



Hub City Energy Park

Aberdeen, South Dakota

Application for an Energy Conversion Facility Permit

Docket EL26-XXX

Appendix J – Public – Cultural Resources Report

October 2026



Hub City Energy Park Level III Intensive Survey

Hub City Energy Park

*Aberdeen, Brown County, South Dakota, Section 25,
Township 123N, Range 64W*

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Abstract

HDR Engineering, Inc. (HDR) conducted a Level III Intensive Survey of the 21.3 acres (8.6 (hectares, ha)) for the proposed NorthWestern Energy (NorthWestern) Hub City Energy Park project (Project) located in Aberdeen, Brown County, South Dakota on June 3rd, 2026. NorthWestern is proposing to construct a new gas-fired power generation plant, covering 21.3 acres (8.6 ha) of the entire 176.4 acres (71.4 ha) NorthWestern owns at the project site. The proposed Project Area of Potential Effects (APE) is located entirely in agricultural fields. The city of Aberdeen lies directly north of the Project APE, with east-to-west flowing Foot Creek approximately 0.25 miles south of the Project APE's southern boundary. A Level III Intensive Survey was performed for the proposed activities due to the potential for disturbance of historic properties as defined by the National Historic Preservation Act and its implementing regulations (54 U.S.C. §306108). All work was conducted according to 36 CFR Parts 60 and 61.

The Level III Intensive Survey included a pedestrian survey and photo-documentation. These tasks consisted of ground surface inspection, photographing the general conditions of the Project APE, and recording identified cultural material. One site was identified during this survey. Site 39BN0174 is a multicomponent site that consists of an artifact scatter on the ground surface in the western portion of the Project APE. Site 39BN0174 has been heavily affected by agricultural practices and topsoil moving activities to create an equipment laydown area currently in use. This existing laydown area is not associated with the Hub City Energy Park project. Artifacts identified on the ground surface include; 5 aluminum or tin can fragments, 1 pull tab, 3 aqua bottle glass fragments, 7 colorless bottle glass fragments, 7 brown bottle glass including 1 embossed fragment, 1 brick fragment, 1 ceramic irrigation pipe fragment, 2 solarized amethyst bottle glass fragments, 1 cement fragment, 1 coal slag, and 1 chert possible biface fragment. A second artifact scatter was identified on [REDACTED]. This spoil pile consisted of machine excavated topsoil moved from its place of origin to create the equipment laydown area. The material identified included ceramic irrigation pipe fragments, bottle glass, and an unidentified fragment. This concentration of artifacts was determined to be out of context due to the soil moving activity at the laydown area and not included in site 39BN0174. Due to the agricultural and machine excavating disturbance, including a lack of diagnostic artifacts, it is recommended that site 39BN0174 is not eligible for listing on the National Register of Historic Places and the Project poses No Adverse Effect (36 CFR Part 800.4). Currently, the Project is not a federal undertaking subject to Section 106 of the National Historic Preservation Act. However, all tasks associated with the Project were conducted by qualified personnel, as defined by Federal standards (36 CFR Part 61), and in compliance with Section 106 of the National Historic Preservation Act (54 U.S.C. §300101). All work complied with South Dakota Guidelines for Compliance with the National Historic Preservation Act and South Dakota Codified Law 1-19A-11.1 (SD SHPO 2012); [RF3.1]the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 Fed. Reg. 190 [1983]), and 36 CFR Part 66, "Recovery of Scientific, Prehistoric, Historic, and Archaeological Data." HDR's cultural resources staff meet or exceed the Secretary of Interior's Professional Qualifications Standards (36 CFR Part 61).

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1 Introduction

On June 3rd, 2026, archaeologists from HDR Engineering, Inc. (HDR) conducted a Level III Intensive Survey of the 21.3 acres (8.6 hectares, ha) for the proposed Hub City Energy Park project (Project) located in Aberdeen, Brown County, South Dakota. During the survey, weather conditions were partly cloudy with a high temperature of 82 degrees Fahrenheit. NorthWestern Energy (NorthWestern) is proposing to construct a new gas-fired power generation plant, covering 21.3 acres (8.6 ha) of the entire 176.4 acres (71.4 ha) NorthWestern owns at the project site. The proposed Project Area of Potential Effects (APE) is located entirely in agricultural fields. The city of Aberdeen lies directly north of the Project APE, with east-to-west flowing Foot Creek approximately 0.25 miles south of the Project APE's southern boundary. A Level III Intensive Survey was performed for the proposed activities to have the potential for disturbance of historic properties as defined by the National Historic Preservation Act and its implementing regulations (54 U.S.C. §306108). All work was conducted according to 36 CFR Parts 60 and 61. Currently, the Project is not a federal undertaking subject to Section 106 review of the National Historic Preservation Act and was surveyed in accordance with the South Dakota state guidelines for non-federal projects.

The Level III Intensive Survey included a pedestrian survey and photo-documentation. These tasks consisted of ground surface inspection, photographing the general conditions of the Project APE, and recording identified cultural material. One site was identified during this survey, site 39BN0174, which is a multicomponent site that consists of an artifact scatter in the western portion of the Project APE, 2.47 acres (1 ha) in size. Site 39BN0174 has been heavily affected by agricultural practices and topsoil moving activities to create an equipment laydown area currently in use. This existing laydown area is not associated with the Hub City Energy Park project. Artifacts identified on the ground surface include; 5 aluminum or tin can fragments, 1 pull tab, 3 aqua bottle glass fragments, 7 colorless bottle glass fragments, 7 brown bottle glass including 1 embossed fragment, 1 brick fragment, 1 ceramic irrigation pipe fragment, 2 solarized amethyst bottle glass fragments, 1 cement fragment, 1 coal slag, and 1 chert possible biface fragment. A second artifact scatter was identified on [REDACTED]

[REDACTED] This spoil pile was machine excavated from its place of origin to create the equipment laydown area for NorthWestern. The material identified included ceramic irrigation pipe fragments, bottle glass, and an unidentified fragment. This concentration of artifacts was determined to be out of context due to the soil moving activity at the laydown area and was not included in Site 39BN0174. Due to the agricultural and machine excavating disturbance, including a lack of diagnostic artifacts, it is recommended that Site 39BN0174 is not eligible for listing on the National Register of Historic Places.

Currently, the Project is not a federal undertaking subject to Section 106 of the National Historic Preservation Act. However, all tasks associated with the Project were conducted by qualified personnel, as defined by Federal standards (36 CFR Part 61), and in compliance with Section 106 of the National Historic Preservation Act (54 U.S.C. §300101). All work complied with South Dakota Guidelines for Compliance with the National Historic Preservation Act and South Dakota Codified Law 1-19A-11.1 (SD SHPO 2012); the Secretary of the Interior's Standards and Guidelines for Archeology and Historic

Preservation (48 Fed. Reg. 190 [1983]), and 36 CFR Part 66, “Recovery of Scientific, Prehistoric, Historic, and Archaeological Data.” HDR’s cultural resources staff meet or exceed the Secretary of Interior’s Professional Qualifications Standards (36 CFR Part 61).

2 Background Research

2.1 Previously Recorded Archaeological and Architectural Resources

2.1.1 The cultural resources desktop background investigation was initiated on 6 March 2026 by submitting data search request to the South Dakota Archaeological Research Center (ARC) for information on all previously recorded archaeological sites, cultural resource surveys, and aboveground historic properties within 1 mile (1.6 kilometer [km]) of the Project APE (Figure 1). The records were accessed from the online Archaeological Resources Management System (ARMS). Results of the request were received on 9 March 2026 and reviewed by HDR archaeologist, Amy Leuchtmann. The initial desktop review of previously recorded archaeological and architectural resources was conducted for the entire 176.4 acres (71.4 ha) of NorthWestern property. For this report, the review was performed for the 21.3 acres (8.6 ha) that were surveyed. Previously Recorded Archaeological Surveys and Resources

The ARMS records show 14 previous cultural resources surveys and no archaeological sites within 1 mi (1.6 km) of the Project APE. None of the 14 surveys overlap the Project APE. Details for all cultural resource surveys conducted within 1 mile (1.6 km) of the Project APE are listed in Table 1.

Table 1. Previous Cultural Resources Surveys Conducted within 1-Mile of Project APE.

Report ID	Author	Year	Report Title
ABN-0002	Jeffrey V. Buechler and Steven A. Symes	1977	A Cultural Resources Survey of the Proposed Expansion of the Wastewater Treatment Facilities for the City of Aberdeen, Brown County, South Dakota. Contract Completion Studies 37
ABN-0043	Brenda A. Shierts,	1994	A Letter Report on an Intensive Cultural Resource Survey Along Melgaard Road in Aberdeen, Project P 2342(4), PCEMS 4198, Brown County, South Dakota. CIS No. 928
ABN-0053	Calvin Long	1995	A Letter Report on an Intensive Cultural Resource Survey Along Fifth Street in Aberdeen, Project P2333(1), PCEMS 4533, Brown County, South Dakota. CIS No. 1125
ABN-0064	Carson N. Murdy	1998	New Moccasin Creek Soccer Fields: a Reconnaissance Cultural Resource Survey of the Proposed Soccer Complex Addition in the City of Aberdeen, Brown County, South Dakota
ABN-0073	Steve J. Dasovich	2000	A Letter Report on an Intensive Cultural Resource Survey of Proposed Drainage Improvements in the City of Aberdeen, Brown County, South Dakota

Report ID	Author	Year	Report Title
ABN-0081	Thomas Messerli	2003	An Intensive Cultural Resources Survey of Bridge Replacement Project No. BRF 6599(3), PCEMS 6086, Brown County, South Dakota. CIS No. 1613
ABN-0086	Patricia Downing	2004	A Cultural Resources Reconnaissance Survey for Proposed Aeration Basins at the Aberdeen Wastewater Treatment Facility in Brown County, South Dakota
ABN-0124	Patricia Downing	2006	A Level III Cultural Resource Survey of Two Recreational Trails in the City of Aberdeen, T123N, R63W, Section 7 and T123N, R64W, Section 23 in Brown County, South Dakota
ABN-0165	Patricia Downing	2008	A Cultural Resources Survey for the Northern Beefpackers Facility in Brown County, South Dakota
ABN-0167	K. Bryce Lowry	2009	Level III Cultural Resources Inventory of the South Dakota Army National Guard Aberdeen Training Area, T123N, R64W, Section 26, Brown County, South Dakota. QSI Project No. SD0947
ABN-0170	Patricia Downing	2007	A Cultural Resources Reconnaissance Survey for a Wastewater Treatment Area at Aberdeen, T123N, R64W, Section 36, Brown County, South Dakota
ABN-0255	Patricia Downing	2018	A Level III Cultural Resources Survey for Recreational Trail Additions at Kuhnert Arboretum, T123N R64W Section 25, in Brown County, South Dakota
ABN-0256	Patricia Downing	2015	A Level III Cultural Resources Reconnaissance Survey for a Recreational Trail at T123N R64W Section 25 in Brown County, South Dakota
ESD-0130	Jeffery V. Buechler,	1991	A Cultural Resources Inventory of WEB (Phase 7) Construction in North Dakota and South Dakota. Project No. 91-19. Volume 1 (Project Area, Survey Results and Management Recommendations). Volume 2 (Maps Showing Surveyed Areas). DRS Project No. 91-19

2.1.2 Aboveground Historic Properties

There are no National Register of Historic Places (NRHP)-listed or -eligible aboveground historic properties are located within the 1 mi (1.6 km) search radius (Figure 1 and Table 2). ARMS records indicate 1 historic bridge was surveyed within 1 mile of the Project APE.

Table 2. Above Ground Resource within 1-Mile of Project APE.

Resource ID	Category	NRHP Eligibility
BN00001254	Bridge	Not Eligible

One cemetery, Riverside Memorial Park, is located approximately 0.75-miles northwest of the Project APE (Table 3). The cemetery was established by the City of Aberdeen in

1886. Two of the most notable burials out of over 14,000 memorials include Charles Nelson Herreid and James Henderson Kyle, a South Dakota governor and a U.S. senator, respectively (Find a Grave 2026).

Table 3. Cemeteries Located within 1 Mile of Project APE.

Name	Location	Approximate Distance from Project APE
Riverside Memorial Park	North of Centennial Drive	0.75-mile northwest of Project APE

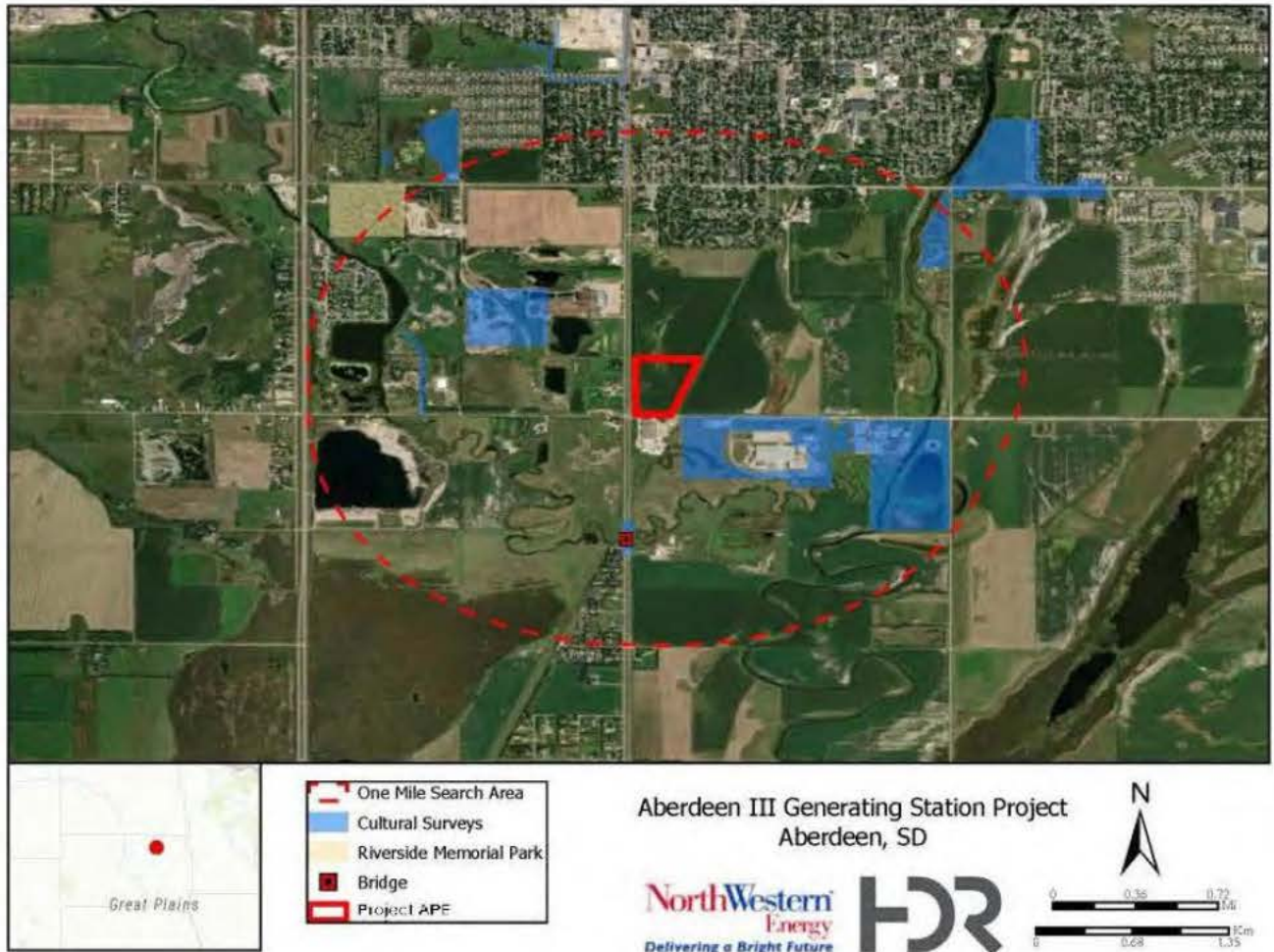


Figure 1. Map of Archaeological Surveys and Above Ground Resources within 1-Mile of Project APE.

2.1.3 Historical Map Review Results

A review of historic aerials and topographic maps indicated that no historic-age buildings or structures overlap the Project APE (NETR Online 2026, Figure 2, Figure 3). However, it does appear that a railroad dissected the Project APE in a southwest to northeast direction, though current aerial images show little evidence beyond the landscape scar.

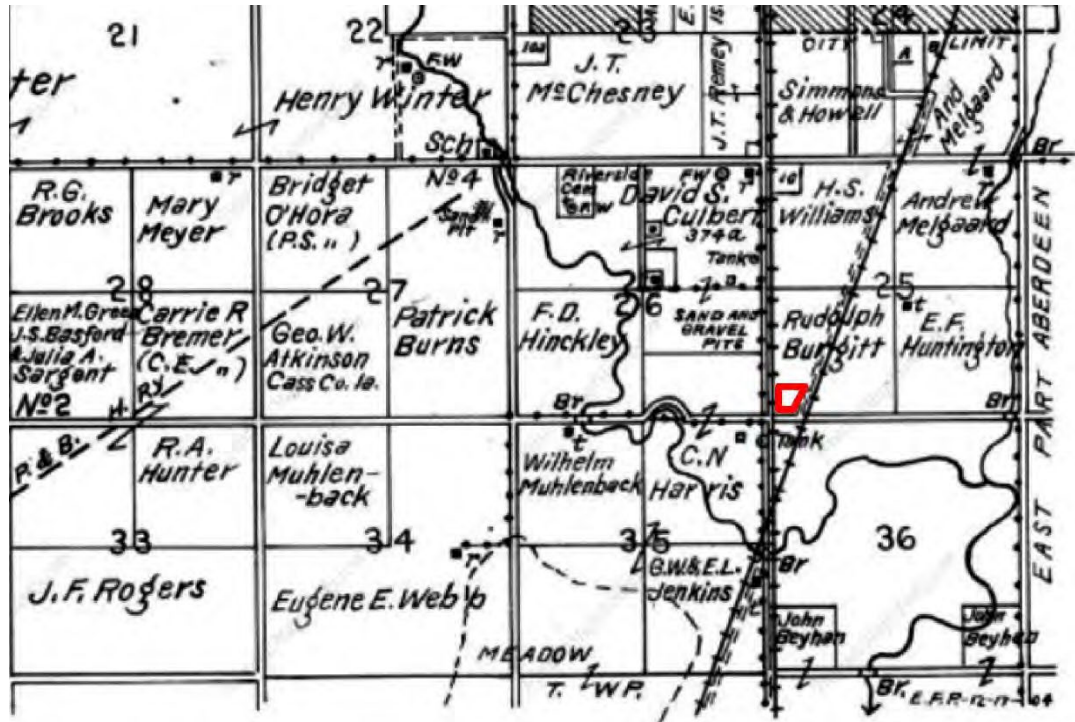


Figure 2. [RF6.1] Enlarged 1905 Aberdeen Township West map with Project APE located in the southwestern corner of section 25.

