NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES/ NATIONAL HISTORIC LANDMARKS PROGRAM

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REDACTION DATE _3/21/2017_ (IF APPLICABLE)

NOTES:

FILE (PROPERTY) NAME: Biesterfeldt Site

LOCATION (STATE/TERRITORY): North Dakota

LOCATION (COUNTY/PARISH): Ransom

NRIS#: NL100000874

1. NAME AND LOCATION OF PROPERTY

Historic Name: Biesterfeldt Site

Other Name/Site Number: *Shahienawoju* (Lakota) / 32RM1

Street and Number (if applicable)**:** N/A

City/Town: Lisbon vicinity **County:** Ransom **State:** ND

Designated a National Historic Landmark by the Secretary of the Interior December 23, 2016.

2. SIGNIFICANCE DATA

NHL Criteria: 6

NHL Criteria Exceptions: N/A

NHL Theme(s): I. Peopling Places
1. Family and Life Cycle
2. Health Nutrition and Disease
3. Migration from Outside and Within
4. Community and Neighborhood
5. Ethnic Homelands
6. Encounters, Conflicts, and Colonization

Period(s) of Significance: ca. 1724-1780/90 CE

Significant Person(s) (only Criterion 2)**:** N/A

Cultural Affiliation (only Criterion 6)**:** Cheyenne

Designer/Creator/Architect/Builder: N/A

Historic Contexts: I. Cultural Developments: Indigenous American Populations
D. Ethnohistory of Indigenous American Populations
1. Native Cultural Adaptations at Contact
h. Native Adaptations to Plains Environments

Paperwork Reduction Act Statement. We are collecting this information under the authority of the Historic Sites Act of 1935 (16 U.S.C. 461-467) and 36 CFR part 65. Your response is required to obtain or retain a benefit. We will use the information you provide to evaluate properties nominated as National Historic Landmarks. We may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a currently valid OMB control number. OMB has approved this collection of information and assigned Control No. 1024-0276.

Estimated Burden Statement. Public reporting burden is 2 hours for an initial inquiry letter and 344 hours for NPS Form 10-934 (per response), including the time it takes to read, gather and maintain data, review instructions and complete the letter/form. Direct comments regarding this burden estimate, or any aspects of this form, to the Information Collection Clearance Officer, National Park Service, 12201 Sunrise Valley Drive, Mail Stop 242, Reston, VA 20192. Please do not send your form to this address.

3. Varieties of Early Conflict, Conquest, or Accommodation
   b. Forced and Voluntary Population Movements
      2. The Changing Cultural Geography of the Southeast, Northeast, etc.
   d. Changing Settlement Types
      1. Mounted Hunters
      2. Sedentary Villagers

3. WITHHOLDING SENSITIVE INFORMATION

Does this nomination contain sensitive information that should be withheld under Section 304 of the National Historic Preservation Act?

_X_ Yes

___ No

4. GEOGRAPHICAL DATA

1. **Acreage of Property:** approximately 4.5 acres

2. **Use either Latitude/Longitude Coordinates or the UTM system:**

   Latitude/Longitude Coordinates:
   Datum if other than WGS84: NAD27
   (enter coordinates to 6 decimal places)

   Latitude: **Longitude:**

   OR

UTM References:	**Zone**	**Easting**	**Northing**
A	[redacted]	[redacted]	[redacted]
B			
C			
D			

3. **Verbal Boundary Description**:

[redacted]

4. Boundary Justification:

[redacted]

5. SIGNIFICANCE STATEMENT AND DISCUSSION

INTRODUCTION: SUMMARY STATEMENT OF SIGNIFICANCE

The Biesterfeldt site (32RM1) is a nationally significant archeological site, nominated under NHL Criterion 6, because it contains unique scientific information pertaining to the migration of native peoples on the Great Plains, and thus also pertaining to the transformation of sedentary farming cultures into horse-mounted nomads on the Northern Great Plains in the mid-eighteenth century. Its relatively early scientific investigation is also arguably important in the development of field methods and theoretical constructs of American archeology, particularly as it has been practiced on the Great Plains. The site is also associated with the early careers of two major figures of their respective academic generations, William Duncan Strong and W. Raymond Wood. However, at the present time sufficient evaluative context for the history of archeology has not been developed to support the nomination of Biesterfeldt under NHL Criterion 1 or Criterion 2, and so any such argument for broader national significance is not currently supportable.

Biesterfeldt clearly is part of the Plains Village Tradition, as its occupants lived in earth lodge structures and likely practiced maize horticulture like their neighbors who lived to the west on the Middle Missouri River. Since the Biesterfeldt site is culturally identifiable as having been occupied by the Cheyenne Indians, and because it is the only known representative of that relatively brief period in their history during which they pursued a horticultural way of life, the archeological site has the potential to yield critical information on the history of that celebrated tribe and various neighboring tribes. Several other tribes, like the Crow (Absaroka), also moved onto the Great Plains and abandoned their sedentary way of life for a nomadic one.

Biesterfeldt is unique in being the only known earth lodge village site in the Red River drainage system, which generally flows northward to Lake Winnipeg and ultimately empties its waters into Hudson Bay. All other currently known earth lodge village sites have been found exclusively to lie in the Missouri River drainage, which flows southward to join the Mississippi River in its journey to the Gulf of Mexico. Biesterfeldt is also the only known earth lodge village site that can be confidently associated with the Cheyenne tribe, others being associated with such historic tribes as the Mandan, Hidatsa, and Arikara, among others.

The property meets Criterion 6 for National Historic Landmark nomination and applies to the theme of "Peopling Places" outlined in the 1996 NHL Thematic Framework. Biesterfeldt holds great potential for helping us understand the processes by which the Native American groups that surrounded the northern rim of the Great Plains of North America during precontact times were later absorbed into the dominant mode of life there during the eighteenth century. The theme of "Peopling Places" is applicable through the investigation of subsistence pursuits, architectural design, and settlement patterning. Furthermore, the Biesterfeldt site is unique in representing a crucial evolutionary stage in the cultural history of the Cheyenne people. Continued archeological research at the site, considered in the context of other comparative regional data, has great potential to yield significant new information related to the origins, development, and migration patterns of the Cheyennes.

The Biesterfeldt site was added to the National Register of Historic Places in 1980 (NRHP # 80002925), at the national level of significance under Criterion D, by virtue of archeological findings developed up to that time and on the basis of its future research potential. That nomination of some 35 years ago was confined to a parcel of approximately 4.5 acres, [redacted] While it is acknowledged that cultural resources likely associated with the main occupation lie much farther afield from the

fortification ditch, the current nomination takes into account only those that recent archeological investigations have clearly shown to lie on the level ground immediately outside the ditch that confines the main village area.

[redacted]

PROVIDE RELEVANT PROPERTY-SPECIFIC HISTORY, HISTORICAL CONTEXT, AND THEMES. JUSTIFY CRITERIA, EXCEPTIONS, AND PERIODS OF SIGNIFICANCE LISTED IN SECTION 2.

PERIOD OF SIGNIFICANCE AND CULTURAL ASSOCIATION

The Biesterfeldt village appears to have been occupied principally by the Cheyenne Indians in the middle decades of the eighteenth century, ca. 1724-1780, though it may have been settled a few years earlier and may have survived somewhat longer (but not later than 1790). This conclusion is based on internal evidence at the site, such as temporally diagnostic artifacts, and on historical data that identify this site as the Cheyenne village destroyed by the Ojibwa in the late eighteenth century (the putative reason for its abandonment). At present, no reliable radiocarbon dates are available from the site to augment those data.

Biesterfeldt categorically fits well into the Plains Village pattern, though in an area well removed from the Missouri River trench, and also into what has been termed the Post-Contact Coalescent variant (Lehmer 1971:32, 136). This cultural pattern is typified by settled life in villages that often were fortified by an enclosing ditch and palisade; about equal dependence on maize horticulture and hunting; the use of the earth lodge as a dwelling; well-made pottery; and a range of tools and weapons in the process of being displaced by introduced European goods. The distinctive pattern was first defined among cultures living along the Missouri Valley and its tributaries. The site, despite its marginal location in the Red River drainage some 180 miles to the west, possesses the general characteristics of the Post-Contact Coalescent variant as it is fully expressed in the Missouri Valley.

The Post-Contact Coalescent occupation at the Biesterfeldt site cannot be further placed in a classificatory scheme, for it stands unique: no other site contains the same combination of elements that is found there. Nevertheless, Biesterfeldt shares much of its material content with contemporary villages of the Mandan and Hidatsas in what is now central North Dakota, and with the Arikara in central South Dakota. Shared elements include the environmental setting, village fortification system, community plan, architecture, globular pottery cooking vessels, notched and unnotched triangular arrow points, hide scrapers, grooved mauls, catlinite pipes, bison scapula hoes, bison rib shaft wrenches, slotted-rib knife handles, and serrated bone fleshers.

The pottery at Biesterfeldt (Figure 19), in particular, is very similar to that of the Arikara Indians, particularly sites from the area of the confluence between the Cheyenne River (not to be confused with the Sheyenne River of North Dakota) and Missouri River in south-central South Dakota (Johnson 2007: 162-163). Indeed, the forms of the rims on vessels from this site grade easily into those of Arikara types defined in the Missouri Valley (Wood 1971:25), though the decorations on them are distinctive and are known only at Biesterfeldt. Three features that characterize Biesterfeldt pottery but occur rarely in ceramics found at sites along the Missouri River, are linear check stamping, the emphasis on cord-wrapped rod decorations, and S-twist cord-impressed decoration. These latter two traits are most common in Late Woodland sites to the east in Minnesota. Another very distinctive feature is the fact that European-made glass trade beads were set into the shoulder of some pottery vessels prior to firing. Overall, the features on pottery from the site document that this aspect of their culture, like the rest of their material culture, clearly was oriented in the direction of the sedentary tribes along

the Missouri, where it most closely parallels that of the Arikara (Wood 1971:47). The reason for this parallelism remains in question and awaits further investigation.

Although received opinion that the Biesterfeldt site was occupied by the Cheyennes has not been questioned since Wood's (1971) analytical determination of its plausibility, and recent investigations yield no evidence to contradict that fundamental conclusion, current research does reveal several strands of evidence that warrant further vetting. The notion that the Cheyennes left the Minnesota region immediately prior to settling at Biesterfeldt could be questioned. Grounding in Missouri Trench culture was necessary to create something on the order of the Biesterfeldt site in regards to planning, house style, and ceramic style. The supposed "eastern" influence that Strong initially believed he detected in the pottery styles is now somewhat diminished, but there are several elements that link Biesterfeldt to the east. The question, then, is not whether the Biesterfeldt site was occupied by the Cheyennes, but whether that occupation reflects group migration from the east, migration from the west, or perhaps an *in situ* development of the Cheyenne culture locally in what is now southeastern North Dakota. Further investigation of the site may yield archeological data that will shed light on that essential question (Michlovic et al. 2016).

STATEMENT OF SIGNIFICANCE: PEOPLING PLACES

Historical data derived from various sources support the conclusion that the Biesterfeldt site is the only known earth lodge village of the Cheyenne Indians. All archeological information gathered at the site to date is fully consistent with that identification, and no reasonable alternative interpretation is supported by the data available. Furthermore, there is no reason to believe that the Cheyennes built more than one such village, and there are several accounts that help establish the time period in which they lived there. There are many nationally significant questions remaining, however, as to whether the Cheyennes migrated to this part of North Dakota from elsewhere, or whether the Biesterfeldt site is a product—and an archeological reflection of—*in situ* development of the Cheyenne as a distinct cultural group. Thus, this unique archeological property holds the potential to reveal much about cultural adaptations, historical demography, and changing patterns of human settlement on the Great Plains during the eighteenth century—and, perhaps, about the very origins of the Cheyenne tribe.

Various nineteenth-century sources initiated the identification of this locale as having been occupied by the Cheyennes, beginning with Ferdinand Hayden, who placed them on the Red River of the North (Hayden 1862: 275), and the missionary Stephen Riggs, who visited what we now call the Biesterfeldt site in 1863 and left a precise description of the village site (Riggs 1863). Accompanying Riggs was A. L. Van Osdel, who later embellished Riggs' account by suggesting the village at the time of their visit had been but recently abandoned (Van Osdel 1899). George Bird Grinnell summarized those sources, and various Dakota Sioux traditions, that identify Biesterfeldt's location near the present town of Lisbon, North Dakota, as the village in question, which the Sioux called *Shahienawoju*—one of several locations known by that name, which translates into English as "Cheyenne Plantings" (Grinnell 1919 and 1923:vol. 1, 16-19, 27, and vol. 2, 382).

Citing unpublished stories and oral traditions collected by the historian and author George E. Hyde from those he identified then as the "oldest living members" of the tribe, George F. Will (1914:70) states that, while they were on the Sheyenne River, a war party set out from the village, but was terrified and returned home when the "sun was blotted out." According to Wood (1971:55), records of past solar eclipses reveal only one that could possibly relate to this incident, one that took place in 1724 (more specifically, the Saros cycle 133, Member 29, total eclipse that passed over the northern Great Plains that year occurred on May 22 and lasted about 4.5 minutes), providing a time-marker event that appears to have taken place early in the site's history.

An Ojibwa chief, Sheshepaskut, told North West Company fur trader David Thompson in 1798 that he had led an attack on a Cheyenne village "lately," thus implying a date perhaps between 1780 and 1790. According to that account, the Ojibwa raiders set fire to the village, killing most of its inhabitants (Tyrrell 1916:261), though other accounts suggest that the destruction took place while the villagers were gone. Each of the eight houses that Strong excavated had been burned, having charred beam remnants and charcoal on their floors, generally consistent with the old story of its catastrophic ruination. Another account, written by Alexander Henry the Younger in 1800, also related the destruction of the Cheyenne village by the Chippewa, adding that it "happened about Sixty years ago," that is, about 1740 (Coues 1897, vol. 1:144; and Gough 1988, vol. 1:90).

Additional supporting data are to be found in the journals of Joseph N. (Jean-Nicolas) Nicollet, who passed through the Sheyenne River valley in August of 1839. On the thirteenth day of that month he recorded that,

[redacted]

Therefore, the historical record is clear on the identity of the site's occupants, and no other group has ever been proposed as its residents. The dates for its occupation may be bracketed between 1724, the year "when the sun was blotted out," and its terminal date about 1780 or 1790, when it was reportedly attacked and destroyed by the Ojibwas. To judge from the amount of material recovered by Strong's excavations in 1938 and the lack of middens, it certainly was not a short-term occupation. However, earth lodges of the sort revealed at Biesterfeldt are believed to have had an effective life of about 10 to 15 years before they had to be rebuilt or replaced, and none of the excavated houses contains extraneous post molds that would suggest such repair took place during their occupation and use. It could be, of course, that the Biesterfeldt earth lodges were not all occupied contemporaneously and instead represent a smaller resident population replacing house structures at different locations, as needed, over a much longer span of time. Continued investigation of the archeological site may help answer this important question relating to group size and village patterning.

