Testing and Assessment of Archeological Sites at Bent's Old Fort and Sand Creek Massacre National Historic Sites

By

Michael D. Troyer
Staff Archaeologist

Jason M. LaBelle
Principle Investigator

The Center for Mountain and Plains Archaeology
Colorado State University

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ABSTRACT

In July of 2011, the National Park Service and the Rocky Mountain Cooperative Ecosystems Studies Unit (RM-CESU) contracted with the Center for Mountain and Plains Archaeology (CMPA) at Colorado State University to conduct surface inventories and limited testing on four prehistoric sites (5OT141, 5OT534, 5OT536, 5OT537) and one historic site (5OT558) within the boundaries of the Bent's Old Fort National Historic Site in northeastern Otero County, Colorado, and one undocumented historic trash midden within the boundaries of the Sand Creek Massacre National Historic Site in eastern Kiowa County, Colorado (5KW215). The research centered on establishing site boundaries, temporal affiliation, and National Register of Historic Places eligibility.

In the course of research, CMPA archaeologists documented an additional unrecorded prehistoric site (5OT1359), historic site (5OT1360), and a prehistoric tool isolate (5OT1361).

Investigators successfully delineated the surface and subsurface extent of material using surface inventories and shovel testing, which were often largely in accord with one another. Additionally, investigators recovered diagnostic artifacts useful for making age determinations from all but four sites; two prehistoric sites (5OT536, 5OT537), the prehistoric isolate (5OT1361), and one historic site (5OT558) remain temporally ambiguous.

The rate of erosion affecting the prehistoric sites south of the Arkansas River is much greater than originally interpreted (Greubel and Reed 1996). Unfortunately, all have been very heavily deflated and lack spatial integrity. CMPA archaeologists recovered only a few diagnostic artifacts useful for making age determinations. Given the extensive erosion, lack of intact features, lack of datable material, lack of evidence of subsistence, and paucity of diagnostic materials, we recommend all prehistoric sites investigated in 2011 be listed as not eligible for inclusion on the National Register of Historic Places (NRHP). Survey also revealed two additional prehistoric sites. The first, hereafter referred to as 5OT1359, requires additional survey and testing before eligibility determinations can be made. The second, 5OT1361, is an isolated utilized flake and is not NRHP eligible.

Similarly, CMPA archaeologists tested three historic trash middens, two on the Bent's Old Fort property, and one near the Sand Creek Massacre memorial. Collectively, the material reflects domestic activities dating between the 1940's and 1970's. Given the available data, the sites are not associated with individuals or events of historical significance. Additionally, given the relatively recent age of the material, these sites are unlikely to yield additional data relevant to understanding historic use of the respective areas. Accordingly, we recommend that all historic sites investigated in 2011 be listed as not eligible for inclusion on the National Register of Historic Places.

1. INTRODUCTION AND STATEMENT OF OBJECTIVES

In July of 2011, the National Park Service and the Rocky Mountain Cooperative Ecosystems Studies Unit (RM-CESU) contracted with the Center for Mountain and Plains Archaeology (CMPA) at Colorado State University to conduct surface inventories and limited testing on four prehistoric sites (5OT141, 5OT534, 5OT536, 5OT537) and one historic site (5OT558) within the boundaries of the Bent's Old Fort National Historic Site in northeastern Otero County, Colorado, and one undocumented historic trash midden (5KW215) within the boundaries of the Sand Creek Massacre National Historic Site in eastern Kiowa County, Colorado. The research goals as outlined in the Statement of Work are as follows:

- Identify the vertical and horizontal distribution of material, using both surface inventories as well as shovel testing.
- Assess the age and, if possible, the cultural affiliation of the deposits.
- Assess the significance and integrity of the deposits.
- Make management recommendations to the Park Service.

Additionally, in the course of research, CMPA archaeologists documented an additional unrecorded prehistoric site (5OT1359), historic site (5OT1360), and a prehistoric tool isolate (5OT1361).

2. LOCATION AND ENVIRONMENTAL SETTING

The Bent's Old Fort project area is located in southeastern Colorado, within the east-west trending riparian corridor formed by the Arkansas River. Elevations in the study area range from 1214 meters (3982 feet) to 1230 meters (4035 feet). The area broadly falls within the Great Plains physiographic province and short-grasses and sage dominate the areas not immediately within the floodplain. The riparian biotic community consists of Plains cottonwood, willow, sedges, sagebrush, various cacti species, and various grasses, and is home to a variety of ungulates, canids, leporids, and reptiles. Most of the prehistoric sites investigated in 2011 sit on low terraces along the river. Loosely consolidated, sandy sediments dominate the floodplain, in contrast to the compacted, clay-rich terrace sediments. The modern river course in this area meanders a great deal and appears to have varied hundreds of meters throughout the recent past. Indeed, it is likely many of the sites that now sit on terraces removed from the river were actually much closer at time of occupation. Aside from stream movement and erosion, commercial livestock grazing, which was widely practiced in the area until 1966 (Keller Lynn 2005), undoubtedly contributed to the de-vegetation and subsequent erosion that characterizes many of the archaeological resources in this area. Some sites also show evidence of plowing (plow-marks on cobbles), though the terrace edges would have been marginal to commercial agricultural use. See Keller Lynn (2005) for a more detailed discussion of the local geology.

The Sand Creek Massacre National Historic sits on an alluvial terrace within the valley of Big Sandy Creek, where the river makes an abrupt turn from south, southeast trending to east upon contact with a low hill system. The valley fill is composed of sand, silt, gravel, and clay and averages 25-30 feet in thickness. The strata of archaeological interest are composed of silt, clay, and fine to very fine sand (Coffin 1967, cited in Scott et al. 1998). The area falls within the Great Plains physiographic province; short grasses and forbs dominate the area outside the riparian corridor, cottonwood and riparian grasses predominate within the immediate vicinity of the streambed. The faunal community includes mule deer and pronghorn, though Bison would have been present in the past, as well as canids, leporids, reptiles, and a variety of bird species.

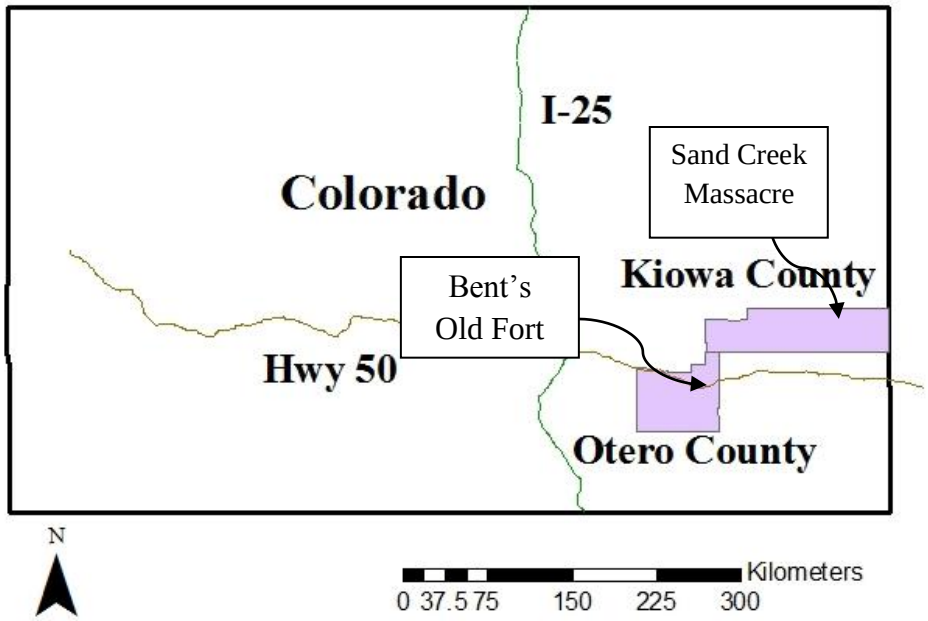

Figure 2.1 Location of study area in Colorado

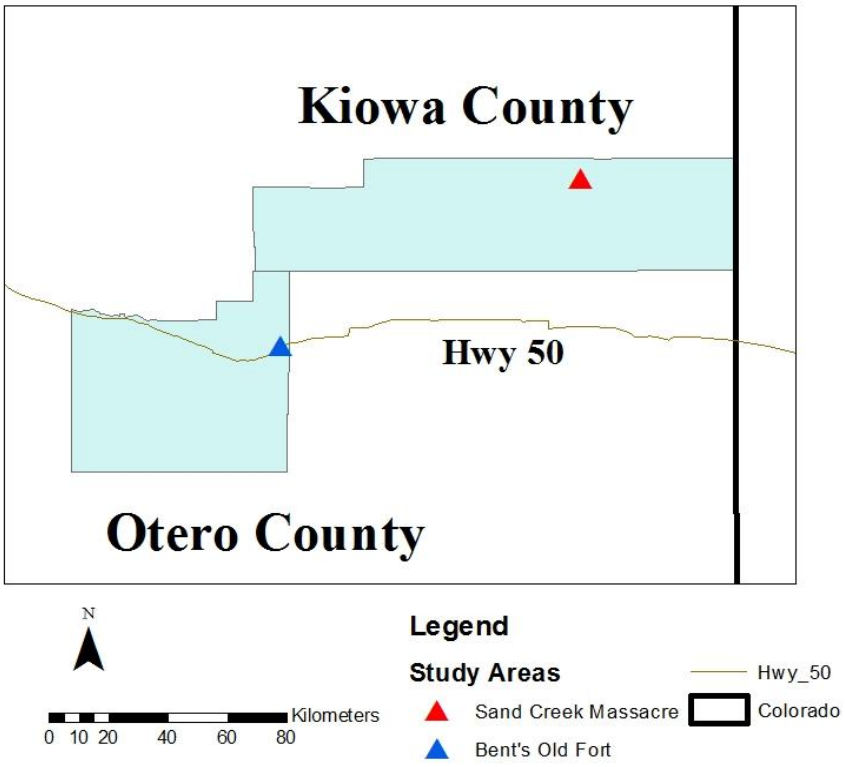

Figure 2.2 Location of study areas within Southeast Colorado

3. REGIONAL CULTURE HISTORY

The following briefly summarizes the cultural history of southeastern Colorado and is largely based upon the summary presented within the Colorado Prehistory context for the Arkansas Basin (Zier and Kalasz1999).

Paleoindian Stage

The Paleoindian stage of prehistory broadly refers to the period dating from sometime before 11,500 RCYBP to just after 8,000 RCYBP The period represents the earliest occupations of Colorado and a transition period from the Pleistocene to the Holocene. Most archaeologists recognize a four-part subdivision to the Paleoindian Period in Southern Colorado:

Pre-Clovis	>11,500 RCYBP
Clovis	11,500 – 10,950 RCYBP
Folsom	10,950 – 10,250 RCYBP
Late Paleoindian	10,250 – 7,800 RCYBP

The earliest subdivision within this scheme – referred to as Pre-Clovis, highlights the belief that Clovis peoples were not the first Americans, but rather the first archaeologically visible group, present in large enough numbers that they left behind substantive material evidence. Since the initial colonization of North America is very poorly understood and widely debated, the Pre-Clovis period of prehistory is largely hypothetical and does not have an established, uncontested beginning date. Assumptions of Pre-Clovis occupation in southeast Colorado are largely based upon temporal patterns in adjacent areas; there are no sites of this age presently known within the study area, or southeastern Colorado more broadly.

Similarly, Clovis occupation in the study area is poorly understood. There are few documented sites of this age in all of southeastern Colorado and those that contain Clovis material have not been excavated or are in private collections. Campbell (1969) reported one fluted Clovis projectile point in Bent County, though the details are not very specific. Notably, the areas subjected to large, intensive, block surface inventories, such as the Piñon Canyon Maneuver Site, John Martin Reservoir, and Bent's Old Fort have not revealed any Clovis-age components (Zier 1999: 80).

Folsom appears to directly follow Clovis within the Great Plains and Rocky Mountains of the United States. Folsom peoples, like Clovis, produced distinctive, fluted projectile points found across large parts of interior North America. Clovis and Folsom appear to have followed similar economic strategies oriented towards large animal procurement, though Folsom peoples favored Pleistocene bison rather than mammoth. Traditionally, both Folsom and Clovis are characterized as large-animal specialists. Growing evidence in the form of both subsistence and settlement data indicate that both

groups were likely more generalized foragers than previously thought (LaBelle 2005). There are only slightly more sites of the Folsom age in southern Colorado, specifically, two surface scatters in Las Animas County (5LA57 and 5LA986) and the Hahn site in El Paso County (5EP1)(Zeir 1999:85). Anderson (1989) reports a few Folsom artifacts west of La Junta, near the Red Top Ranch in southeastern Pueblo County.

The last period, Late Paleoindian, contains the most archaeological evidence of the Paleoindian traditions and is characterized by large, unfluted lanceolate projectile points, often found in association with modern bison. Despite the abundance of known projectile points of this age, however, the Arkansas Basin evidence is scant compared to later periods. The Olsen-Chubbuck site, a large Late Paleoindian, Cody Complex bison kill, is located about 60 miles to the northeast of the study area and is the only excavated Paleoindian site in the area (Wheat et al 1972). The remaining data come largely from isolated surface scatters distributed across southeastern Colorado.

Archaic Stage

The Archaic stage of prehistory broadly refers to the period dating 7,800 RCYBP to about 1,850 RCYBP The beginning of the stage marks the end of the Paleoindian lifeway and is largely coincident with a climatic shift towards warmer and drier conditions that affected large parts of interior North America. Most Great Plains archaeologists recognize the three-part subdivision detailed below:

Early Archaic	7,800 RCYBP – 5,000 RCYBP
Middle Archaic	5,000 RCYBP – 3,000 RCYBP
Late Archaic	3,000 RCYBP – 1,850 RCYBP

As mentioned above, the Early Archaic period marks the end of the Paleoindian lifeway and an adaptation to Middle Holocene warming conditions that influenced the distribution and abundance of both plant and animal species. There are very few well-dated and thoroughly excavated sites of this age in southeast Colorado and indeed throughout the Great Plains and Rocky Mountains. There are a few points regarding this paucity of data that need to be addressed. First, the available evidence regarding Early Archaic subsistence and settlement indicates that in response to Middle Holocene (Altithermal) warming, people progressively shifted toward broader diets and more task-based settlement strategies (Metcalf and Black 1991). That is, groups chose “base-camps” that offered a variety of critical resources (often water) and organized small groups to collect other critical resources and return them to the base camp (Binford 1980). This strategy does not appear to have been utilized to the same extent in earlier periods. Rather, earlier peoples used a combination of task-based mobility and residential mobility (moving camp to food instead of moving food to camp) that favored the latter. Within the aforementioned summary of the Early Archaic transition, there are two

possible explanations for the paucity of sites of this age. First, since settlement organization rapidly departs from the earlier periods, it is possible that there are few sites of this age simply because archaeologists have looked in the wrong places (and looked for the wrong material). More specifically, it is possible that discovery of Early Archaic sites is hampered by an incompatibility with the development activities (often oil and gas) that govern a large part of archaeological research (i.e. cultural resource management). Since it seems that many of the sites of this age are located along sources of water, it is unsurprising that they have gone unnoticed – these areas also happen to be difficult to develop. Additionally, it is equally plausible that given their location near reliable bodies of water, these sites may simply have been very deeply buried and/or destroyed by flood events. Given the apparent changes in large animal distribution (Byers et al. 2005), it is also likely that human population also decreased and/or took refuge in the higher, better watered Rocky Mountains (Benedict 1978, 1979).

The Middle Archaic Period coincides with the appearance (and disappearance) of McKean-complex projectile points. There are generally more dates from this period that the preceding Early Archaic; in southern Colorado, there are 26 radiocarbon dates from 20 tested and/or excavated sites in the Arkansas Basin. Additionally, four rock-art panels have been dated using the cation-ratio technique in the Piñon Canyon Maneuver Site ranging from 4675 RCYBP to 3300 RCYBP (Zier 1999: 113). Broadly, there is very little change in terms of subsistence and settlement between the Early and Middle Archaic periods; stylistic changes in projectile points distinguish the two. The increase in sites dating to the Middle Archaic relative to the Early Archaic may relate to increases in population density and/or better preservation.

The Late Archaic period dates from 3,000 RCYBP to around 1,850 RCYBP The end date of the Late Archaic is perhaps the most difficult to define since it is based on the appearance of a constellation of material items that vary in terms of their distribution and acceptance. Generally, the introduction of ceramics and the transition from the atlatl to the bow-and-arrow demark the end of the Archaic way of life and usher in the Late Prehistoric period of prehistory. However, the factors controlling the acceptance and spread of these technologies needs to be better considered. Notably, even after the bow-and-arrow arrives from eastern cultures, the atlatl remains in use in some cultures. Namely, Besant sites often contain ceramics as well as atlatl darts rather than the more typical arrow-tip projectile points (Miller et al 1987).

The progressive increase in documented Archaic sites through time continues into the Late Archaic period and sites of this age are found throughout the region. Zier (1999:126) notes that the radiocarbon record in the Arkansas basin during this time contains gaps between absolute dates that average only 21 years, with a maximum gap of

only 110 radiocarbon years, indicating an increase in the sheer number of sites in the area as well as potentially indicating an increase in regional population.

Late Prehistoric Stage

The Late Prehistoric stage refers to the period dating from 1,850 RCYBP (A.D. 150) to 225 RCYBP (A.D. 1725) and is divided into three periods: Developmental (A.D. 150 to 1050), Diversification (A.D. 1050 to A.D. 1450), and Protohistoric (A.D. 1450 to A.D. 1725) (Kalasz et al 1999: 141). To briefly summarize, the Developmental Period corresponds with the Early Ceramic period as defined by Eighmy (1984), and is characterized by the appearance of ceramic technology, the bow-and-arrow, masonry architecture, and small-scale maize horticulture. However, as previously noted, the dates derived from the individual technologies do not always necessarily correspond (hence the use of the term Late Prehistoric rather than Ceramic). Beyond changes in material culture, there is initial continuity in lifeways and economies between Late Archaic and Late Prehistoric cultures. As time progressed however, significant changes in demographics, settlement, and subsistence, swept across the area. The Diversification Period corresponds to the Middle Ceramic period. The appearance of the distinctive Apishapa and Sopris phases, characterized by increasingly complex, multi-room stone structures, increased maize horticulture, and increased sedentism define the era. Due to a combination of apparent population expansion and better preservation of Development and Diversification-aged sites, the period is one of the best documented of all prehistory. For additional details, see Kalasz et al. (1999: 141-249). Lastly, the Protohistoric period traditionally refers to the period after aboriginal and European contact, but before contact was commonplace. However, evidence of such interaction is not always clear, thus, Kalasz et al (1999: 250) argue the period more appropriately refers to the Apishapa abandonment and the arrival of Athapaskan groups to southern Colorado and the subsequent displacement of Athapaskan groups by the Comanche around A.D. 1725.

History of Bent's Old Fort and Previous Research

Charles and William Bent partnered with Ceran St. Vrain to form Bent, St. Vrain and Company and built Bent's Fort in 1833 along the Arkansas River, near modern day La Junta, Colorado. The fort was the first permanent outpost in the Southwestern Frontier, located along the border between the United States and Mexico, and along the Mountain Branch of the Santa Fe Trail. The outpost served as an important trade destination for trappers, travelers, and Plains Indian groups, particularly the Southern Cheyenne and Arapahoe. Additionally, the fort served as a staging area during the war with Mexico in 1846. After the war, the U.S. Army may have negotiated with William Bent to purchase the post. In 1849, after disease and disaster had taken their toll, Bent abandoned the post and burned it. The site remained little used until the 1860s, when the Barlow-Sanderson Overland Mail and Express Company established a station and repair shop in refurbished parts of the fort, and used the fort grounds to house extra coaches

(Gardner 2004). Daniel W. Holbrook and Phillip Lander acquired the property in 1867 for use as a base of cattle operations, though stages apparently still used the property up until 1876. John W. Prowers began using the fort for ranching operations in 1872. The fort again fell into disuse around 1881. In 1912, The Daughters of the American Revolution erected a stone archway to commemorate the historical significance of the site, and acquired the property in 1920. DAR deeded the site to the state of Colorado in 1954; the site became a National Historic site in 1960 and the Park Service began administration in 1963 (Comer, 1985).

Archaeological investigations of Bent's Old Fort began in 1954 when the State of Colorado began investigations to determine the historical significance of the property. The work was led by Herbert W. Dick and was directed at exposing the broad layout of the fort; the results were published in Colorado Magazine in 1956 (Dick 1956). Shortly after being acquired by the Park Service in 1963, Jackson W. Moore conducted a three-year archaeological investigation aimed at understanding the floor plan and spatial organization of the fort that was instrumental in the reconstruction that began in 1975 (Moore 1973). Robert W. Leonard of Colorado State University monitored reconstruction activities in 1975 and conducted limited testing (Leonard 1975). Douglas C. Comer conducted test excavations for the Park Service in 1976 as part of the mitigation of fort reconstruction and infrastructural development (Comer 1985).

Archaeological investigation of the land surrounding Bent's Old Fort began in 1975 when a two-person team from Midwest Archaeological Center surveyed the lands adjacent to and within the National Historic Site, reporting a single site and six isolated finds within the lands slated for acquisition (Nickel 1976). Jerry Dawson and Carol Maass of the National Park Service (Dawson and Maas 1994) surveyed the entire Bent's Old Fort property, as it exists now, in 1994. They report four lithic scatters south of the Arkansas River (5OT141, 5OT534, 5OT536, and 5OT537). Alpine Archaeological Consultants reinvestigated these sites in 1995. The reinvestigation aimed to identify the age and cultural affiliation of the material as well as to assess the significance and integrity of the deposits, and provided the first radiocarbon dates for the area (Greubel and Reed 1996). Lastly, RMC Consultants surveyed the area burned by the Old Trail wildfire in March of 2002 and reported on the disturbance to 5OT141, 5OT149, 5OT534, and 5OT537 (Killam 2003).

Site	CMPA	Alpine	RMC	NPS 1976	NPS 1994	Carrillo 1996
5OT141	X	X	X	X	X	
5OT149			X			
5OT534	X	X	X		X	
5OT536	X	X			X	
5OT537	X	X	X		X	
5OT554		X				
5OT555		X				
5OT558	X					X
5OT1359	X					
5OT1360	X					
5OT1361	X					

CMPA The Center for Mountain and Plains Archaeology, Colorado State University
Alpine Alpine Archaeological Consultants, Inc (Greubal and Reed 1996)
RMC RMC Consultants, Inc (Killam 2003)
NPS National Park Service (Nickel 1976; Dawson and Maass 1994)
Carrillo In state site files (OAHP)

Table 3.1 History of research outside fort walls at Bent's Old Fort National Historic Site

History of Sand Creek National Historic Site and Previous Research

The Sand Creek Massacre National Historic Site is the location of a conflict between roughly 700 soldiers representing the Colorado Territory Militia and around 500 Southern Cheyenne and Arapahoe camped along Sand Creek in what is now southeastern Colorado. At dawn on November 29, 1864 the militia, under the command of Colonel John M. Chivington, rode into the Native American camp and burned the village. Many of the Southern Cheyenne and Arapahoe fled up the dry streambed in an attempt to hold off the advancing militia. When the dust settled, over 150 Native Americans lay dead, many of the bodies mutilated at the hands of the militiamen (Greene and Scott 2004).

Military personnel visited the location of the Sand Creek Massacre in the years following the event, but eventually the exact location of the massacre was lost. It was not until 1998 that a multidisciplinary team sought to relocate the event and establish it as a National Historic Site. In that year, then Senator Ben Nighthorse Campbell convinced Congress to pass the Sand Creek Massacre National Historic Site Study Act, which charged the National Park Service with combining ethnohistoric accounts, historic documentation, and a variety of archaeological survey methods to locate the massacre site. The Sand Creek Massacre project team located the site in May of the following year (Greene and Scott 2004). The site was listed on the National Register of Historic Places

in September of 2001 and became an official unit of the National Park System on April 27th, 2007; the memorial dedication ceremony took place the following day.

4. FIELD AND LABORATORY METHODS

Field Methods

Dr. Jason LaBelle, Michael D. Troyer (Field Director), Wendy L. Huber and Tia R. Cody (field archaeologists), with the help of Dennis Schiferl (volunteer) performed the fieldwork between July 18 and July 27, 2011. Jason M. LaBelle served as Principal Investigator and Rhonda Brewer and Karl Zimmermann served as liaisons with the Bent's Old Fort and Sand Creek Massacre National Historic Sites respectively.

Site Recordation

Standard site recording procedure for both re-investigations as well as new sites centers on capturing the physical location of the cultural material as well as the overall character of the assemblage. Specifically, archaeologists record the spatial extent of the material using a Magellan Mobile Mapper CX global positioning satellite unit. The site is assigned a datum location if one does not already exist. Previous investigators have used 1" PVC pipe and metal tags as datums; CMPA archaeologists used 10" galvanized metal spikes surrounded by a small cairn of stones to prevent interference to the datum location; several of the extant PVC datums were clearly disturbed. Initial site recording includes documentation of discovery method, sampling strategy, site size and topographic location, proximity to existing infrastructure, location and character of diagnostic materials and debitage, factors influencing site structure and integrity, as well as an assessment of the research and data potential of the site.

Debitage

CMPA archaeologists record the raw material and size of lithic debitage (the byproduct of tool production) as well as the presence of cortex (the weathered exterior of the parent material) and evidence of burning (crazing, potlidding, discoloration, changes in texture appearance – glossy/waxy). For sites with less than 200 flakes, the location and characteristics of each flake is recorded. Determination of raw material type depends heavily on the experience of the individual investigator and can be subjective. To counteract the subjectivity of raw material determinations, two archaeologists collaborated when recording size and type of lithic material. The figure below (Figure 4.1) illustrates the size classes used during flake inventory – each class (circle) indicates a whole centimeter increment.

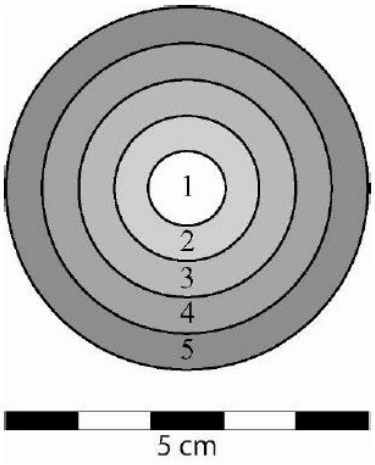

Figure 4.1 Lithic debitage size classes

Tools

Archaeologists record lithic tools, both formal and informal individually. Specifically, each tool is categorized based on type, portion, raw material, color, and production technique. Archaeologists also record a variety of metrics, when applicable, including overall length, width, and thickness. All tools are photo documented regardless of whether or not they are collected.

Features

Feature is a classification that emphasizes the permanence of much of the historic and prehistoric record. In other words, artifacts are portable and features are not. In the case of prehistory, feature generally refers to non-natural accumulations of rock – hearths, walls, stone foundations, cairns, and so on. During the project in question, the only possible features encountered were fire-altered concentrations of rock (FAC), that is, concentrations of cobbles that appear to have been heated in a reasonably hot fire. Previous investigators recorded these features as prehistoric hearths. The 2011 reinvestigation centered on relocating and assessing the rate of disturbance affecting these concentrations and determinations of cultural and functional origin. Broadly, all features encountered in 2011 were in very poor condition. However, given the evidence of heating as well as the non-native origin of the stone, I consider all the features discussed below to be of cultural origin and represent badly deflated/eroded "earth ovens".

