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Midwest Archeological Center
Lincoln, Nebraska

ARCHEOLOGICAL INVENTORY AT MULTIPLE LOCALITIES, BADLANDS NATIONAL PARK, SOUTH DAKOTA

By
Erin C. Dempsey

Archeological Report 7

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This report has been reviewed against the criteria contained in 43CFR Part 7, Subpart A, Section 7.18 (a) (1) and, upon recommendation of the Midwest Regional Office and the Midwest Archeological Center, has been classified as

AVAILABLE

Making the report available meets the criteria of 43CFR Part 7, Subpart A, Section 7.18 (a) (1).

ABSTRACT

Midwest Archeological Center (MWAC) personnel completed archeological inventories at a number of project localities in the north and south units at Badlands National Park (BADL), South Dakota, in July 2012. The majority of work was related to Maintenance activities and included shovel test and/or pedestrian inventories in advance of fenceline installation or replacement at three housing units and the bison corral, trail improvements at Pinnacles Overlook and the Notch Trail, sand shed construction at the Maintenance facility, and housing unit construction at the White River Visitor Center in the South Unit. Several site condition assessments were also completed. Miscellaneous projects involved removing material from a small hearth discovered eroding out of a social trail at Ancient Hunters Overlook and a site visit to Johnny Spring, which the park considered developing for bison use. In addition, a pedestrian inventory was conducted across the Kelly parcel, a tract of land that currently belongs to the U.S. Forest Service, but will be traded with a private landowner who currently grazes cattle there in exchange for his inholding within BADL.

ACKNOWLEDGEMENTS

This project would not have been possible without the invaluable support of BADL staff, including Superintendent Eric Brunneman, Museum Technician Megan Cherry, Supervisory Ranger Aaron Kaye, and Facility Management Systems Specialist Ken Thompson. The efforts of tribal liaison Mike Catches Enemy and Nebraska National Grasslands and Forests Archeologist Kristina Hill were also much appreciated. The hardworking field crew consisted of Laura Bender and Allison Young. Finally, thank you to Vergil Noble, Jeff Larson, and Allan Weber for their efforts to produce this report.

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ARCHEOLOGICAL INVENTORY AT MULTIPLE LOCALITIES, BADLANDS NATIONAL PARK, SOUTH DAKOTA

Introduction

The Midwest Archeological Center (MWAC) conducted archeological investigations at Badlands National Park (BADL) in July 2012. The primary goal was to complete pedestrian and/or shovel-test inventory at multiple locations across the North Unit and in the area of the White River Visitor Center in the South Unit as part of the Park's Section 106 compliance efforts. In addition, we conducted a pedestrian inventory of a 640-acre parcel of U.S. Forest Service (USFS) land. This land will be traded to a private landowner (Mr. Kelly) in exchange for the inholding of land Mr. Kelly currently retains within BADL's legislative boundary.

The MWAC field crew included Archeologist Erin Dempsey and archeological technicians Laura Bender and Allison Young. We were assisted by a number of BADL staff. Museum Technician Megan Cherry and Supervisory Park Ranger Aaron Kaye coordinated our work in the Park. Invaluable assistance and guidance was provided by Superintendent Eric Brunnemann, Facility Management Systems Specialist Ken Thompson, and members of the Resource Management Team, including Wildlife Biologist Eddie Childers and Resource Management Specialist Brian Kenner. Oglala Sioux Tribal Liaison Mike Catches Enemy monitored our work in the South Unit. We coordinated with Nebraska National Forests and Grasslands Archeologist Kristina Hill to survey the Kelly land exchange parcel.

Environmental Setting

BADL preserves a portion of the highly dissected White River Badlands, which are situated in the Pierre Hills and Tertiary Table Lands divisions of the Unglaciated Missouri Plateau, Great Plains physiographic province (Fenneman 1931). Ward (1922) identified four surfaces in the topographic sequence: the Upper Prairie surface, the Badlands Wall, the Lower Prairie surface, and the modern White River floodplain. The White River Badlands are highly dissected and the formations erode at a rate of 1 inch per year. Permanent and intermittent springs, streams, and seeps exist throughout the Park. During the Historic period, a number of these features were dammed to form feed ponds. Springs occur mostly on the Upper Prairie surface.

Dominant vegetation types include mixed grass species, sage, prickly pear cactus, and narrow leaf yucca. Hardwood trees may be found in draws, and groves of Rocky Mountain juniper exist in well-watered portions of the Badlands Wall (Churchill 1981; Kuehn 2003). The modern climate is continental with strong seasonality. Average rainfall measures 15.52 inches, the majority of which falls between April and September.

Cultural Context

People have lived in the western plains of South Dakota for approximately 12,000 years. Paleoindians (12,000-6,000 years BP) occupied the area during the late Pleistocene and early Holocene, practicing a subsistence and adaptive strategy of big-game hunting.