Position of the Biesterfeldt Site in the Pre-Contact Period of the Northern Plains

The preliminary evaluation of current archeological researchers (Dalan et al. 2007), which serves as a working hypothesis for future research, leads to the conclusion that there was likely a trend towards increased Middle Missouri River influence in the Sheyenne River valley and a corresponding decline in southeastern and eastern influences. This is evident from the decline in shell tempering, cord-marked surface treatments, and Oneota-related designs (chevrons and punctates) on ceramic specimens. Supplanting traits include braced rims, cord impressed designs, simple stamping, stamping for decorations, and fine-line incised geometric designs. Knife River Flint, from west of the Missouri River, also gained popularity with 45%-85% of the chipped stone tool assemblage at Biesterfeldt composed of this toolstone, depending on technological class. Presumably, the vacuum created with the decline in Oneota-related designs is filled with bona-fide examples of Coalescent wares. With gaps in dates and secure contexts, this preliminary assessment does not automatically negate Biesterfeldt as a site-unit intrusion. However, current researchers argue that the Biesterfeldt site does have its antecedents in the region. This perspective may reveal that the Coalescent Tradition was an expanding force in the Northern Plains worthy of additional consideration.

Other Questions of Consequence

In addition to the issues above, which relate directly to the Biesterfeldt site's ability to address questions concerning migration of peoples on the Great Plains, their ethnic homelands, and the role of warfare in the

movements of those peoples, other questions of a more general nature can also be asked of the archeological data that may be derived from future investigations. Because the Biesterfeldt site represents an entire village of earth lodges, it is possible to examine not only the household level of society but also the community as a whole: What was the make-up of the nuclear family? Is there any evidence of multi-family clans, or indications of interaction with other groups outside the immediate Biesterfeldt community? What do faunal and botanical remains recovered from the Biesterfeldt site tell us about food preferences, general nutrition, organized subsistence practices, and the rise of horticulture among its occupants? How does the situation at Biesterfeldt differ from earlier, later, and roughly contemporary sites of the region? What can Biesterfeldt, when compared with contemporary sites along the Missouri River, reveal about trade patterns on the Great Plains? Can comparative analysis enlighten our understanding of the transition from a nomadic lifeway to increased sedentism? These and many other nationally significant questions relating to life on the Great Plains during the early Historic period—a period of profound and lasting change for native peoples—may be answered with data derived from the Biesterfeldt site.

CONCLUSION

The Biesterfeldt site presents a unique opportunity for archeologists to address nationally significant questions related to the dynamic process of cultural evolution, the dramatic transition from traditional nomadism to sedentism, and broad patterns of migration and settlement on the Great Plains. Analysis of archeological data derived from the site has already revealed much about the presumed eighteenth-century Cheyenne inhabitants of the site, and much more can be learned from the continued investigation of Biesterfeldt. Aside from those more general questions of ethnic identity and the like, some basic questions about the site still remain to be asked and potentially answered: Where did these people originate? How long did they reside in the village? How did they acquire their Plains Village culture? Was the village attacked, burned, and by whom? Where did they go? What processes led to their abandonment of gardening to adopt a nomadic Plains buffalo hunting existence? As recent geophysical investigations have shown, archeological integrity at the site is outstanding in spite of superficial damage over certain parts of Biesterfeldt caused by past agricultural practices that have long since ceased. Indeed, the potential to yield archeological research data affecting theories, concepts, and ideas is considerable. Accordingly, the Biesterfeldt site is an ideal candidate for Federal recognition under National Historic Landmark Criterion 6.

6. PROPERTY DESCRIPTION AND STATEMENT OF INTEGRITY

Ownership of Property		Category of Property	
Private:	X	Building(s):	
Public-Local:		District:	
Public-State:		Site:	X
Public-Federal:		Structure:	
		Object:	

Number of Resources within Boundary of Property:

Contributing		Noncontributing	
Buildings	0	Buildings	0
Sites	1	Sites	0
Structures	0	Structures	0
Objects	0	Objects	0
Total	1	Total	0

PROVIDE PRESENT AND PAST PHYSICAL DESCRIPTIONS OF PROPERTY
(Please see specific guidance for type of resource[s] being nominated)

The Biesterfeldt site (32RM1), named for the property owner of record when the initial systematic archeological investigations were carried out in the late 1930s, represents a native earth lodge village with a perimeter defensive ditch (second palisade). It is located near the present course of the Sheyenne River in rural southeastern North Dakota, some 10 miles (16 kilometers) southeast of the town of Lisbon in Ransom County. [redacted]

The site today is covered in pasture grasses, though the ground has not been used for cattle grazing for many years. Scattered earth lodge depressions are clearly visible—obvious even to the untrained eye—on the northern portion of the village site. The southern half of the site, however, was once under regular cultivation, and the earth lodge depressions there are no longer as obvious to casual observers; their once-distinct edges were gradually worn down by repeated plowing over the course of many years. Although surface expressions of house features in the southern reaches are not readily apparent, with their formerly sharp relief smoothed over by the plow, recent geophysical prospection of that same area reveals that sub-surface elements of earth lodges and other cultural features are still partly intact, recognizable, and—most important—capable of being investigated archeologically for the nationally significant archeological information that they doubtless still contain.

The fortified village site measures about 175 m across from east to west and 100 m on its north-south dimension (measuring from the exterior margins of the defensive ditch on the cardinal axes). The fortification ditch circumscribes about 1.75 ha (approximately 4.5 acres), but it is apparent from recent archeological investigations that related cultural features are also present in a narrow band immediately outside of the ditch confines. [redacted] That neighboring parcel has only recently been investigated archeologically, a shovel-testing survey in 2012, yielding evidence of two small sites (32RM176 and 32RM177); however, the adjacent

parcel is not part of this National Historic Landmark nomination. At present, those sites have been insufficiently investigated, leaving doubts as to their possible relationship to Biesterfeldt as well as the current state of their integrity. Other archeological sites, such as the Irwin Johnson Site (32RM172), have been recorded in the vicinity of Biesterfeldt, but it does not appear that they were contemporaneous with the nominated site.

Biesterfeldt is located on the western edge of the Sheyenne Delta geological formation, a large sand and silt deposit dating to the terminal Pleistocene Epoch (Figure 2). The delta was formed as the Sheyenne River dropped alluvial sediments at its mouth upon entering glacial Lake Agassiz perhaps 11,000 years ago. The resultant deltaic formation is known locally today as the "Sand Hills." It is topographically complex (Figure 9) and supports a mixture of grass communities and copses of trees. [redacted] It is not known whether the village site was occupied when that meander bed held an active stream channel. That would seem highly probable, however, as ready access to a reliable source of fresh water would be very important for sustenance of the village population. Small ponds are sometimes found today in the low discharge areas between relict sand dunes, as was doubtless the case when the Biesterfeldt site was occupied, but they can prove ephemeral in dry seasons. To the north and east of the sand hills was the tall grass (bluestem) prairie. Much of this area today is part of the Sheyenne National Grasslands.

A mixed-grass prairie covered the till plain to the west and north of Biesterfeldt at the time of its occupation. Bison, elk and other wildlife used this region, possibly moving over the course of the growing season to grass communities that had matured to their nutritional maximum. Further, the sand hills of the Sheyenne Delta that lie immediately adjacent to Biesterfeldt can be described as a natural refuge for certain wildlife populations during episodes of drought. One early Euro-American visitor to this area described the many distinctive game trails that lay about Biesterfeldt in the mid-nineteenth century: "In all directions the prairie is worn into deep paths leading down to the river, by the hoofs of thousands of buffalo that every summer graze over this plain" (Gardner 1868). That same account describes the sand hills as "covered with wild plums and cherries."

Along the Sheyenne River is a gallery forest dominated by a variety of tree species (Nelson 1964:34,102), including cottonwood (*Populus deltoids)*, American elm (*Ulmus americana*), ash (*Fraxinus spp*.), boxelder (*Acer negundo*), ironwood (*Ostrya virginiana*), burr oak (*Quercus macrocarpus*), and hackberry (*Celtis occidentalis*). Major shrubs in the woodland are gooseberry (*Ribes missouriensis*), wolfberry (*Symphoricarpos occidentalis*), creeper (*Parthenocissus inserta*), waterleaf (*Hydrophyllum virginianum*), wood nettle (*Laportea canadensis*), and various sedges (*Carex spp*.). Edible plant species that were likely exploited by Native Americans historically in the local grasslands and gallery woods include wild onion, amaranth, milkweed, ground plum, hazelnut, goosefoot, wild strawberry, prairie sunflower, wood sorrel, ground cherry, wild plum, chokecherry, prairie turnip, acorn, smooth sumac, buffalo currant, wild rose, wild rye, elderberry, buffaloberry, honewort, sage, vetch, yellow sorrel, prairie rose, and raspberry. Medicinal plants known to have been used by various native populations, such as cinquefoil and anemone, also were abundant at the time of occupation.

Historical accounts relating to the region left by Euro-Americans generally indicate that the Cheyenne planted native corn (*Zea mays*). The prairie sod, here and elsewhere on the Great Plains, was virtually impossible to work by hand prior to the introduction of large, domesticated draft animals and metal plows. Accordingly, at Biesterfeldt such plantings likely would have been in garden plots in or near the gallery woodlands, where the soil was sufficiently watered and enriched with the natural alluvium deposited by periodic flooding of the river. Although northern grasslands are often considered relatively barren of usable resources for pre-modern technologies, the Biesterfeldt site lies in an area that was highly advantageous to human use and village settlement.

Current Conditions at the Site

Much of the Biesterfeldt property was used as agricultural land since at least the early twentieth century. As noted above, the southern portion of the village site was plowed regularly for many years, and it seems that the northwest quadrant of the site was also cultivated, if only briefly, in the early 1950s. From the 1960s through the early 2000s, the northern part of the site was largely unplowed and employed as a cattle pasture, and for much or even all of that period the southern portion of the site was pasturage, as well (it can be confirmed that the entire site area was a cattle pasture since the 1970s). [redacted] setting the lands aside as an archeological preserve to ensure that this important site's remaining cultural deposits will be protected from development and damaging agricultural uses in perpetuity.

Three distinctive portions of Biesterfeldt can currently be identified, all of which are elements of the nominated property (Figures 9-10). The first is the unplowed field that makes up the northern half of the ditch-enclosed village. That section was the focus of multiple archeological investigations and remains largely intact where controlled excavations did not occur, except for certain limited areas along the meander scar where some gully erosion was evident in recent years but no longer seems to be present. The second conforms to the formerly plowed portion of the ditch-enclosed village. Early twentieth-century plowing muted the depressions of the structures and ditch in this area but did not destroy subsurface elements of the features or the nationally significant archeological information that they contain. Moreover, intensive close-interval contour mapping of this sector could still reveal subtle traces of features that are known to have been present but are no longer readily apparent to casual observers, especially given the parcel's heavy vegetative cover. The third portion of the site consists of the elevated areas immediately outside of the ditch. Probably related to the site is a scatter of cultural debris noted in the cultivated field to the south, but that poorly known area is not included as part of this landmark nomination.

At present, the Biesterfeldt site is covered with a heavy growth of pasture grasses and is relatively stable over most of its surface. Michael Scullin, Anthropology Professor Emeritus at Minnesota State University, Mankato, has done a comparative study of surface stability at aboriginal village sites throughout the northern Great Plains. Scullin (personal communication, 2007) visited the site with MSUM field researchers and concluded that Biesterfeldt is one of the more stable village sites that he has seen in terms of its surface conditions. Nevertheless, moderate gully erosion is present along the northern side-slope margins, owing to continuing long-term rodent activity and prior livestock grazing and trailing.

[redacted] However, there is a thick sod growing on the slope, and it is in no immediate danger of deleterious instability. Two of the structures partly excavated by W. D. Strong (namely, Houses 7 and 23) have unexcavated remnants that are near the upper edge of the slope, and it is possible that any structures situated along that edge are in eventual danger if the natural forces of erosion should ever intensify. Active rodent and, perhaps, badger burrows are present along the side-slope margins, but the landowner of the adjacent agricultural field (to the south) in recent years has initiated eradication measures, as the pesky rodents also have been impacting his crops.

Historical References to Biesterfeldt

The place now known as the Biesterfeldt site is mentioned (not by that name, of course) repeatedly in several historical documents related to eastern North Dakota. Summaries of those early reports may be found in the

writings of Grinnell (1918, 1923, and 1955) and Wood (1971). The earliest known mention of the site is in a 1798 report of English-Canadian fur-trader, explorer, and early cartographer David Thompson (1770-1857), who states that an Ojibwa elder named Sheshepaskut ("Sugar") informed him that the Cheyenne people had a village on the Sheyenne River, and that a group of Ojibwa attacked their village and drove them out. Thompson's informant told him that the Ojibwa burned the village after routing the Cheyennes. Alexander Henry, the Younger (?-1814), a North West Company fur trader who kept a personal journal covering the years 1799-1814 (Coues 1897, 1965), mentions roughly the same account (Wood 1971:55-56). Subsequently, others have repeated this same story (e.g., Swanton 1952:279), or a very similar one involving not the Ojibwa, but the Dakota. In his classic 1896 account on the Ghost Dance, for example, Mooney (1991:1024) attributes expulsion of the Cheyenne from the Sheyenne Valley to pressures from the Sioux, as does a letter written by W. H. Gardner (1868) recently found among the Smithsonian Institution's archival collections (William Billeck, personal communication, 2007).

From 1866 to 1869, U.S. Army Captain (Brevet Major) William Henry Gardner, was on assignment as the assistant surgeon at Fort Abercrombie on the Red River, Dakota Territory, having transferred there from Ft. Snelling, Minnesota. In 1868, he visited a location on the great bend of the Sheyenne River, east of a prominent stretch of sand hills, some 40 miles west of the fort. The place that he visited and reported could only have been the Biesterfeldt site. Gardner left a description of the site and an account he received from native informants about its history. The Dakota informants told him that, when their great-grandfathers were young, the Cheyennes controlled all the area around the Sheyenne River. The Dakotas attacked them to drive the Cheyennes out of this game-rich area. According to that account, the Cheyenne occupants defended themselves by digging a trench around their village, and by digging holes in which to pitch their tipis. Eventually, under siege, the Cheyennes were starved out and forced to leave the area.