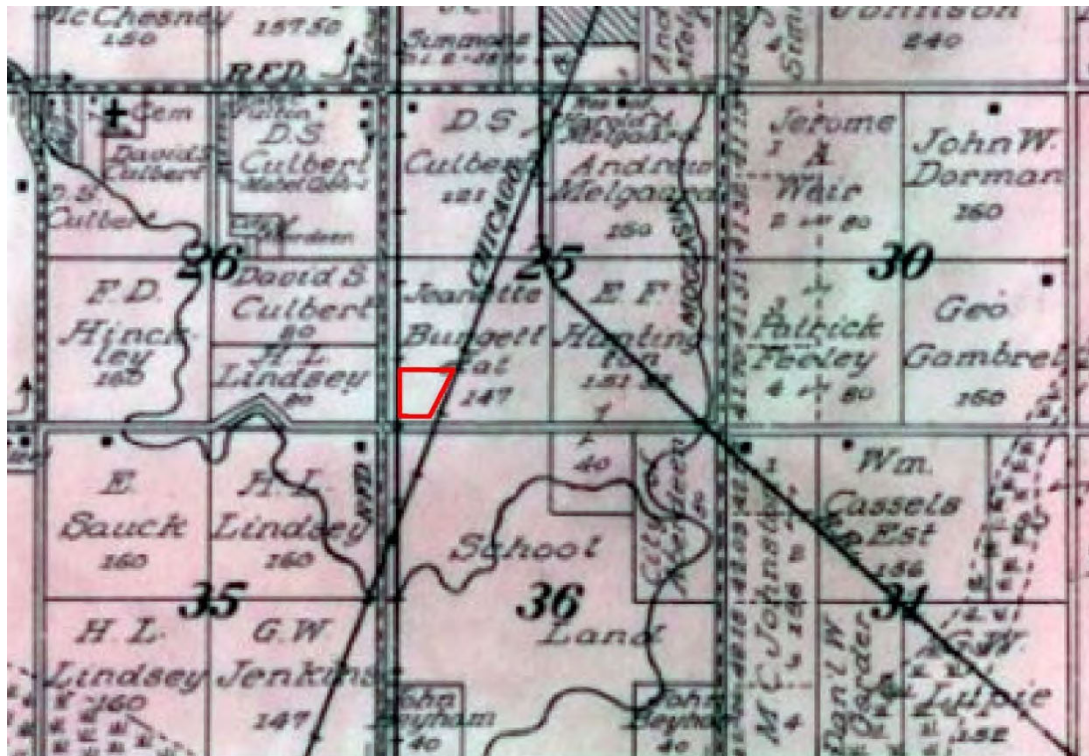


Figure 2. Enlarged 1911 Atlas of Brown County with Project APE located in southwestern corner of section 25.

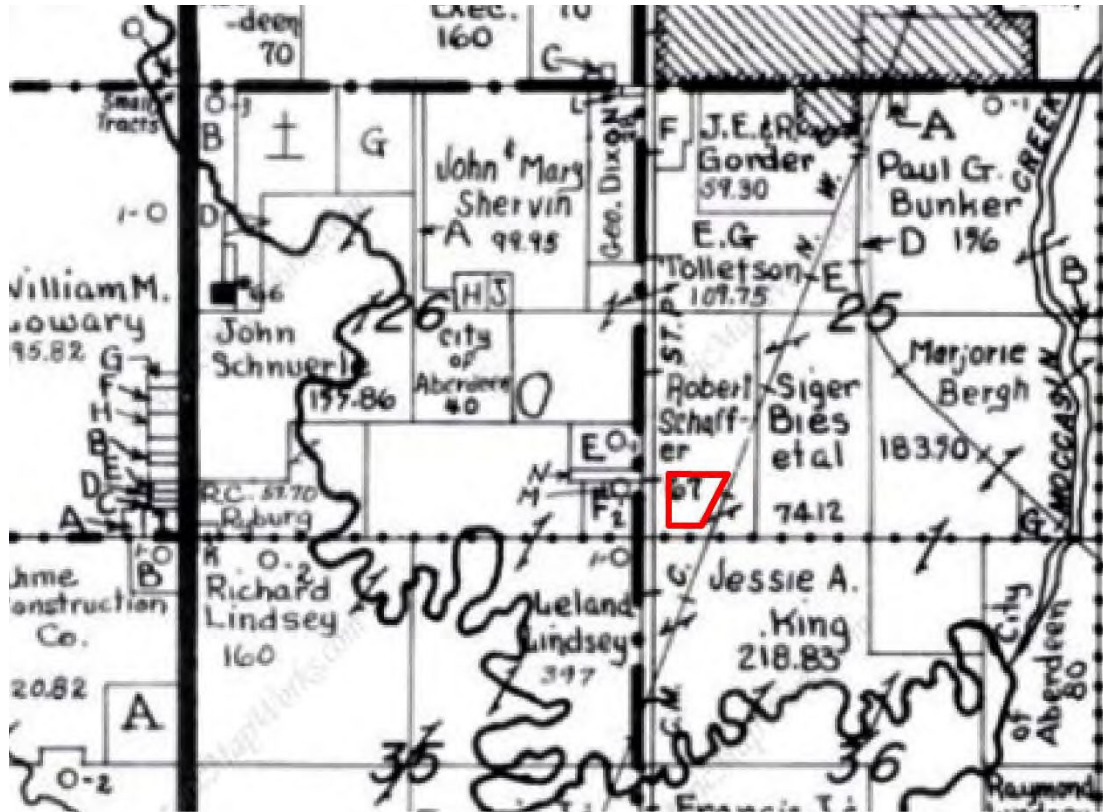


Figure 3. Enlarged 1960 Aberdeen Township map with Project APE located in the southwestern corner of section 25.

2.1.4 Archaeological Sensitivity of the Project APE

The Project APE falls within the Upper James Archaeological Region of South Dakota. According to the South Dakota State Plan for Archaeological Resources (Winham and Hannus 1991). This region is characterized as a broad river valley and relatively flat to gently rolling hills. The region is largely flat grassland prairie with mid to tall grasses and few trees and shrubs. Previous archaeological investigations within the region have largely focused on areas surrounding the James River, with more recent investigations occurring because of small-scale projects. Paleoindian and Archaic period sites are minimal within this region. A majority of the pre-contact sites in the Upper James region are dated to the Woodland period and include both burial mound sites and artifact scatters. Plains Village and late prehistoric sites are also low in number. Protohistoric and Historic resources in the region include post-contact Dakota villages and fur-trade posts.

2.2 Environmental Context

2.2.1 Geology and Physiography

The Project APE is in the Glacial Lake Basins, a Level III and IV Ecoregion, part of the Central Lowlands physiographic region. The Glacial Lake Basins ecoregion is an area once occupied by Lake Dakota. Lake Dakota was a proglacial lake that was formed by the blocking of major rivers and stream drainages by glacial ice during the Pleistocene era.

The Glacial Lake Basins ecoregion is characterized as having a smooth topography resulting from the buildup of sediments deposited by water. The deep soils of this region are intensely cultivated, with soybeans and corn being the predominant crops grown in this region of South Dakota (Malo 1997; Bryce et al 1996).

Exposure of pre-Pleistocene bedrock is rare, except in the Missouri River trenches and other areas cut by large streams. The area east and north of the Missouri River was completely covered by glacial drift. Glacial ice entered the state from the northeast and flowed south and west. In the James River Lowland, where the glacial ice was the thickest, the preglacial landforms were greatly altered by the ice sheet. Drift deposited from glaciers in South Dakota altered the topography and landform of the eastern part of the state. The movement of the ice and erosion filled major valleys, destroyed small valleys, forced the cutting of new valleys, and formed substantial moraines. In the James River Lowland, drift thickness ranges from 50 feet to 100 feet and can exceed 300 feet in some areas. The glacial drift in South Dakota can be identified as till, outwash, glacial-lake deposits, and ice-contact stratified drift. Till is most abundant of the four groups. Most of the till is rich in clay, believed to have been deposited by the "lodgment of the ground from the underpart of the flowing ice" (Flint 1955).

The most recent interval of glaciation occurred in South Dakota during the Pleistocene Epoch, which began roughly 2 million years ago and ended approximately 10,000 years ago. Two Pleistocene aged glacial ice sheets were present in South Dakota; the Illinoian and the Wisconsin, the most recent episode being the latter. The Wisconsin stage began roughly 30,000 years ago and ended roughly 14,000 years ago. During this period of glaciation, the ice around Aberdeen, in Brown County, was at least 1,000 feet (303 meters) thick. There is evidence of older periods of glaciation by the presence of sediments found underlying the extent of the Wisconsin deposits (Gilbertson 1995).

Brown County has three major landforms; lake plain, glacial uplands, and alluvial flood plains. The eastern 2/3rds of the county consists of a nearly flat plain with elevations ranging between 1,290 to 1,310 feet (393 meters to 399 meters) above sea level. This plain is the bed of the proglacial lake, Lake Dakota. A shallow and short-lived glacial lake, Lake Dakota was approximately 90 miles (145 km) long and 27 miles (43 km) wide and extended from Spink County to just north of the North Dakota-South Dakota state line. Prior to modern drainage facilities, the area of the lake plain was mostly swampland. West of the Lake Dakota plain lie the glacial uplands in the southeastern corner of Brown County. These uplands consist of till deposits that form smooth, rolling hills with an elevation that ranges from 1,310 feet (399 meters) on the eastern side, to 1,525 feet (465 meters) in the northwestern region of the county. The development of flood plains occurred along the James River, Elm River, Maple River, and Moccasin Creek (Koch and Bradford 1976).

2.2.2 Hydrology

The Project APE is located within the James River watershed. The James River is a tributary of the Missouri River, measuring approximately 710 miles (1,143 km) in length and drains an area of 20,653 sq. miles (53,490 sq. km) in both North and South Dakota. The river rises in Wells County, North Dakota, flows southward and enters northeastern South Dakota in Brown County where it is held by two reservoirs northeast of Aberdeen before finally flowing southeast joining the Missouri River in Yankton County (Academic N. D.). The area west of the James River is drained by the Elm River, Moccasin Creek, Foot

Creek, and Snake Creek, along with other smaller tributaries (South Dakota's Conservation Districts N.D.) The river occupies an area of flat plains between two plateaus, the Coteau du Missouri to the west and the Coteau des Prairies to the east. The James River winds through the state and has very little vertical gradient. It is estimated that the river has approximately one inch drop in elevation per mile in southern Brown County (South Dakota Department of Agriculture and Natural Resources 2024). Soils within the James River watershed are mostly loams or sandy loams, though they can range from silty clay loams to loamy sands (Brigham and Payne 1999). While the Project APE lacks any creeks or streams flowing through it, Foot Creek is located approximately 700 meters south of the southern boundary of the Project APE and Moccasin Creek is located approximately 1,194 meters east of the northeastern corner of the Project APE.

2.2.3 Climate

The climate of South Dakota ranges throughout the state due to humidity, proximity to the Missouri River, and elevation. Overall, South Dakota has a temperate continental climate with hot summers, cold winters, and moderate precipitation that varies from east to west. Winters are very cold with average temperatures in January ranging from 23 to 41 degrees Fahrenheit (-5 degrees Celsius to 5 degrees Celsius). Summers are generally hot with July being the warmest month of the year. The average temperatures in July range from 80.6 degrees Fahrenheit to 89.6 degrees Fahrenheit (27 degrees Celsius to 32 degrees Celsius). South Dakota receives an average of 23 inches (58.4 centimeters) of rain and 39 inches (99.06 centimeters) of snow per year. The state averages about 213 sunny days and about 80 days of precipitation annually. The amount of precipitation is generally higher in the east and lower in the west. Eastern South Dakota is more humid and can better support agricultural practices than the semi-arid climate in western part of the state (Weather and Climate 2026). Brown County has a cool, semi-arid climate with warm summers, cold winters, and moderate precipitation. The average temperature of Brown County is 43.5 degrees Fahrenheit (6.3 degrees Celsius); the annual precipitation is 22.4 inches (56.8 centimeters) and an annual snow average of 39.7 inches (100.8 centimeters) (Weather by County 2026).

2.2.4 Flora and Fauna

Brown County lies within the Northern Glaciated Plains Ecoregion which is part of the larger Great Plains region of the United States. Flora associated with these regions in South Dakota include species of tall grass such as wheatgrass, needlegrass, green needlegrass, blue grama, little bluestem, prairie cordgrass, slim sedge, and northern reedgrass. Common shrubs include prairie rose and western snowberry (USDA 2026). Wooded parts of the Great Plains in South Dakota typically contain hackberry, chokeberry, ponderosa pine, cottonwood, and black hill spruce trees (SDACD 2024). The prairies, grasslands, and forests create a habitat that can support a rich diversity of fauna in the region. Typical herbivores and carnivores include mule deer, white-tailed deer, bobcat, pronghorn, coyote, white-tailed prairie dog, black-tailed prairie dog, white-tailed jackrabbit, opossum, and racoon, to name a few. Species historically associated with the Great Plains in South Dakota are bison and the black-footed ferret. Some bird species associated with the Missouri River and typical of both prairie potholes and badlands include piping plover, chimney swift, purple martin, eastern bluebird, indigo bunting, swamp and field sparrows,

wild turkey, ring-necked pheasant, the canvasback duck, and various types of owls, hawks, falcons, and eagles. (USDA 2026; NRC N.D.).

2.2.5 Soils of the Project APE

Three soil series are identified within the Project APE, as defined by the United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS) and includes 73.8% Aberdeen-Nahon silty clay loams, 0 to 2 percent slopes (G472A), 25.4% Harmony-Aberdeen silty clay loams, 0 to 2 percent slopes (G866A), and 0.8% of Tonka silt loam, silty substrate, 0 to 1 percent slopes (G007A). Below is a description of the soils within the Project APE. See Table 4 for the soil percentages within the Project APE and Figure 4 of the mapped soils.

Table 4. Soils Identified within the Project APE.

Soil Name & Symbol	Slope (percent)	Drainage	Landform	Acreage in Project APE	Percent of Project APE
Aberdeen-Nahon silty clay loams (G472A)	0 to 2	Moderately well drained	Flats	15.7	73.8
Harmony-Aberdeen silty clay loams (G866A)	0 to 2	Moderately well drained	Rises	5.4	25.4
Tonka silt loam, silty substrate (G007A)	0 to 1	Poorly drained	Depressions	0.2	0.8
Total for the Project APE				21.3	100.0

Aberdeen-Nahon silty clay loams (G472A)

The Aberdeen series consists of moderately well drained, very deep soils formed in glacial lacustrine sediments on lake plains. Slopes range from 0 to 2 percent. Permeability is slow in the solum and moderate to slow in the subsoil. The first soil horizon is the plowzone (**Ap**) situated between 0 to 8 inches (0 to 20.3 centimeters) below ground surface and is identified as dark gray (10YR 4/1) silty clay loam, or black (10YR 2/1) moist soil. The structure is identified as weak fine granular, slightly hard, friable, slightly sticky and slightly plastic. This horizon is slightly acidic and has a smooth abrupt boundary and measures between 5 to 12 inches (12.7 to 30.5 centimeters) in thickness. Following the Ap is the **BE** horizon which ranges from 8 to 11 inches (20.3 to 27.9 centimeters) below ground surface and is identified as a gray (10YR 5/1) with a texture of silty clay loam to a very dark gray (10YR 3/1) of moist soils to gray (10YR 6/1) silt coatings. It has a medium, weak, subangular, blocky structure parting to a weak, thin platy. The BE horizon is slightly hard, friable, slightly plastic, and slightly sticky. There is a smooth, clear boundary and the horizon ranges from 2 to 6 inches (5 to 15.2 centimeters) thick. The third horizon in this sequence is the **Bt_n1** which ranges from 11 to 18 inches (27.9 to 45.7 centimeters) below ground surface and is identified as a dark gray (10YR 4/1) silty clay, to very dark gray (10YR 3/1) moist soils. The structure is medium prismatic that parts to a moderate fine blocky, structure which is firm, sticky, and plastic. This horizon has shiny films on faces of

pedes and has a clear wavy boundary. Underlying the Btn1 horizon is the **Btn2** soil horizon. This horizon ranges from 18 to 26 inches (45.7 to 66 centimeters) below ground surface and is characterized as a dark gray (10YR 4/1) silty clay, to very dark gray (10YR 3/1) moist soil. This horizon has a moderate medium prismatic structure which parts to moderate medium and fine blocky. This horizon is also characterized as firm, sticky, and plastic, with shiny films on faces of pedes. It has a clear wavy boundary. The combined Btn horizons range from 8 to 26 inches (20.3 to 66 centimeters) in thickness. The fifth soil horizon that underlays the Btn2 is the **Bkyz1**. The Bkyz1 horizon is found ranging from 26 to 31 inches (66 to 78.7 centimeters) below ground surface and is characterized as light gray (2.5Y 7/2) with a silty clay loam texture to grayish brown (2.5Y 5/2) moist soils. The structure is typically weak with a medium prismatic structure parting to weak medium subangular blocky structure which is also firm, sticky, and plastic. Gypsum and other salts are common, as well as very fine accumulations of carbonates. This horizon is slightly alkaline and has a clear wavy boundary. The sixth soil horizon that is situated underneath the Bkyz1 is the **Bkyz2** horizon. This horizon ranges from 31 to 38 inches (78.7 to 96.5 centimeters) below ground surface and is characterized as a light brownish gray (2.5Y 6/2) with a silty clay loam texture to dark grayish brown (2.5Y 4/2) moist soils. It has a weak medium prismatic structure that parts to weak medium subangular blocky granular structure. It is firm, plastic, and sticky. Fine gypsum and salts are present along with very fine accumulations of carbonates. This horizon is slightly alkaline and has a gradual wavy boundary. The thickness of the Bkyz horizon ranges from 0 to 20 inches (0 to 50.8 centimeters). Below the Bkyz2 is the **C1** soil horizon. This horizon ranges from X centimeters (38 to 51 inches) below ground surface and is characterized by light gray (2.5Y 7/2) with a silty loam texture to grayish brown (2.5Y 5/2) moist soils. Few fine concentrations of iron redoximorphic (yellowish brown 10YR 5/6) and few fine gray (10YR 5/1) moist redoximorphic depletions are present. This horizon has a friable, hard, slightly plastic, and slightly sticky structure. Few pockets of gypsum and other salts are found. This horizon is slightly alkaline and has a gradual wavy boundary. The final horizon in this series that is underlying the C1 horizon is the **C2** horizon. The C2 ranges from 51 to 60 inches (129.5 to 152.4 centimeters) below ground surface and is a pale yellow (2.5Y 7/4) with a silt loam texture and is laminated with thin layers of silty clay and very fine sandy loam. This horizon has prominent yellowish brown (10YR 5/6) and string brown (7.5Y 5/6) concentrations of iron redoximorphic depletions. The structure is typically characterized as being slightly hard, friable, slightly plastic, and slightly sticky (USDA 2019).

