minnesota power

AN ALLETE COMPANY

Attachment C

Class I and III Cultural Resources Inventory Report

P: 218.722.2625 | W: www.mnpower.com
30 West Superior Street | Duluth, MN 55802

January 15, 2026

Damien Reinhart
Merjent Inc.
1 Main Street SE
Suite 300
Minneapolis, MN 55414

SHSND Ref.: 25-9058 Longspur Wind Project

Dear Damien,

We received the report for SHSND Ref: 25-9058, titled "A Class I and Class III Cultural Resources Inventory of the Minnesota Power Longspur Windfarm Project, Morton and Mercer Counties, North Dakota" and find this Merjent report by Damien Reinhart and Matthew Cox on the archaeological portion of the survey acceptable. We will add it to our Manuscript Collection.

Thank you for the opportunity to review this report. Please be advised that acceptance of this report does not constitute concurrence with the determinations therein. If you have any questions, please Lorna Meidinger, Lead Historic Preservation Specialist, at (701) 328-2089 or lbmeidinger@nd.gov.

Sincerely,

for William D. Peterson, PhD
Director, State Historical Society of North Dakota

25-9058

MANUSCRIPT DATA RECORD FORM

1. Manuscript Number: [SHPO assigns]

2. SHPO Reference #:

3. Author(s): Damien Reinhart, Matthew Cox

4. Title: A Class I and Class III Cultural Resources Inventory of the Minnesota Power Longspur Windfarm Project, Morton and Mercer Counties, North Dakota

5. Report Date: September 11, 2025

6. Number of Pages: 186

7. Type – I, T, E, O: I

   I=Inventory; T=Formal Testing; E=Excavation; O=Other

8. List formally tested or excavated sites (not probes):

9. Acres: 1,478

10. List the legal description* and study unit. For study unit assignment, use the township tables in the *State Plan*, http://history.nd.gov/hp/stateplan_arch.html.
    Study Units: LM, CB, KN, HE, SM, GA, JA, GR, NR, SR, SO, SH, YE

*For *inventory*, *formal testing,* and *excavation* projects, *list the CLASS III legal locations only*.

County	Township	Range	Section	Study Unit
Morton	139 N	87 W	4-5	SM
	139N	88W	3-5	SM
	140N	87W	6-8, 17-21, 28-34	SM
	140N	88W	1-3, 9-16, 18-25, 30-34	SM
	140N	89W	13, 24	SM
Mercer	141N	88W	36	SM

Minnesota Power

A Class I and Class III Cultural Resources Inventory of the Minnesota Power Longspur Windfarm Project

Morton and Mercer Counties, North Dakota

PREPARED BY

Merjent, Inc.
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414

Damien Reinhart, MA
Matthew Cox, MA, RPA

Damien S. Reinhart, MA
Principal Investigator

September 2025

EXECUTIVE SUMMARY

Minnesota Power, an ALLETE company, is developing a wind energy conversion facility, known as the Longspur Wind Project in Morton and Mercer Counties, North Dakota (Project). All Project turbines will be in Morton County and approximately 2.5 miles of 230-kilovolt (kV) transmission generator lead line (Transmission Line) will be installed to connect the Project to the proposed Point of Interconnect (POI) at an existing substation in Mercer County. The Project will require a Certificate of Site Compatibility from the North Dakota Public Service Commission (NDPSC) in accordance with the North Dakota Energy Conversion and Transmission Facility Siting Act (the Siting Act) (North Dakota Century Code [NDCC], Chapter 49-22). Because the Project's Transmission Line will have a capacity greater than 115 kV and is longer than one mile, the Project will also need a Certificate of Corridor Compatibility under the Siting Act. The Project will also require a Special Use Permit from Morton County and may require a Conditional Use Permit from Mercer County.

Minnesota Power contracted Merjent, Inc. (Merjent) to conduct a Class I and Class III cultural resources inventory on their behalf. Merjent completed a Class I file search in August 2024, with an update in January 2025, which identified one previously recorded historic archaeological site, one historic archaeological site lead, and three precontact isolated finds within the Project Survey Areas. The Class III pedestrian survey of the Project Survey Areas was completed on January 31, 2025, March 5 to 14, 2025, April 9, 2025, April 14 to 18, 2025, April 23, 2025, and May 26, 2025. During the survey, two new historic sites, two new precontact sites, and five new isolated finds were identified. Of the new sites, isolated finds, and previously identified sites, four are recommended as unevaluated or potentially eligible for listing on the National Register of Historic Places. Merjent recommends avoiding four, 32MO1719, 32MO1720, 32MO1721, and 32MO1722, of the nine new resources. Merjent searched for site lead 32MOX132, a historic camp site, but no evidence of past activity was identified during the survey for a proposed access road, which is an existing crowned and ditched county road; therefore, no further work is recommended for the resource in this area. Similarly, site 32MO233, a segment of stagecoach line, was originally noted as being covered in this area by a modern crowned and ditched county road. No evidence of past activity was identified during the survey for proposed operations and maintenance work areas to the north of the existing road. No further work is recommended for the previously recorded site in this area. The other eight sites and isolated finds are recommended as not eligible for listing. No further work or avoidance is recommended for those resources.

Merjent recommends that no significant sites will be affected by the proposed Project provided the avoidance measures recommended in this report are implemented. No further archaeological work is recommended for the Project as planned.

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ACRONYMS AND ABBREVIATIONS

ADLS	Aircraft Detection Lighting System
BP	Before Present
CE	Common Era
cm	Centimeter
cmbs	centimeters below surface
COD	commercial operation date
CFR	Code of Federal Regulations
EMMV	Extended Middle Missouri Variant
Gen Tie Line	transmission generator lead line
GLO	General Land Office
GSV	ground surface visibility
IMMV	Initial Middle Missouri Variant
KRF	Knife River flint
kV	kilovolt
Merjent	Merjent, Inc.
NDCC	North Dakota Century Code
NDPSC	North Dakota Public Service Commission
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
O&M	operations and maintenance
POI	Point of Interconnect
Project	Longspur Wind Project in Morton and Mercer Counties, North Dakota
Project Survey Area	proposed area of Class III pedestrian survey
PVC	polyvinyl chloride
SHPO	State Historic Preservation Office
SHSND	State Historical Society of North Dakota
SITS	Smithsonian Institution Trinomial System
SMRSU	Southern Missouri River Study Unit
Study Area	proposed Survey area plus a 1-mile radius
the Siting Act	North Dakota Energy Conversion and Transmission Facility Siting Act
USGS	U.S. Geological Survey
WPA	Works Progress Administration

1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

Minnesota Power, an ALLETE company, is developing a wind energy conversion facility, known as the Longspur Wind Project in Morton and Mercer Counties, North Dakota (Project). All Project turbines will be in Morton County and approximately 2.5 miles of 230-kilovolt (kV) transmission generator lead line (Transmission Line) will be installed to connect the Project to the proposed Point of Interconnect (POI) at an existing substation in Mercer County. The Project will require a Certificate of Site Compatibility from the North Dakota Public Service Commission (NDPSC) in accordance with the North Dakota Energy Conversion and Transmission Facility Siting Act (the Siting Act) (North Dakota Century Code [NDCC], Chapter 49-22). Because the Project's Transmission Line will have a capacity greater than 115 kV and is longer than one-mile, the Project will also need a Certificate of Corridor Compatibility under the Siting Act. The Project will also require a Special Use Permit from Morton County and may require a Conditional Use Permit from Mercer County. The Project has an anticipated commercial operation date (COD) of December 2027, with construction potentially starting in 2026.

In anticipation of compliance with state law and the NDPSC permitting process, Minnesota Power contracted Merjent to conduct a Class I file search within a 1-mile radius of the proposed Project Survey Areas (Study Area) and a Class III intensive cultural resource inventory of the Project's survey area (see Table 1.1-1 and Figure 1 in Appendix A). Minnesota Power identified turbine locations, access road corridors, a transmission line corridor, substation areas, work or staging areas, and communication tower locations. These locations and buffers surrounding them, which make up the Project Survey Area, were inventoried to identify the presence of historic properties with the goal of avoiding adverse effects to unevaluated, potentially eligible properties, or those already listed on the National Register of Historic Places (NRHP).

A total of 69 proposed turbine locations, a gen-tie transmission line, substation block, two operations and maintenance (O&M) facility locations, three meteorological evaluation towers (METs), an Aircraft Detection Lighting System (ADLS) tower location and associated access roads were inventoried on private lands (see Table 1.1-1 below).

Table 1.1-1

Class III Survey Areas, Results, and Acreages

Location Name	Legal Description	Vegetation	Ground Surface Visibility	Associated Access Road Miles	Survey Width	Sites Identified or Revisited	Total Class III Acreage
Gen-Tie Transmission Line	[redacted]	Grain stubble, corn stubble, mixed grass pastures	30-100	N/A	500 feet	32MO1721, 32MOX579, 32MOX580	143.5
Gen-Tie Workspace and Substation Blocks	[redacted]	Grain stubble, mixed grass pasture	20-50	N/A	N/A	32MO1720, 32MO1721	125.4
O&M Option 1	[redacted]	Grain stubble	50	N/A	N/A	32MO233	20

Table 1.1-1

Class III Survey Areas, Results, and Acreages

Location Name	Legal Description	Vegetation	Ground Surface Visibility	Associated Access Road Miles	Survey Width	Sites Identified or Revisited	Total Class III Acreage
O&M Option 2	[redacted]	Grain stubble	50	N/A	N/A	32MO233	19.8
MET Tower 1	NWNE, Sec. 2, T140N, R88W	Corn stubble	70	N/A	N/A	None	4.5
MET Tower 2	SESW, Sec. 14, T140N, R88W	Grain stubble, short grass pasture	30-70	N/A	N/A	None	4.5
MET Tower 3	SESE, Sec. 33, T140N, R87W	Grain stubble	50	N/A	N/A	None	4.5
ADLS Tower	SENW, Sec. 21, T140N, R88W	Mixed grass pasture, grain stubble, tree plantings	20-40	N/A	N/A	None	4.5
Turbine 01	SENW, Sec. 24. T140N, R89W	Grain stubble, short grass pasture	50-90	0.2	50	None	19.1
Turbine 02	SWSW, Sec. 13, T140N, R89W	Corn stubble, grain stubble	50-80	N/A	N/A	None	18
Turbine 03	NWSE, Sec. 13, T140N, 89W	Grain stubble, mixed grass pasture	25-50	0.1	50	None	18.6
Turbine 04	SESE, Sec. 13, T140N, R89W	Grain stubble, mixed grass pasture	25-60	N/A	N/A	None	18
Turbine 05	[redacted]	Grain stubble	50-70	0.05	50	32MOX803	18.3
Turbine 06	[redacted]	Grain and corn stubble, hay field	50-70	1.21	50	32MOX132	25.6
Turbine 07	SESW, Sec. 30, T140N, R88W	Grain stubble, tree plantings	50-70	0.2	50	None	19.2
Turbine 08	SESW, Sec. 30, T140N, R88W	Grain stubble, tree plantings	50-70	0.12	50	None	18.75
Turbine 09	SESE, Se. 19, T140N, R88W	Stubble field	80	0.1	50	None	18.65
Turbine 10	SWSW, Sec. 20, T140N, R88W	Mixed grass pasture	40	0.5	50	None	20.9
Turbine 11	SESW, Sec. 20, T10N, R88W	Grain stubble, mixed grass pasture	30-60	0.22	50	None	19.45
Turbine 12	SESE, Sec. 20, T140N, R88W	Grain stubble	50-70	1.07	50	None	20.17
Turbine 13	SENE, Sec. 31, T140N, R88W	Grain stubble	40-80	1.16	50	None	20.36
Turbine 14	SWNW, Sec. 32, T140N, R88W	Grain stubble	40-100	N/A	N/A	None	18

Table 1.1-1

Class III Survey Areas, Results, and Acreages

Location Name	Legal Description	Vegetation	Ground Surface Visibility	Associated Access Road Miles	Survey Width	Sites Identified or Revisited	Total Class III Acreage
Turbine 15	SWNE, Sec. 32, T140N, R88W	Canola stubble, stream crossing	60	0.58	50	None	19.19
Turbine 16	NENE, Sec. 32, T140N, R88W	Flax stubble, tree plantings	90	0.23	50	None	18.47
Turbine 17	SENW, Sec. 5, T139N, R88W	Stubble field	40	N/A	N/A	None	18
Turbine 18	SWNE, Sec. 5, T139N, R88W	Short grass pasture	25-60	0.74	50	None	19.54
Turbine 19	SWNW, Sec. 4, T139N, R88W	Flax stubble	70-80	1.42	50	None	20.86
Turbine 20	NENE, Sec. 3, T140N, R88W	Corn stubble	40	N/A (Within Gen-Tie Corridor	N/A	None	17.3
Turbine 21	SENW, Sec. 2, T140N, R88W	Disked hay field	50-75	0.27	50	None	19.74
Turbine 22	SWNE, Sec. 2, T140N, R88W	Corn stubble	40-70	0.13	50	None	18.82
Turbine 23	NENE, Sec. 1, T140N, R88W	Grain stubble	30-50	0.57	50	None	21.3
Turbine 24	NWSE, Sec. 1, T140N, R88W	Grain stubble	30-50	0.52	50	None	21.52
Turbine 25	SENE, Sec. 7, T140N, R87W	Corn stubble	30-75	N/A	N/A	None	18
Turbine 26	NWNW, Sec. 8, T140N, R87W	Corn stubble	50-75	0.79	50	None	23.43
Turbine 27	NENW, Sec. 8, T140N, R87W	Corn stubble	50-75	0.13	50	None	18.77
Turbine 28	NWSE, Sec. 9, T140N, R88W	Soybean stubble, pasture	80	N/A	N/A	None	18
Turbine 29	SENE, Sec. 10, T140N, R88W	Mixed grass pasture	25	0.03	50	None	18.28
Turbine 30	SESE, SENE, Sec. 10, T140N, R88W	Wheat stubble	50	1.25	50	None	25.96
Turbine 31	[redacted]	Mowed hay field	30-50	0.24	50	32MOX802	19.47
Turbine 32 (Removed)	N/A	N/A	N/A	N/A	N/A	N/A	0
Turbine 33	NESW, Sec. 12, T140N, R88W	Canola stubble	40-65	2.13	50	None	32
Turbine 34	NESE, Sec. 12, T140N, R88W	Corn stubble	60-100	N/A	N/A	None	18
Turbine 35	SENW, Sec. 14, T140N, R88W	Corn stubble	30-60	N/A	N/A	None	18
Turbine 36	NWSE, Sec. 14, T140N, R88W	Wheat stubble	30-60	0.63	50	None	22.4

Table 1.1-1

Class III Survey Areas, Results, and Acreages

Location Name	Legal Description	Vegetation	Ground Surface Visibility	Associated Access Road Miles	Survey Width	Sites Identified or Revisited	Total Class III Acreage
Turbine 37	SENE, Sec. 14, T140N, R88W	Stubble field	30-60	N/A	N/A	None	18
Turbine 38	NESW, Sec. 14, T140N, R88W	Wheat stubble	30-70	0.42	50	None	20.62
Turbine 39	SWNE, Sec. 14, T140N, R88W	Corn stubble	30-60	1.55	50	None	30.83
Turbine 40	NWSE, Sec. 18, T140N, R87W	Wheat stubble	40-60	0.21	50	None	19.36
Turbine 41	[redacted]	Corn stubble	75-100	N/A	N/A	32MOX804	18
Turbine 42	NESW, Sec. 17, T140N, R87W	Soybean stubble	50-80	N/A	N/A	None	18
Turbine 43	NESE, Sec. 16, T140N, R88W	Wheat stubble, cut hayfield	50	0.45	50	None	20.89
Turbine 44	[redacted]	Wheat stubble	30-70	0.12	50	32MO233	18.85
Turbine 45	SESW, Sec. 16, T140N, R88W	Corn stubble, grain stubble, planted trees	60-90	0.26	50	None	19.95
Turbine 46	NWNE, Sec. 21, T140N, R88W	Soybean stubble	50	0.15	50	None	19.16
Turbine 47	NWNW, Sec. 22, T140N, R88W	Wheat stubble	30-60	0.16	50	None	19.03
Turbine 48	SWSE, Sec. 22, T140N, R88W	Wheat stubble, mixed grass pasture	25-50	0.55	50	None	21.75
Turbine 49	NESE, Sec. 22, T140N, R88W	Wheat stubble	30-60	N/A	N/A	None	18
Turbine 50	SESW, Sec. 23, T140N, R88W	Wheat stubble	30-70	0.58	50	None	22.08
Turbine 51	SESW, Sec. 24, T140N, R88W	Wheat stubble	25-50	N/A	N/A	None	18
Turbine 52	[redacted]	Tilled field	75-100	0.97	50	32MO1722, 32MOX806	25.15
Turbine 53	[redacted]	Corn stubble	30-80	0.43	50	32MOX805	21.2
Turbine 54	SESE, Sec. 19, T140N, R87W	Corn stubble	40-80	N/A	N/A	None	18
Turbine 55	NWNE, Sec. 20, T140N, R87W	Grain stubble	35-65	N/A	N/A	None	18
Turbine 56	SWSE, Sec. 25, T140N, R88W	Tilled field	90-100	N/A	N/A	None	18

Table 1.1-1

Class III Survey Areas, Results, and Acreages

Location Name	Legal Description	Vegetation	Ground Surface Visibility	Associated Access Road Miles	Survey Width	Sites Identified or Revisited	Total Class III Acreage
Turbine 57	NWSE, Sec. 30, T140N, R87W	Mowed hay field	30-60	N/A	N/A	None	18
Turbine 58	SENE, Sec. 30, T140N, R87W	Corn stubble	30-100	3.1	50	None	38.32
Turbine 59	NESW, Sec. 29, T140N, R87W	Corn stubble	30-100	0.41	50	None	20.68
Turbine 60	NENW, Sec. 29, T140N, R87W	Canola stubble	25-70	N/A	N/A	None	18
Turbine 61	SESE, Sec. 29, T140N, R87W	Flax stubble	25-50	N/A	N/A	None	18
Turbine 62	[redacted]	Soybean stubble	35-50	1.9	50	32MO1719	38.27
Turbine 63	NWNE, Sec. 31, T140N, R87W	Barley stubble	40-60	0.84	50	None	24.07
Turbine 64	NWNE, Sec. 32 T140N, R87W	Soybean stubble	50	N/A	N/A	None	18
Turbine 65	NWSW, Sec. 32, T140N, R87W	Barley stubble	40-60	0.5	50	None	22.2
Turbine 66	NWSW, Sec. 33, T140N, R87W	Flax stubble	25-50	0.88	50	None	24.46
Turbine 67	[redacted]	Barley stubble	40-60	1.7	50	32MOX577	30.23
Turbine 68	NESW, Sec. 334, T140N, R87W	Grain stubble	35-65	0.44	50	None	21
Turbine 69	NENE, Sec. 5, T139N, R87W	Corn stubble	40-65	0.55	50	None	21.76
Turbine 70	NWSE, Sec. 5, T139N, R87W	Grain stubble	40	1.03	50	None	24.62
TOTAL				**23.89**			**1,478.41**

The Project Survey Area is 1,478.41 acres total, with 23.89 linear miles for access roads and the proposed transmission line, all of which were inventoried at the Class III level.