To briefly summarize, an earth oven represents a food processing technique whereby individuals prepare a shallow basin or steep-sided pit in the ground and place within it a large quantity of stone and fuel wood. The cook then sets the pile of wood and stone ablaze and allows the fire to consume the fuel and heat the stone. Once the fire has dwindled, the hot stones are organized in the center of the pit, subsequent layers of

vegetative ‘packing’ material and food are layered into the hearth and the entire contents are buried and allowed to cook for long periods of time, often days. The purpose of such costly and time-consuming processing likely relates to the biochemistry of many plant foods. Specifically, complex carbohydrates, characteristic of many root foods, require extended periods of heating in order to break down into simple carbohydrates – a process called carbohydrate hydrolysis (Wandsnider 1997). Simple carbohydrates are more nutritious and digestible by humans. Extended heating also helps reduce toxins in some plant species. Noteworthy, a simple flame is inadequate to provide such long-term heat as it would be impossible to control the temperature and the fuel costs would be excessive. Thus, rock-inclusive hearth feature designs – such as these ones – represent adaptive subsistence strategies that are, at least in part, focused on plant root-food use.

However, that is not to say that these “earth ovens” would have been the only features type in use at time of occupation. Rather, these features tend to be very erosion resistant due to the inclusion of rock, and given the badly eroded character seen on most of the sites in question, it is reasonable to assume that simple, rock-less designs, useful for other tasks, long since eroded away.

CMPA archaeologists record basic measurements of features (length, width, depth) as well as, in the case of thermal features, number and size of stones, evidence of burning (soil and stone reddening, crazing or cracking, discoloration, presence of charcoal) and associated artifacts or other features. All features are photo-documented.

Shovel Testing

Shovel testing is an investigative strategy aimed at understanding the presence or absence of buried cultural material and the vertical and horizontal distribution of that material. Additionally, since many of the sites investigated in 2011 were previously documented surface scatters, CMPA archaeologists used shovel testing as a means to test the validity of inferred site boundaries, that is, whether or not those visible surface boundaries represent the extent of human behavior or simply a survey bias.

Shovel testing refers to the ordered spacing of small (30x30cm) excavations across a site. The soil is removed in arbitrary 20cm levels and screened through 1/4” mesh. Archaeologists record the color and texture of the soil as well as the inclusion of gravel, roots, other natural elements, and, of course, cultural material. Tools and debitage recovered in a shovel test are recorded as they would be on the surface (see above).

Shovel tests should be conducted with attention to both the goals and questions driving the research as well as the time and resources available. Accordingly, the shovel testing strategy should vary as the size and character of the site and investigative goals change. The 2011 investigations utilized shovel testing on all previously recorded sites as per the contract with the Rocky Mountain Cooperative Ecosystems Study Unit (RM-

CESU) and one previously unrecorded historic site (5OT1360); two newly identified prehistoric sites were not tested (5OT1359 and 5OT1361). CMPA archaeologists used shovel testing as a means to test the inferred boundaries of prehistoric and historic sites as well as test for buried material; between 4 and 8 shovel tests were dug per site. Accordingly, the spacing and location of individual shovel tests varied with the size and spatial character of each site.

Figure 4.2 Shovel testing

Laboratory Methods

Artifact Analysis

Michael Troyer cleaned, photographed, and re-measured all collected artifacts at the Center for Mountain and Plains Archaeology laboratory at Colorado State University. No further analysis is planned at this time.

Curation

Collected artifacts will be curated at Bent's Old Fort under accession number BEOL-00570. The individual artifacts were collected and curated with the catalog

numbers detailed below. Hereafter, LT refers to lithic tool, i.e. prehistoric artifacts, and HA refers to historic artifact. CMPA archaeologists did not collect any historic artifacts; all were recorded in the field. Only prehistoric artifacts were collected for curation.

Site	Field Designation	Catalog Number	Tool
5OT141	LT3	BEOL 32128	Projectile point
5OT141	LT4	BEOL 32129	Projectile point
5OT534	LT1	BEOL 32130	Projectile point
5OT534	LT3	BEOL 32131	Preform
5OT534	LT5	BEOL 32132	Preform
5OT534	LT6	BEOL 32133	Drill
5OT1359	LT1	BEOL 32134	Projectile point
5OT1359	LT2	BEOL 32135	Biface
5OT1359	LT3	BEOL 32136	Biface
5OT1359	LT4	BEOL 32137	Endscraper
5OT1359	LT5	BEOL 32138	Biface

Table 4.1 Summary of artifact catalog numbers (LT – lithic tool)

5. SITE DESCRIPTIONS

5KW215

5KW215 is a historic trash midden exposed on the surface and, in places, shallowly buried in a small draw west of the Sand Creek Massacre National Historic Site monument. The arroyo was apparently used to deposit domestic and ranch related items and sits along a currently unused two-track road. A variety of glass, ceramic, and metal artifacts comprise the bulk of the artifact assemblage. Further erosion in the arroyo exposed shallowly buried deposits in places (generally less than 5 cm) and a surface scatter of material measuring approximately 75x30m. The bulk of the material is concentrated in a north-south trending distribution that parallels the west side of the arroyo and the unused two-track road, indicating that the material was transported by vehicle and is secondarily deposited.

CMPA archaeologists surveyed the entire area contained within the draw using 1-meter transects and flagged all cultural material (Figure 5.1; Figure 5.2). They then quantified the assemblage based on type of material and color. Diagnostic artifacts were recorded individually, with diagnostic element recorded and photographed for evaluation in the lab (select examples Figure 5.5; Figure 5.6). The surrounding landscape was mapped and is represented in Figure 5.3.

Figure 5.1 5KW215 – view is to the east. Arrows indicate north-south extent of material, dashed line indicates 2-track road. Photo by Michael Troyer, July 2011.

Figure 5.1 illustrates the north-south extent of the cultural material. The Sand Creek Massacre National Historic site monument is to the right on top of the hill in the background. The unused two-track road can be seen in the foreground near the base of the hill, running perpendicular to the line-of-sight. Figure 5.2 illustrates the association between the surface exposed material and the arroyo and road.

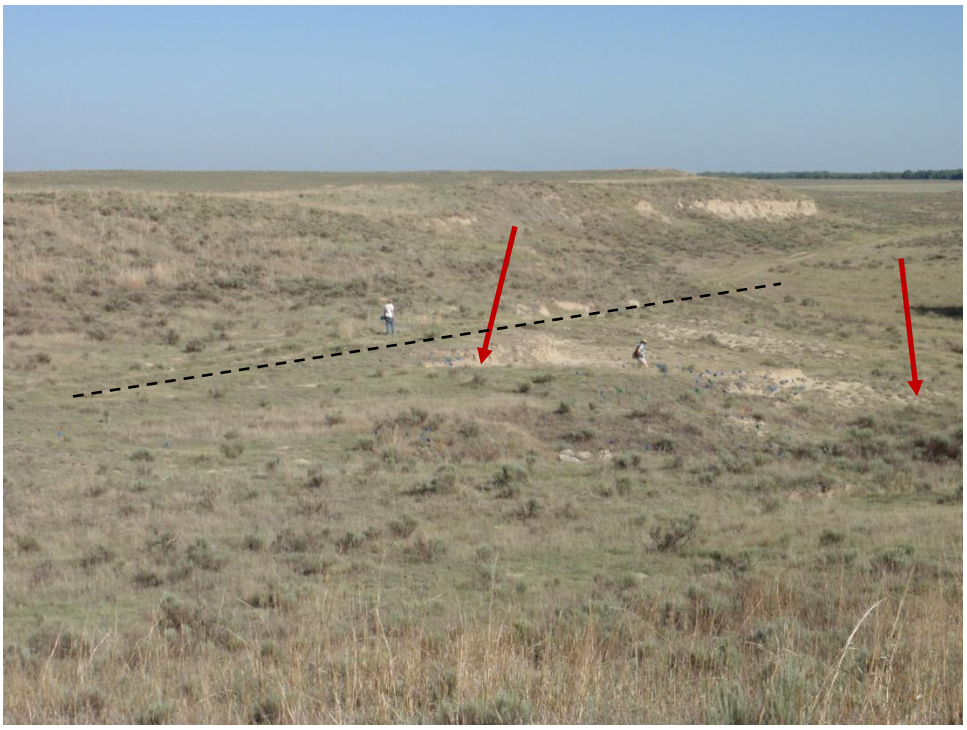

Figure 5.2 5KW215 – view is to the north. Arrows indicate east-west extent of material, dashed line indicates 2-track road, blue flags indicate diagnostic material. Photo by Michael Troyer, July 2011.

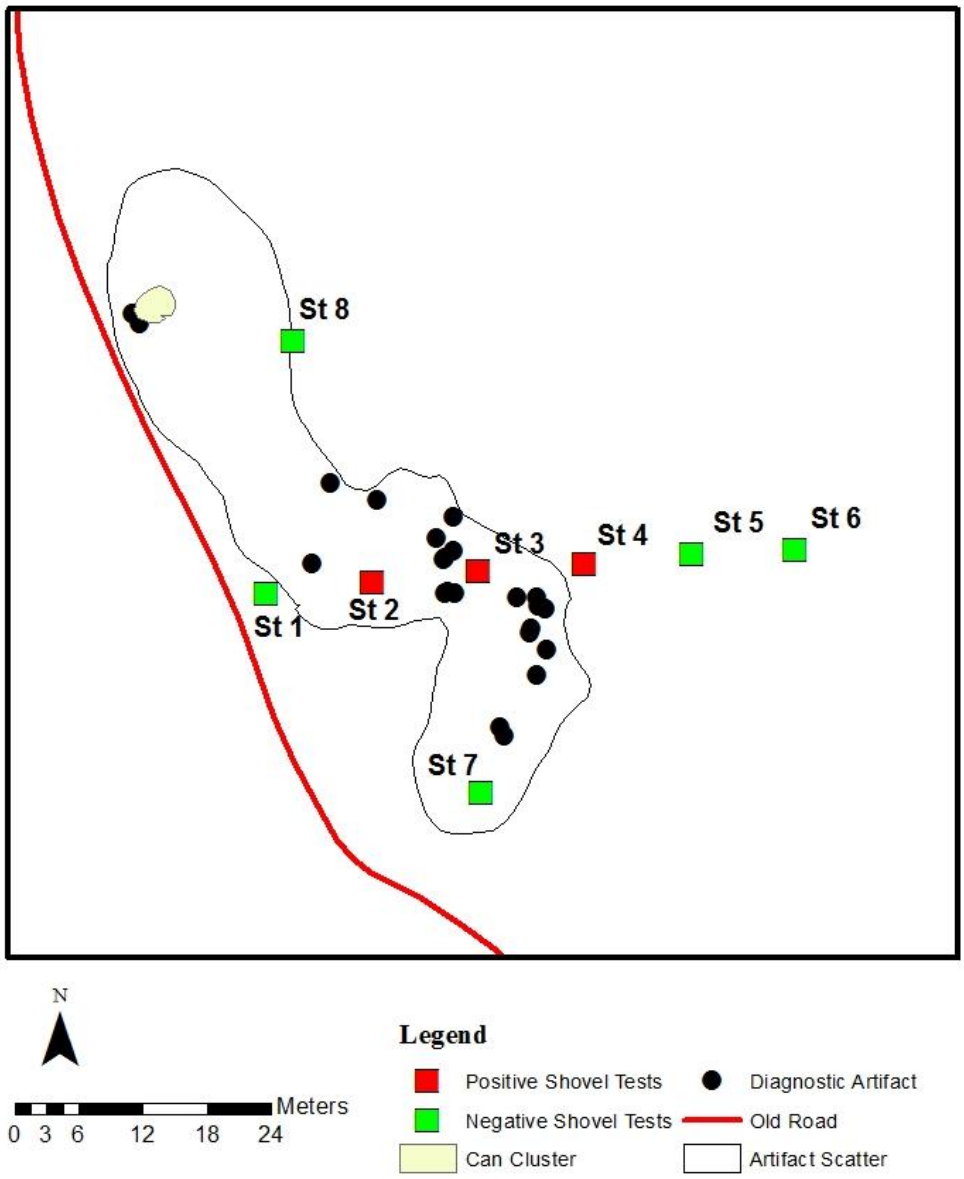

Figure 5.3 5KW215 – overview of surface materials and shovel tests

Historic Artifacts

Glass	Ct	Ceramic	Ct	Metal Misc	Ct
Bottle		Ceramic Fragments		Metal	
Amber	2	Porcelain	30	Misc	152
Brown	1	Earthenware	2	Barbed Wire	15
Cobalt	1			Wire	4
Green	1	**Can**		Screw	3
Clear	15	Beverage		Staple	1
Milk	1	Crown Cap		Round Nail	4
		Flat Top	4	Rebar	1
Fragments		Cylindrical Food	6	Hinge	1
Amber	207	Other		Large Metal frags	5
Brown	28	Pull Tab Cans	53	Spring	1
Cobalt	1	Pull Tabs	3	Silver Hook	1
Green	10				
Clear	550	**Other**			
Milk	27	Black Rubber	1		
Lt Blue	34	Blue Plastic	1		
Rose	4				

Table 5.1 5KW215 Summary of historic surface inventory materials

Non-diagnostic glass fragments comprise the bulk of the artifacts recorded at 5KW215. A small number of glass items were recorded that were identifiable to a bottle type and occasionally a manufacturer. Clear and amber colored glass makes up well over 90 percent of the glass assemblage. Unfortunately, these two colors are also the least diagnostic, having been in use since the late 1800's and continuing to the present. Notably, there are no examples of yellow or amethyst glass, which were in use until the 1920's (Horn 2005).

The assemblage also contained 53 pull-tab cans and 3 pull-tabs. Ermal Cleon Fraze patented the pull-tab can in 1963, thus the bulk of the can assemblage (northwest corner of artifact scatter - Figure 5.3, Figure 5.4) dates later than 1963/1964 when they became widely used. It is also noteworthy that the can assemblage contains so few pull-tabs in proportion to cans. It is likely that, due to their size, the tabs were discarded at or near the place of consumption and only the larger, bulkier cans were transported to a secondary deposit, an inference supported by the spatial association between the scatter and two-track road.

Figure 5.4 5KW215 Can scatter. Photo by Michael Troyer, July 2011.

CMPA archaeologists also recorded a number of non-diagnostic, badly corroded metal fragments that likely represent the remains of a variety of beverage and food cans.

Diagnostic Artifacts

The artifact assemblage also contained a variety of artifacts that possessed diagnostic attributes, including maker's marks, other brand lettering, and/or characteristic manufacture techniques. However, many of the characteristics do not have conclusive end dates. Thus, they serve only to establish the earliest possible date for the assemblage. Table 5.2 presents the details of artifacts deemed diagnostic. Noteworthy among these are an AC-M8 sparkplug, a round glass headlight (Figure 5.6), the remains of a compass watch (Figure 5.5), a glass bottle base produced by the Hazel Atlas Glass Company, and two cans with intact lettering – a Hamm's pull-tab beer can and a Rhondo Citrus Soda stay-tab can. These artifacts possess both beginning and end dates of production, and are therefore the most useful in delineating the temporal range of site use. Accordingly, it appears the site was used between the mid 1930's and mid 1960's, though the presence of some later items indicates the area may have been used to a lesser extent into the late 1970's.

Figure 5.5 5KW215 Historic Artifact 15 - "The E Ingraham Compass Bristol Con USA". Photo by Michael Troyer, July 2011.

Figure 5.6 5KW215 Historic Artifact 21 – round glass headlight. Photo board reflects temporary site designation. Photo by Michael Troyer, July 2011.

Artifact #	Type	Portion	Manufacture Method	Min Date	Max Date	Comments/ Writing
H1	Can	Complete	Pull Tab	1970	2011	"Hamm's" - 2-piece can, pull tab
H2	Bottle	Finish	Srewtop	1904	2011	Seam through finish
H3	Bottle	Complete		1932	2011	"No deposit, no return, not to be refilled"
H4	Bottle	Base	Post-mold	1932	2011	"G PROH…5" refilling prohibited"
H5	Nail	Compete	Wire-drawn	1900	2011	
H6	Glass	Base	Cup-mold	1920	1964	Hazel Atlas Glass Co. maker's mark
H7	Glass	Base	Cup-mold	1904	2011	Brown - automatic bottle machine
H8	Spark Plug	Complete		1922	1974	"AC M-8 Coralor Patented"
H9	Zipper	Complete		1922	1978	"Talon"
H10	Glass	Base				"allon" likely -gallon
H11	Med Bottle	Complete	Srew top w/ lid	1904	2011	Automatic bottle machine
H12	Glass Jug	Finish	Screw top	1904	2011	Single finger handle, seam extends through finish
H13	Glass	Base	Post-mold	1935	2011	Clear, "Wine.. Refilling prohibited"
H14	Bottle	Finish	Screw top	1904	2011	Metal cap, "100% grape wine"
H15	Compass	Partial		1945	1955	"The E Ingraham Compass Bristol Con USA"
H16	Glass Vase	Complete	Post-mold			Milk Glass, Vine motif
H17	Glass	Finish	Screw top	1904	1962	Brown, winged finish, "Hi-Lex" 1-gallon bleach bottle
H18	Glass	Base	Post-mold	1904	2011	Square base
H19	Ceramic	Fragment				Tea cup, white, brushed shell motif
H20	Glass Bowl	Complete	Machine made			
H21	Glass Headlight	Half		1915	1980	Round headlight - likely Chevrolet (AC sparkplug)
H22	Can	Complete	Stay-tab	1975	1983	"Rondo Citrus Soda"
H23	Glass	Base	Cup-mold	1904	2011	"M-112"
H24	Glass mug	Handle	Machine made	1904	2011	

Table 5.2 5KW215 Summary of diagnostic artifacts (H-historic artifact). Date references from Horn 2005 and Toulouse 2001.

Figure 5.7 illustrates the age range and average dates for the diagnostic artifacts.

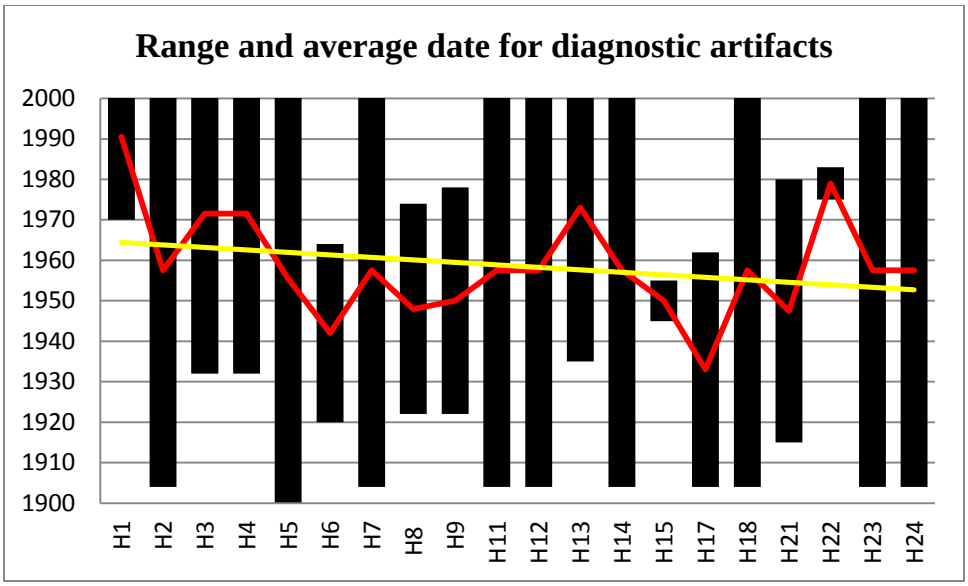

Figure 5.7 5KW215 Range and average date for diagnostic artifacts. Age range is represented by black bars, the red line indicates average age of individual artifacts, and the yellow line represents the average age of the assemblage.

Features

The most noticeable items at 5KW215 are four features, designated 1-4, that reflect both the domestic and ranch related history of the property. CMPA archaeologists recorded these items in the field, as exposed; they were not excavated or otherwise manipulated in any way.

Feature 1 is a large metal stock tank that was apparently deposited at the head of the arroyo – possibly to help reduce head-cutting erosion. Large amounts of concrete and sediment fill the tank. It is unclear if the tank was intentionally filled or the sediment is a result of slope wash. The feature as is measures 235 cm north-south, 248.5 cm east-west and sits approximately 63 cm above the surface. A small number of artifacts were associated with the tank, particularly H22, a Rondo Citrus Soda can dating to the late 1970's through early 1980's. Taken with the limited evidence of oxidation, especially when compared to the heavy oxidation apparent on nearly every other metal artifact, it is reasonable to assume that the tank dates to the later period of site use.

Feature 2 is a partially buried mattress spring. The feature measures 170 cm north-south, 46.5 cm east-west, and is exposed 63cm above the surface. The spring mattress sits on end and the bulk of the feature is buried. The feature sits on the east slope of the arroyo; if it secondarily deposited from the road as per the aforementioned hypothesis of site use, it was thrown across the arroyo or carried around to the other side.

Feature 3 appears to be a car bumper or some similarly sized metal tubing. The feature is partially buried with flattened surface elements. The most noticeable aspects of

the feature are vertically exposed and slightly inclined to the south. The total feature measures 64.5 cm maximum extent north-south, 60cm east-west, and is exposed 54.2 above the ground. There were non-diagnostic metal artifacts in association with the feature; it is unclear if the metal fragments were once part of the feature or simply unassociated waste.

Feature 4 is metal bed frame that sits very near the surface, but is largely overgrown by dense vegetation. The feature measures 69.4cm north-south, 180.5 east-west, and sits 33.5 cm above the surface. The frame is in a small depression in the arroyo, and was likely used to stem erosion. The metal frame also has all metal wheels, which would seem to indicate that the frame itself is quite old. However, there are bits of fabric from a mattress associated with the frame. The short preservation time of cloth fabric on the surface would indicate that the frame has not been sitting on the surface as long as some of the other materials on site; rather the frame may have been in use for some time, and deposited long after it was manufactured. Thus, the apparent early date of the frame manufacture does not directly relate to the use of the site.

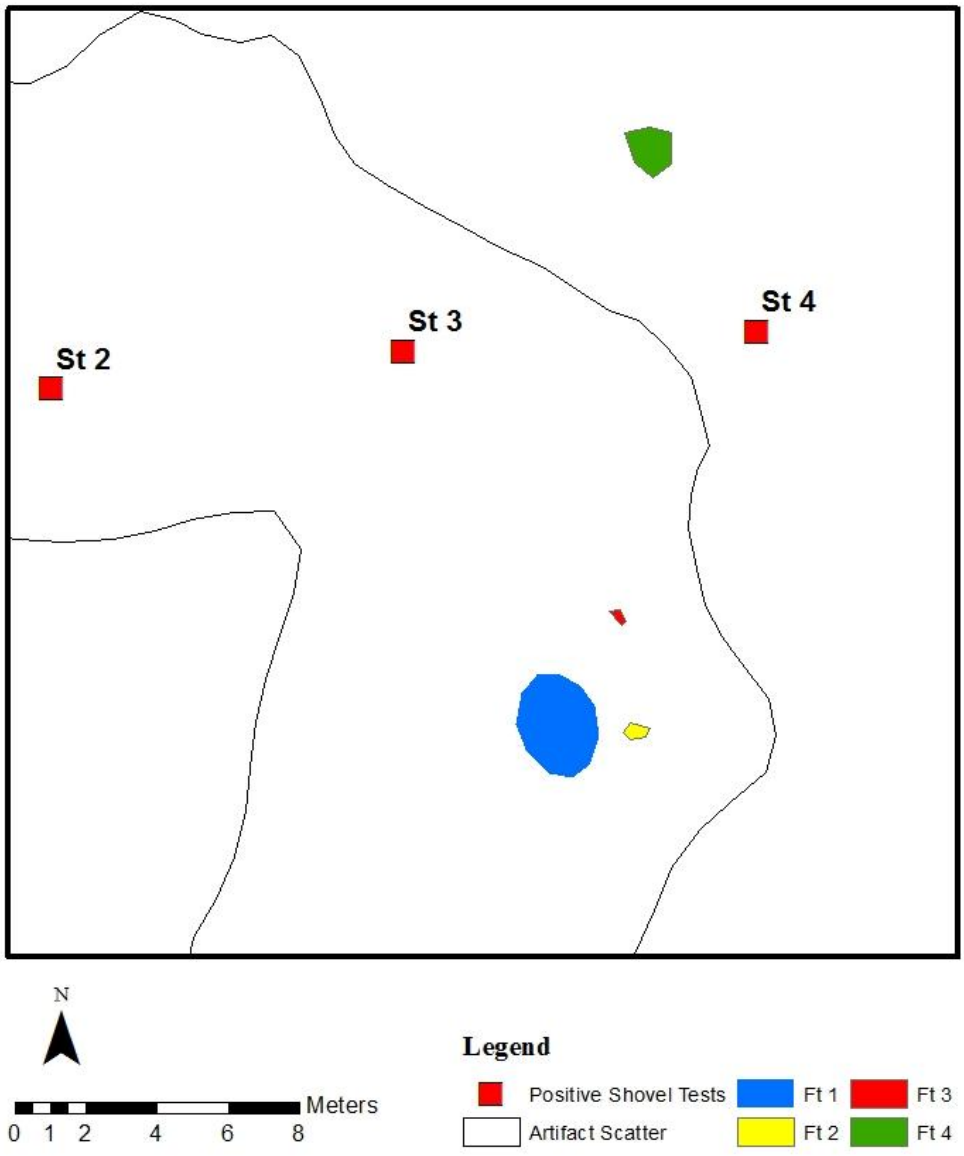

Figure 5.8 5KW215 – overview of features in relation to surface scatter and shovel tests

Figure 5.9 5KW215 Feature 1 – stock tank. Photo board reflects temporary site designation. Photo by Michael Troyer, July 2011.

Figure 5.10 5KW215 Feature 2 – partially buried bed spring. Photo board reflects temporary site designation. Photo by Michael Troyer, July 2011.

Figure 5.11 5KW215 Feature 3 – unidentified. Photo board reflects temporary site designation. Photo by Michael Troyer, July 2011.

Figure 5.12 5KW215 Feature 4 – partially buried bed frame. Photo board reflects temporary site designation. Photo by Michael Troyer, July 2011.

Shovel Tests

CMPA archaeologists used a series of 8 shovel tests to delineate the subsurface extent of the material. Broadly, the shovel testing strategy confirms the observed surface distribution. Specifically, the tests began in the west beyond the observed surface material and preceded in 5m increments to the east; the tests east and west of the surface scatter were all negative, with the exception of shovel test 4, which was in the arroyo proper (Table 5.3). Additionally, two tests were oriented perpendicular to the east-west test line and the arroyo orientation to test the north-south distribution of the material; both tests were positioned just within the boundary of the observed surface scatter and both were negative (Figure 5.3).