Visitors to the southern Sheyenne Valley throughout the nineteenth century refer to a village of the Cheyenne Indians on the east bend of the Sheyenne River. Famed American explorer William Clark shows the "Old Village" on a map of 1805 depicting the Sheyenne River (Wood 1971:53), and the French explorer Jean-Nicolas (Joseph N.) Nicollet also features the Cheyenne village on his 1843 hydrographical basin map of the Upper Mississippi. In his notes, Nicollet describes the site as follows:

> [redacted], mark the ancient village of the Chayenne nation which was driven out and pursued by the Sioux to the south of the Missouri…Thus the name Chayenne oju was given to the place and to the river. [Bray and Bray 1976: 202]

Wood (1971:52-4) outlines the traditional history of the Cheyenne people, as well as the early explorer and settler accounts that describe their movements out of Minnesota into eastern North Dakota and thence onto the High Plains. Previous to their stay in eastern North Dakota, the Cheyennes are presumed by scholars to have resided in Minnesota. Under pressure from the Dakota and Assiniboine, they moved up the Minnesota River to the vicinity of Lake Traverse, then across the Bois de Sioux River to the Sheyenne River, where they lived in an agricultural village until attacked by enemies and driven westward across the Missouri. No documented site other than Biesterfeldt has been identified archeologically, or through historical records or oral history accounts, to represent this movement of the Cheyenne. This series of migrations is illustrated in a volume of the *Handbook of North American Indians* on tribes of the Plains (Moore et al. 2001:864, Fig. 1).

Previous Studies of the Site

What appears to have been the first ground-intrusive examination of the Biesterfeldt site took place over 140 years ago, when William Henry Gardner visited the site in 1868. Gardner, a U.S. Army assistant surgeon assigned to duty at Fort Abercrombie on the Red River, occasionally collected ethnographic and natural history specimens for shipment to the Army Medical Museum (now the National Museum of Health and Medicine), which was then housed in the former Ford's Theatre building at Washington, D.C. He briefly described the archeological site that we now know as Biesterfeldt, recounting a Dakota oral tradition that the site and its surrounding territory were formerly controlled by the Cheyenne. Gardner also reported that the village was eventually destroyed by the Dakota, based on information provided to him. It is interesting that Gardner's Dakota informant told him that the depressions scattered across the site's ground surface were believed to be defensive pits for Cheyenne tipis. Gardner described some 74 depressions visible at the site in his day, measuring some 10-15 ft. in diameter and about 2 ft. deep (Gardner 1868).

Gardner, of course, was not trained as an archeologist, but he curiously dug into some of those depressions to a depth of 2-3 ft. and observed ash deposits, shell, charred animal bones, flints, and native pottery fragments bearing crosshatched diagonal impressions and zigzags. He uncovered no metal implements among the cultural debris through his limited, untutored investigations and, therefore, supposed the site to be hundreds of years old. Gardner also described encountering burial mounds in the vicinity that contained the bones of humans, buffalo, dog, beaver, otter, and muskrat; he regarded the smaller animals as having been parts of ceremonial bundles.

Biesterfeldt was later described and mapped by the noted early archeologist Theodore H. Lewis (1856-1930) in 1890 (Figure 4). The Lewis field notes of August 20, 1890, provide an early, but rather detailed description of the site's surface features. Of special interest are remarks about the house remains that he observed outside the "fort" (i.e., the fortification ditch). Lewis also noted the similarity of house forms suggested at the Biesterfeldt site to those of the Mandan:

> Inner slope at ditch extends to 30. About 20 feet above the bottom. Central space 75 x 98 feet. Trail running from gateway to the center. There are remains of 65 lodges and a large number of old caches. There are also 150 or 200 houses outside the fort. Smallest house is 15 feet in diameter. Largest house 35 feet in diameter. This may be a Mandan enclosure. [Lewis 1890]

Another map was completed in 1908 by Orin G. Libby (1864-1952), a historian from the University of North Dakota at Grand Forks, and Arlow B. Stout (1876-1957), then a student at the University of Wisconsin and later a renowned horticulturalist with the New York Botanical Garden. The Libby-Stout map shows only minimal cultivation of the site at that time (Figure 5). Their investigation is reported in Grinnell (1918).

> Rings inside plowed field – to the south of fence indicated – have been plowed over for past 8 years – hence all that could be done was to locate tepee sites. – The centers and ditch showed plainly. [Grinnell 1918:362]

Note that, along with W. H. Gardner, Libby and Stout also believed that the visible depressions were associated with former tipi locations. It seems likely, however, that Libby and Stout may have missed shallower house basins and, further, that concentrations of several pit features might have been interpreted wrongly as tipi rings. Such confusion was also evident during William Duncan Strong's later investigations of the unplowed portion of the site, which will be discussed more fully below.

George F. Will (1914) produced a small outline map in 1914 (Figure 6), and L. P. Dove and Dana Wright produced a rather crude topographic map of the site (Figure 7) about a decade later, on June 10, 1923, which is

today in the files of the State Historical Society at Bismarck (Dalan et al. 2007). All site maps going back to Lewis indicate the location of the fortification ditch and the site's relation to the adjacent abandoned channel of the Sheyenne River. Only Libby and Stout, however, mapped the numerous house depressions that they observed.

There are a few notable differences among the early site maps. For example, Lewis illustrates a notch or an indentation in the ditch outline on the southeast of the site—a feature that does not appear on other maps of the site. He also indicates an entryway on the south side of the ditch, as well as an open area or plaza at the center of the site. Will provides a simple outline of the village and the old river channel. Libby and Stout provide a detailed map with an outline of all the visible house depressions at the site, whereas Dove and Wright illustrate the site with topographic contour lines but mark no house depressions. Strong's 1938 excavations are shown on the Libby-Stout map (Figure 8), with some features of Lewis' map incorporated in Wood (1971:Figs. 2-3).

Parts of the Biesterfeldt site were systematically excavated by William Duncan Strong (1899-1962) in 1938, shortly after the noted Great Plains archeologist left his post at the Bureau of American Ethnology for Columbia University. Strong reviewed his Biesterfeldt excavations briefly in a 1940 article entitled "From History to Prehistory in the Northern Plains," which appeared in *Smithsonian Miscellaneous Collections* 100. He described the site and his work in about six pages of text. A few relevant passages are:

> There are the rings of about 70 houses surrounded by a deep ditch or moat which surrounds the village except along the steep river bank. Our excavations tested the ditch, seven houses, and numerous cache pits. The ditch proved to have had a width of almost 10 feet and a depth of almost 5 feet. There were no bastions…there was no evidence of a regular palisade…The houses excavated were all circular earth lodges with four central posts set in an almost exact square and a central fireplace…One house, the largest and best preserved…had four central posts, a row of intermediate posts, and a ditch or series of post holes around the outer circumference…it may well have been a ceremonial center. [Strong 1940:371]

All of the excavated houses are described by Strong as having burned, and evidence of charred beams was especially apparent in the largest of the house features. This is an important point in light of some historic documents indicating that the village at this location had been attacked and burned by either Dakota or Ojibwa warriors.

Historic artifacts that Strong recovered from the site included glass beads, a trigger guard, and various metallic blades made of brass, copper, or iron. Horse bones, representing an intrusive species of the Historic period, were also found, along with native bison, deer, bear, fish and dog (Strong 1940:372-375). Pottery found at the site was globular in shape with grit temper, and surfaces either were paddled with a grooved instrument or brushed with grass. Some vessels had handles, and the rims were decorated with vertical, horizontal, and parallel lines made by stick and cord impressions. Strong believed that those distinctive decorative motifs would eventually prove to be derived from a source in central Minnesota (Strong 1940:373-374). Nevertheless, the close resemblance of Biesterfeldt to the village sites along the Missouri River in the Dakotas was obvious, and Strong (1940: 375) remarked that "…at this period the general framework of Cheyenne culture was very similar to that of the Mandan, Arikara, and other sedentary Missouri River tribes." The Biesterfeldt site thus was seen as standing culturally between the Woodlands and the Plains villages.

Working from Strong's field records and artifact collections, as well as from supplementary site observations of his own, the prominent Great Plains archeologist W. Raymond Wood published *Biesterfeldt: A Post-Contact Coalescent Site on the Northeastern Plains*, a full site report on Strong's excavations, through the Smithsonian

Institution in 1971—some 33 years after the completion of those methodical excavations. In his report, Wood provided a much-expanded treatment of the site structure and artifact-ecofact collection derived from the site. For example, he noted several open areas at the site, one of which was—and still is—especially noticeable to visitors. Wood (1971:45) argued that, because the open area is centrally located, and the largest house feature at the site lies adjacent to it, the expanse was likely a "plaza analogous to those in Mandan villages."

He noted brass, copper, iron, and leaden objects in the assemblage of metal artifacts from the site, and described the fauna as including bison, deer, bear, dog, horse, elk, fox, raccoon, fish, turtle, crane, and mussels. Wood (1971:5) states that Strong made no systematic recovery of animal remains; therefore, the extant collection of select remains can only provide an impression of the full range of fauna that might have been represented at the site. The ceramics are divided into seven classes or rim types, including cord-wrapped-rod impressed, bead-impressed, cord-impressed, tool-impressed, plain-smoothed, plain-brushed, and pinched rims. Together, those seven major ceramic groups comprise a minimum number of 180 distinct vessels. Three other exotic-looking ceramic vessels are also fully described (Wood 1971:27-32).

Wood (1971:49-50, 69-71) declared it obvious that Biesterfeldt was part of the Plains Village pattern, which includes several tribes of the Northern Plains: Mandan, Hidatsa, Arikara, and (in the early Historic period) probably the Cheyenne and some of the Eastern Dakota. He regarded the occupation as part of the cultural developments of the Missouri Valley and assigned it to the Coalescent Tradition. Wood, and everyone else who has written about the site, including many of its nineteenth-century visitors, believed that the site was an agricultural village of the Cheyenne people occupied in the eighteenth century, where at least some of the Cheyenne lived after leaving the Minnesota woodlands and prior to their move to the High Plains where they took up their classic horse-nomad adaptation (Moore, Liberty, and Straus 2001). His analysis dated the Biesterfeldt site to the middle of the eighteenth century with reference to various historic accounts and, indirectly, in light of certain metal objects and other exotic materials recovered from the site during Strong's excavations. More recent investigations carried out at the site were limited primarily to non-intrusive geophysical examinations. Accordingly, they produced few artifact collections that might further refine or dispute Wood's earlier conclusions.

Certain elements of the Biesterfeldt site were partly damaged, but certainly not obliterated, by repeated cultivation throughout the first half of the twentieth century. The Libby-Stout map of 1908 depicts earth lodge features south of a fence line that bisects the site from east to west, though that part of the site was then actively being farmed (cf. Wood 1971:8). Continued seasonal plowing since that time increasingly degraded the visible surface expressions of those house features (Figure 9 and 11), but recent geophysical surveys of the site clearly indicate that subtle evidence of some of them still survives partly intact beneath the present ground surface. Similar geophysical studies recently conducted at such NHL sites as the Hopeton Earthworks near Chillicothe, Ohio (Bevan 2001; Lynott 2001), have shown that important archeological data frequently are still present in long-cultivated fields despite the obvious effects of plowing on the visibility of surface features. Similarly, the Boley Village site (32MO37) in North Dakota has been cultivated since as early as 1907, but features could still be identified by recent investigators, including two fortification ditches (Ahler 2006).

It is generally believed that the cultivated portion of Biesterfeldt consists of roughly its southern half; however, during the 2007 field investigations, MSUM archeologist George R. Holley noticed that depressions in the northwest quadrant of the site were especially difficult to map. After the completion of those recent investigations, the following relevant comment was found in archived personal notebooks of the late Professor Lloyd Wilford (1894-1982), a prominent archeologist long affiliated with the University of Minnesota. He noted that the part of the site north of the fence line was being plowed for the first time (Wilford 1952).

Fortunately, the new plowing in that sector soon ceased. Earth lodge depressions to the west and north were not entirely destroyed, as Wilford feared they would be, though they doubtless suffered some superficial damage as a result of at least one growing season under the plow. The most obvious depressions visible today are those in the north and east sectors of the site. No surface evidence of depressions survives in an obvious state on the south half of the site, but geophysical readings clearly indicate the presence of subsurface anomalies consistent with the lower aspects of native earth lodges.

Recent Investigations

Preliminary to the preparation of this nomination, and with landowner permission from The Archaeological Conservancy, the National Park Service, Midwest Archeological Center, executed a cooperative agreement with Minnesota State University, Moorhead, for intensive site documentation at Biesterfeldt in the summer of 2007. That recent non-intrusive study, the first of its kind at the site, included the gathering of geophysical data using several different detection instruments, production of a detailed topographical map, and aerial photography shot at low altitude. In addition, the research team reconsidered evidence derived from Strong's 1938 excavations, as well as Wood's (1971) published summary of those investigations and performed an original study of the ceramic collections now curated in Bismarck by the state of North Dakota (Dalan, et al. 2007). Supplementary geophysical data were gathered at the Biesterfeldt site in the spring of 2008 as part of a week-long National Park Service training program in non-destructive archeological investigations carried out in collaboration with MSUM and with permission of The Archeological Conservancy (De Vore 2008). Immediately following that second geophysical survey, MSUM held an archeological field school at the site. Those investigations included completion of remote-sensing work that was unfinished at the conclusion of the training workshop, as well as limited excavations for purposes of ground-truth testing of geophysical survey results, relocating some of Strong's debris piles, study of areas outside the perimeter ditch, and pedestrian survey of neighboring lands (Holley et al. 2011).

The 2007 MSUM remote-sensing program was designed to provide coverage of a large section of the village, specifically the eastern half of the site, including both plowed and unplowed areas (Figures 12-18). Coverage of the southern (formerly plowed) portion was limited to an area that had been mowed prior to commencing the study. A 100-m-x-120-m area was surveyed in 20-x-20-m grids (Fig. 14) using a fluxgate gradiometer (Geoscan FM256) and a resistance meter (Geoscan RM15). Data density for the gradiometer survey was 16 samples per meter (a line spacing of 0.5 m and sample spacing along each line of 0.125 m). Data density for soil resistivity was 4 samples per meter (a line spacing of 0.5 m and a sample data-point spacing of 0.5 m); probe separation was 0.5 m. Both magnetic and resistance surveys were employed for the complementary information that they would be able to provide. As discussed in a pertinent study by Bales and Kvamme (2005), magnetometry works particularly well at earth lodge villages, enabling investigators to identify the locations of hearths, storage pits, metal objects, and evidence of burning. Resistance surveys, on the other hand, often help identify living floors and other intentionally compacted soils identified at such sites.