Harmony-Aberdeen silty clay loams (G866A)

The Harmony series consists of moderately well drained, very deep soils that formed in lacustrine sediments on lake plains. Slopes range from 0 to 2 percent. The first soil horizon in this series is the plowzone (**Ap**) which is 0 to 8 inches (0 to 20.3 centimeters) below ground surface and is characterized as dark gray (10YR 4/1) with a texture of silt loam to black (10YR 2/1) moist soils. It has a medium and fine, weak, granular structure and is slightly hard and friable. Many fine roots run through this horizon, and it has a smooth, abrupt, boundary. The second soil horizon underlying the Ap is the **A** horizon. This horizon ranges from 8 to 15 inches (20.3 to 38.1 centimeters) below ground surface and is typically dark gray (10YR 4/1) silty loam texture to black (10YR 2/1) moist soils. It has a medium weak subangular block structure that parts to a moderate, medium and fine granular structure. This horizon is friable, hard, slightly plastic, and slightly sticky. Many fine roots are also present. The boundary is clear and wavy. The combined thickness for the A

horizons ranges from 8 to 16 inches (20.3 to 40.6 centimeters). Underlying the A horizons is the **Bt1** horizon, which ranges from 15 to 19 inches (38.1 to 48.2 centimeters) below ground surface. It is characterized as dark gray (10YR 4/1) silty clay loam texture to very dark gray (10YR 3/1) moist soils. This horizon has a weak, coarse, and medium prismatic structure that parts to strong fine and very fine, subangular blocky structure. It is firm, hard, plastic, and sticky. Fine roots are found in this horizon, and it has a clear wavy boundary. Underlying the Bt1 is the **Bt2** horizon. This horizon ranges from 19 to 28 inches (48.2 to 71.1 centimeters) below ground surface and is a grayish brown (10YR 5/2) silty clay texture to very dark grayish brown (10YR 3/2) moist soil. It is characterized as having a moderate medium prismatic structure that parts to a moderate medium and fine blocky structure. It is firm, hard, plastic, and sticky. Fine roots are also common, and this horizon has a clear wavy boundary. The fifth soil horizon in this series is the **Bt3** which ranges from 28 to 35 inches (71.1 to 88.9 centimeters) below the ground surface. It is characterized as a light brownish gray (2.5Y 6/2) and silty clay texture, to a dark grayish brown (2.5Y 4/2) moist soils. It has a moderate coarse and medium prismatic structure that parts to a moderate medium and fine blocky structure. It is firm, hard, plastic, and sticky. The few coatings found on faces of peds are typically dark gray (10YR 4/1). Few fine roots are found, and the boundary is clear and wavy. Underneath the Bt3 is the **Bk** soil horizon. The Bk ranges from 35 to 40 inches (76.2 to 101.6 centimeters) below ground surface and is a light brownish gray (2.5Y 6/2) with a silty clay texture. It is characterized as a weak medium subangular block structure and is friable, hard, plastic, and sticky. Few fine roots are common inclusions as well as fine accumulations of carbonates. This horizon is slightly alkaline and has a clear wavy boundary. This horizon ranges in thickness from 5 to 20 inches (12.7 to 50.8 centimeters). The final soil horizon in the Harmony series is the C horizon which ranges from 40 to 60 inches (101.6 to 152.4 centimeters) below the ground surface. It is light gray (2.5Y 7/2) and loam in texture. Inclusions include prominent yellowish brown (10YR 5/6) iron redox concentrations along with distinct grayish brown (2.5Y 5/2) redox depletions. This horizon is slightly alkaline, is slightly hard, and very friable (USDA 2019).

Tonka silt loam, silty substrate (G007A)

The Tonka soil series consists of poorly drained, very deep, slowly permeable soils that formed in local alluvium over glacial till or glaciolacustrine deposits. The Tonka soils are found in closed basins and depressions on till and glacial lake plains with 0 to 1 percent slopes. The first horizon in this series is the **A** horizon which ranges from 0 to 13 inches (0 to 33 centimeters) below ground surface, is black (10YR 2/1) and silt loam in texture. It is made up of fine granular structure parts to moderate thin platy structure. It is friable, soft, slightly plastic, and slightly sticky. Many fine roots are found, and this horizon has an abrupt wavy boundary. The next horizon is the **E** horizon which ranges from 13 to 19 inches (33 to 48.2 centimeters) below ground surface, is dark gray (10YR 3/1), and loam in texture. This horizon is characterized as having many prominent dark brown (10YR 3/3) and dark yellowish brown (10YR 3/4) redoximorphic concentrations. It is a thin, moderate, platy, and moderate fine granular structure. It is friable, slightly hard, slightly plastic, and slightly sticky. Many fine roots are common, and the horizon has an irregular and abrupt boundary. This horizon is moderately acidic. Thickness ranges from 4 to 18 inches (10.1 to 45.7 centimeters). The next soil horizon is the **Bt1** which ranges from 19 to 24 inches (48.2 to 60.9 centimeters) below ground surface and is a very dark gray (10YR 3/1) with a silty clay loam texture. It is a moderate coarse prismatic structure and is firm, sticky, very hard, and

slightly plastic. Fine roots are common inclusions. The horizon is moderately acidic and has a gradual wavy boundary. The fourth soil horizon is the **Bt2** horizon which ranges from 24 to 34 inches (60.9 to 86.3 centimeters) below ground surface and is a dark grayish brown (10YR 4/2), silty clay loam in texture. It is characterized as a moderate coarse prismatic structure that parts to a moderate, very fine angular blocky structure. This horizon is very hard, sticky, firm, and slightly plastic. Fine roots are common and it is moderately acidic, with a gradual wavy boundary. The combined Bt horizons range in thickness from 8 to 35 inches (20.3 to 88.9 centimeters). Underlying the Bt2 is the **2BC** horizon which is found between 34 to 50 inches (86.3 to 127 centimeters) below ground surface and is a dark grayish brown (2.5Y 4/2) with a clay loam texture. It is characterized as having redoximorphic concentrations that are medium distinct dark yellowish brown (10YR3/4) in color. It has a weak and coarse prismatic structure that parts to a moderate fine subangular blocky structure. This horizon is very hard, sticky, firm, and slightly plastic. Fine roots are common inclusions, as well as manganese concretions and gravel (2%). It has a gradual wavy boundary. The final horizon in the Tonka series is the **2Cg** horizon which is found between 50 to 60 inches (127 to 152.4 centimeters) below ground surface and is gray (5Y 5/1) with a clay loam texture. Many redoximorphic concretions of a distinct dark brown (7.5YR 4/4) are present. The structure is weak, fine, platy, and moderate, very fine angular blocky. It is friable, hard, sticky, and slightly plastic. Inclusions are fine roots, manganese concretions, and gravel (3%). This horizon is slightly alkaline (USDA 2019).



Figure 4. Soils Within Project APE.

2.3 Cultural Context

2.3.1 Paleo-Indian (Pre-6000 BCE)

The Paleo-Indian Period is defined as the earliest cultural appearance of peopling and human occupation in South Dakota. It is believed populations from Asia crossed a land bridge from Siberia to Alaska in times of low sea level during the Last Glacial Maximum, defined as the Late Pleistocene and Early Holocene epochs. This migration was slow, possibly with gradual and intermittent movement of small groups of people following now extinct big game animals such as the mammoth, giant bison, and the ground sloth. Various types of projectile points represent various complexes of early hunters in South Dakota. The Llano Complex is characterized by the leaf-shaped, fluted Clovis Projectile Point. First recognized at the Clovis Site in New Mexico, these points exhibit a shallow flake, or flute, removed from the base on both sides of the projectile. The people who produced and utilized Clovis points were mammoth hunters, and when the mammoth became extinct, bison larger than the modern species were hunted and the bison hunting complexes were developed. There are two bison hunting complexes identified in South Dakota; the Folsom Complex and the Plano Complex (Lass 1981).

The first identified bison hunting complex in South Dakota is the Folsom Complex. Hunters produced Folsom projectile points which were smaller, also fluted, projectiles and often better worked than Clovis points. There is little archaeological evidence for these early cultures in South Dakota. Scattered surface find sites in Hyde and Tripp Counties, west of the Red River, have produced Folsom projectile points. The Plano Complex (8000 BC to 6000 BC) also existed in South Dakota and is more well known. It is characterized by a variety of localized types on unfluted projectile points. These unfluted types include Plainview, Angostura, Scottsbluff, Eden, and Agate Basin types. Near the Black Hills, The Ray Long Site (39FA65) in Fall River County is the oldest confirmed archaeological site in the state and has produced a radiocarbon date between 7000 BCE and 5000 BCE. A distinct projectile point type was identified at the Ray Long Site, a Plano projectile point named Angostura Point. This projectile is finely flaked, long and slender, exhibiting a narrow base. Other bison hunting and processing tools were identified at the Ray Long Site including chalcedony knives, side and end scrapers, large bifacially worked blades, drills, and manos and metates used for grinding (Lass 1981).

2.3.2 Archaic Period (6000 BCE to 500 CE)

During the Archaic Period, changes in the climate brought dry, hot conditions and species of big game became scarce. These changes created the need for big game hunters to abandon their specialized hunting techniques and find other ways to obtain sustenance. Fishing, gathering plants, and the collection of mollusks were subsistence techniques utilized to supplement hunting (Lass 1981). The Archaic Period in South Dakota is divided into three periods; the Early Archaic, Middle Archaic, and Late Archaic.

Early Archaic (6000 - 3500 BCE)

Relatively little information is available for this period in South Dakota. More arid climatic conditions prevailed for several thousand years during the Altithermal climate period (Sundstrom 2019). In many ways, the Early Archaic period differed little from the Late Paleoindian period. Early Archaic people relied on a mix of large game hunting and more

generalized foraging for their sustenance. In the Black Hills and northwestern Great Plains, pit houses are a common feature of sites dating between 6000 and 4500 BP (Sundstrom 2019). These semi-subterranean structures typically contain numerous storage pits; thus, they served a dual function as shelters and storage facilities. The amount of effort represented by these substantial features suggests regularized travel between resource areas that would have allowed repeated use of the pit houses (Smith and Reust 1992; Larson 1997).

Animal kill sites, butchering sites, and small camps are the most common types for the Early Archaic period (Sundstrom 2019). Additionally, while Early Archaic sites and artifacts occur throughout the state, they are most common in the west and along the Missouri River. However, sites dating to the Early Archaic period are relatively rare in South Dakota and the northern Great Plains in general. This appears to be because sites were subsequently eroded away or very deeply buried during a period of active landscape change between 6000 and 3000 BCE (Sundstrom 2019).

Early Archaic sites contain a variety of projectile point types, most of which are relatively large, triangular types notched at the sides. The most common Early Archaic projectile point types in South Dakota are Hawken, Bitterroot, Simonsen, and Dalton-Meserve (Sundstrom 2019). These points were used to tip atlatl darts, which remained the main weapon system throughout the Archaic (Sundstrom 2019). The Early Archaic Period consists of four complexes: Hawken Complex, Logan Creek Complex, Meserve-Dalton Complex, and Unassigned Early Archaic. At present, contexts are based primarily on projectile point types; however, some regional differences in subsistence remain and site types are leading to more precise definitions of the various complexes (Sundstrom 2019).

Middle Archaic (3500 – 1500 BCE)

Between about 3500 and 3000 BCE, the number of sites begins to increase dramatically throughout the northwestern plains (Frison 1991; Kornfeld et al. 2010). This marks the beginning of the Middle Plains Archaic, which persisted until about 500 BCE. Several complexes, based on projectile point styles, have been proposed for the Middle Archaic. The earliest is the Oxbow complex, characterized by broad, deeply corner- and basally-notched or “eared” dart points (Sundstrom 2019). This is followed by one or more cultural complexes containing McKean, Duncan, and Hanna projectile points with a variety of triangular to lanceolate basally-notched forms. A variety of hafting elements occur, including shallow and deep side and corner notches, as well as unnotched sides and corners (Sundstrom 2019). Stemmed forms also occur. These dart points are generally smaller than Paleoindian projectile points and bigger than Late Prehistoric arrow points. They tend to be relatively wide at the base or stem, as is typical of dart points. The points are rather thick in cross-section and often exhibit sinuous blade edges formed by alternate beveling of the blade edges during finishing and resharpening (Sundstrom 2019). Sometimes these are combined into a single McKean complex, and sometimes they are considered separate but overlapping complexes. In South Dakota, Duncan and Hanna points tend to occur together, indicating a single cultural development (Sundstrom 2019).

Middle Archaic sites include periodically reused base-camps, small camps and special activity stations, possible game drive sites, pit houses, roasting pit complexes, plant food processing sites, and rock art (Sundstrom 2019).

Like Early Archaic sites, Middle Archaic sites occur throughout South Dakota but are most common in the western regions. Sites in the west often occur within buried deposits. These deposits tend to be shallow with little or no separation between individual components. Deeper deposits afford good separation of components in some rock shelter, stream terrace, alluvial fan, and springside settings. Along the Missouri River, Middle Archaic components are often deeply buried in river and stream terraces (Sundstrom 2019).

Middle Archaic sites contain a variety of projectile point types, including a range of corner and basally-notched dart points and, rarely, unnotched, parallel-oblique flaked forms (Sundstrom 2019). The most common Middle Archaic projectile point types in South Dakota are Oxbow, McKean, Hanna, Duncan, and Mallory, which were used to tip atlatl darts. Types tend to grade into one another in terms of their morphology. Besides containing distinctive projectile points, Middle Archaic sites typically exhibit periodic reuse and contain numerous features such as stone-lined hearths and roasting pits. Ground-stone tools are relatively abundant in Middle Archaic sites (Sundstrom 2019).

Late Archaic (1500 BCE – 500 CE)

The Late Archaic designation reflects a continuation of hunting-based subsistence strategies and a highly dispersed mobile settlement pattern that continued patterns of the Middle Archaic period. From about 1500 to 500 BCE, the northwestern Great Plains witnessed the development of three distinct cultural complexes (Sundstrom 2019). The first, largely limited to the upper Powder and Belle Fourche drainages, is the Yankee complex. A roughly contemporaneous, but much more widespread development is termed the Pelican Lake complex. These were followed in some areas by the Besant complex. In western South Dakota, these complexes had a mixed bison hunting and foraging subsistence base (Sundstrom 2019). Complex communal bison hunts were an important Besant adaptation throughout the Northwestern Plains. In eastern South Dakota, Besant and Pelican Lake projectile points are associated with Plains Woodland ceramics and features such as burial mounds (Sundstrom 2019). In South Dakota, sites with Besant or Pelican Lake projectile points that lack ceramics are typically listed as Late Archaic, and those with ceramics or associated with burial mounds are listed as Woodland (Sundstrom 2019). The Late Archaic of western South Dakota is characterized by two related changes in subsistence. The first is a shift toward greater use of bison. The second is a shift away from the diverse, broad-spectrum subsistence of the Middle Archaic toward a more limited and specialized subsistence pattern. Despite the impressive remains left behind by the communal bison hunters of the Wyoming and Montana high plains, not all Late Archaic subsistence was based on bison, with sites such as 48CA1000 and 48CK46 showing evidence of substantial mussel and deer consumption in addition to bison (Sundstrom 2019).