1.2 CLASS III SURVEY METHODS

Merjent applied industry best practices and adhered to the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* (Title 48 Code of Federal Regulations [CFR] 44716) and the North Dakota State Historic Preservation Office (SHPO) *Guidelines Manual for Cultural Resource Inventory Projects* (State Historical Society of North Dakota [SHSND] 2020). Fieldwork was conducted January 31, 2025, March 5-14, 2025, April 9, 2025, April 14-18, 2025, April 23, 2025, and May 26, 2025. The Class III inventory and limited shovel testing was led by

Damien Reinhart (Principal Investigator) with a crew consisting of Fred Sutherland, Cody Dobson, and Martha Mock. Mr. Reinhart meets the Secretary of the Interior's Professional Qualification Standards for Archaeology as published in 36 CFR Section 61.

1.3 CULTURAL RESOURCES WITHIN THE SURVEY AREA

See Table 1.3-1 below for a list of archaeological resources within the Project Survey Area. Merjent completed a file search in August 2024, which was updated in January 2025, and the results identified five previously recorded archaeological sites within the Project Survey Area (see Figure 1 of Appendix A). During the survey, two new historic sites, two new precontact sites, and five new isolated finds were identified. Of the new sites, isolated finds, and previously identified sites, four are recommended as unevaluated or potentially eligible for listing on the NRHP. Merjent recommends avoidance of two of the nine new resources (Smithsonian Institution Trinomial System [SITS] 32MO1720 and 32MO1721). Merjent searched for site lead 32MOX132, a historic camp site, but no evidence of past activity was identified during the survey for a proposed access road, which is an existing crowned and ditched county road; therefore, no further work is recommended for the resource in this area. Similarly, site 32MO233, a segment of stagecoach line, was originally noted as being covered in this area by a modern crowned and ditched county road. No evidence of past activity was identified during the survey for proposed O&M work areas to the north of the existing road. No further work is recommended for the resources in this area. The other 10 sites and isolated finds are recommended as not eligible for listing. No further work or avoidance is recommended for those resources.

TABLE 1.3-1

Summary of Cultural Resources in Study Area

SITS Number [a]	Resource Ty pe	New/Revisit	NRHP Recommendation
32MO233	Historic Stagecoach Line	Revisit	Unevaluated
32MOX132	Historic Camp Site-Site Lead	Revisit	Unevaluated
32MOX577	Precontact Isolated Find-Chipped Stone	Revisit	Not Eligible
32MOX579	Precontact Isolated Find-Chipped Stone	Revisit	Not Eligible
32MOX580	Precontact Isolated Find-Chipped Stone	Revisit	Not Eligible
32MO1719	Precontact Lithic Scatter	New	Unevaluated
32MOX802	Precontact Isolated Find-Chipped Stone	New	Not Eligible
32MO1720	Historic Farmstead	New	Unevaluated
32MOX803	Precontact Isolated Find-Chipped Stone	New	Not Eligible
32MOX804	Prehistoric Isolated Find-Chipped Stone	New	Not Eligible
32MOX805	Precontact Isolated Find-Chipped Stone	New	Not Eligible
32MOX806	Precontact Isolated Find-Chipped Stone	New	Not Eligible
32MO1721	Historic-Foundations and Material Scatter	New	Unevaluated
32MO1722	Precontact Lithic Scatter	New	Unevaluated

[a] SITS = Smithsonian Institution Trinomial System

2.0 ENVIRONMENTAL AND CULTURAL BACKGROUND

The Project Survey Area occurs in the Missouri Plateau subregion, west of the Missouri River, of the Northwestern Great Plains. This ecoregion encompasses the Missouri Plateau section of the

Great Plains. It is a semiarid rolling plain of shale, siltstone, and sandstone punctuated by occasional buttes and badlands. The topography of this ecoregion was largely unaffected by glaciation and retains its original soils and complex stream drainage pattern. Native grasslands persist in areas of steep or broken topography, but they have been largely replaced by spring wheat and alfalfa over most of the ecoregion. Agriculture is limited by erratic precipitation patterns and limited opportunities for irrigation (Bryce et al. 1996). Culturally, the Project Survey Area falls within the Southern Missouri River Study Unit (SMRSU), which includes upland till plains, breaks terrain, river terraces, river floodplains (Lehmer 1971:49–54). The Project Survey Area traverses "breaks terrain," associated with the eroded and steeply dissected margins of the Missouri River Trench, which provided the ideal terrain for precontact hunting and gathering (Ahler et al. 1981, 1982).

2.1 TOPOGRAPHY

Topography in the Project Survey Area ranges from gently rolling with low hills, knolls, to steep hillsides with broad ridges incised by intermittent drainages, which have been extensively farmed and grazed for at least 100 years.

2.2 HYDROLOGY

Haymarsh Creek occurs in the west portion of the Project Survey Area and is fed by several lower order, unnamed perennial and intermittent drainages that flow through the Project Survey Area. Hailstone Creek occurs in the eastern portion of the Project Survey Area and is fed by perennial and intermittent drainages similar to the western portion of the Project Survey Area. Haymarsh Creek drains into Big Muddy Creek, approximately 5-miles south of the Project Survey Area. Hailstone Creek drains into Big Muddy Creek approximately 15-miles southeast of the Project Survey Area. In turn, Big Muddy Creek drains into the Heart River approximately 30 miles southeast of the Project Survey Area. The Heart River has its confluence with the Missouri River at Mandan, North Dakota, approximately 40 miles east/southeast of the Project Survey Area.

2.3 GEOLOGY

The Project Survey Area occurs within the non-marine Paleocene-age Sentinel Butte Formation, a sedimentary bedrock dating to the Paleocene consisting primarily of poorly consolidated grayish brown silt, sand, clay, and sandstone, as thick as 600 feet (200 meters) (Bluemle 1988; Clayton 1980; North Dakota Geological Survey 2001). Incidental constituents include lignite, some of which are thick and being mined, for instance, at Beulah, Center, or Falkirk, suggest low-gradient and local poor-drainage conditions for much of the Sentinel Butte Formation. Both coalified and non-coalified fossil flora are abundant in the formation, with leaves, stems, and stalks commonly preserved or replicated along bedding surfaces. Petrified wood is very abundant in the formation, and logs and stumps are sometimes seen in their original growth position. Fossil invertebrates include both clams and snails. Vertebrate fossils are rare in Sentinel Butte strata but scattered remains recognized in the formation include fish vertebrae, bones, teeth, and scales, crocodile teeth, and mammal teeth and bones (Foreman 1986).

2.4 SOILS

A total of 84 soil series occurs within the Project Survey Area, 28 of which comprise less than 1 percent of the Project Survey Area (Natural Resources Conservation Service [NRCS] 2025) (see Table 2.4-1 below). Nearly all the soils are taxonomically defined as Mollisols, which indicate that

the landforms they occur on have been stable for hundreds of years (Fanning and Fanning 1989; Jenny 1941). Over 75 percent of the soils within the Project Survey Area are well drained.

TABLE 2.4-1

Soil Units Comprising Over 1 Percent of the Study Area

Unit Name	Landform	Percent of Survey Area	County
Belfield-Daglum complex, 0 to 2 percent slopes	hillslopes, drainageways	3.30%	Morton
Daglum-Rhoades complex, 0 to 6 percent slopes	hillslopes	7.70%	Morton
Daglum-Rhoades complex, 6 to 9 percent slopes	hillslopes	1.90%	Morton
Rhoades-Daglum-Rhoades, severely eroded complex, 0 to 9 percent slopes	hillslopes, drainageways	0.40%	Morton
Dogtooth-Janesburg complex, 0 to 6 percent slopes	hillslopes	0.10%	Morton
Belfield-Grail clay loams, 0 to 2 percent slopes	drainageways, swales	1.70%	Morton
Belfield-Wyola-Daglum complex, 2 to 6 percent slopes	hillslopes, drainageways	3.20%	Morton
Grail-Belfield clay loams, 2 to 6 percent slopes	flats	3.20%	Morton
Regent-Janesburg complex, 0 to 3 percent slopes	hillslopes	0.40%	Morton
Regent-Janesburg complex, 3 to 6 percent slopes	hillslopes	6.00%	Morton
Regent-Janesburg complex, 6 to 9 percent slopes	hillslopes	0.30%	Morton
Dogtooth-Janesburg-Cabba complex, 6 to 35 percent slopes	hillslopes, drainageways	3.70%	Morton
Grail silty clay loam, 0 to 2 percent slopes	swales, hillslopes	0.10%	Morton
Grail silt loam, 0 to 2 percent slopes	swales, hillslopes	0.00%	Morton
Wyola-Grail silty clay loams, 0 to 2 percent slopes	hillslopes, swales	0.20%	Morton
Wyola silty clay loam, 2 to 6 percent slopes	hillslopes, swales	1.90%	Morton
Wyola silty clay loam, 6 to 9 percent slopes	hillslopes, swales	0.10%	Morton
Virgelle complex, 0 to 6 percent slopes	stream terraces	0.10%	Morton
Moreau-Wayden silty clays, 6 to 9 percent slopes	ridges, rises of pediments	0.00%	Morton
Moreau-Barkof silty clays, 3 to 6 percent slopes	pediments	0.10%	Morton
Regent-Wyola silty clay loams, 0 to 3 percent slopes	hillslopes, swales	0.10%	Morton
Regent-Wyola silty clay loams, 3 to 6 percent slopes	hillslopes, swales	0.70%	Morton
Regent-Wyola silty clay loams, 6 to 9 percent slopes	hillslopes, swales	0.20%	Morton
Cohagen-Vebar-Parshall fine sandy loams, 9 to 35 percent slopes	hillslopes, drainageways	0.10%	Morton
Vebar-Cohagen fine sandy loams, 6 to 9 percent slopes	hillslopes, swales	7.20%	Morton
Vebar-Cohagen fine sandy loams, 9 to 15 percent slopes	hillslopes, swales	0.20%	Morton
Vebar-Flasher-Tally complex, 9 to 15 percent slopes	hillslopes, swales	3.90%	Morton
Beisigl-Flasher-Telfer loamy fine sands, 6 to 15 percent slopes	hillslopes, drainageways	0.10%	Morton
Flasher-Vebar-Parshall complex, 9 to 35 percent slopes	hillslopes	1.70%	Morton
Flasher-Rock outcrop-Vebar complex, 9 to 70 percent slopes	ridges, hills	0.20%	Morton
Beisigl-Lihen loamy fine sands, 0 to 6 percent slopes	pediments, alluvial fans, alluvial flats	0.60%	Morton
Vebar-Parshall fine sandy loams, 0 to 3 percent slopes	hillslopes, swales	0.50%	Morton
Vebar-Parshall fine sandy loams, 3 to 6 percent slopes	hillslopes, swales	3.90%	Morton
Lihen-Parshall complex, 0 to 6 percent slopes	alluvial flats, alluvial fans, swales	0.40%	Morton
Parshall fine sandy loam, 0 to 2 percent slopes	alluvial flats	0.50%	Morton
Tally-Parshall fine sandy loams, 2 to 6 percent slopes	alluvial flats	0.10%	Morton
Tally-Parshall fine sandy loams, 6 to 9 percent slopes	hills, ridges	0.00%	Morton
Arnegard loam, 0 to 2 percent slopes	swales	1.00%	Morton
Arnegard loam, 2 to 6 percent slopes	swales, hillslopes	0.10%	Morton
Shambo loam, 0 to 2 percent slopes	hillslopes, swales	0.20%	Morton

TABLE 2.4-1

Soil Units Comprising Over 1 Percent of the Study Area

Unit Name	Landform	Percent of Survey Area	County
Shambo loam, 2 to 6 percent slopes	hillslopes, swales	0.40%	Morton
Farland silt loam, 0 to 2 percent slopes	alluvial flats	1.60%	Morton
Farland silt loam, 2 to 6 percent slopes	alluvial flats, alluvial fans, terraces	1.90%	Morton
Farland silt loam, 6 to 9 percent slopes	hills, alluvial fans	0.20%	Morton
Amor-Cabba loams, 6 to 9 percent slopes	hillslopes	6.20%	Morton
Amor-Cabba loams, 9 to 15 percent slopes	hillslopes	5.40%	Morton
Cabba-Chama-Shambo loams, 9 to 50 percent slopes	hillslopes	2.30%	Morton
Chama-Cabba-Sen silt loams, 6 to 9 percent slopes	hillslopes, drainageways	3.80%	Morton
Cabba-Chama-Sen silt loams, 9 to 15 percent slopes	ridges, hills	2.40%	Morton
Werner-Chama-Sen silt loams, 9 to 15 percent slopes	ridges, hills	0.00%	Morton
Cabba-Rock outcrop-Chama complex, 15 to 70 percent slopes	pediments, rises	0.20%	Morton
Amor-Arnegard loams, 0 to 3 percent slopes	hillslopes, swales	0.50%	Morton
Amor-Shambo loams, 3 to 6 percent slopes	hillslopes, swales	3.00%	Morton
Reeder-Farnuf loams, 3 to 6 percent slopes	pediments, terraces, alluvial fans	2.60%	Morton
Chama-Sen-Cabba silt loams, 3 to 6 percent slopes	pediments	0.70%	Morton
Morton-Farland silt loams, 3 to 6 percent slopes	pediments, alluvial fans	1.90%	Morton
Morton-Cabba silt loams, 6 to 9 percent slopes	ridges, hills, swales, alluvial fans	2.50%	Morton
Sen-Chama silt loams, 3 to 6 percent slopes	hillslopes, drainageways	0.70%	Morton
Ringling-Daglum loams, 6 to 15 percent slopes	ridges, hills	0.10%	Morton
Searing-Ringling loams, 3 to 6 percent slopes	alluvial flats, alluvial fans, rises on alluvial fans	0.00%	Morton
Williams-Reeder loams, 3 to 6 percent slopes	rises, pediments	0.00%	Morton
Harriet loam, 0 to 2 percent slopes, occasionally flooded	alluvial flats, drainageways	2.20%	Morton
Korchea-Fluvaquents complex, channeled, 0 to 2 percent slopes, frequently flooded	flood plains, flood plain steps, drainageways	2.30%	Morton
Straw loam, 0 to 2 percent slopes, rarely flooded	flood plains	0.10%	Morton
Lehr-Stady loams, 2 to 6 percent slopes	terraces, stream terraces	0.20%	Morton
Wabek-Manning complex, 6 to 15 percent slopes	ridges on terraces, escaprments on stream terraces	0.10%	Morton
Wabek-Cabba-Shambo complex, 6 to 35 percent slopes	escarpments, ridges	0.30%	Morton
Shambo loam, gravelly substratum, 0 to 2 percent slopes	stream terraces	0.10%	Morton
Wanagan loam, 0 to 2 percent slopes	stream terraces	0.40%	Morton
Manning fine sandy loam, 2 to 6 percent slopes	stream terraces on river valleys	1.40%	Morton
Dimmick silty clay, 0 to 1 percent slopes	depressions	0.00%	Morton
Tonka silt loam, 0 to 1 percent slopes	depressions, swales, flats	0.10%	Morton
Water	n/a	0.10%	Morton
Belfield-Daglum complex, 0 to 2 percent slopes	hillslopes, drainageways	0.00%	Mercer
Daglum-Rhoades complex, 0 to 6 percent slopes	hillslopes	0.00%	Mercer
Regent-Janesburg complex, 3 to 6 percent slopes	hillslopes	0.00%	Mercer
Grail silt loam, 0 to 2 percent slopes	swales, hillslopes	0.00%	Mercer
Cohagen-Vebar-Parshall fine sandy loams, 9 to 35 percent slopes	hillslopes, drainageways	0.00%	Mercer
Vebar-Cohagen fine sandy loams, 6 to 9 percent slopes	hillslopes, swales	0.00%	Mercer
Vebar-Cohagen fine sandy loams, 9 to 15 percent slopes	hillslopes, swales	0.00%	Mercer
Vebar-Parshall fine sandy loams, 3 to 6 percent slopes	hillslopes, swales	0.00%	Mercer
Werner-Chama-Sen silt loams, 9 to 15 percent slopes	ridges, hills	0.00%	Mercer
Amor-Shambo loams, 3 to 6 percent slopes	hillslopes, swales	0.00%	Mercer

TABLE 2.4-1

Soil Units Comprising Over 1 Percent of the Study Area

Unit Name	Landform	Percent of Survey Area	County
Harriet loam, 0 to 2 percent slopes, occasionally flooded	hillslopes, swales	0.00%	Mercer
Total		99.8%	

Of the 85 soil units mapped within the Project Survey Area, only five represent 5 percent or more of the Project Survey Area. The Amor-Cabba loams (9 to 15 percent slopes), the Regent-Janesburg complex (3 to 6 percent slopes), the Amor-Cabba loams (6 to 9 percent slopes), and the Daglum-Rhoades complex (0 to 6 percent slopes), all occur on hillslopes. The Vebar-Cohagen fine sandy loams (6 to 9 percent slopes) occur on hillslopes and swales. The Amor-Cabba loams (9 to 15 percent slopes) and the Amor-Cabba loams (6 to 9 percent slopes) are derived from fine-silty residuum weathered from sedimentary rock. The Regent-Janesburg complex (3 to 6 percent slopes) is derived from residuum weathered from shale and siltstone. Similarly, the Vebar-Cohagen fine sandy loams (6 to 9 percent slopes) are derived from residuum weathered from sandstone. The Daglum-Rhoades complex (0 to 6 percent slopes) is derived from slope alluvium derived from shale and siltstone. Soil series mapped by the NRCS potentially provide clues but should be recognized as having considerable limitations in archaeological applications (Holliday 2004).

The potential for preservation of archaeological materials within or adjacent to the Project Survey Area has been impacted by farming and coal mining. Although the area has been farmed extensively over the last 100 plus years and mined for coal, relatively undisturbed precontact sites and features may still be found on the tops of hills, ridges, and knolls. Intact, precontact features may include cairns and other stone features on narrow, or otherwise undisturbed, ridges. Artifact scatters may be located on ridges and near floodplains, although reservoir waters may obfuscate some sites along floodplains. In some places, these land uses have resulted in increased ground visibility and removal of overburden, allowing for the identification of sites and an interpretation of relatively high site density. In other cases, these impacts have simply removed the archaeological materials and resulted in the identification of low site densities. In combination, these factors may have disrupted the context of a relatively high percentage of cultural materials.