A primary goal was to locate all cultural features known from previous investigations within the sampled area, as well as to identify previously undetected features. Researchers were especially interested in the extent to which more than 100 years of plowing in the southern sector had impacted cultural resources. As preliminary results were interpreted in the field, the data-gathering strategy was adjusted to include additional work on apparent structures and geomorphic features.

Initial results for the resistance, magnetometer, and gradiometer surveys are illustrated in Figures 15 and 16. Several features are apparent on those maps. Houses and pit features are evident on both of the geophysical data maps, but only in the unplowed northern field can they be reliably distinguished. Post-occupation features are

also evident, including the field line and the historic trail that once passed through the site. The encircling ditch is visible in both maps of the plotted data sets, as well. Cultural feature recognition and identification, while not impossible, is more difficult in the plowed southern portion of the site. Further data processing to remove noise would improve feature recognition.

Geo-referencing the Libby-Stout map, as published by Wood in 1971, onto the geophysical survey grid allows matching the projected location of features onto the various geophysical survey maps. For the resistance survey (Figure 14) all of the known structures in the unplowed portion were identifiable. Houses and pits are indicated by circular areas of low resistance, often with a ring of surrounding high-resistance soil. A structure with a deeper intact basin (for example, Structure 18) is well-defined, whereas shallower structures are indicated with less contrast. Houses are more obvious in the north, because there is a greater contrast between the house floors and the surrounding sandier soil matrix. Other features distinguished by low-resistance signatures include the historic trail that crosses the site, pathways from the structures, Strong's 1938 excavations, and external pits associated with many of the earth lodge structures. Pathways are identified leading from House 14 and House 12; the pathways conform to the historically-mapped locations of the entrances to those structures. Excavated houses display a mosaic pattern in the resistance survey results. A number of low-resistance anomalies, not corresponding to the locations of pits or houses on the overlaid Libby-Stout map, likely indicate the presence of additional external pits at the site. Some of them possibly could represent earth lodge structures, which would be consistent with the varied historic accounts that claim a total number of structural basins exceeding the 62 identified by Libby and Stout and, later, by Strong.

A series of ca. 5-m diameter circular anomalies are evident paralleling the exterior curtain of the ditch. The source of those anomalies remains unknown, but they could represent spoil piles from the ditch construction or perhaps external pits. The ditch, including the odd jog or notch in the southeast that was identified by Lewis in 1890 (see Fig. 3), is well documented in the resistance survey, even in the formerly plowed field. A series of 5- to 8-m-wide swaths that trend east-west are evident in the plowed field. It is likely that those swaths are remnant byproducts of the plowing activities.

The gradiometer survey (Figure 16) reveals some of the same features that appear in the geo-referenced Libby-Stout map and several interesting anomalies. The houses are circular magnetic lows, bounded by a ring of more highly magnetic soil. This is especially the case in the unplowed portion. In the south, less contrast with the surrounding matrix (soils are not as sandy) and agricultural disturbances make the recognition of houses difficult though not impossible. Iron artifacts and central hearths are also mapped by the gradiometer survey. All of the structures excavated by Strong yielded evidence for a centrally placed hearth, and presumably the high magnetic readings in the center of most earth lodge structures, even those without clearly defined basin outlines in the magnetic data, correlate with hearths. There is no clear geophysical evidence for the catastrophic burning of village houses suggested in many historical accounts, though more isolated indications of burning episodes are indeed present at the site.

The formerly plowed field also poses problems for interpretation, owing to the presence of numerous dipolar magnetic anomalies associated with metal artifacts that affect the results of magnetometry, though not necessarily other geophysical prospection methods. Compare, for example, the areas outside of the ditch in the extreme northeast with the extreme southeast in Figure 16. The extreme northeast is unplowed and is characterized by few discrete anomalies; in the southeast such anomalies dominate. Results show that the entire plowed field, whether inside or outside the ditch, is peppered with discrete high-magnetic anomalies, many of which are likely the result of historic agricultural use (remnants of fencing material, historic debris fallen from agricultural implements used in plowing, etc.). Those modern anomalies make the recognition of hearths and early-historic metal artifacts associated with the village occupation more difficult, absent ground-truth

excavation, although circular arrangements of these anomalies and other anomaly patterns do aid in defining probable locations of intact or partly intact structural basins in the plowed field.

Unique features, square in outline, were identified in two areas adjacent to structures in the plowed field (for example, see Figure 16 northwest corner of N920 E940 block). Those squares, approximately 4 m on a side, could represent burned platforms associated with houses or some other type of cultural feature. The approximate size and shape of the anomalies matches the center-post pattern evident in all excavated structural basins from the site; however, they do not conform to the projected location of houses in the plowed field.

The remote-sensing program initiated by MSUM in 2007, and augmented by the NPS training program participants a year later, achieved outstanding results in characterizing subsurface deposits for the entire Biesterfeldt site (Dalan et al. 2011). Recognition of mapped cultural features as geophysical anomalies was especially pronounced in the northern half or unplowed portion of the site. Reduced visibility to the south was attributed to plowing, with attendant disturbances and contaminates, as well as the differences in near-surface soils that lead to decreased contrasts between cultural features and surrounding soils (Figure 18).

Soil coring and down-hole susceptibility measurements provide a reliable means of documenting the preservation status of structures in the area formerly subject to plowing. This method has shown unequivocally that there are intact remains in plowed sections of the site. Nevertheless, it is also probable that shallow structure basins (under 25 cm in depth) have been plowed away or partly disturbed. The instrument resolution employed in 2007 and 2008 did not allow investigators to recognize and identify structure locations consistently or conclusively in the plowed field by surface geophysical or topographical means, but the presence of certain cultural features was abundantly clear. Accordingly, despite the obfuscation that resulted from years of plowing in the southern sector, there is ample evidence that nationally significant archeological deposits survive at greater depth and will produce important scientific data if investigated more fully.

Supplementary investigations carried out as part of the 2008 MSUM field school included additional geophysical survey and the excavation of 15 1-m-x-1-m test units meant to examine apparent anomalies, as well as pedestrian survey on adjacent lands. Ten of those units were placed within the perimeter ditch confines, and the other five fell immediately outside the ditch. These ground-truth investigations indicate that preservation at the site is even better than what had been previously assumed to be the case (Figure 19), and the floors of house features are still intact beneath the plow zone in formerly cultivated portions of the site within the village ditch. The very limited excavations could not conclusively confirm the presence of identifiable structures outside the ditch, but they did disclose evidence of spoil piles derived from cleaning sediments out of the ditch during the site's occupation.

More interesting, perhaps, was new evidence pointing to an earlier occupation of the Biesterfeldt site landform. One of the 2008 test units, placed in a circular ring of tall grass outside the ditch, resulted in the discovery of cultural debris representing the late pre-contact Northeastern Plain Village period (ca. 1200-1600). The same unit also provided evidence of two buried soil horizons, heretofore unknown at the site. [redacted]

Remaining Site-Specific Questions

Aside from the broader research questions concerning such topics as ethnic identity and the movements of peoples across the Great Plains, which might be profitably addressed at Biesterfeldt with reference to

archeological data derived at other sites elsewhere in the region, a number of site-specific questions about Biesterfeldt itself remain to be answered through continued investigation.

Earlier Components

The Biesterfeldt site lies on an elevated and commanding location close to a former course of the Sheyenne River, which now passes some distance to the west. While archeological examination of the site has not been anywhere near comprehensive, the seeming lack of material indicators of earlier occupations at this location had always troubled investigators. Buried soil zones, representing pre-contact human occupations from Archaic through Late Woodland times, are known to exist at sites elsewhere in the Sheyenne Valley (Michlovic and Running 2005), so it was no great surprise when the 2008 limited testing finally produced solid evidence of an earlier occupation zone at Biesterfeldt. Although that new evidence is indeed exciting, the full extent and character of those pre-contact deposits are not yet known. Further investigation of buried soil horizons identified at the site may yet yield more substantial data related to earlier settlement of the locality. If archeological research potential of great importance can later be demonstrated for the earlier deposits at Biesterfeldt, the site's period of national significance perhaps could be extended back a half-century or more.

Catastrophic Burning

A surprising piece of information derived from analysis of the ceramic collection actually reinforces the results of the magnetometer survey. This information sheds light on the evidence for burning on the house floors at Biesterfeldt. The historical records, particularly David Thompson's 1796 journal, indicate that the Ojibwa chief Sheshepaskut attacked and burned Biesterfeldt in the middle to late eighteenth century. Strong reported that during the excavations he found charred logs and timbers on the floors of all the house features examined. His claim has been used to bolster the interpretation, favored by historical sources, that the village was cataclysmically destroyed in an attack (Wood 1971:54ff).

Examination of the evidence, however, leads to certain qualifications of this reported event. To begin with, no structure yielded evidence for the kind of hurried or rapid burning that would force residents to flee abruptly, leaving behind many of their personal possessions as one would expect. Examples of this kind of conflagration are recognized at similar earth lodge village sites along the Missouri River, and such evidence where it does occur can be used to presume that violent attack was the likely cause—especially when recognized in multiple structures at a site. Nevertheless, artifact data, particularly ceramics, recovered from the fill of the presumed burned houses do not support a claim of sudden and complete site evacuation at Biesterfeldt. It may be noted that experimental firings of a full-size replica earth lodge have shown that initial attempts to burn such a structure can fail and several firings may be necessary to effect a complete burn (Taylor 1982; Fred Schneider, personal communication). Furthermore, clear evidence of catastrophic burning was identified at Scattered Village in Mandan, North Dakota, where burned artifacts were on the floor of earth lodges, including a cluster of whole pots (Ahler 2002).

When again exposed to fire after manufacture, depending upon the amount of oxygen available and intensity of the heat, ceramics can be altered in a variety of tell-tale ways, affecting surface and paste colors, as well as paste texture. For example, high temperatures exceeding those of original firing will contribute to crazing of a ceramic surface, and oxygen-poor fires will leave the paste uniformly blackened. These extreme effects were not evident in the pottery derived from the site, except in a small collection from House 36, which was reported to have a black deposit. A few ceramic specimens from this feature have a post-firing smudged surface that could have resulted from other than catastrophic burning. No difference is discernable among the ceramic sherds recovered from pit features, the ditch, or any presumably burned structures.

Absent signs of an intense or prolonged fire, none of the ceramic sherds bears witness to post-firing conflagrations either on their surfaces or in their internal fabric. It is also worth noting that sudden conflagrations, whether due to purposeful actions or accidental events, will sometimes leave the remains of complete vessels broken in place on the floors of house features, or multiple lithic caches, archeological signatures that are not evident among the limited Biesterfeldt field data. Finally, chert arrow points retrieved from the site lack evidence for heat-spalling (Figure 21), nor do bone tools recovered from the structures bear evidence consistent with the effects of a catastrophic and destructive fire.

House Clusters and Village Patterning

The Biesterfeldt site's village layout is characterized by an obvious central plaza, adjacent to remains of the largest building (House 16) at the site. This feature was first recognized by Lewis in 1890, although it is difficult to reconcile his placement of the plaza with modern maps of the site. This plaza, the close relationship of the largest building to this plaza, and the formal entrance in the ditch with a trail leading to the plaza combine to provide clear evidence of village planning. However, the village as a whole lacks strong patterning with regard to earth lodge entrance orientations.

Multiple organizational patterns are evident in the village. The first of these is the presence of additional open areas. Results of the soil-resistance survey, which show varied orientation of house entrances and arrangements around open spaces, attest to the presence of multiple plazas or courtyards arrayed about the village. Second, resistance survey in the north-central portion of the site indicates pathways leading away from the house entryways toward open areas on the site. Similarly, low resistance readings are also obtained from a modern service road that once cut across the site east to west when the property was used for farming and cattle grazing. Pathways indicate persistent traffic flow to localized portions of the site.

The lack of a clear pattern in lodge placement and multiple plazas may indicate the village was formed as a constellation of multiple related families, each kin group maintaining a degree of "local" cohesion within the site. A survey of pre-contact settlement sites in the region for a portion of the Late Pre-Contact period reveals the presence of small fortified villages with a small number of structures (estimated to number no more than five). This would approximate in size the putative kin-based "neighborhoods" suggested at the Biesterfeldt site.

Outside the Ditch Feature

Theodore Lewis's survey of 1890 represents the first systematic study of what later came to be called the Biesterfeldt site. Lewis was able to observe several features that have since been marred or diminished by cultivation. He was familiar with house depressions and noted that outside of the ditch were numerous houses. There is an earlier reference to those external features, as well. Curiously, in the twentieth century no other mention is made of house features outside the ditch. It is difficult to reconcile those specific early observations with the silence on this point in modern studies. The 2007 study team superficially examined the surrounding area and found no evidence for such depressions. However, much of the land farther south of the ditch (i.e., beyond the Conservancy property line) is still actively cultivated. Cultural debris can indeed be observed in those adjacent fields, consistent with that from the Biesterfeldt site proper, but it is not sufficient evidence at this point to justify expanding the boundary beyond the elevated ground immediately adjacent to the ditch embankment.

In addition to a formal entrance to the village from the south, the Lewis map and field notes reveal three additional features important to interpreting the site. They include representation of a jog in the southeast ditch curtain; a plaza; and a note indicating that there were 150-200 houses outside of the ditch. The latter observation

is corroborated by an earlier account (Grinnell 1918:365), which also mentions that the external house basins are shallower.

The initial remote sensing investigations of 2007 examined only a small linear area parallel to the defensive ditch, as most of the work was conducted inside that confining feature. Numerous anomalies were detected in this area and, while it is not clear whether they might be pits or structures, the presence of those cultural features suggest that the site is far more complex than a settlement contained entirely within the ditch perimeter. Supplementary geophysical study of the site and limited ground-truth excavation in 2008 expanded coverage outside the ditch but did not settle the question of whether there was residential life outside the confines. It is clear that activities related to village life were conducted outside the ditch, but any occupation of that area may have been in ephemeral structures. Resolving the veracity of the early observations is critical to understanding the occupation of the site.

It should be acknowledged, however, that community life typically extends well beyond even the clearest of village boundaries and incorporates various integrally associated features, many of which may be used for special purposes (e.g., waste disposal, agricultural plots, animal pens, cemeteries, sacred areas, etc.). Therefore, it is reasonable for this to be the case at Biesterfeldt. It may also be noted that at some North Dakota sites, such as Fort Clark, it has been speculated that houses outside the ditch could have been built by the Arikara after the Mandan had left for the winter (Fern Swensen, personal communication). Thus, it could be that features outside the ditch at Biesterfeldt are later and could even be the products of another cultural group. Additional field research may help identify and delineate ancillary features that lie in close proximity to the village proper.