2.3.3 Woodland Period (500 BCE-1100 CE)

The Woodland Period is characterized by the advent of the bow and arrow, burial mounds, pottery and horticulture in South Dakota. Woodland Period occupation sites are typically located in or near stream valleys, and subsistence was based on the use of wooded bottomlands. Faunal remains recovered from sites dating to this period suggest bison was still hunted although not as much as in previous periods in time. Deer and small game were the main hunting focuses. The Woodland toolkit included small, triangular projectile points, knives, scrapers, awls, and needles. These materials suggest the importance of

hunting and utilizing the meat and hides. Other tools include percussion-flaked axes, pecked and ground celts, and chipped stone drills. Discoidal shell beads have also been recovered from Woodland Period sites. The presence of copper tools and shells suggests an extensive trade network between the Woodland people in South Dakota, and populations in the Great Plains region as well as the Gulf and Pacific Coasts. Grinding stones also recovered from Woodland Period sites suggest a continued reliance on gathering plants. Seeds were another natural resource gathered. The introduction of horticulture during this time supplemented hunting and gathering practices. Corn, beans, and squash were cultivated. The advent of horticulture allowed for population growth and subsequently more semi-permanent settlement patterns. Storage pits were used to store excess food. Woodland pottery includes large, cylindrical vessels with thick walls and crushed granite temper. The bases of the early vessels were either flat or pointed and the rims were either straight or slightly flared. Exteriors were often impressed using a cord-wrapped paddle. This was not a decorative technique but a surface treatment. Interiors were generally smooth. Later during this period ceramic vessels were decorated with diagonal or vertical impressions along the rims or shoulders of the pot (Lass 1981).

2.3.4 Late Prehistoric (500 CE-1861 AD)

The introduction of the bow and arrow marks the beginning of the Late Prehistoric period, sometime around 500 CE (Sundstrom 2019). In the western half of the state, the Late Prehistoric is largely a continuation of patterns established during the Archaic period, with small groups following a seasonal round of bison hunting and plant-food gathering. Along the Missouri River and in the eastern half of the state, this is referred to as the Plains Village period, as the small settlements and experiments with horticulture of the Woodland period developed into larger villages dependent on agriculture for much of their economic base (Sundstrom 2019).

Late Prehistoric sites are generally recognized from the presence of arrow points, as opposed to dart or spear points (Sundstrom 2019). Aspects of culture related to large-scale hunts are well known, largely because of the visibility of animal kill and butchering sites. Stone circle sites are also highly visible but often contain few artifacts and features. Other kinds of sites, including special activity sites, plant-food processing sites, and rock art have also been identified, though at a lesser frequency than animal kill sites (Sundstrom 2019).

Along the Missouri River and in much of eastern South Dakota, Plains Village pattern cultures followed the Woodland era (Sundstrom 2019). The Plains Village pattern developed directly out of the Woodland pattern, influenced by cultures to the south and east, and was characterized by large, semi-sedentary earth lodge settlements clustered along the major waterways. Maize horticulture and seasonal bison hunting provided subsistence, with surpluses being stored in underground pits in the villages. Actual villages are rare in the western portion of the state; however, a few probable villages are reported from the Black Hills peripheries and White River Badlands. Other off-river sites seem to represent temporary camps used on seasonal bison hunts (Sundstrom 2019).

Plains Village sites may be identified from house, fortification, and village features and from distinctive artifact assemblages. The latter include various types of ceramic vessels, generally globular in shape with thin walls and a wide variety of decorative elements.

Furthermore, Plains Village sites typically contain large assemblages of bone and shell artifacts (Sundstrom 2019).

2.3.5 Protohistoric (1700-1861 AD)

In northern Great Plains archaeology, the term Protohistoric refers to the period after which European goods and species had entered the material culture assemblage but before permanent non-native settlement began. In South Dakota, the Protohistoric period roughly corresponds to the period between 1700 to 1861 (Sundstrom 1989). Although archaeologists have excavated some sites dating to this period, most of our information comes from the written accounts of the first non-native trappers, traders, explorers, missionaries, and military personnel venturing into what is now South Dakota. Native Americans also left documentation in the form of narratives and pictographic records such as winter-counts. Several historically known ethnic groups inhabited South Dakota before the introduction of the horse in the early eighteenth century (Reher and Frison 1980; Schlesier 1994; Greiser 1994; Sundstrom 1989). These include the Mandan, Hidatsa, Arikara, Ponca, Omaha, Kiowa, Kiowa Apache (Naishan Dene), Comanche or Plains Apache, Cheyenne, Arapaho, Dakota, Nakota, Assiniboin, and Lakota.

The central reach of the Missouri River runs north to south, dividing South Dakota into eastern and western halves. Just as “East River” and “West River” have long been distinct geographically, ethnically, and economically, the area along the river itself has enjoyed a unique history and cultural identity for at least the last 1000 years. The river itself facilitated transportation and trade while the silty, fertile lower terrace and floodplain permitted farming with simple tools (Sundstrom 2019). Maize horticulture permitted establishment of semi-permanent villages throughout the region.

The Middle Missouri became one of the most densely populated areas of pre-contact North America, a major trade center, and a center of cultural innovation (Sundstrom 2019). By 1000 CE, earth lodge villages appeared in the Middle Missouri area. The Plains Village archaeological culture emerged in historic times as the Mandan, Hidatsa, and Arikara nations. Other groups that followed the Plains Village pattern for a time in what is now South Dakota include the Cheyenne, Ponca, and Omaha. When the first non-native fur-traders, explorers, and missionaries entered the Middle Missouri region, they encountered large, thriving villages on the high bluffs lining both sides of the river (Sundstrom 2019). Large dome-shaped circular and semi-rectangular earth-covered lodges housed large extended families composed of women related by blood and their husbands and children. The women managed large garden plots on the lower terraces, while the men took charge of bison hunting, catfish trapping, and defending the village from enemies. Early white settlers observed abandoned villages, as well (Sundstrom 2019).

These early white explorers included Lewis and Clark, who compiled a map of western South Dakota in 1805 based on information supplied by Native Americans and French and Spanish traders (Grinnell 1923:30-31). This map places Cheyenne, Comanche, Kiowa, and Kiowa-Apache groups at the head of the Belle Fourche River. The Suhtai Cheyenne were at the head of the Cheyenne and White rivers. The Arapaho were at the head of the North Platte, and another group of Kiowa was located just south of them. Few Lakota had entered the area at that time. The map places the Brule Lakota on the Missouri near the mouth of the White and the Oglala Lakota near the mouth of the Cheyenne River (Sundstrom 2019).

Archaeological remains in the Badlands show that groups associated with the Middle Missouri and Central Plains Tradition, specifically the various groups identified historically as the Mandan, Arikara, and Skiri Pawnee, used this country (Sundstrom 2019). Ponca groups centered near the mouth of the White and Niobrara may have extended their territory west as far as the Badlands. One Badlands site is hypothesized to represent a Ponca presence in the area (Wood 1965). By about 1750 CE, the Lakota alliance had entered the area and began to control access to it.

Until the Lakota took over the Black Hills country, Mandan, Arikara, and other Siouan-speaking groups from the Missouri River villages traveled to the Black Hills in summer to trade, hunt, and gather resources such as quartzite (Alex 1981; Johnson 1993). This pattern had been followed for nearly a millennium and perhaps extended back to the Besant complex of the Late Archaic period. The increasing military might of the Lakota and other nomadic groups restricted the Missouri villagers to their home territory both for defense and to maintain some control over the fur trade (Hyde 1937). Meanwhile, the defeat of the French in Canada and improved transportation along the Missouri had opened the fur trade to new areas. By the winter of 1829 a fur-trading post, the Ogallala Post, was operating east of the Black Hills at the confluence of Rapid Creek and the Cheyenne River, probably to exploit the abundant beaver populations of the Black Hills. This post burned in 1832 and was not rebuilt (Hyde 1937).

2.3.6 Historic (Post-1861 AD)

In 1794, two expeditions, that of Jean Baptiste Truteau and that of Jacques d'Englise pushed far up the Missouri River into what is now South Dakota (Sundstrom 2019). Truteau built a cabin for winter shelter near present-day Fort Randall Dam, the first documented European building in South Dakota. An expedition under John Evans on behalf of the Spanish crown reached the Mandan villages in 1797. In 1800 Regis Loisel built a log trading post downstream of present-day Pierre. Manuel Lisa traveled up the Missouri and Yellowstone Rivers to the mouth of the Bighorn in 1807 and established Fort Manuel (Sundstrom 2019). In response to increasing competition, Lisa formed the Missouri Fur Company in 1809 with Pierre and August Chouteau, Pierre Menard, and Andrew Henry. This group dominated the trade in South Dakota until 1813, pushing past the Arikara villages to reach Mandan and Blackfoot territory (Sundstrom 2019).

American settlement of South Dakota began in 1803, when territory variously claimed by Spain, France, and England became part of the new American republic with the Louisiana Purchase. Having bought Louisiana, the US government funded the exploration of its new territory. Meriwether Lewis and William Clark set off from St. Louis in the spring of 1804 with 45 men and a smaller crew of boatmen and soldiers to accompany them as far as the Mandan villages. The Corps of Discovery entered present-day South Dakota on October 13, 1804 (Sundstrom 2019).

The Missouri River region was the first part of South Dakota settled by non-Indians. A unique mix of Indian villages, trading posts, steamboat landings, military forts, and reservations formed the matrix in which non-Indian settlements grew up along the river (Sundstrom 2019). Several US government actions facilitated white settlement throughout the 19th century. First, the federal government established an Upper Missouri Agency to facilitate interactions with local Indian nations in 1819. Following the Fur Trade Act of 1824, towns began to be established alongside fur trading posts (Sundstrom 2019).

By the early 1830s, steamboats were travelling on the Missouri River as far as Fort Union at the mouth of the Yellowstone (Sundstrom 2019). Pierre Chouteau was the first to bring steamboats to the Upper Missouri, realizing that larger shipments to St. Louis meant much greater profits for his company. In 1832, Chouteau rebuilt Fort Tecumseh as Fort Pierre, one of the largest trading posts in the Missouri River country. By then, beaver populations were depleted and a more diverse fur trade replaced the beaver trade. In the Middle and Upper Missouri, the trade had largely shifted to buffalo. The nomadic Lakota bands profited greatly; untethered to garden plots and well mounted, they could bring in great numbers of hides whenever the traders were buying. The steamboats carried vast numbers of buffalo hides and tongues to St. Louis for export to the eastern cities and to Europe (Sundstrom 2019). By the mid-1840s, the Lakota winter counts were recording famine because no buffalo could be found in winter. The steamboats also carried explorers and adventurers into the Middle and Upper Missouri country. South Dakota was rapidly opening to the Americans via its river highway. Historic records place about 100 fur trade posts in what is now South Dakota, most clustered along the Missouri (Hoover 2005:64).

By the 1850s, the fur boom was over, and the big companies had sold out and left the area (Sundstrom 2019). In 1855, Pierre Chouteau sold his fort to the US Army. The South Dakota fur trade era gave way to one of homesteading and town-building.

With the Yankton Treaty of 1858, some 11 million acres along and east of the Missouri River were opened to white settlement (Sundstrom 2019). The treaty provided for mixed-blood families to select 650 acres, allowing the fur traders and their wives and children to continue in positions of economic and political importance. New white traders were not allowed to operate in the “Yankton Triangle” formed by the Big Sioux and Missouri except by special permit (Hoover 2005:70). The treaty also reserved 400,000 acres for the Yanktons, as well as an agency site on the Missouri River. In return for ceded land, the Yanktons received annuity payments and other forms of support. With new land, new homesteads, and a prosperous reservation, the area attracted entrepreneurs. Dakota Territory was organized in 1861 with Yankton as its capital. Eastern South Dakota filled rapidly with citizens and immigrants seeking small holdings. The towns of Vermillion, Bon Homme, Yankton, Oacoma, Springfield, and Harney City were platted by 1870. The east river counties took shape between 1868 and 1883. Meanwhile, under the terms of the 1868 Fort Laramie Treaty, Indian agencies were established along the river at Whetstone, Fort Bennett, and Fort Yates, and the old Fort Pierre and Fort Randall posts gained importance as places to cross the river (Sundstrom 2019).

Until railroads reached South Dakota in the early 1870s, the Missouri River towns attracted most non-Indian settlement (Sundstrom 2019). Yankton was capital of Dakota Territory from 1861 to 1883, followed by Bismarck. Another river town, Pierre, was chosen as the capital of the new state of South Dakota in 1890. Off-river towns such as Brookings and Sioux Falls grew rapidly once they had rail service. The settlement of eastern South Dakota was largely a matter of some land speculators capitalizing on rail connections. On the Missouri, the Indian agencies, reservations, and river trade towns ensured a steadier population and economic base (Sundstrom 2019).

Waves of settlers from the eastern US and various parts of Europe landed in South Dakota, pulled by the promise of cheap land and pushed by overpopulation and civil strife in Europe (Olson 2005). The first wave of settlement, 1860-1880, was mostly New England Yankees. Swedes followed beginning in 1868, and Czechs in 1869. What would become a large

population of German-Russians entered the scene in 1872. By 1878, the expansion of rail lines extended into eastern South Dakota sparked the Dakota Boom. Large numbers of Norwegians, Dutch, and Swedes entered South Dakota enticed by railroad promotions beginning in 1878, followed by Danes in 1882. The largest immigration of Germans happened after statehood in 1889. African American settlers arrived early in southeastern South Dakota, with a small population living in the Sioux Falls area by 1870 (Sundstrom 2019).

The first Dakota boom ended with the “great Dakota bust” of 1889-98 (Sundstrom 2019). Crop failures and the economic panic of 1893 were the principal causes of the bust. Crop losses in the severe droughts of 1889 and 1894 were exacerbated by the newcomers’ failure to plant drought-resistant species and varieties. Soils were clayey and rainfall scarce west of the Missouri (Nelson 1986:11); even in favorable years, successful farming in the area required tillage techniques and crop varieties that most of the homesteaders were not familiar with.

The second Dakota boom lasted from 1902-1914. West of the Missouri, the boom was more intense from 1905-1910, when the West River population more than doubled (Brooks and Jaçon 1994:20; Schell 1975:256). Most of the Great Sioux Reservation was opened to homesteading in 1890 under a lottery system (Nelson 1986:18). As economic conditions improved, bolstered by relief legislation, a new wave of homesteaders moved into South Dakota to claim these lands. Farmers’ prospects were also improved with the increased demand for food products during World War I (Sundstrom 2019).

Despite these efforts, the next two decades were to be the worst yet for western Dakota farmers. The post-war drop in market demand caused a farm depression. In rural areas of the state, farm foreclosures, bank failure, hunger, and loss of population were the rule. By 1924, South Dakota had the highest per capita debt in the nation (Schell 1975:276). The new rural credit system failed (Fite 1985). Nation-wide economic depression, grasshopper infestations, drought, and severe winters made bad conditions worse in the early 1930s. By December of 1934, 39% of the state’s residents were on public assistance, the highest percentage of any state at any time in US history (Schell 1975:292). The state lost 7% of its population in the 1930s (Schell 1975:292). The western counties were especially hard hit (Schell 1975:282).

Although government relief efforts would follow, farming would never again dominate western South Dakota’s economy. By 1950, farm population in the High Plains states had dropped to 1.7 million from a peak of 2.6 million in 1920 as cattle ranching overtook farming as the main industry (White 1991:437).

2.3.7 History of Brown County

White settlers first came to what would become Brown County in the summer of 1877, having come from Fort Pierre, South Dakota. Over the next three years, more families settled near the town of Columbia, bringing herds of cattle and sheep with them as their primary source of income (Daly 1970). By September, 1880, Brown County was officially organized with Columbia as its county seat, although it later moved to Aberdeen, which remains the county seat today. Between 1881 and 1886, steamboats transported passengers, coal, lumber, and consumer goods to and from LaMour, North Dakota, however railroads remained the center of commerce and residential settlement (Brown

County Historical Society N.D.). The Chicago, Milwaukee and St. Paul and Chicago and Northwestern Railroads began service to the area in 1881, and the Great Northern Railroad arrived in 1886 (Brown County Historical Society N.D.). By 1890, the population of Brown County was 16,855 (Tennant 2018). Flour mills, a brick factory, wagon factory, sash and door factory, bakeries, and greenhouses were the leading non-agricultural industries in Aberdeen in the late 19th and early 20th centuries (Brown County Historical Society 1981).

During its boom years, settlers to Brown County came from other Midwestern states as well as Germany, Norway, and Sweden. The Minneapolis and St. Louis Railroad continued to offer reduced fares for immigrants into the 1930s. Bolstered by this influx of immigration, the population of Brown County grew to 31,458 by 1930 (Kooiman and Slattery 1995). As of the 2020 census, the population was 38,301, making it the fourth most populous county in South Dakota (United States Census Bureau 2020).

3 Survey Methods and Results

On June 3rd, 2026, Amy Lechtman, M.A., an archaeologist from HDR's Ann Arbor, Michigan office, and Rhea Fuller, an archaeologist from HDR's Providence, Rhode Island office, conducted a Level III Intensive Survey for the proposed Hub City Energy Park Project. The Level III Intensive Survey included a pedestrian survey and photo-documentation of the Project APE. All field methods employed during the Level III Intensive Survey were conducted in accordance with the South Dakota Guidelines for Compliance with the National Historic Preservation Act and South Dakota Codified Law 1-19A-11.1 (SD SHPO 2012). As the Project is not a federal undertaking at this time, this visual inspection was conducted in due diligence for the proposed Hub City Energy Park Project. Though the close proximity of Foot Creek raises the archaeological sensitivity of the area, the existing ground disturbance and the lack of identified surface features reduced the probability of finding intact, sub-surface sites. Therefore, sub-surface testing was not performed during this survey.