2.5 FLORA AND FAUNA

The Project Survey Area is within the Missouri Plateau subregion of the Level III Northwestern Great Plains ecoregion, and consists semiarid rolling plains of shale, siltstone, and sandstone punctuated by occasional buttes and badlands. Native grasslands persist in areas of steep or broken topography, but they have been largely replaced by wheat (*Triticum* sp.) and alfalfa (*Medicago sativa*) over most of the ecoregion. Agriculture is limited by erratic precipitation patterns and limited opportunities for irrigation (Bryce et al. 1998). Vegetation known to occur in the Missouri Plateau subregion includes Blue grama (*Bouteloua gracilis),* western wheatgrass (*Pascopyrum smithii*), prairie sandreed (*Calamovilfa longifolia*) and some bluestem (*Andropogon gerardii*). Juniper (*Juniperus communis*) and deciduous trees are often found on north facing slopes, while cottonwood gallery forests often occur on floodplains (Bryce et al. 1998). Vegetation observed within the Study Area consisted of little bluestem (*Schizachyrium scoparium*), western snowberry (*Symphoricarpos occidentalis*), fringed sage (*Artemisia frigida*), buffaloberry (*Shepherdia*), and other grasses and forbs consistent with mixed-grass prairie. Most of the Class III area is currently used for agriculture.

Approximately 160 wildlife species are residents or seasonal visitors to the broader Missouri River ecosystem, and hundreds of native fish species live in the mainstem and tributaries. Some of the animal species that would have been common and available for human use in the Missouri River Valley area—both prehistorically and historically—include fur-bearing mammals such as beaver (*Castor canadensis*), muskrat (*Ondatra zibethicus*), eastern cottontail (*Sylvilagus floridanus*), elk (*Cervus canadensis*), moose (*Alces alces*), mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), pronghorn (*Antilocapra americana*), and bison (*Bison bison*), as well as bird and waterfowl species such as mallard (*Anas platyrhynchos*), Canada goose (*Branta canadensis*), sharp-tailed grouse (*Tympanuchus phasianellus campestris*), golden eagle (*Aquila chrysaetos*), and bald eagle (*Haliaeetus leucocephalus*) (Seabloom et al. 1978).

Prominent wildlife influencing lifeways within the broader SMRSU include white-tailed deer and mule deer, wolf (*Canis lupis*), coyote (*Canis latrans*), fox (*Vulpes*), beaver, catfish (*Ictalurus* sp.), turtles, and various mussels. Past inhabitants included bison, elk, and pronghorn (Gregg et al. 2021).

2.6 CULTURAL/HISTORICAL OVERVIEW

Culturally, the Project Survey Area is within the SMRSU, as defined in the *North Dakota Comprehensive Plan for Historic Prevention: Archaeological Component* (SHSND 2021), which comprises all or portions of Burleigh, Emmons, Kidder, Logan, McIntosh, McLean, Mercer, Morton, Oliver, Sheridan, Sioux, and Stutsman counties. The following discussion incorporates several sources to develop a precontact overview for the work conducted for this Project and includes information from the SMRSU in which the Project Survey Area is located. Numerous archaeological sites have been identified in the SMRSU, the majority of which were identified on upland till plain, breaks terrain, river terraces, and river floodplains (Gregg et al. 2021).

2.6.1 Paleoindian Tradition (ca. 11,500–7,900 BP)

While speculation exists regarding the likelihood of earlier habitation of the Great Plains, the Paleoindian tradition is the oldest accepted occupation of the region, and, generally, is associated with a hunting and gathering adaptation (Gregg 1985). The Paleoindian tradition is subdivided herein into six main complexes: Clovis, Goshen, Folsom, Hell Gap/Agate Basin, Alberta/Cody, and Parallel Oblique Flaked. Paleoindian sites in the general area, outside the SMRSU, include, but are not limited to, the Beacon Island site (32MN234A), the Beacon Island Agate Basin site (32MN234), the Moe site (32MN101), and 32ME946.

The Clovis complex (ca. 11,500–10,800 years Before Present [BP]) is characterized by large, fluted lanceolate projectile points and is the earliest unequivocal complex in North America. Clovis artifacts have been found with megafauna, such as mammoth, in buried contexts in the Southwest and Great Plains (Grayson and Meltzer 2002); however, although megafauna were probably dietary constituents, it is disputed to what degree early Paleoindians pursued large game (Cannon and Meltzer 2004; Grayson and Meltzer 2002). In the South Dakota Badlands, the Lange-Ferguson site yields the best evidence for proboscidean exploitation (Hannus 1990). There, modified mammoth bones are directly associated with a flake, and three projectile points were recovered from deposits similar to those containing mammoth, indicating that Clovis hunter-gatherers either killed the animals or scavenged their carcasses (Hannus 1990). Skeletal remains from a single mammoth were unearthed during building construction in 1988 near Powers Lake. These remains were shallowly buried, were not radiocarbon dated, and were not appraised for the potential of associated cultural remains (Gregg et al. 2021). Few Clovis sites have been

recorded in the region. Clovis artifacts were recovered from one site in the SMRSU, and in the western portion of the state, a single Clovis point base was recovered from 32ME946 (Floodman 1988), and Clovis points were recovered from the Beacon Island Agate Basin site (Ahler 2003).

Goshen (ca. 10,900–10,100 BP) is a technological complex first identified at Hell Gap, Wyoming (Irwin 1967, 1971), but it is also found at Mill Iron, Montana; Carter-Kerr/McGee, Wyoming; and the Jim Pitts site, located in the South Dakota Black Hills (Sellet 2001). Goshen is poorly understood—the basally thinned, unfluted projectile points share affinities with both Clovis and Folsom but are also similar to Southern Plains Planview points. In stratified deposits, Goshen materials typically underlie Folsom (Frison et al. 1996).

The Folsom complex (ca. 10,900–10,200 BP) is typified by distinctive fluted lanceolate projectile points. With most large grazers extinct by Folsom times and grasslands dominating the Great Plains, bison populations flourished, providing resources for Folsom hunters (Frison 1991). However, many high-elevation Folsom sites also demonstrate broad diets of diverse small prey (Hill 2007). Probable structures recorded at the Mountaineer and Barger Gulch sites in Colorado suggest long-term occupations in mountain settings (Stiger 2006; Surovell and Waguespack 2007). In North Dakota, there are numerous documented Folsom sites (Gregg 1985), including the Bobtail Wolf (32DU955A), Big Black (32DU955C), and Young-Man-Chief (32DU955D) sites (Root 2000; Shifrin 2000; William 2000). These sites are interpreted as camps, quarries, and lithic workshops where Knife River flint (KRF) was procured and used for tool production.

The Agate Basin (ca. 10,500–10,000 BP) and Hell Gap (ca. 10,000–9,500 BP) technocomplexes are both characterized by lanceolate projectile points with thick lenticular cross sections (Frison 1991). Based on morphological similarities and stratigraphic evidence, Hell Gap is technologically descended from Agate Basin. Agate Basin and Hell Gap hunter-gatherers were most likely specialized bison hunters. Sites like Agate Basin II (Hill 2001) and Casper (Todd et al. 1997) indicate more frequent extraction of marrow and within-bone nutrients, suggesting a greater focus on planning than previously evident. Some sites associated with this tradition have been recorded in North Dakota and South Dakota, but these mainly consist of isolated surface finds (Gregg 1985). One of the most significant Paleoindian sites is the Beacon Island Agate Basin site (Ahler 2003).

Alberta (9,800–9,000 BP) is a poorly dated technology that probably descends from Hell Gap and is documented at the Hell Gap, Wyoming, and Hudson-Meng, Nebraska sites (Agenbroad 1978; Frison 1991). Hudson-Meng is one of the largest documented bison kills and suggests that Alberta people focused on bison hunting (Agenbroad 1978); however, more recent work suggests that humans were not responsible for killing the bison and that they died of a natural event (Todd and Rapson 1999). The Cody Complex (9,200–8,800 BP), which includes stemmed/shouldered Eden and Scottsbluff projectile points and the distinctive Cody knife, seemingly arose from Alberta (Frison 1991). These sites are widespread across the northwestern and central Great Plains, with components at the Wyoming Horner I, Finley, and Medicine Lodge Creek sites (Frison and Todd 1986; Frison and Walker 2007) and the Mammoth Meadows, Myers-Hindman, and MacHaffie sites in Montana (Davis 1993). Such sites indicate that Cody adaptations were diverse and used large fauna as well as small prey and floral resources (Frison et al. 1996; Galvan 2007). Alberta/Cody sites have been recorded in North Dakota and South Dakota. In fact, Hudson-Meng contains extensive KRF, showing a strong connection to the Missouri River region.

The Parallel Oblique Flaked complex is a catch-all grouping of Paleoindian projectile point types (Gregg 1985), including Angostura, Milnesand, Browns Valley, Lusk, Allen, and Frederick, ranging in age between 9,400 and 7,900 BP. All types are lanceolate with parallel oblique flaking. Bison kill-butcheries became rare on the northwestern and northern Great Plains after approximately 8,000 BP (Frison 1998), perhaps due to severe ecological deterioration that could no longer support large bison populations. Complex excavated and surface sites have been recorded in the Dakotas, including sites on the Missouri River. A total of 15 Paleoindian sites have been recorded in the SMRSU (Gregg et al. 2021).

2.6.2 Plains Archaic Tradition (ca. 8,000–1,500 BP)

The transition from Paleoindian to Archaic is archaeologically visible as an abrupt shift from lanceolate forms to large notched projectile points (Frison 1991), perhaps indicating a shift to atlatl propelled darts from hand-thrown spears. This transition is also associated with warming/drying trends that prompted diverse subsistence adaptations among hunter-gatherers (Carlson 1994). Ground stone appears in the Archaic, suggesting a greater focus on processing botanical resources. In conjunction with the appearance of pithouses and storage pits in the western intermontane basins, this suggests a shift in subsistence base, a reduction in overall residential mobility, and more predictable seasonal rounds (Frison 1991).

The Logan Creek/Mummy Cave complex (5,600–4,000 BP) is the earliest example of large side-notched projectile points on the northern Great Plains. The blending of the Logan Creek and Mummy Cave for this complex is due to varied nomenclature used among archaeologists regionally for similar archaeological complexes (Gregg 1985). Settlement types associated with this complex include bison kills, transient camps, and some stone circle sites.

While the Oxbow complex (5,000–4,000 BP), typified by side-notched, deeply concave-based projectile points, is concentrated in northern Montana, Alberta, and Saskatchewan (Hannus 1994: 180), it is also common in North and South Dakota, with numerous sites within the Missouri River watershed. Oxbow subsistence centered on bison and sites include bison impoundments and jumps, encampments on stream terraces, stone circles, and processing areas (Hannus 1994; Reeves 1969). Numerous birds and small mammals were also probably exploited (Aaberg et al. 2006:174). Some northern Great Plains sites further yield evidence of complex cultural behavior including bundle burials with elaborate grave goods (Bryan 1991).

The McKean complex (ca. 4,500–3,400 BP) encompasses three distinct sub-phases: the McKean lanceolate, Duncan, and Hannah. The McKean complex is widespread across the Great Plains, and sites from this period can be found associated with bison kills, stone circles, lithic caching, and seasonal settlements (Frison 1991). Slab-lined pit hearths are common, as are ground stone artifacts suggesting a greater reliance on plant resources (Carlson 1994; Frison 1991). McKean complex sites often demonstrate evidence of lithic raw material exchange, including Swan River chert, Tongue River silicified sediment, and KRF (Gregg 1985).

Pelican Lake (ca. 3,000–2,700 BP), typified by broad, thin comer-notched projectile points, is likely a descendant of McKean and is found across the northern and central Great Plains (Frison 1991). This wide spatial distribution may indicate significant population growth in response to the favorable moist conditions of the Sub-Atlantic episode (Reeves 1983). Numerous communal bison kills, such as Head-Smashed-In (Frison 1991), indicate communal bison hunting, but this does not suggest it was an exclusive feature of their subsistence. Rather, Pelican Lake

populations probably relied on a broad-based economy across diverse ecozones (Hannus 1994). A total of 88 Archaic sites have been recorded in the SMRSU (Gregg et al. 2021).

2.6.3 Plains Woodland Tradition (ca. 2,000–450 BP)

Temporally overlapping with the northwestern Great Plains Late Archaic, the Plains Woodland tradition is characterized by increased sedentism, garden horticultural activity, expanding regional exchange networks with eastern Woodland populations (Adena and Hopewell), and the elaboration of ceremonial activities and mortuary practices, specifically mound burials (Griffin 1967). Significant technological advances such as bow and arrow and ceramics use are also apparent (Gregg 1985); however, the fundamental subsistence strategies of the Plains Woodland did not drastically differ from their Archaic predecessors (Zimmerman 1985). It is assumed that this tradition saw the beginning of horticultural practices in the region. For the purposes of this study, the complexes that are classed as belonging to the Plains Woodland include Besant, Sonota, Laurel, Avonlea, Old Woman's, and Blackduck. The Besant and Sonota components are well represented in the area.

The Besant complex (ca. 2,000–1,500 BP), typified by small- to medium-sized, side-notched triangular projectile points, represents the earliest presence of ceramics in North Dakota, probably resulting from eastern Woodland influence (Walde 2006). Besant ceramics are more common in the eastern half of the Dakotas; the vessels show a basic conoidal shape and suggest lump modeling manufacture with some coarse cording (Wood and Johnson 1973). Besant sites show extensive use of KRF (Reeves 1970). Site types include stone circle sites, habitations on stream and river terraces, and bison kills. Numerous communal kill sites, including the Ruby bison pound in Wyoming (Frison 1991), suggest that Besant people were sophisticated bison hunters. The Sonota complex (1,850–1,350 BP) appears to be a possible sub-complex of Besant but differs in that burial mounds are common at Sonota sites (Reeves 1983; Wood 1967). These mounds include rectangular subfloor pits/tombs with dismembered bodies and, commonly, articulated bison remains (Johnson and Johnson 1998). The presence of associated exotic artifacts is often cited as evidence of Hopewell influence on Middle Plains Woodland populations (Johnson and Johnson 1998).

Sites from the Laurel complex (2,100–850 BP) are generally found in the eastern portions of North Dakota, northern Minnesota, and southern Canada. Laurel pottery and mound building are distinct, but lithics associated with this complex tend to be various and lack a particular style (Gregg 1985).

Avonlea complex (ca 1,800–1,000 BP) sites occur across the northern Great Plains and are contemporaneous with Besant. This complex includes a variety of site types, including stone circles, bison kills, and rock shelter habitations (Reeves 1970). Avonlea represents the first regional complex to produce arrow points exclusively, suggesting a transition to bow and arrow technology (Frison 1988). Avonlea point types are small and indistinctly side-notched. Saskatchewan Basin Complex Early Variant pottery is often found at Avonlea sites (Byrne 1973). Avonlea subsistence in the north relied heavily on communal bison procurement, but in their southern range, bison hunting was supplemented by smaller game (e.g., pronghorn), fish, and seasonal plant exploitation (Smith and Walker 1988). Avonlea sites are relatively rare in the Dakotas (Vickers 1994). In North Dakota, the Evans site (32MN301) contained Avonlea projectile points and ceramics (Schneider and Kinney 1978).

Rare in North Dakota is the Old Woman's complex (Common Era [CE] 700–1300). This complex is contemporary with the Plains Village Tradition, so it seems likely that many associated sites would be granted the latter designation (Gregg 1985).

The Blackduck complex (CE 1150-1450) derives from northern Minnesota and was concentrated in southern Manitoba. It is contemporaneous with both Avonlea and Old Woman's complexes, and with Extended and Terminal Middle Missouri traditions. Some evidence of possible Blackduck pottery has been found along the Missouri River, which suggests trade between the Missouri River villagers and the Blackduck people to the north (Joyes 1970). A total of 74 Woodland sites have been recorded in the SMRSU (Gregg et al. 2021).

2.6.4 Plains Village Tradition (ca. 1,050–350 BP)

Lehmer (1971) defined the Plains Village Tradition as possessing the following diagnostic traits equal horticulture and hunting and gathering strategies, semi-permanent villages near the Missouri River floodplain, earthlodges, large storage and refuse pits, distinctive ceramics, abundant end scrapers and arrow points, bison scapula hoes, and a well-developed bone tool industry. The Plains Village Tradition is divided into the Middle Missouri Tradition (CE 969–1500) and the Coalescent Tradition (CE 1300–1650), discussed below.

Three primary Middle Missouri variants are recognized: Initial Middle Missouri (CE 969–1297), Extended Middle Missouri (CE 1075–1443), and Terminal Middle Missouri (CE 1300–1500) (Eighmy and LaBelle 1996). These represent a continuation and intensification of Northern Plains Woodland lifeways, and their appearance coincides with the onset of the Medieval Warm Period (Bryson et al. 1970) when an increase in moisture likely allowed horticulture in areas previously characterized by tenuous farming conditions (Wood 2001).

The Initial Middle Missouri Variant (IMMV) is thought to have developed as an outgrowth of the Great Oasis (Tiffany 2007) or via the arrival of eastern populations already exploiting a Plains Village lifeway (Lehmer 1971). The IMMV was concentrated in the southern portions of the Middle Missouri region and characterized by highly fortified villages of large, semi-subterranean rectangular houses (Lehmer 1971, Winham and Calabrese 1998).

The Extended Middle Missouri Variant (EMMV) is concentrated in the northern portions of the Middle Missouri region (Lehmer 1971). EMMV groups resided in small villages of semi-subterranean rectangular houses; southern villages were more often fortified than those in the north (Wood 2001). It is unclear whether the EMMV replaced the IMMV or represents a contemporaneous offshoot of the IMMV. Origins aside, it is assumed that IMMV populations were eventually absorbed into EMMV populations. The final expression of this tradition was the Terminal Middle Missouri (Winham and Calabrese 1998:282). These sites were concentrated in a smaller geographic area along the Missouri River in southern North Dakota and characterized by fewer, but much larger villages (Wood 2001). Sites again contained long, rectangular semi-subterranean houses, but were highly fortified (Wood 2001). A continuation of the Middle Missouri Tradition is recognized historically as the Siouan-speaking Mandan and Hidatsa (Wood 2001).

The Coalescent period is temporally divided into Initial (650–350 BP), Extended (500–300 BP), and Post-Contact Coalescent (300 BP–historic period) (Johnson 1998; Lehmer 1971). The Coalescent Tradition is thought to represent a geographic movement of Central Plains Tradition village-dwelling populations to the Missouri River Valley in South Dakota (Blakeslee 1993).

