
Executive Director, THC
Date 1/23/17
Track#

Enclosures
cc: Kay Hindes

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JAN 30 2017

Appendix B

Lithic Artifact Analysis

Appendix B: Lithic Analysis for Site 41BX1592

Lot-Spec	Unit or ST #	SST#	General Provenience	Feature No.	Level	Depth (cm-bs/bd)	Original Count	Original WT (g)	Material	Artifact Description	Artifact Sub-description	Flake Reduction Stage	Size Grade	Length (mm)	Width (mm)	Thickness (mm)	Thermal Alteration	Comments
1-01			Near ST 37		0	Surface	1		Chert	Nontool	Debitage (Non-Flake)							shatter
2-01	MN4	46			1	0-10 cmbs	1		Chert	Nontool	Debitage (Non-Flake)							shatter
2-02	MN4	46			1	0-10 cmbs	1	23	LMST	Nontool	FCR							
3-01			Near ST 46		0	Surface	1		Chert	Tool	Biface	Indeterminate		24.68	22.66	9.53	N	incomplete; distal tip
3-02			Near ST 46		0	Surface	1		Chert	Nontool	Debitage (Flake)	Secondary	B					
3-03			Near ST 46		0	Surface	1		Chert	Nontool	Debitage (Flake)	Tertiary	B					
4-01	MN5	38			3	20-30 cmbs	1		Chert	Nontool	Debitage (Flake)	Tertiary	A					
5-01	JS2	45			2	10-20 cmbs	1		Chert	Nontool	Debitage (Flake)	Tertiary	A					
5-02	JS2	45			2	10-20 cmbs	1		Chert	Nontool	Debitage (Non-Flake)							shatter
7-01	JS4	39			3	20-30 cmbs	2		Chert	Nontool	Debitage (Non-Flake)							shatter
8-01	JS7	35			1	0-10 cmbs	2		Chert	Nontool	Debitage (Non-Flake)							shatter
8-02	JS7	35			1	0-10 cmbs	1	3	Chert	Nontool	FCR							
9-01	JS7	35			2	10-20 cmbs	2		Chert	Nontool	Debitage (Flake)	Tertiary	A					
10-01	JS7	35			5	40-50 cmbs	3		Chert	Nontool	Debitage (Flake)	Tertiary	A					
10-02	JS7	35			5	40-50 cmbs	1		Chert	Nontool	Debitage (Flake)	Tertiary	B					

Lot-Spec	Unit or ST #	SST#	General Provenience	Feature No.	Level	Depth (cm-bs/bd)	Original Count	Original WT (g)	Material	Artifact Description	Artifact Sub-description	Flake Reduction Stage	Size Grade	Length (mm)	Width (mm)	Thickness (mm)	Thermal Alteration	Comments
10-03	JS7	35			5	40-50 cmbs	1		Chert	Nontool	Debitage (Non-Flake)							shatter
11-01	JS8	24			1	0-10 cmbs	2		Chert	Nontool	Debitage (Flake)	Tertiary	A					
11-02	JS8	24			1	0-10 cmbs	1	5	LMST	Nontool	FCR							
12-01	JS8	24			2	10-20 cmbs	4		Chert	Nontool	Debitage (Flake)	Tertiary	A					
12-02	JS8	24			2	10-20 cmbs	3		Chert	Nontool	Debitage (Flake)	Tertiary	B					
12-03	JS8	24			2	10-20 cmbs	4		Chert	Nontool	Debitage (Non-Flake)							shatter
12-04	JS8	24			2	10-20 cmbs	1	41	LMST	Nontool	FCR							
13-01	JS8	24			3	20-30 cmbs	4		Chert	Nontool	Debitage (Flake)	Tertiary	A					
13-02	JS8	24			3	20-30 cmbs	1		Chert	Nontool	Debitage (Flake)	Tertiary	B					
14-01	JS8	24			4	30-40 cmbs	1		Chert	Nontool	Debitage (Flake)	Secondary	B					
14-02	JS8	24			4	30-40 cmbs	2		Chert	Nontool	Debitage (Flake)	Tertiary	A					
14-03	JS8	24			4	30-40 cmbs	1	15	LMST	Nontool	FCR							
15-01	JS8	24			5	40-50 cmbs	7		Chert	Nontool	Debitage (Flake)	Tertiary	A					
16-01	MN11	26			1	0-10 cmbs	1		Chert	Nontool	Debitage (Flake)	Secondary	B					
17-01	MN12	22			2	10-20 cmbs	1		Chert	Nontool	Debitage (Flake)	Secondary	B					
18-01	MN14	13			1	0-10 cmbs	3	193	LMST	Nontool	FCR							
19-01	MN14	13			2	10-20 cmbs	1		Chert	Nontool	Debitage (Flake)	Secondary	B					
19-02	MN14	13			2	10-20 cmbs	1	26	LMST	Nontool	FCR							