Site	ST #	Level	Dry Munsell	Wet Munsell	Soil Texture	Cultural material
5KW215	1	1 (0-20cm)	2.5y5/4	2.5y4/4	Sand	none
5KW215	1	2 (20-40cm)	2.5y5/4	2.5y4/4	Sandy clay loam	none
5KW215	1	3 (40-60cm)	2.5y5/4	2.5y4/4	Sandy clay	none
5KW215	2	1 (0-20cm)	2.5y5/4	2.5y4/4	Sand	1 cobalt bottle glass frag, 3 clear glass frags
5KW215	2	2 (20-40cm)	2.5y5/4	2.5y4/4	Sandy clay loam	none
5KW215	2	3 (40-60cm)	2.5y5/4	2.5y4/4	Silty clay	none
5KW215	3	1 (0-20cm)	2.5y5/4	2.5y4/4	Clay	5 clear glass frags
5KW215	3	2 (20-40cm)	2.5y5/4	2.5y4/4	Clay	none
5KW215	3	3 (40-60cm)	2.5y6/4	2.5y5/4	Clay	none
5KW215	4	1 (0-20cm)	2.5y4/4	2.5y3/3	Sandy loam	2 clear glass frags, 3 pieces of metal, 2 ceramic frags, 1 pull top can, burnt wood
5KW215	4	2 (20-40cm)	2.5y5/4	2.5y4/4	Sandy loam	1 piece of clear glass, 1 ceramic frag,
5KW215	4	3 (40-60cm)	2.5y5/4	2.5y4/3	Sandy clay	1 clear glass frag - small .8cm
5KW215	5	1 (0-20cm)	2.5y6/4	2.5y5/4	Sand	none
5KW215	5	2 (20-40cm)	2.5y6/4	2.5y5/4	Sand	none
5KW215	5	3 (40-60cm)	2.5y6/4	2.5y5/4	Sand	none
5KW215	6	1 (0-20cm)	2.5y5/4	2.5y4/4	Sand	none
5KW215	6	2 (20-40cm)	2.5y5/4	2.5y4/4	Sand	none
5KW215	6	3 (40-60cm)	2.5y5/4	2.5y4/4	Sand	none
5KW215	7	1 (0-20cm)	2.5y5/4	2.5y4/4	Sand	none
5KW215	7	2 (20-40cm)	2.5y6/4	2.5y4/4	Sandy clay	none
5KW215	8	1 (0-20cm)	2.5y5/4	2.5y4/4	Clay	none
5KW215	8	2 (20-40cm)	2.5y6/4	2.5y4/4	Clay	none
5KW215	8	3 (40-60cm)	2.5y5/4	2.5y4/4	Clay	none

Table 5.3 5KW215 Shovel test results

National Register Recommendations

5KW215 appears to retain spatial integrity, as evidenced by the agreement between the surface and subsurface distribution of material. Additionally, the material appears to be associated with the unused two-track road, indicating that the material is secondarily deposited and was transported by vehicle. However, the archaeological materials represent a domestic trash midden, and as such, possess no potential to yield additional data of scientific importance. The material is estimated to date between the mid 1930's and the late 1970's, and given the available data, the material is not associated with any individual or event of historical significance. Accordingly, we recommend that the site be listed as not eligible for nomination to the National Register of Historic Places.

5OT141 (The Sandhill Site)

5OT141 is a lithic and fire-altered rock scatter situated on a low hill complex on a terrace on the south side of the Arkansas River. The site is bounded between the Hwy 50 Right-of-Way (ROW) and the Burlington Northern Santa Fe railroad ROW. The site measures approximately 200x50m, or just less than 2.5 acres. Shrubs and xeric grasses dominate the local vegetation, which becomes denser as one move off of the hill proper. Surface visibility is roughly 40 percent on the top and sides of the low hill complex and approaches 0 percent at the base of the hill. CMPA archaeologists surveyed the area in its entirety using linear, 1-meter transects. All lithics, fire-altered stone, and other cultural material were flagged and recorded using a Magellan Mobile Mapper CX global positioning unit. Investigators recorded size class, raw material type, and the presence/absence of cortex for all lithic debris, and overall size and orientation, count and size of stones for fire-altered concentrations. Diagnostic artifacts were collected for further analysis at the laboratory at Colorado State University. Previous investigations noted large quantities of lithic debris as well as up to 35 fire-altered concentrations (Greubel and Reed 1996). CMPA archaeologists recorded over 50 lithic artifacts, but only recognized 8 concentrations of stone that potentially represented hearth features (Figure 5.19). The discrepancy may relate to differences in criteria for reliably determining the presence of such a feature as well as disturbance to such features since originally recorded (15 years, Table 5.8). The absence of charcoal in any of these concentrations attests to the high levels of post-deposition disturbance. The cobbles show clear evidence of heating and few, if any, cobbles appear on the terrace outside of these small clusters, arguing in favor of a cultural origin; additionally, flakes were in direct association with several of the concentrations. Survey also revealed a small quantity of burned bone and a few mollusk shell fragments. If the shell is of cultural origin, which it may be, it would perhaps establish the age of the site within the Late Archaic or Ceramic era of prehistory (within the last 3000 years- Eddy et al. 1981). The types of lithic raw materials present are similar to other sites in the area: a variety of cherts, tan and grey quartzites, basalt, and Alibates. However, 5OT141 is overwhelmingly composed of basalts (Figure 5.16), a pattern shared with 5OT534, but in contrast to both 5OT1359 and 5OT536.

Figure 5.13 5OT141 Overview – view is to the northeast. Photo by Michael Troyer, July 2011.

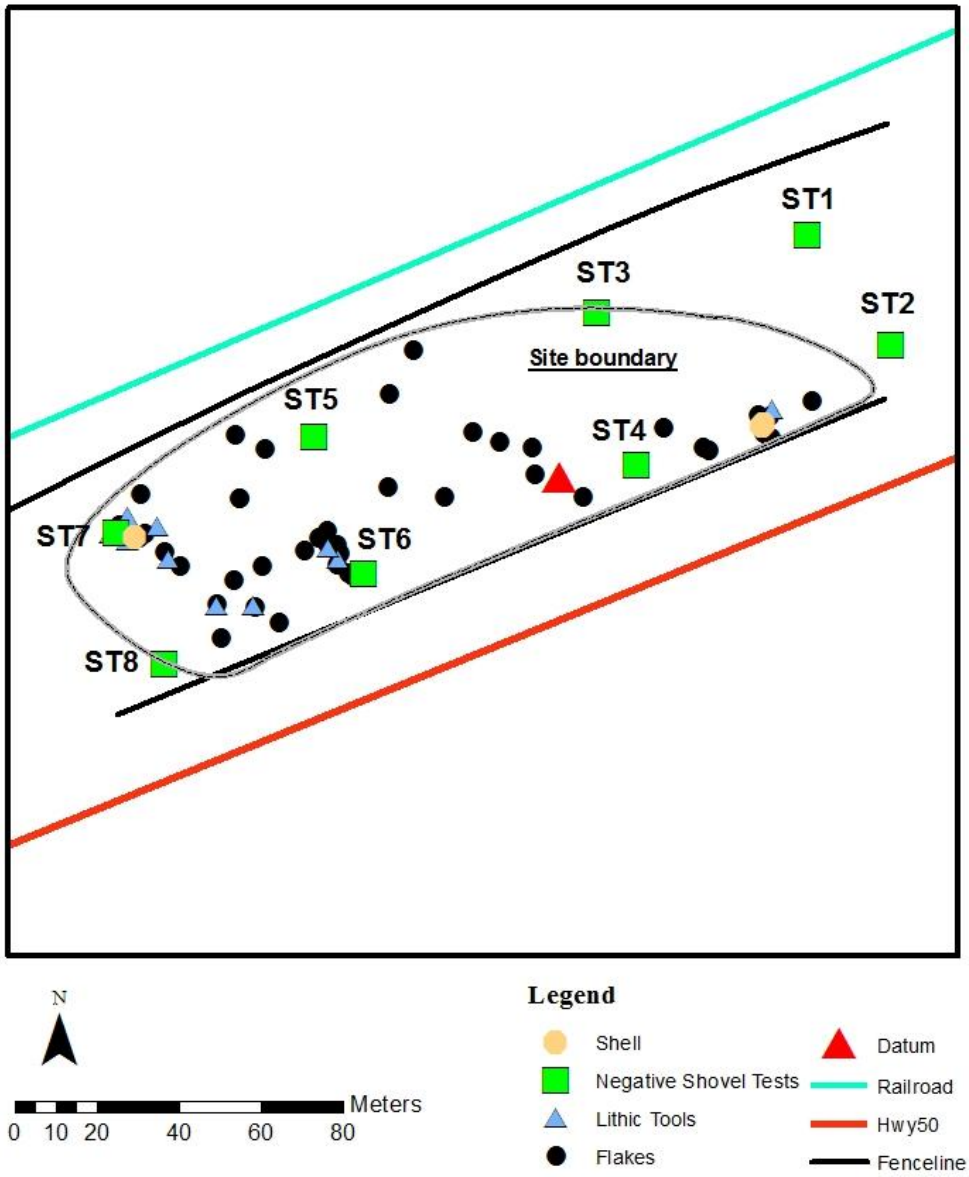

Figure 5.14 5OT141 Overview of setting, surface materials, and shovel tests

Debitage

Debitage Without Cortex							
Raw Material Type	**1**	**2**	**3**	**4**	**5**	**Other**	**Total**
Chalcedony		1					1
Chert	3	4	2				9
Quartzite		5	3	2			10
Silicified Wood							0
Basalt	3	2	7	7	7	1	27
Total	6	12	12	9	7	1	47

Debitage With Cortex							
Raw Material Type	**1**	**2**	**3**	**4**	**5**	**Other**	**Total**
Chalcedony							0
Chert							0
Quartzite				1			1
Silicified Wood							0
Basalt					1		1
Total	0	0	0	1	1	0	2

Table 5.4 5OT141 Raw material and size class for surface inventory material

Non-cortical basalt dominates the lithic assemblage at 5OT141, followed by quartzite and cherts (Table 5.4, Figure 5.15, Figure 5.16). Ninety-six percent of the material lacks cortex, which indicates that tools entered the site as prepared cores and other tools. The lack of cortex also argues in favor of non-local procurement for lithic raw materials. Basalt is the best-represented raw material in the larger size classes(Figure 5.17), indicating that the material underwent less reworking before entering the site and is likely the nearest raw material source. Basalt, a volcanic extrusive rock, is common to the south of the study area near the New Mexico/Colorado border, where past volcanic activity is evident. None of the material showed unequivocal evidence of burning despite the association with presumed hearth features.

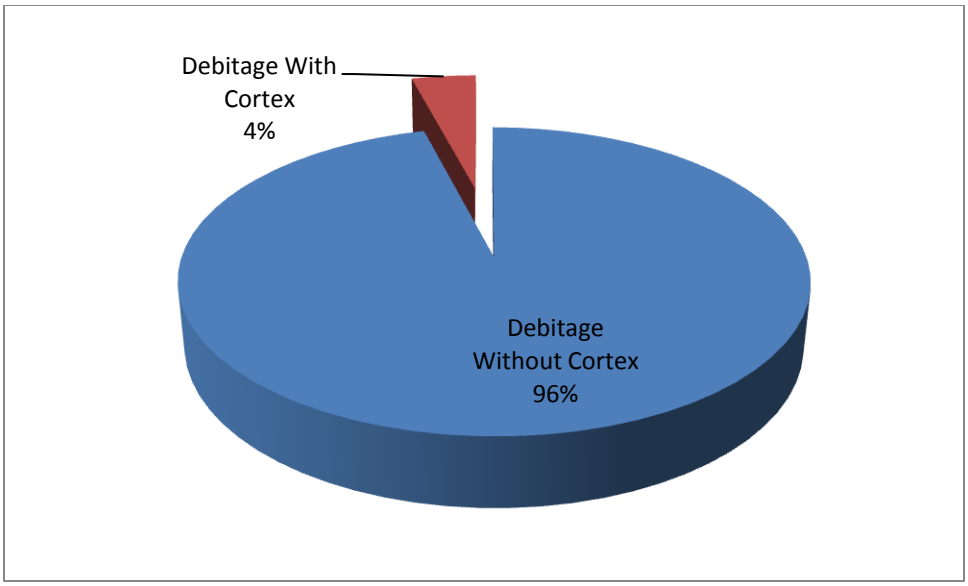

Figure 5.15 5OT141 Debitage with and without cortex

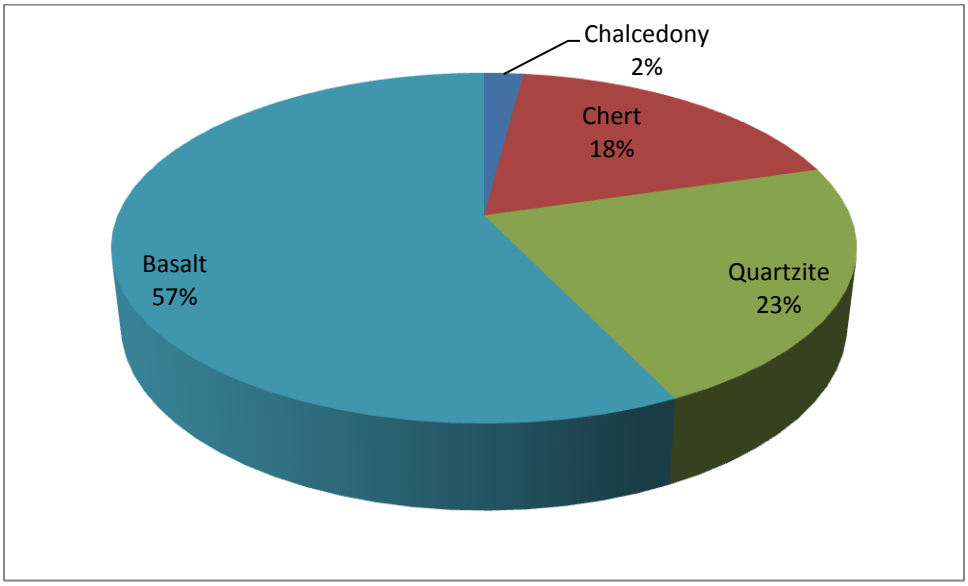

Figure 5.16 5OT141 Debitage raw material

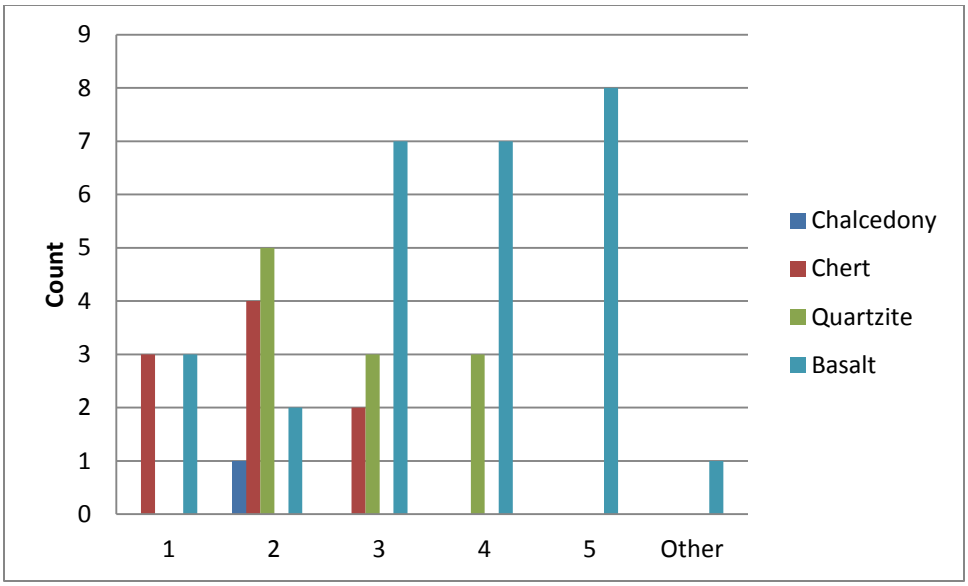

Figure 5.17 5OT141 Debitage raw material types and size class

Tools

Eleven individual lithic tools were recorded, including, but not limited to: two small basalt projectile points (one side notched-which appears to have been recycled as a drill, and one corner notched), two nearly exhausted end scrapers, one side scraper, a quartzite biface, and several groundstone fragments – primarily netherstones (Figure 5.18; Table 5.10). Lithic tool 3 (Figure 5.18 – A) closely resembles Washita arrow points as identified by researchers at John Martin Reservoir (Eddy et al. 1982: 127-128), or projectile point type P83 as identified by researchers at the Piñon Canyon Maneuver Site (Lintz and Anderson 1989: 310). Broadly, these projectiles have straight, flanged stems, and slightly concave bases. Points of this design are found across southern Colorado, and have been recorded in association with three radiocarbon dates ranging from 570+/-60 RCYBP to 850+/-60 RCYBP at the Piñon Canyon Maneuver Site, just to the south of the study area (Lintz and Anderson 1989: 218). Lithic tool 4 (Figure 5.18 – B) resembles the Bonham point style as identified by researchers at John Martin Reservoir (Eddy et al. 1982: 126-127) or projectile point type P58 as identified by researchers at the Piñon Canyon Maneuver Site (Lintz and Anderson 1989: 294) and are identified by straight to convex blade edges, narrow necks, and corner notching; there are no associated radiocarbon dates for this projectile point style, though they likely date to a similar period. Lithic tool 2 is also suggestive of the "hogback" corner-notched arrow point generally found along the foothills to the west of the study area. Taken together, the points strongly suggest a Late Prehistoric age of the site.

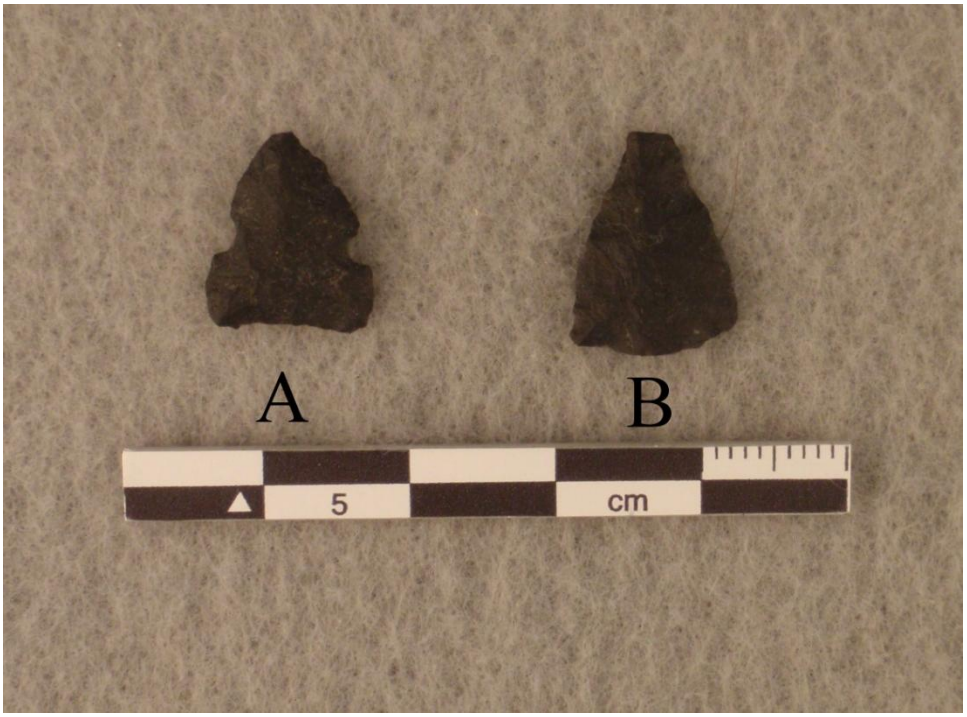

Figure 5.18 5OT141 Diagnostic artifacts (A-LT3; B-LT4). Photo by Michael Troyer, October 2011.

Lithic tool (LT) number	Type	Portion	Raw material	Color	Length (mm)	Width (mm)	Thickness (mm)
1	Biface	Complete	Quartzite	5y5/2	41.5	27.48	5.09
2	End Scraper	Complete	Chert	5YR5/6	13.74	9.02	1.41
3	Projectile	Complete	Basalt	N3	13.63	11.66	2.56
4	Projectile	Midsection	Basalt	N3	15.42	11.62	3.13
5	Side Scraper	Complete	Basalt	N3	59.17	44.87	10.16
6	Scraper	Complete	Chert	5YR5/6	16.63	15.83	5.55
7	Netherstone	Fragment	Sandstone	10yr7/4	190.5	134.07	19.05
8	Netherstone	Fragment	Sandstone	10yr6/2	59.19	41.51	11.56
9	Netherstone	Fragment	Sandstone	10yr6/2	96.94	104.3	19.97
10	Netherstone	Fragment	Sandstone	10yr6/4	34.23	19.26	17.37
11	Handstone	Cross-section	Basalt	N4	113.7	62.36	37.14

Table 5.5 5OT141 Summary of formal tools

Shovel Tests

A series of shovel tests were employed to test the horizontal extent of material as well as to assess the potential for buried components. Archaeologists used 8 shovel tests, all of which failed to turn up flakes or other cultural material. There does not appear to be any significant buried components to the site (Table 5.6).

Site	ST #	Level	Dry Munsell	Wet Munsell	Soil Texture	Cultural material
5OT141	1	1 (0-20cm)	10yr4/2	10yr3/2	Clay	None
5OT141	1	2 (20-40cm)	10yr4/3	10yr3/2	Clay/Silty Clay	None
5OT141	1	3 (40-60cm)	10yr4/3	10yr3/3	Clay	None
5OT141	2	1 (0-20cm)	10yr5/2	10yr3/2	Silty Clay	None
5OT141	2	2 (20-40cm)	10yr5/3	10yr3/2	Silty Clay	None
5OT141	2	3 (40-60cm)	10yr5/3	10yr3/2	Silty Clay	None
5OT141	3	1 (0-20cm)	10yr4/3	10yr4/2	Clay	None
5OT141	3	2 (20-40cm)	10yr4/3	10yr3/3	Clay	None
5OT141	3	3 (40-44cm)	10yr4/3	10yr3/3	Clay	None
5OT141	4	1 (0-20cm)	10yr5/2	10yr4/2	Silty Clay	None
5OT141	4	2 (20-40cm)	10yr5/3	10yr4/2	Silty Clay	None
5OT141	4	3 (40-60cm)	10yr6/3	10yr3/2	Silty Clay	None
5OT141	5	1 (0-20cm)	10yr4/4	10yr3/4	Silty Clay	None
5OT141	5	2 (20-40cm)	10yr5/4	10yr4/3	Clay	None
5OT141	5	3 (40-60cm)	10yr5/4	10yr3/4	Clay	None
5OT141	6	1 (0-20cm)	10yr5/3	10yr3/3	Silty Clay	None
5OT141	6	2 (20-40cm)	10yr5/4	10yr3/3	Clay	None
5OT141	7	1 (0-20cm)	10yr5/3	10yr4/3	Silty Clay	None
5OT141	7	2 (20-40cm)	10yr5/3	10yr3/3	Clay	None
5OT141	7	3 (40-60cm)	10yr5/3	10yr3/3	Clay	None
5OT141	8	1 (0-20cm)	10yr5/3	10yr3/3	Clay	None
5OT141	8	2 (20-40cm)	10yr5/3	10yr3/3	Clay	None

Table 5.6 5OT141 Shovel test results

Thermal Features

CMPA archaeologists recorded 8 fire-altered concentrations. Figure 5.19 illustrates the spatial location of the fire-altered concentrations. Table 5.7 lists the measurements and characteristics of the features. Broadly, the concentrations are badly disturbed and the original size and configuration cannot be determined. There was no charcoal, oxidation, or soil discoloration present, the associated stones have clearly been heated nonetheless. Additionally, the features were associated with flakes and tools, indicative of hearth-centered activities.

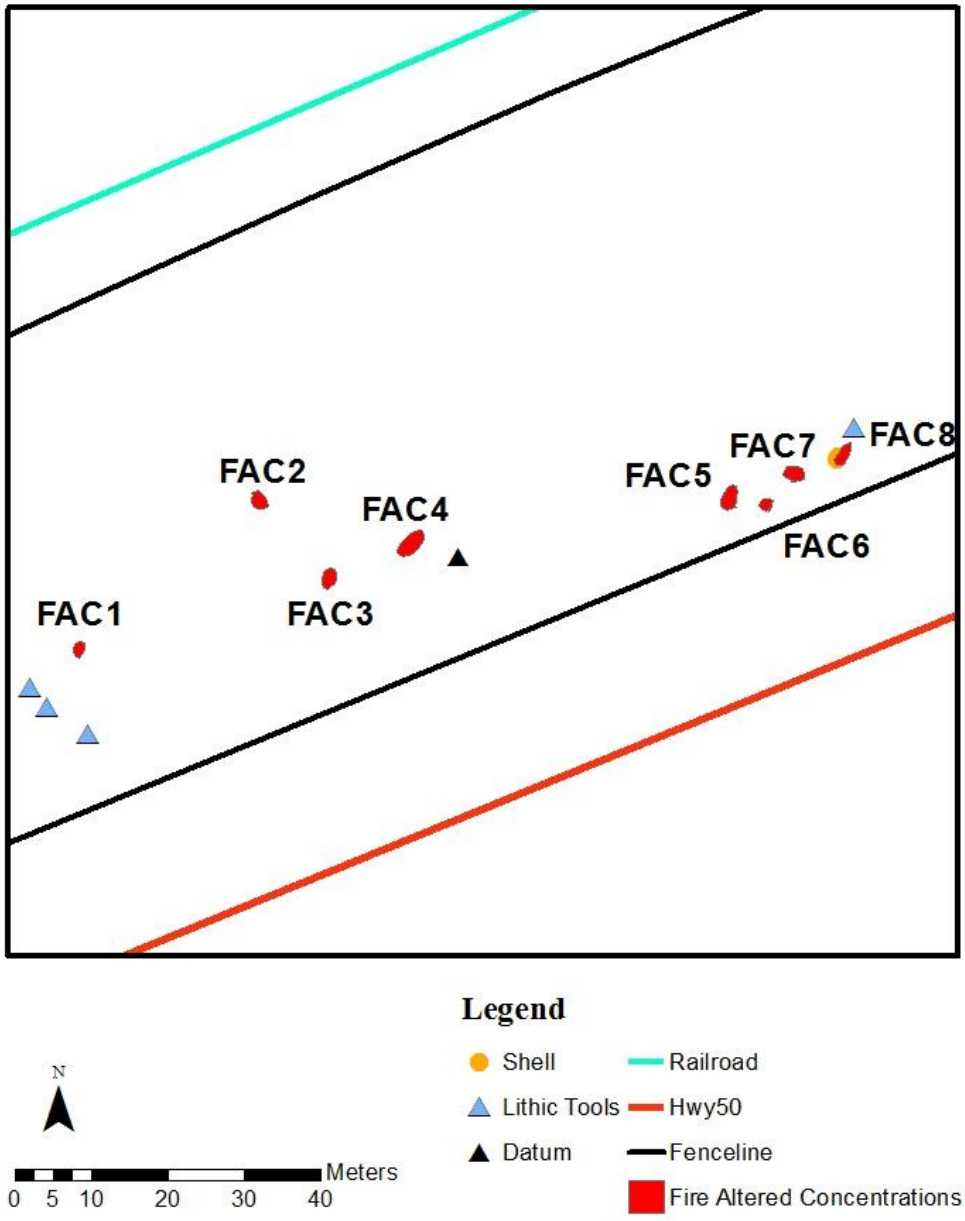

Figure 5.19 5OT141 Overview of fire-altered concentrations. Note association with both lithic tools and mollusk shell.