Site Disturbances and Integrity

It is worth reiterating that the Biesterfeldt site was subject to cultivation for many years, and the southern part of the site has suffered greater degradation of surface features than the area lying north of an old fence line. Earth lodge depressions are not as clearly visible in the southern reaches, owing to long-term effects of the plow. Accordingly, it is perhaps more difficult for the casual visitor to appreciate fully the scope and complexity of Biesterfeldt on the ground. While all that is true, there is a sufficient number of obvious depressions in the northern parcel to suggest the general size and density of earth lodges that once stood at the site.

More important to the question of site integrity is the fact that the recent intensive geophysical investigations demonstrate that more than 60 earth lodge remains are present across the entire expanse of Biesterfeldt, though the surface expressions may have been obscured for many of them. Spatial patterning is evident from those data, which can potentially yield nationally significant information about community organization and the settlement system of this site's occupants. Further, the evident depth of cultural deposits associated with earth lodge features at the site, whether their locations are obvious at the surface or revealed only through geophysical prospection, also suggests the great potential for the Biesterfeldt site to yield consequential archeological information.

In short, although the presence of a good number of surviving earth lodge remains has been obscured by past agricultural practices, the potential for this archeological site to yield data of major scientific importance has not been diminished. Biesterfeldt retains outstanding integrity for a site of its kind, and the data it still contains have the potential to affect theories, concepts, and ideas about the past to a significant degree.

7. BIBLIOGRAPHICAL REFERENCES AND OTHER DOCUMENTATION

Ahler, Stanley A. (editor)
2002 Prehistory on First Street NE: The Archaeology of Scattered Village in Mandan, North Dakota. PaleoCultural Research Group. Submitted to The City of Mandan and North Dakota Department of Transportation.

2006 *Geophysical Survey and Test Excavation during 2005 at Boley Village (32MO37), North Dakota*. PaleoCultural Research Group. Submitted to the State Historical Society of North Dakota. Bismarck.

Anonymous
1909 *History of the Red River Valley: Past and Present*. Volume II. Herald Printing Company, Grand Forks, North Dakota.

Bales, J.R., and K.L. Kvamme
2005 Geophysical Signatures of Earthlodges in the Dakotas. In *Plains Earthlodges*, edited by D.C. Roper and E.R. Pauls, pp. 157-183. University of Alabama Press, Tuscaloosa.

Bevan, Bruce
2001 *Geophysical Tests at the Hopeton Mound Group*. Report on file, Midwest Archeological Center, National Park Service, Lincoln, Nebraska.

Billeck, William
2007 Personal communication. Smithsonian Institution, National Museum of Natural History, Department of Repatriation, Washington, D.C.

Bray, Edmund C., and Martha Coleman Bray, translators and editors
1976 Joseph N. Nicollet on the Plains and Prairies: The Expeditions of 1838-1839. Minnesota Historical Society Press, St. Paul.

Burke, Christina E., and Russell Thornton (assisted by Dakota Goodhouse)
2007 Winter by Winter. In *The Year the Stars Fell: Lakota Winter Counts at the Smithsonian*, edited by C. S. Greene and R. Thornton, pp. 70-298. University of Nebraska Press, Lincoln.

Coues, Elliott, editor
1897 New Light on the Early History of the Greater Northwest: The Manuscript Journals of Alexander Henry and of David Thompson, 1799-1814. 3 vols. F. P. Harper, New York.

1965 The Manuscript Journals of Alexander Henry and of David Thompson 1799-1814. Reprint of 1897 edition. Ross and Haines, Inc., Minneapolis, MN.

Dahlberg, J.
1977 Ceramic Analysis. In Archaeological Investigations of the Hendrickson III Site – 32SN403, Lamoure-Oakes Project Area, Garrison Diversion Unit, North Dakota, by K. Good, J. Dahlberg, T. Larson, B. Benz, and F. Schneider. USDI, Bureau of Reclamation, Billings, MT.

Dalan, Rinita, George Holley, Michael Michlovic, Erik Gooding, and Harold Watters, Jr.
2007 *Comprehensive Significance Study of the Biesterfeldt Site (32RM1), Ransom County, North Dakota*. Report prepared by Department of Anthropology and Earth Science, Minnesota State University, Moorhead, for USDI, National Park Service, Midwest Archeological Center, Lincoln, NE (Cooperative Agreement H6115050086).

Dalan, R. A., B. W. Bevan, D. Goodman, D. Lynch, S. De Vore, S. Adamek, T. Martin, G. Holley, and M. Michlovic
2011 The Measurement and Analysis of Depth in Archaeological Geophysics: Tests at the Biesterfeldt Site, USA. *Archaeological Prospection* 18(4):245-265.

DeMallie, Raymond J.
2001 Sioux Until 1850. In *Handbook of North American Indians*, v.13, pt.2. edited by R.J. DeMaillie, pp. 718-760. Smithsonian Institution, Washington, D.C.

De Vore, Steven L.
2008 *Geophysical Investigations of the Biesterfeldt Site (33RM1), Ransom County, North Dakota.* Report submitted to the Midwest Regional Director, The Archaeological Conservancy, by National Park Service, Midwest Archeological Center, Lincoln, NE.

Finney, Fred A.
2005 Theodore H. Lewis (1856-1930): An Obituary. *Minnesota Archaeologist* 64:11-20

Gardner, W. H.
1868 Letter. Smithsonian Institution Collections, Washington, D.C.

Gregg, M., and P. Picha
1990 North Dakota Comprehensive Plan for Historic Preservation: Archaeological Component. State Historical Society of North Dakota, Bismarck.

Grinnell, George Bird
1918 Early Cheyenne Villages. *American Anthropologist*, n.s., 20(4):359-380.

1923 *The Cheyenne Indians: Their History and Ways of Lif*e. Yale University Press, New Haven.

1955 *The Fighting Cheyennes*. University of Oklahoma, Norman.

Gough, Barry M.
1988 The Journal of Alexander Henry the Younger, 1799-1814. The Champlain Society, Toronto.

Hayden, Ferdinand Vandeveer
1862 On the Ethnography and Philology of the Indian Tribes of the Missouri Valley. *Transactions of the American Philosophical Society*, n.s., vol. 12 (part 2, article 3):321-461.

Holley, George R.
2008 Place Names, Mounds and Landscape: An Interpretation of the Late Prehistoric Occupation of the Northeastern Plains. *Journal of the North Dakota Archaeological Association* 8.

Holley, G. R., and E. M. Kalinowski
2009 The Lucas Site: Enclosures, Military Camps and the Terminal Late Woodland of the Northeastern Plains. *Journal of the North Dakota Archaeological Association* 8.

Holley, G. R., M. G. Michlovic, and R. A. Dalan
2011 *Report on 2008 Archaeology at the Biesterfeldt Site (32RM1), Ransom County, North Dakota*. Department of Anthropology and Earth Science, Minnesota State University, Moorhead.

Howard, J. H.
1966 *The Dakota or Sioux Indians*. Dakota Museum, University of South Dakota, Vermillion.

1976 *Yanktonai Ethnohistory and the John K. Bear Winter Count*. Plains Anthropologist Memoir 11, 21 (73, Pt. 2):1-78.

Johnson, Craig M.
2007 *A Chronology of Middle Missouri Plains Village Sites*. Smithsonian Contributions to Anthropology, Number 47. Smithsonian Scholarly Press, Washington, DC.

Kvamme, Kenneth L.,
2003 Multidimensional Prospecting in North American Great Plains Village Sites: *Archaeological Prospection* 10:131-142.

Kvamme, K. L., and S. A. Ahler
2007 Integrated Remote Sensing and Excavation at Double Ditch State Historic Site, North Dakota. *American Antiquity* 72:539-561.

Lehmer, Donald J.
1971 *Middle Missouri Archeology*. Department of the Interior, National Park Service, Anthropological Papers, No. 1. Washington, D.C.

Lewis, Theodore H.
1890 Sites Recorded by Northwest Archaeological Survey. Manuscript (MS#4184) reposited at the North Dakota Historical Society, Bismarck.

Lynott, Mark J.
2001 The Hopeton Earthworks: An Interim Report. *Hopewell Archeology* 4(2):1–5. Midwest Archeological Center, National Park Service, Lincoln, Nebraska.

Mallery, G.
1972 *Picture-Writing of the American Indians*, v.1 Reprint of 1893 original. Dover Publications, New York.

Michlovic, Michael G.
1983 The Red River Valley in the Prehistory of the Northern Plains. *Plains Anthropologist* 28: 23-31.

2008 The Shea Phase of the Northeastern Plains Village Culture. *Journal of the North Dakota Archaeological Association* 8.

Michlovic, Michael G., George R. Holley, Rinita A. Dalan and Erik Gooding
2016 The Cheyenne migration and the Biesterfeldt site revisited. *Plains Anthropologist* 61(237): 5-24.

Michlovic, M. G., and G. Running IV
2005 Archaeology and Paleoenvironment at the Rustad Site. *Plains Anthropologist*, Memoir 37.

Michlovic, M. G., and F. E. Swenson
1998 Northeastern Plains Village Pottery. North Dakota History, Journal of the Northern Plains 65 (2&3):11-25.

Mooney, James
1991 *The Ghost Dance Religion and the Sioux Outbreak of 1890*. Reprint of 1896 original. University of Nebraska Press, Lincoln.

Moore, John H., Margot Liberty, and A. Terry Strauss
2001 Cheyenne. In *Handbook of North American Indians, Vol. 13, Plains, Part 2*, edited by Ray DeMallie, pp. 863-885. Smithsonian Institution, Washington, D.C.

Nelson, P. W.
1964 *The Forests of the Lower Sheyenne Valley*. Unpublished Master's thesis, North Dakota State University, Fargo.

Riggs, Stephen Return
1863 St. Paul *Daily Press*, August 5, 1863.

Schneider, F. E.
1982 A Model of Prehistoric Cultural Development in the James River Valley of North Dakota. *Journal of the North Dakota Archaeological Association* 1:113-133.

Scullin, Michael
2007 Personal communication. Professor Emeritus of Anthropology, Minnesota State University, Mankato.

Strong, William Duncan
1940 From History to Prehistory in the Northern Great Plains. In *Essays in the Historical Anthropology of North America*. Smithsonian Miscellaneous Collections, 100: 353-394. Washington, D.C.

Swanton, J. R.
1952 *The Indian Tribes of North America*. Smithsonian Institution, Washington, D.C.

Taylor, John F.
1982 Preliminary Report on the On-A-Slant Village Replica Earth lodge Burn Project. Report Submitted to Dr. James Sperry, Superintendent, State Historical Society of North Dakota. Collection of Archeology & Historic Preservation, Manuscript 3771. Bismarck.

Thorfinnson, S. M.
1975 *Ransom County History*. Ransom County Historical Society, Fort Ransom, ND.

Toom, D. L.
2004 Northeastern Plains Village Complex Timelines and Relations. *Plains Anthropologist* 49:281-297.

Tyrrell, J. B., editor
1916 David Thompson's Narrative of his Explorations in Western America, 1784-1812. The Champlain Society, Toronto.

Van Osdel, A. L.
1899 The Monthly South Dakotan, August 4, 1899.

Vehik, S. C., and R. Vehik
1985 Anderson Mound: A Late Prehistoric Burial Mound in Eastern North Dakota. *The Minnesota Archaeologist* 44(1):3-17.

Weymouth, John W.
1979 Technical Developments and Results of the 1977 Season of the Great Plains Magnetic Surveying Program. *Archaeo-Physica* 10:710-717.

Weymouth, J. W., and R. K. Nickel
1977 A Magnetometer Survey of the Knife River Indian Villages. Plains Anthropologist Memoir 13:104-118.

Wheeler, R. P.
1963 The Stutsman Focus: An Aboriginal Culture Complex in the Jamestown Reservoir Area, North Dakota. River Basin Surveys Papers, no. 30. Bureau of American Ethnology Bulletin, 185:171-234. Washington, D.C.

Wilford, Lloyd
1952 Transcription of Notes by County, Wilkin County. Minnesota Historical Society, St. Paul.

Will, George F.
1914 The Cheyenne Indians in North Dakota. Proceedings of the Mississippi Valley Historical Association 7: 67-78.

Will, George F., and Thad. C. Hecker
1944 Upper Missouri River Valley Aboriginal Culture in North Dakota. North Dakota Historical Quarterly 11(1-2).

Wood, W. Raymond
1963 Lisbon Flared Rim and Owego Flared Rim Wares. In *The Stutsman Focus: An Aboriginal Culture Complex in the Jamestown Reservoir Area, North Dakota*, by R. P. Wheeler, River Basin Surveys Papers, no. 30. Bureau of American Ethnology Bulletin, 185:231-232.

1971 *Biesterfeldt: A Post-Contact Site on the Northeastern Plains*. Smithsonian Contributions to Anthropology, No. 1. Washington, D.C.

1993 *Joseph N. Nicollet's 1839 Manuscript Maps of the Missouri River and Upper Mississippi Basin*. Illinois State Museum, Scientific Papers, Vol. 24. Springfield.

2007 Significance of the Biesterfeldt Site. Manuscript report prepared under purchase order for USDI, National Park Service, Midwest Archeological Center, Lincoln, NE.