Central Plains Traditions might have migrated from Nebraska and Kansas in response to drought brought on by the Pacific climatic episode (Lehmer 1971). Similar to Middle Missouri Tradition groups, Coalescent populations practiced an economy split between mixed cultigen horticulture and bison hunting (Johnson 1998).

Initial Coalescent Variant sites are located on bluffs overlooking the Missouri River and its drainages in southern South Dakota. Populations lived in fortified villages consisting of subrectangular to circular/oval earthlodges and often surrounded by complex fortifications (Johnson 1998). Violence amongst Coalescent groups is evidenced at the Crow Creek site (39BF11) where approximately 486 individuals were killed in the village fortification ditch around 625 BP (Willey and Emerson 1993). Crow Creek is interpreted as evidence of internecine warfare amongst Initial Coalescent groups over land competition (Zimmerman and Bradley 1993) or, conversely, as evidence of warfare between immigrant Coalescent groups and resident Middle Missouri Tradition peoples (Johnson 1998). The Extended Coalescent Variant apparently descended from the Initial Coalescent sometime in the fifteenth century CE. Sites are concentrated along the Missouri River and its tributaries in central and northern South Dakota (Krause 2001). Extended Coalescent sites are far more abundant than during the Initial Coalescent and are characterized by a dispersed, unfortified village structure of circular earthlodges (Johnson 1998; Krause 2001; Lehmer 1971). The Extended Coalescent Variant evolved into the Post-Contact Coalescent during the Protohistoric and Historic periods; the Coalescent Tradition is recognized as the Ankara (Krause 2001). The last post-contact village was Like-a-Fishhook Village, occupied by the Ankara, Mandan, and Hidatsa; it was abandoned in 1886 when groups relocated to the Fort Berthold Indian Reservation (Smith 1972). A total of 236 late precontact sites have been recorded in the SMRSU (Gregg et al. 2021).

2.6.5 European Trade and Exploration (CE 1738–1858)

Perhaps the earliest attempts at exploring the northern Great Plains came as a result of the ventures of Pierre Gaultier de Varennes Sure de la Verendrye (Dill 1983). His travels from New France into North Dakota led him as far as the Missouri River (somewhere near Bismarck), and led to subsequent expeditions by his sons, which went farther south into South Dakota (near Pierre) and west towards the Black Hills. While the elder la Verendrye met the Mandan, his sons encountered the Arikara and other tribes in South Dakota. Their reports heightened interest in the region and the possibilities that existed for trade with its inhabitants.

Following the la Verendryes, a modest fur trade developed in the region, but until the expedition of Captains Meriwether Lewis and William Clark returned successfully from their voyage up the Missouri, the region was considered a wild unknown (Schulenberg 1957).

In 1807, Manuel Lisa established a short-lived post at the mouth of the Bighorn, and by 1809 his St. Louis Missouri Fur Company built posts among most of the tribes all along the Missouri River. Other notable companies, such as the Northwest Company, Hudson Bay Company, the Columbia Fur Company, and the American Fur Company, soon followed suit (Schulenberg 1957). The life of these posts tended to be short, but they did much to influence the tribes who frequented the Missouri River in both North and South Dakota. Fort Union—at the confluence of the Yellowstone and Missouri Rivers—was the last of the great posts, and its waning during the late 1850s saw the fur trade in the Dakotas in its last throes.

2.6.6 Post-Contact Tribal Overview (CE 1780–1900)

In addition to the tribes that arose from the Middle Missouri and Coalescent traditions (Mandan, Hidatsa, and Arikara), the northern Great Plains and the Missouri River were also used by countless other tribes since before European contact.

The Assiniboine were known to frequent the northern Missouri River (mainly near the confluence with the Yellowstone River) and were active in the fur trade throughout the eighteenth and nineteenth centuries. Also, the Cheyenne were pushed westward by the Chippewa during the middle of the eighteenth century and took up at least a temporary settlement period on the Missouri River. At least one earthlodge village has been attributed to the Cheyenne in eastern North Dakota, and some Cheyenne villages on the Missouri River were located between the Mandan to the north, and the Arikara to the south, where they built earthlodges and pursued horticulture and buffalo hunting (Schlesier 1968).

The Plains Cree and Plains Chippewa also frequented the northern Missouri—mainly near the confluence with the Yellowstone River, but also near Fort Clark. Both tribes traded actively with the Mandan and Hidatsa. The Crow, although more westerly in their territory, were related to the Hidatsa and would often trade and visit with the Missouri River tribes (Schulenberg 1957).

Based on linguistic evidence, the Sioux (or Dakota) originated from the southwest Great Lakes region (DeMallie 2001a). The timing of the migration is unclear, but ceramic evidence suggests that the Dakota were living on the plains several centuries before the arrival of Europeans (Hanson 1998). Based on linguistics, it is thought that the Assiniboine split from the Sioux sometime before the mid-seventeenth century (Hanson 1998). The Teton Dakota are divided into seven sub-tribes, including the Oglala, Brule, Sans Arc, Hunkpapa, Blackfeet, Miniconjou, and Two Kettles (Hanson 1998). According to DeMallie (2001a), by the mid-eighteenth century, the Teton Dakota hunted bison in the area east of the Missouri River, their movements limited in part by the Arikara stronghold along the Missouri River. However, a series of smallpox epidemics from 1771 to 1781 devastated the Arikara villages (Johnson 1998) and permitted the Teton Dakota to move west of the Missouri River. Like the Teton Dakota, the Yankton and Yanktonai Dakota occupied the prairies east of the Missouri River and north into Minnesota in the mid-seventeenth century (DeMallie 2001a). By the mid-nineteenth century, the Yankton and Yanktonai occupied the prairies east of the Missouri River from the mouth of the Big Sioux River in the south to the Red River in the north (DeMallie 2001b). The Reservation Period began in the 1860s and continues today.

2.6.7 Homesteading in the Dakotas (CE 1860–1930)

The first homestead in North Dakota was filed in 1868, which was the only homestead filed until 1871. The true rush for homesteads did not take place until 1885. This rush was spurred by the extension of the Northern Pacific Railroad across the Red River from Minnesota (Works Progress Administration [WPA] 1950). Western North Dakota, including Oliver County, did not see much settlement prior to the 1890s, and the major settlement of this region did not start in any great numbers until between 1900 and 1910. In general, those homesteaders who selected lands along the Missouri River were able to do some crop farming, but the majority of homesteads were arranged as ranch operations for sheep or cattle.

The North Dakota SHPO (2014) developed a NRHP context for farming. Relevant to site 32DU2530, it states that much of the initial Euro-American settlement in the region was due to a

large investment of eastern capital in railroads, banks, elevators, and farm equipment (Robinson 1966:157). Early twentieth-century agricultural experiment station bulletins recommended placing barns 100 to 150 feet away from the house and placing the house and barn so that the prevailing winds blow at right angles to a line connecting them. Typical farms of this period would have the main house in the foreground with the outbuildings to the side and rear (SHPO 2014). Gas tractors first came into general use for farm work in the northern Great Plains as a result of the labor shortages caused by World War I (SHPO 2014).

According to historian David Danbom, what had once been a career open to any average man with few specialized talents became at this time more mechanized, scientific, and capital intensive. By 1930 farming had become an industry in which a man with no experience or capital could not compete (Granger and Kelley 2005). U.S. Department of Agriculture specialists tried during the 1920s to change farming methods on the Plains (McDean 1980:22). The 1930s was a decade of drought and depression. In addition to reduced farm outputs, farmers had no control over market prices, causing thousands to lose their farms and at least one-third of the population of North Dakota to rely on Federal relief (Robinson 1966). Between 1945 and 1960, labor shortages during the war years encouraged further farm mechanization (Granger and Kelley 2005). Moving from the walking or riding plows, harrowers, grain seeders, corn planers, mowers, rakes, grain-binders, and wagons to mechanized versions of the same equipment allowed for still larger farms while also requiring more capital (Granger and Kelley 2005). Between 1945 and 1959, the number of small farms fell from 70,000 to 55,000 while individual farm size rose from 590 acres to 755 acres, largely due to increased mechanization of farm activities (Robinson 1966). Another factor which helped to modernize farms was the increase in rural electrification. In 1935, only 2.3 percent of North Dakota farms had electricity; by 1954, it was 90 percent (Robinson 1966).

In addition to the homesteading, which brought an increasing number of people to western North Dakota, the discovery of large deposits of lignite coal further boosted interest in the development of Oliver County and the surrounding area (WPA 1950). Although slow at first, the mining industry started to flourish during the 1930s. To this day, it remains a major focus of activity, which drives the economy of both the county and the state.

2.7 LITERATURE SEARCH

2.7.1 Previously Recorded Sites Within the Study Area

Records in the North Dakota Archaeology and Historic Preservation Files identify 51 cultural resources in the Study Area, which is the Project study area plus a 1-mile radius (see Tables 2.7.1-1 and 2.7.1-2 below). This sample includes archaeological sites, site leads (probable site locations), isolated finds, and architectural buildings or structures. Precontact period Native American cultural resources include 17 archaeological sites and 11 occurrences of isolated artifacts. Historical Euro-American resources include nine architectural properties, six archaeological sites, two multicomponent localities with both archaeology and standing buildings or structures, and eight site leads.

TABLE 2.7.1-1

Summary of Previously Recorded Cultural Resources in the Study Area.

Property Class	Property Type	Isolated Find	Site	Site Lead	Total
Architectural	Barn		2		2

TABLE 2.7.1-1

Summary of Previously Recorded Cultural Resources in the Study Area.

Property Class	Property Type	Isolated Find	Site	Site Lead	Total
Architectural	Bridge		2		2
Architectural	Church		1		1
Architectural	Habitation		2		2
Historic	Artifact scatter		1		1
Historic	Camp site			1	1
Historic	Habitation		4		4
Historic	Habitation/school			1	1
Historic	Mill			1	1
Historic	Mine			4	4
Historic	Post office			1	1
Historic	Road		1		1
Multicomponent Historic	Habitation		2		2
Precontact	Cairn		7		7
Precontact	Cairn with lithic scatter		1		1
Precontact	Flaked stone scatter	11	3		14
Precontact	Stone feature(s)		4		4
Precontact	Stone feature(s) with lithic scatter		2		2
	TOTAL	**11**	**32**	**8**	**51**

Native American components are characterized by occurrences of flaked stone artifacts and/or stone feature sites. Seventeen precontact components included flaked stone artifacts as isolates and scatters, with the most common site being a lithic isolate (n=11). There are three lithic scatter sites, and there is flaked stone associated with rock features at three other locations. There are eight rock cairn sites, one of which includes flaked stone. Six other archaeological sites are characterized by stone circles or features, and two of these have lithic artifacts. Generalizing, Native American components in the Project and Study Areas are low-duration and low-intensity occupations representing isolated, limited, and specialized activities, and perhaps temporary habitations. Some of these lands remain unbroken by mechanized agriculture, and the preservation of surface features like cairns and stone circles indicate that some of the Survey area sites retain their integrity. Cairns may be specialized features related to hunting, marking trails, communicating information, or denoting other important spots on the landscape, and the stone circles could represent campsites and ephemeral structure locations.

Particularly with the archaeological sites, few precontact Native American components have been evaluated for their NRHP eligibility. Eleven occurrences of isolated lithic artifact have been determined or are recommended as not meeting the eligibility requirements of the NRHP. Four precontact archaeological sites have been recommended or determined as eligible, one has been recommended as not eligible, and 12 precontact cultural resources are unevaluated. The four sites that are eligible for the NRHP include three cairn sites (one with associated lithics) and a stone circle locality. Preservation of integrity is important to support the eligibility of Native American sites in the region, and agriculture can have a deleterious effect on historic significance. The small sample of previously documented sites in the Study Area are probably very

representative of the types of Native American sites that are currently undetected in the Survey area.

Historic period Euro-American components in the Study Area include architectural properties and archaeological sites. There are seven resources with historical buildings or structures, six archaeological sites, eight site leads (possible sites), and two localities with both standing architecture and archaeological remains. Including architectural and archaeological components, the sample of previously recorded sites include seven habitation sites as residences, homesteads, or farmsteads. Two barns in the Study Area are complementary, and there are four coal mines and four bridges. With a single example each, other site types in the Study Area include a road (Bismarck and Fort Keogh Stage Road), church (St. Clement Oratory), post office, mill, camp site, an artifact scatter, and a one-room schoolhouse foundation (also associated with a house foundation).

About half of the historical resources in the Study Area have been evaluated for the NRHP, and the remainder are unevaluated. Two sites, a barn and St. Clements Oratory, have been determined or recommended as meeting eligibility requirements of the NRHP, and 10 resources have been evaluated as not eligible. Historical architecture is common in the Study Area, but most of these properties do not meet eligibility requirements of the NRHP, likely due to decades of refurbishment and remodeling that has affected their integrity and historic character. The significance of 11 historical resources has not been evaluated. One of these, the Bismark and Fort Keogh Stage Road, crosses the Survey area, and this feature would likely be an eligible property if evaluated, comprised of contributing and non-contributing segments depending on preservation and integrity.

The Project is within 1 mile of 51 previously recorded archaeological sites, site leads, architectural sites, and isolated finds (see Table 2.2-2 below). Of those resources, 32 are sites, 11 are isolated finds, and 8 are site leads. The sites are comprised of 17 precontact sites, 6 historic sites, 7 architectural sites, and 2 multi-component sites. A total of 10 sites are recommended as unevaluated regarding eligibility status for listing on the NRHP. A total of 12 sites are recommended as not eligible for listing on the NRHP. A total of 6 sites are recommended as eligible for listing on the NRHP. Four of the recommended eligible sites are precontact stone feature sites, and 2 are architectural sites consisting of a church and a barn. The isolated finds are comprised of 11 precontact finds. All 11 isolated finds have been recommended as not eligible for listing in the NRHP. The 8 site leads are all historic in nature. A total of 7 site leads are recommended as unevaluated regarding eligibility for listing in the NRHP, while 1 is recommended as not eligible for listing in the NRHP.

Within the Survey area there are a total of 17 previously recorded sites, site leads, and isolated finds (see Table 2.7-2 below and Appendix A). Seven sites consist of a historic stagecoach road, a historic farm site, an architectural house site, a cemetery, a precontact lithic scatter, and two precontact stone features sites. Five of the sites are unevaluated regarding eligibility for listing in the NRHP. One site, a church, has been recommended as eligible for listing in the NRHP. One site, a historic archaeological farm site and material scatter, has been recommended as not eligible for listing in the NRHP. There are three previously recorded site leads within the Survey area. The site leads consist of a camp site, a post office, and a coal mine. All site leads are unevaluated regarding eligibility for listing in the NRHP. Lastly there are six previously recorded precontact isolated finds that are all chipped stone. All isolated finds have been recommended as not eligible for listing in the NRHP.

TABLE 2.7.1-2

Previously Recorded Sites Within the 1-Mile Study Area

SITE ID	Type	Affiliation	SITE TYPE	NRHP Status
32MO189*	Site	Architectural	St. Clement's Church	Eligible
32MO214*	Site	Precontact	Lithic Scatter	Unevaluated
32MO233*	Site	Historic	Stagecoach Road- Abandoned Fort Keogh to Fort Lincoln	Unevaluated
32MO284*	Site	Precontact	Stone Circles, Lithic Scatter	Unevaluated
32MO346*	Site	Precontact	Stone Circle	Unevaluated
32MO387	Site	Architectural	Bridge-Hailstone Creek Bridge	Not Eligible
32MO1055	Site	Precontact	Lithic Scatter (Tested)	Not Eligible
32MO1388	Site	Architectural	House	Unevaluated (Potentially Eligible)
32MO1389	Site	Architectural	Barn	Unevaluated (Potentially Eligible)
32MO1390	Site	Historic	Foundations, Cultural Material Scatter	Not Eligible
32MO1393*	Site	Architectural	House-Earthen Brick	Unevaluated
32MO1397	Site	Precontact	Cairn	Unevaluated
32MO1398	Site	Precontact	Cairn	Unevaluated
32MO1400	Site	Precontact	Cairn	Unevaluated
32MO1401	Site	Precontact	Stone Circle	Unevaluated
32MO1402	Site	Precontact	Lithic Scatter	Unevaluated
32MO1403	Site	Precontact	Cairn	Unevaluated
32MO1447*	Site	Historic	Farmstead, Cultural Material Scatter	Not Eligible
32MO1515	Site	Multi-Component (Architectural, Historical)	Farmstead, Cultural Material Scatter	Not Eligible
32MO1516	Site	Historic	Cultural Material Scatter	Not Eligible
32MO1517	Site	Historic	Foundations, Cultural Material Scatter	Not Eligible
32MO1596	Site	Architectural	Bridge- Bridge #30-123-05.0	Not Eligible
32MOX102	Site Lead	Historic	Coal Mine- Richter Mine	Unevaluated
32MOX132*	Site Lead	Historic	"Camp 5"	Unevaluated
32MOX134*	Site Lead	Historic	Post Office- Haymarsh Post Office	Unevaluated
32MOX225	Site Lead	Historic	Mill – Geck Brothers Mill	Unevaluated
32MOX253	Site Lead	Historic	House and One Room School Foundations	Not Eligible
32MOX348	Site Lead	Historic	Coal Mine	Unevaluated
32MOX349*	Site Lead	Historic	Coal Mine	Unevaluated
32MOX350	Site Lead	Historic	Coal Mine- Filibeck Mine	Unevaluated
32MOX569	Isolated Find	Precontact	Chipped Stone	Not Eligible

TABLE 2.7.1-2

Previously Recorded Sites Within the 1-Mile Study Area

SITE ID	Type	Affiliation	SITE TYPE	NRHP Status
32MOX576*	Isolated Find	Precontact	Chipped Stone	Not Eligible
32MOX577*	Isolated Find	Precontact	Chipped Stone	Not Eligible
32MOX579*	Isolated Find	Precontact	Chipped Stone	Not Eligible
32MOX580*	Isolated Find	Precontact	Chipped Stone	Not Eligible
32MOX581*	Isolated Find	Precontact	Chipped Stone	Not Eligible
32MOX583*	Isolated Find	Precontact	Chipped Stone	Not Eligible
32MOX629*	Isolated Find	Precontact	Chipped Stone	Not Eligible
32OL666	Site	Architectural	Barn	Eligible
32OL671	Site	Precontact	Stone Circles	Eligible
32OL672	Site	Precontact	Cairn, Lithic Scatter	Eligible
32OL673	Site	Precontact	Cairn	Eligible
32OL674	Site	Precontact	Cairn	Unevaluated
32OL690	Site	Precontact	Cairn	Eligible
32OL691	Site	Historic	Foundations, Depressions	Not Eligible
32OL710	Site	Precontact	Stone Features, Lithic Scatter	Unevaluated
32OLX263	Isolated Find	Precontact	Chipped Stone	Not Eligible
32OLX268	Isolated Find	Precontact	Chipped Stone	Not Eligible
32ME2404	Site	Multi-Component (Architectural, Historic)	Farmstead, Cultural Material Scatter	Not Eligible
32ME2495	Site	Precontact	Stone Features	Unevaluated
32MEX788	Isolated Find	Precontact	Chipped Stone	Not Eligible

* Sites Within the Survey area

Based on the review of known cultural resources in the Study Area, it is likely that additional resources exist in the Survey area, such as precontact period Native American archaeological sites, historical Euro-American architectural properties as buildings and structures, and historic period archaeological sites. Some lands in the Project Survey Area have not been cultivated, and this may foster site preservation and integrity. Native American sites, particularly those with preserved features, may meet eligibility requirements of the NRHP. Architectural properties are unlikely to retain their historic significance and sufficient integrity to support NRHP eligibility. Historic period archaeological sites are likely to be similar. Although there could be historical archaeological sites meeting the NRHP eligibility criteria in the Survey area, most would likely be determined as not eligible.