Figure 5.20 5OT141 Fire-altered concentration 4, a typical cluster. Photo by Michael Troyer, July 2011.

Ft Num (FAC)	Length (N-S) (cm)	Width (E-W) (cm)	# of stones	Average size range of stones (cm)	Charcoal	Oxidation	Soil Reddening
1	150	125	40	10-20	no	no	no
2	300	230	20	10-20	no	no	no
3	250	200	30	10-20	no	no	no
4	360	250	20	10-20	no	no	no
5	160	130	25	<10	no	no	no
6	200	180	10	10-20	no	no	no
7	200	180	10	<20	no	no	no
8	150	150	15	10-20	no	no	no

Table 5.7 5OT141 Summary of fire-altered concentrations

Comparison to Past Investigations

5OT141	CMPA	Alpine	NPS 1994
Year	2011	1996	1994
Site size (acres)	2.5	1.01	1.24
Flakes	49	100-200	-
Tools	11	9	14+
Hearths	8	35	41
Shovel test pits (STPs)	8	6	0
Positive STPs	0	1	-
Radiocarbon material	No	730 +/- 90	No
NRHP eligible	No	Yes	Yes

Table 5.8 5OT141 Summary of data-bearing investigations, (-) = not reported

When taking into consideration past investigations, a clear pattern emerges. Namely, there is a progressive decrease in cultural material recovered through time. This is unsurprising since previous investigations conducted extensive surface inventories and collected diagnostic artifacts. More surprising however, is the rate at which the number of identifiable features in 1994 (41) and 1996 (35) has decreased. As stated before, there may be differences regarding the criteria for identification of thermal (hearth) features, but based on the descriptions given in previous investigations (Greubel and Reed 1996; Dawson and Maass 1994) that does not appear to be the case. Alternatively, it seems these sites have been exposed to a great deal of surface erosion since last recorded. These features are badly deflated and none retains enough integrity to make statements regarding their size and orientation. Additionally, the discrepancy in site size corroborates this point. The boundary of cultural material as identified in 2011 is larger than both previous size assessments combined, and is indicative of extensive surface erosion.

National Register Recommendations

Given the extensive erosion evident in the distribution of fire-altered rock, lack of charcoal, the discrepancy in the number of identifiable features recorded in 1994, 1996, and 2011, and the lack of buried components, we recommend that 5OT141 be listed as not eligible for the National Register of Historic Places. The site does not possess integrity and cannot contribute additional data of scientific importance. No further work is deemed necessary.

5OT534 (The Prairie Dog Site)

5OT534 is a prehistoric lithic scatter situated on a terrace overlooking the Arkansas River. The river is approximately 400 meters to the north, but may have been much closer at occupation. The terrace is very broad and flat, composed primarily of silty clay, and is interrupted to the south by the BNSF railroad right-of-way (ROW) and the Hwy 50 ROW. To the south of the highway is a series of low hills and benches that make up most of the topographic relief in the area; the area to the south is not owned by the Park Service. A small draw dissects the site, progressing from the southeast to the northwest. The bulk of observed surface material lies on either side of the draw, including most of the recovered lithic tools, and several concentrations of fire-altered rock (Figure 5.22). There are dispersed lithics and fire-altered rock to the south and west along the terrace edge, which progresses from southwest to northeast. The site is roughly triangular and measures approximately 270m x 150m, with an area of roughly 5 acres.

The northern and northwestern boundary of the site is delineated primarily by the arroyo edge – no cultural materials were noted below the terrace, either on the surface or in a subsurface shovel test. The east and south boundaries of the site are based on observed surface material and shovel testing. The subsurface character of the site appears to mirror the surface character, which is discrete and spatially bounded. Observed raw materials include basalt, chert, and quartzite, with medium quality basalt dominating the assemblage (Figure 5.24), a pattern shared with 5OT141, but in contrast to both 5OT536 and 5OT1359. The overwhelming proportion of cortex-free flakes indicates that primary lithic reduction did not take place on site, but rather, the raw material entered the site as bifaces or other core tools. Many of the flakes cluster around fire-altered concentrations, indicating hearth-centered site activities. Prairie dog holes are abundant across the terrace system and flakes often occur near these disturbances, indicating the potential for buried deposits. Visibility is very high in this area ~80 percent and there is little surface vegetation.

Figure 5.21 5OT534 Overview – view is to the north. Blue flags indicate lithic debris. Photo by Michael Troyer, July 2011.

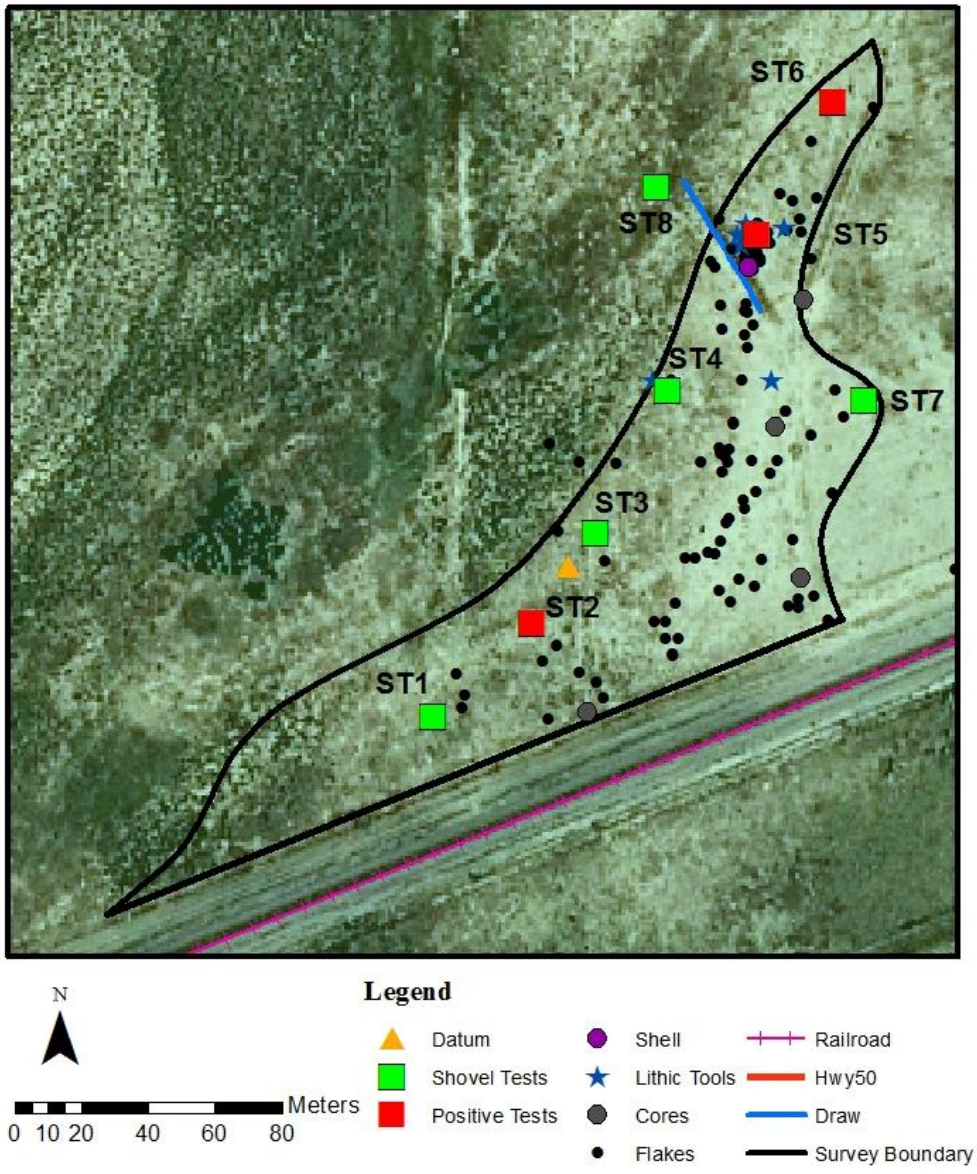

Figure 5.22 5OT534 Overview of surface materials and shovel tests

Debitage

Debitage Without Cortex							
Raw Material Type	**1**	**2**	**3**	**4**	**5**	**Other**	**Total**
Chalcedony	1	3					4
Chert	1	8	5	2	1		17
Quartzite	2	8	9	8	1	1	29
Silicified Wood							0
Basalt		12	30	15	9	7	73
Other (Specify)		1 (Alibates)					1
Total	4	32	44	25	11	8	124

Debitage With Cortex							
Raw Material Type	**1**	**2**	**3**	**4**	**5**	**Other**	**Total**
Chalcedony							0
Chert				1			1
Quartzite		1					1
Silicified Wood							0
Basalt		3	2	1			6
Other (Specify)							0
Total	0	4	2	2	0	0	8

Table 5.9 5OT534 Raw material and size class for surface inventory materials

Non-cortical basalt dominates the lithic assemblage at 5OT534, followed by quartzite and cherts (Table 5.9, Figure 5.23, Figure 5.24). Ninety-four percent of the material lacks cortex, which indicates that tools entered the site as prepared cores and other tools. The lack of cortex also argues in favor of non-local procurement for lithic raw materials. Basalt is the best-represented raw material in the larger size classes (Figure 5.25), indicating that the material underwent less reworking before entering the site and is likely the nearest raw material source. Basalt, a volcanic extrusive rock, is common to the south of the study area near the New Mexico/Colorado border, where past volcanic activity is evident. None of the material showed unequivocal evidence of burning despite the association with presumed hearth features. The lithic assemblage is very similar to that at 5OT141.

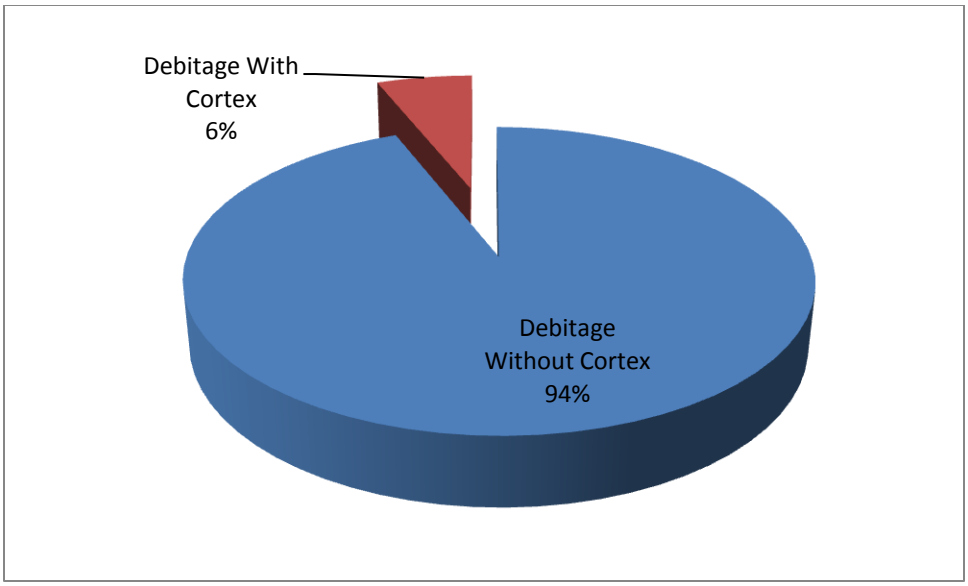

Figure 5.23 5OT534 Debitage with and without cortex

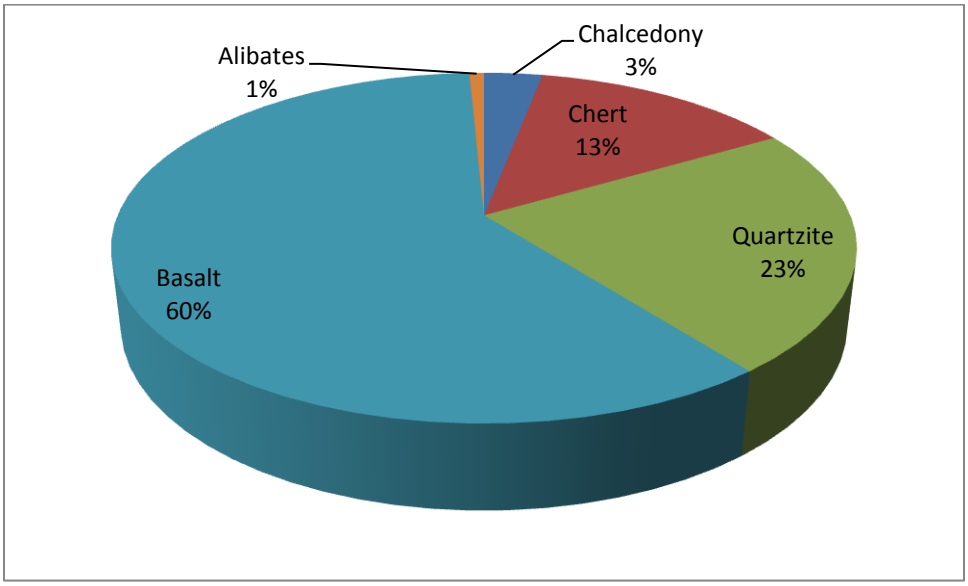

Figure 5.24 5OT534 Debitage raw material type

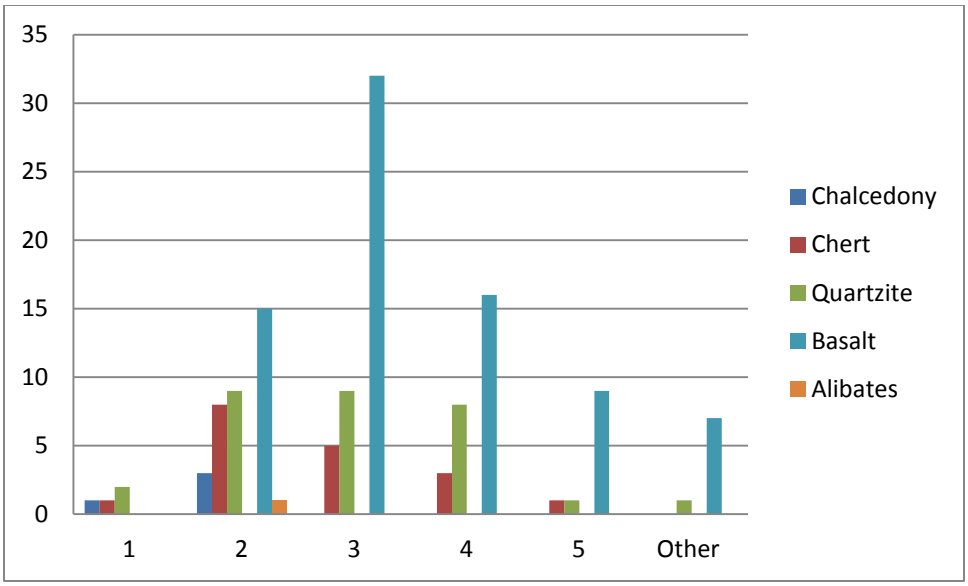

Figure 5.25 5OT534 Debitage raw material type and size class

Tools

A small number of formal tools were collected, including a large quartzite projectile point, two preforms - made of chert and basalt respectively, and a quartzite drill (Figure 5.26; Table 5.10) Lithic tool 1 (Figure 5.26 –A) is a finely made, corner-notched, quartzite dart point with slightly convex blade edges. The point is reminiscent of projectile point style P26 as identified by researchers at the Piñon Canyon Maneuver Site to the south of the study area. There are no radiocarbon dates from the PCMS associated with this point style. However, these points resemble specimens recovered from dated contexts across the Great Plains dating between 3,000 RCYBP and 1,500 RCYBP, or largely within the Late Archaic period of prehistory (Lintz and Anderson 1989). However, the two preforms appear to have been intended for much smaller projectiles, likely arrow points, thus also demonstrating a Late Prehistoric component to the site. The drill is ambiguous as to temporal affiliation, but appears to have been heavily utilized. Additionally, despite the strong similarity in lithic debris between 5OT141 and 5OT534, the tool assemblages are subtly different. While the 5OT534 preforms were likely intended as arrow points, similar to those recovered from 5OT141, there is no conclusive evidence of Late Archaic occupation at 5OT141, as there is at 5OT534.

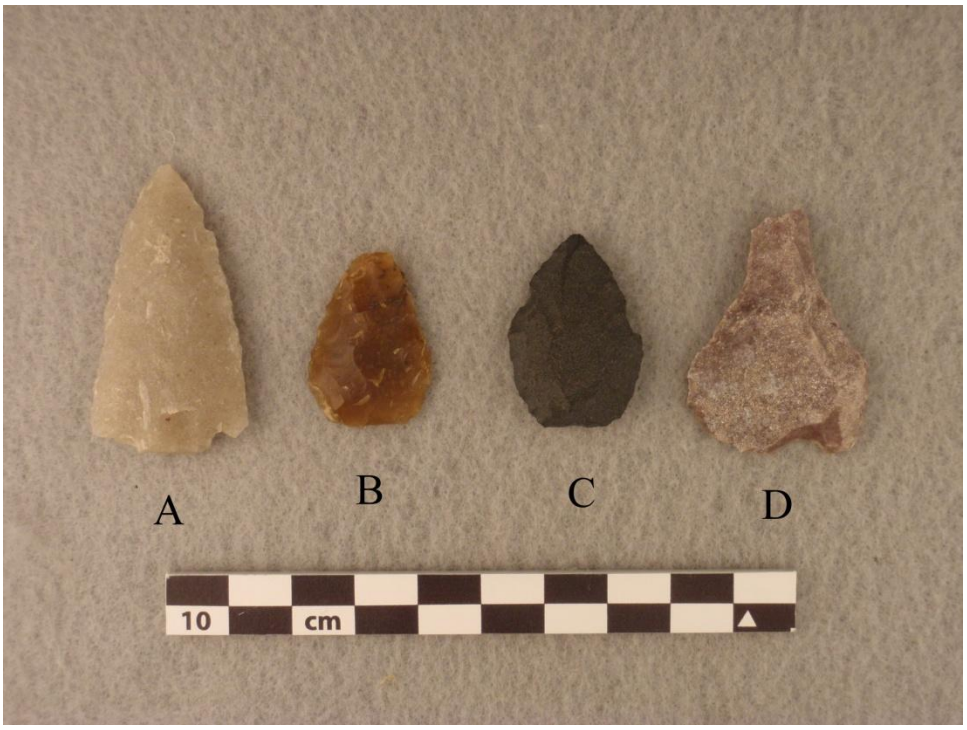

Figure 5.26 5OT534 Formal tools. Photo by Michael Troyer, September 2011.

Item (LT)	Photo	Type	Portion	Raw material	Color	Length (mm)	Width (mm)	Thickness (mm)
1	A	Projectile	Distal	Quartzite	5YR61	45.21	24.36	6.28
2		Netherstone	Frag	Sandstone	5YR61	108	90	27
3	B	Preform	Complete	Chert	5YR44	27.27	18.48	6.01
4		Handstone	Complete	Sandstone	5Y72	160	88	66
5	C	Preform	Complete	Basalt	N3	30.47	20.93	7.71
6	D	Drill	Proximal	Quartzite	5R42	39.51	28.47	8.55

Table 5.10 5OT534 Summary of formal tools

Core #	Type	Material	# of Scars	Cortex	Length (mm)	Width (mm)	Thickness (mm)
1	Amorphous	Chert	15	Yes	37	30	12
2	Amorphous	Basalt	14	Yes	92	70	28
3	Amorphous	Basalt	9	Yes	53.05	35.73	17.77
4	Amorphous	Quartzite	8	No	57.43	44.3	33.6

Table 5.11 5OT534 Summary of core tools

Additionally, CMPA archaeologists recovered four amorphous cores in varying sizes, materials, and stages of use (Table 5.11). Cores of this type are not diagnostic as to cultural or temporal affiliation.

Shovel Tests

CMPA archaeologists placed a series of 6 shovel tests along the terrace edge from southwest to northeast, with an additional two tests positioned east and west of this line to test the distribution of materials below the terrace and to the east (Table 5.12, Figure 5.22). The subsurface distribution of material accords well with the observed surface distribution. Specifically, over half of the buried material came from tests 5 and 6, which is the area of densest surface material. The tests below the terrace edge to the west and in the field to the east were both negative.

Site	ST #	Level	Dry Munsell	Wet Munsell	Soil Texture	Cultural material
5OT534	1	1 (0-20cm)	10yr4/1	10yr2/2	Silty Clay	None
5OT534	1	2 (20-40cm)	10yr4/2	10yr2/2	Clay	None
5OT534	2	1 (0-20cm)	10yr4/2	10yr3/2	Silty Clay	Size 2 non-cortical basalt flake, size 4 non-cortical quartzite flake
5OT534	2	2 (20-40cm)	10yr4/2	10yr3/2	Clay	none
5OT534	2	3 (40-60cm)	10yr5/2	10yr4/2	Clay	none
5OT534	3	1 (0-20cm)	10yr3/3	10yr2/2	Silty Clay	none
5OT534	3	2 (20-40cm)	10yr4/3	10yr2/2	Silty Clay	none
5OT534	4	1 (0-20cm)	10yr4/3	10yr2/2	Silty Clay	none
5OT534	4	2 (20-40cm)	10yr4/2	10yr2/2	Silty clay	none
5OT534	5	1 (0-20cm)	10yr4/4	10yr3/3	Silty Clay	1 size 2 angular non-cortical basalt flake, 1 size 2 red chert cortical flake
5OT534	5	2 (20-40cm)	10yr5/3	10yr3/2	Clay	none
5OT534	5	3 (40-60cm)	10yr5/3	10yr3/3	Clay	none
5OT534	6	1 (0-20cm)	10yr5/2	10yr3/2	Silty Clay	1 size 2 cortical quartzite flake
5OT534	6	2 (20-40cm)	10yr5/4	10yr4/4	Clay	none
5OT534	6	3 (40-60cm)	10yr5/3	10yr4/3	Clay	none
5OT534	7	1 (0-20cm)	10yr5/4	10yr4/4	Clay	None
5OT534	7	2 (20-40cm)	10yr4/2	10yr3/2	Clay	None
5OT534	8	1 (0-20cm)	10yr5/3	10yr3/3	Silty Clay	none
5OT534	8	2 (20-40cm)	10yr5/3	10yr3/2	Clay	none

Table 5.12 5OT534 Shovel test results

Thermal Features

CMPA archaeologists recorded 8 fire-altered concentrations. Figure 5.19 illustrates the spatial location of the fire-altered concentrations. Table 5.13 lists the measurements and characteristics of the features. Broadly, the concentrations are badly disturbed and the original size and configuration cannot be determined. Similar to 5OT141, there was no charcoal, oxidation, or soil discoloration present. The features are located to the south of

the densest concentration of flakes and are entirely within the overall boundary of the surface scatter, though the evidence of hearth-centered activities is not as strong as at 5OT141.

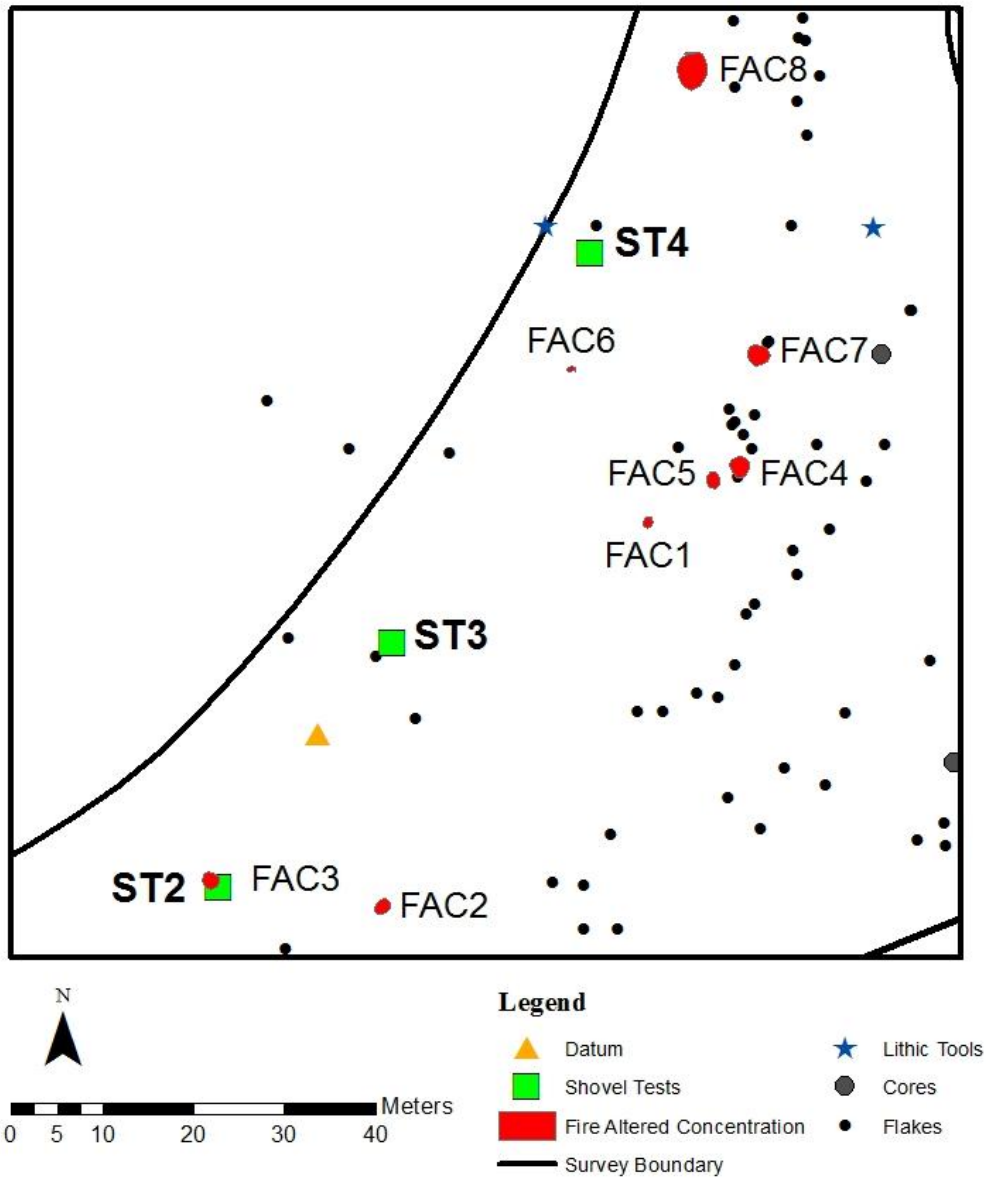

Figure 5.27 5OT534 Overview of fire-altered concentrations

Figure 5.28 5OT534 Fire-altered concentration 5. Photo by Michael Troyer, July 2011.