The pedestrian survey consisted of visual inspections of the ground surface across the 21.3 acre (8.6 ha) Project APE in parallel 15-meter interval transects. The photo-documentation portion consisted of photographs of the general conditions within the Project APE, including potential pre-contact features or historical architectural resources and cultural material, along with existing topographic landforms, erosion, and disturbances. Boundaries of the Project APE included the NorthWestern transmission line to the east, 135th Street bounded the APE to the south, the edge of the agricultural field bounded the APE to the west, and the northern boundary extends approximately 502 meters north of 135th Street. The Project APE was composed of a recently planted soybean field with evidence of past corn cultivation. Disturbance of the APE included an existing gravel equipment laydown area for the NorthWestern upgrade project at the existing Aberdeen Generating Station located across the street. This laydown area required the topsoil to be machine excavated and moved to the southeastern corner of the APE, creating a spoil pile. Should there be additional laydown areas created for the Hub City Energy Park not part of the original Project APE, an additional survey should be completed to include them. The ground surface visibility of the entire Project APE was between 90-100%. Transects were walked to observe cultural material on the ground

surface. The portion of the APE within the equipment laydown area was not surveyed due to presence of gravel on the ground surface, its past ground surface disturbance, and standing water. All materials identified during this survey were recorded by an EOS Arrow GPS unit connected to the Fieldmaps application. The field conditions were excellent, and the weather was partly cloudy with temperatures in the lower 80s.

One multicomponent site, 39BN0174, was identified. [REDACTED]

[REDACTED] All cultural materials were identified on the ground surface during pedestrian survey. This site is an artifact scatter which has been affected by agricultural and topsoil moving activities. Materials identified on the ground surface include; 5 aluminum or tin can fragments, 1 pull tab, 3 aqua bottle glass fragments, 7 colorless bottle glass fragments, 7 brown bottle glass including 1 embossed fragment, 1 brick fragment, 1 ceramic irrigation pipe fragment, 2 solarized amethyst bottle glass fragments, 1 cement fragment, 1 coal slag, and 1 chert possible biface fragment (Photograph 1 through Photograph 34).

A second artifact scatter was identified on a [REDACTED]

[REDACTED] This spoil pile was machine excavated topsoil moved from its place of origin to create the equipment laydown area. The material identified included ceramic irrigation pipe fragments, bottle glass, and an unidentified fragment. This concentration of artifacts was determined to be out of context due to the soil moving activity at the laydown area and not included in Site 39BN0174.

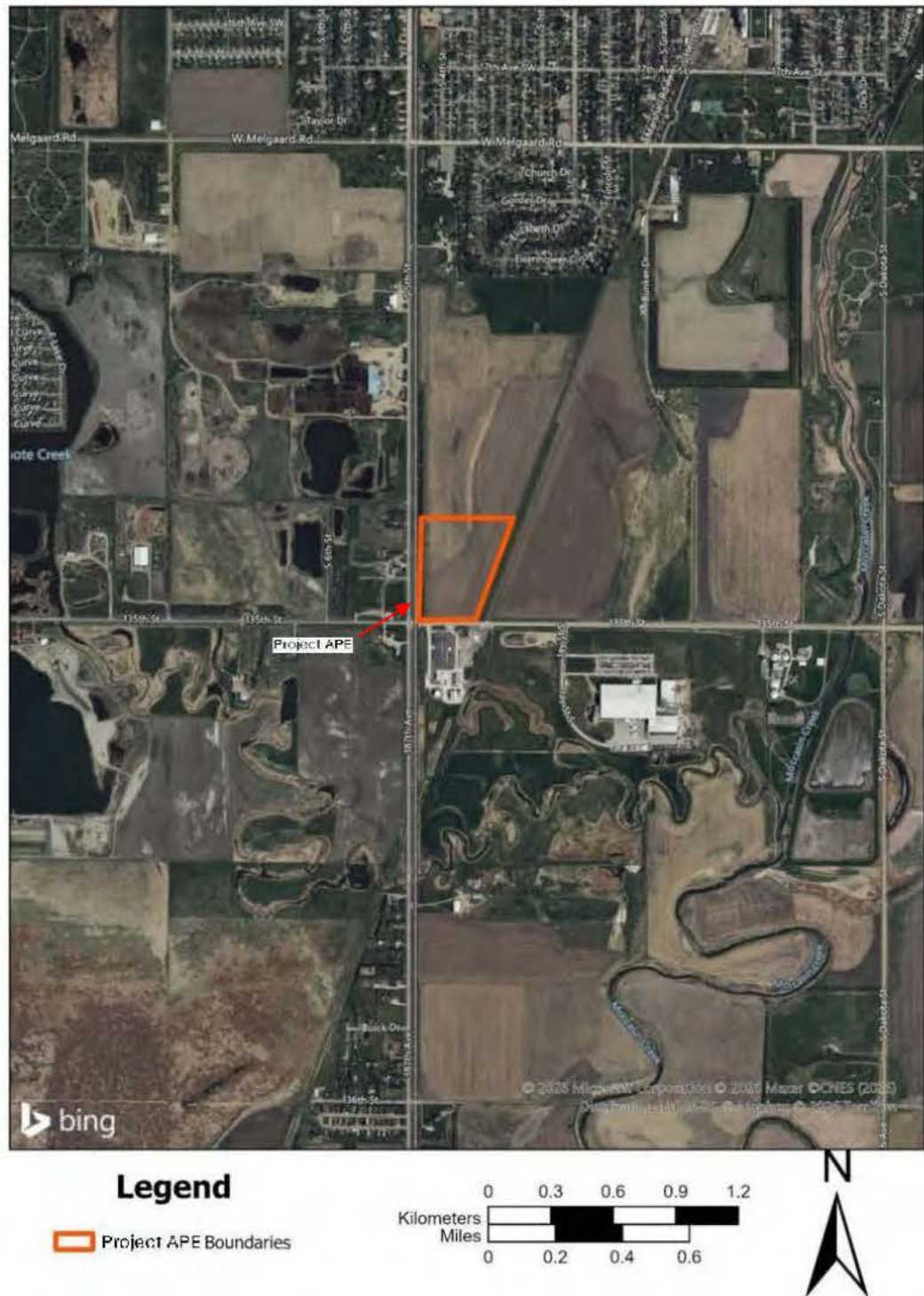


Figure 5. Hub City Energy Park Project APE.

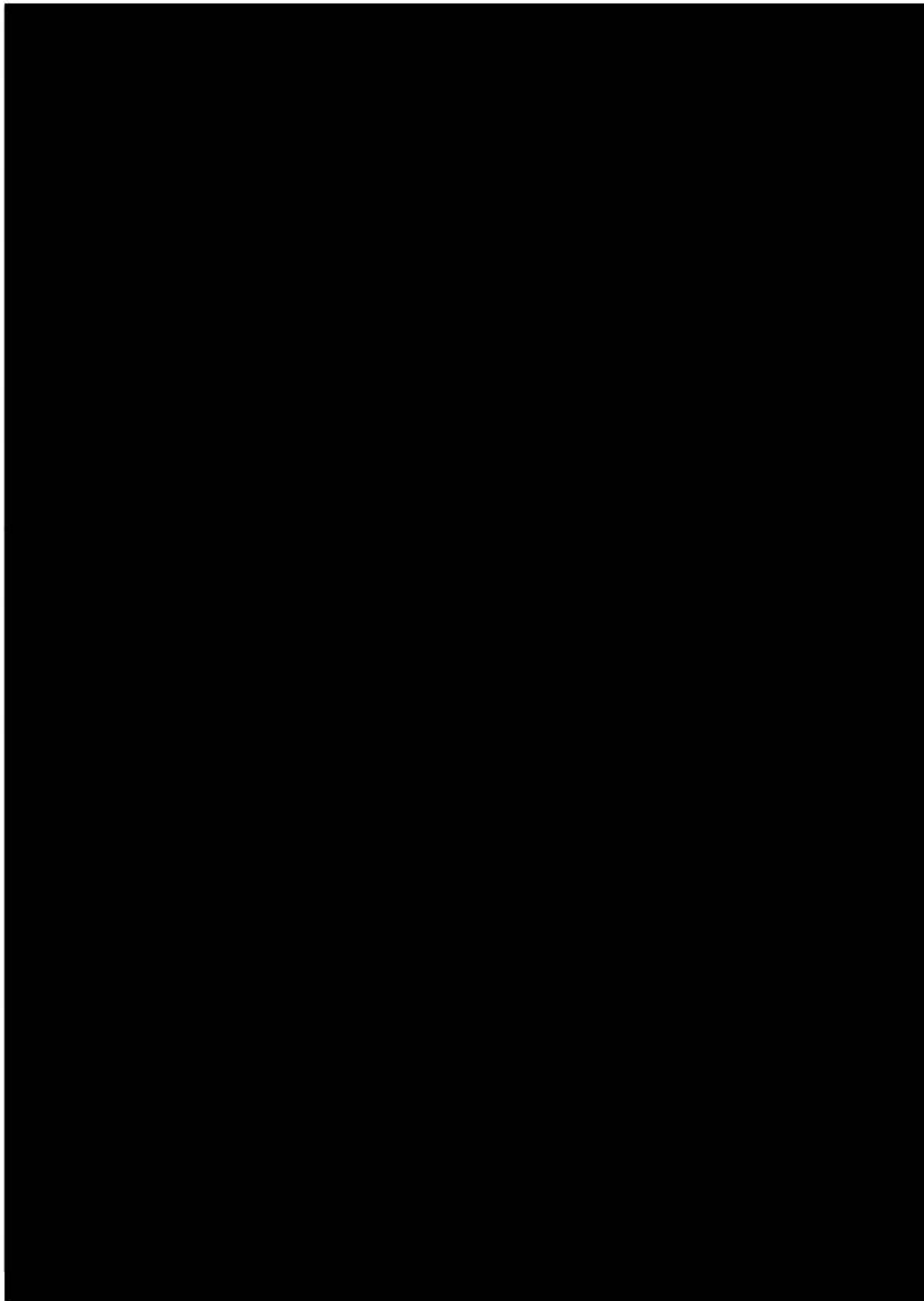
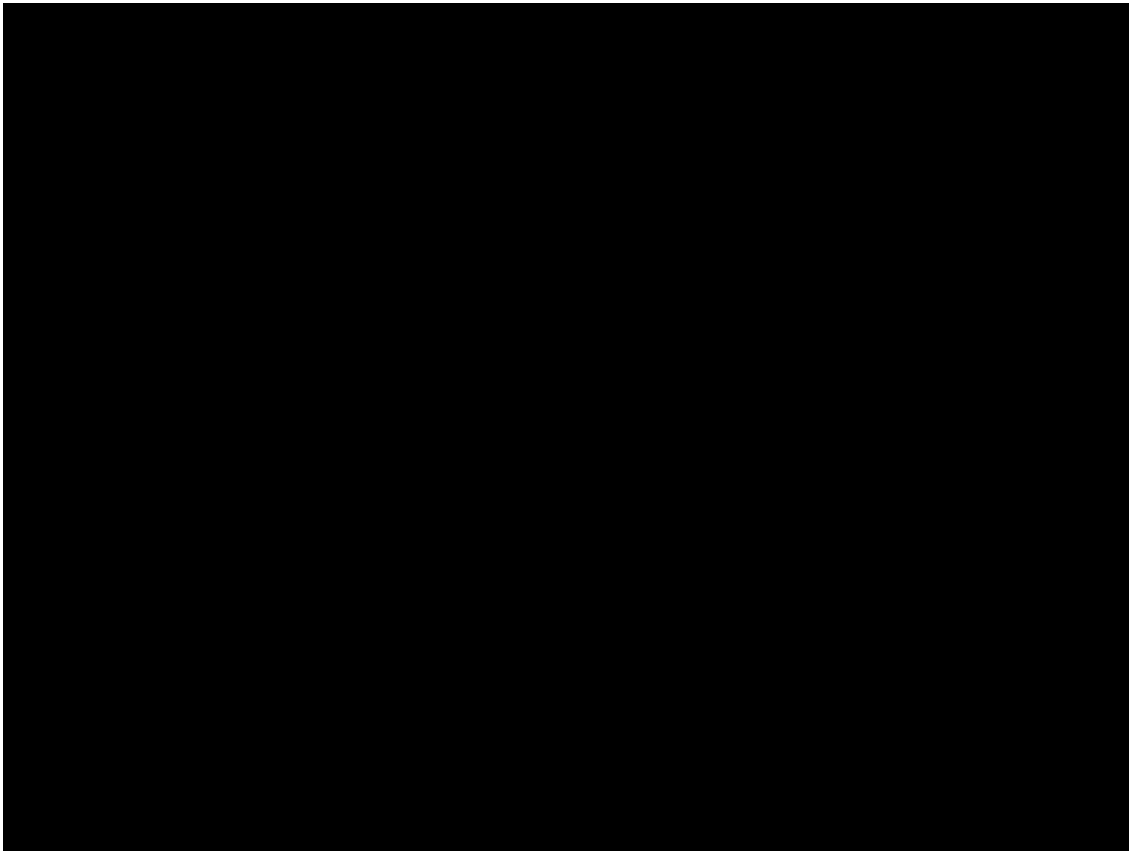


Figure 6. Site 39BN0174 within Project APE.



Photograph 1. Overview of Project APE, facing north, with site 39BN0174 in background.



Photograph 2. Overview of Project APE, facing east, with NorthWestern equipment laydown area.



Photograph 3. Overview of Project APE, facing south. NorthWestern equipment laydown area in foreground and substation in background.



Photograph 4. Western boundary of Project APE.



Photograph 5. Overview of Project APE, facing southwest.



Photograph 6. Overview of Project APE facing west.



Photograph 7. Equipment laydown area disturbance within the southwestern portion of the Project APE. Photograph taken facing northwest



Photograph 8. Machine excavated top-soil spoil pile to create equipment laydown area, east of equipment laydown area. Location of second artifact scatter concentration out of context. Photograph taken facing north.



Photograph 9. Surface Find 002, crushed tin or aluminum can identified at site 39BN0174.



Photograph 10. Surface Find 003, colorless flat glass identified at site 39BN0174.



Photograph 11. Surface Find 004, coal slag identified at site 39BN0174.



Photograph 12. Surface Find 005, colorless flat glass identified at site 39BN0174.



Photograph 13. Surface Find 006, aqua bottle glass identified at site 39BN0174.



Photograph 14. Surface Find 007, concrete fragment identified at site 39BN0174.



Photograph 15. Surface Find 008, two solarized amethyst bottle glass identified at site 39BN0174.



Photograph 16. Surface Find 009, colorless bottle glass identified at site 39BN0174.



Photograph 17. Surface Find 010, brown bottle glass identified at site 39BN0174.



Photograph 18. Surface Find 011, two brown bottle glass fragments identified at site 39BN0174.



Photograph 19. Surface Find 012, light aqua bottle glass fragment identified at site 39BN0174.



Photograph 20. Surface Find 013, crush tin or aluminum can identified at site 39BN0174.



Photograph 21. Surface Find 014, brown bottle glass fragment identified at site 39BN0174.



Photograph 22. Surface Find 015, brown bottle glass with embossed raised dots identified at site 39BN0174.



Photograph 23. Surface Find 016, brown bottle glass fragment identified at site 39BN0174.



Photograph 24. Surface Find 017, colorless bottle glass fragment with patina identified at site 39BN0174.



Photograph 25. Surface Find 018, two colorless bottle glass fragments identified at site 39BN0174.



Photograph 26. Surface Find 019 tin or aluminum can identified at site 39BN0174.



Photograph 27. Surface Find 020, aqua bottle glass fragment identified at site 39BN0174.



Photograph 28. Surface Find 021, brown bottle glass fragment identified at site 39BN0174.



Photograph 29. Surface Find 022, brown bottle glass fragment identified at site 39BN0174.



Photograph 30. Surface Find 023, possible biface fragment identified at site 39BN0174.



Photograph 31. Surface Find 024, redware irrigation pipe fragment identified at site 39BN0174.



Photograph 32. Surface Find 025, brick fragment identified at site 39BN0174.



Photograph 33. Surface Find 026, tin or aluminum can fragment identified at site 39BN0174.



Photograph 34. Surface Find 027, one pull tab and one tin or aluminum can fragment identified at site 39BN0174.

4 Statement of Significance

The criteria for evaluating properties for inclusion in the NRHP (36 CFR Part 60.4 [a–d]) are codified under the authority of the NHPA of 1966, as amended, (54 U.S.C. § 306108) and the Advisory Council on Historic Preservation's (ACHP) *Protection of Historic Properties* (36 CFR Part 800) has set forth guidelines to use in determining site eligibility. After the identification of relevant historical themes and related research questions, the following four criteria for eligibility are applied:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, material, workmanship, feeling, and association.

- A. that are associated with events that have made a significant contribution to the broad patterns of our history; or
- B. that are associated with the lives of persons significant in our past; or
- C. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. that have yielded, or may be likely to yield, information important in prehistory or history. Note that the application of Criterion D presupposes that the information imparted by the site is significant in history or prehistory (36 CFR Part 60.4, emphasis added).

The physical characteristics and historic significance of the overall property are examined when conducting NRHP evaluations. Although a property in its entirety may be considered eligible for listing in the NRHP based on Criteria A, B, C, and/or D, specific data are also required for individual components therein based on date, function, history, physical characteristics, and other information. Resources that do not relate in a significant way to the overall property may contribute if they independently meet the NRHP criteria.

For a cultural resource, district, or landscape to be determined eligible for listing in the NRHP, it must retain enough of its historic integrity to convey its significance. For the NRHP, there are seven aspects of integrity:

- 1. Location
- 2. Design
- 3. Setting
- 4. Materials
- 5. Workmanship
- 6. Feeling
- 7. Association

Occasionally, specific resources fall into categories in which they must be evaluated further using one or more of the following Criteria Considerations. If a resource identified during the reconnaissance-level survey were to fall into one of these

categories, the following Criteria Considerations would be applied in conjunction with one or more of the four National Register criteria:

- A. A religious property deriving primary significance from architectural or artistic distinction or historical importance, or
- B. A building or structure removed from its original location, but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event, or
- C. A birthplace or grave of a historical figure of outstanding importance, if there is no other appropriate site or building directly associated with his or her productive life, or
- D. A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events, or
- E. A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived, or
- F. A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historical significance, or
- G. A property achieving significance within the past 50 years if it is of exceptional importance (36 CFR Part 60.4).