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_X_ Previously listed in the National Register (fill in 1 through 6 below)

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1. NR # 80002925
2. Date of listing: February 8, 1980
3. Level of significance: National
4. Applicable National Register Criteria: A__ B__ C__ D_X_
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PHOTOGRAPH INFORMATION

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County and State: Ransom County, North Dakota
Name of Photographer: unknown; courtesy of Dr. Frank Zeck
Photograph Date: September 11, 2007
Location of Original Digital Files: Minnesota State University-Moorhead

Photo Number	Description	Camera Direction
1	General aerial view of Biesterfeldt site, high angle.	SW
2	General aerial view of Biesterfeldt site, low angle.	SW

Photo Log

Ink and Paper Combination: **UltraChrome HD Pigment Inks** on **Moab Juniper Baryta Rag Glossy Fine Art Inkjet Print Paper** using an **Epson SureColor P600** printer

Photo 0001:
Biesterfeldt Site
Ransom County, North Dakota
Photo courtesy of Dr. Frank Zeck, Lisbon, North Dakota
September 11, 2007
Image archived at Dept of Anthropology and Earth Science, Minnesota State University-Moorhead
General view of Biesterfeldt site. View toward southwest, high angle.
image file name: ND_Ransom County_Biesterfeldt Site_001.tif

Photo 0002:
Biesterfeldt Site
Ransom County, North Dakota
Photo courtesy of Dr. Frank Zeck, Lisbon, North Dakota
September 11, 2007
Image archived at Dept of Anthropology and Earth Science, Minnesota State University-Moorhead.
General view of Biesterfeldt site. View toward west, low angle.
image file name: ND_Ransom County_Biesterfeldt Site_002.tif

FIGURES

Figure Number	Description of Figure
1	Approximate Location of the Biesterfeldt Site in the Northeastern Plains (Dalan et al. 2007; NPS files).
2	Geological Setting of the Biesterfeldt Site. To the east is the Sheyenne Delta, south and east are outwash deposits, west is the till plain (Dalan et al. 2007; NPS files).
3	Biesterfeldt Site Location (Geophysical Study Area) on Venlo, ND, 7.5' USGS Quad (De Vore 2008)
4	Copy of Lewis 1890 Map of the Biesterfeldt Site. Adapted from a copy available at the State Historical Society, Bismarck (Dalan et al. 2007; NPS files).
5	Libby-Stout Map, 1908 (Grinnell 1918 in Dalan et al. 2007; NPS files).
6	George Will Map, 1914 (Grinnell 1918 in Dalan et al. 2007; NPS files).
7	Contour Map of Biesterfeldt Site, 1923. State Historical Society, Bismarck (Dalan et al. 2007; NPS files).
8	Modified Libby-Stout Map with Strong's 1935 Excavations (Wood 1971).
9	Biesterfeldt Site, View to the Southwest (Dalan et al. 2007; NPS files).
10	Topographic Map with Location of Houses, Pits, Ditch, Lewis Entrance (Dalan et al. 2007; NPS files)...
11	Locations of Pits and House Centers Evident on the Surface (Dalan et al. 2007; NPS files).
12	Location of Geophysical Grid Relative to Other Features (Dalan et al. 2007; NPS files).
13	Resistance Survey, Biesterfeldt Site. The data have been despiked, edge-matched, and a high pass filter (X and Y radius = 10 with uniform weighting) has been applied (Dalan et al. 2007; NPS files).
14	Resistance Map with Geo-Referenced Libby-Stout Houses and Pits (Dalan et al. 2007; NPS files).
15	Gradiometer Survey, Biesterfeldt Site. Processing steps applied include zero mean traverse, search and replace values above 20 nT, interpolation to produce evenly spaced data, and a Gaussian low pass filter (X and Y radius=2) (Dalan et al. 2007; NPS files).
16	Gradiometer Map with Geo-Referenced Libby-Stout Houses and Pits (Dalan et al. 2007; NPS files).
17	Electrical Resistance (top) and Magnetometry (bottom) Survey of the Biesterfeldt Site (Dalan et al. 2007; NPS files).
18	Interpretation of the Magnetometer Survey at Biesterfeldt (DeVore 2008).
19	Bone Pile, Cache 13, 2008 (Holley et al. 2011).
20	Biesterfeldt Ceramics Typical of Village Occupation (Holley et al. 2011).
21	Chipped Lithics, Points (Holley et al. 2011).
22	Metal Points and Knives (Holley et al. 2011).



Photo 1. General aerial view of Biesterfeldt site, high angle. (Photo courtesy of Dr. Frank Zeck, Lisbon, North Dakota)



Photo 2. General aerial view of Biesterfeldt site, low angle. (Photo courtesy of Dr. Frank Zeck, Lisbon, North Dakota)

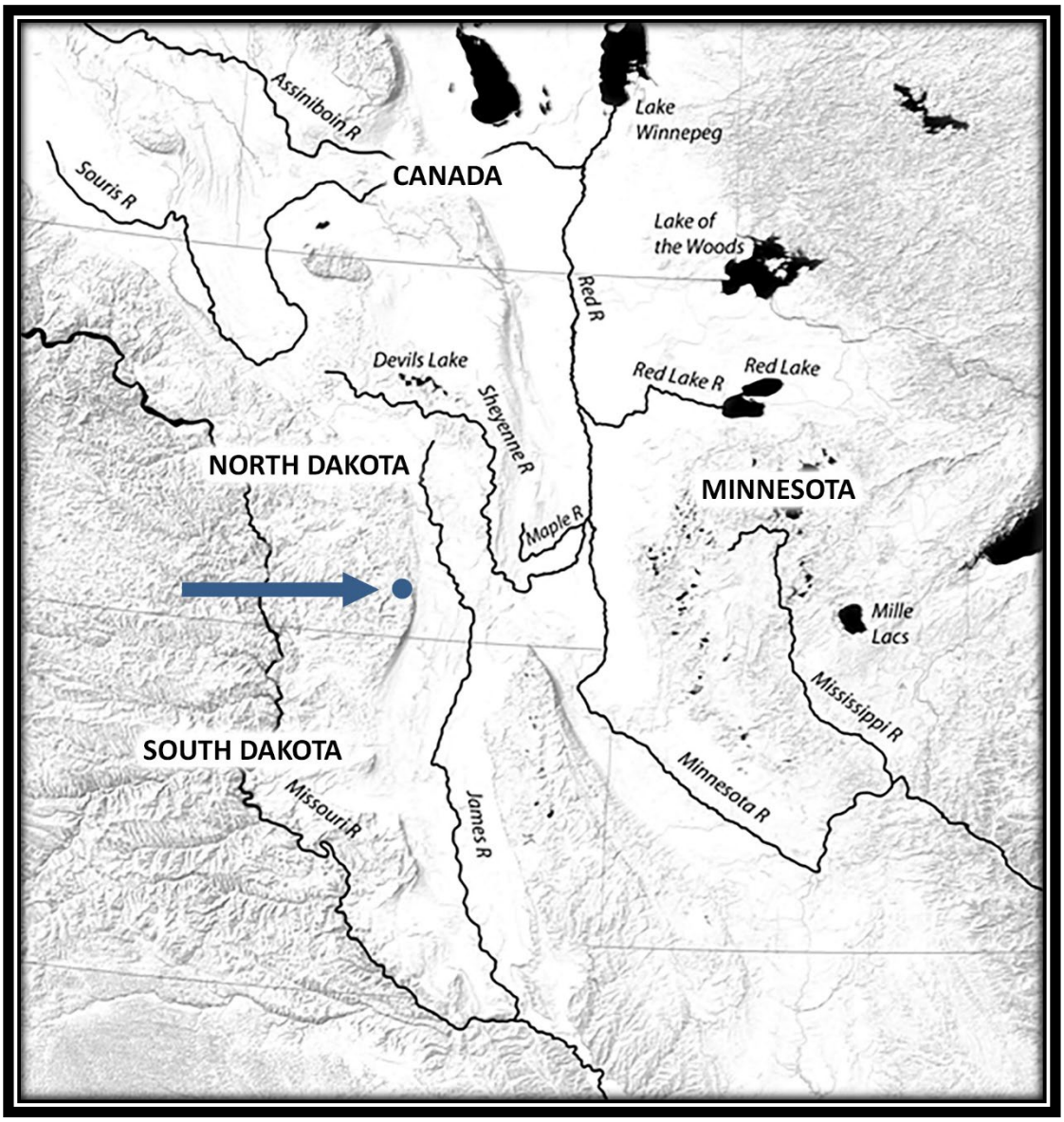


Figure 1. Approximate location of the Biesterfeldt Site in the Northeastern Plains (Dalan et al. 2007; NPS files).



Figure 2. Geological setting of the Biesterfeldt Site. To the east is the Sheyenne Delta, south and east are outwash deposits, west is the till plain (Dalan et al. 2007; NPS files).



Figure 3. Biesterfeldt Site Location (Geophysical Study Area) on Venlo, ND, 7.5' USGS Quad (De Vore 2008).



Figure 4. Copy of Lewis 1890 Map of the Biesterfeldt site. Adapted from a copy available at the State Historical Society, Bismarck (Dalan et al. 2007; NPS files).

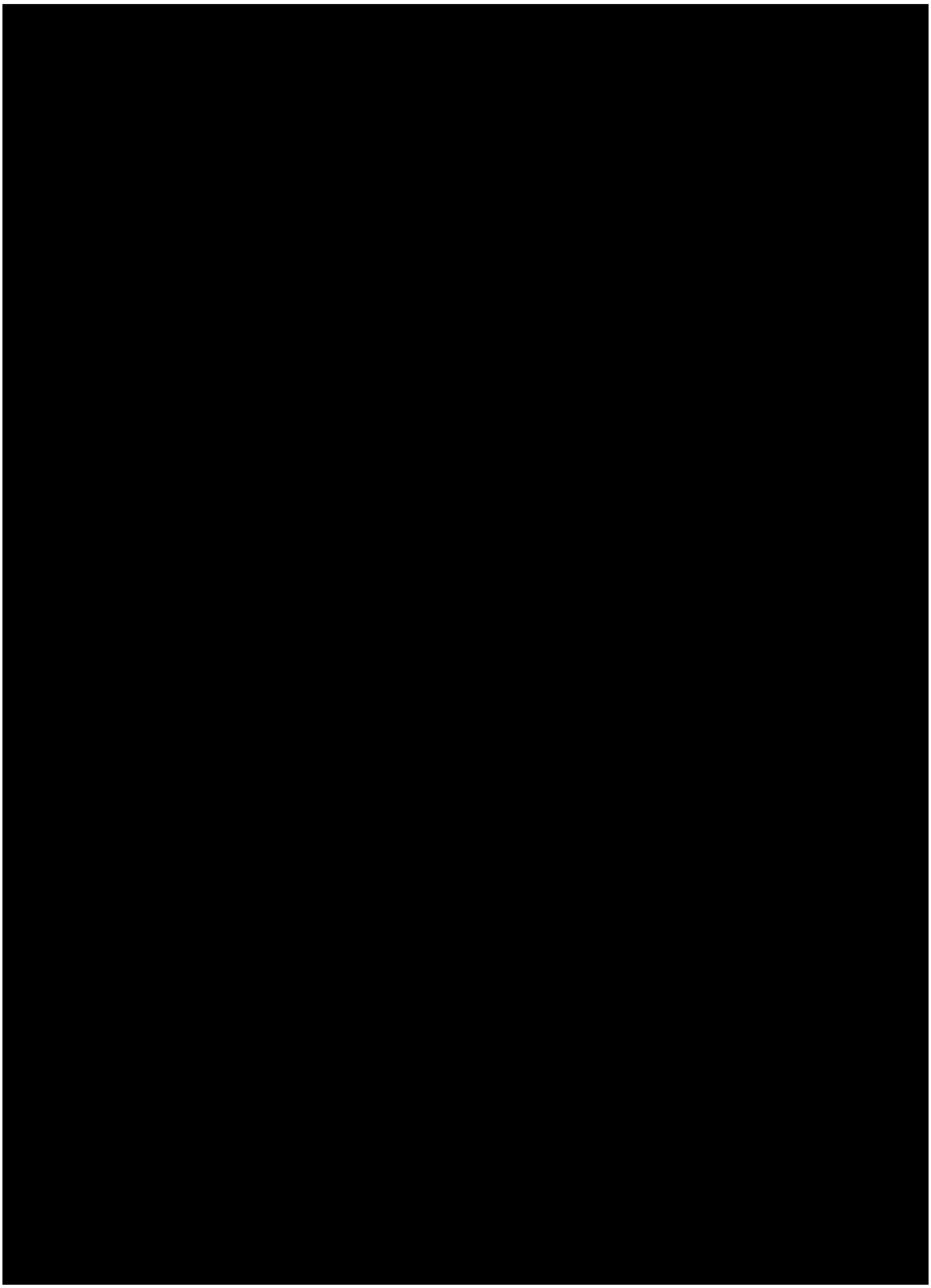


Figure 5. Libby-Stout Map, 1908 (Grinnell 1918 in Dalan et al. 2007; NPS files).



Figure 6. George Will Map, 1914 (Grinnell 1918 in Dalan et al. 2007; NPS files).



Figure 7. Contour Map of Biesterfeldt Site, 1923. State Historical Society, Bismarck (Dalan et al. 2007; NPS files).



Figure 8. Modified Libby-Stout Map with Strong's 1935 Excavations (Wood 1971).



Figure 9. Biesterfeldt Site, View to the Southwest (Dalan et al. 2007; NPS files).

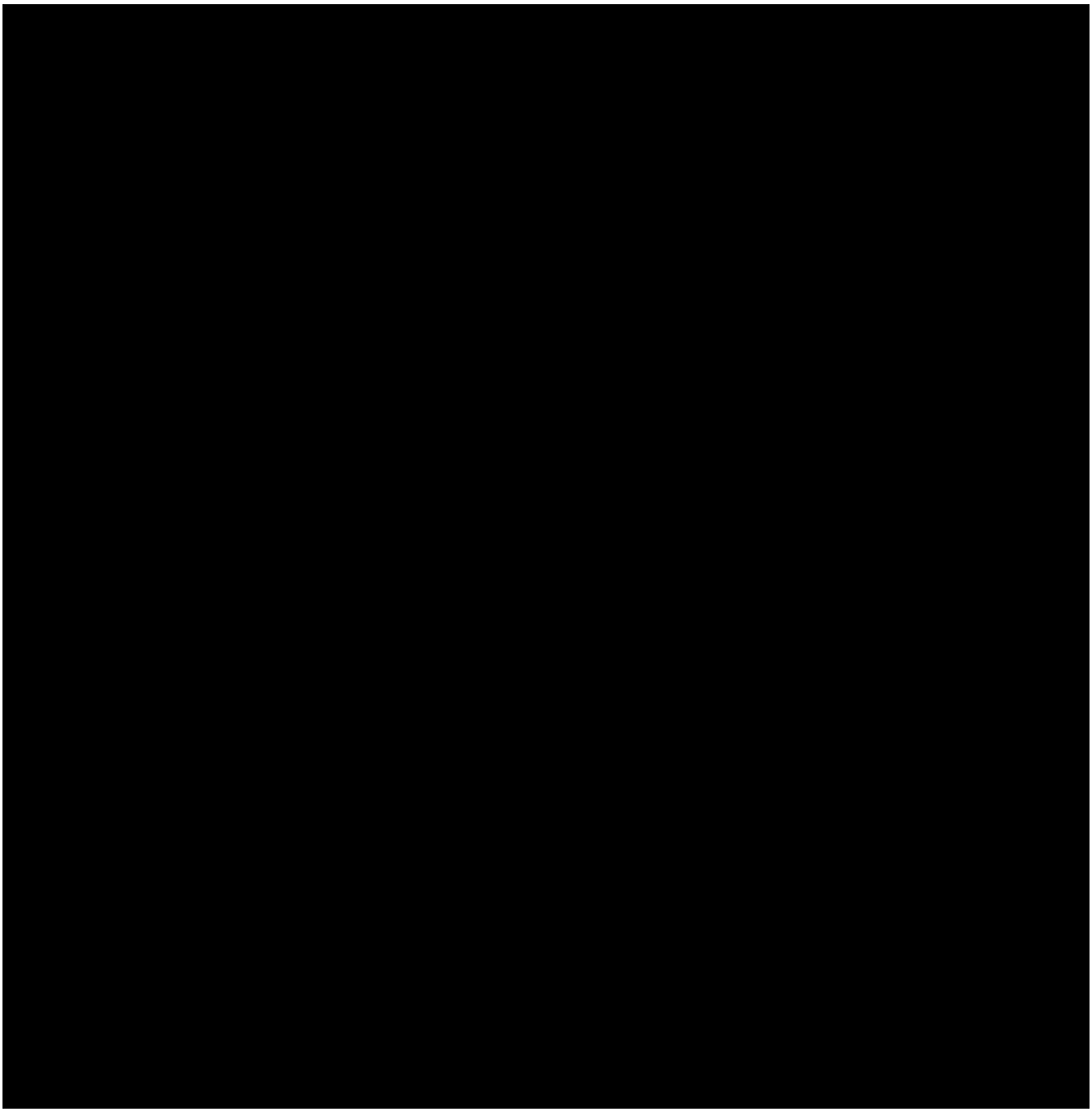


Figure 10. Topographic Map with Location of Houses, Pits, Ditch, Lewis Entrance (Dalan et al. 2007; NPS files).