Ft Num (FAC)	Length (N-S) (cm)	Width (E-W) (cm)	# of stones	Size range of stones (cm)	Charcoal	Oxidation	Soil reddening
1	140	90	18	10-20	no	no	no
2	145	125	50	5-10	no	no	no
3	175	145	30	10-20	no	no	no
4	220	160	30	10-20	no	no	no
5	170	100	40	10-20	no	no	no
6	60	40	5	10-20	no	no	no
7	120	145	60	5-20	no	no	no
8	125	140	12	10-20	no	no	no

Table 5.13 5OT534 Summary of fire-altered concentrations

Comparison to past investigations

5OT534	CMPA	Alpine	NPS 1994
Year	2011	1996	1994
Site size (acres)	5	1.08	3.7
Flakes	132	24	-
Tools	8	8	26+
Hearths	8	11	22
Shovel test pits (STPs)	8	6	0
Positive STPs	3	5	-
Radiocarbon material	No	No	No
NRHP eligible	No	Yes	Yes

Table 5.14 5OT534 Summary of previous investigations

Similar to 5OT141, when taking into consideration past investigations, a clear pattern emerges. Namely, there is a progressive decrease in lithic tools recovered through time. This is unsurprising since previous investigations conducted extensive surface inventories and collected diagnostic artifacts. The 2011 investigations did, however, produce considerably more flake artifacts. Again, similar to 5OT141, the number of identifiable features in 1994 (22), 1996 (11), and 2011 (8) has decreased, albeit not as fast as at 5OT141. As stated before, there may be differences regarding the criteria for identification of thermal (hearth) features, but based on the descriptions given in previous investigations (Greubel and Reed 1996; Dawson and Maass 1994) that does not appear to be the case. Alternatively, it seems these sites have been exposed to a great deal of surface erosion since last recorded. These features are badly deflated and none retains enough integrity to make statements regarding their size and orientation. Additionally, the discrepancy in site size corroborates this point. The boundary of cultural material as identified in 2011 is larger than both previous size assessments combined, and is indicative of extensive surface erosion.

National Register Recommendations

5OT534 is a spatially discrete lithic and fire-altered rock concentration that has been severely eroded and will continue to be eroded given the near absence of surface vegetation on site. The extensive erosion is evident in the highly variable distribution of fire-altered rock. Though the location of the fire-altered rock clusters correspond to the surface distribution of lithic material, the lack of charcoal and soil discoloration indicates that the features no longer retain any integrity and consequently do not possess potential to provide additional information relevant to the understanding of prehistory in the area. Additionally, the subsurface components of the site are sparse, variable, and shallowly deposited. The 2011 investigation recovered only a single diagnostic artifact. Accordingly, we recommend the site be listed as not eligible for the National Register of Historic Places.

5OT536

5OT536 is a small lithic scatter bounded between the Hwy 50 ROW to the south, the Oxbow State Wildlife area access road to the east, and the railroad ROW to the north. The entire area contained within these fence lines was systematically surveyed at 1-meter intervals to a maximum westward extent of approximately 140 meters, where visibility decreases to near 0 percent due to the abundance of dense, low-growing grasses. CMPA archaeologists recorded over 30 individual flakes using a Magellan Mobile Mapper CX global positioning unit. Color, cortex, and size class attributes were recorded for each artifact. A diversity of material types were noted, including, but not limited to: tan and brown chert, tan and grey quartzites, basalt, red, white and/or grey Alibates and possibly petrified wood; representative photographs were taken of the various material types. The lithic assemblage of 5OT536, in contrast to other sites in this area, is characterized by a preponderance of quartzite over other material types and a high percentage of cortical flakes relative to other sites (Figure 5.31; Figure 5.32). The site measures approximately 140x60m, with the bulk of the material contained within an area of approximately 40x25m. Broadly, the site sits along the north-facing slope of a low rise on an alluvial terrace south of the Arkansas River. There are somewhat larger rises to the south on the south side of Hwy 50. Numerous cobbles both buried as well as on the surface indicate past fluvial activity. Many of the cobbles on site show slight evidence of grinding, which may be related to human behavior, but are ambiguous at best. Aeolian erosion appears to be the primary mechanism of site exposure. Flakes were often clustered in areas that appear to have been wind-scoured, indicating the potential for shallowly buried deposits. The area was likely plowed in the recent past, as evidenced through gouging on some of the larger cobbles. The Harmon family, who sold the property to the Park Service in 1979, may have farmed the area. One small cluster of fragmented mollusk shell was recorded in a shallow (possibly wind-related) depression, and in association with several lithic flakes. Calhoun (2011: 42) has demonstrated that mollusk shell recovered from dated contexts in eastern Colorado overwhelmingly occurs in Late Prehistoric deposits (75%) or deposits dating to the Late Archaic/ Late Prehistoric transition (24.6%). The limited distribution of the shell would seem to indicate a cultural origin, and thus demonstrate a strong likelihood of a Late Archaic or Ceramic era age for the site

Previous investigations noted lithic debris on the surface as well as in shovel test units (Dawson and Maas 1994; Greubel and Reed 1996). Previous testing was linearly arranged N-S from the PVC site datum. CMPA archaeologists placed 8 shovel tests in a grid in an effort to reify the N-S boundary previously established as well as to test the E-W extent of material. Of particular interest, testing on the western edge of the site was directed at determining if the observed extent of material represented the range of past human activity, or rather was the result of the near 0 percent surface visibility at the western base of the low rise.

Figure 5.29 5OT536 Overview – view is to the west. Photo by Michael Troyer, July 2011.

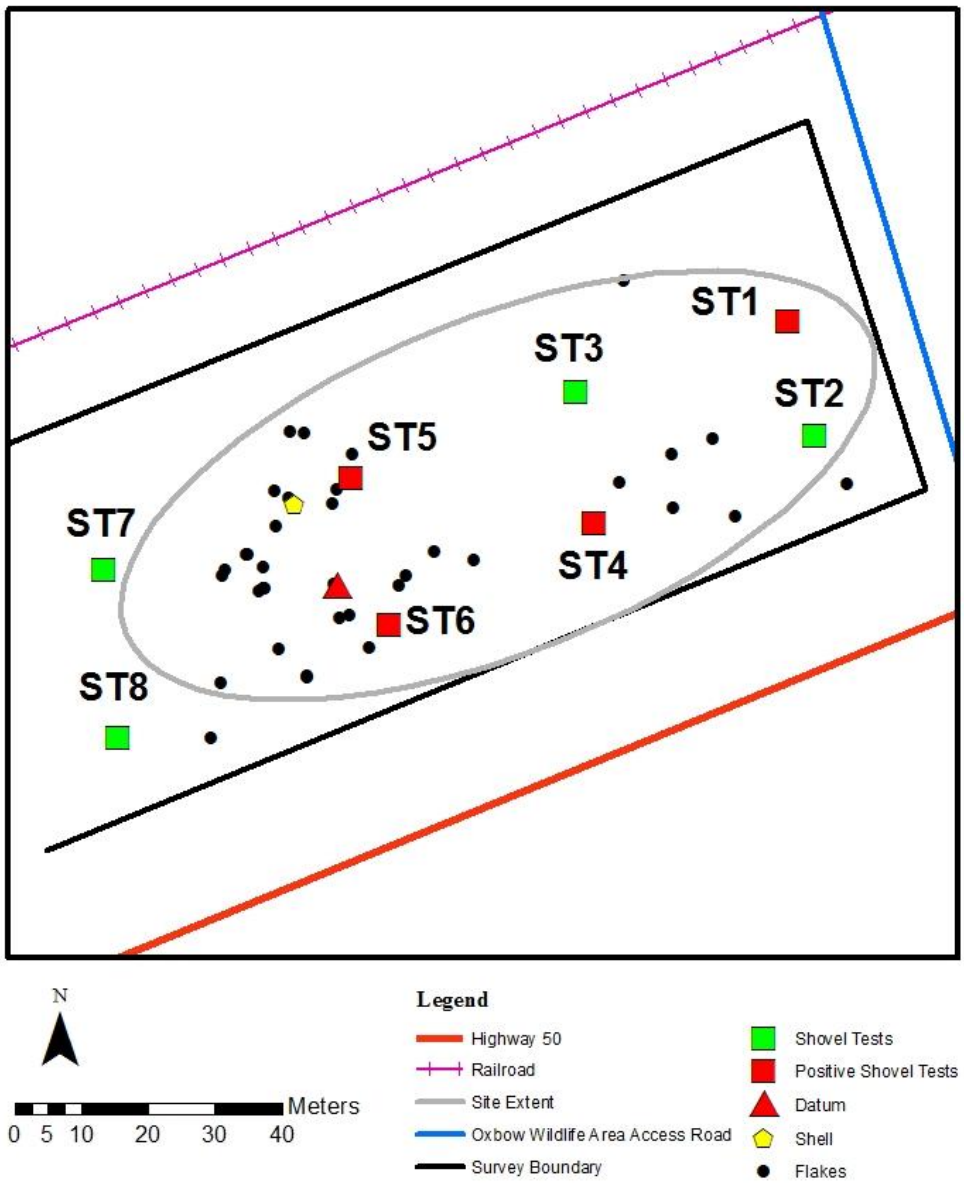

Figure 5.30 5OT536 Overview of surface materials and shovel tests

Debitage

Debitage Without Cortex							
Raw Material Type	**1**	**2**	**3**	**4**	**5**	**Other**	**Total**
Chalcedony		3	1				4
Chert	1						1
Quartzite	1	3	4	2			8
Silicified Wood							0
Basalt		3	2	1			6
Other (Specify)		1(Alibates)					3
Total	2	10	7	3			21

Debitage With Cortex							
Raw Material Type	**1**	**2**	**3**	**4**	**5**	**Other**	**Total**
Chalcedony	1	1	1				3
Chert		1	1	1			3
Quartzite			1				1
Silicified Wood							0
Basalt							0
Other (Specify)							0
Total	1	2	3	1	0	0	7

Table 5.15 5OT536 Raw material and size class for surface inventory materials

The lithic assemblage at 5OT536 is sparse compared to other sites in the area (5OT141, 5OT534). Non-cortical material dominates the assemblage, but not to the degree seen on the aforementioned sites. At 5OT536, cortical material makes up 24 percent of the assemblage (Figure 5.31). Also in stark contrast to other sites in the area, quartzite is the dominant raw material type represented, followed by chalcedony and basalt respectively (Figure 5.32). In terms of the size of flakes within the assemblage, quartzite, basalt, and chert are roughly comparable, perhaps with a slight tendency for larger quartzite flakes (Figure 5.33). No formal tools or otherwise diagnostic materials were recovered, though the presence of mollusk shell suggests a Late Archaic/ Late Prehistoric temporal affinity (Calhoun 2011). Additionally, Eddy et al (1982: 40) note that Alibates does not appear on the Chaquaqua Plateau, southeast of the study area, in dated contexts until the late Archaic period, thus tentatively placing the occupation of 5OT536 sometime within the last 3000 RCYBP.

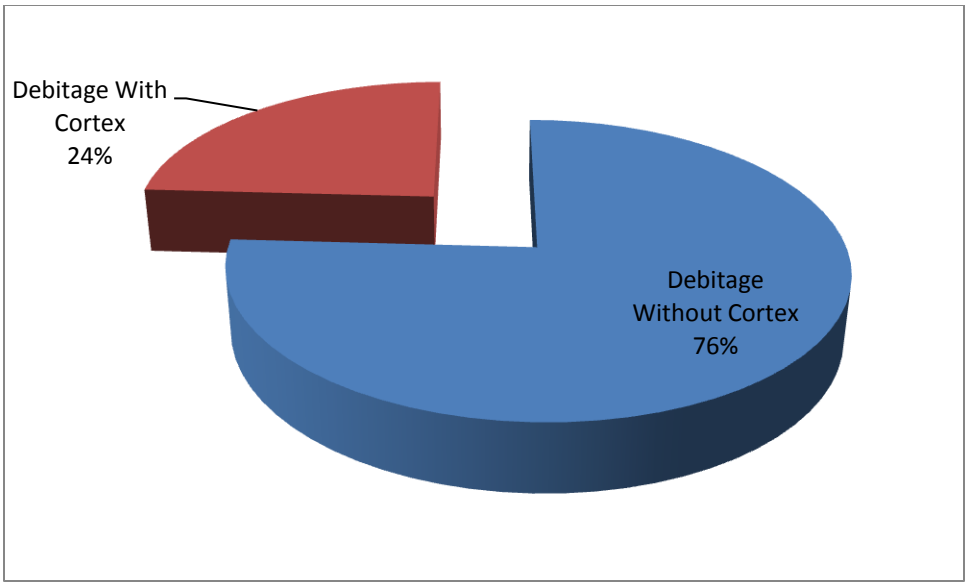

Figure 5.31 5OT536 Debitage with and without cortex

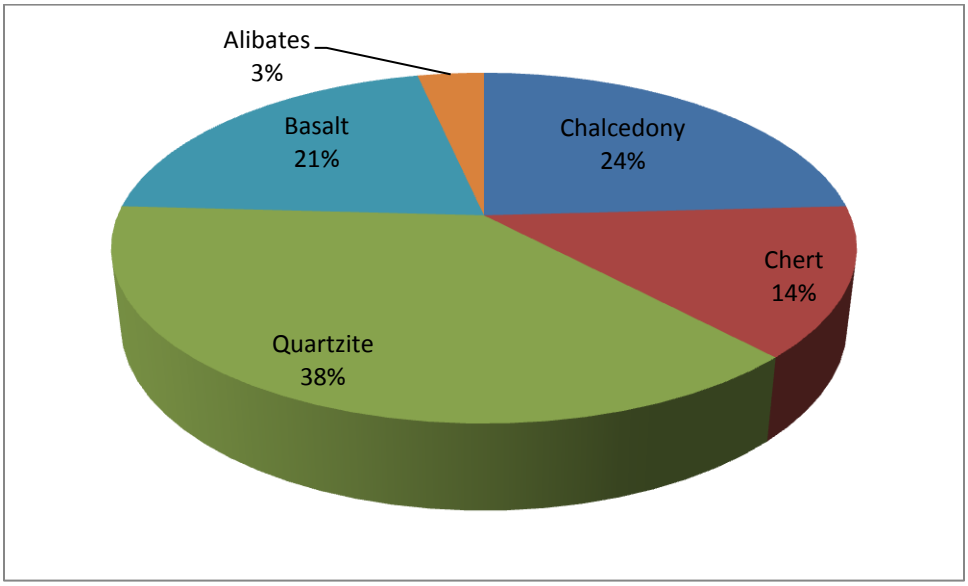

Figure 5.32 5OT536 Debitage raw material type

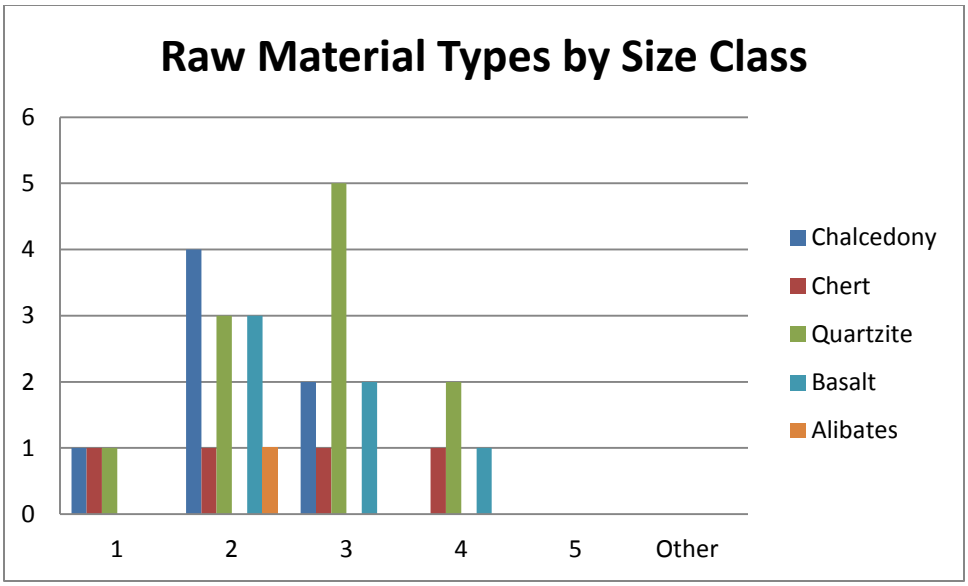

Figure 5.33 5OT536 Debitage raw material types by size class

Shovel Tests

Shovel testing confirms the site boundaries based on observed surface material. Specifically, tests 7 and 8, positioned to the west below the hill complex were both negative. Tests 4, 5, and 6, representing the core of the site, were all positive. With the exception of a positive shovel test number 1 and a negative test 3, the interior tests, falling within the observed surface material boundary, all contain buried components, while all the exterior tests, outside the scatter boundary, lacked buried components (Table 5.16, Figure 5.30).

Site	ST #	Level	Dry Munsell	Wet Munsell	Soil Texture	Cultural material
5OT536	1	1 (0-20cm)	10yr5/3	10yr3/3	Silty Clay Loam	1 size 2 cortical chert flake
5OT536	1	2 (20-40cm)	10yr4/4	10yr3/4	Silty clay	1 size 2 non-cortical quartzite flake
5OT536	1	3 (40-50cm)	10yr5/4	10yr3/4	Clay	none
5OT536	2	1 (0-20cm)	10yr5/2	10yr4/3	Silty Clay	none
5OT536	2	2 (20-40cm)	10yr5/3	10yr3/3	Silty Clay	none
5OT536	2	3 (40-60cm)	10yr5/3	10yr3/3	Silty Clay	none
5OT536	3	1 (0-20cm)	10yr4/3	10yr3/4	Silty Clay Loam	none
5OT536	3	2 (20-40cm)	10yr4/4	10yr3/3	Silty Clay	none
5OT536	4	1 (0-20cm)	10yr5/2	10yr3/2	Silty Clay	none
5OT536	4	2 (20-40cm)	10yr5/2	10yr3/3	Silty Clay	1 size 2 non-cortical quartzite flake
5OT536	4	3 (40-60cm)	10yr5/3	10yr3/3	Silty Clay	1 size 2 non-cortical quartzite flake
5OT536	5	1 (0-20cm)	10yr4/3	10yr3/3	Silty Clay	1 size 2 non-cortical chalcedony flake
5OT536	5	2 (20-40cm)	10yr4/4	10yr3/3	Clay	1 size 2 non-cortical basalt flake
5OT536	5	3 (40-60cm)	10yr5/3	10yr3/4	Clay	none
5OT536	5	4 (60-80)	10yr5/3	10yr3/4	Silty Clay	none
5OT536	6	1 (0-20cm)	10yr4/2	10yr3/4	Silty Clay	1 size 1 red non-cortical chert
5OT536	6	2 (20-40cm)	10yr4/3	10yr3/3	Silty Clay	none
5OT536	6	3 (40-60cm)	10yr4/3	10yr3/3	Silty Clay	none
5OT536	7	1 (0-20cm)	10yr4/3	10yr3/4	Silty Clay	none
5OT536	7	2 (20-40cm)	10yr4/3	10yr3/4	Clay	none
5OT536	8	1 (0-20cm)	10yr5/3	10yr3/3	Silty Clay	none
5OT536	8	2 (20-40cm)	10yr4/3	10yr3/2	Silty Clay	none
5OT536	8	3 (40-60cm)	10yr3/1	10yr2.5/2	Sandy Clay	none

Table 5.16 5OT536 Shovel test results

Comparison to previous investigations

5OT536	CMPA	Alpine	NPS 1994
Year	2011	1996	1994
Site size (acres)	2.07	0.12	0.92
Flakes	28	-	-
Tools	0	-	4
Hearths	0	0	0
Shovel test pits (STPs)	8	5	0
Positive STPs	4	3	-
Radiocarbon material	No	No	No
NRHP eligible	No	Yes	Yes

Table 5.17 5OT536 Comparison to previous investigations

The principle difference between this investigation and previous ones lies in determinations of site size, specifically, that the 2011 investigation revealed a site just over 2 acres in area, more than double previous assessments. Additionally, while the Park Service investigation in 1994 revealed 4 formal lithic tools, none has been recorded since. The lack of formal tools may be a result of recreational curio hunting, or simply may indicate that the site contained few lithic tools to begin with. However, the extensive erosion on site indicates that eolian movement of sediment and the subsequent exposure and collection of lithic tools is likely.

National Register Recommendations

5OT536 is a spatially discrete lithic scatter with sparse, shallowly buried components. Present day investigations failed to reveal any artifacts useful for making age determinations. Given the low flake density and ambiguous temporal affiliation, we conclude that the site does not have potential to provide additional information relevant to the understanding of the Arkansas Valley prehistory and therefore recommend that 5OT536 be listed as not eligible for inclusion on the National Register of Historic Places; no further work is deemed necessary.

5OT537 (The Sandsage Site)

5OT337 is a small prehistoric lithic scatter situated on a small rise on an alluvial terrace east of a southward trending bend in the Arkansas River. Previously recorded materials were largely concentrated between the Park Service access road and a currently unused two-track road that follows along the east bank of the river. The road abuts dense riparian vegetation and is less than 5 meters from the modern river course. Surface visibility is generally poor on-site (less than 20 percent), as grasses and sagebrush dominate the small rise. Less dense, small grasses and forbs dominate the terrace surrounding the low rise and surface visibility improves to roughly 50 percent. Dawson and Maas (1994) report a thin scatter of lithic material and a single side scraper; Greubel and Reed (1996) reinvestigated the site and report an additional 5 flakes on the hill proper. At some point, a 1" PVC datum was set in the approximate center of the lithic scatter. The coordinates reported for 5OT537 in the state database do not appear to be accurate, and are off by approximately 130 meters, placing the site to the southwest, very near the river – this is perhaps indicative of the use of an incorrect coordinate datum when originally reported.

Frost and Hogue noted several new flakes during site monitoring activities in 2006 (reported in state files) to the west of the site datum along the two-track road that follows the river. These new flakes would indicate a much larger site than originally reported, if their location is the result of human action and not geomorphic processes. The 2011 reinvestigation tested this expanded site area for buried components that would verify the larger site size. CMPA archaeologists systematically surveyed both the original site area as well as the expanded are to the west. Total survey coverage extended between the Park Service access road and the two-track road; a total distance E-W of over 150 meters. Survey coverage extended equally north and south from the datum for a total distance N-S of over 175 meters, for a survey coverage total of just over 6 acres. The recorded artifacts were however, located within a 60 x 40m area, totaling just over half an acre.

Two additional flakes and one possible amorphous core comprise the sum of the recovered material. The artifacts were measured, recorded, and photographed, but not collected.

Figure 5.34 5OT537 Overview – view is to the southwest. Photo by Michael Troyer, July 2011.

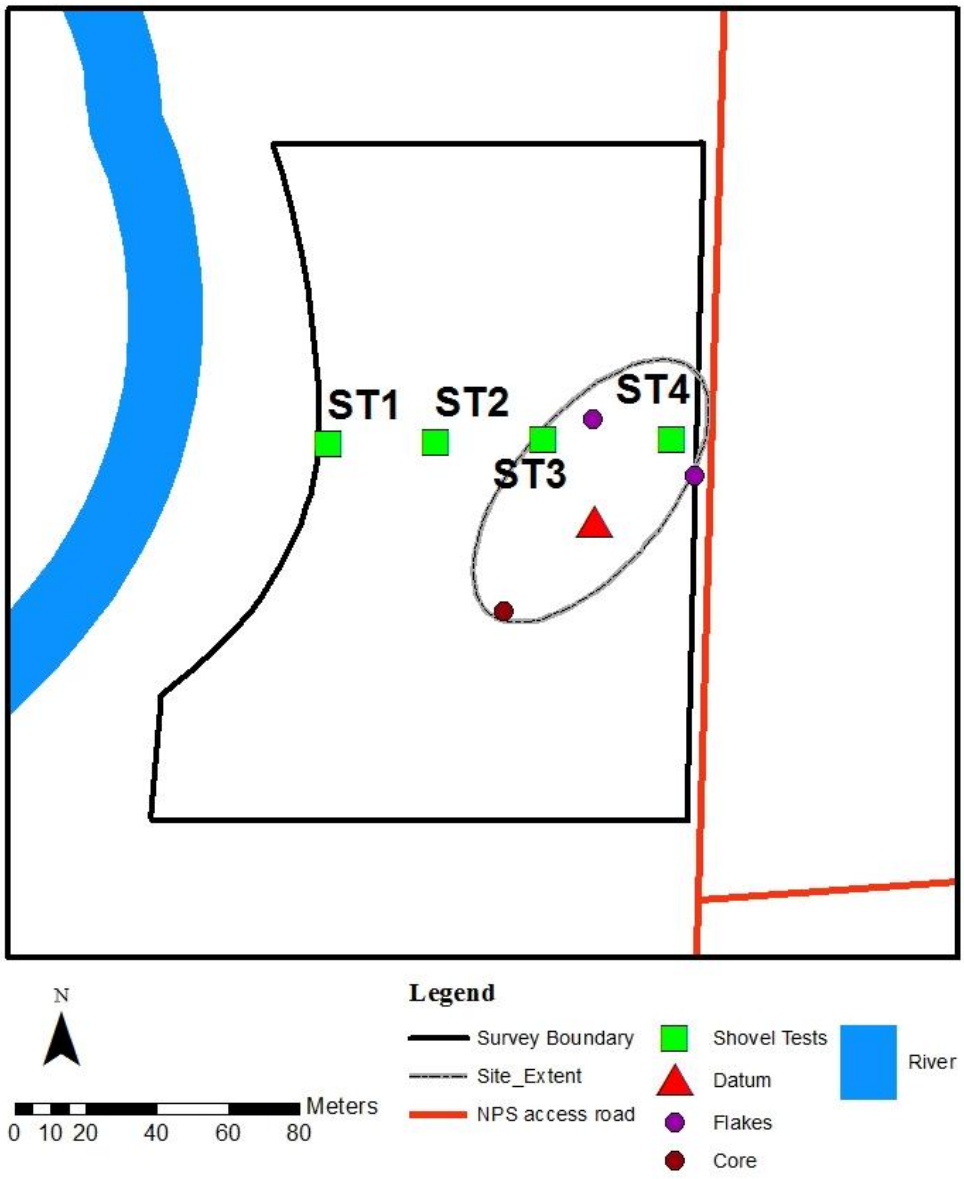

Figure 5.35 5OT537 Overview of surface materials and shovel tests

Debitage

Surface survey revealed two flakes of cultural origin, one chalcedony flake (size class 3) and a single basalt flake (size class four), both cortex-free.

Core

Core #	Type	Material	# of Scars	Cortex	Max L (mm)	Max W (mm)	Max T (mm)	Comments
1	Amorphous	Quartzite	7	no	48.44	33.7	17.11	Isolated to south of known site extent - somewhat ambiguous

Table 5.18 5OT537 Summary of core tools

Additionally, CMPA archaeologists recorded a single amorphous core tool (Table 5.18). The core represents the only modified lithic artifact, but is unfortunately non-diagnostic as to temporal or cultural affiliation.

Shovel Tests

Previous shovel testing had produced no buried components. CMPA archaeologists utilized a linear grid of 30x30 cm shovel excavation units spaced 15 meters apart along an east-west line just to the north of the site datum. The intent was to provide additional subsurface data where flakes had been noted in all investigations, as well as to test the expanded area to the west. The 2011 shovel tests were, again, all negative, and indeed, survey failed to turn up any cultural material along the road to the west. Thus, the expanded site size does not seem appropriate with the available data.