The most diagnostic artifacts from this period are fluted projectile points, which were often knapped from exotic raw material. In BADL, evidence for these early inhabitants is ephemeral; only isolated Paleoindian artifacts have been found within the Park boundaries (Falk et al. 1978; Jones 1993). The Lange-Ferguson site, an intact Clovis-age mammoth kill site is located south of the Park's South Unit (White and Hannus 1985; Hannus 1990). The Plains Archaic (6,000-2,250 years BP) period is marked by a transition to smaller points made of locally sourced material. Compared to other regions of the Great Plains, Plains Archaic and Plains Woodland (2,250-1,100 years BP) cultural occupations in the Park are also poorly represented in BADL (Jones 2002). Plains Village tradition (1,100-200 years BP) archeological sites are well documented through what appear to be short-term camp or multi-use sites (Jones 2002).

Field Methods

Field methods included both pedestrian survey and shovel-test inventories, depending upon the individual requirements of the project component.

Pedestrian surveys were completed at two localities: the Kelly Parcel and Notch Trail. At the Kelly Parcel, half of the project area was surveyed at 15-m intervals and half at 30-m intervals. Though surface visibility varied between 0 and 40% at this locality, the USFS did not request a shovel test inventory in addition to the pedestrian inventory. Notch Trail runs over highly eroded Badlands formations and winds along a steep drop off. The trail was too narrow to survey at traditional intervals. Instead, the crew spread out as much as the terrain allowed and did their best to scan the area between the formation slope and the drop off.

Shovel testing was used as an inventory technique at the majority of localities investigated during the project. Shovel tests had a diameter of 30 cm and were excavated to a depth of at least 40 cm below surface, depending on the soil. Sediments were screened through ¼-in hardware cloth. Generally, shovel tests were excavated on a 10-m grid. Full grids were not excavated at each locality. In some cases, intervals were expanded to as much as 20 m if artifacts were not being encountered. Shovel tests were numbered sequentially, either overall or by transect.

Curation

The project archives are curated at MWAC under accession MWAC- 1503, BADL-671. Archives include shovel test forms, site forms, site condition assessments, photo logs, photographs (both black-and-white film and digital), field notes, the work plan, and other project correspondence. Photos and locations of materials found at the Kelly Parcel were provided directly to the USFS, though the originals will be permanently curated at MWAC under an agreement with the USFS. Information from site condition assessments has been entered into the Archeological Sites Information Management System (ASMIS) and the completed forms added to the site files.

Results

The results of work at each locality are summarized below. Site management recommendations are made where appropriate.

North Unit

Sand Shed

The Park proposes to build a sand shed immediately south of the Maintenance buildings, near the Badlands formations that separate the complex from the Bone Yard. Historic photographs depict mounds of gravel and heavy machinery in the project area. We excavated nine shovel tests in a roughly 30-m-x-20-m grid (Figure 1 and 2). No artifacts were recovered during the inventory. All shovel tests encountered bedrock at approximately 30-40 cm below surface. No additional archeological work is recommended in the sand shed area.

Bison Corral

Several projects are proposed at the bison corral. One of these projects, the rehabilitation and replacement of the holding pen fences, was deemed too large to complete during our visit. Instead, we focused our efforts on the wing fence extensions.

At the westernmost fence extension, we excavated nine shovel tests in a rough 10-m-x-1-m grid (Figures 3, 4, and 5). No excavations took place on the slope into the drainage formed by the CCC dam. At the top of the slope, soil stratigraphy is brown/gray silty clay loam over stratified orange and maroon clay mixed with limestone. At the base of the slope, stratigraphy consists of unsorted colluvium. One possible lithic artifact was recovered from a shovel test. No archeological resources will be adversely impacted by wing fence construction, and further archeological work at this locality is not necessary.

On our way back to the vehicle, we observed several artifacts on the surface approximately 50 m east of the fence extension including one core, two flakes, and one tested cobble (Figures 6 and 7). This site was designated 2012-1 in the field and later given South Dakota site number 39PN3476. We took GPS coordinates of each artifact and collected them. The core and one flake were exposed in a two-track road. The site's extent is unknown at this time. Because the site is unevaluated and its eligibility for inclusion on the National Register of Historic Places is unknown, when the wing fence is constructed I recommend that care be taken to drive heavy machinery and vehicles around the landform on which the site is situated.

During work at the fence extension immediately west of the main bison corral, we excavated 19 shovel tests at 10-m intervals along the fence's proposed route (Figure 8 and 9). Nine of the shovel tests were positive for cultural material. Artifacts (chipped stone debitage) were encountered as deep as 20 cm below surface. As long as the fence follows the proposed path, it will not adversely affect archeological resources. However,

given the subsurface position of some artifacts, an archeological site evaluation is recommended in the future.

A section of boundary fence at the bison corral is slated for replacement in FY 12. The posts will be positioned at different intervals than they currently stand, and a shovel test inventory was recommended in the absence of ground visibility. We excavated 38 shovel tests along the fence beginning at 10-m intervals and switching to 15- and 20-m intervals (Figures 10 and 11). No artifacts were recovered and no archeological resources will be adversely impacted by fence replacement. No further archeological work is recommended at this locality.