Lot-Spec	Unit or ST #	SST#	General Provenience	Feature No.	Level	Depth (cm-bs/bd)	Original Count	Original WT (g)	Material	Artifact Description	Artifact Sub-description	Flake Reduction Stage	Size Grade	Length (mm)	Width (mm)	Thickness (mm)	Thermal Alteration	Comments
20-01	JS9	14			1	0-10 cmbs	3		Chert	Nontool	Debitage (Flake)	Secondary	A					
20-02	JS9	14			1	0-10 cmbs	4		Chert	Nontool	Debitage (Flake)	Tertiary	A					
20-03	JS9	14			1	0-10 cmbs	2		Chert	Nontool	Debitage (Non-Flake)							shatter
21-01	JS9	14			2	10-20 cmbs	1		Chert	Nontool	Core	Multi-directional					N	complete; multidirectional
21-02	JS9	14			2	10-20 cmbs	2		Chert	Nontool	Debitage (Flake)	Tertiary	A					
21-03	JS9	14			2	10-20 cmbs	1		Chert	Nontool	Debitage (Non-Flake)							shatter
22-01	JS9	14			3	20-30 cmbs	1		Chert	Nontool	Debitage (Flake)	Tertiary	A					
22-02	JS9	14			3	20-30 cmbs	2		Chert	Nontool	Debitage (Flake)	Tertiary	B					
22-03	JS9	14			3	20-30 cmbs	8		Chert	Nontool	Debitage (Non-Flake)							shatter
22-04	JS9	14			3	20-30 cmbs	2	209	LMST	Nontool	FCR							
23-01	JS10	11			4	30-40 cmbs	1		Chert	Nontool	Debitage (Flake)	Tertiary	A					
24-01	JS11	8			1	0-10 cmbs	1		Chert	Nontool	Debitage (Flake)	Tertiary	B					
24-02	JS11	8			1	0-10 cmbs	2	100	LMST	Nontool	FCR							
25-01	JS11	8			2	10-20 cmbs	2	170	LMST	Nontool	FCR							
26-01	JS11	8			3	20-30 cmbs	1		Chert	Nontool	Debitage (Flake)	Secondary	B					
27-01	JS13	4			1	0-10 cmbs	1		Chert	Nontool	Debitage (Flake)	Tertiary	B					
28-01	JS13	4			2	10-20 cmbs	1		Chert	Nontool	Debitage (Flake)	Secondary	B					
29-01			Near ST 9		0	Surface	1		Chert	Nontool	Debitage (Flake)	Tertiary	B					

Lot-Spec	Unit or ST #	SST#	General Provenience	Feature No.	Level	Depth (cm-bs/bd)	Original Count	Original WT (g)	Material	Artifact Description	Artifact Sub-description	Flake Reduction Stage	Size Grade	Length (mm)	Width (mm)	Thickness (mm)	Thermal Alteration	Comments
30-01	MN15	15			1	0-10 cmbs	2		Chert	Nontool	Debitage (Flake)	Secondary	A					
30-02	MN15	15			1	0-10 cmbs	1		Chert	Nontool	Debitage (Flake)	Secondary	B					
30-03	MN15	15			1	0-10 cmbs	3		Chert	Nontool	Debitage (Flake)	Tertiary	A					
31-01	MN16	16			1	0-10 cmbs	1		Chert	Nontool	Debitage (Flake)	Secondary	B					
31-02	MN16	16			1	0-10 cmbs	1		Chert	Nontool	Debitage (Non-Flake)							shatter
32-01	MN19	6			1	0-10 cmbs	1		Chert	Nontool	Debitage (Flake)	Tertiary	B					
33-01			Near ST 3		0	Surface	1		Chert	Tool	Biface	Early-Stage		136.34	74.83	50.37	N	butted biface; early-stage
34-01	MN21	3			2	10-20 cmbs	1		Chert	Nontool	Debitage (Flake)	Tertiary	A					
35-01			Near ST 23		0	Surface	1		Chert	Tool	Edge Modified Flake	Secondary	C				N	incomplete; unifacially retouched; two edges
35-02			Near ST 23		0	Surface	1		Chert	Nontool	Debitage (Flake)	Secondary	A					
35-03			Near ST 23		0	Surface	3		Chert	Nontool	Debitage (Flake)	Secondary	B					
35-04			Near ST 23		0	Surface	1		Chert	Nontool	Debitage (Flake)	Secondary	C					
35-05			Near ST 23		0	Surface	1		Chert	Nontool	Debitage (Flake)	Tertiary	A					
35-06			Near ST 23		0	Surface	3		Chert	Nontool	Debitage (Non-Flake)							shatter
35-07			Near ST 23		0	Surface	1	17	LMST	Nontool	FCR							
36-01	MN24	23			1	0-10 cmbs	2		Chert	Nontool	Debitage (Flake)	Tertiary	A					
37-01	MN24	23			2	10-20 cmbs	1		Chert	Nontool	Debitage (Flake)	Tertiary	A					