Site	ST #	Level	Dry Munsell	Wet Munsell	Soil Texture	Cultural material
5OT537	1	1 (0-20cm)	10yr5/4	10yr4/3	Silty Clay	none
5OT537	1	2 (20-40cm)	10yr5/2	10yr4/3	Sandy Loam	none
5OT537	2	1 (0-20cm)	10yr4/3	10yr3/1	Clay	none
5OT537	2	2 (20-40cm)	10yr5/4	10yr4/4	Clay	none
5OT537	3	1 (0-20cm)	10yr4/3	10yr3/2	Silty Clay	none
5OT537	3	2 (20-40cm)	10yr4/3	10yr4/2	Silty Clay	none
5OT537	4	1 (0-20cm)	10yr3/2	10yr3/1	Silty Clay	none
5OT537	4	2 (20-40cm)	10yr4/2	10yr3/2	Silty Clay	none

Table 5.19 5OT537 Shovel test results

Comparison to Previous Investigations

5OT537	CMPA	Alpine	NPS 1994
Year	2011	1996	1994
Site size (acres)	.5	0.07	0.05
Flakes	2	2	-
Tools	1	3	1
Hearths	0	0	0
Shovel test pits (STPs)	4	4	0
Positive STPs	0	0	-
Radiocarbon material	No	No	No
NRHP eligible	No	No	Yes

Table 5.20 5OT537 Comparison to previous investigations

Little has changed with regard to artifact frequency and diversity since originally recorded in 1994. The 2011 investigation revealed flakes and a single core tool spanning nearly 60 meters north-south, thus rendering a larger site size than either previous investigations (Dawson and Maass 1994; Greubel and Reed 1996). However, no flakes were recorded in the area to the west where flakes had been noted in 2006, warranting the site reinvestigation (Frost and Hogue 2006 - in state files). Thus, it does not appear that the site requires expansion to the west, but rather to the south.

National Register Recommendations

The cultural assemblage at 5OT537 is extremely thin and ambiguous as to the age and cultural affiliation. Additionally, shovel testing failed to demonstrate buried components, neither on site as previously recorded, nor further to the west. Accordingly, the site is not likely to yield information relevant to the understanding of prehistory in the area. We recommend that 5OT537 be listed as not eligible for the National Register of Historic Places; no further work is necessary.

5OT558

5OT558 is a small trash midden exposed in the south wall of a small irrigation ditch that runs parallel to Hwy 194, just east of the Bent's Old Fort entrance gate. The site was discovered during trenching activities associated with the installation of a new power box in 1996 (Carrillo 1996 – in state site files). The trench was cut to a depth of approximately 60 cm, revealing a shallow lens of historic domestic debris. The present ground surface is heavily vegetated with hydrophilic grasses and forbs, the roots of which obscure large parts of the exposed wall of interest. Accordingly, the 2011 investigation began by cutting back the arroyo wall between 10 and 20 cm with a shovel to expose a 20m clean profile with which to determine the spatial extent of the deposited materials. The materials varied between 15 and 60cm below the surface for approximately 12 meters. Including the surface assemblage, the site extends approximately 20 meters east-west and 6 meters north-south, for a total area of around .06 acres.

Broadly, the material reflects a domestic origin, representing a variety of household tasks. Additionally, investigators noted two small organic, discolored lenses (Figure 5.38), though without intact charcoal. CMPA Archaeologists recorded nails, ceramic, and glass in the wall, though none were temporally diagnostic. Notably, however, the glass assemblage lacks yellow, aqua, or amethyst glass, which was in use until the 1920's.

Carrillo (1996) reports a two-story farmhouse to the west of the site that was likely built sometime in the 1920's and was used through the 1960's as the residence for the property superintendent. Additionally, Carrillo notes a wagon shed just south of the deposit, which housed a Barlow and Sanderson Stage Coach in the 1960's. The house, shed and several other tenant houses located along the opposite side of Hwy 194 were removed in the 1970's.

Figure 5.36 5OT558 Overview, blue flags indicate historic artifacts – view is to the southeast. Photo by Michael Troyer, July 2011.

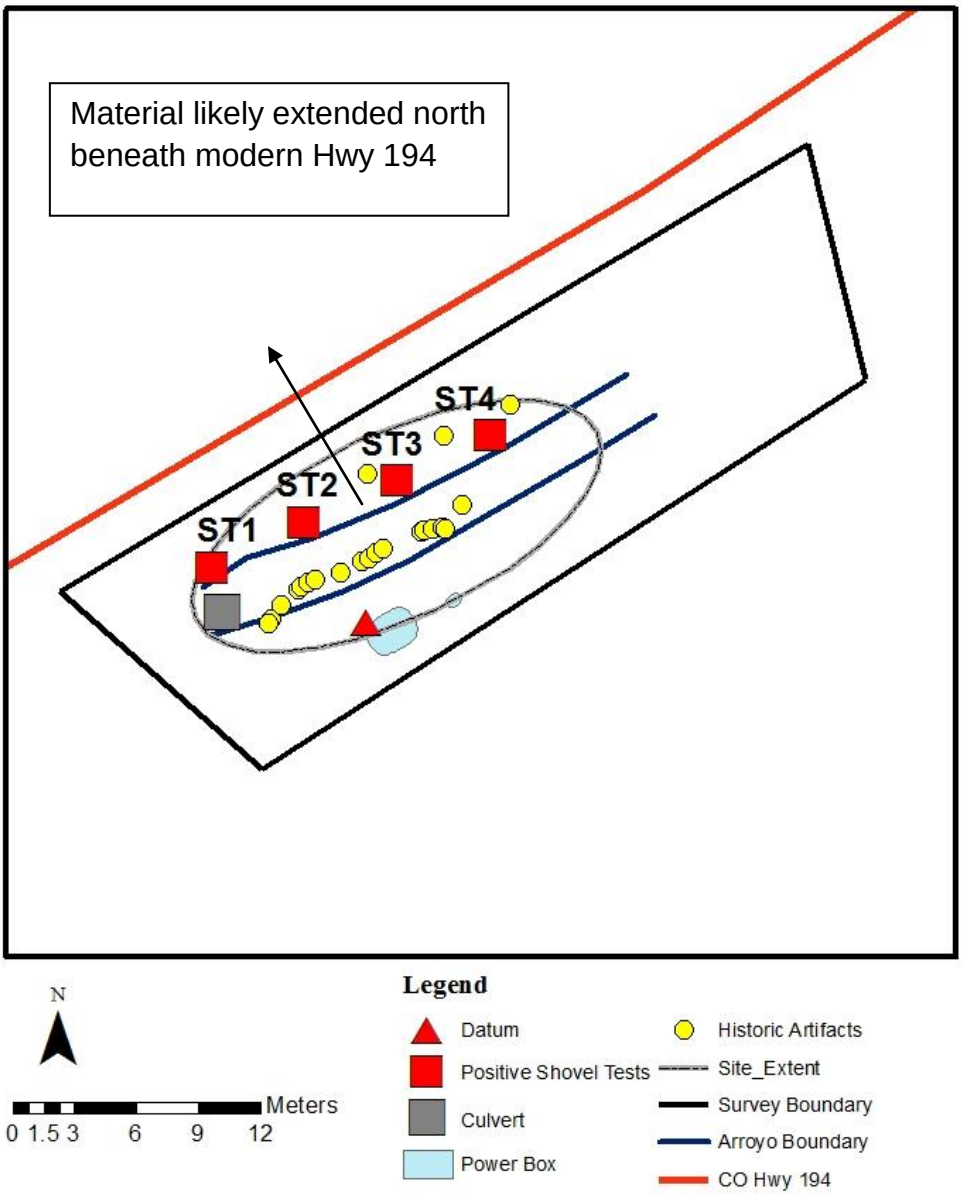

Figure 5.37 5OT558 Overview of cultural material and shovel tests

Historic Debris

Glass	Ct	Other	Ct
Bottle		Other	
Amber	2	Wood (15cm)	1
Clear	2	Metal pipe	1
		Charcoal Lens	2
Fragments			
Amber	1	**Ceramic**	
Clear	4	Stoneware	
Milk	1	Jugs	1
		Ceramic Fragments	
		Stoneware	1

Table 5.21 5OT558 Summary of historic surface and arroyo sidewall materials.

Broadly, the material recovered from the arroyo sidewall and ground surface represent domestic, consumer goods. The assemblage is weighted towards representation of glass artifacts, but ceramics and other miscellaneous items were also noted, including a metal pipe eroding out of the sidewall (Figure 5.39), and two discolored ash lenses (example in Figure 5.38). The ash lenses appear to be spatially distinct, but given the relatively young age of the deposits and the lack of intact charcoal, it would appear that the material did not burn in place, but rather was secondarily deposited - possibly from a nearby homestead, an inference in agreement with that developed for other materials on site and with the history of the area as reported by Carrillo (1996 –In state files). Additionally, there does not appear to be vertical differentiation in the material that may indicate separate periods of use. Instead, the stratigraphic context suggests a single, extended deposition event without intervening burial of the materials. Undoubtedly, frost heaving and other taphonomic processes have influenced the distribution of the artifacts, but there is continuity in general artifact type between those recovered from the surface and those in the wall – again, indicating a single, behaviorally and functionally cohesive deposit.

Figure 5.38 5OT558 Charcoal staining in arroyo wall – likely secondarily deposited ash from a nearby homestead. Photo by Michael Troyer, July 2011.

Figure 5.39 5OT558 Unidentified metal pipe eroding out of arroyo wall. Photo by Michael Troyer, July 2011.

Shovel Tests

Investigators used a series of 4 shovel tests to verify the extent of buried material. Due to the proximity to the power box and associated buried wire, the tests were located on the north of the ditch and spaced 5 meters apart. The tests extended beyond the observed surface and arroyo wall materials on both ends. Non-diagnostic cultural material, mostly glass fragments, existed in all shovel tests. The only diagnostic material came from shovel test 2, level 1, in the form of two stay-top beer cans, which date to sometime after 1975 (Figure 5.40). The buried material on the north side of the road exceeds the distribution of material in the south arroyo wall, indicating that the core of the scatter is located to the north, closer to the road. It is unclear to what extent the road construction impacted the deposits, but given the proximity, the impact is likely great. Survey did not reveal significant deposits north of Hwy 194 other than modern road debris. Shovel test 1 contained extensive road base material, indicative of heavy disturbance.

Site	ST #	Level	Dry Munsell	Wet Munsell	Soil Texture	Cultural material
5OT558	1	1 (0-20cm)	10yr2/2	7.5yr2.5/3	Sandy clay	2 amber bottle glass frags
5OT558	1	2 (20-40cm)	10yr2/2	7.5yr2.5/2	Sandy Clay	none
5OT558	1	3 (40-60cm)	10yr4/3	10yr3/2	Sandy clay	none
5OT558	2	1 (0-20cm)	2.5y4/2	2.5y3/2	Clay	1 piece of clear bottle glass
5OT558	2	2 (20-30cm)	2.5y4/2	2.5y3/2	Clay	2 pieces of clear bottle glass
5OT558	3	1 (0-20cm)	2.5y4/3	2.5y3/2	Clay	2 beer cans, 3 pieces of clear bottle glass, 2 pieces of amber bottle glass
5OT558	3	2 (20-40cm)	2.5y4/3	2.5y3/3	Silty clay	4 pieces of amber bottle glass, 1 piece of clear bottle glass
5OT558	3	3 (40-60cm)	2.5y4/2	2.5y3/2	Silty clay	none
5OT558	4	1 (0-20cm)	10yr4/3	10yr3/2	Silty clay	12 pieces of clear bottle glass, 2 pieces of amber bottle glass, burnt wood
5OT558	4	2 (20-40cm)	2.5yr5/3	2.5yr3/3	Silty clay	8 pieces of fencing metal, 5 pieces of clear bottle glass
5OT558	4	3 (40-60cm)	2.5y5/3	2.5y3/2	Clay	16 pieces of clear bottle glass, 5 pieces of amber bottle glass, 16 pieces of misc metal

Table 5.22 5OT558 Shovel test results

Figure 5.40 5OT558 Late 1970's era stay-top beer cans recovered from shovel test 3. Photo by Michael Troyer, July 2011.

Comparison to Previous Investigations

5OT558	CMPA	Carrillo
Year	2011	1996
Site size (acres)	0.06	.006 (Trench)
Artifacts	98 (inventory + tests)	154
Shovel test pits (STPs)	4	0, Trenched
Positive STPs	4	-
Radiocarbon material	No, ash not collected	No
NRHP eligible	No	No

Table 5.23 5OT558 Comparison to past investigations

The investigation, headed by Richard Carrillo in 1996, revealed a lens-shaped deposit of historic, domestic materials. Carrillo reports a very similar artifact assemblage to that recorded in 2011. The interpretation of the 1996 material was that of a 1920's – 1940's era trash midden. The 2011 investigation is largely in accord with the previous interpretations, save for the age of the deposits. CMPA archaeologists recovered materials dating at least after the 1920's, but up through the late 1970's. The temporal assessment provided here favors a later date, likely 1940's through 1970's, an inference in agreement with the newly identified site 5OT1360, less than a mile east.

National Register Recommendations

The cultural assemblage at 5OT558 represents a historic trash midden of undeterminable age. However, the lack of certain colors of glass and the presence of stay-tab cans indicates that the material is not of great historic antiquity, and likely dates from the 1940's and later. Given the present data, the assemblage is not associated with any individuals or events of historical significance and is thus considered not eligible for inclusion on the National Register of Historic Places. No further work is deemed necessary.

5OT1359 (Luna de Fuega)

5OT1359 is a prehistoric lithic scatter along the southeast corner of the National Park Service property, along the west side of the Oxbow State Wildlife Area access road as it crosses the Burlington Northern Santa Fe railroad ROW. CMPA archaeologists discovered the site as part of survey work associated with 5OT534, which is approximately 250 meters to the west. Survey did not reveal any artifacts between the two areas, warranting the designation of 5OT1359 as a new site. The site measures approximately 100m east west and 40 meters north south for a total area of approximately 0.98 acres. Visibility is very high as there is very little surface vegetation. Heavy rains the few days leading up to the discovery of 5OT1359 left standing water on parts of the site. The rain may have also contributed to the discovery. The standing water also attests to the high clay content of the soil; a factor that seems to be consistent across the alluvial terrace system, which includes at least four other prehistoric sites. The site is bounded to the south by the BNSF railroad ROW – archaeologists noted lithic materials up to the fence line. It is unclear how much railroad construction impacted the site. Observed surface material forms the basis for the northern boundary of the site, although the area may have been used for dry-land agriculture in the past. Modern prairie dog activity is apparent further to the north, but does not appear to have impacted the site proper. CMPA archaeologists recorded approximately 50 flakes, including chert, basalt, quartzite, and Alibates, with chert making up over half of the assemblage. Investigations recovered four lithic tools, including a Late Archaic dart point, two bifaces, and an end scraper. No subsurface testing was conducted as time and resources were limited and the site was not part of the initial Scope-of-Work.

The 2011 field crew named the site Luna de Fuega (the moon on fire), as the lack of vegetation and extraordinary afternoon temperatures in late July (often over 105 degrees F) create such an impression.

Figure 5.41 5OT1359 Overview – view is to the southwest from Oxbow State Wildlife area access road. Photo by Michael Troyer, July 2011.

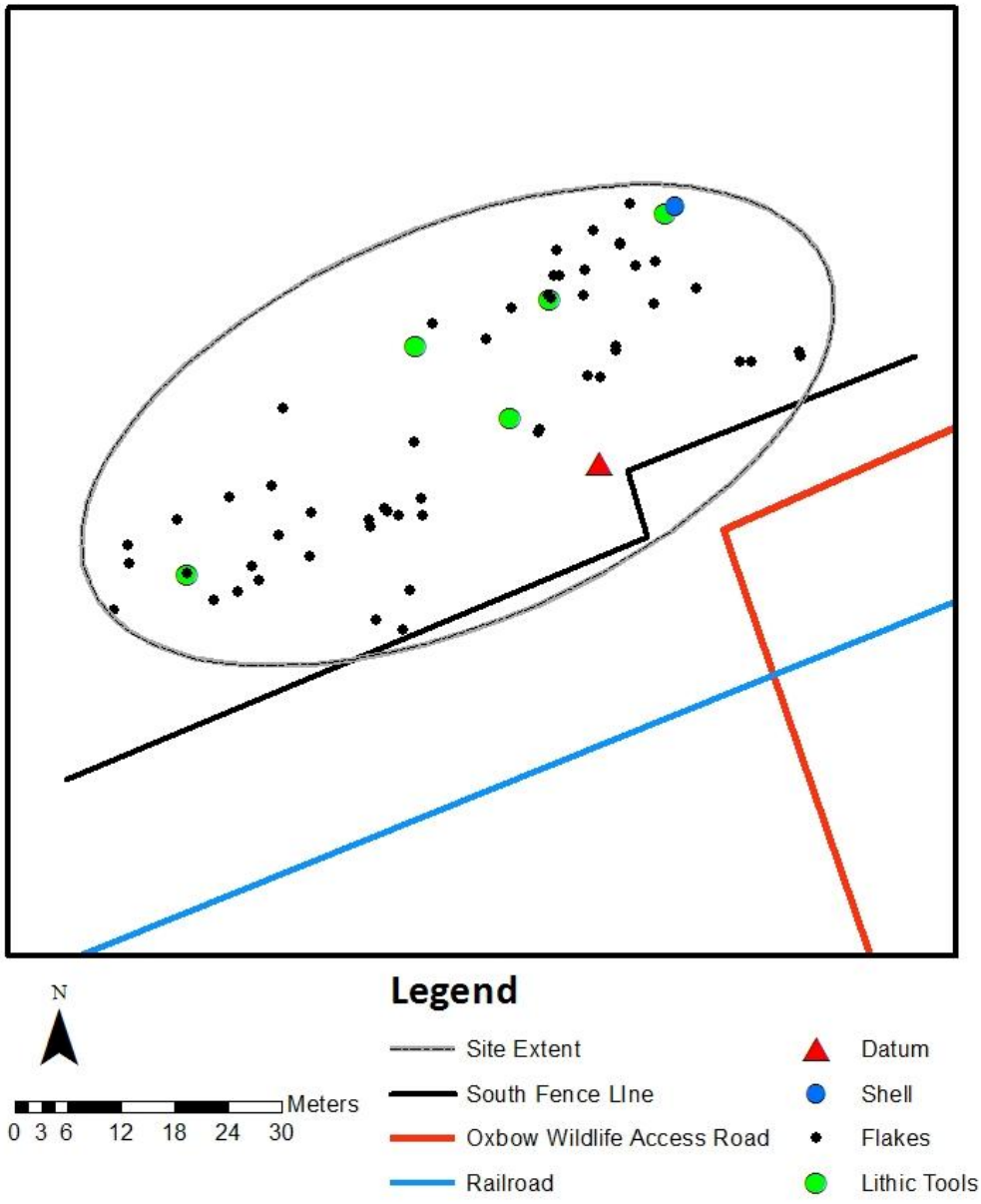

Figure 5.42 5OT1359 Overview of cultural material

Debitage

Debitage Without Cortex							
Raw Material Type	**1**	**2**	**3**	**4**	**5**	**Other**	**Total**
Chalcedony							0
Chert	2	13	7	4	3		29
Quartzite		4	9	4		1	18
Silicified Wood							0
Basalt			2				2
Other (Specify)		1(Alibates)	2(Alibates)				3
Total	2	18	20	8	3	1	51

Debitage With Cortex							
Raw Material Type	**1**	**2**	**3**	**4**	**5**	**Other**	**Total**
Chalcedony							0
Chert			1	1	1	1	4
Quartzite							0
Silicified Wood							0
Basalt							0
Other (Specify)							0
Total	0	0	1	1	1	1	4

Table 5.24 5OT1359 Raw material and size class for surface inventory materials

5OT1369 presents a new pattern for site assemblage characteristics within the Bent's Old Fort National Historic Site study area. Similar to other sites in the area, non-cortical material dominates the assemblage (Figure 5.43). However, in stark contrast to other sites in the study area, chert is the best represented material at Luna de Fuega, making up 59 percent of the assemblage (Figure 5.44). Additionally, the highest frequency of chert flakes fall within the smaller size classes, which is not uncommon for chert specifically, but unique in that chert is also the most frequent material type on this site. Elsewhere on the property, the dominant raw material type is best represented in the larger size classes (3+), producing a weak left-tailed distribution. Here, chert size classes produce a more right-tailed distribution. Also noteworthy, chert is the only cortical material on site, but in this case, in the larger size classes. This leads to two seemingly contradictory conclusions: first, the smaller size class representation of non-cortical chert on site would indicate that the material is highly curated, having been brought to the site in prepared forms such as bifaces and other tool types. On the other hand, however, the larger cortical chert flakes would argue that there was some primary reduction of chert taking place on site. Given that all the recorded material is located on the deflated surface, it is difficult to determine if the assemblage represents one or more occupations. Future testing may reveal subsurface deposits useful for addressing these issues.

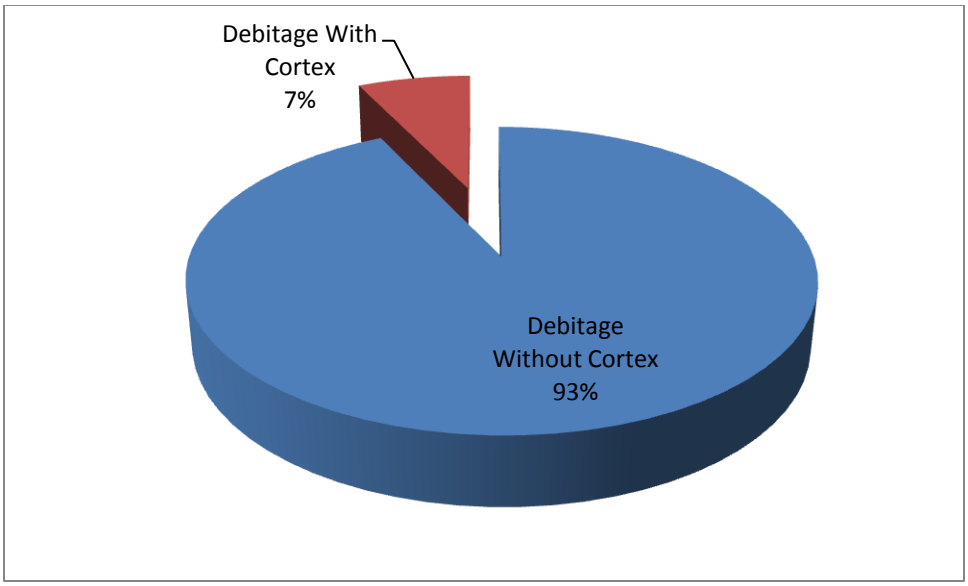

Figure 5.43 5OT1359 Debitage with and without cortex

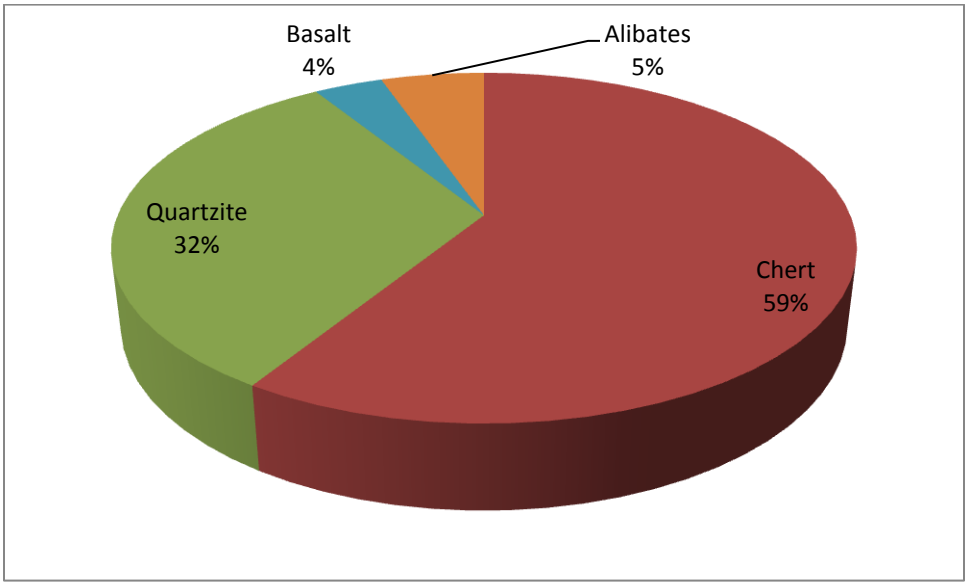

Figure 5.44 5OT1359 Debitage raw material type

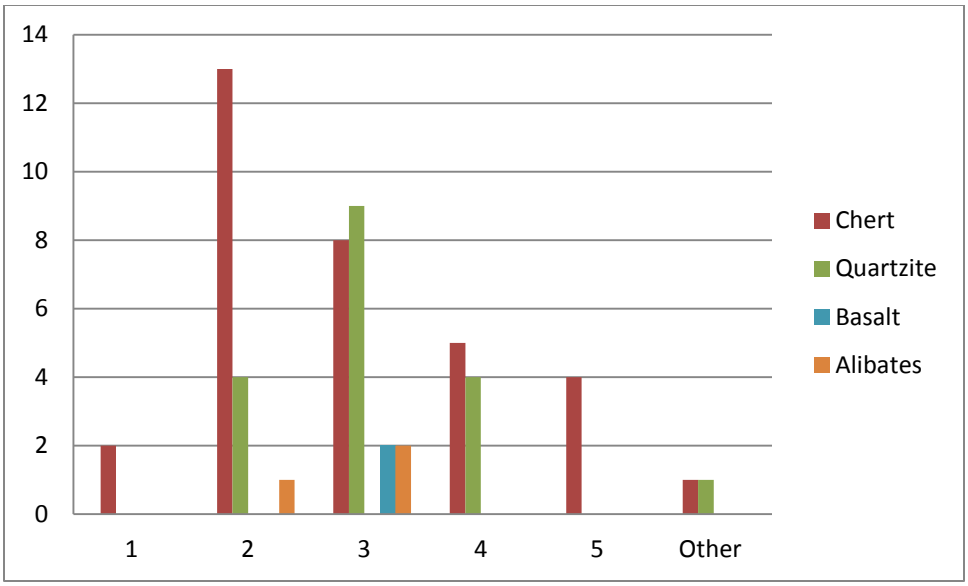

Figure 5.45 5OT1359 Debitage raw material types and size class

Tools

Lithic tool 1 (Figure 5.26 –A), the only temporally diagnostic artifact, is a finely made, corner-notched, quartzite projectile point with slightly convex blade edges. The point is nearly identical to projectile point style P26 as identified by researchers at the Piñon Canyon Maneuver Site to the south of the study area. There are no radiocarbon dates from the PCMS associated with this point style. However, these points resemble specimens recovered from dated contexts across the Great Plains dating between 3,000 RCYBP and 1,500 RCYBP, or largely within the Late Archaic period of prehistory (Lintz and Anderson 1989: 143).

The remaining tools represent domestic camp chores, such as hide scraping (LT-5, Table 5.25) and bifacial tool use and maintenance (LT-3, LT-5, Table 5.25). However, CMPA archaeologists also recovered a small preform (LT-2). Given the size and fragmented nature of the artifact, it is impossible to determine if the tool was destined to be a dart point similar to LT-1, or rather a small arrow point. It would be unsurprising, given the temporal affiliation of nearby prehistoric resources (5OT536, 5OT534), if the site also yielded evidence of Late Prehistoric occupation as well.