Figure 11. Locations of Pits and House Centers Evident on the Surface (Dalan et al. 2007; NPS files).

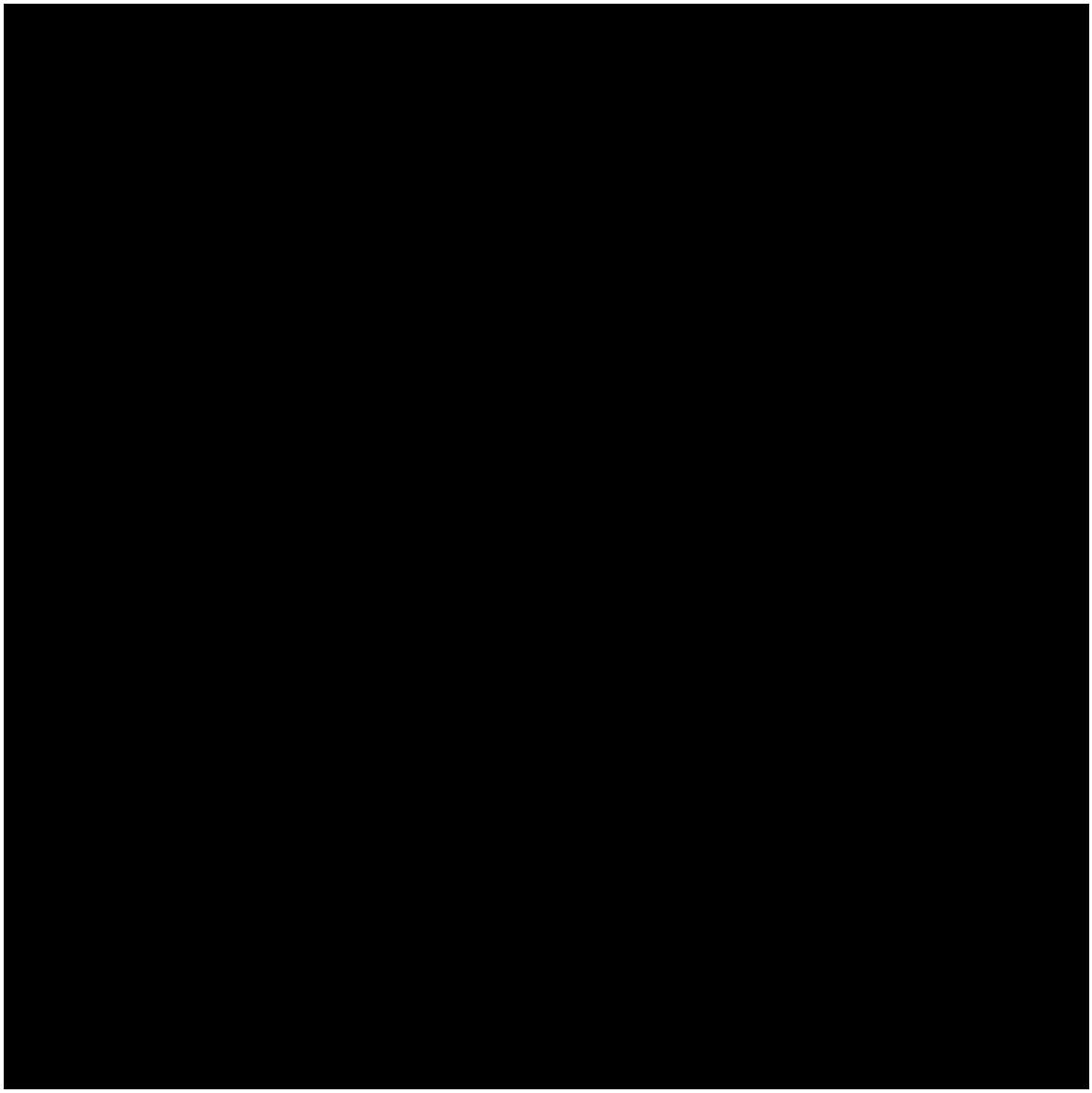


Figure 12. Location of Initial 2007 Geophysical Grid Relative to Other Features (Dalan et al. 2007; NPS files).

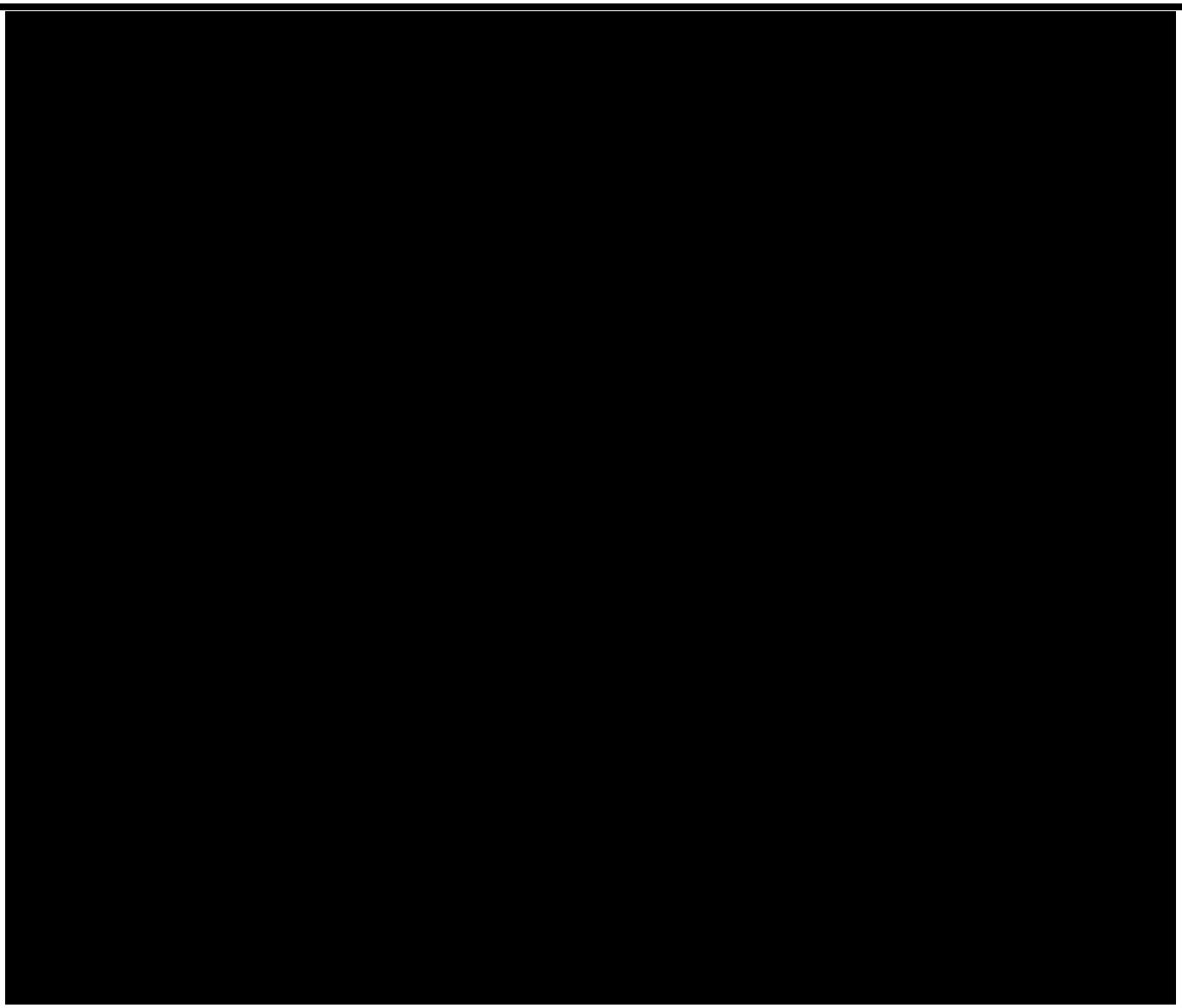


Figure 13. Resistance Survey, Biesterfeldt Site. The data have been despiked, edge-matched, and a high-pass filter (X and Y radius = 10 with uniform weighting) has been applied (Dalan et al. 2007; NPS files).



Figure 14. Resistance Map with Geo-Referenced Libby-Stout Houses and Pits (Dalan et al. 2007; NPS files).



Figure 15. Gradiometer Survey, Biesterfeldt Site. Processing steps applied include zero mean traverse, search and replace values above 20 nT, interpolation to produce evenly spaced data, and a Gaussian low pass filter (X and Y radius=2) (Dalan et al. 2007; NPS files).

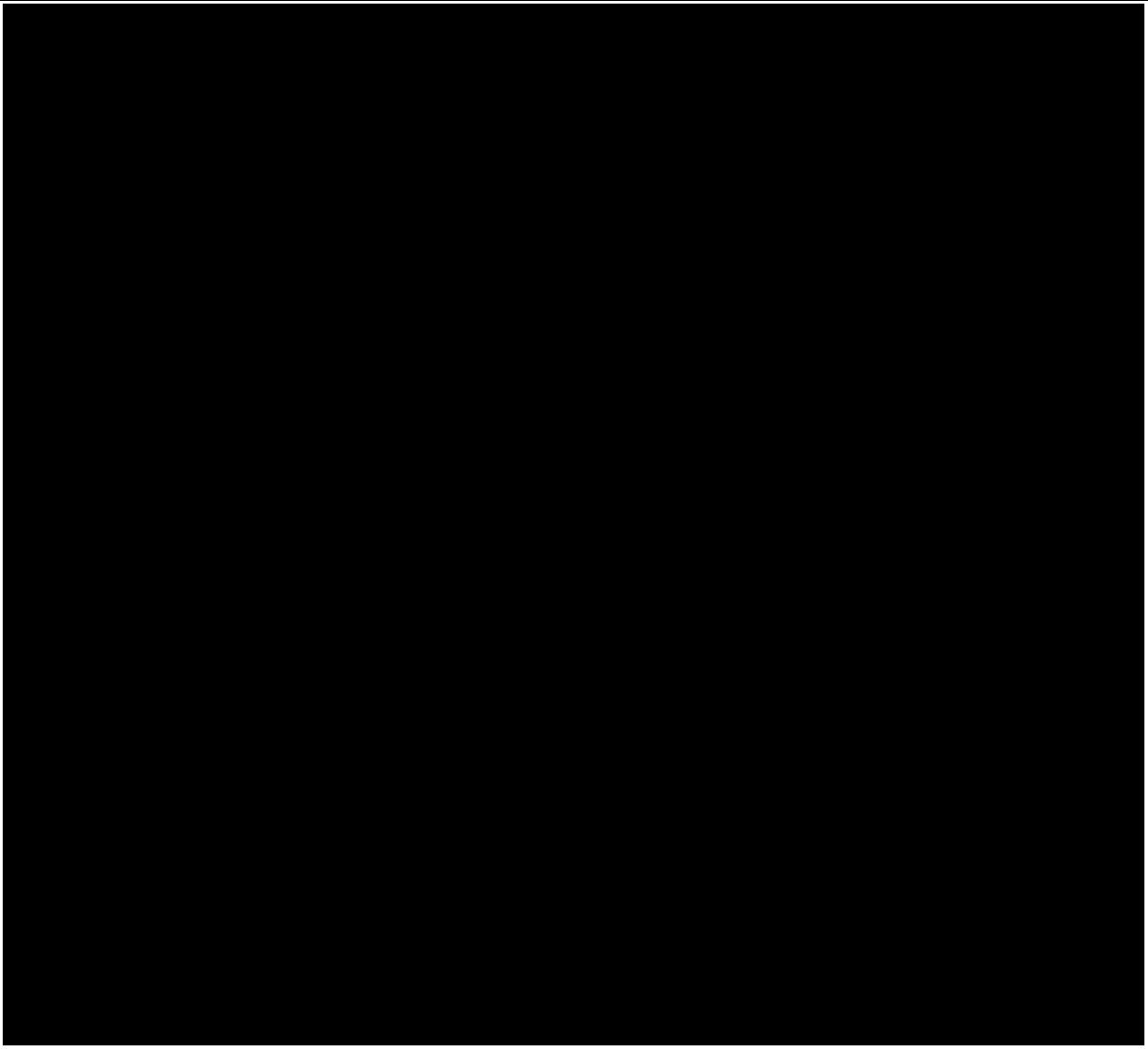


Figure 16. Gradiometer Map with Geo-Referenced Libby-Stout Houses and Pits (Dalan et al. 2007; NPS files).