Lot-Spec	Unit or ST #	SST#	General Provenience	Feature No.	Level	Depth (cm-bs/bd)	Original Count	Original WT (g)	Material	Artifact Description	Artifact Sub-description	Flake Reduction Stage	Size Grade	Length (mm)	Width (mm)	Thickness (mm)	Thermal Alteration	Comments
38-01	MN24	23			3	20-30 cmbs	2		Chert	Nontool	Debitage (Flake)	Tertiary	A					
38-02	MN24	23			3	20-30 cmbs	1		Chert	Nontool	Debitage (Flake)	Tertiary	B					
39-01			Near ST 28		0	Surface	1		Chert	Nontool	Debitage (Flake)	Secondary	B					
40-01	MN25	28			1	0-10 cmbs	1		Chert	Nontool	Debitage (Flake)	Tertiary	A					
40-02	MN25	28			1	0-10 cmbs	1		Chert	Nontool	Debitage (Flake)	Tertiary	B					
40-03	MN25	28			1	0-10 cmbs	1		Chert	Nontool	Debitage (Non-Flake)							shatter
41-01	MN25	28			2	10-20 cmbs	1		Chert	Tool	Biface	Indeterminate		30.37	23.82	6.78	N	incomplete; distal tip
41-02	MN25	28			2	10-20 cmbs	1		Chert	Tool	Edge Modified Flake	Tertiary	B				Y	incomplete; unifacially retouched; one edge
42-01	MN25	28			3	20-30 cmbs	1		Chert	Nontool	Debitage (Flake)	Secondary	A					
42-02	MN25	28			3	20-30 cmbs	5		Chert	Nontool	Debitage (Flake)	Tertiary	A					
42-03	MN25	28			3	20-30 cmbs	1		Chert	Nontool	Debitage (Non-Flake)							shatter
43-01			Near ST 29		0	Surface	2		Chert	Nontool	Debitage (Flake)	Secondary	B					
44-01	MN26	29			1	0-10 cmbs	1		Chert	Nontool	Debitage (Flake)	Secondary	B					
44-02	MN26	29			1	0-10 cmbs	1		Chert	Nontool	Debitage (Flake)	Tertiary	A					
45-01	MN26	29			2	10-20 cmbs	1		Chert	Nontool	Debitage (Flake)	Tertiary	B					
45-02	MN26	29			2	10-20 cmbs	1		Chert	Nontool	Debitage (Non-Flake)							shatter
46-01	MN28	20			7	60-70 cmbs	1		Chert	Nontool	Debitage (Flake)	Primary	C					

Lot-Spec	Unit or ST #	SST#	General Provenience	Feature No.	Level	Depth (cm-bs/bd)	Original Count	Original WT (g)	Material	Artifact Description	Artifact Sub-description	Flake Reduction Stage	Size Grade	Length (mm)	Width (mm)	Thickness (mm)	Thermal Alteration	Comments
47-01			Near ST 17		0	Surface	1		Chert	Tool	Edge Modified Flake	Tertiary	B				N	incomplete; unifacially retouched; two edges
47-02			Near ST 17		0	Surface	2		Chert	Nontool	Debitage (Flake)	Secondary	B					
47-03			Near ST 17		0	Surface	3		Chert	Nontool	Debitage (Flake)	Secondary	C					
48-01	JS15	17			1	0-10 cmbs	1		Chert	Nontool	Debitage (Flake)	Secondary	A					
48-02	JS15	17			1	0-10 cmbs	5		Chert	Nontool	Debitage (Flake)	Tertiary	A					
48-03	JS15	17			1	0-10 cmbs	4		Chert	Nontool	Debitage (Non-Flake)							shatter
49-01	JS15	17			2	10-20 cmbs	3		Chert	Nontool	Debitage (Flake)	Tertiary	A					
49-02	JS15	17			2	10-20 cmbs	1		Chert	Nontool	Debitage (Flake)	Tertiary	B					
49-03	JS15	17			2	10-20 cmbs	1		Chert	Nontool	Debitage (Non-Flake)							shatter
49-04	JS15	17			2	10-20 cmbs	1	257	LMST	Nontool	FCR							
50-01	JS15	17			3	20-30 cmbs	1		Chert	Nontool	Debitage (Flake)	Tertiary	A					
50-02	JS15	17			3	20-30 cmbs	1		Chert	Nontool	Debitage (Non-Flake)							shatter
51-01			Near ST 25		0	Surface	1		Chert	Nontool	Core	Multi-directional						broken; multidirectional
51-02			Near ST 25		0	Surface	2		Chert	Nontool	Debitage (Non-Flake)							shatter
51-03			Near ST 25		0	Surface	1	20	Chert	Nontool	FCR							
52-01	JS16	25			1	0-10 cmbs	1		Chert	Nontool	Debitage (Flake)	Tertiary	A					
52-02	JS16	25			1	0-10 cmbs	1		Chert	Nontool	Debitage (Non-Flake)							shatter