Figure 5.46 5OT1359 Formal tools. Photo by Michael Troyer, September 2011

Item Num (LT)	Photo	Type	Portion	Raw material	Color	Length (mm)	Width (mm)	Thickness (mm)
1	A	Projectile	Middle	Quartzite	Tan/ Brown	33.04	26.27	5.56
2	B	Preform	Distal	Chert	Brown	16.31	19.54	4.55
3	C	Biface	Complete	Quartzite	Tan/ Cream	61.92	40.51	12.66
4	D	Biface	Complete	Alibates	Cream/ Red	49.53	32.88	9.75
5	E	End Scraper	Complete	Chert	Lt/Dk Brown	30.72	24.66	10.91

Table 5.25 5OT1359 Summary of formal tools

National Register Recommendations

5OT1359 is a spatially discrete lithic scatter with components dating to the Late Archaic period of prehistory. It is presently unknown if the site contains buried components. We recommend further testing to determine the extent of the surface and potential subsurface material. The site should be given high priority status, as it is located very near the Oxbow State Wildlife Area public access road and Highway 50.

5OT1360

5OT1360 is a historic glass and ceramic scatter that represents a domestic trash dump. Most varieties of domestic glass are represented, including amber, white/milk, green, amethyst, cobalt, and clear (Table 5.26). The scatter appears to be discrete, approximately 15x8m. Visibility is generally poor (~20%) due to the abundance of dense, riparian vegetation (70% grasses, 10% shrubs). Broadly, the site follows an east-west trending terrace to the north of the Arkansas River, which flows approximately 100 meters to the south; dense, largely impenetrable riparian vegetation occurs just 5 m south of the artifact scatter and continues to the river. The Highway 194 ROW delineates the north boundary of the site. Archaeologists did not note artifacts beyond the fence line to the north; yet it should be noted that the Park Service does not manage the area and it was not surveyed in any detail. However, the surface scatter did not reach the modern fence line, ending roughly 1 meter to the south. Additionally, the surface materials ended before the dense riparian vegetation to the south. Similarly, the east and west boundaries are not associated with any topographic or other physical barrier. Thus, it appears that the boundaries of surface materials are in fact genuine and accurately reflect human behavior and are not a function of surface visibility, though plowing and/or mowing undoubtedly influenced the distribution as well. A two-track road, approximately 10 m west of the scatter boundary, has down-cut up to 10cm and failed to reveal cultural materials. Archaeologists inventoried the non-diagnostic materials by type and count and recorded the boundary of the scatter with a Magellan Mobile Mapper global satellite-positioning unit. CMPA archaeologists mapped diagnostic artifacts individually and photographed each item and associated diagnostic elements for use in future age determinations.

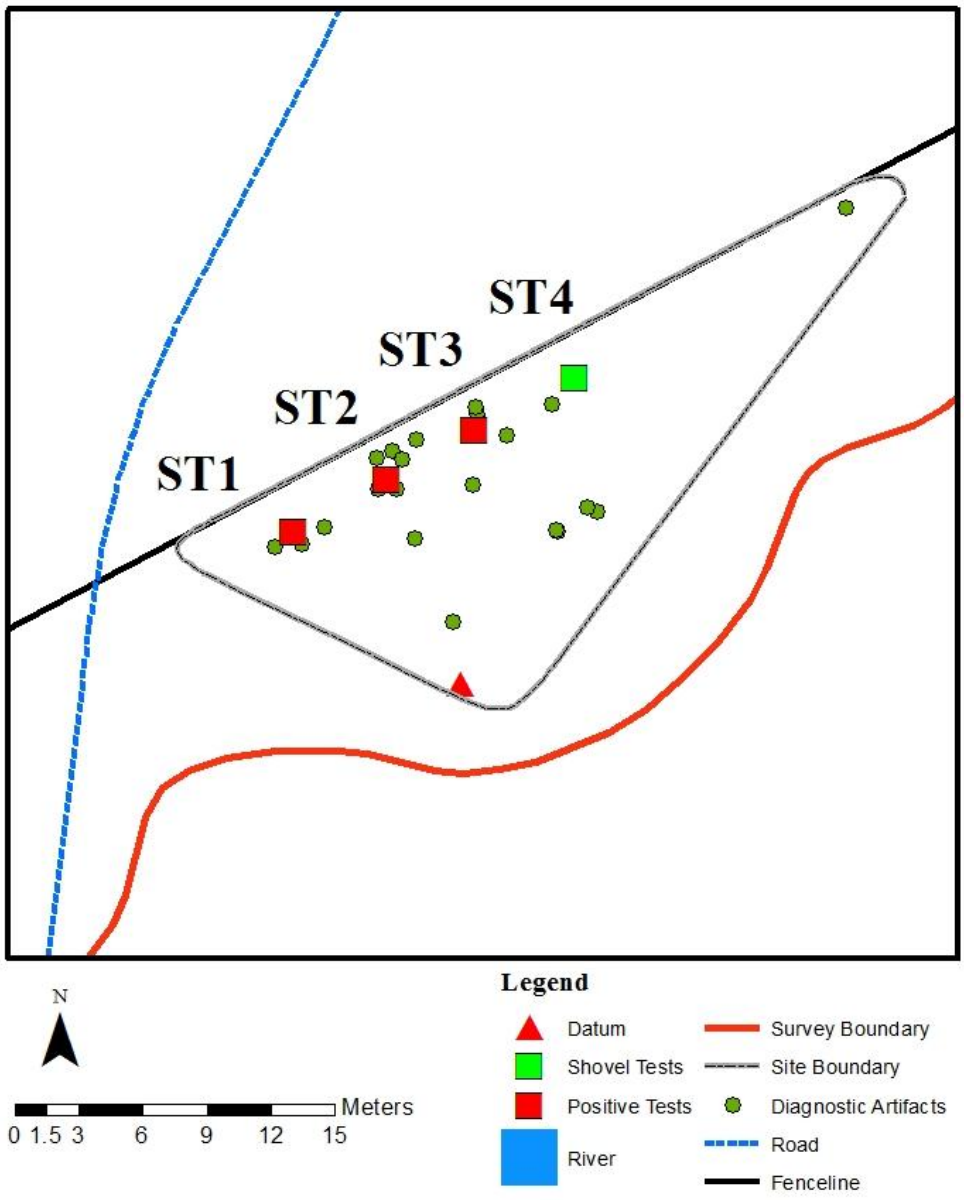

Figure 5.47 5OT1360 Distribution of cultural material and shovel tests

Historic Debris

Can	**Ct**	**Ceramic**	**Ct**
Beverage		Ceramic Fragments	
Flat Top	1	Porcelain	32
Glass	**Ct**	**Metal Misc**	**Ct**
Bottle		Metal	
Amber	2	Fragments	20
Green	4	Metal Fencing	1
Rose	3		
		Other	**Ct**
Fragments		Other	
Amber	35	Plastic	1
Brown	61		
Cobalt	4		
Green	9		
Rose	2		
Clear	306		
Milk	57		

Table 5.26 5OT1360 Summary of historic surface materials

Diagnostic Artifacts

Artifact #	Type	Portion	Manufacture Method	Min Date	Max Date	Comments/ Writing
HA1	Ceramic	Frag	Screen-print			Red, flower motif
HA2	Clear Glass	Base				"655"
HA3	Brown Glass	Base	Post-mold	1904	2011	"AD" Automatic bottle machine
HA4	Clear Glass	Base		1938	1969	"622 A (in circle)" Armstrong Cork Company
HA5	Clear Glass	Finish	Screw top	1904	2011	
HA6	Button	Complete				4 hole design
HA7	Clear Glass	Finish	Screw top	1904	2011	"5"
HA8	Metal Cap	Complete	Screw top	1904	2011	
HA9	Clear Glass	Base		1904	2011	"aglas"
HA10	Clear Glass	Base		1904	2011	
HA11	Rose Glass	Jar Base				Three associated fragments
HA12	Aqua Glass	Base				"628"
HA13	Clear Glass	Square Base	Post-mold	1905	1917	" P (in a circle) 30" Pierce Glass Company
HA14	Clear Glass	Base				Decorative jar fragment
HA15	Clear Glass	Body Frag		1932	2011	"It's name o…is like…pling stampe…under…NT PRO"
HA16	Leather shoe sole	Partial				"8…14 IRON…S PAT-OFF"
HA17	Clear Glass	Base	Post-mold			Decorative jar fragment
HA18	Clear Glass	Finish	Crown			
HA19	Clear Glass	Base		1929	1954	"des. Pat. 12…7 8… Reg. US. FF. … Net. Wt." Owens
HA20	Clear Glass	Jar Base				Ball Jar "113-64…l Ball"
HA21	Milk Glass	Body Frag				"Hand cream a..ds soft and delica..to sooth and s..ed skin"
HA22	Clear Glass	Base		1929	1954	Owens Glass Company"Des…12"

Table 5.27 5OT1360 Summary of diagnostic artifacts – from Horn 2005 and Toulouse 2001.

Figure 5.48 illustrates the age range and average dates for identified diagnostic materials. Unfortunately, many of the diagnostic attributes are in use today and are therefore not useful in delineating the age of the deposits. However, four artifacts contain maker's marks that are no longer used. Three of the four overlap in the 1940's, a date that accords well with the other material. The last diagnostic artifact (H13) dates to the first 17 years of the 20th century. However, the item is a square-base glass bottle, in contrast to the other primarily round bottles. Thus, the irregularity of the item may indicate that H13 was not a strictly consumer item and may have been curated for some time, in which case, the manufacture date would not agree with the date of deposition. Based on the bulk of the evidence, 5OT1360 likely dates to around the 1940's and 1950's.

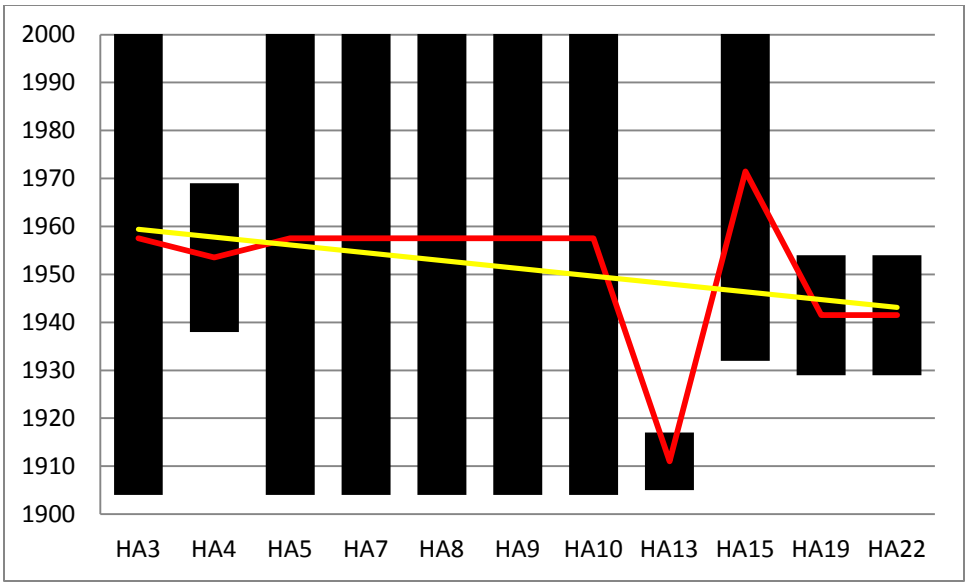

Figure 5.48 5OT1360 Range and average date for diagnostic artifacts. Age range is represented by black bars, the red line indicates average age of individual artifacts, and the yellow line represents the average age of the assemblage.

Shovel Tests

Investigators utilized four shovel test units to test both for the presence of subsurface materials, as well as for the agreement between surface and subsurface boundaries. The eastern most test unit was beyond the observed surface material and was negative for subsurface material. The remaining tests were positive to a depth of 40 cm, at which point an extensive stone pavement existed that served as the bottom of most tests and buried material. The available evidence indicates that the surface distribution of material accurately reflects the subsurface extent of cultural material. The subsurface material is largely non-diagnostic, save for square bottle body fragment, with the Glass Containers Corporation mark, which began manufacturing in 1945 and continues to the present (Toulouse 2001).

Site	ST #	Level	Dry Munsell	Wet Munsell	Soil Texture	Cultural material
5OT1360	1	1 (0-20cm)	10yr3/4	10yr2/2	Sandy clay	15 metal pieces, 1 clear glass bottle frag, 2 amber bottle glass frags
5OT1360	1	2 (20-40cm)	10yr4/3	10yr3/1	Sandy clay	5 clear bottle glass frags, 2 amber bottle glass frags, 1 cobalt bottle glass frag, 3 metal pieces, two red plastic (?) pieces
5OT1360	2	1 (0-20cm)	10yr3/3	10yr2/2	Sandy clay	39 clear glass frags, 2 green bottle glass frags, 5 amber bottle glass frags, 2 ceramic frags, 16 metal pieces, 1 bottle finish, 1 jar frag w/ writing, 1 marble
5OT1360	2	2 (20-40cm)	10yr5/3	10yr3/4	Sandy clay	5 green bottle glass frags, 14 clear bottle glass frags, 1 amber bottle glass frag, 1 metal piece, 1 clear bottle finish
5OT1360	3	1 (0-20cm)	10yr3/4	10yr2.5/3	Sandy clay	11 pieces of clear glass (including Figure 5.49), 4 amber bottle glass frags, 4 pieces of metal
5OT1360	4	1 (0-20cm)	10yr4/3	10yr3/4	Sandy clay	none
5OT1360	4	2 (20-40cm)	10yr5/4	10yr4/4	clay	none

Table 5.28 5OT1360 Shovel test results

Figure 5.49 5OT1360 Bottle fragment from shovel test 3, level 1 – Glass Containers Corp 1945 – present. Photo by Michael Troyer, July 2011.

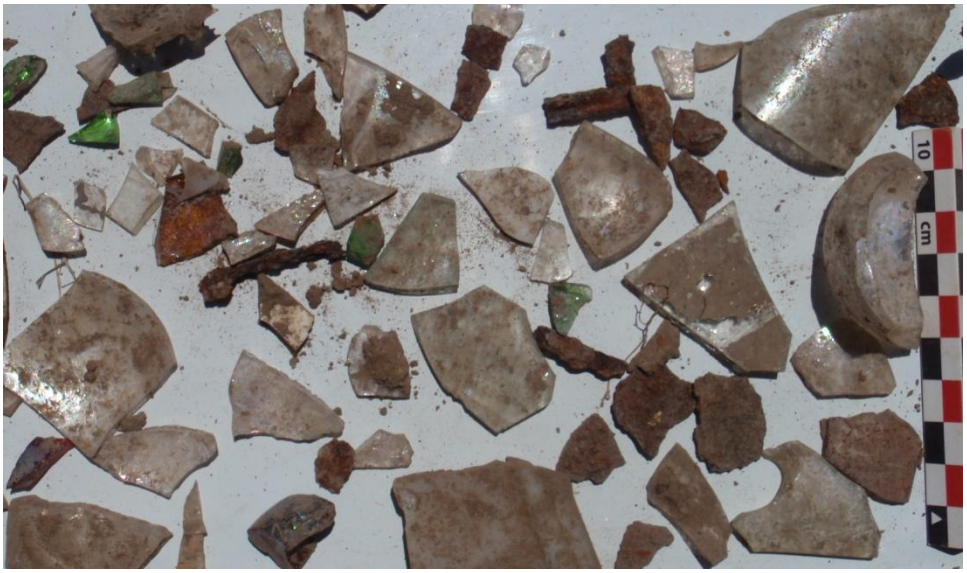

Figure 5.50 5OT1360 Miscellaneous non-diagnostic glass and metal from shovel test 2, level 1. Photo by Michael Troyer, July 2011.

National Register Recommendations

5OT1360 represents a domestic trash midden dating to around the 1940's and 1950's. The source of the material is likely north of the road, on what is now a modern farm. The property north of the road contains several buildings that may date to the period of site use; the area is privately owned and was not surveyed. Given the available data, the assemblage is not associated with any event or person of historical significance. Additionally, the paucity of diagnostic artifacts and abundance of non-diagnostic consumer waste indicates that the site has little potential to provide additional information relevant to the understanding of the historical use of the area. Accordingly, we recommend that the site be listed as not eligible for inclusion on the National Register of Historic Places. No further work is deemed necessary.

5OT1361 (Flake Isolate)

5OT1361 is a lithic artifact isolate found while surveying the National Park Service Bent's Old Fort Property to the south of the Arkansas River, east of a southward trending bend in the river (**Error! Reference source not found.**). The isolate is near 5OT537, which is approximately 400 meters due south. CMPA archaeologists located the Alibates flake along the south edge of a small sage-covered hill, which was also surveyed, but surface visibility was very poor and no additional material was located. The artifact appears to have had some edge modification, likely resulting from use as a cutting implement. The item is not formally diagnostic, but Eddy et al (1982: 40) note that Alibates does not appear on the Chautauqua Plateau, southeast of the study area, in dated contexts until the late Archaic period.

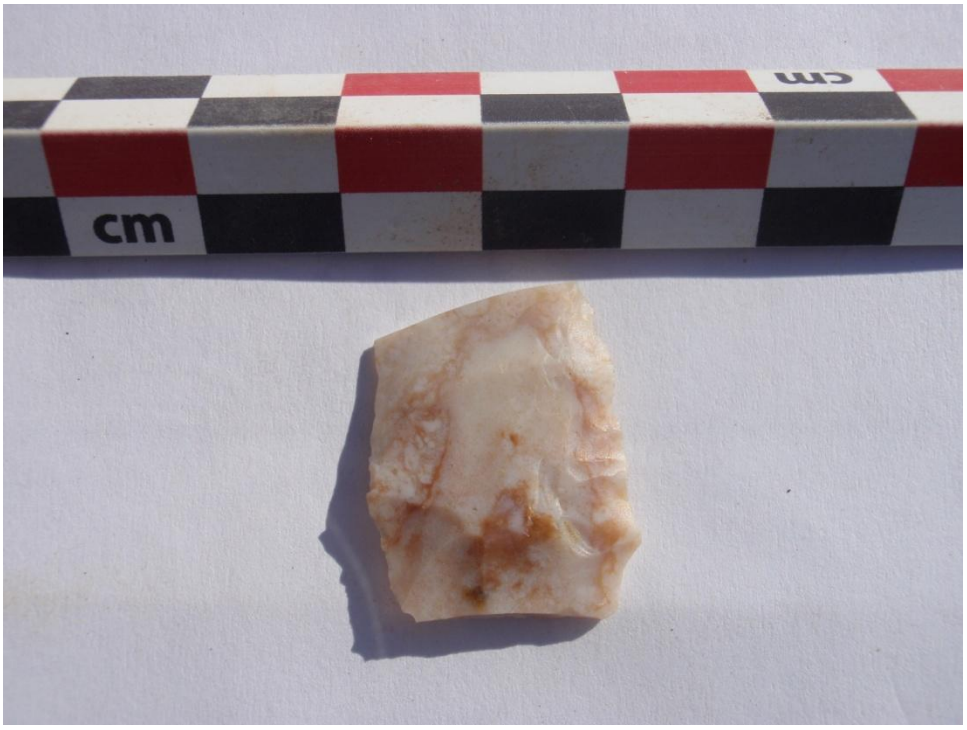

Figure 5.51 5OT1361 Flake isolate – dorsal surface. Photo by Michael Troyer, July 2011.

Figure 5.52 5OT1361 Flake isolate – ventral surface. Photo by Michael Troyer, July 2011.

National Register Recommendations

Lithic isolates possess little information useful for addressing topics of prehistoric research and cannot provide additional information relevant to understandings of the past. 5OT1361 is therefore not eligible for inclusion on the National Register of Historic Places. Future survey may reveal additional cultural materials, but at present, no further work is deemed necessary.

6. CONCLUSIONS AND RECOMENDATIONS

Evaluation of Research

CMPA archaeologists pursued the objectives outline in Section 1 using a variety of methods and strategies. Investigators successfully delineated the surface and subsurface extent of material using surface inventories and shovel testing, which were often largely in accord with one another. Additionally, investigators recovered diagnostic artifacts useful for making age determinations from all but four sites; two prehistoric sites (5OT536, 5OT537), the prehistoric isolate (5OT1361), and one historic site (5OT558) remain ambiguous. Lastly, management recommendations follow the individual site discussions in Section 5 and are summarized below.

Prehistoric Results

There are a few important observations resulting from the 2011 fieldwork. First, there is a clear pattern to the location of the prehistoric sites on the Bent's Old Fort Property. Specifically, prehistoric occupation seems to be concentrated along large, low, flat terraces just above the modern flood plain. The sites were likely located just above the river at time of occupation. At least one site (5OT5537) is located upon the modern flood plain, but contains very little cultural material. The paucity of artifacts from 5OT537, and the lack of sites on floodplain more broadly, may indicate a behavioral tendency towards site placement upon the aforementioned terrace landform, or may simply be a result of prehistoric and historic Arkansas River flooding. Additionally, the sites tend to occur in areas where the surface vegetation has been removed. Whether or not this pattern represents human behavior or simply a survey bias is a topic for future investigation, thought the latter seems likely.

Second, while investigation failed to reveal datable charcoal, all of the formal, diagnostic tools date to the Late Archaic period and later. The absence of earlier deposits on these sites indicates that either earlier groups were not using the area in the same way, or perhaps older deposits are simply deeply buried. The widespread use of rock-filled hearths at both 5OT141 and 5OT534 also support a Late Prehistoric age designation. While fire-altered concentrations, representing the remains of rock-inclusive hearth features show up as early as 8000 RCYBP in Colorado, the vast majority date to the last 2000 years (Troyer 2012).

Patterns in raw materials also offer a few insights. Basalts and quartzites dominate every assemblage, save 5OT1359, and are likely locally available. However, cherts and chalcedony are also present on nearly every prehistoric site. Debitage without cortex greatly outnumbers debitage with cortex; cortical material makes up less than 10 percent on all sites except 5OT536. It appears that raw materials entered the sites as prepared tools or bifaces and little if any primary production took place on site. Additionally, there is a remarkable degree of continuity in lithic raw material frequencies between 5OT141

and 5OT534 – the only two sites with fire-altered concentrations (Figure 6.1). However, the two sites differ considerably in terms of the size of the flakes representing each raw material type (Figure 5.17, Figure 5.25, and Figure 6.2). The two likely represent very similar economic organization on site, but the differences in flake size class indicate that the sites were integrated into subtly different annual mobility systems, that resulted in differences in patterned access to raw material sources. 5OT141 is securely dated to 730 +/- 90 RCYBP (Greubel and Reed 1996), but 5OT534 lacks an absolute age determination.

The lithic assemblage of the newly identified prehistoric site, 5OT1359, differs from the other prehistoric sites in the area. Specifically, chert represents nearly 60 percent of the raw material (Figure 5.44, Figure 6.1), whereas, on the other hand, chert makes up between 13 and 18 percent on the other prehistoric sites (5OT141, 5OT534, 5OT536). Additionally, the highest frequency of chert flakes fall within the smaller size classes, which is not uncommon for chert specifically, but unique in that chert is also the most frequent material type on this site. Elsewhere on the property, the dominant raw material type is always best represented in the larger size classes (3+), producing a weak left-tailed distribution. Here, chert size classes produce a more right-tailed distribution. Also noteworthy, chert is the only cortical material on site, but in this case, in the larger size classes. This leads to two seemingly contradictory conclusions: first, the smaller size class representation of non-cortical chert on site would indicate that the material is highly curated, having been brought to the site in prepared forms such as bifaces and other tool types. On the other hand, however, the larger cortical chert flakes would argue that there was some primary reduction of chert taking place on site. Given the differences in the size of the material, basalt and quartzite were likely locally acquired, while chert and chalcedony were acquired from a greater distance.

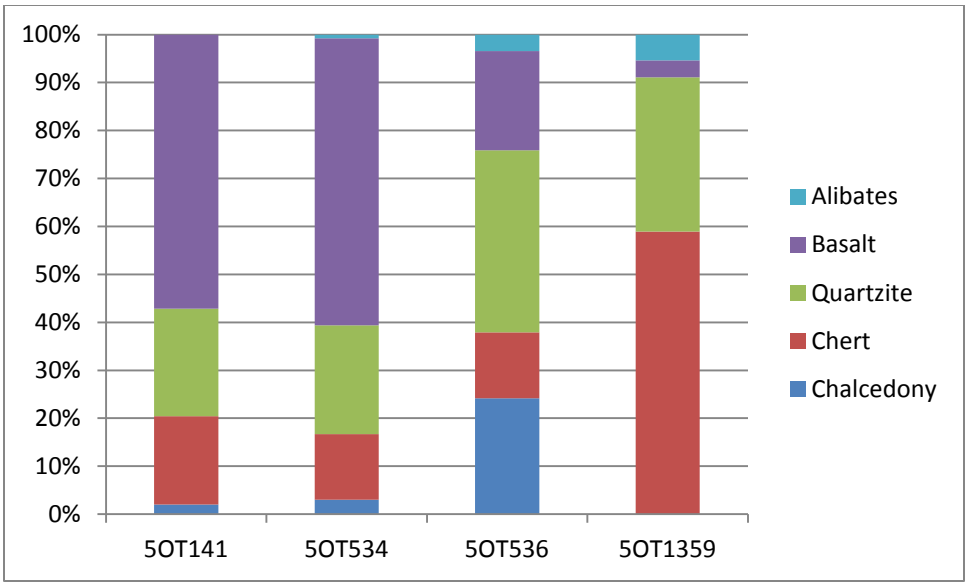

Figure 6.1 Percent representation of raw material types across sites

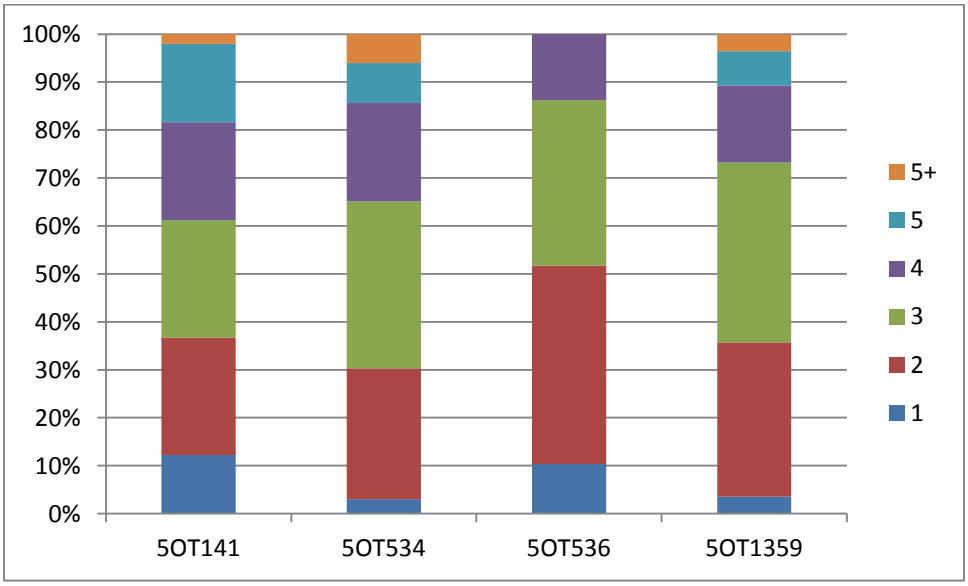

Figure 6.2 Percent representation of flake size class across sites

Along those same lines, Alibates is present on three of the five prehistoric sites (excluding 5OT537 due to low sample size); the flake isolate, 5OT1361, was also made of Alibates. Prehistoric peoples mined Alibates, a high-quality chert, along the Canadian River in the Texas Panhandle, roughly 250 miles south of the study area. Thus, the presence of the exotic material in southeastern Colorado represents either long-distance extraction efforts, or more likely, regional trade networks. The frequency of the Alibates across sites on the Bent's Old Fort property is unusually high, warranting future investigation into spatial distribution of this material and the underlying social/economic networks that brought it to southeastern Colorado. As previously mentioned, Alibates

does not appear in radiocarbon dated contexts in the study area until the Late Archaic period (Eddy et al. 1982: 40), an inference in agreement with the temporal assessments given here.