Quarters 28, 29, and 60 Fencing

The yards at three housing units are slated for fence installation. We completed shovel test inventories along the proposed fence route at each house. Three shovel tests were excavated at both quarters 28 (Figure 12) and 29 (Figure 13) in the Cedar Pass housing area, all negative for cultural material (Figure 14). At Quarters 60, we excavated seven shovel tests (Figure 15), which again did not yield cultural material (Figure 16). Soils at all three housing units are disturbed (compacted and clayey). No archeological resources will be negatively impacted by fence installation at these localities and no additional archeological work is recommended.

Pinnacles Overlook Social Trails

The Park proposes to harden two social trails at Pinnacles Overlook. First, we completed a pedestrian survey across the landform and determined that visibility was very poor. Second, we completed shovel-test inventories along each trail (Figure 17). At the easternmost trail, we excavated two shovel tests along the social trail (Figure 18). At the westernmost trail, we excavated 16 shovel tests along the trail (Figure 19). No artifacts were recovered during these excavations. Overall, soils are compact and gravelly. Two shovel tests along the west trail appear to have natural mollic soil profiles. Given the history of disturbance at Pinnacles Overlook, the potential for archeological resources is low and the proposed trail work will not adversely impact any such resources. No additional archeological work is recommended at Pinnacles Overlook.

Johnny Spring

Johnny Spring is one of the few perennial springs in the western part of the North Unit and may be developed in order to keep the bison herd watered. Lithic artifacts have been observed on the surface above the spring. Park staff asked us to determine if a shovel test inventory is feasible in and around the spring. Upon our site visit, we found the spring bowl to be steep, narrow, and boggy at the bottom. Bison trampling is apparent and hoof prints sink as deep as 30 cm below surface. The area above the spring should be shovel tested as visibility is roughly 20%. I recommend that Park staff develop a more detailed plan of action for work at the spring, including a route for heavy machinery. Once this plan is in place, a shovel-test method may be devised that better serves the Park's needs.

Notch Trail

To make Search and Rescue operations along the Notch Trail easier and safer for emergency responders, the Park proposes to flatten certain sections of the trail at points beyond the wooden ladder (closer to the Notch). We conducted a pedestrian survey along the trail, which runs on bedrock between the ladder and the Notch. No artifacts were observed on the surface and the potential for archeological resources to exist along this portion of the trail is extremely low. No further archeological work along this portion of the North Trail is needed.

39PN9 (Ancient Hunters)

During a site condition assessment at 39PN9, we discovered a small hearth feature with faunal remains, charcoal, and debitage eroding out of a social trail leading up to the plateau on the south side of the road (Figure 20). The feature was at approximately 0.5 m below surface before slumping occurred off the edge of the plateau. We photographed and took GPS coordinates of the feature. After consulting with Supervisory Archeologist Jeff Richner, we decided to collect charcoal and faunal samples from the feature. As we collected the samples, it was clear the feature was ephemeral and had mostly eroded away. No additional archeological work is needed at the hearth location. It is my recommendation that one trail at the Ancient Hunters Overlook be hardened. New waysides might better describe the site and encourage visitors to protect and preserve the Park's archeological resources by staying on the trail. The social trail should then be revegetated.

Site Condition Assessments

We completed 22 site condition assessments in the North Unit. Table 1 indicates the site number, site name (if applicable), site type, and the site's current condition. Eight of the 22 sites visited are in fair condition. This is mostly the result of erosion and bison and/or prairie dog activity.

Kelly Parcel

As part of a land exchange between the USFS, Mr. Kelly, and the Park, we agreed to survey a 640-acre parcel of USFS land that is situated approximately one mile north and west of the Pinnacles Entrance Station (Figure 21). We conducted pedestrian survey transects at 15-m intervals in the east half of the project area, switching to 30-m intervals in the west half of the project area on the advice of USFS Archeologist Hill. We recorded one historic dump near the center of the parcel as site 39PN3505, which included fragments of glass and ferrous metal. A single isolated fragment of metal was found on the parcel's northern boundary. One historic homestead was recorded as site 39PN3504 approximately 300m west of the parcel's western boundary (Figure 22). As mentioned above, the GPS coordinates and photographs from these localities will be given directly to the USFS. Hill indicated that subsurface archeological work is not necessary at the parcel.

South Unit

Quarters 252 (White River Development Area)

Site 39SH16 was previously recorded through pedestrian inventory in the area of the White River Visitor Center (Falk et al. 1977). An additional pedestrian inventory was conducted by Messerli et al. (2003). Though utilities run in 12-ft-wide disturbance corridors across the area where Quarters 252 will be built, in order to understand 39SH16's extent better, a shovel-test inventory was recommended. We completed a 50-m-x-50-m shovel-test grid in the area between the existing housing unit (Quarters 200) and the leachfield (North/South) and the fence line and old driveway/garage (East/West). Thirty-one shovel tests were excavated in the project area (Figures 23 and 24), and disturbed soil profiles were encountered in all. The southernmost transect of shovel tests contained gravel. No artifacts or features were recovered from the excavations and no archeological resources will be adversely impacted by the construction of Quarters 252. Based upon our work and a discussion with Utility Systems Repair Operator Russ Logan, it is apparent that utility work has disturbed much of the White River Development Area. Logan indicated that the picnic area to the west of the Visitor Center is relatively undisturbed. Additional archeological work should be completed in and around the picnic area to complete the assessment of impacts to 39SH16 and determine what portion, if any, of the site remains intact.