Lot-Spec	Unit or ST #	SST#	General Provenience	Feature No.	Level	Depth (cm-bs/bd)	Original Count	Original WT (g)	Material	Artifact Description	Artifact Sub-description	Flake Reduction Stage	Size Grade	Length (mm)	Width (mm)	Thickness (mm)	Thermal Alteration	Comments
53-01	JS16	25			2	10-20 cmbs	1		Chert	Nontool	Debitage (Flake)	Secondary	A					
53-02	JS16	25			2	10-20 cmbs	3		Chert	Nontool	Debitage (Flake)	Tertiary	A					
55-01			Near ST 18		0	Surface	1		Chert	Nontool	Debitage (Non-Flake)							shatter
55-02			Near ST 18		0	Surface	1	148	Chert	Nontool	FCR							
56-01	JS17	18			2	10-20 cmbs	1		Chert	Nontool	Debitage (Non-Flake)							shatter
57-01	JS18	19			2	10-20 cmbs	2		Chert	Nontool	Debitage (Flake)	Secondary	B					
57-02	JS18	19			2	10-20 cmbs	2		Chert	Nontool	Debitage (Flake)	Tertiary	B					
57-03	JS18	19			2	10-20 cmbs	1		Chert	Nontool	Debitage (Non-Flake)							shatter
58-01	JS18	19			5	40-50 cmbs	1		Chert	Nontool	Debitage (Flake)	Tertiary	A					
58-02	JS18	19			5	40-50 cmbs	1		Chert	Nontool	Debitage (Flake)	Tertiary	B					
59-01	JS18	19			6	50-60 cmbs	1		Chert	Nontool	Debitage (Flake)	Tertiary	A					
60-01	1				0	Surface	1		Chert	Nontool	Debitage (Flake)	Secondary	C					
60-02	1				0	Surface	7		Chert	Nontool	Debitage (Flake)	Tertiary	A					
60-03	1				0	Surface	3		Chert	Nontool	Debitage (Flake)	Tertiary	B					
60-04	1				0	Surface	1		Chert	Nontool	Debitage (Non-Flake)							Shatter
61-01	1				1	8-20 cmbd	1		Chert	Tool	Uniface			59.39	44.15	14.76	N	complete; scraper
61-02	1				1	8-20 cmbd	1		Chert	Tool	Biface	Indeterminate		21.24	20.07	6.38	Y	incomplete; medial fragment

Lot-Spec	Unit or ST #	SST#	General Provenience	Feature No.	Level	Depth (cm-bs/bd)	Original Count	Original WT (g)	Material	Artifact Description	Artifact Sub-description	Flake Reduction Stage	Size Grade	Length (mm)	Width (mm)	Thickness (mm)	Thermal Alteration	Comments
61-03	1				1	8-20 cmbd	1		Chert	Tool	Edge Modified Flake	Tertiary	B				N	incomplete; unifacially retouched; one edge
61-04	1				1	8-20 cmbd	7		Chert	Nontool	Debitage (Flake)	Secondary	A					
61-05	1				1	8-20 cmbd	9		Chert	Nontool	Debitage (Flake)	Secondary	B					
61-06	1				1	8-20 cmbd	27		Chert	Nontool	Debitage (Flake)	Tertiary	A					
61-07	1				1	8-20 cmbd	10		Chert	Nontool	Debitage (Flake)	Tertiary	B					
61-08	1				1	8-20 cmbd	23		Chert	Nontool	Debitage (Non-Flake)							shatter
61-09	1				1	8-20 cmbd	7	243	LMST	Nontool	FCR							
62-01	1				2	20-30 cmbd	1		Chert	Tool	Uniface			37.64	37.8	6.82	N	incomplete; scraper
62-02	1				2	20-30 cmbd	1		Chert	Tool	Biface	Indeterminate		11.46	14.75	7.59	N	incomplete; medial fragment
62-03	1				2	20-30 cmbd	6		Chert	Nontool	Debitage (Flake)	Secondary	A					
62-04	1				2	20-30 cmbd	3		Chert	Nontool	Debitage (Flake)	Secondary	B					
62-05	1				2	20-30 cmbd	6		Chert	Nontool	Debitage (Flake)	Tertiary	B					
62-06	1				2	20-30 cmbd	41		Chert	Nontool	Debitage (Flake)	Tertiary	A					
62-07	1				2	20-30 cmbd	24		Chert	Nontool	Debitage (Non-Flake)							shatter
62-08	1				2	20-30 cmbd	8	122	LMST	Nontool	FCR							
62-09	1				2	20-30 cmbd	7	78	Chert	Nontool	FCR							