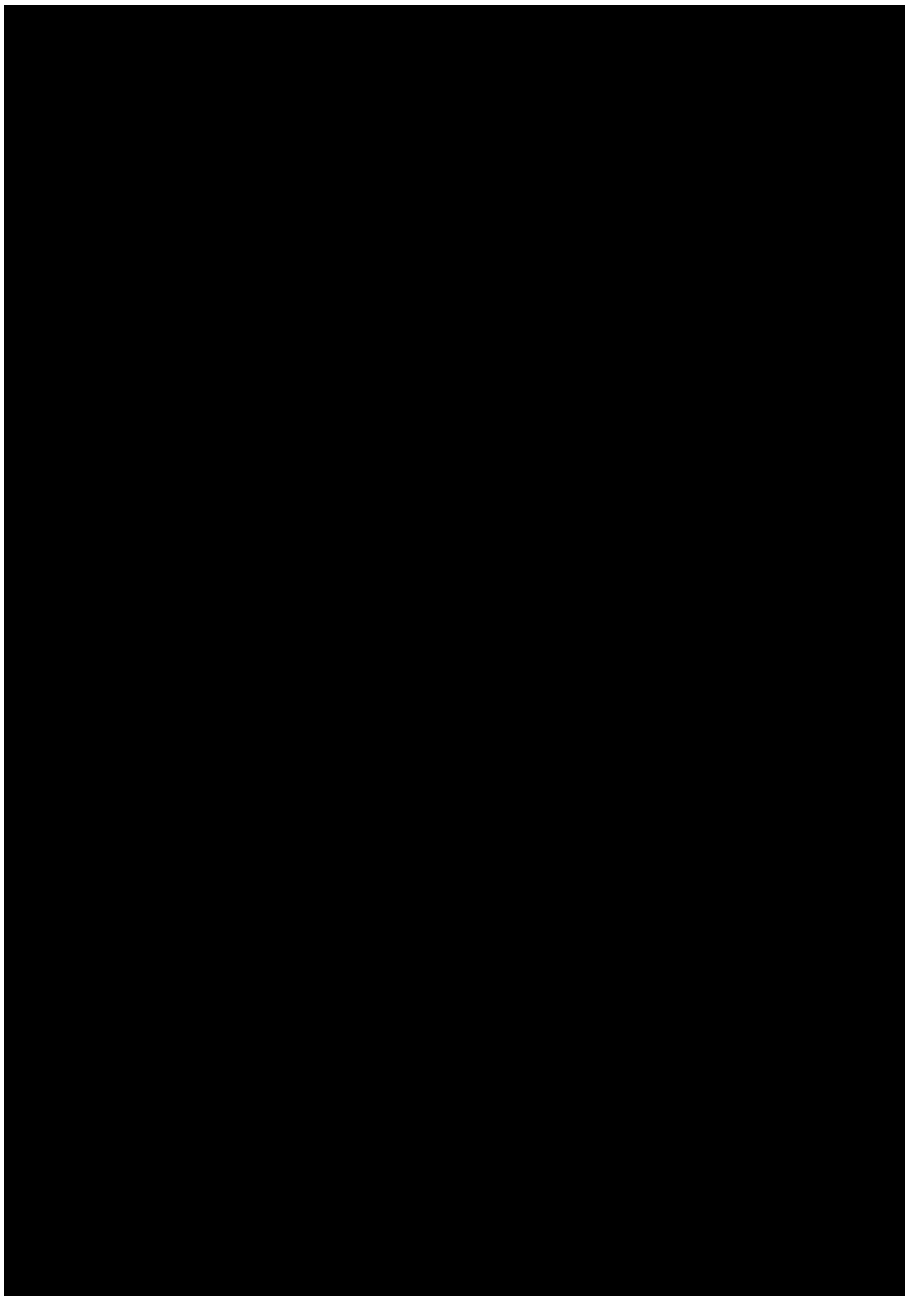


Figure 17. Electrical Resistance (top) and Magnetometry (bottom) Survey of the Biesterfeldt Site (Dalan et al. 2007;NPS files).



Figure 18. Interpretation of the 2008 Magnetometer Survey at Biesterfeldt (DeVore 2008).



Figure 19. Bone Pile, Cache 13, 2008 (Holley et al 2011).

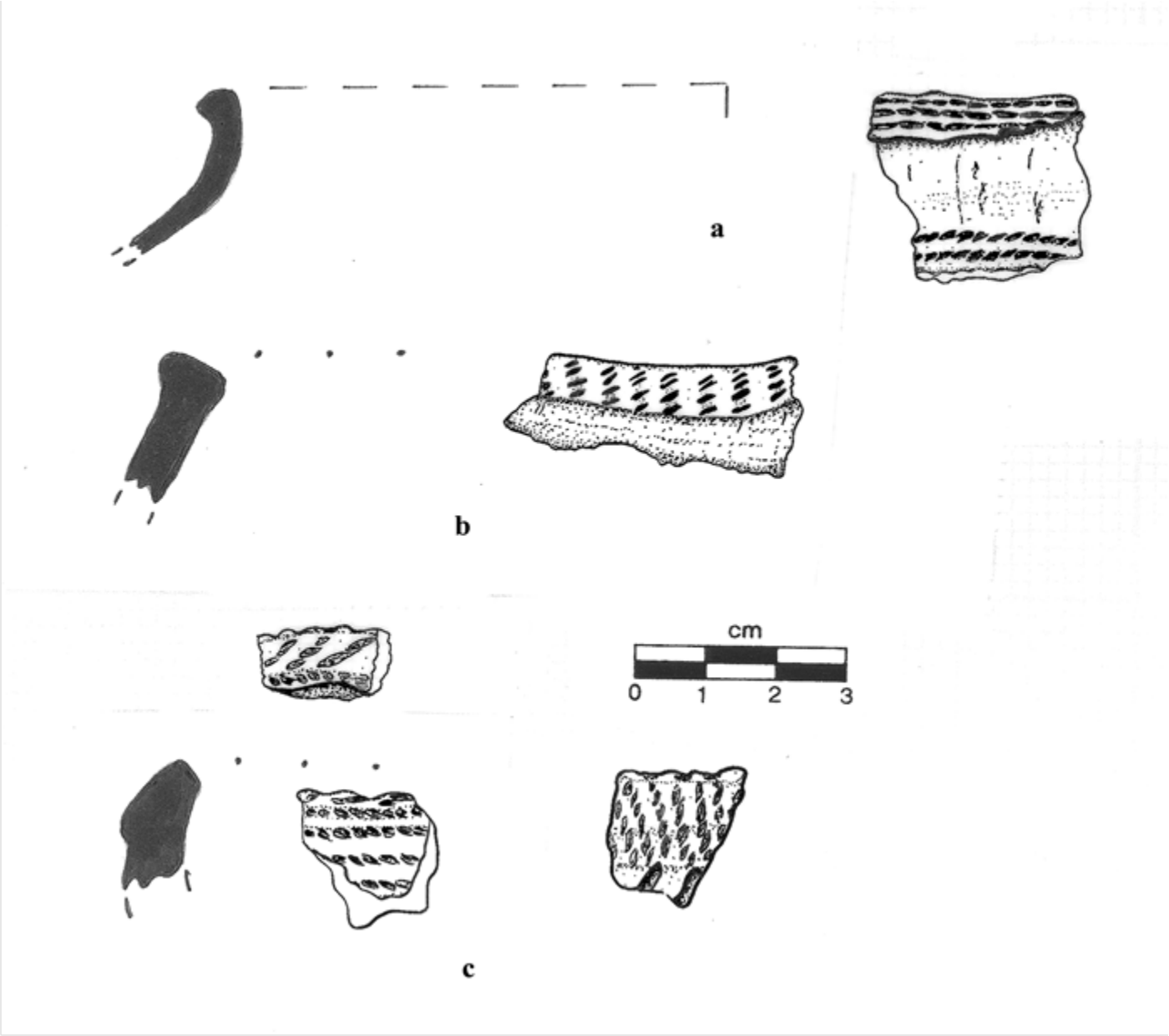


Figure 20. Biesterfeldt Ceramics Typical of Village Occupation (Holley et al. 2011).

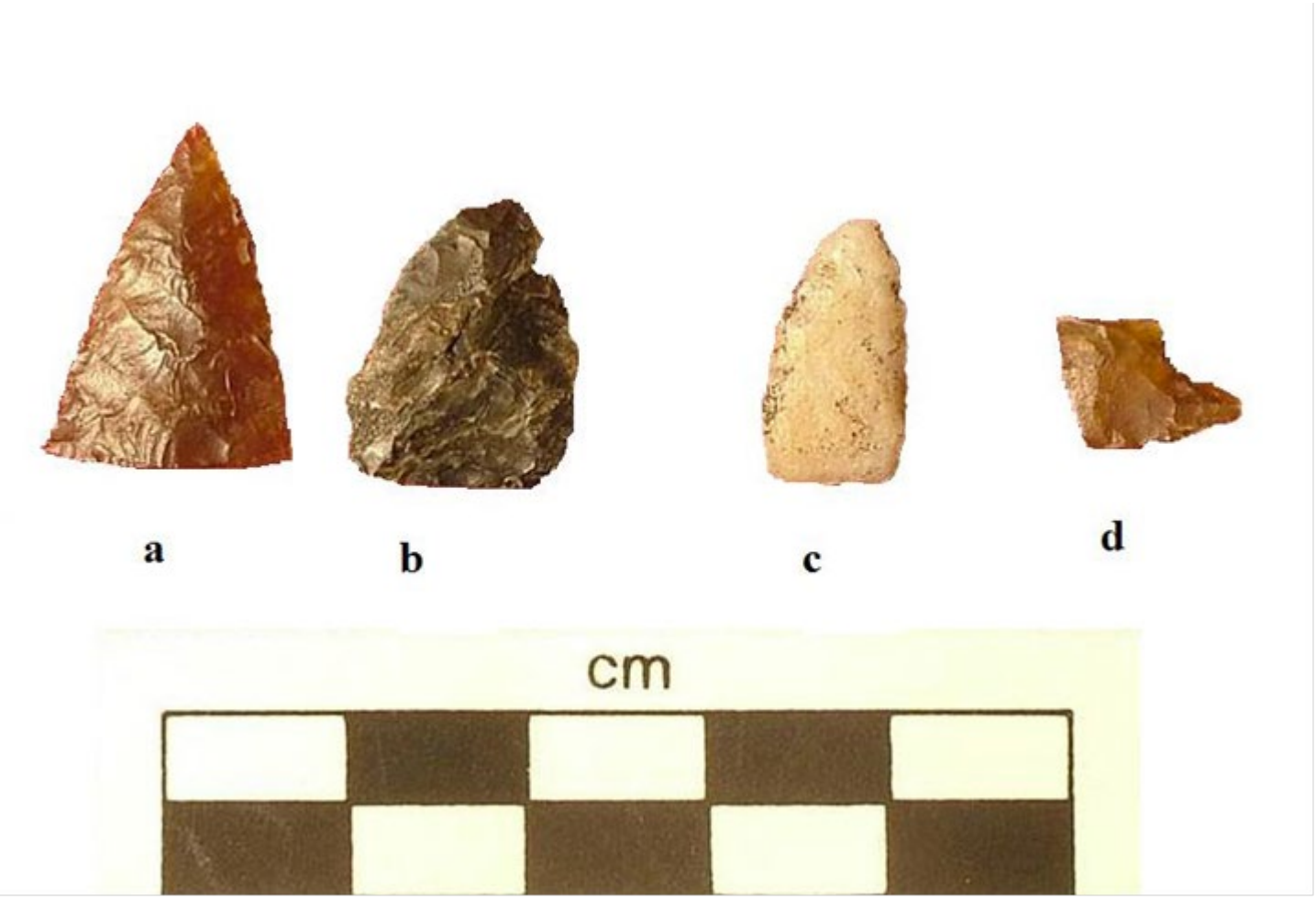


Figure 21. Chipped Lithics, Points (Holley et al. 2011).

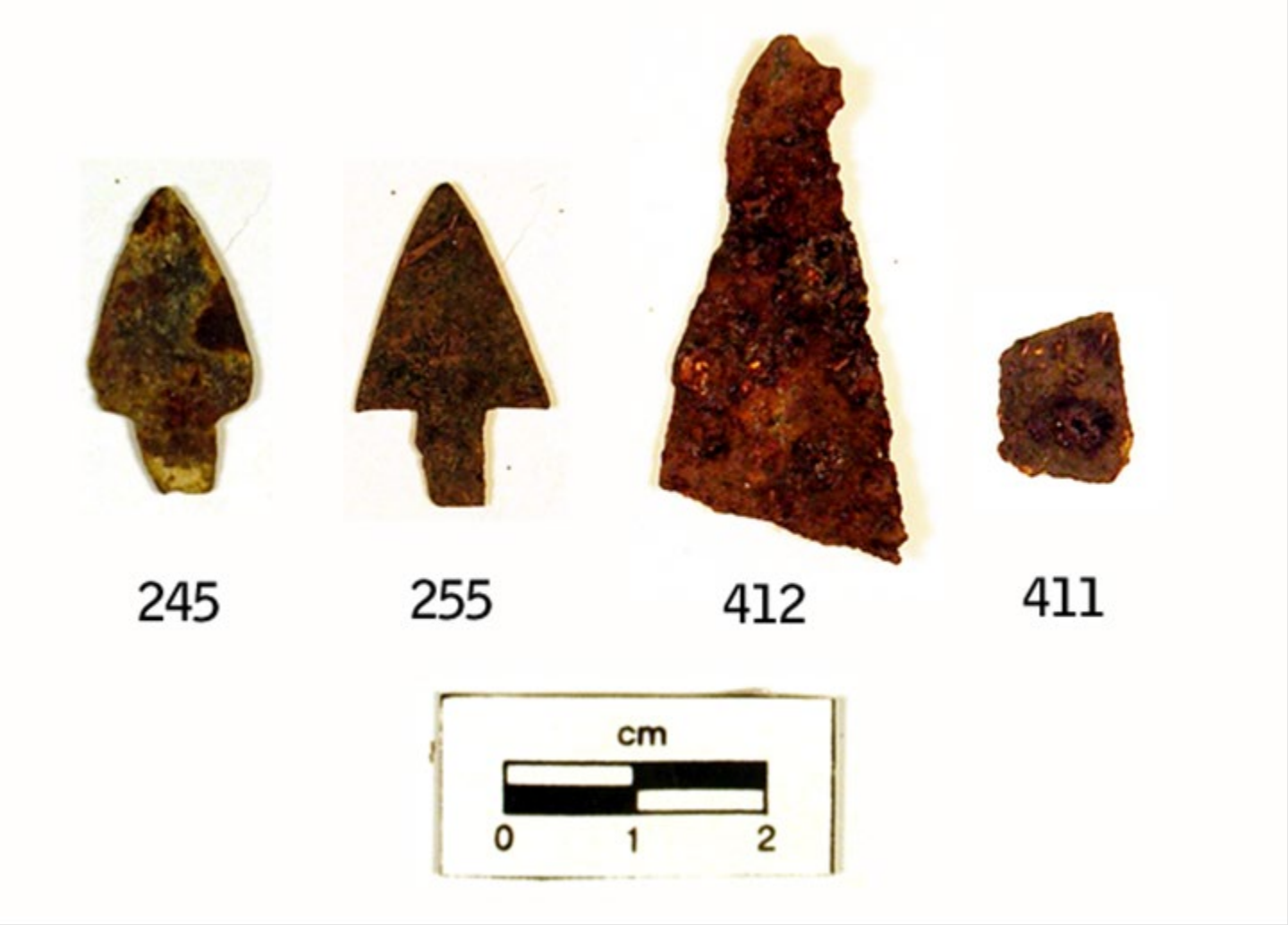


Figure 22. Metal Points and Knives (Holley et al. 2011).