Summary and Conclusions

During the 2012 field season at BADL, several archeological inventories were successfully completed. Only a few of the project localities yielded cultural material and in many cases, soil profiles were not intact. In most cases, no further archeological work is necessary at the localities discussed in this report, however some would benefit from additional research. Those recommendations are included in the above summaries.

BADL preserves a unique archeological and environmental landscape. While much is known about the cultural and physical histories in the greater BADL area, continued inventory and research at the Park will help us better understand the specifics of human-landscape interaction in the Badlands proper during the late Pleistocene and throughout the Holocene.

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TABLES

Table 1. Summary of site condition assessments completed during July 2012.

Site Number	Site Name	Site Type	Condition
39PN9		artifact scatter	fair
39PN337		quarry	good
39PN336		quarry	good
39PN335		quarry	good
39PN334		quarry	good
39PN333		lithic workshop	good
39PN332		lithic scatter	good
39PN331		lithic workshop	good
39PN330		artifact scatter	good
39PN329		lithic scatter	good
39PN22		lithic, ceramic scatter; hearth	fair
39PN21	Hocking	lithic scatter	fair
39PN1929		lithic scatter	good
39PN1911		lithic scatter	fair
39PN1905		lithic scatter	good
39PN1904		lithic scatter	fair
39PN1544	Buffalo Spring	lithic, artifact scatter	good
39PN1174	BADL-91-05	artifact scatter	good
39PN1135	Grand Hotel	artifact scatter	fair
39JK4	Johnnie	artifact scatter	fair
39JK37		historic structure	good
39JK205	Cliff Shelf	lithic scatter; hearth	fair

FIGURES

Figure 1. Overview of the shovel test area where the Maintenance sand shed is slated for construction. Allison Young and Laura Bender excavated shovel test N30 E20. View west.

Figure 2. Aerial map showing shovel test locations at the sand shed project area.

Figure 3. Overview of new wing fence area, west of the bison corral. The wing fence extension will cross over the drainage in the background. Laura Bender and Allison Young excavate at shovel test N20 E30. The screen at right is at shovel test N30 E20. View west northwest.

Figure 4. End of the existing wing fence showing bison- and vehicle-related disturbance. View east.