Lot-Spec	Unit or ST #	SST#	General Provenience	Feature No.	Level	Depth (cm-bs/bd)	Original Count	Original WT (g)	Material	Artifact Description	Artifact Sub-description	Flake Reduction Stage	Size Grade	Length (mm)	Width (mm)	Thickness (mm)	Thermal Alteration	Comments
63-01	1				3	30-40 cmbd	1		Chert	Tool	Biface	Late-Stage		17.56	26.15	6.73	N	incomplete; basal fragment
63-02	1				3	30-40 cmbd	1		Chert	Nontool	Debitage (Flake)	Primary	B					
63-03	1				3	30-40 cmbd	5		Chert	Nontool	Debitage (Flake)	Secondary	A					
63-04	1				3	30-40 cmbd	6		Chert	Nontool	Debitage (Flake)	Secondary	B					
63-05	1				3	30-40 cmbd	55		Chert	Nontool	Debitage (Flake)	Tertiary	A					
63-06	1				3	30-40 cmbd	5		Chert	Nontool	Debitage (Flake)	Tertiary	B					
63-07	1				3	30-40 cmbd	8		Chert	Nontool	Debitage (Non-Flake)							shatter
63-08	1				3	30-40 cmbd	10	452	LMST	Nontool	FCR							
64-01	1			1 & 2	4	40-50 cmbd	1		Chert	Nontool	Debitage (Flake)	Primary	B					
64-02	1			1 & 2	4	40-50 cmbd	1		Chert	Nontool	Debitage (Flake)	Secondary	B					
64-03	1			1 & 2	4	40-50 cmbd	27		Chert	Nontool	Debitage (Flake)	Tertiary	A					
64-04	1			1 & 2	4	40-50 cmbd	6		Chert	Nontool	Debitage (Flake)	Tertiary	B					
64-05	1			1 & 2	4	40-50 cmbd	21		Chert	Nontool	Debitage (Non-Flake)							shatter
64-06	1			1 & 2	4	40-50 cmbd	33	1885	LMST	Nontool	FCR							
64-08	1			1 & 2	4	40-50 cmbd	1	0.16	Charcoal Sample									
65-01	1			1	4	40-50 cmbd	1	0.29	Charcoal Sample									
66-01	2				0	Surface	2		Chert	Nontool	Debitage (Flake)	Tertiary	A					
67-01	2				1	5-20 cmbd	5		Chert	Nontool	Debitage (Flake)	Secondary	A					

Lot-Spec	Unit or ST #	SST#	General Provenience	Feature No.	Level	Depth (cm-bs/bd)	Original Count	Original WT (g)	Material	Artifact Description	Artifact Sub-description	Flake Reduction Stage	Size Grade	Length (mm)	Width (mm)	Thickness (mm)	Thermal Alteration	Comments
67-02	2				1	5-20 cmbd	5		Chert	Nontool	Debitage (Flake)	Secondary	B					
67-03	2				1	5-20 cmbd	32		Chert	Nontool	Debitage (Flake)	Tertiary	A					
67-04	2				1	5-20 cmbd	3		Chert	Nontool	Debitage (Flake)	Tertiary	B					
67-05	2				1	5-20 cmbd	17		Chert	Nontool	Debitage (Non-Flake)							shatter
67-06	2				1	5-20 cmbd	9	279	LMST	Nontool	FCR							
68-01	2				2	20-30 cmbd	2		Chert	Nontool	Debitage (Flake)	Secondary	A					
68-02	2				2	20-30 cmbd	49		Chert	Nontool	Debitage (Flake)	Tertiary	A					
68-03	2				2	20-30 cmbd	7		Chert	Nontool	Debitage (Flake)	Tertiary	B					
68-04	2				2	20-30 cmbd	12		Chert	Nontool	Debitage (Non-Flake)							shatter
68-05	2				2	20-30 cmbd	6	131	LMST	Nontool	FCR							
69-01	2				3	30-40 cmbd	1		Chert	Tool	Uniface			39.1	46.63	15.44	N	incomplete; scraper
69-02	2				3	30-40 cmbd	1		Chert	Nontool	Debitage (Flake)	Primary	B					
69-03	2				3	30-40 cmbd	4		Chert	Nontool	Debitage (Flake)	Secondary	A					
69-04	2				3	30-40 cmbd	4		Chert	Nontool	Debitage (Flake)	Secondary	B					
69-05	2				3	30-40 cmbd	35		Chert	Nontool	Debitage (Flake)	Tertiary	A					
69-06	2				3	30-40 cmbd	11		Chert	Nontool	Debitage (Flake)	Tertiary	B					
69-07	2				3	30-40 cmbd	12		Chert	Nontool	Debitage (Non-Flake)							shatter
69-08	2				3	30-40 cmbd	24	901	LMST	Nontool	FCR							

Lot-Spec	Unit or ST #	SST#	General Provenience	Feature No.	Level	Depth (cm-bs/bd)	Original Count	Original WT (g)	Material	Artifact Description	Artifact Sub-description	Flake Reduction Stage	Size Grade	Length (mm)	Width (mm)	Thickness (mm)	Thermal Alteration	Comments
70-53	3				0	Surface	1		Chert	Nontool	Debitage (Flake)	Tertiary	A					
70-53	3				0	Surface	1		Chert	Nontool	Debitage (Flake)	Tertiary	B					
71-01	3				1	13-20 cmbd	1		Chert	Tool	Biface	Late-Stage		31.57	33.63	7.92	N	incomplete; medial fragment
71-02	3				1	13-20 cmbd	1		Chert	Nontool	Debitage (Flake)	Secondary	A					
71-03	3				1	13-20 cmbd	1		Chert	Nontool	Debitage (Flake)	Secondary	B					
71-04	3				1	13-20 cmbd	6		Chert	Nontool	Debitage (Flake)	Tertiary	A					
71-05	3				1	13-20 cmbd	4		Chert	Nontool	Debitage (Non-Flake)							shatter
71-06	3				1	13-20 cmbd	1	31	LMST	Nontool	FCR							
72-01	3				2	20-30 cmbd	1		Chert	Tool	Biface	Late-Stage		49.90	32.98	5.83	N	incomplete; distal fragment
72-02	3				2	20-30 cmbd	1		Chert	Tool	Biface	Mid-Stage		53.63	39.71	8.93	N	incomplete; basal fragment
72-03	3				2	20-30 cmbd	2		Chert	Nontool	Debitage (Flake)	Secondary	A					
72-04	3				2	20-30 cmbd	7		Chert	Nontool	Debitage (Flake)	Secondary	B					
72-05	3				2	20-30 cmbd	36		Chert	Nontool	Debitage (Flake)	Tertiary	A					
72-06	3				2	20-30 cmbd	4		Chert	Nontool	Debitage (Flake)	Tertiary	B					
72-07	3				2	20-30 cmbd	18		Chert	Nontool	Debitage (Non-Flake)							shatter
72-08	3				2	20-30 cmbd	4	287	LMST	Nontool	FCR							