The scientific value of archaeological sites is assessed under Criterion D. With regard specifically to this criterion, the goal of precontact archaeological research and management is to fill gaps in the knowledge about specific research domains. Scientific importance is driven, in part, by the research paradigms of the time and, in part, by the amount of information available about a particular research topic in a specific geographic area. The most robust forms of scientific importance should honor diverse and occasionally competing schools of research interests and their attendant approaches. To fulfill Criterion D, a site must possess specific attributes (e.g., intact buried cultural strata with functionally and temporally diagnostic materials, datable cultural features) such that further intensive research at the site could be expected to add information to relevant research questions.

While the Level III Intensive Survey for the proposed Hub City Energy Park Project identified one multicomponent site, 39BN0174, it is HDR's recommendation that this site lacks research potential based on the information gathered during the pedestrian survey. The site lacks permanent above ground features and the materials identified could not be placed temporally. Modern trash, including soda cans and plastic, was also identified but not recorded. Additionally, based on the review of historic maps and aerial photography, the Project APE did not have structures on the property in the past, apart from the railroad which has since been removed. Disturbances to the site and Project APE include agricultural practices and machine excavation of the topsoil for the creation of an equipment laydown area. It is HDR's recommendation that the site 39BN0174 is not eligible for listing on the NRHP based on Criteria A through D, it does it fall under any of

the National Register Consideration Criteria listed above, nor according to the South Dakota State Plan for Archaeology.

5 Assessment for Undertaking's Effect

It is HDR's recommendation that the proposed Hub City Energy Park Project will have No Adverse Effect to site 39BN0174. This recommendation is determined based on the historic map and aerial photographs review, a data search of previous surveys and known sites in the vicinity of the Project APE, the lack of above ground features, and the inability to place the site temporally based on the materials identified during the pedestrian survey. According to historic maps and aerial photographs available for review there were no structures within the Project APE prior to 1976, apart from a railroad which has been removed. The materials identified at site 39BN0174 were non-diagnostic and cannot be placed temporally. They lack any attributes which could place them within a specific period. Furthermore, the site and Project APE have been heavily affected by ground surface disturbance from agricultural practices and the creation of a gravel laydown area for NorthWestern to store equipment and machinery. These activities have compromised the integrity of site 39BN0174 and the Project APE as a whole. Should there be additional laydown areas created for the Hub City Energy Park not part of the original Project APE, an additional survey should be completed to include them.

6 Resolution of Adverse Effects

It is HDR's recommendation that the proposed Hub City Energy Park Project poses No Adverse Effects to site 39BN0174, therefore there is no Resolution of Adverse Effects necessary.

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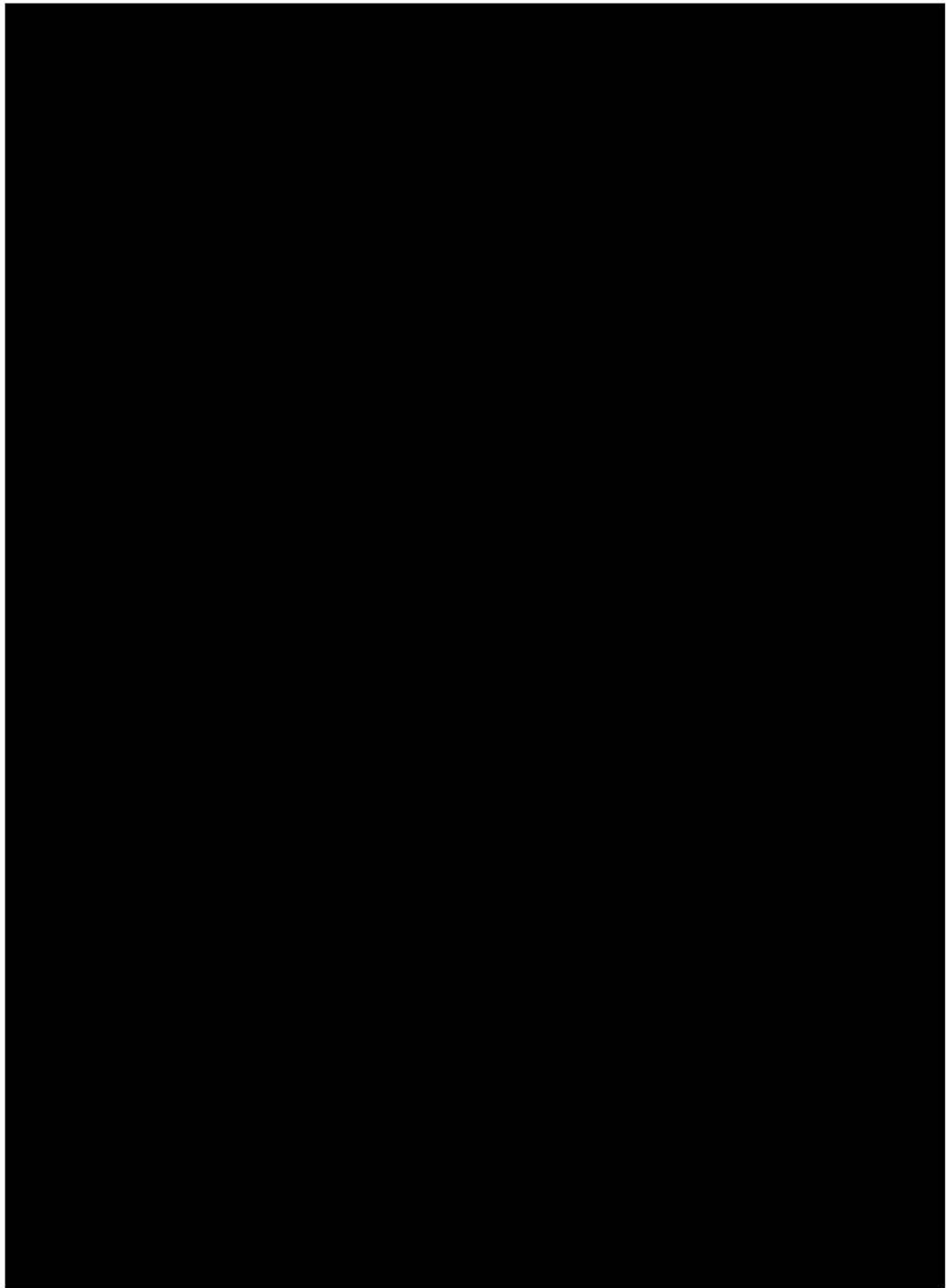
Winham, P.R. and L.A. Hannus

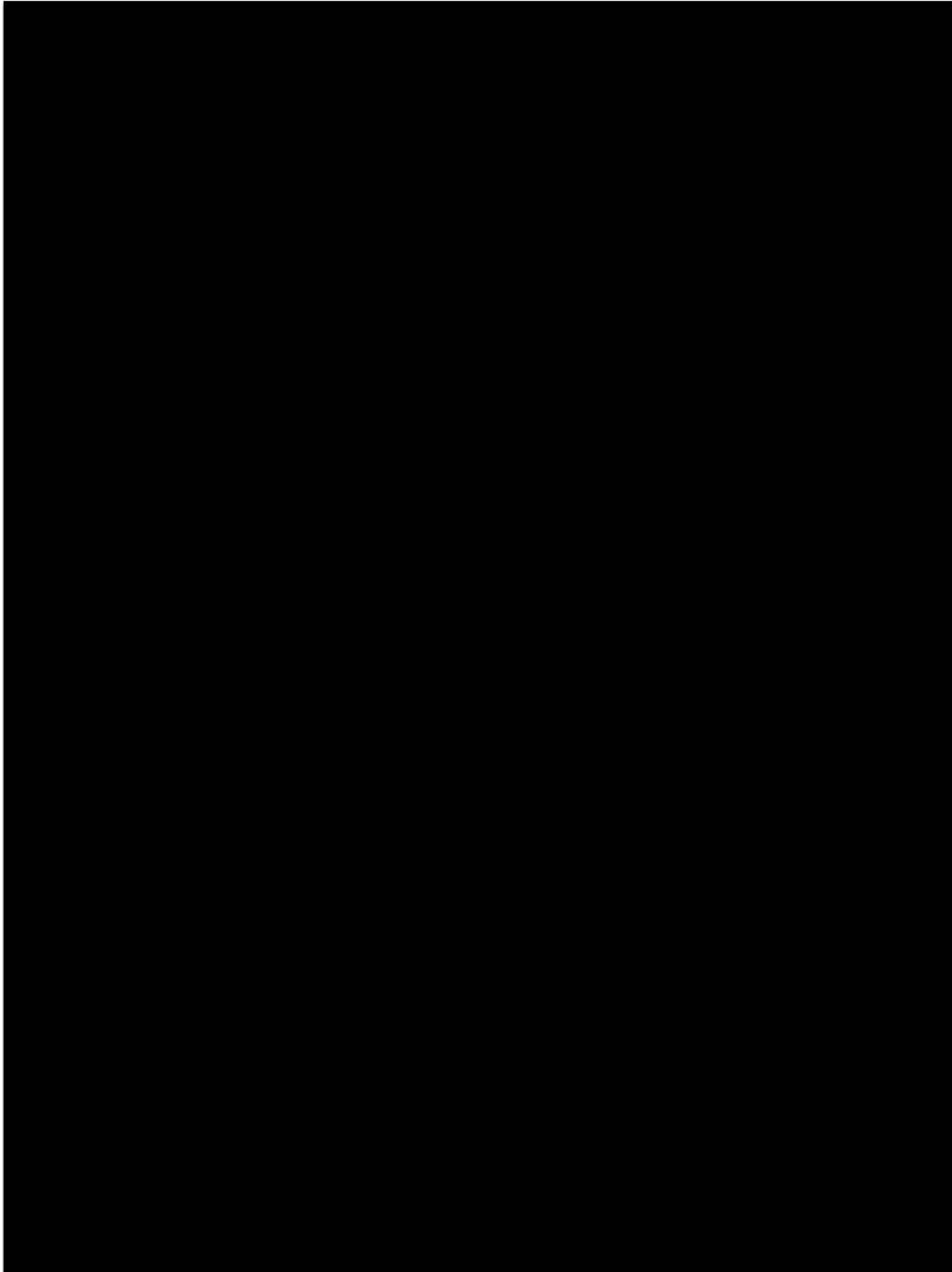
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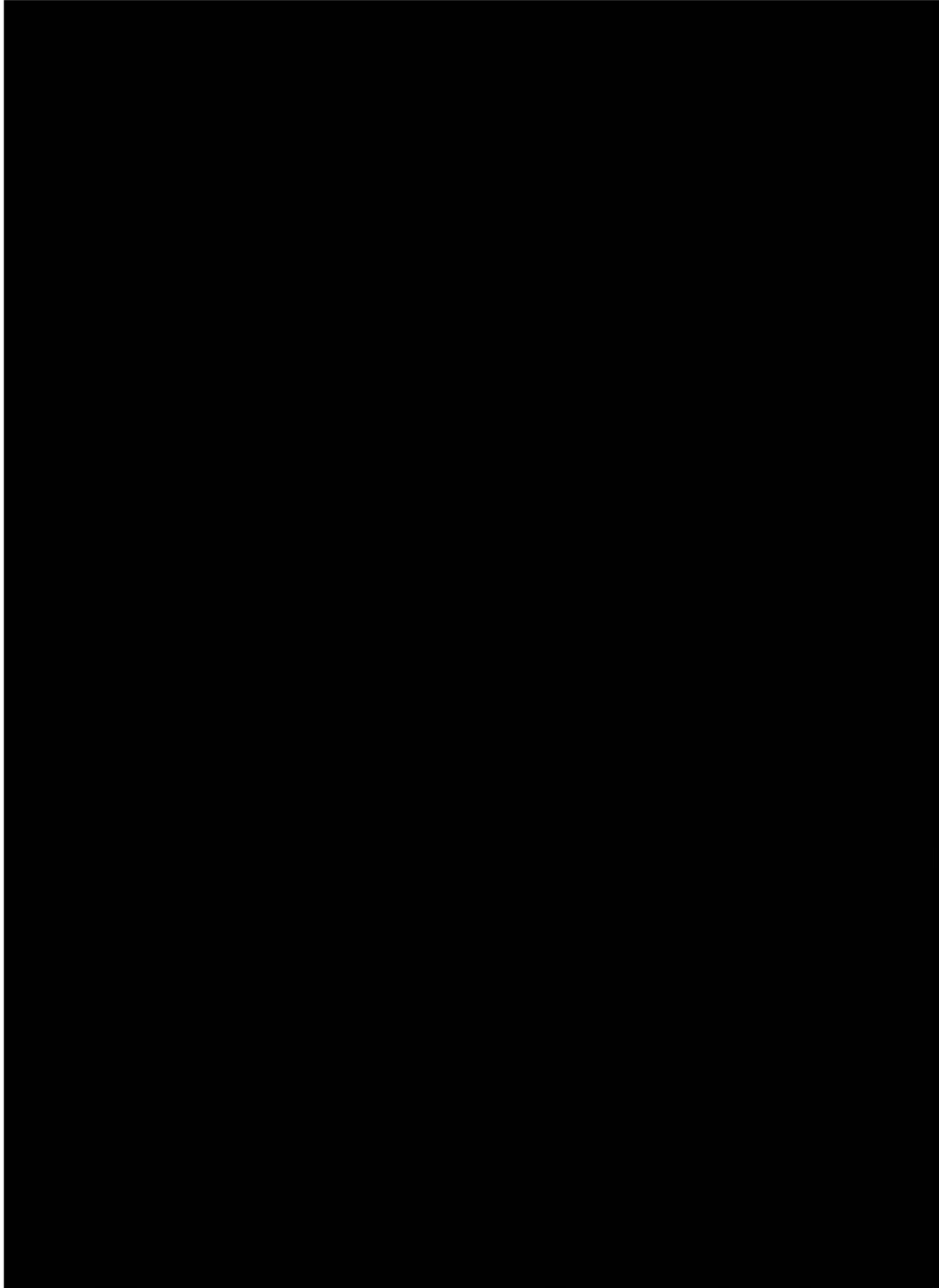
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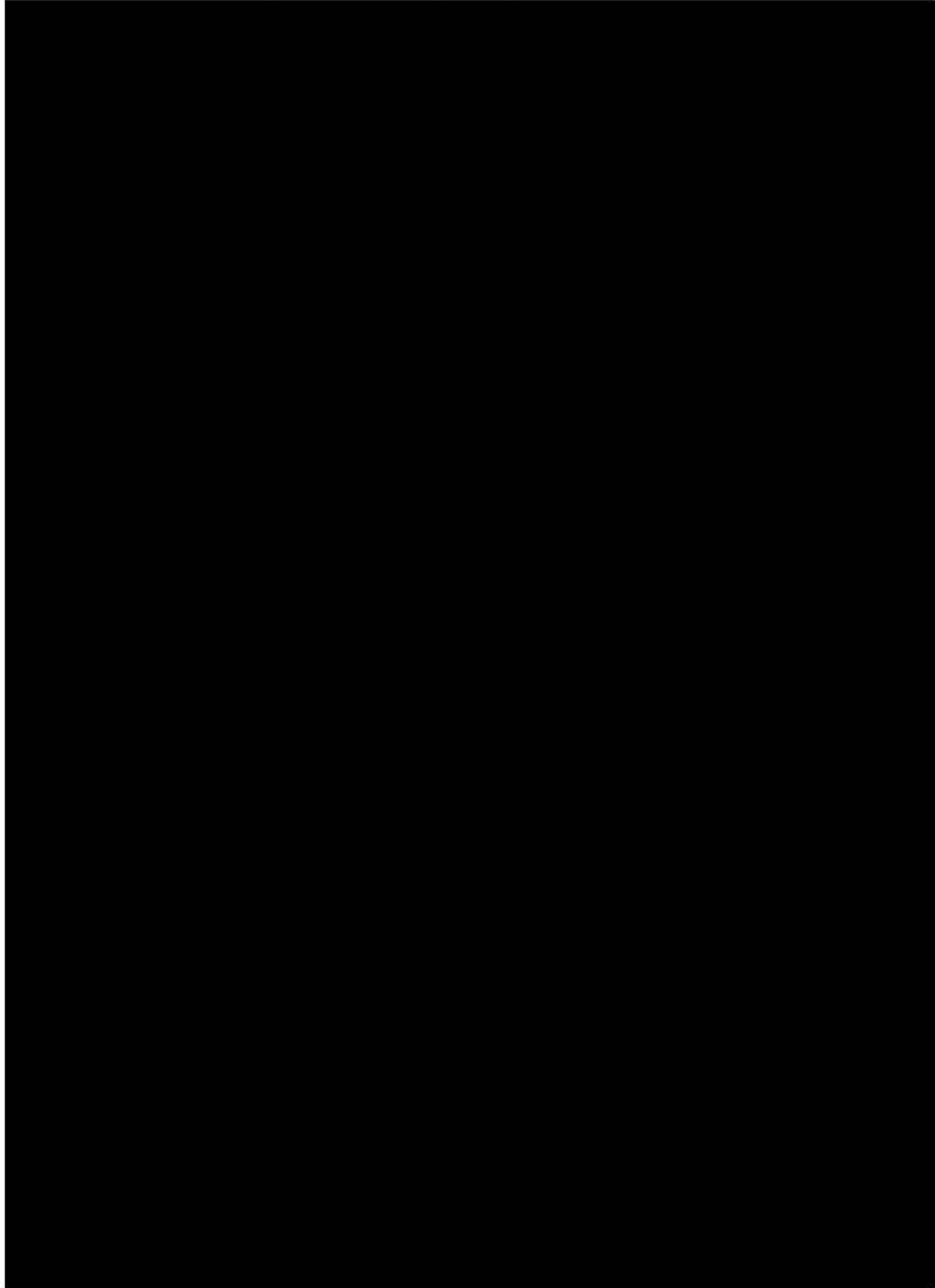
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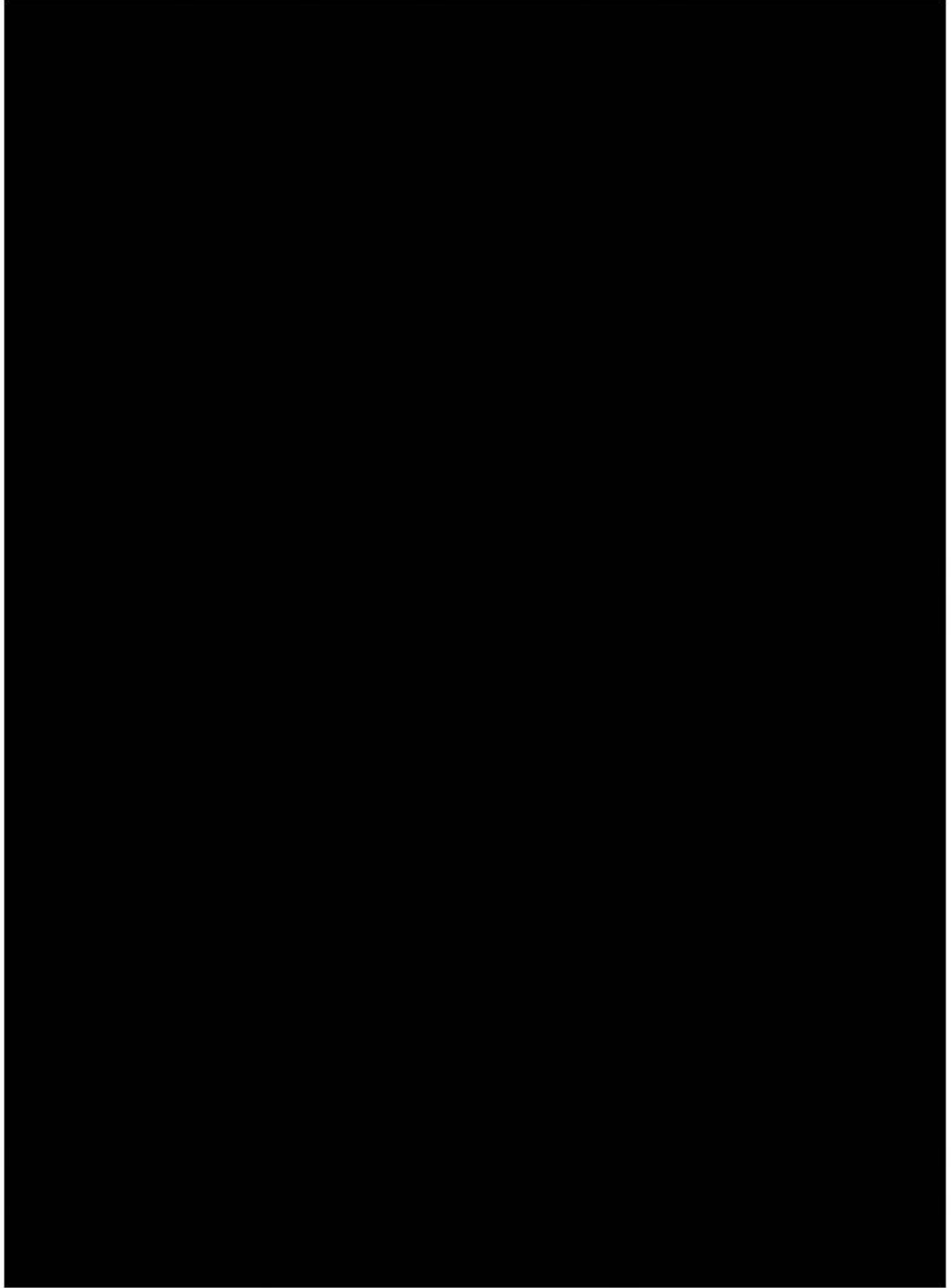
Appendix A.: Site Form