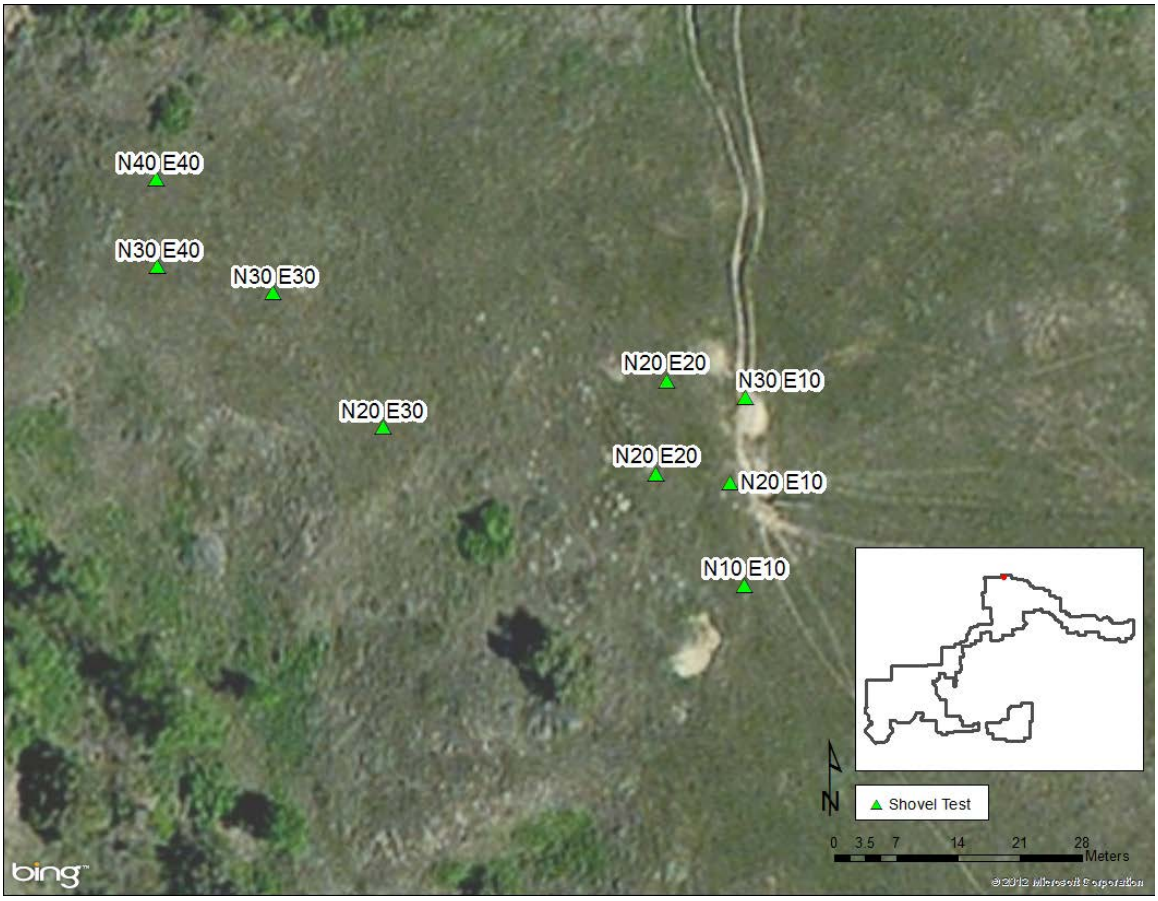

Figure 5. Aerial map showing shovel test locations, animal trails, and two-track road at the wing fence extension area. The existing wing fence ends immediately east of shovel test N20 E10.

Figure 6. Artifacts collected from surface at 39PN3476.

Figure 7. Overview of site 39PN3476 and wing fence. Allison Young and Erin Dempsey record artifacts while standing on the two-track road on the left side of the frame. View northeast.

Figure 8. Overview of the bison corral fence extension area. View northeast.

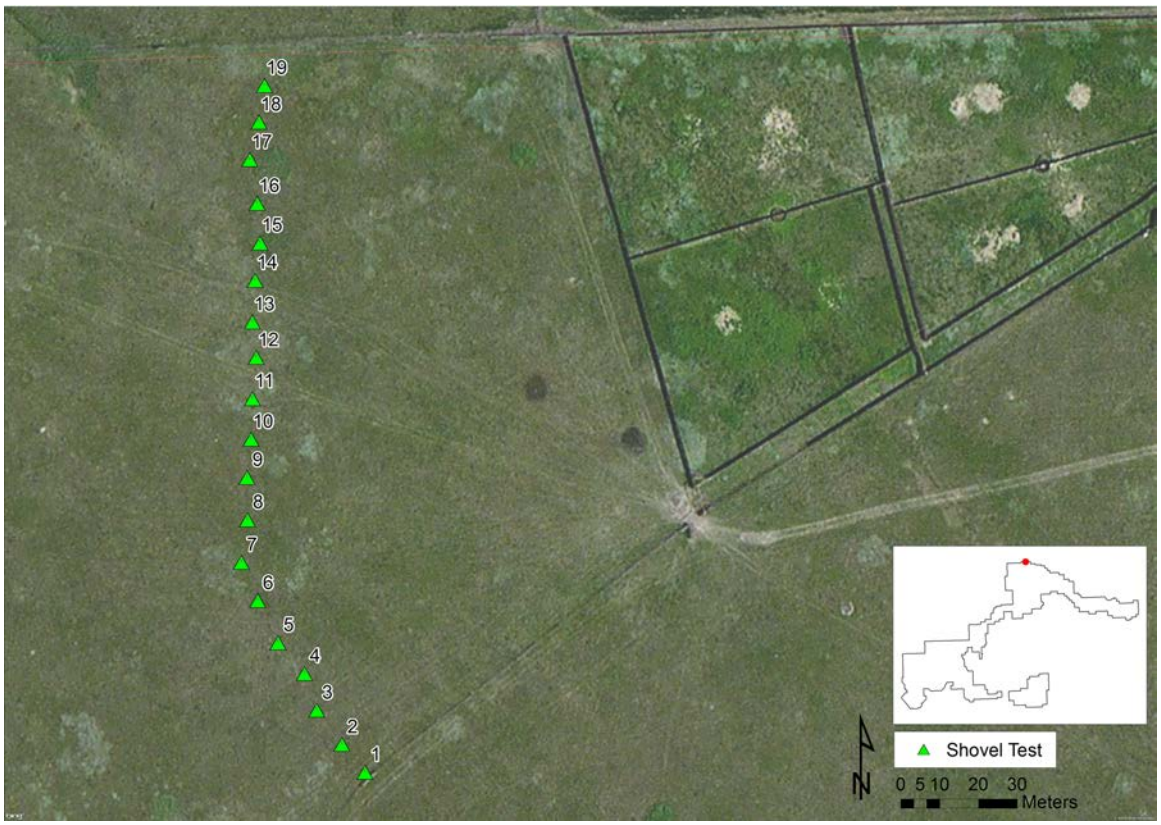

Figure 9. Aerial map showing shovel test locations at the bison corral fence extension area.

Figure 10. Overview of the boundary fence shovel test area within the bison corral. Allison Young and Laura Bender excavate shovel test 10. View northeast.