2.7.2 Previous Surveys Within the Study Area

Records curated with the SHSND Archaeology and Historic Preservation Files, document 44 previously completed cultural resources projects within the Project Survey Area and 1-mile Study Area. Conducted between 1979 and 2021, almost all the previous investigations are linear and small block surveys associated with infrastructure development (see Table 2.7.2-1 below). Over half of the cultural resource projects are related to wind energy development and road improvements. Other common survey types include oil and gas projects, bridge inventories, and electrical and water transmission developments. About three-quarters of the previous projects are contemporary and were completed after 2010. A total of 16 previous surveys cross within the proposed Survey area (see Table 2.7.2-1 below and Appendix A). The majority are for a windfarm adjacent to the Survey area, material borrow and road improvement projects, and rural water distribution lines. Other surveys were conducted for oil pipelines and a microwave project.

TABLE 2.7.2-1

Previous Survey Manuscripts Within the 1-Mile Study Area

MS Number	Report Title	Authors	Report Year
2600	Report on a Cultural Resources Survey of the Stanton and Preferred Transmission Line Corridors in ND and SD, Basin Electric Cooperative, Bismarck, ND, Vol. 2-North Dakota Sites in Emmons, Morton, & Mercer Counties	(Woolworth, Alan R. – Primary Author)	1979
3347*	Cultural Resource Surveys: Billings Microwave System in Golden Valley, Morton, Oliver, Mercer, Slope, Stark, & Billings Co., ND	(Phillips, Ben – Primary Author)	1983
3455	Archeology of the Northern Border Pipeline, North Dakota: Vol. 2, Pts. 1-3 Survey and Background Information, McIntosh, Emmons, Morton, Stark, Mercer, Dunn, McKenzie, & Williams Co., ND	(Gregg, Michael L. - Contributing Author); (Root, Matthew J. - Primary Author)	1983
5920	Historic Bridges in North Dakota	(Hufstetler, Mark – Contributing Author); (Johnson, Lon – Primary Author); (Quivik, Fredric L. – Contributing Author); (Roise, Charlene K. – Contributing Author)	1992
6509*	North Dakota Department of Transportation Material Source Projects Cultural Resource Review 1989-1994	(Borchert, Jeani L. – Primary Author)	1995
6880*	Safety Project Cultural Resource Review 1996	(Borchert, Jeani L. – Primary Author)	1997
7159*	Southwest Pipeline Phase II Cultural Resources Investigations in Portions of the Hebron-Glen Ullin Service Area, Morton and Stark Counties, ND UW #2036	(Klinner, Duane G. – Primary Author)	1998
7306	Interstate Engineering, Inc. Winkler Bridge Replacement (Morton County Bridge #122-03.03): A Class III Cultural Resource Inventory and Limited Testing, Morton County, ND	(Morrison, John G. – Primary Author)	1998
7677	Cultural Resources Inventory of Sioux Falls Tower Specialists Inc's Communication Towers in BA, BI, BL, CS, GV, KD, SK, SN, and MO Co., ND	(Rom, Lance W. – Primary Author)	2000
7725	Wrought Iron Cross Cemeteries in North Dakota – Continuing Survey, 1998-99 (Public Report)	(Isern, Thomas D. – Primary Author); (Nesemeier, Kevin – Contributing Author)	1999
9126	Bridge 30-122-04.0 Replacement Project: A Class III Cultural Resource Inventory in Morton Co., ND	(Klinner, Duane G. – Primary Author); (Morrison, John G. – Contributing Author)	2005

TABLE 2.7.2-1

Previous Survey Manuscripts Within the 1-Mile Study Area

MS Number	Report Title	Authors	Report Year
10128	Historic Bridges in North Dakota 2004 Revision	(Goff, Jennie – Contributing Author); (Hufstetler, Mark – Primary Author)	2005
10860	Kroh Gravel Pit: A Class III Cultural Resource Inventory in Morton Co., ND	(Stine, Edward – Primary Author)	2009
12568*	Bison 3 Wind Project: A Class III Cultural Resource Inventory, Oliver and Morton Cos, ND	(Burns, Christina G. – Primary Author)	2011
12680	Addendum to the Bison 3 Wind Project: A Class III Cultural Resource Inventory in Oliver and Morton Counties, North Dakota	(Burns, Christina G. – Contributing Author): (Suess, Bill – Primary Author)	2011
12901	Class III Cultural Resource Inventory for the Allete Energy 230kV Transmission Line Project in Mercer, Morton, and Oliver Counties, North Dakota	(Burns, Christina G. – Primary Author)	2012
13467	ACE Wind Energy Center: A Class III Cultural Resource Inventory, Mercer and Morton Counties, North Dakota	(Burns, Christina G. – Primary Author)	2012
13914	ND Highway 49, From Beulah to the Morton County Line: A Class III Cultural Resource Inventory, Mercer County, North Dakota-NDDOT Project Number: 5-049(014)082 PCN: 18686	(Morrison, John G. – Primary Author)	2012
14223	Bison 4 Wind Energy Center: A Class III Cultural Resource Inventory, Oliver, Morton, and Mercer Counties, North Dakota	(Burns, Chirstina G. – Primary Author)	2013
14224	Addendum to Bison 4 Wind Energy Center: A Class III Intensive Cultural Resources Inventory in Mercer and Oliver Counties, North Dakota	(Reiners, Linsey – Primary Author)	2013
14356	West Substation Location Survey: A Class III Intensive Cultural Resource Inventory in Mercer County, North Dakota	(Brooks, Brittany – Primary Author)	2013
14976*	2013 Survey Report Addendum: Center Service Area Rural Distribution Lines Supplemental Class II-III Cultural Resources Inventory Southwest Water Pipeline Project Mercer, Morton, and Oliver Counties, North Dakota SWPP Contract 7-9E	(Jackson, Michael A. – Primary Author); (Rokke, Nathan J. – Contributing Author); (Toom, Dennis L. – Contributing Author)	2014
15062	Addendum to Bison 4 Wind Energy Center Access Roads and Borrow Areas: A Class III Intensive Cultural Resource Inventory in Mercer and Oliver Counties, North Dakota	(Brooks, Brittany – Primary Author)	2014
15174	Addendum to Bison 4 Wind Energy Center Crane Paths: A Class III Intensive Cultural Resource Inventory in Oliver County, North Dakota	(Brooks, Brittany – Primary Author)	2014
15491	Addendum to Bison 4 Wind Energy Center Crane Path Reroutes II: A Class III Intensive Cultural Resource Inventory in Oliver County, North Dakota	(Brooks, Brittany – Primary Author)	2014
15636*	ND Highway 49 From Road Point 67 Near Glen Ullin North to the Morton County Line: A Class III Cultural Resource Inventory, Morton County, North Dakota	(Morrison, John G. – Primary Author)	2014
15707	Highway 21: From the Junction with ND Highway 31 East to the Junction with ND Highway 6: Class III Cultural Resource Inventory, Morton County, North Dakota	(Morrison, John G. – Primary Author)	2015
15938*	Dakota Access, LLC Dakota Access Pipeline Project (ND) 2014 Dakota Access Class II/III Cultural Resources Inventory	(Mueller, Andrew C. - Primary Author); (Picka, Craig M. - Contributing Author); (Sather, Dean T. - Contributing Author); (Terry, Matthew - Contributing	2015

TABLE 2.7.2-1

Previous Survey Manuscripts Within the 1-Mile Study Area

MS Number	Report Title	Authors	Report Year
		Author)	
16475*	MO-1057 Class III Inventory Report	(Wermers, Greg L. – Primary Author)	2016
16476*	MO-1055 and MO-1056 Class III Inventory Report	(Wermers, Greg L. – Primary Author)	2016
16512*	Dakota Access, LLC, Dakota Access Pipeline Project (ND) Volume 1, 2015 Dakota Access Class II/III Cultural Resources Inventory	(Mueller, Andrew C. - Primary Author); (Picka, Craig M. - Contributing Author); (Sather, Dean T. - Contributing Author); (Terry, Matthew - Contributing Author)	2015
16513	Dakota Access, LLC, Dakota Access Pipeline Project (ND) Volume III 2015 Dakota Access Cultural Resources Inventory	(Harrison, Abbie L. - Contributing Author); (Landt, Matthew J. - Primary Author); (McCord, Beth - Contributing Author); (Millward, Sara A. - Contributing Author); (Prouty, Michael J. - Contributing Author); (Trader, Patrick D. - Contributing Author)	2016
17092*	2015 Survey Report Addendum: Center Service Area Rural Distribution Lines Supplemental Class II and Class III Cultural Resources Inventories for the Southwest Water Pipeline Project, Oliver, Mercer, and Morton Counties, North Dakota, SWPP Contract 7-9E	(Cox, Matthew A. – Contributing Author); (Kromarek, Nicole – Primary Author)	2016
17305	Dan Feser Watershed Survey: A Class III Intensive Cultural Resources Inventory in Morton County, North Dakota	(Hanley, Raina – Primary Author)	2017
17456	Class III Cultural Resource Inventories for the Martin Construction, Inc. 2016 Material Source Areas in Mercer and Dunn Counties, North Dakota	(Brooks, Brittany – Primary Author); (Friend, Tara – Contributing Author)	2017
17593	Results of the Evaluative Testing for Eligible Sites Within the Cultural Resources Survey Corridor of the Dakota Access Pipeline, Dunn, Emmons, McKenzie, Mercer, Morton and Williams Counties, North Dakota	(Baltz, Chris – Contributing Author); (Kovacs, Jason – Contributing Author); (Landt, Matthew J. – Contributing Author); (Leone, Karen – Contributing Author); (Millward, Sara A. – Contributing Author); (Trader, Patrick D. – Primary Author)	2017
17608	A Class III Cultural Resource Inventory for the Glasser Field Clearing Piles in Mercer County, North Dakota	(Brooks, Brittany – Primary Author)	2017

TABLE 2.7.2-1

Previous Survey Manuscripts Within the 1-Mile Study Area

MS Number	Report Title	Authors	Report Year
18093*	Addendum to the Clean Energy I Wind Farm: A Class III Intensive Cultural Resource Inventory in Morton and Mercer Counties, North Dakota	(Atkinson, Alex – Primary Author)	2018
18192*	Addendum II to the Clean Energy I Wind Farm: A Class III Intensive Cultural Resource Inventory in Morton and Mercer Counties, North Dakota	(Brooks, Brittany – Primary Author)	2018
18200*	Class III Cultural Resource Inventories for the Border States Paving, Inc. 2017 Material Source Areas in McKenzie, Morton, and Richland Counties, North Dakota	(Beavers, Matthew – Primary Author); (Neumiller, Alex – Contributing Author)	2018
18332	A Class III Cultural Resource Inventory of the Glen Ullin Relo Communications Tower in Morton County, North Dakota	(Brooks, Brittany – Primary Author)	2019
18351	Addendum III to the Clean Energy I Wind Farm: A Class III Intensive Cultural Resource Inventory in Morton and Mercer Counties, North Dakota	(Abbott, Melody – Primary Author)	2019
18533*	Addendum IV to the Glen Ullin Energy Center: A Class III Intensive Cultural Resource Inventory in Morton and Mercer Counties, North Dakota	(Reich, Arielle – Primary Author)	2019
19389	A Class III Cultural Resource Inventory for the Bison & Glen Ullin Wind Project Radar Stations in Morton and Oliver Counties, North Dakota	(Altieri, Irene – Primary Author)	2021
* Surveys Within the Proposed Survey area			

2.7.3 U.S. Geological Survey and General Land Office Map Review

The region and Survey area are characterized by dispersed farms and ranches integrated around small community population centers, and this contemporary pattern began to take hold in the late nineteenth century. The U.S. Department of the Interior Bureau of Land Management General Land Office (GLO) surveyed these townships between 1880 and 1883, and these maps are the earliest large-scale depictions of the Survey area. When the GLO platted these sections, there was little development in the region. Acting as seed infrastructure that would support population growth and community development, the passes through the Project, and the Northern Pacific Railroad corridor lies 1.5 to 4.0 miles to the south and southwest.

The stage route generally followed the earlier Custer Trail of 1876 and was in service in 1878 as Post Office Route no. 35,051 with improved wagon road and stations every 18 miles (Pfaller 1955). The nearest stage stops were at Hebron, approximately 10 miles to the west, and on Hailstone Creek, two miles east of the Project. This is a region where the first railroads overlapped the last of the overland trails. The Northern Pacific Railroad met Bismarck in 1873, but it took until 1882 for the line to bridge the Missouri River and ultimately reach Miles City (Old Red Old Ten Scenic Byway 2024). In that same year, mail service was discontinued on the Fort Keogh trail, but it continued to be an important transportation route. It functioned as an early

highway as homesteaders pioneered the Dakota Territory and points west, and trappers, traders, and cattle ranchers moved goods to market. The Northern Pacific Railroad was important for the growth of towns and population, and land speculation was rampant along the corridor. The 1880s and 1890s brought rapid development, and this interval established the basic community framework of small farms and ranches, modest rural communities with schools, churches, and businesses, and the growth of larger regional towns.

George A. Ogle and Company atlases and plat maps show the Survey area region in the late 1910s (1917; 1918). The local landscape had been subdivided with the typical landholding being a quarter or half section. At this time, there were at least 55 homesteads or farms in the Study Area. Some of the identified features include ranches and a fruit farm. An approximation of the contemporary road network had already developed, and community infrastructure included four schools and a church and cemetery in the surrounding Study Area.

Small-scale U.S. Geological Survey (USGS) mapping from the 1950s shows few minor elements of the built environment, but apparently a few of the larger ranches were still depicted (Bismark 1:250K 1954). The Study Area included five schools and a church at this time. There were four quarries or surface mining operations in the overall Study Area and additional localities were dispersed to the south. Two of the Study Area features are marked as coal mines, and the other two may have been sand and gravel operations. Reflecting the local importance of ranching, the early USGS maps show a half dozen channel-bottom dams in tributaries of Wilson and Hailstone creeks. They may have functioned to some degree as erosional control structures, but the impoundments importantly created livestock tanks.

Later USGS mapping from 1960 and 1970 is very comparable to the depictions from the 1910s—the Project and surrounding area was characterized by dispersed rural residences as farms and ranches (Glen Ulin 1960; Dengate 1960; Glen Ulin 1970; Hailstone Butte 1970). These map sources show about 80 residential localities in the overall Study Area with half being in the immediate Survey area. Structures shown in the late historic period often correspond to those from the 1910s, and likely, some of these residences remain occupied today. Continuing or expanding the pattern from the 1950s, there are nine gravel pits in the Study Area with most lying along Wilson Creek. The only community development depicted was the St. Clements church, school, and cemetery, which is contiguous with the far northwestern perimeter of the Study Area. Officially known as St. Clement Oratory of Haymarsh, a small wood frame structure functioned as a church and post office in 1887, and the cemetery probably dates similarly (Bismarck Diocese 2024). After a catastrophic lightning-strike fire, a second church was built on the original foundation in 1905 along with a rectory. Both buildings burned in 1936, and the present church was built in 1937, again on the original rock foundation. The current property includes the 1937 church, a rectory, a tile-brick schoolhouse, an outdoor prayer space, and the cemetery. This property has been recommended as meeting eligibility requirements of the NRHP.

Contemporary land use is a mix of agricultural properties and unbroken grassland for pasture with narrow riparian zones flanking larger drainageways. Beginning with initial homesteading in the Survey area in the late nineteenth century, the mixed farming and ranching economy dominated this landscape. The earliest aerial photography for the Study Area is from 1957 and 1967, and these data are comparable to the contemporary pattern of land use. Over time, farmland acreage probably expanded at the expense of pasture and grassland as more capable farm equipment and methods, like terracing, were able to exploit more marginal, sloped lands for cultivation. Consistent from the early twentieth century on, a rural population of dispersed farm and ranch houses dot a landscape of fields and pasture.

3.0 CLASS III SURVEY METHODOLOGY

The general objective of a Class III inventory is to identify historic properties within the Project Survey Area that are at least 45 years of age. Historic property types considered for this investigation included both precontact and historic period archaeological sites, architectural sites, and earthworks that could provide information about human occupation. Such sites could be evident in artifacts or features on or below the current ground surface. The focus of this field investigation was to identify any eligible resources that could be present in the Project Survey Area.

Throughout all stages of the investigation, Merjent applied cultural resource management industry best practices and adhered to the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* (48 CFR 44716), and North Dakota SHPO *Guidelines Manual for Cultural Resource Inventory Projects* (SHSND 2020).

The Project Survey Area was established based on files provided by Minnesota Power. Damien Reinhart (Principal Investigator), Fred Sutherland, Cody Dobson, and Martha Mock conducted the Class III inventory. Areas exhibiting obvious disturbance, inundation, or exhibiting slopes greater than 15 degrees were photo documented. The inventory was geographically oriented using Geographic Information System data in conjunction with a Trimble R1 Integrated Global Navigation Satellite System receiver. Field observations, including vegetation, ground surface visibility (GSV), slope, general topography, areas of soil disturbance or inundation, and stratigraphy, were described on field forms.