Lot-Spec	Unit or ST #	SST#	General Provenience	Feature No.	Level	Depth (cm-bs/bd)	Original Count	Original WT (g)	Material	Artifact Description	Artifact Sub-description	Flake Reduction Stage	Size Grade	Length (mm)	Width (mm)	Thickness (mm)	Thermal Alteration	Comments
73-01	3				3	30-40 cmbd	1		Chert	Tool	Biface	Indeterminate		11.08	11.24	3.42	N	incomplete; distal tip / projectile point barb
73-02	3				3	30-40 cmbd	2		Chert	Nontool	Debitage (Flake)	Secondary	B					
73-03	3				3	30-40 cmbd	29		Chert	Nontool	Debitage (Flake)	Tertiary	A					
73-04	3				3	30-40 cmbd	5		Chert	Nontool	Debitage (Flake)	Tertiary	B					
73-05	3				3	30-40 cmbd	19		Chert	Nontool	Debitage (Non-Flake)							shatter
73-06	3				3	30-40 cmbd	18	410	LMST	Nontool	FCR							
74-01	1				5	50-60 cmbd	1		Chert	Nontool	Debitage (Flake)	Secondary	B					
74-02	1				5	50-60 cmbd	18		Chert	Nontool	Debitage (Flake)	Tertiary	A					
74-03	1				5	50-60 cmbd	9		Chert	Nontool	Debitage (Flake)	Tertiary	B					
74-04	1				5	50-60 cmbd	15		Chert	Nontool	Debitage (Non-Flake)							shatter
74-05	1				5	50-60 cmbd	13	300	LMST	Nontool	FCR							
75-01	1			1 (S 1/2)	5	50-55 cmbd	2		Chert	Nontool	Debitage (Flake)	Secondary	B					
75-02	1			1 (S 1/2)	5	50-55 cmbd	2		Chert	Nontool	Debitage (Flake)	Tertiary	A					
75-03	1			1 (S 1/2)	5	50-55 cmbd	1		Chert	Nontool	Debitage (Flake)	Tertiary	B					
75-04	1			1 (S 1/2)	5	50-55 cmbd	15	1882	LMST	Nontool	FCR							1 piece may also represent a nutting stone
76-01	1				6	60-70 cmbd	1		Chert	Tool	Uniface			38.54	39.9	8.48	N	incomplete; scraper

Lot-Spec	Unit or ST #	SST#	General Provenience	Feature No.	Level	Depth (cm-bs/bd)	Original Count	Original WT (g)	Material	Artifact Description	Artifact Sub-description	Flake Reduction Stage	Size Grade	Length (mm)	Width (mm)	Thickness (mm)	Thermal Alteration	Comments
76-02	1				6	60-70 cmbd	1		Chert	Nontool	Debitage (Flake)	Secondary	B					
76-03	1				6	60-70 cmbd	3		Chert	Nontool	Debitage (Flake)	Tertiary	A					
76-04	1				6	60-70 cmbd	2		Chert	Nontool	Debitage (Non-Flake)							shatter
76-05	1				6	60-70 cmbd	27	3619	LMST	Nontool	FCR							
77-01	1 & 3			2 (SW 1/2	4	40-50 cmbd	11	3952	LMST	Nontool	FCR							
77-02	1 & 3			2 (SW 1/2)	4	40-50 cmbd	1		Chert	Nontool	Debitage (Flake)	Secondary	B					
77-03	1 & 3			2 (SW 1/2)	4	40-50 cmbd	2		Chert	Nontool	Debitage (Flake)	Tertiary	B					
77-04	1 & 3			2 (SW 1/2)	4	40-50 cmbd	6	931	LMST	Nontool	FCR							
78-01	1 & 3			2 (NE 1/2)	4	40-50 cmbd	1		Chert	Nontool	Debitage (Flake)	Primary	B					
78-02	1 & 3			2 (NE 1/2)	4	40-50 cmbd	1		Chert	Nontool	Debitage (Flake)	Tertiary	A					
78-03	1 & 3			2 (NE 1/2)	4	40-50 cmbd	25	3075	LMST	Nontool	FCR							
78-04	1 & 3			2 (NE 1/2)	4	40-50 cmbd	6	1540	LMST	Nontool	FCR							
79-01	2			1	4	40-50 cmbd	2		Chert	Nontool	Debitage (Flake)	Secondary	A					
79-02	2			1	4	40-50 cmbd	2		Chert	Nontool	Debitage (Flake)	Secondary	B					
79-03	2			1	4	40-50 cmbd	10		Chert	Nontool	Debitage (Flake)	Tertiary	A					
79-04	2			1	4	40-50 cmbd	6		Chert	Nontool	Debitage (Flake)	Tertiary	B					
79-05	2			1	4	40-50 cmbd	13		Chert	Nontool	Debitage (Non-Flake)							shatter
79-06	2			1	4	40-50 cmbd	22	961	LMST	Nontool	FCR							