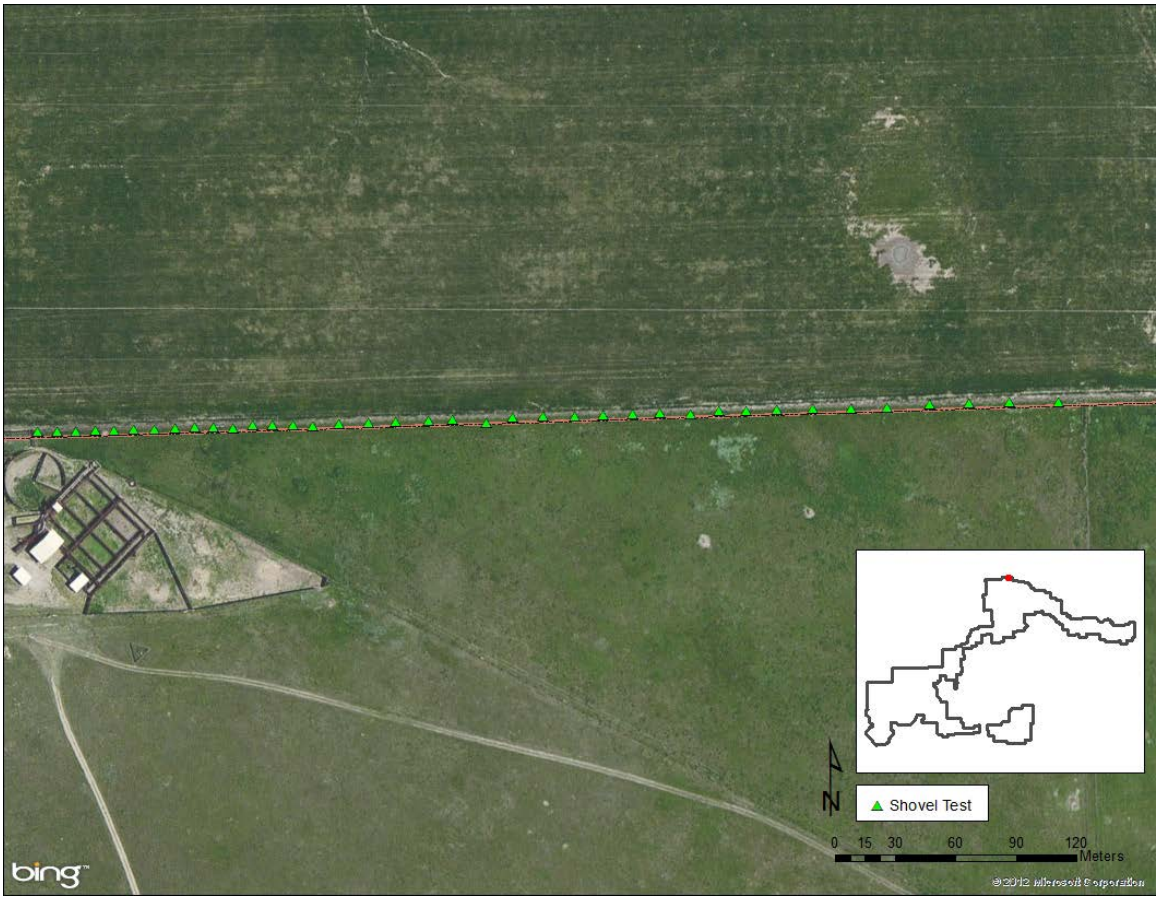

Figure 11. Aerial map showing the boundary fence shovel test area at the bison corral. Shovel tests were numbered sequentially, 1-38, from west to east.

Figure 12. Overview of shovel test area in advance of privacy fence installation at Quarters 28. Erin Dempsey and Laura Bender excavate shovel test 1.

Figure 13. Overview of the shovel test area at Quarters 29. Laura Bender and Allison Young excavate shovel test 1 in advance of fence installation.

Figure 14. Aerial view of shovel test locations at quarters 28 and 29.

Figure 15. Overview of shovel test area at Quarters 60 (Pinnacles Ranger Station). Erin Dempsey and Laura Bender excavate shovel test 3.

Figure 16. Aerial view of the shovel test locations at Quarters 60. Shovel test 7 was not excavated because of proximity to the water line.