All portions of the Project Survey Area were walked using parallel transects spaced no more than 15 meters apart. When surface cultural material was observed along a transect, the interval was decreased to no more than 3 meters wide (and often less). Shovel probes were excavated in 10-meter radial intervals from the location of surface finds within newly recorded sites to characterize soils, delineate site boundaries, and determine the potential for the presence (or absence) of intact, subsurface cultural resource deposits. Excavation was discontinued after one or more sterile levels depending on soil characteristics and horizonation. In all cases, excavation extended below the Ap and A horizons. Sediments were screened through 0.25-inch hardware cloth mesh. Stone features, although none were identified or revisited, would have been plotted on field forms using a string grid to measure the diameter and height of both the feature and visible individual stones, so as not to disturb or alter provenience. No subsurface tests were excavated within the vicinity of any stone features. Artifacts were photographed and measured in the field; no artifacts were collected.

Merjent evaluated sites and their significance, as defined by criteria set forth in Title 36 CFR 60.4 (National Park Service 1991), which states:

> 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, materials, workmanship, feeling, and association, and:
>
> A) that are associated with events that have made a significant contribution to the broad patterns of our history;
>
> B) that are associated with the lives of persons significant in our past;

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.

Sites that are not eligible are unlikely to contribute further data significant to our knowledge of prehistory or history and/or may no longer possess integrity.

Precontact lithic scatters/campsites (sites without any structures or association with known significant events or persons) generally will not require discussion of Criteria A, B, and C. Instead, for NRHP recommendation purposes, these properties are discussed for their potential to yield information significant to prehistory or the archaeological record under NRHP Criterion D. Special cases generally relate to Criterion A, where a precontact site type (such as a stone circle site) may not be recommended eligible for the NRHP from an archaeological perspective, but may be considered important to the cultures of Native American peoples.

Evaluation of the significance of archaeological sites under Criterion D involves considering general characteristics such as the nature, size, and diversity of the site assemblage; the potential presence or absence of subsurface cultural deposits; the nature of any features within the site (construction techniques, building materials, structural integrity); and, the age range reflected by the site assemblage. Sites considered to be significant generally contain an assemblage of cultural remains that reflect sufficient diversity to permit identification of activities and allow confirmation of the period of site use. Sites with the most potential to address research questions about human lifeways contain associated features, structures, and/or relatively intact and dateable artifacts.

Historic sites containing or consisting of preserved features or structures are evaluated primarily under Criteria A, B, and C. Historic trash scatters lacking associated features or structures are primarily evaluated under Criterion D. In general, these types of sites represent ephemeral prospecting or stock management activities, but they lack identifiable or important association with specific persons or events of regional or national history (Criteria A and B), and they lack the formal and structural attributes necessary to qualify as eligible under Criterion C. The evaluation of significance of historic archaeological sites under Criterion D focuses on the capacity of the sites or components to yield significant information regarding knowledge of history during the period(s) of site significance.

Evaluation of the significance of historic sites considers general characteristics such as the nature, size, and diversity of the site assemblage; the potential presence or absence of subsurface cultural deposits; the nature of any features within the site; construction techniques; building materials; structural integrity; and, the age range reflected by the site assemblage.

Historic sites considered to be significant under Criterion D generally contain an assemblage of cultural remains that reflect sufficient diversity to permit identification of activities and allow confirmation of the period of site use. Sites with the most potential to address research questions contain associated features, structures, and relatively intact and datable artifacts. Significant sites are those that could impart information not available solely from historical documents. Although archival research may provide an essential form of information, often historical records are

inaccurate or incomplete. For example, examination of construction techniques or household assemblages can provide information on economic slumps, reuse of structures for other than original purposes, and re-occupation cycles. As a result, insight may be gained into questions about human lifeways that are often asked in archaeology but rarely answered directly in historical documentation.

Non-archaeological historic sites or sites with non-archaeological components are those primarily assessed for NRHP eligibility under Criteria A, B, and C, rather than Criterion D, and typically are not subject to subsurface testing. Individual segments of significant historic sites are evaluated as contributing or non-contributing in terms of physical and environmental integrity. Examples of historic site types include linear historic features, such as transportation routes and water conduits, standing buildings, and structure sites. Historic site types potentially include any historic feature on an otherwise archaeological site, such as traditional cultural property features. Historic and ethnographic sites evaluated for potential contributions to history or cultural traditions for reasons beyond their possible future research value tend to have different evaluation and management considerations than archaeological sites. Typically, the integrity of historic sites is addressed using the guidelines presented in National Register Bulletin 15 (National Park Service 1991), which defines the seven elements of integrity as location, design, setting, materials, workmanship, feeling, and association. Properties are basically evaluated in consideration of their physical integrity and the integrity of their surroundings. Traditional cultural properties are also considered under the guidelines of National Register Bulletin 38 (Parker and King 1998).

4.0 CLASS III RESULTS AND RECOMMENDATIONS

This section presents the results of the Class III inventory conducted on January 31, 2025, March 5 to 14, 2025, April 9, 2025, April 14 to 18, 2025, April 23, 2025, and May 26, 2025 (see Figures 3.1 to 3.85 in Appendix A). During the Class III inventory, four new archaeological sites and five new isolated finds were recorded, while five previously recorded sites, site leads, and isolated finds were revisited.

At the time of each survey session, the Project Survey Area was characterized as mowed hay fields, agricultural lands containing stubble fields of wheat, corn, barley, flax, canola, and soybeans, and a small proportion of native or mixed grass pastures (see Photos 4.0-1, 4.0-2, and 4.0-3 below). The Project Survey Area is located approximately 4.5 miles north of the Town of Glen Ullin and 1.5 miles north of Interstate 94. The Project Survey Area is scattered throughout a large block that is bound on the west by 67th Avenue SW, on the south by 37th Street SW, on the east by 56th Avenue SW, and on the north generally by 30th Street SW. Highway 49 passes from north to south through the western third of the Project Survey Area.

Photo 4.0-1.
Project Survey Area Overview Facing East from Northwest Project Extent, Example of Wheat Stubble Fields in Project Survey Area.

Photo 4.0-2.
Project Survey Area Overview Facing West, Example of Corn Stubble Fields in Project Survey Area.

Photo 4.0-3.
Project Survey Area Overview Facing East, Example of Native Pastures in Project Survey Area.

4.1 Site 32MO1719

Site 32MO1719 consists of a sparse lithic scatter identified during pedestrian survey (see Figure 3.31 and 3.32). The site is located on a gentle hilltop sloping to the south, where there is currently a seasonal wetland, with Hailstone Butte directly to the north (see Photo 4.1-1). The site area is located within a stubble field with 60 to 100 percent GSV. The cultural material present consists of a broken KRF flake with modified edges, two tertiary KRF flakes, two secondary KRF flakes, and one primary KRF flake on the ground surface (see Photo 4.1-2). No artifacts were collected. Radial shovel tests were excavated around the site boundary (see Table 4.1-1 and Photo 4.1-3, Figure X). Each negative probe was bracketed until there were two consecutive negative probes to determine the horizontal site boundary (Figure 4.7). Additionally, a shovel probe was placed near the highest distribution of artifacts to examine soil deposition. Nine shovel probes were excavated. All shovel probes were negative.

Photo 4.1-1.
Overview of Site 32MO1719, Facing North.

Photo 4.1-2.
Overview of Tertiary Knife River Flint Flake.

Photo 4.1-3.
Representative Shovel Probe at Site 32MO1719..

TABLE 4.1-1

Site 32MO1719 Shovel Test Profiles

Shovel Probe	Depth (cmbs)[a]	Horizon	Munsell	Soil	Notes
SP 1 (Center)	0–18	Ap	2.5Y 5/3	Loam	Medium Brown
	18–41	B	2.5Y 6/2	Loam	Slightly Lighter Brown
SP 2A (North)	0-19	Ap	10YR 4/3	Loam	Medium Brown
	19-39	B	2.5Y 6/4	Loam	Light Brown to Gray
SP 2B (North	0-21	Ap	10YR 4/3	Loam	Medium Brown
	21-39	B	2.5Y 6/4	Loam	Light Brown to Gray
SP 3A (West)	0-19	Ap	10YR 5/3	Loam	
	19-36	B	2.5Y 6/4	Loam	
SP 3B (West)	0-21	Ap	2.5Y 6/4	Loam	Very Subtle Color Difference
	21-42	B	2.5Y 6/3	Loam	
SP 4A (East)	0-18	Ap	10YR 4/3	Loam	Subtle change to B Horizon.
	18-36	B	2.5Y 5/4	Loam	
SP 4B (East)	0-14	Ap	10YR 3/3	Loam	Not Compact. Clear Transition from Ap to B Horizon.
	14-40	B	10YR 4/4	Loam	
SP 5A (North)	0–16	Ap	10YR 4/4	Loam	Ap is Medium to Gray Brown. Bw1 is Orange Brown. Bw2 is Light Brown.
	16-22	Bw1	2.5Y 5/6	Loam	
	22-31	Bw2	10YR 6/2	Loam	
SP 5B (South)	0–12	Ap	10YR 3/2	Loam	Ap is Medium to Gray Brown. B is Grayish Brown.
	12–30	B	2.5Y 6/3	Loam	

[a] cmbs = centimeters below surface

Site 32MO1719 consists of a sparse lithic scatter located on the edge and top of a hilltop within a stubble field. The site maintains integrity of location and materials. Due to its location in a stubble field, the artifacts have been displaced due to mechanical cultivation, integrity of design, setting,

workmanship, association, and feeling have been compromised. Shovel probes terminating below the plow zone did not identify any subsurface artifacts or intact cultural deposits. The plow zone extends into the B horizon. It is indeterminable whether the site is associated with events or persons significant in our past (Criteria A and B); the resource does not embody the distinctive characteristics of a type, period or method of construction; nor does it represent the work of a master; nor does it possess high artistic values; or represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C). When considering Criterion D of the NRHP, although the resource consists of six, non-diagnostic, artifacts that are limited to the surface, with the plow zone extending through the A horizon and into the B, the potential presence of intact subsurface cultural deposits remain. This resource is recommended as *Unevaluated* for inclusion on the NRHP.

4.2 Site 32MO1720

Site 32MO1720 consists of a demolished farmstead [redacted] in what is now a mixed grass pasture (see Figure 3.6). There is a wetland on the east edge of the site, and the edge of the wetland has been modified to create a stock pond, which connects through a buried polyvinyl chloride (PVC) pipe west to an existing water tank and windmill and water pump (described on architectural form). The pond was constructed at some point around 1995 as evidenced by aerial imagery. The site currently consists of four features: a windmill (Feature 1), a large depression with dirt berms (Feature 2), a shallow rectangular depression (Feature 3), and the remains of a stacked stone corral (Feature 4).

Feature 1 consists of a steel frame windmill, pump, and modern water tank (with PVC pipe leaving the tank, buried, and extending east 350 feet to a modern stock pond (see Photo 4.2-1 below). The windmill is located approximately 80-125 feet southwest of a larger farm site where all structures have been razed. The tail of the windmill is intact, but the manufacturer is worn and illegible. There are indications in the aerial imagery from 1938 that indicate the windmill was in place at that time. The farm was active in that year, but by the next aerial image from 1957, the farm was clearly abandoned with all structures either partially or completely razed. The windmill is still being used, and it appears that around 2017 an effort was made to connect a pipe from a stock pond at the windmill, east, to a stock pond. The stock pond does not appear until the 1995 aerial, so it is not being included as a historic architectural feature. It appears that the tank, pipe, and stock dam were added in recent years due to the windmill no longer being able to drive the water pump.

Feature 2 is a large depression with dirt berms stacked up around the depression (see Photo 4.2-2). The feature measures 70 feet from north-south and 30 feet in width. The soil berms are stacked to heights of approximately 4 feet above the ground surface and are most prominent on the north and west sides of the depression. The depression has an irregular depth with a maximum depth of 2 feet. Aerial imagery from 1938 indicates this area held a rectangular outbuilding.

Feature 3 is a shallow rectangular depression filled with bottles and other refuse (see Photo 4.2-3). The feature lies 80 feet northeast of Feature 2. It is smaller in size, measuring 25 feet north-south by 15 feet east-west. Aerial imagery from 1938 is unclear about this area. A small structure that is heavily shadowed appears in this area, but details are difficult to discern. The depression is currently 2 feet in depth. There is an amalgamation of tin cans that have been deposited in this spot for so long they are corroding into one large pile. It is estimated that there are over 100 cans, bottles, metal buckets, tin cans, and appliance parts within the depression

along with field stones that were likely used as foundation material. A root beer bottle with a maker's mark indicated a date of 1968. It appears that the dumping ceased around this time.

Feature 4 represents the remains of a stacked stone corral that has largely collapsed (see Photo 4.2-4). Some of the north, west, and east walls remain. This corral system can be seen on the 1938 aerial image with a building on the southeast corner. No building remains. The corral is 115 feet southwest of Feature 3. The corral is generally 3.5 feet in height. Other debris adjacent to the feature includes a chassis for a Model T and a small scatter of associated car parts (90 feet to the SE of Feature 4) (see Photo 4.2-5). Signs of two other structures present on the aerial image have been razed.

Site 32MO1720 is a razed farmstead site situated on flat plains adjacent to a wetland and ephemeral drainages. The larger farm site is recommended *Unevaluated* for the NRHP pending further investigation. While the site maintains integrity of location, the site's design, setting, materials, workmanship, and feeling have been impacted through deterioration of the farm features on-site and nearby wind farm development. The site is originally associated with Karl Christian who was issued the original patent (No. ND1770.331) on October 27, 1904 under the Homestead Act [Act of May 20, 1862, Public Law 37-64 (12 STAT 392)]. It is likely the farm and windmill are associated with this individual. A search on ancestry.com, yielded results that indicated in the 1900 United States Federal Census, Karl was aged 54 and had been born in Hungary in December 1845 (Ancestry.com 2025). He was living in [redacted]; potentially on a nearby farmstead from this particular site, which he didn't purchase until 1904. The record indicates he was married to Katherine Christian, and they had married in 1869. She was also from Hungary. He was a naturalized citizen, a farmer, and could read and write, but spoke no English. He had a 15-year-old daughter at the time of the census named Abelonia. The site could not be associated with an important historic event or person, as Karl Christian was not noted as being of importance to local history (NDSU Libraries-Institute for Regional Studies & University Archives 2025). The features present at the site do not appear to meet the requirements of significance under Criterion C. Criterion D may still apply to the overall eligibility of the farmstead site due to potential subsurface deposits.

Photo 4.2-1.
View of Feature 1, Windmill and Water Tank, View Southwest, Site 32MO1720.

Photo 4.2-2.
View of Features 2 and 3 (Feature 2 in Background, Feature 3 in Foreground), View Southwest, Site 32MO1720.

Photo 4.2-3.
View of Feature 3, Depression with Garbage Dump, View North, Site 32MO1720.

Photo 4.2-4.
View of Feature 4, Stacked Stone Corral, View South, Site 32MO1720.

Photo 4.2-5.
View of Model T Chassis, Site 32MO1720.

4.3 Site 32MO1721

Site 32MO1721 consists of a demolished farmstead [redacted] in what is now a mixed grass pasture (see Figure 3.5). There is a stream 300 feet northeast of the site and a massive soil stockpile 400 feet to the west of the site. The site currently consists of two features and associated abandoned vehicles and a garbage deposit within a feature.

Feature 1 is the north and east foundations of a razed structure (see Photo 4.3-1). The north foundation measured roughly 25 feet. The east foundation was nearly the same length. The foundation is concrete with large stone aggregate and pieces of steel rebar protruding periodically for wall sill anchors. The thickness of the foundations were approximately 4 to 6 inches in thickness and standing approximately 10 to 12 inches above the surface. No depressions or evidence of other walls were identified.

Feature 2 is a large depression with dirt berms stacked up around the depression (see Photo 4.3-2. The feature measures 60 feet from north-south and 30 feet in width. The soil berms are stacked to heights of approximately 2 to 3 feet above the ground surface and are most prominent on the north, east, and west sides of the depression. The depression has an irregular depth with a maximum depth of 2 feet. The depression has turned into a deposit for farming-related garbage. There are over 100 large pieces of sheet metal likely the remains of a grain bin, rolls of fencing, farm implement and home appliance parts. The most recent appliances are of styles no later than the 1960s.

Aerial imagery from 1938 indicates this area was actively being used and had been worn by vehicle traffic. It is difficult to tell from this image if this was a stockyard or a farmstead with a

home. The image has black writing across the location, but it appears that there were five or six structures of various sizes in the vicinity with two roads/trails on the north and south ends. The 1957 aerial shows all structures razed and the foundations completely overgrown.

Other debris adjacent to the feature includes three car bodies that date from the 1940s and early 1960s (see Photo 4.3-3). A vehicle plate had the year 1962 as its last year of registration. No other signs of structures remained on the ground surface.

Photo 4.3-1.
View of Feature 1, Concrete Foundation, View West, Site 32MO1721.

Photo 4.3-2.
View of Feature 2, Depression and Garbage Dump, View North, Site 32MO1721.

Photo 4.3-3.
View of Vehicle Dump, 1940s and 1950s Automobiles, View East, Site 32MO1721.

Site 32MO1721 is a razed farmstead site situated on top and side of a small hill adjacent to a drainage. The site is recommended *Unevaluated* for the NRHP pending further investigation.

While the site maintains integrity of location, the site's design, setting, materials, workmanship, and feeling have been impacted through deterioration of the farm features on-site and nearby wind farm development. The site is originally associated with Nikolaus Weissman who was issued the original patent (No.187801) on April 4, 1911, under the Homestead Act [Act of May 20, 1862, Public Law 37-64 (12 STAT 392. It is likely the farm and windmill are associated with this individual. A search on ancestry.com, yielded results that indicated Nikolaus was born in 1882 in Hungary and arrived in the United States in September 1903 through New York City. The site could not be associated with an important historic event or person, as Nikolaus Weissman was not noted as being of importance to local history under Criteria A and B. The features present at the site do not appear to meet the requirements of significance under Criterion C. Criterion D may still apply to the overall eligibility of the farmstead site due to potential subsurface deposits.

4.4 Site 32MO1722

Site 32MO1722 consists of approximately 28 chipped stone artifacts identified during pedestrian survey (see Figure 3.41 and 3.42; Photo 4.4-1 below). The artifacts were located on a gentle hilltop within a canola stubble field with 75 to 100 percent GSV. The artifacts recorded consisted of: 18 tertiary flakes of KRF, 5 pieces of KRF shatter, two secondary flakes of KRF, one KRF core, one broken biface made from what appears to be porcellanite and has a lenticular shape, and a secondary flake of petrified wood (see Photo 4.4-2 and 4.4-3). The artifacts present indicate the breaking or testing of raw material, as well as the final stages of reduction in tool making, and one instance of a broken and discarded biface.

Radial shovel tests were excavated around the boundary (see Table 4.4-1 and Photo 4.4-4 below) (Figure 4.4). Each negative probe was bracketed until there were two consecutive negative probes to determine the horizontal boundary. A shovel probe was placed near the highest distribution of artifacts to examine soil deposition. Nine shovel probes were excavated. All were negative.