Lot-Spec	Unit or ST #	SST#	General Provenience	Feature No.	Level	Depth (cm-bs/bd)	Original Count	Original WT (g)	Material	Artifact Description	Artifact Sub-description	Flake Reduction Stage	Size Grade	Length (mm)	Width (mm)	Thickness (mm)	Thermal Alteration	Comments
79-07	2			1	4	40-50 cmbd	1	0.84	Charcoal Sample									
80-01	2			1 (N 1/2)	5	50-55 cmbd	1		Chert	Nontool	Debitage (Flake)	Tertiary	B					
80-02	2			1 (N 1/2)	5	50-55 cmbd	1		Chert	Nontool	Debitage (Non-Flake)							shatter
80-03	2			1 (N 1/2)	5	50-55 cmbd	18	4814	LMST	Nontool	FCR							
81-01	2				5	55-60 cmbd	1		Chert	Tool	Biface	Mid-Stage		30.8	39.2	11.64	Y	incomplete; medial fragment
81-02	2				5	55-60 cmbd	2		Chert	Nontool	Debitage (Flake)	Secondary	B					
81-03	2				5	55-60 cmbd	5		Chert	Nontool	Debitage (Flake)	Tertiary	A					
81-04	2				5	55-60 cmbd	2		Chert	Nontool	Debitage (Flake)	Tertiary	B					
81-05	2				5	55-60 cmbd	7	321	LMST	Nontool	FCR							
81-06	2				5	55-60 cmbd	1	0.86	Charcoal Sample									
82-01	2				6	60-70 cmbd	7	760	Limestone	Nontool	FCR							
82-02	2				6	60-70 cmbd	1	0.2	Charcoal Sample									
83-01	3			2	4	40-50 cmbd	1		Chert	Nontool	Core	Multi-directional						complete
83-02	3			2	4	40-50 cmbd	3		Chert	Nontool	Debitage (Flake)	Secondary	B					
83-03	3			2	4	40-50 cmbd	5		Chert	Nontool	Debitage (Flake)	Tertiary	A					
83-04	3			2	4	40-50 cmbd	6		Chert	Nontool	Debitage (Flake)	Tertiary	B					
83-05	3			2	4	40-50 cmbd	3		Chert	Nontool	Debitage (Non-Flake)							shatter

Lot-Spec	Unit or ST #	SST#	General Provenience	Feature No.	Level	Depth (cm-bs/bd)	Original Count	Original WT (g)	Material	Artifact Description	Artifact Sub-description	Flake Reduction Stage	Size Grade	Length (mm)	Width (mm)	Thickness (mm)	Thermal Alteration	Comments
83-06	3			2	4	40-50 cmbd	13	892	LMST	Nontool	FCR							
84-01	3				5	50-60 cmbd	1		Chert	Nontool	Debitage (Flake)	Secondary	B					
84-02	3				5	50-60 cmbd	8		Chert	Nontool	Debitage (Flake)	Tertiary	A					
84-03	3				5	50-60 cmbd	2		Chert	Nontool	Debitage (Flake)	Tertiary	B					
84-04	3				5	50-60 cmbd	16	993	LMST	Nontool	FCR							
85-01	3				6	60-70 cmbd	1		Chert	Nontool	Debitage (Flake)	Tertiary	A					
85-02	3				6	60-70 cmbd	1		Chert	Nontool	Debitage (Flake)	Tertiary	B					
85-03	3				6	60-70 cmbd	5	37	LMST	Nontool	FCR							
86-01	1			1 (S 1/2)	5	50-55 cmbd	1		Soil Sample									
87-01	1 & 3			2 (NE 1/2)	4	40-50 cmbd	1		Soil Sample									
88-01	1 & 3			2 (SW 1/2)	4	40-50 cmbd	1		Soil Sample									
89-01	2			1 (N 1/2)	5	50-55 cmbd	1		Soil Sample									