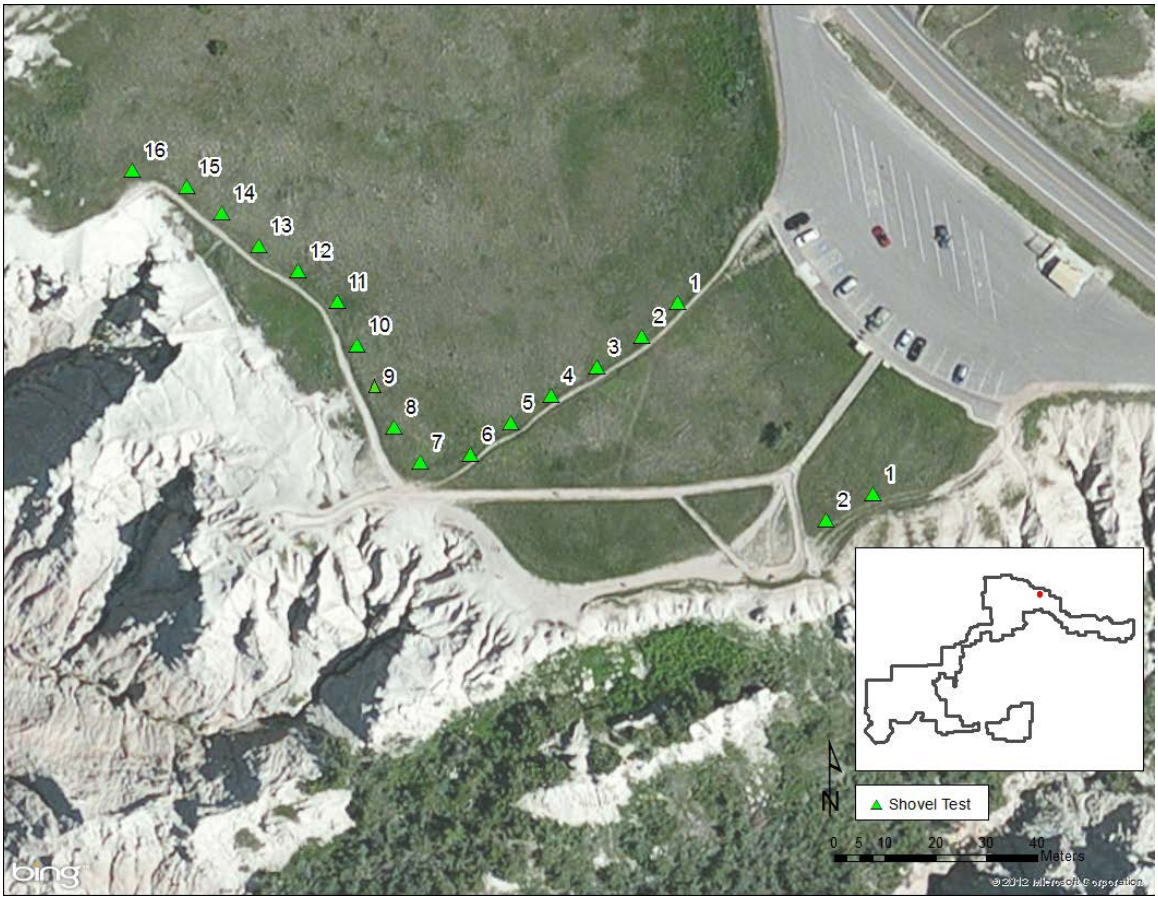

Figure 17. Overview of shovel test locations at Pinnacles Overlook.

Figure 18. Overview of the easternmost social trail and associated erosion at Pinnacles Overlook.

Figure 19. Overview of western most social trail at Pinnacles Overlook. Allison Young and Laura Bender excavate a shovel test in the left part of the frame. The trail turns west at the overlook (where people are standing in the left part of the frame) and runs along the edge of the formation toward the center part of the frame.

Figure 20. Hearth eroding out of a social trail at the Ancient Hunters site (39PN9). The hearth yielded charcoal, bone, and debitage.