Appendix B.: Resumes



Rhea Fuller

Archaeological Crew Chief

Rhea is an archaeologist with 13 years of experience in cultural resources management. She has worked throughout eastern North America, with a focus in New England. Rhea has garnered experience in all aspects of field data collection including mapping, site relocation, and excavation. In addition to fieldwork, Rhea has acquired 9 years of laboratory experience in processing, analyzing, and curating archaeological and historical collections in both a CRM setting as well as with the Haverhill historical society Buttonwoods Museum.

RELEVANT EXPERIENCE

CATEGORY
504.60 Cultural
Resources Management
Services (Archaeology)

FIRM
HDR

EDUCATION
BA | Anthropology

INDUSTRY TENURE
13 years

FIRM TENURE
3 years

New Tiberias Excavation Project | Tiberias, Israel

Rhea learned excavation techniques as a student on an Islamic period site. Identified and recorded features and artifacts. Completed course work and received four college credits from the Hebrew University of Jerusalem, Israel.
Role: Field School Student
Date: September - October 2013

HDR, Inc. |

Providence, RI

Rhea has participated on Phase I, Phase II, and Phase III archaeological investigations. Duties included excavating shovel test pits and test units to identify and record pre-and-post-contact artifacts and features. Drew plan views and profiles of archaeological features. Recorded soil stratigraphy in shovel test pits and test units. Participated on reconnaissance surveys of areas of potential effects to determine the impact of cultural material.
Role: Field Archaeologist
Date: November 2022 - Present

Commonwealth Heritage Group, Inc. |

Littleton, MA, and West Chester, PA

Rhea served as a crew member participating in Phase I and Phase II archaeological investigations. Duties included excavating shovel test pits and test units to identify and record pre-and-post-contact artifacts and archaeological features. Drew plan views and profiles of archaeological features. Recorded soil stratigraphy. Participated on reconnaissance surveys determine the presence of cultural material. Processed recovered artifacts in the laboratory after excavation. Assisted the laboratory supervisor in the analysis of pre-and post-contact artifacts.

Role: Field Archaeologist

Date: August 2017- August 2022

Power Engineers |

Foxboro, MA

Rhea served as a crew member participating on Phase I, Phase II, and Phase III archaeological investigations. Recorded and identified pre-and post-contact artifacts, features, and faunal remains. Participated on reconnaissance surveys of areas of potential effects to determine the impact of cultural material. Supported field supervisor in the mapping of sites. Processed recovered artifacts in the laboratory after excavation. Assisted the laboratory supervisor in the analysis of pre-and post-contact artifacts. Photographed artifacts to be included in reports. Participated in the process of soil floatation.

Role: Field Archaeologist

Date: September 2016 - June 2019

Environmental Resources Management | Atlanta, GA

Excavated shovel test pits and test units on Phase I and Phase II projects. Identified and recorded pre-and post-contact artifacts and features. Identified soil stratigraphy in shovel test pits and test units. Drew plan views and profiles of features. Participated on reconnaissance surveys of areas of potential effects to determine the impact of cultural material.
Role: Field Archaeologist
Date: November 2015-May 2016

UMass Archaeological Services |

Amherst, MA

Rhea participated on a Phase I archaeological survey in Pittsfield, MA. Duties included identifying and recording soil stratigraphy. Identified pre-and-post contact archaeological cultural material. Identified and recorded archaeological features.

Role: Field Archaeologist

Date: April 2017

RHEA FULLER (CONTINUED)

Gray and Pape |

Providence, RI

Rhea participated on Phase I and II archaeological investigations for the Clear River Interconnect Project in Burrillville, RI. Rhea also served as a crew member on Phase II excavation for electrical pole re-location project in Brimfield and Sturbridge, Massachusetts. Excavated shovel test pits and test units on Phase I and Phase II excavations. Identified and recorded pre-and post-contact artifacts and features. Recorded soil stratigraphy in shovel test pits and test units.

Drew plan views and profiles of features

Role: Field Archaeologist

Date: April 2015 – November 2018

Louis Berger |

Morristown, NJ

Rhea participated on a Phase I archaeological survey in New York State excavating shovel test pits Identified and recorded pre-and post-contact artifacts and features.

Recorded soil stratigraphy in shovel test pits and test units.

Role: Field Archaeologist

Date: September – October 2014



Amy Leuchtmann

Archaeology Project Director

EDUCATION

Ph.D., Environmental Science,
Oregon State University, pending

M.A., Maritime Archaeology, East
Carolina University, 2011

B.A., Liberal Arts/Sciences (Liberal
Arts & Sciences- Concentration:
Biology), Florida Atlantic University,
2004

PROFESSIONAL AFFILIATIONS

Society for Historical Archaeology,
2005-Present

INDUSTRY TENURE

17 years

HDR TENURE

14.5 years

OFFICE LOCATION

Ann Arbor, MI

Ms. Leuchtmann has over seventeen years of experience working on professional archaeological projects, both terrestrial and underwater. She has experience working on cultural resource management projects across the United States with much of her experience occurring in the North-Central United States, the Midwest, Texas, Alaska, and the Gulf Coast. She has completed work for USACE, NAVFAC, DHS, BNSF & CSX railroads, local governments, and commercial clients. Ms. Leuchtmann's experience includes conducting background research, Phase I & Phase II archaeological surveys, Phase III archaeological excavations, and FCC communication tower compliance. Ms. Leuchtmann has written or contributed to numerous technical reports submitted to local, state, and federal government entities.

As a Maritime Archaeologist with HDR, she is responsible for maritime site assessment and consultation and contributed subject matter expertise during the BP Deepwater Horizon oil spill cleanup. She has maritime archaeology field experience in both salt and freshwater environments.

RELEVANT EXPERIENCE

BNSF, Positive Train Control Tower Compliance AL, AR, AZ, CA, CO, IA, ID, IL, KS, KY, LA, MI, MN, MO, MS, MT, ND, NE, NM, OK, OR, SD, TX, TN, WA, WI, and WY 08/2013–Present. Archaeology Project Director. Working with Native American tribes and SHPOs to identify historic properties and areas of Indian heritage that may be affected by tower construction. Workflow involves gathering and processing of background information, GIS data, state archaeological and historic site data, and preparation of cultural resource memos and reports compliant with the FCC's Program Comment to be provided to Indian tribes and other interested parties on short notice. Also responsible for distributing data packages to SHPOs, participating tribes, and local government contacts. Complete and submit FCC 620 forms for towers. Maintain clear records for tower tracking purposes.

CSX Transportation, CSX Positive Train Control Tower Compliance AL, FL, GA, IL, IN, KY, LA, MA, MD, ME, MI, MS, NC, NJ, NY, OH, PA, SC, TN, VA, and WV, 08/2013–Present. Archaeology Project Director. Working with Native American tribes and the various SHPOs to identify historic properties and areas of Indian heritage that may be affected by tower construction. Workflow involves gathering and processing of background information, GIS data, state archaeological and historic site data, and preparation of cultural resource memos and reports provided to Indian tribes and other interested parties on short notice. Complete and submit FCC 620 forms for towers. Also responsible for distributing data packages to SHPOs, participating tribes, and local government contacts. Maintain clear records for tower tracking purposes.

MDoT, Bull Shoals Survey, Theodosia, MO. 12/2025. Field Crew. Conducted pedestrian survey and subsurface shovel testing along the

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shoreline of Bull Shoals Lake. Supervised excavation of block units to delineate subsurface archaeological resources

Alaska DoT, Sterling Highway Phase II, Cooper Landing Alaska. 05-10/2025. Co- Field Director.

Ms. Leuchtmann acted as Co-Field Director for the duration of the summer season on this Phase III excavation. She supervised multiple crews during field survey activities, as well as during excavation of block units to delineate subsurface archaeological resources. Ms. Leuchtmann was responsible for daily transport of artifacts from field sites to the temporary field lab, as well as submitting daily communications of field activities to Project Management

CPKC, Positive Train Control Compliance IA, LA, MO, 03/2025

Archaeology Project Director. Working with Native American tribes and the various SHPOs to identify historic properties and areas of Indian heritage that may be affected by tower construction. Workflow involves gathering and processing of background information, GIS data, state archaeological and historic site data, and preparation of cultural resource memos and reports provided to Indian tribes and other interested parties on short notice. Maintain clear records for tower tracking purposes.

MAWC – Missouri River Pipeline Crossing, Chesterfield, MO. 12/2024.

Field Crew.

Ms. Leuchtmann conducted pedestrian survey and subsurface shovel testing ahead of a road expansion project.

Alaska DoT, West Su Access Road, Susitna, AK. 09/2024. Crew Chief.

Ms. Leuchtmann acted as crew lead for this linear survey project near the Susitna River. Ms. Leuchtmann was responsible for assignment logistics, data collection, as well as participating in the survey and subsurface testing activities. This survey included both pedestrian and aerial survey from a helicopter.

Alaska Energy Authority, Sterling Substation to Quartz Creek Substation Transmission Line Reconstruction Projects 2-3, Kenai Peninsula, AK. 06/2024. Crew Chief. Ms. Leuchtmann acted as crew lead for a linear survey project along an existing power line within and west of Cooper Landing, Alaska. Ms. Leuchtmann was responsible for assignment logistics, data collection, as well as participating in the survey and subsurface testing activities.

Alaska DoT, Sterling Highway Phase II, Cooper's Landing Alaska. 09/2022, 08-09/2023, 06/2024. Archaeological Crew Chief.

Ms. Leuchtmann supervised excavation of block units to delineate subsurface archaeological resources.

rPlus-WO2 WPPH Pumped Storage, Ely NV, 06/2021. Archaeologist. Ms.

Leuchtmann performed a Phase I cultural resource survey including pedestrian survey.

Turkey Peak Phase II, Santos TX. August 2019.

Archaeological Crew Chief. HDR Inc.

Ms. Leuchtmann supervised excavation of block units to delineate subsurface archaeological resources.

Ocean Wind Offshore Wind Farm Project, NJ, 2019.

Maritime Archaeologist. Ms. Leuchtmann was responsible for hiring and supervising archaeology subcontractors. She acted as the liaison with project managers and the subcontractor to ensure field work (architectural history reconnaissance and terrestrial archaeological field surveys) were



being done in a timely manner and meeting the standards provided by BOEM regarding renewable energy programs.

Ash Grove Cement Company, Ash Grove, Chantue, KS, 11/2018-12/2018. Archaeologist Field Director. Ash Grove Cement Company proposed an expansion of their existing limestone mining efforts. Ms. Leuchtmann led the field crew which performed a Phase I cultural resource survey, including pedestrian survey and shovel testing. She was also responsible for authoring the technical report for the client and submission to KS SHPO.

Port of Brownsville, USACE Easement Transfer, Brownsville, TX, 11/15/2018-11/16-2018. Archaeologist. The USACE was scheduled to release easements within the Port of Brownsville to the Port. Ms. Leuchtmann conducted a site visit to summarize the cultural resources within the easement.

GBRA, Carrizo Groundwater Supply Project, TX, 09/2018-10/2018. Archaeologist. GBRA proposed improvements to within the groundwater supply of Caldwell and Gonzales counties. Ms. Leuchtmann was part of the cultural resource crew that completed a Phase I survey of approximately 1,080 acres which included pedestrian survey and shovel testing.

TXDOT, I-35 Denton, TX, 04/2018-05/2018. Archaeologist. TXDOT proposes to widen and reconstruct Interstate Highway 35 from four to six lanes for a total distance of approximately 15 miles. Ms. Leuchtmann performed a Phase I cultural resource survey including pedestrian survey and shovel testing.

Union Pacific Railroad, Brazos Yard Monitoring, TX, 03/2018. Archaeologist. UPRR is constructing a new rail yard in Robertson County. Part of the construction includes a large canal, draining into the Brazos River. Ms. Leuchtmann acted as a monitor during the construction of the canal.

NextEra Energy Resources, Crowned Ridge Wind Farm Project, SD, 08/2017-11/2017. Archaeologist. NextEra proposes to construct a 600 MW wind farm in Codington, Deuel, and Grant counties, South Dakota. Ms. Leuchtmann worked with representatives from the Sisseton-Wahpeton-Oyate, Spirit Lake, and Yankton tribes in the field, and helps provide coordination between the tribal representatives, the client, and their archaeological contractor in order to facilitate a joint archaeological-TCP field survey for the project.

Phase I Archaeological Survey for the NICTD West Lake Corridor Project, Lake County, Indiana, 04/17-05/17. Crew Chief. Ms. Leuchtmann conducted background research, led the field survey, acted as lead author of the survey report.

Archaeological Survey for the Selfridge Air National Guard (ANG) Station, Harrison Township, Michigan, 2/2017. Ms. Leuchtmann conducted the background investigation. Was part of the field survey team at the ANG installation, which included pedestrian survey and shovel testing.

Archaeological Survey for the Georgia Air National Guard (ANG) Savannah IAP and Glynnco Air National Guard Station, Savannah, Georgia, 12/2016. Ms. Leuchtmann conducted the field survey at the ANG installations, which included pedestrian survey and shovel testing.

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Phase II Archaeological Survey at Log Cabin Site, Minnesota Power, Great Northern Transmission Line, Northern Minnesota, 03/2016.

Archaeologist. Ms. Leuchtmann performed a Phase II at a newly recorded historical site. The survey included shovel testing, excavation of test units, and survey with a metal detector.

BKI, Highway LA3132 Extension Project, Shreveport, LA, October 2016.

Crew Chief. Ms. Leuchtmann performed a cultural resources inventory covering approximately 10 miles of a 150-ft corridor for the proposed construction of an expansion for Highway LA3132 south of Shreveport, LA.