Table 6.1 lists the variation in tool type diversity across prehistoric sites as recorded in 2011. 5OT141, 5OT534, and 5OT1359 contain the most tool artifacts, as well as the most distinct tool type classes. However, 5OT141 and 5OT534 are the only two sites containing fire-altered concentrations and ground stone, perhaps confirming the inferred use of these features previously discussed in the methods section of this report. It is unsurprising that the highest tool frequencies and the presence of fire-altered concentrations coincide; larger campsites with hearths and campfires most likely represent longer-term occupations, and would thus contain evidence of increased on-site tool production in the form of higher tool and flake frequencies. The comparable frequency of tools and tool forms at the untested 5OT1359 as well as the high density of flakes per acre (Table 6.2) provides further evidence in favor of further investigation.

Additionally, lack of formal tools at 5OT536 is perhaps indicative of curio collecting in the recent past. 5OT536 is very similar in terms of physiographic location on the landscape to the much richer, aforementioned sites, and likely represents a similar landscape use strategy. Along those lines, 5OT536 also contained the most extensive and spatially distinctive (albeit modest) sub-surface deposits (Table 6.2). While it is possible, given the parallels between the tool types, quantity, and physiographic setting between 5OT536 and 5OT141/5OT534, that 5OT536 may represent a similarly organized prehistoric campsite, the extensive testing strategy utilized there failed to confirm significant sub-surface deposits. Surface survey similarly failed to reveal burned material that may indicate buried hearth features.

Site	Projectile	Preform	Biface	Scraper	Drill	Groundstone	Core	Total
5OT141	2		1	3		5		11
5OT534	1	2			1	1	4	9
5OT536								0
5OT537							1	1
5OT1359	1	1	2	1				5

Table 6.1 Intersite comparison of tool type frequencies

Site	Area (acres)	Surface Flake Count	Surface Flake Density (Fk/Acre)	Subsurface Flake Count	Fire-Altered Concentrations	Temporal Affiliation
5OT141	2.5	49	19.6	0	8	LP
5OT534	5	132	26.4	5	8	LA/LP
5OT536	2.07	28	13.52	7	0	Unknown
5OT537	.5	2	4	0	0	Unknown
5OT1359	.98	55	56.12	Not Tested	0	LA

Table 6.2 Intersite comparison of all cultural materials (LA-Late Archaic, LP-Late Prehistoric)

Prehistoric Results and the Prehistory of the Arkansas River Basin

The available evidence in the form of a single radiocarbon date (5OT141: Greubel and Reed 1996) and a handful of diagnostic projectile point tool forms (5OT141, 5OT534, 5OT1359), indicates that this collection of prehistoric sites largely date within the last 3000 radiocarbon years. As such, the following discussion will focus on the utility of the data presented here in addressing broader questions regarding the prehistory of the Arkansas basin specifically within the terminal Late Archaic and Late Prehistoric periods.

Zeir (1999: 137-140) and Kalasz et al. (1999: 181-188, 240-250) outline regional questions relevant to the study of the Arkansas Basin Late Archaic period and Late Prehistoric periods. Though the data collected in 2011 represents the remains of what appears to be typologically similar occupations along alluvial terraces, and therefore does not represent the entirety of either Late Archaic or Late Prehistoric landscape-use strategies, the data is nonetheless useful for addressing some of the questions of the prehistory of the region, particularly continuity or lack thereof between these two periods. That being said however, only through more thorough comparisons to site types from the foothills, mountains, and eastern plains can we fully integrate the Bent's Old Fort prehistoric resources into a temporally and spatially meaningful context.

Given the data presented here, there appears to occupational and economic continuity between Late Archaic and Late Prehistoric use of the area. This is most apparent at 5OT534 where evidence of both periods is present. The aforementioned continuity in tool type diversity and frequency between 5OT141, 5OT534, and 5OT1359 (Table 6.1) suggests similarities in economic organization and on-site activities. 5OT141 and 5OT543 both contain evidence of resource extraction activities (likely plant) in the form of groundstone tools and fire-altered concentrations of rock. Furthermore, the remarkable similarity in flake material type distribution between 5OT141 and 5OT534 (Figure 6.1) suggests continuity in the organization of both sites in annual mobility

systems that has resulted in nearly identical patterns of access to regional raw material sources. The distribution of flake size classes between all three sites also suggests similarly organized annual mobility systems (Figure 6.2); taken together, these three sites demonstrate continuity in Late Archaic and Late Prehistoric occupation of the area.

A Predictive Model for Prehistoric Resources

Given the similarities in prehistoric site location at Bent's Old Fort (be it a result of either behavioral or taphonomic processes) it is possible to query various quantifiable aspects of site location in order to identify areas with similar suites of physiographic characteristics that may also reveal prehistoric human occupation. In this way, I have used ArcGIS and publicly available spatial data sets (the USGS Seamless Server, National Atlas Database) to identify those quantifiable aspects of site setting and produce a map of the Bent's Old Fort Property that highlights areas similar to those with documented archaeological resources that may be targeted for more thorough future archaeological reconnaissance.

The most basic and perhaps most useful geographic data set is the DEM, or digital elevation model. A DEM is digital raster representation of the ground surface; the DEM is generated using remote sensing techniques and, occasionally, land survey data. I downloaded a DEM for the study area from the USGS Seamless server database (http://seamless.usgs.gov/). I calculated slope from the DEM using the 'slope' tool in the Spatial Analyst toolbox (Ver. 9.3.1 Spatial Analyst Tools>Surface>Slope). I calculated topographic change using the 'neighborhood block statistics' tool (Spatial Analyst Tools>Neighborhood>Block Statistics: range) using a 200mx200m window centered over each cell; the cell is revalued to the net range of values within the window. This tool is similar to the slope tool, but uses a larger area and presents the results as a range of values instead of an angle or percent rise. The topographic change raster illustrates the local setting of prehistoric sites, whether they occur on homogenous surfaces or in areas of relief, such as next to a hill. Aspect, the location of a site with regard to cardinal directions (on a north-facing slope, east-facing etc.), is similarly calculated from the DEM data. Lastly, a measure of the total sun exposure for a given area is calculated using the Area Solar Radiation tool (Spatial Analyst Tools>Area Solar Radiation). The tool calculates sun exposure 24 times a day, once every two weeks for the entire year. Thus, the output is a measure of the average sun exposure throughout all four seasons. If the prehistoric sites at Bent's Old Fort can be shown to have been occupied at a particular time of year or within a specific season, the model can be adjusted appropriately. At present, we do not have the kind of seasonal data necessary to make this kind of inference (evidence of seasonally available plants or seasonal faunal characteristics), thus the solar radiation throughout an entire year is the most appropriate measure.

I then projected these four raster layers (slope, aspect, local topographic change, and solar radiation) onto a map of known prehistoric site point locations, the value of each raster layer is extracted for each point, and the data recorded.

Having recorded a series of observations for each data set, I calculated the standard deviation of the observations and reclassified the raster layers according to the range of 1 standard deviation above and below the mean (Spatial Analyst Tools>Raster>Reclass), in effect creating a probabilistic location model. I gave raster cells that fell outside the specified range a value of 0, and those that fell within the specified range a value of 1 (Figure 6.3). The purpose of using the standard deviation as opposed to the total range of observed values is that the variance between archaeological sites can be very large and the standard deviation allows for more refinement of the general pattern and the subsequent prediction by eliminating outlier data.

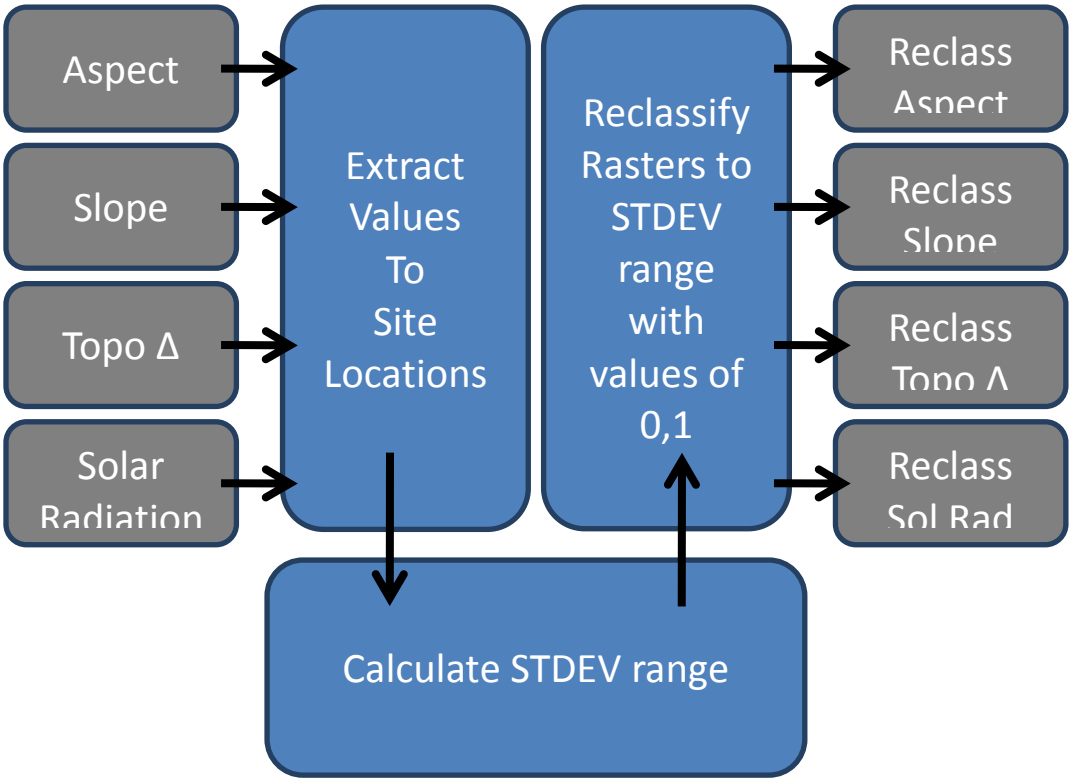

Figure 6.3 Summary of predictive model developmental methodology

I then added the reclassified raster layers together using the plus tool (3D Analyst Tools>Raster Math>Plus), to produce a gradient of values of locational range conditions

met (Figure 6.4, Figure 6.5Figure 6.4 Reclassified raster layers representing one standard deviation range of observed prehistoric site location attributes.).

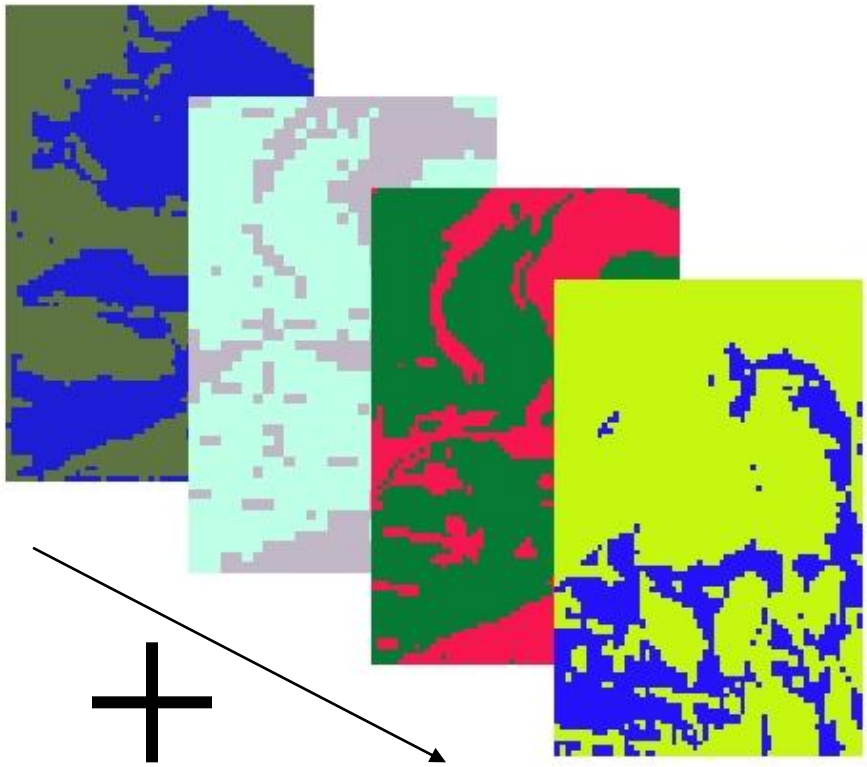

Figure 6.4 Reclassified raster layers representing one standard deviation range of observed prehistoric site location attributes. Layers are added together to produce a map of high-probability prehistoric occupation areas.

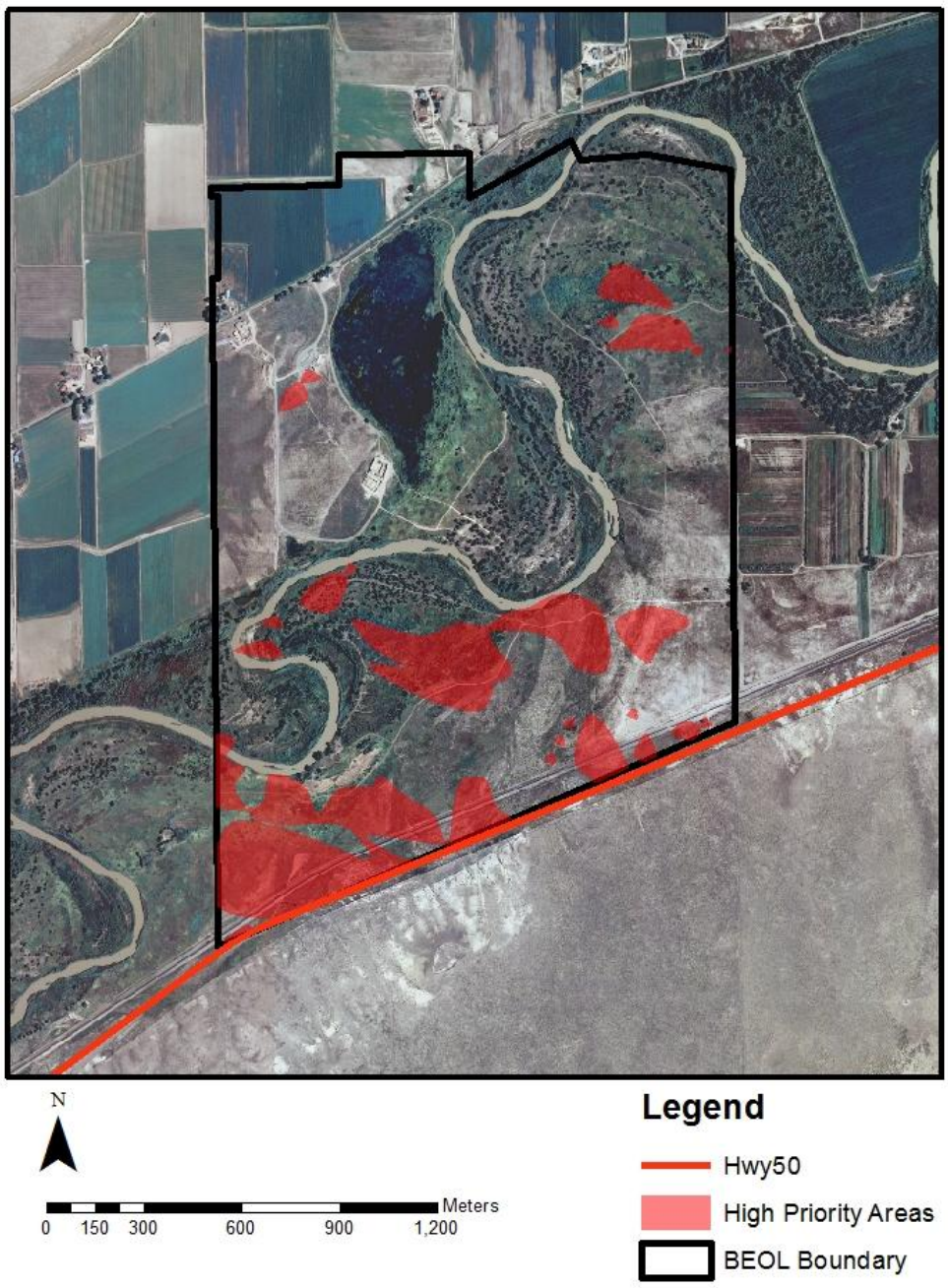

Figure 6.5 Areas within Bent's Old Fort National Historic Site with a high probability of prehistoric occupation based on known site locations

Unsurprisingly, the model predicts occupation along the southern border of the property on terraces above the Arkansas River. Perhaps more surprising however, the

model also predicts several high-probability areas on the flood plain proper. Vegetation is more of an issue to site discovery here than on the higher, wind-scoured terraces, and may be a large part of why almost no sites are known from these areas. Periodic flooding of the Arkansas River has undoubtedly obfuscated what archaeological record may have been present. Nonetheless, the model indicates a similarity between these areas and known occupations, providing a framework for future investigation. Of particular interest, Protohistoric occupation (that is, the campsites of groups trading at Bent's Old Fort) may be located within the flood plain, nearer the fort itself. If this is the case, the areas identified by the model may contain such evidence, as they have been herein demonstrated to have appropriate campsite characteristics.

Historic Results

All three historic sites investigated in 2011 are domestic trash middens dating to the 1940's and later. Notably, not one of the middens revealed yellow, aqua, or amethyst glass, which was in use until the 1920's, and all the glass was machine made. Additionally, all contained evidence of recent, non-historic use, i.e. stay-tab cans and modern manufacturing techniques. 5KW215 contained evidence of ranch related activities in the form of a discarded stock tank. The source of the domestic material at 5OT558 and 5OT1360 was likely farmhouses located north of the present Colorado Highway 194; the area north of the road is privately held and was not surveyed. The source of the material at 5KW215 is not precisely known, as it appears that the material is secondarily deposited and arrived on site via vehicle transportation. Accordingly, the material may have come from anywhere in the vicinity. As noted in the Sand Creek Massacre Project report (Volume 2, 2000) the Sand Creek massacre site has been used for farming and ranching throughout the twentieth century and at least two abandoned ranch complexes exist in the area and at least thirteen landowners formerly had property within the boundary of the site. Thus, the material may have come from any number of households in the near area. The Sand Creek Massacre National Historic site visitor's center currently sits on the location of one of these past homesteads and given the proximity to the site (<1 mi) is a likely source of the material; the Kiowa County Assessor lists the ownership of the property below, and thus, the material may be associated with one or more of these individuals:

- NPS purchased the property in 2005
- Bill Dawson from 1963 until about 2005
- Levi Ruthlidge from 1948 - 1963
- H R Webster from 1944 - 1948
- The McCluskey Brothers 1930 - 1944
  (Karl Zimmerman, personal communication, Nov 2011)

Given the available data regarding property ownership and residence, none of the historic trash middens are associated with individuals or events of historical significance. All lack architecture and represent only the accumulation of domestic waste. Accordingly, the deposits have little potential to provide additional data useful for understanding historic use of the area.

CMPA Recommendations

Given the badly eroded character, sparse subsurface deposits, general lack of temporally diagnostic materials, and lack of datable charcoal, the prehistoric sites 5OT141, 5OT534, 5OT536, and 5OT537 are deemed not eligible for inclusion on the National Register of Historic Places. These recommendations are in contrast to those previously given (Greubel and Reed 1996, Dawson and Maass 1994; Table 3.1).

A summary of the similarities and differences between this and previous determinations with regard to NHRP eligibility is outlined on a site-by-site basis below:

- 5OT141 – Greubel and Reed (1996: 21) provide a NRHP eligible determination for 5OT141 based on the presence of intact buried features and the potential for macrobotanical/faunal evidence. The 2011 investigation failed to confirm the presence of intact or buried features. The hearths recorded in 2011 were very sparse and scattered, indicative of extensive surface erosion. Additionally, Greubel and Reed indicate that the absence of subsurface materials in 1996 shovel tests may not be indicative of the subsurface character of the entire site. More widespread testing in 2011 indicates that an absence of subsurface material does in fact characterize the entire site and there is no subsurface component.

- 5OT534 - Greubel and Reed (1996: 27) provide a NRHP eligible determination for 5OT534 based on the presence of shallowly buried deposits. The 2011 investigation similarly revealed spatially distinct, shallow deposits. However, the subsurface deposits are extremely sparse and inconclusive as to temporal or cultural affiliation. Additionally, extensive surface erosion is evident in the highly variable distribution of fire-altered rock. Though the location of the fire-altered rock clusters correspond to the surface distribution of lithic material, the lack of charcoal and soil discoloration indicates that the features no longer retain any integrity and consequently do not possess potential to provide additional information relevant to the understanding of prehistory in the area.

- 5OT536 - Greubel and Reed (1996: 30) provide a NRHP eligible determination for 5OT536 based on the presence of shallowly buried cultural materials. 2011 investigations similarly noted shallowly buried materials, but of a sparse and technologically/temporally indistinct nature. Given the low flake density and ambiguous cultural affiliation, we conclude that the site does not have potential to

provide additional information relevant to the understanding of the Arkansas Valley prehistory.

- 5OT537 – Dawson and Maass (1994) provide a NRHP eligible determination for 5OT537 based upon the presence of finely flaked lithic material and the location of the site within the floodplain, which they interpret as evidence of a Protohistoric temporal affiliation. The 1996 (Greubel and Reed) and 2011 reinvestigations failed to corroborate a Protohistoric affiliation. Indeed, the assemblage at 5OT537 is extremely thin and ambiguous as to the age and cultural affiliation. Additionally, shovel testing failed to demonstrate buried components, neither on site as previously recorded, nor further to the west where additional materials were hypothesized. Accordingly, we, conclude that 5OT537 does not possess additional data pertaining to the prehistoric or Protohistoric use of the area.

	CMPA 2011	Greubal and Reed 1996	Dawson and Maass 1994
5OT141	No	Yes	Yes
5OT534	No	Yes	Yes
5OT536	No	Yes	Yes
5OT537	No	No	Yes

Table 6.3 Summary of NRHP eligibility determinations

The newly identified prehistoric site, 5OT1359 needs further testing to delineate the surface boundaries of the material as well as to test for the presence of subsurface components. Given the proximity of 5OT1359 to the Oxbow State Wildlife Area access road, further investigation should be given high priority status. The newly identified lithic isolate does not require additional research and is not eligible for inclusion on the National Register of Historic Places.

The historic sites, 5OT558, 5OT1360, and 5KW215, represent 1940's and later domestic trash middens. 5KW215 also contains evidence of ranch-related activities. Given the present data, the deposits are not associated with any person or event of historical significance. Additionally, given the general domestic waste character of the deposits, they are unlikely to provide additional information relevant to understandings of the historic use of the Bent's Old Fort National Historic Site and Sand Creek Massacre National Historic Site properties. Taken together, these sites are deemed not eligible for inclusion on the National Register of Historic Places.

Site	NRHP Evaluation	Management Recommendation
5KW215	Not eligible	No further archaeological work is recommended.
5OT141	Not eligible	No further archaeological work is recommended.
5OT534	Not eligible	No further archaeological work is recommended.
5OT536	Not eligible	No further archaeological work is recommended.
5OT537	Not eligible	No further archaeological work is recommended.
5OT558	Not eligible	No further archaeological work is recommended.
5OT1359	Needs Data	Further testing is recommended.
5OT1360	Not eligible	No further archaeological work is recommended.
5OT1361	Not eligible	No further archaeological work is recommended.

Table 6.4 Summary of management recommendations

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Appendices

A. Shell Data

Site	5OT141	Date	7.20.11	Recorder	DCS/TRC/WLH/MDT

All in mm

Feature #	Type	Material	Length	Width	Thickness	Comments
1	Shell Frag	Mollusk	33.46	15.55	2.17	Piece of bivalve, has lip, isolated
2	Shell Frag	Mollusk	-	-	-	Size Class 2
3	Shell Frag	Mollusk	-	-	-	Size Class 2

Site	5OT536	Date	7.19.11	Recorder	DCS/TRC/WLH/MDT

All in cm

Feature #	Type	Material	Pieces	Scatter Size	Max Length	Max Width	Max Thickness
1	Shell Scatter	Mollusk Shell	11	20x15cm	1.97	1.72	.37

B. Site Setting Summary

Datum: NAD 83 - 13N

Site	Date Recorded	Type of site	Description	Artifact Type
5OT141	7.20.11	Prehistoric	Lithic Scatter	Lithics
5OT534	7.21.11	Prehistoric	Lithic Scatter	Lithics/FCR
5OT536	7.19.11	Prehistoric	Lithic Scatter	Lithics
5OT537	7.22.11	Prehistoric	Lithic Scatter	Lithics
5OT558	7.23.11	Historic	Trash Midden	Glass/Ceramic
5OT1359	7.22.11	Prehistoric	Lithic Scatter	Lithics
5OT1360	7.23.11	Historic	Trash Midden	Glass/Ceramic
5OT1361	7.24.11	Prehistoric	Flake Isolate	Flake
5KW215	7.25.11	Historic	Trash Midden	Glass/Ceramic

Site	Exposure	On site slope	On site aspect	Depostional Environment	Erosion	Soil Texture
5OT141	Surface	5-10	N	Alluvial	Eolian	Silty Clay
5OT534	Surface	<5	N	Alluvial	Eolian	Silty Clay
5OT536	Surface	<5	N	Alluvial	Eolian	Sandy Clay Loam
5OT537	Surface	<5	360	Alluvial	Eolian	Silty Clay
5OT558	Cutbank	<5	S	Alluvial/Colluvial	Alluvial	Clay
5OT1359	Surface	<5	N	Alluvial	Eolian	Silty Clay
5OT1360	Surface	<5	S	Alluvial/Colluvial	Human Action	Clay/Silty Clay
5OT1361	Surfae	<5	S	Aluvial	Eolian/Human Action	Silty Clay
5KW215	Arroyo/surface	<5	N	Colluvial	Alluvial	Sandy Clay Loam

Site	% Grasses	% Sagebrush	% Yucca	% Other
5OT141	40	20	0	0
5OT534	20	0	0	0
5OT536	25	25	0	0
5OT537	40	40	0	0
5OT558	60	0	0	0
5OT1359	30	0	0	0
5OT1360	70	10	0	0
5OT1361	30	10	0	0
5KW215	20	20	0	0

Site	Comments
5OT141	Bounded between HWY 50 ROW and railroad ROW - scatter discrete within
5OT534	Straddles a shallow draw, on prehistoric terrace edge
5OT536	Bounded between HWY 50 ROW and railroad ROW - scatter discrete within
5OT537	On slight rise east of south trending bend in Arkansas River
5OT558	Heavily disturbed from road
5OT1359	Near railroad ROW and Park Service access road
5OT1360	Vegetation line forms southern boundary - discrete scatter
5OT1361	On slight rise east of south trending bend in Arkansas River, NE of 5OT537
5KW215	Arroyo bank, fill, and adjoining areas