Appendix C

Macrobotanical Analysis

Appendix C: Macrobotanical Analysis for Site 41BX1592

Lot #	FS #	Feature #	Material	Identification	Common Name	Number	Weight (g)
86	88	1	Wood Charcoal	*Quercus fusiformis*	Plateau Live Oak	2	0.02
86	88	1	Wood Charcoal	Hardwood, Indeterminable		3	0.02
86	88	1	Botanical	Indeterminable		1	0.01
87	89	2	Wood Charcoal	Hardwood, Indeterminable		1	0.01
88	90	2	Wood Charcoal	*Acacia/Prosopis* sp.	Acacia/Mesquite	1	0.01
88	90	2	Wood Charcoal	Hardwood, Indeterminable		5	0.01
88	90	2	Seed Fragment	Indeterminable		1	<0.01
89	91	1	Wood Charcoal	*Acacia/Prosopis* sp.	Acacia/Mesquite	8	0.18
89	91	1	Wood Charcoal	*Prosopis* sp.	Mesquite	5	0.08
89	91	1	Wood Charcoal	*Quercus fusiformis*	Plateau Live Oak	1	0.06
89	91	1	Wood Charcoal	*Celtis* sp.	Hackberry	1	0.01
89	91	1	Wood Charcoal	Ring-porous hardwood		5	0.34
89	91	1	Wood Charcoal	Not examined for species		54	0.44

Appendix D

Radiocarbon Dating Analysis

DirectAMS | **Radiocarbon Dating Services**

Dr. Ugo Zoppi
Director, Accelerator Mass Spectrometry Lab

24 February 2016

Melanie Nichols
Pape-Dawson Engineers
7800 Shoal Creek Blvd.
Ste. 220 West
Austin, TX 78757

Dear Melanie,

Your samples submitted for radiocarbon dating have been processed and measured by AMS. Following results were obtained:

DirectAMS code	Submitter ID	$\delta(^{13}C)$	Fraction of modern		Radiocarbon age	
		per mil	pMC	1σ error	BP	1σ error
D-AMS 015101	FS# 88	-26.1	70.16	0.20	2847	23
D-AMS 015102	FS# 90	-22.8	69.32	0.18	2944	20
D-AMS 015103	FS# 91	-25.4	70.89	0.18	2764	20

All results have been corrected for isotopic fractionation with $\delta^{13}C$ values measured on the prepared graphite using the AMS spectrometer. These $\delta^{13}C$ values provide the most accurate radiocarbon ages but cannot be used to investigate environmental conditions.

Best regards,

Ugo Zoppi

550 17th Avenue, Suite 550, Seattle WA 98122
Tel (206) 258-8857 – Fax (206) 281-5916 – www.directAMS.net

RADIOCARBON CALIBRATION PROGRAM*
CALIB REV7.1.0
Copyright 1986-2016 M Stuiver and PJ Reimer
*To be used in conjunction with:
Stuiver, M., and Reimer, P.J., 1993, Radiocarbon, 35, 215-230.

DAMS-01510
Lab Code
DAMS-015101
Radiocarbon Age BP 2847 +/- 23
Calibration data set: intcal13.14c # Reimer et al. 2013

% area enclosed	cal AD age ranges	relative area under probability distribution
68.3 (1 sigma)	cal BC 1045- 975	0.929
	952- 945	0.071
95.4 (2 sigma)	cal BC 1106- 1103	0.007
	1087- 1062	0.045
	1060- 926	0.948

Median Probability: -1006

DAMS-01510
Lab Code
DAMS-015102
Radiocarbon Age BP 2944 +/- 20
Calibration data set: intcal13.14c # Reimer et al. 2013

% area enclosed	cal AD age ranges	relative area under probability distribution
68.3 (1 sigma)	cal BC 1207- 1203	0.044
	1196- 1139	0.771
	1135- 1120	0.185
95.4 (2 sigma)	cal BC 1218- 1074	0.981
	1065- 1057	0.019

Median Probability: -1158

DAMS-01510
Lab Code
DAMS-015103
Radiocarbon Age BP 2764 +/- 20
Calibration data set: intcal13.14c # Reimer et al. 2013

% area enclosed	cal AD age ranges	relative area under probability distribution
68.3 (1 sigma)	cal BC 929- 893	0.707
	875- 850	0.293
95.4 (2 sigma)	cal BC 974- 954	0.086
	943- 839	0.914

Median Probability: -906

References for calibration datasets:
Reimer PJ, Bard E, Bayliss A, Beck JW, Blackwell PG, Bronk Ramsey C, Buck CE Cheng H, Edwards RL, Friedrich M, Grootes PM, Guilderson TP, Haflidason H, Hajdas I, HattÃ© C, Heaton TJ, Hogg AG, Hughen KA, Kaiser KF, Kromer B, Manning SW, Niu M, Reimer RW, Richards DA, Scott EM, Southon JR, Turney CSM, van der Plicht J.
IntCal13 and MARINE13 radiocarbon age calibration curves 0-50000 years calBP
Radiocarbon 55(4). DOI: 10.2458/azu_js_rc.55.16947

Comments:
* This standard deviation (error) includes a lab error multiplier.
** 1 sigma = square root of (sample std. dev.^2 + curve std. dev.^2)
** 2 sigma = 2 x square root of (sample std. dev.^2 + curve std. dev.^2)
where ^2 = quantity squared.
[ ] = calibrated range impinges on end of calibration data set
0* represents a "negative" age BP
1955* or 1960* denote influence of nuclear testing C-14

NOTE: Cal ages and ranges are rounded to the nearest year which may be too precise in many instances. Users are advised to round results to the nearest 10 yr for samples with standard deviation in the radiocarbon age greater than 50 yr.