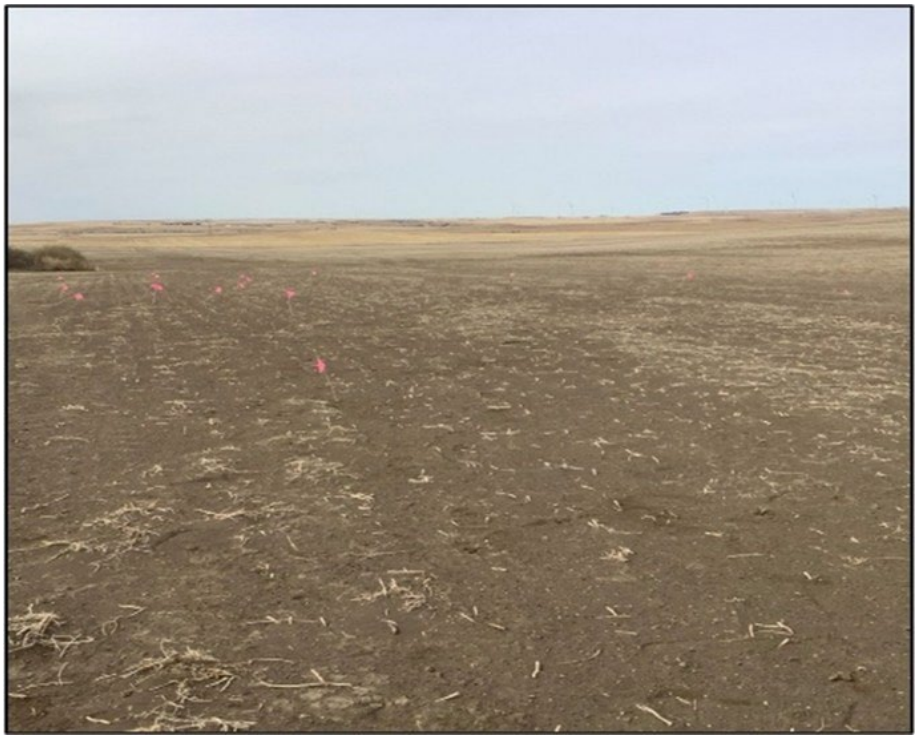

Photo 4.4-1.
Overview of Site 32MO1722, View West.

Photo 4.4-2.
View of Broken Biface, Porcellanite, Site 32MO1722.

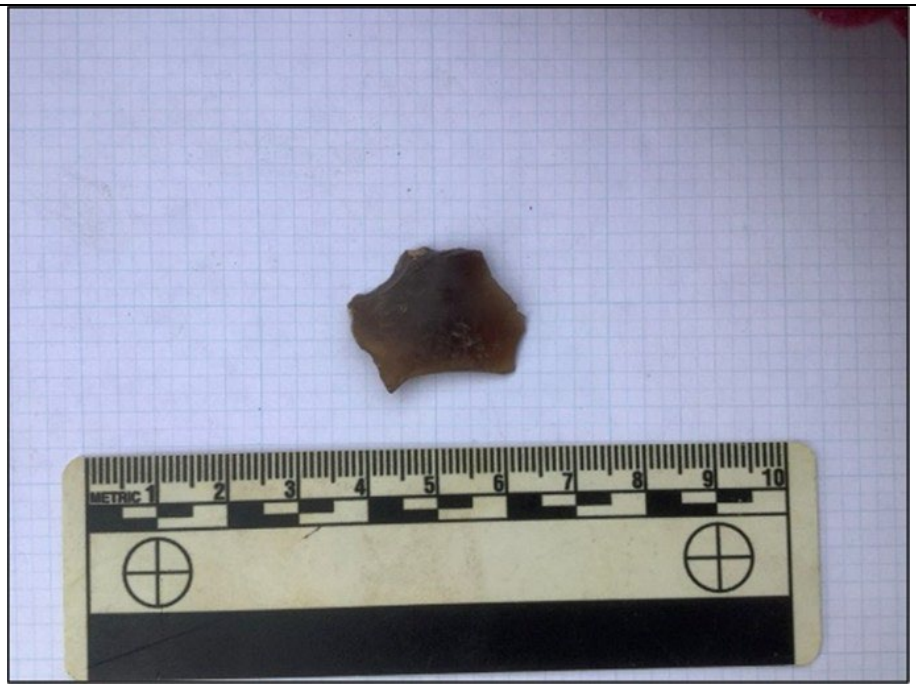

Photo 4.4-3.
View of Tertiary Flake, Knife River Flint, Site 32MO1722.

Photo 4.4-4.
Representative Negative Shovel Probe, Site 32MO1722.

TABLE 4.4-1

Site 32MO1722 Shovel Test Profiles

Shovel Probe	Depth (cmbs)[a]	Horizon	Munsell	Soil	Notes
SP 1 (Center)	0–15	Ap	10YR 3/3	Sitl Loam	More Small Inclusions in Ap. Gradual Sideslope.
	15–32	B	2.5Y 4/3	Silt Loam	
SP 2A (North)	0-17	Ap	10YR 3/3	Silt Loam	Flat Plain. Few to No Inclusions in Ap.
	17-53	B	2.5Y 4/3	Silt Loam	
SP 2B (North	0-15	Ap	10YR 3/3	Silt Loam	Flat Plain. Little to No Inclusions in Ap.
	15-38	B	2.5Y 4/3	Silt Loam	
SP 3A (West)	0-18	Ap	10YR 3/3	Silt Loam	Flat Plain. No Inclusions in Ap.
	18-37	B	2.5Y 4/3	Silt Loam	
SP 3B (West)	0-13	Ap	10YR 3/3	Silt Loam	Dry. No Inclusions. Plain North of Drainage.
	13-36	B	2.5Y 4/3	Silt Loam	
SP 4A (East)	0-20	Ap	10YR 3/3	Silt Loam	Few Inclusions in Ap. Thicker Ap.
	20-38	B	2.5Y 4/3	Silt Loam	
SP 4B (East)	0-11	Ap	10YR 3/3	Silt Loam	Few Inclusions in Ap.
	11-32	B	2.5Y 4/3	Silt Loam	
SP 5A (North)	0–16	Ap	10YR 3/3	Silt Loam	Chunky. Dry Ap. Few Inclusions of Siltstone.
	16-38	Bw1	2.5Y 4/3	Silt Loam	
SP 5B (South)	0–18	Ap	10YR 3/3	Silt Loam	Few Iron Concretions and Small Inclusions in Ap. Dry. Blocky.
	18–36	B	2.5Y 4/3	Silt Loam	

[a] cmbs = centimeters below surface

This site maintains integrity of location and materials. Due to its location in a stubble field and displacement of the artifacts due to mechanical cultivation, integrity of design, setting, workmanship, association, and feeling have been compromised.

Site 32MO1722 is a newly recorded lithic scatter located on the top of a gentle hilltop within a stubble field. The resource has been continually disturbed by plowing and disking. Shovel probes terminating below the plow zone did not identify any subsurface artifacts or intact cultural deposits. The plow zone extends into the B horizon. It is indeterminable whether the site is associated with events or persons significant in our past (Criteria A and B); the resource does not embody the distinctive characteristics of a type, period or method of construction; nor does it represent the work of a master; nor does it possess high artistic values; nor, represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C). When considering Criterion D of the NRHP, although the resource consists of approximately 28, non-diagnostic, artifacts that are limited to the surface, with the plow zone extending through the A horizon and into the B, the potential for intact subsurface deposits remain. This resource is recommended as *Unevaluated* for inclusion on the NRHP.

4.5 Isolated Find 32MOX804

Isolated Find 031025-DSR-IF consists of two KRF tertiary flakes identified during pedestrian survey (see Figure 3.43). The flakes were located on a gentle hilltop within a corn stubble field with 75 to 100 percent GSV (see Photos 4.5-1 and 4.5-2 below). Four radial shovel tests were excavated around the isolate and one shovel probe near the find, all with negative results (Figure 4.3). Each shovel probe was fairly similar in that a dark grayish brown (10YR 3/3) Ap horizon consisting of silt loam was present underlain by a light brownish (10YR 4/4) silty clay loam B horizon (see Table 4.5-1 and Photo 4.5-3 below). The soils were noted as having few inclusions

in the Ap horizon. Radial testing was conducted at 10-meter intervals in each cardinal direction from the surface find. No additional cultural materials were recovered in subsurface testing.

Photo 4.5-1.
Overview of Isolated Find 32MOX804, Facing West.

Photo 4.5-2.
Overview of Isolated Find, Tertiary Flake, Knife River Flint.

Photo 4.5-3.
Representative Shovel Probe of Isolated Find 030525-DSR-IF-001.

TABLE 4.5-1

Site 32MOX804 Shovel Test Profiles

Shovel Probe	Depth (cmbs)[a]	Horizon	Munsell	Soil	Notes
SP 1 (Center)	0–15	Ap	10YR 3/2	Silt Loam	Few Inclusions in Ap.
	15–36	B	10YR 6/2	Silty Clay Loam	
SP 2 (North)	0-19	Ap		Silt Loam	
	19-32	B		Silty Clay Loam	
SP 3 (West)	0–24	Ap	10YR 3/2	Silt Loam	
	24–36	B	10YR 4/3	Silty Clay Loam	
SP 4 (East)	0–22	Ap	10YR 3/2	Silt Loam	
	22–34	AB	10YR 5/2	Silty Clay Loam	
SP 5 (South)	0–22	Ap	10YR 3/2	Silt Loam	
	22–32	B	10YR 4/3	Silty Clay Loam	

[a] cmbs = centimeters below surface

Isolated Find 031025-DSR-IF is a newly recorded Isolated Find located on a hilltop within a corn stubble field. The resource has been continually disturbed by plowing and disking. This Isolated Find maintains integrity of location and materials. Due to its location in a corn stubble field the displacement of the artifacts due to mechanical cultivation, integrity of design, setting, workmanship, association, and feeling have been compromised. Shovel probes terminating below the plow zone did not identify any subsurface artifacts or intact cultural deposits. It is indeterminable whether the site is associated with events or persons significant in our past (Criteria A and B); the resource does not embody the distinctive characteristics of a type, period

or method of construction; nor does it represent the work of a master; nor does it possess high artistic values; nor, represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C). When considering Criterion D of the NRHP, the resource consists of two, non-diagnostic, artifacts that are limited to the surface; recordation exhausts its research value. This resource is recommended as *Not Eligible* for inclusion on the NRHP.

4.6 Isolated Find 32MOX802

Isolated Find 03062025-MRM-IF consists of a single KRF secondary flake identified during pedestrian survey (see Figure 3.6; Photos 4.6-1 and 4.6-2 below). The flake was located within the middle of a saddle between a hill to the north and one to the south within a two-track ranch road in short grass pasture with 30 to 70 percent GSV. There is some probability that the gravels present in the two-track were introduced at some point in the past due to the absence of similar gravel deposits in shovel probes outside of the two-track road.

Four radial shovel tests were excavated around the isolate and one shovel probe near the find, with negative results (Figure 4.1). Each shovel probe was fairly similar in that a (10YR 3/2) A horizon consisting of fine sandy loam was present underlain by a light brownish (7.5YR 4/3 and 4/4 and 2.5Y 5/4) fine sandy loam B horizon (see Table 4.6-1 and Photo 4.6-3 below). The center probe had a compact A horizon with gravel inclusions. Other probes lacked gravel aside from the east probe, which had baseball sized granite pieces in the B horizon. All probes were negative.

Photo 4.6-1.
Overview of Isolated Find 32MOX802, Facing East.

Photo 4.6-2.
Overview of Isolated Find, Secondary Flake, Knife River Flint.

Photo 4.6-3.
Representative View of Negative Shovel Probe.

TABLE 4.6-1

Site 32MOX802 Shovel Test Profiles

Shovel Probe	Depth (cmbs)[a]	Horizon	Munsell	Soil	Notes
SP 1 (Center)	0–20	A	10YR 3/2	Fine Sandy Loam	Gravel Inclusions in Ap. Slight Color Change Indicates B Horizon.
	20–26	Bw1	10YR 3/4	Fine Sandy Loam	
	26-47	Bw2	2.5Y 5/4	Fine Sandy Loam	
SP 2 (North)	0-25	A	10YR 3/2	Fine Sandy Loam	Almost No Inclusions in A. More on a Flat Area.
	25-45	B	7.5YR 4/4	Fine Sandy Loam	
SP 3 (West)	0–25	A	10YR 3/3	Fine Sandy Loam	Almost No Inclusions.
	25–50	B	2.5Y 5/4	Fine Sandy Loam	
SP 4 (East)	0–30	A	10YR 3/3	Fine Sandy Loam	Abundant Baseball-Sized Granite Pieces into B.
	30–48	B	7.5YR 4/3	Fine Sandy Loam	
SP 5 (South)	0–25	A	10YR 3/3	Fine Sandy Loam	Few Inclusions in Ap. Small.
	25–45	B	7.5YR 4/3	Fine Sandy Loam	

[a] cmbs = centimeters below surface

Isolated Find 03062025-MRM-IF is a newly recorded Isolated Find located in a saddle between two prominent hills within a two-track road. The resource has been disturbed by erosion from cattle grazing and the ruts of the two-track road. This Isolated Find maintains integrity of location and materials. Due to its location in a corn stubble field and displacement of the artifacts due to mechanical cultivation, integrity of design, setting, workmanship, association, and feeling have been compromised. Shovel probes terminating below the A horizon (approximately 20 centimeters [cm] into the B horizon) did not identify any subsurface artifacts or intact cultural deposits. It is indeterminable whether the site is associated with events or persons significant in our past (Criteria A and B); the resource does not embody the distinctive characteristics of a type, period or method of construction; nor does it represent the work of a master; nor does it possess high artistic values; nor, represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C). When considering Criterion D of the NRHP, the resource consists of one, non-diagnostic, artifact that is limited to the surface and may have been introduced as a gravel topping material for the two-track road; recordation exhausts its research value. This resource is recommended as *Not Eligible* for inclusion on the NRHP.

4.7 Isolated Find 32MOX803

Isolated Find 32MOX803 consists of a single KRF tertiary flake identified during pedestrian survey (see Figure 3.54; Photos 4.7-1 and 4.7-2 below). The flake was located on a gentle hilltop within a wheat stubble field with 50 to 70 percent GSV. Four radial shovel tests were excavated around the isolate and one shovel probe near the find, with negative results (Figure 4.2). Each shovel probe was fairly similar in that a dark grayish brown (10YR 3/2) Ap horizon consisting of silty clay loam was present underlain by a light brownish (10YR 5/4) silty clay B horizon (see Table 4.7-1 and Photo 4.7-3 below). It was noted the soils had shale or siltstone inclusions in the Ap horizon. Radial testing was conducted at 10-meter intervals in each cardinal direction from the surface find. All probes were negative.

Photo 4.7-1.
Overview of Isolated Find 32MOX803, View to North.

Photo 4.7-2.
Isolated Find 32MOX803, Tertiary Flake, Knife River Flint.

Photo 4.7-3.
Representative Shovel Probe at Isolated Find 32MOX803.

TABLE 4.7-1

Site 32MOX803 Shovel Test Profiles

Shovel Probe	Depth (cmbs)[a]	Horizon	Munsell	Soil	Notes
SP 1 (Center)	0–11	Ap	10YR 3/2	Silty Clay Loam	Ap Has Shale, Siltstone Inclusions. Clear Soil Transition with 5 cm of A Missing.
	11–30	B	10YR 5/4	Silty Clay	
SP 2 (North)	0-10	Ap	10YR 3/2	Silty Clay Loam	Pieces of Thin Shale Inclusions. Siltstone Breaks Easily in Ap.
	10-29	B	10YR 5/6	Silty Clay	
SP 3 (West)	0–15	Ap	10YR 3/2	Silty Clay Loam	Plow Zone is 0-15 cm. From 15-29 cmbs was a Cluster/Layer of Iron Concretions and Shale.
	15–29	Bt1	10YR 5/8	Sandy Silt Clay	
	29-36	Bt2	10YR 5/4	Silty Clay	
SP 4 (East)	0–16	Ap	10YR 3/2	Silty Clay Loam	Chunks of Shale and Siltstone Concetions in Ap. Less in B.
	16–35	AB	10YR 5/4	Silty Clay	
SP 5 (South)	0–16	Ap	10YR 3/2	Silty Clay Loam	Least Amount of Shale in Ap.
	16–36	B	10YR 5/4	Silty Clay	

[a] cmbs = centimeters below surface

Isolated Find 32MOX803 is a newly recorded Isolated Find located on a gentle hilltop within a wheat stubble field. The resource has been continually disturbed by plowing and disking. This Isolated Find maintains integrity of location and materials. Due to its location in a corn stubble field and displacement of the artifacts due to mechanical cultivation, integrity of design, setting, workmanship, association, and feeling have been compromised. Shovel probes terminating below the plow zone did not identify any subsurface artifacts or intact cultural deposits. It is indeterminable whether the site is associated with events or persons significant in our past

(Criteria A and B); the resource does not embody the distinctive characteristics of a type, period or method of construction; nor does it represent the work of a master; nor does it possess high artistic values; nor, represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C). When considering Criterion D of the NRHP, the resource consists of a single, non-diagnostic, artifact that is limited to the surface; recordation exhausts its research value. This resource is recommended as *Not Eligible* for inclusion on the NRHP.

4.8 Isolated Find 32MOX805

Isolated Find 32MOX805 consists of two KRF flakes identified during pedestrian survey (see Figure 3.41; Photos 4.8-1 and 4.8-2 below). The flakes, which consist of one tertiary flake and one secondary flake, were located on top of and slightly on the south downslope of a gentle hilltop within a corn stubble field with 70 to 100 percent GSV. Four radial shovel tests were excavated around the isolate and one shovel probe near the find, with negative results (Figure 4.6). Each of the shovel probes were fairly similar in that a thin, dark grayish brown (10YR 3/3) Ap horizon consisting of loam was present underlain by either a thin (8 to 10 cm) B horizon or from the Ap straight to a C horizon (see Table 4.8-1 and Photo 4.8-3 below). Radial testing was conducted at 10-meter intervals in each cardinal direction from the surface find. No additional cultural materials were recovered in subsurface testing.

Photo 4.8-1. Overview of Isolated Find 32MOX805, View to East.

Photo 4.8-2. Isolated Find 32MOX805, Secondary Flake, Knife River Flint.

Photo 4.8-3. Representative Shovel Probe at Isolated Find 32MOX805.