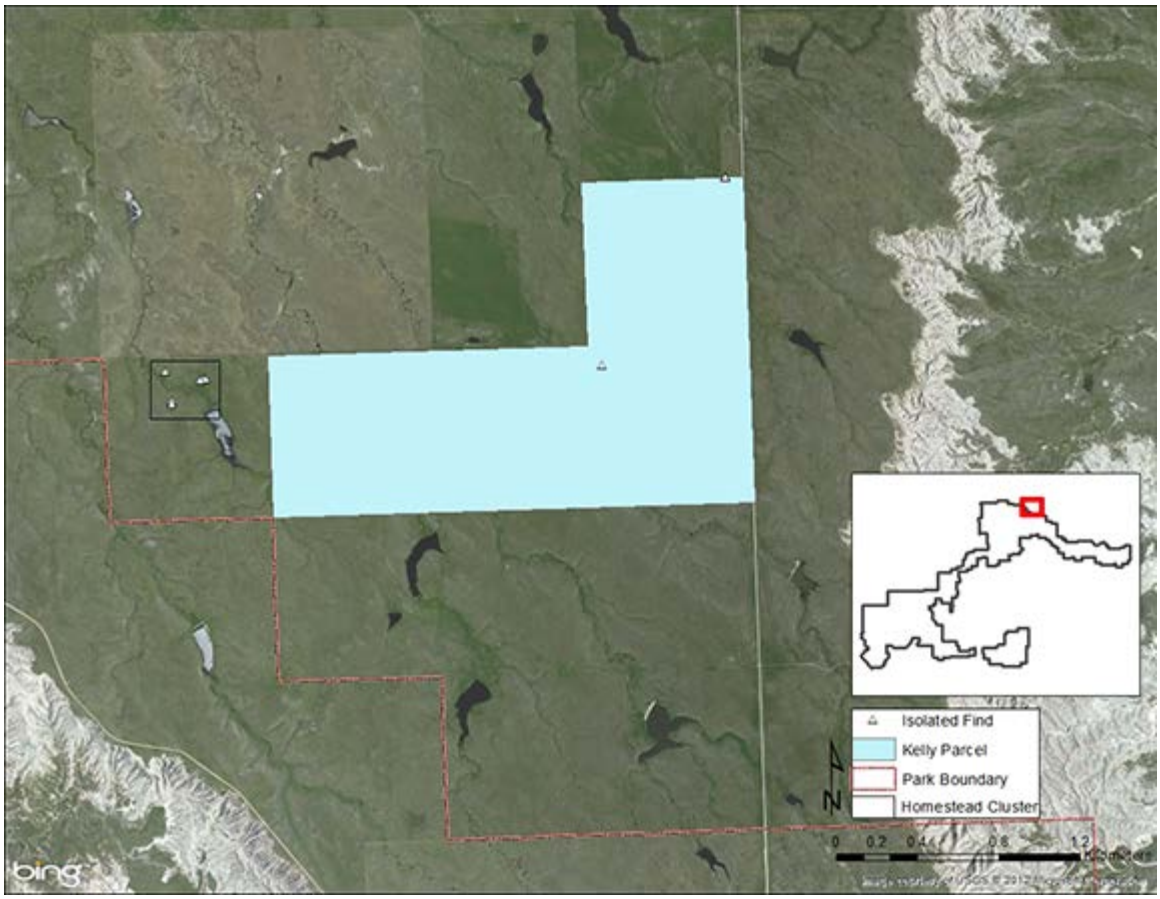

Figure 21. Aerial view of the Kelly Parcel. The features associated with the homestead were located to the west of the parcel, as indicated by the black rectangle.

Figure 22. Allison Young collects GPS coordinates at a cistern. The cistern and porch steps to the right are part of a Historic homestead recorded on the Kelly parcel. View south.

Figure 23. Overview of the area where Quarters 252 will be constructed. Allison Young (left) and Laura Bender excavate shovel test F4. View north, photo taken from road that leads to existing housing unit (near shovel test F1 as seen in Figure 24).

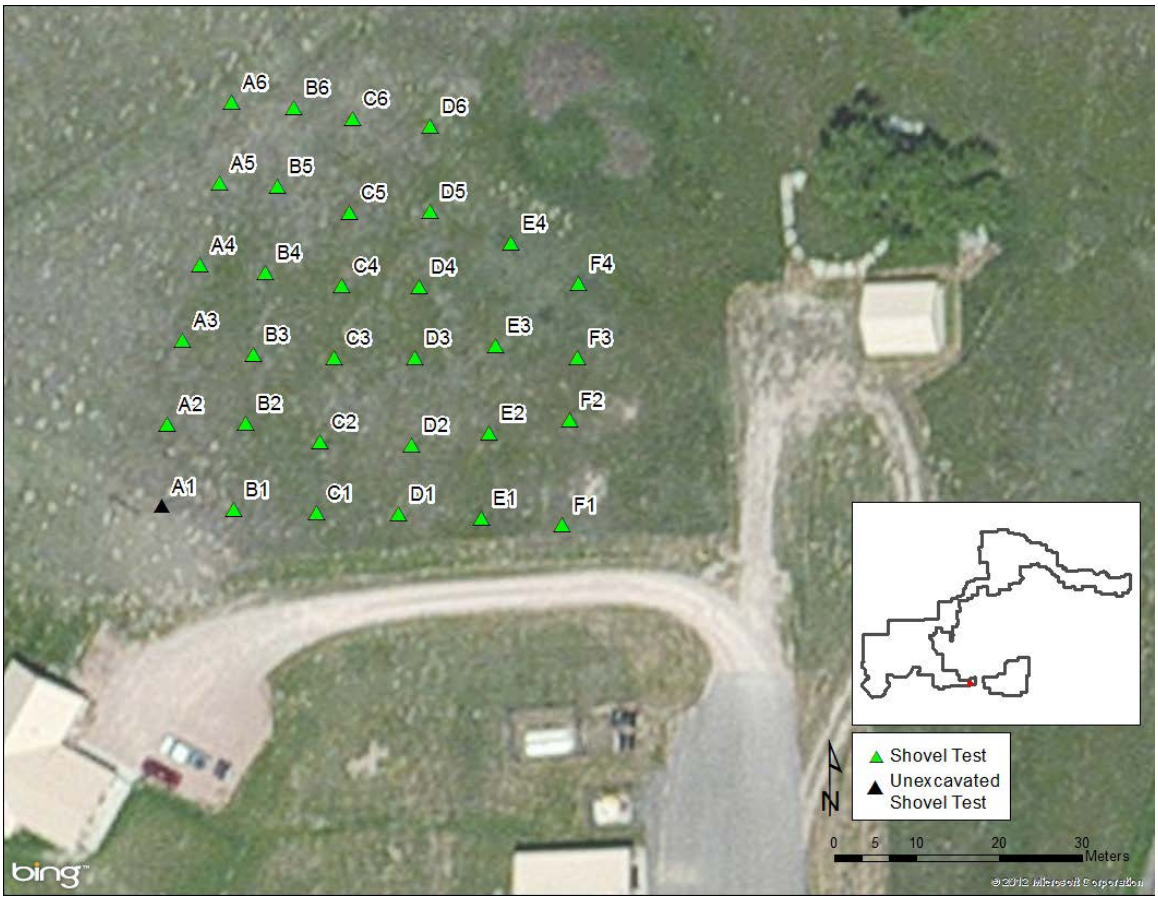

Figure 24. Aerial view of the shovel test grid at Quarters 252. Shovel test A1 was not excavated due to proximity to a power pole and electrical line.