Minnesota Power, Great Northern Transmission Line, Northern Minnesota, 07/2016-09/2016.

Archaeologist. Ms. Leuchtmann performed a cultural resources survey for Minnesota Power's proposed construction of a 224-mile 500k high-voltage transmission line originating in Manitoba, Canada. The survey included shovel testing at 15m intervals in areas of high and mid-level probability.

Ameren Transmission Company of Illinois, Spoon River Transmission Line Project, Galesburg to Peoria, IL, 05/2016-11/2016.

Archaeologist. Performed a cultural resources inventory of the 45-mile Project ROW, which includes a 150-ft corridor, as well as access roads and staging areas. Shovel testing was done in areas of high probability. The survey recorded 27 new archaeological resources.

CDM Smith, Port Bienville, Port Bienville, LA, April 2016.

Archaeologist. Performed a cultural resources inventory for the proposed construction of a main line of track leading into Port Bienville, LA.

Dickinson Bypass, ND, NDDOT, June 2015.

Project Director. Conducted a file search at the ND SHPO and a Phase I cultural resources inventory of a 2.74-acre study area as an addendum to a previous inventory of a 4,462-acre study done in 2012.

Canadian Pacific Railway, Brownsville Siding, MN, May 2015.

Field Archaeologist. Performed Phase I cultural resources inventory and Phase II archaeological evaluation on Canadian Pacific Railway's proposed new 11,000-foot-long siding infrastructure which runs through southeastern Minnesota along the Mississippi River south of the city of La Crescent, in Houston, Minnesota. Phase I survey identified five archaeological sites and one historic property, the RR line itself. Phase II studies were completed for the RR line and for two of the five archaeological sites. One site was determined eligible for the National Register of Historic Places and would be adversely affected by the project.

BNSF, Pleasant Dale to Milford Ravenna Subdivision Capacity Expansion, Pleasant Dale and Milford, NE, April 2015.

Archaeologist. Performed a cultural resources inventory of approximately 35 acres for BNSF's proposed construction of a second main line of track between Pleasant Dale and Milford, Nebraska. The survey recorded one archaeological resource and eleven aboveground resources, seven of which were recommended as NRHP eligible as an historic district.

BP Exploration & Production, Inc. and NOAA, Natural Resources Damage Assessment (NRDA) Cultural Resources Assessment, LA, MS, AL, FL, 09/2012-02/2014.

Maritime Archaeologist. Conducted archaeological monitoring of biota and submerged oil sampling throughout

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the area affected by the Deepwater Horizon oil spill. Provided treatment recommendations to SHPO and federal trustee representatives throughout the four states for NHPA Section 106 compliance. \$282,809.

BP Exploration & Production, Inc., MC 252 Response Cultural Resources Assessment Program, LA, MS, AL, FL, 06/2011-06/2014. Maritime Archaeologist for the HDR team that provided cultural resources support for the Deepwater Horizon oil spill cleanup. Responsible for the archaeological monitoring of operations associated with the cleanup process. Conducts site assessments for maritime related sites on land (shipwrecks and isolated finds such as anchors or piers). Prepares reports detailing results of work conducted for the Section 106 process. \$10,000,000.

London State Fish Hatchery, Ohio Department of Natural Resources, Phase I Archaeological Survey for the London State Fish Hatchery Capital Project, Union Township, Madison County, Ohio, Madison County, OH, 12/2014. Crew Chief. Led crew during a Phase I archaeological survey in advance of electric line replacement at London State Fish Hatchery. Conducted pedestrian and subsurface testing while using iPad field recording techniques for data collection.

NPS, Photogrammetry Project on the USS Arizona, Pearl Harbor HI, 11/2014. Maritime Archaeologist. Acted as on-site maritime archaeologist during experimental testing of new photogrammetry software in a challenging underwater environment.

Eastern Gulf Crude Access, Phase I Archaeological Survey for the Patoka to Trunkline Pipeline Project, Marion, Wayne, and Clay Counties, IL, 07/2014. Crew Chief. Led crews for a Phase I Archaeological survey in advance of pipeline in southern Illinois. Conducted pedestrian and subsurface testing while using iPad field recording data collection and maintenance.

BP Exploration & Production, Inc., Cat Island Archaeological Investigation, MS, Feb-May 2012. Assisted in a Phase I survey of Cat Island, Mississippi. Excavated shovel tests along the island's shoreline and delineated both previously and newly recorded sites. Role – Field Archaeologist

NON-HDR EXPERIENCE

FEMA, DR-1955-UT, St. George, UT, 03/2011-04/2011. Historic Preservation Specialist. Acts as FEMA liaison for local SHPOs and THPOs. Oversee compliance of FEMA funded projects with the NHPA and Section 106. Act as leader for cultural resource survey and testing projects conducted by FEMA. Review reports submitted by hired consultants detailing the results of work conducted for the Section 106 process.

FEMA, DR-1907-ND, Bismarck, ND, 08/2010-12/2010. Historic Preservation Specialist. Acts as FEMA liaison for local SHPOs and THPOs. Oversee compliance of FEMA funded projects with the NHPA and Section 106. Act as leader for cultural resource survey and testing projects conducted by FEMA. Review reports submitted by hired consultants detailing the results of work conducted for the Section 106 process.

Kadmas, Lee & Jackson, Inc., Miscellaneous Projects, Bismarck, ND, 08/2008-08/2010. Crew Chief. Acted as leader for cultural resource survey

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and testing project field crews for oil and natural gas pipelines, oil well pads, access roads, wind farms, DOT projects, and community improvement projects. Provided recommendations to clients and lead agencies on cultural resource eligibility. Prepared, reviewed, and submitted reports to clients and lead agencies detailing the results of work conducted for the Section 106 process. Created maps for fieldwork and final reports using ArcGIS software.

Vasa Beakhead Recording Project/Archaeological field school run by East Carolina University, 2007. Student Archaeologist. Responsibilities included recording the structural elements of the beakhead of the Swedish warship Vasa, both manually and digitally. Create a digital model of beakhead using software Rhino.

Ivanhoe Underwater Recording Project/Archaeological field school run by East Carolina University, 2007. Student Archaeologist. Responsibilities included mapping a 160-foot iron-hulled vessel using triangulation method. Created shoreline map using total station equipment.

Washington Park Vessel Underwater Recording Project/Archaeological field school run by East Carolina University, 2006. Student Archaeologist. Responsibilities included mapping a 60-foot wooden schooner using both baseline offset method and Site Recorder software. Created shoreline map using total station equipment.

Roanoke and Perquimans River – Phase I survey/East Carolina University, 2006. Student Archaeologist. Used sonar and magnetometer to survey the Roanoke and Perquimans Rivers. Received training on Hypack and SonarWiz software.

Continental Underwater Recording Project/Archaeological field school run by East Carolina University, 2007. Student Archaeologist. Responsibilities included mapping a 250-foot wooden bulk carrier using baseline offset method. Created shoreline map using total station equipment.

Master's Thesis

2011 *The Central Places of Albemarle Sound: Examining Transitional Maritime Economies through Archaeological Site Distribution*, Unpublished M.A. Thesis. Department of History, East Carolina University, Greenville, NC.

Professional Reports

- 2010 *Fort Berthold Rural Water - New Town 1 Pipeline: A Class III Cultural Resource Inventory in Mountrail County, North Dakota*. Manuscript on file at the State Historical Society of North Dakota, Bismarck.
- 2010 *Walford City Fiber Optic Cable: A Class III Cultural Resource Inventory, McKenzie County, North Dakota*. Manuscript on file at the State Historical Society of North Dakota, Bismarck.
- 2010 *City of Mandan Cell Tower: A Class III Cultural Resource Inventory, Morton County, North Dakota*. Manuscript on file at the State Historical Society of North Dakota, Bismarck.
- 2009 *Highway 1804 HES-1-804(039)61: PCN 18023: A Class III Cultural Resource Inventory, Burleigh County, North Dakota*. Manuscript on file at the State Historical Society of North Dakota, Bismarck.

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- 2009 *Fort Berthold Reservation Waterline: A Class III Cultural Resource Inventory, Dunn County, North Dakota.* Manuscript on file at the State Historical Society of North Dakota, Bismarck.
- 2008 *Two Shields Butte 2-28H Well Pad and Access Road: A Class III Cultural Resource Inventory, Mountrail County, North Dakota.* Manuscript on file at State Historical Society of North Dakota, Bismarck.
- 2008 *Tall Bear 4-85H Well Pad and Access Road: A Class III Cultural Resource Inventory, Mountrail County, North Dakota.* Manuscript on file at State Historical Society of North Dakota, Bismarck.
- 2008 *Skunk Creek 14-3-13H Well Pad and Access Road: A Class III Cultural Resource Inventory, Mountrail County, North Dakota.* Manuscript on file at State Historical Society of North Dakota, Bismarck.
- 2008 *Baker 44-25H Well Pad and Access Road: A Class III Cultural Resource Inventory, Mountrail County, North Dakota.* Manuscript on file at State Historical Society of North Dakota, Bismarck.
- 2008 *Charging Eagle 2-22H Well Pad and Access Road: A Class III Cultural Resource Inventory, Mountrail County, North Dakota.* Manuscript on file at State Historical Society of North Dakota, Bismarck.
- 2008 *Charging Eagle 13-22H Well Pad and Access Road: A Class III Cultural Resource Inventory, Mountrail County, North Dakota.* Manuscript on file at State Historical Society of North Dakota, Bismarck.
- 2008 *Charging Eagle 15-14H Well Pad and Access Road: A Class III Cultural Resource Inventory, Mountrail County, North Dakota.* Manuscript on file at State Historical Society of North Dakota, Bismarck.
- 2008 *Jay Sandstrom 34-31H Well Pad and Access Road: A Class III Cultural Resource Inventory, Mountrail County, North Dakota.* Manuscript on file at State Historical Society of North Dakota, Bismarck.
- 2008 *Two Shields Butte 14-33H Well Pad and Access Road: A Class III Cultural Resource Inventory, Mountrail County, North Dakota.* Manuscript on file at State Historical Society of North Dakota, Bismarck.
- 2008 *Two Shields Butte 16-8H Well Pad and Access Road: A Class III Cultural Resource Inventory, Mountrail County, North Dakota.* Manuscript on file at State Historical Society of North Dakota, Bismarck.
- 2008 *Two Shields Butte 16-12H Well Pad and Access Road: A Class III Cultural Resource Inventory, Mountrail County, North Dakota.* Manuscript on file at State Historical Society of North Dakota, Bismarck.

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- 2008 *Walker 11-36H Well Pad and Access Road: A Class III Cultural Resource Inventory, Mountrail County, North Dakota.* Manuscript on file at State Historical Society of North Dakota, Bismarck.

Professional Presentations

- 2026 Pre-European Habitation on the Falkland Islands Archipelago: Using Historical Data to Reverse Engineer the Past.
- 2009 The Vasa Beakhead Recording Project. Paper presented at the Society for Historical Archaeology Annual Conference, Toronto, ON.
- 2008 Perquimans River Survey. Paper presented at the Perquimans County Restoration Association Annual Meeting, Hertford, NC.
- 2007 Students Teaching Students: East Carolina University's Maritime Studies Association Outreach Program. Paper presented at the California Maritime Education Conference, San Francisco, CA and the Maritime Heritage Conference, San Diego, CA.
- 2007 Perquimans River Survey. Paper presented at the North Carolina Maritime History Conference, Edenton, NC.



Lauren Schumacher, M.A.,

RPA

Cultural Resources Specialist

Lauren is a Cultural Resources Specialist at HDR and has seven years of experience in cultural resource management. Her experience includes successful completion and documentation of all phases of archaeological survey and investigations from a due diligence through the signing of a Memorandum of Agreement (MOA) and a Record of Decision (ROD) in accordance with Sections 106 and 110 of the National Historic Preservation Act. Lauren has developed agreement documents, avoidance and protection plans, monitoring and unanticipated plans, and implemented construction management and training for the protection of resources. She has expertise in the use of ESRI software, Global Positioning System equipment, ArcGIS Field Maps, ArcGIS online and the development of mapping deliverables including ArcGIS StoryMaps. In the field, Lauren has led crews of archaeological technicians on pedestrian and shovel test surveys. Lauren's qualifications exceed the Secretary of the Interior Professional Qualifications for Archaeology according to 36 CFR Part 61.

EDUCATION

MA Historical Archaeology
University of Massachusetts, Boston

BA Anthropology, History
Indiana University, Bloomington

INDUSTRY TENURE

3 years

OFFICE LOCATION

Albany, NY

REGISTRATIONS

Register of Professional
Archaeologists

PROFESSIONAL MEMBERSHIPS

Society for Historical Archaeology
(SHA)

Society for American Archaeology
(SAA)

PRESENTATIONS

Baring the Sole of a Site:
Shoemaking and Documentary
Archaeology at the Hassanamesit
Woods Augustus Salisbury Site,
Grafton, MA. Lauren Schumacher.
Presented at the Society for
Historical Archaeology Conference,
Detroit, MI, January 9, 2026.

From Farm to Fable: Working
Towards a Comprehensive History of
New England Farmsteads. Lauren
Schumacher and Matthew Becue.
Presented at the Society for
Historical Archaeology Conference,
Detroit, MI, January 9, 2026.

Farm to Census Table: Expanding
Interpretations of Farmsteads
through Documentary Archaeology.

RELEVANT EXPERIENCE

Alaska DOT, Sterling Highway MP 45-46, Cooper Landing, Alaska

(2026): Lauren acted as crew chief during Phase I and Phase III excavations. Crew chief duties included data collection and documentation, instructing archaeological technicians on excavation protocols and techniques, and managing schedules within the time constraints of the project.

Phase I Dashville and Sturgeon Pool Hydroelectric Projects, New Paltz, New York (2026):

Lauren used ArcPro to identify historical and archaeological resources and areas of high probability within the project area prior to field work. During field work, Lauren conducted a visual survey of the shoreline of Sturgeon Pool and the Walkill River and identified historic structures. Lauren also developed GIS deliverables using ArcPro, managed GIS data, and contributed to report writing.

Phase II FCDOT Lee Chapel Road Improvements Project, Springfield, Virginia (2026):

Lauren served as an archaeologist during Phase II excavations, participating in the excavation of multiple block units to delineate subsurface archaeological resources. Lauren also developed GIS deliverables using ArcPro and contributed to report writing.

Phase I Ameren Transmission Company of Illinois Transmission Line Projects, Illinois and Missouri (2026):

Lauren served as both crew chief and archaeologist on various segments of Ameren Transmission Company transmission line projects in central Illinois and Missouri. Lauren participated in pedestrian and shovel test surveys of areas of archaeological significance, while additionally collecting field data and managing archaeological crews. Lauren also developed GIS deliverables using ArcPro, managed GIS data, and contributed to report writing.

NAME, REGISTRATION



Lauren Schumacher. Presented at the Society for Historical Archaeology Conference, New Orleans, LA, January 9, 2025.

By the Bootstraps: Labor, Class Construction and the Shoe Industry in 19th-Century Grafton, MA. Lauren Schumacher and Matthew Becue Presented to the Massachusetts Archaeology Society Gene Winter's Chapter, Danvers, MA, April 18, 2023.

PUBLICATIONS

Schumacher, Lauren. "By the Bootstraps: Transformations in Class, Mobility, and the Shoe Industry in 19th-Century Grafton, Massachusetts." Master's thesis, University of Massachusetts Boston, 2024.

Watts Malouchos, Elizabeth, Carey Champion, Molly Mesner Bleyhl, Jorge Luis Rios Allier, and Lauren Schumacher. "Heritage Archaeology at Indiana University: A Case Study in the Benefits of Campus Archaeology as Place-Based Education." *The SAA Archaeological Record* 22, no. 2 (2022): 32–37.

USDA-NRCS Indiana State Archaeologist (2023-2025): Lauren served as the State Archaeologist and lead for National Historic Preservation Act compliance for all funded work within the USDA-NRCS in the state of Indiana. She conducted all reviews of projects (including watershed rehabilitation programs and producer programs offered by NRCS), consulted with the Indiana Department of Historical Preservation and Archaeology (INDHPA), and the Tribal Historic Preservation Offices (THPOs) for over 20 tribes with ancestral lands in Indiana. Lauren helped producers across the state document and protect historic resources while funding projects relevant to their farm or property. Lauren also provided field staff with cultural resources training and gave informative presentations to local Soil and Water Conservation Districts (SWCDs).

Collections Assistant at Northeast Museum Services Center (2023): Lauren served as collections assistant at the Northeast Museum Services Center, where she rehoused various archaeological collections from the National Park Service. In this role, she conducted storage assessments, created condition reports, and conducted archival research and material analysis. She also managed archaeological databases, completed data entry, and assessed pest concerns in storage facilities. Lauren has hands-on experience with collections from Minuteman National Historical Park, Boston African American National Historic Site, Hopewell Furnace National Historic Site, and Colonial National Historic Park, among other National Park Service properties in the Northeast.

Archaeological Technician at the Andrew Fiske Memorial Center for Archaeological Research (2021-2023): Lauren served as an archaeological technician while earning her master's degree in Historical Archaeology at the University of Massachusetts Boston. Lauren participated in a Phase III excavation of a 19th-Century farmstead and Nipmuc wetu site in Grafton, Massachusetts as part of the Hassanamesit Woods Project. She also participated in a Phase III excavation at Gore Place in Waltham, Massachusetts. In this role, Lauren practiced proper excavation techniques, operated a total station, and kept accurate, detailed records of the excavation process.

Archaeological Research Assistant at the Andrew Fiske Memorial Center for Archaeological Research (2021-2023): Lauren served as an archaeological research assistant while earning her master's degree in Historical Archaeology at the University of Massachusetts Boston. Lauren was responsible for post-excavation laboratory processing and analysis and contributed to report writing. In this role, she conducted extensive archival research and developed storage and conservation plans for several archaeological collections.