TABLE 4.8-1

Site 32MOX805 Shovel Test Profiles

Shovel Probe	Depth (cmbs)[a]	Horizon	Munsell	Soil	Notes
SP 1 (Center)	0–8	Ap	10YR 3/3	Loam	Slight Downslope. Ap is Thin, Bk is Mixed with Parent Material, C is Lighter Gray.
	8–18	Bk	2.5Y 4/2	Silt Loam	
	18-30	C	10YR 5/2	Silt Loam	
SP 2 (North)	0-13	Ap	10YR 3/3	Loam	Upslope, Near Top. Ap is Down to Shallow C. The C is orange to Brown
	13-32	C	10YR 6/3	Silt Loam	
SP 3 (West)	0–12	Ap	10YR 3/3	Loam	Ap Has Few Inclusions, Downslope. C Has Parent Material Reddish Throughout.
	12–24	Bk	2.5Y 4/3	Silt Loam	
	24-34	C	10YR 6/4	Silt Loam	
SP 4 (East)	0–12	Ap	10YR 3/3	Loam	Upslope. Ap is Medium Brown, Bk is Gone. C is Grayish Compact.
	12–35	C	10YR 6/3	Silt Loam	
	0–14	Ap	10YR 3/3	Loam	Downslope-Slight. Ap is Lighter Brown with Small Inclusions. Bk is Reddish Brown. C is White Redox and Parent.
	14–22	Bk	2.5Y 4/2	Silt Loam	
	22-37	C	10YR 5/2	Silt Loam	

[a] cmbs = centimeters below surface

Isolated Find 32MOX805 is a newly recorded Isolated Find located on a hilltop within a corn stubble field. The resource has been continually disturbed by plowing and disking. This Isolated Find maintains integrity of location and materials. Due to its location in a corn stubble field and displacement of the artifacts due to mechanical cultivation, integrity of design, setting, workmanship, association, and feeling have been compromised. Shovel probes terminating below the plow zone did not identify any subsurface artifacts or intact cultural deposits. It is indeterminable whether the site is associated with events or persons significant in our past (Criteria A and B); the resource does not embody the distinctive characteristics of a type, period or method of construction; nor does it represent the work of a master; nor does it possess high artistic values; nor, represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C). When considering Criterion D of the NRHP, the resource consists of two, non-diagnostic, artifacts that are limited to the surface with disturbed soils into the B and C horizons; recordation exhausts its research value. This resource is recommended as *Not Eligible* for inclusion on the NRHP.

4.9 Isolated Find 32MOX806

Isolated Find 32MOX806 consists of four KRF flakes identified during pedestrian survey (see Figure 3.41; Photos 4.9-1 and 4.9-2 below). The flakes, which consist of two tertiary flakes, a primary flake, and one broken biface or preform, were located on top of and slightly on the southwest downslope of a hilltop within a canola stubble field with 90 to 100 percent GSV. The materials are sparse and spread across a broad area along the hill. Four radial shovel tests were excavated around the isolate and one shovel probe near the find, with negative results (Figure 4.5). Each shovel probe was fairly similar in that a thin, dark grayish brown (10YR 3/3) Ap horizon consisting of loam was present underlain by either a B horizon (see Table 4.9-1 and Photo 4.9-3 below). Radial testing was conducted at 10-meter intervals in each cardinal direction from the surface find. No additional cultural materials were recovered in subsurface testing.

Photo 4.9-1.
Overview of Isolated Find 32MOX806, View to Southeast.

Photo 4.9-2.
Isolated Find 32MOX806, Secondary Flake, Knife River Flint.

Photo 4.9-3.
Representative Shovel Probe at Isolated Find 32MOX806.

TABLE 4.9-1

Site 32MOX806 Shovel Test Profiles

Shovel Probe	Depth (cmbs)[a]	Horizon	Munsell	Soil	Notes
SP 1 (Center)	0–11	Ap	10YR 3/3	Loam	Few Inclusions in Top 5 cm. No Inclusions below. Orange Stains in B.
	11–31	B	10YR 5/4	Loam	
SP 2 (North)	0-13	Ap	10YR 3/3	Loam	Easy to Dig Loam. No Inclusions.
	13-32	B	10YR 5/4	Loam	
SP 3 (West)	0–19	Ap	10YR 3/3	Loam	Darker Loams in Ap and B. No Inclusions.
	19–37	B	10YR 5/4	Loam	
SP 4 (East)	0–14	Ap	10YR 3/3	Loam	Few Small Inclusions Within Top 5 cm.
	14–35	AB	10YR 5/4	Loam	
SP 5 (South)	0–17	Ap	10YR 3/3	Loam	Lighter Grayish Brown Ap and Light Tan B. No Inclusions.
	17–35	B	2.5Y 6/2	Loam	

[a] cmbs = centimeters below surface

Isolated Find 32MOX806 is a newly recorded Isolated Find located on a hilltop within a canola stubble field. The resource has been continually disturbed by plowing and disking. This Isolated Find maintains integrity of location and materials. Due to its location in a canola stubble field and displacement of the artifacts due to mechanical cultivation, integrity of design, setting, workmanship, association, and feeling have been compromised. Shovel probes terminating below the plow zone did not identify any subsurface artifacts or intact cultural deposits. It is indeterminable whether the site is associated with events or persons significant in our past (Criteria A and B); the resource does not embody the distinctive characteristics of a type, period

or method of construction; nor does it represent the work of a master; nor does it possess high artistic values; nor, represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C). When considering Criterion D of the NRHP, the resource consists of four, non-diagnostic, artifacts that are limited to the surface with disturbed soils into the B horizon; recordation exhausts its research value. This resource is recommended as *Not Eligible* for inclusion on the NRHP.

4.10 32MO233 Site Revisit

Site 32MO233 was originally recorded in 1980 and consists of a segment of the abandoned Fort Keogh to Fort Lincoln stagecoach road (see Figure 3.46-3.49, 3.38; Photo 4.10-1 below). The original form indicated that the line in this area was now the improved county road located along the south edge of the site boundary. The site was originally recommended as unevaluated in regard to eligibility for listing on the NRHP in 1980 and the recorder recommended that any information that could be gained about the history of the stagecoach line within the current site boundary could be ascertained from review of aerial photography. Historical aerials going back to 1938 and 1957 were reviewed by Merjent, but no evidence of the stagecoach road could be found (DWR 2025). Merjent recommends that the stagecoach line no longer exists in the Project Survey Area, and no further work is recommended for the resource in this area. Ground surface visibility was approximately 75 percent during the revisit. The stagecoach line may exist undisturbed in other places outside of the current Project Survey Area.

Photo 4.10-1.
Overview of Site 32MO233 Revisit, Facing Northeast.

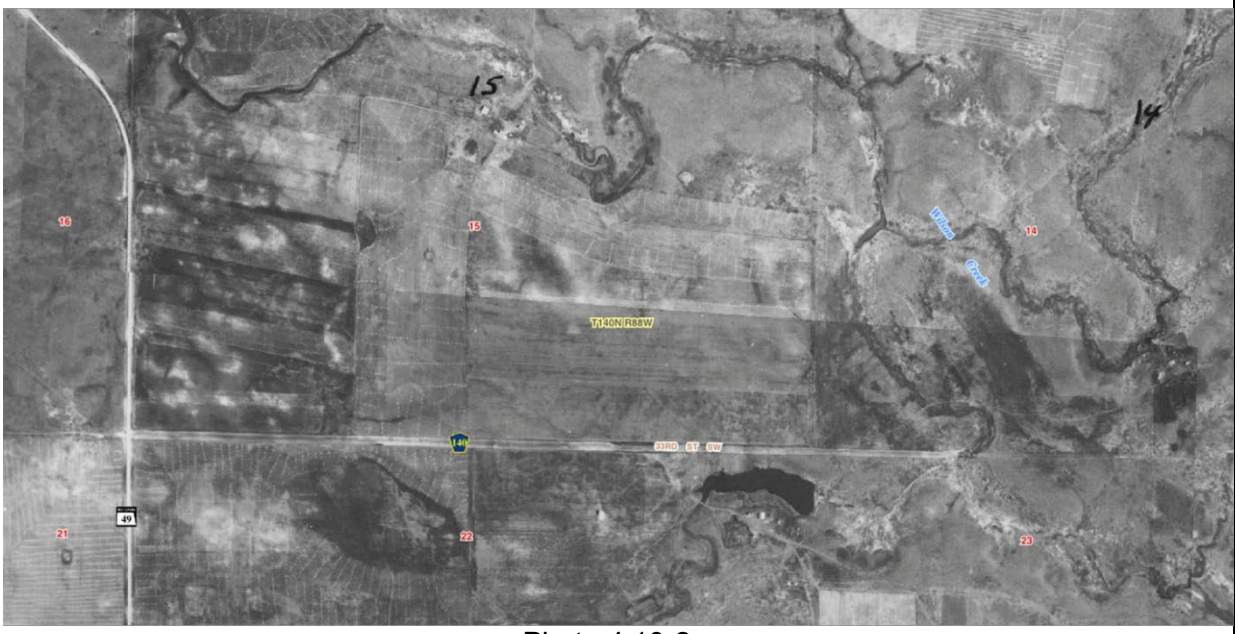

Photo 4.10-2.
1938 Aerial image of project location (DWR 2025).

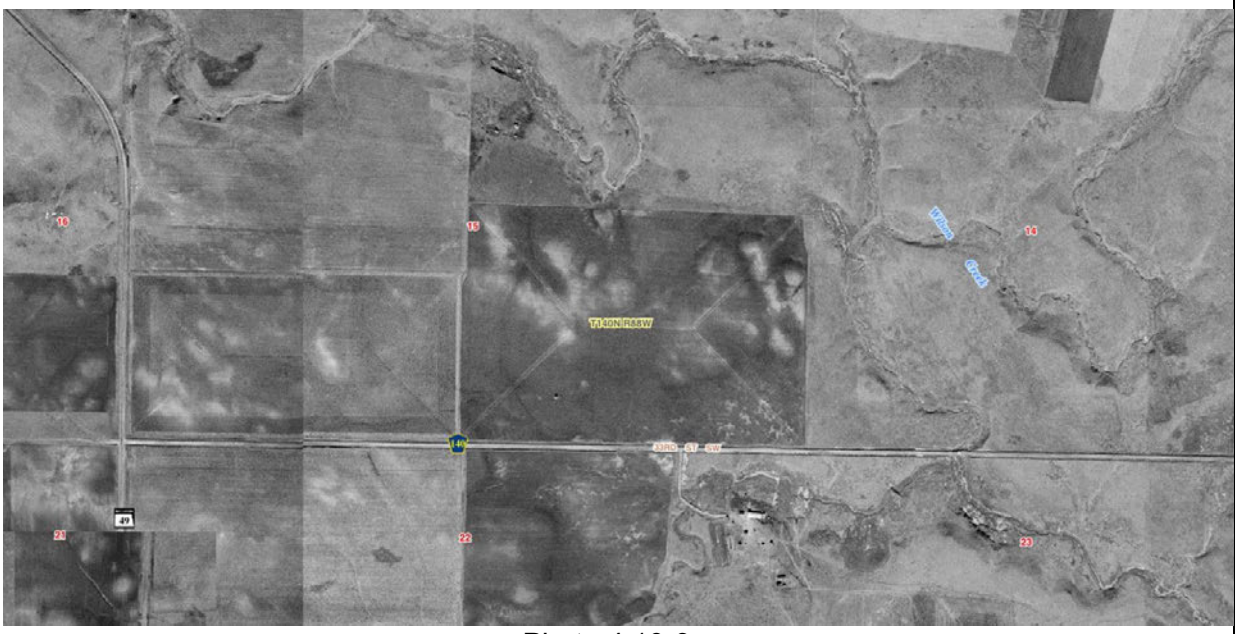

Photo 4.10-3.
1957 Aerial image of project location (DWR 2025).

4.11 32MOX132 Site Revisit

Site Lead 32MOX132 was originally recorded in 1980 by Benson as "Camp 5" (see Figure 3.56 and 3.59; Photo 4.11-1 below). Other supporting information was lacking. The portion of the site lead boundary within the current Project Survey Area consists of a well-established, east-west trending gravel county road. Ground surface visibility was approximately 80 percent during the revisit. No evidence of a camp site exists within the survey area, and any historic camp site is likely located south of the Project Survey Area in a flat to gently rolling plain; therefore, no further work is recommended for the resource in this area.

Photo 4.11-1. Overview of Site Lead 32MOX132 Revisit, Facing East.

4.12 32MOX577 Site Revisit

Site 32MOX577 was originally recorded in 2015 and consisted of four KRF flakes within a two-track road adjacent to an agricultural field (see Figure 3.37 and 3.38; Photo 4.12-1 below). During revisit to the isolated find for the current survey, only one flake was observed of the four original artifacts. Ground surface visibility was approximately 50 percent during the revisit. Four radial shovel probes were placed in the cardinal directions and one probe near the original finds (see Table 4.12-1 below). All probes were negative. Soil profiles indicate that plowing in the adjacent field has disturbed the A horizon down to the B (see Photo 4.12-2 below). Within the two-track, the A horizon is compact due to erosion and rutting. The landscape is little changed since the original recording. Due to the lack of artifacts within shovel probes, the disturbed A horizon directly adjacent to the two-track road, and the eroded and disturbed nature of the two-track road where artifacts were originally identified, Merjent concurs with the prior recommendation of *Not Eligible* for listing in the NRHP and no further work is proposed.

TABLE 4.12-1

Site 32MOX577 Shovel Test Profiles

Shovel Probe	Depth (cmbs)[a]	Horizon	Munsell	Soil	Notes
SP 1 (Center)	0–36	Ap	10YR 3/2	Silt Loam	Redox and Concretion Streaks in B.
	36–48	B	7.5YR 4/3	Silt Loam	
SP 2 (North)	0-33	Ap	10YR 3/2	Silt Loam	
	33-48	B	7.5YR 4/3	Silt Loam	
SP 3 (West)	0–22	A	10YR 3/2	Silt Loam	Compact. Center of Two-Track.
	22–33	Bw	7.5YR 4/3	Silt Loam	
SP 4 (East)	0–26	Ap	10YR 3/2	Silt Loam	No Inclusions.
	26–40	B	7.5 YR 4/3	Silt Loam	
SP 5 (South)	0–20	Ap	10YR 3/2	Silt Loam	
	20–30	Bw	7.5YR 4/3	Silt Loam	
	30-40	Bk	2.5Y 5/4	Silt Loam	

[a] cmbs = centimeters below surface

Photo 4.12-1.
Overview of Isolated Find 32MOX577, Facing West.

Photo 4.12-2.
Representative Shovel Probe at 32MOX577.

4.13 32MOX579 Site Revisit

Site 32MOX579 was originally recorded in 2015 and consisted of a single KRF biface (see Figure 3.5; Photo 4.13-1 below). No new lithic resources were noted during the revisit and the originally recorded artifact was not observed. Ground surface visibility was approximately 20 percent during the revisit. The landscape appears to remain largely unchanged since 2015. The original recorder had placed five shovel probes around the find and all were negative. Due to the previous work done at the isolated find and no chipped stone material being identified during the revisit, Merjent concurs with the prior recommendation of *Not Eligible* for the NRHP and no further work proposed.

Photo 4.13-1.
Ground View Near Isolated Find 32MOx579, Facing North.

4.14 32MOX580 Site Revisit

Site 32MOX580 was originally recorded in 2015 and consisted of a single biface of knife river flint (see Figure 3.5; Photo 4.14-1 below). No new lithic resources were noted during the revisit and the originally recorded artifact was not observed. Ground surface visibility was approximately 20 percent during the revisit. The landscape appears to remain largely unchanged since 2015. The original recorder had placed 15 shovel probes around the find and all were negative. Due to the previous work done at the isolated find and no chipped stone material being identified during the revisit, Merjent concurs with the prior recommendation of *Not Eligible* for the NRHP and no further work proposed.

Photo 4.14-1.
Overview of Isolated Find 32MOX580, Facing South.

5.0 SUMMARY AND RECOMMENDATIONS

A Class I file search completed in August 2024, with an update in January 2025, identified one previously recorded historic archaeological site, one historic archaeological site lead, and three precontact isolated finds within the Project Survey Area. The Class III pedestrian survey of the Project Survey Area was completed on January 31, 2025, March 5 to 14, 2025, April 9, 2025, April 14 to 18, 2025, April 23, 2025, and May 26, 2025. During the survey, two new historic sites, two new precontact sites, and five new isolated finds were identified. Of the new sites, isolated finds, and previously identified sites, four are recommended as unevaluated or potentially eligible for listing on the NRHP (refer to Table 5.0-1 below). Merjent recommends avoidance of four of the nine new resources. Merjent searched for site lead 32MOX132, a historic camp site, but no evidence of past activity was identified during the survey for a proposed access road, which is an existing crowned and ditched county road; therefore, no further work is recommended for the resource in this area. Similarly, site 32MO233, a segment of stagecoach line, was originally noted as being covered in this area by a modern crowned and ditched county road. No evidence of past activity was identified during the survey for proposed O&M work areas to the north of the existing road. No further work is recommended for the resource in this area. The other 10 sites and isolated finds are recommended as not eligible for listing. No further work or avoidance is recommended for those resources. Merjent recommends that no historic properties will be affected by the proposed Project provided the above-mentioned avoidance measures are implemented. No further archaeological work is recommended for the Project as planned.

TABLE 5.0-1

Summary of NRHP and Management Recommendations by Resource

SITS No.	Cultural Affiliation	Resource Type	NRHP Recommendation	Management Recommendation
32MO233	Historic	Stagecoach Road	Unevaluated	No Further Work (Not in Study Area)
32MOX132	Historic	Camp	Unevaluated	No Further Work (Not in Study Area)
32MOX577	Precontact - Unknown	Lithic Scatter	Not Eligible	No Further Work
32MOX579	Precontact - Unknown	Isolated Find	Not Eligible	No Further Work
32MOX580	Precontact - Unknown	Isolated Find	Not Eligible	No Further Work
32MO1719	Precontact - Unknown	Lithic Scatter	Unevaluated	Avoidance or Further Work
32MO1720	Historic	Farmstead	Unevaluated	Avoidance or Further Work
32MO1721	Historic	Farmstead	Unevaluated	Avoidance or Further Work
32MO1722	Precontact - Unknown	Lithic Scatter	Unevaluated	Avoidance or Further Work
32MOX804	Precontact - Unknown	Isolated Find	Not Eligible	No Further Work
32MOX802	Precontact - Unknown	Isolated Find	Not Eligible	No Further Work
32MOX803	Precontact - Unknown	Isolated Find	Not Eligible	No Further Work
32MOX805	Precontact - Unknown	Isolated Find	Not Eligible	No Further Work
32MOX806	Precontact - Unknown	Isolated Find	Not Eligible	No Further Work

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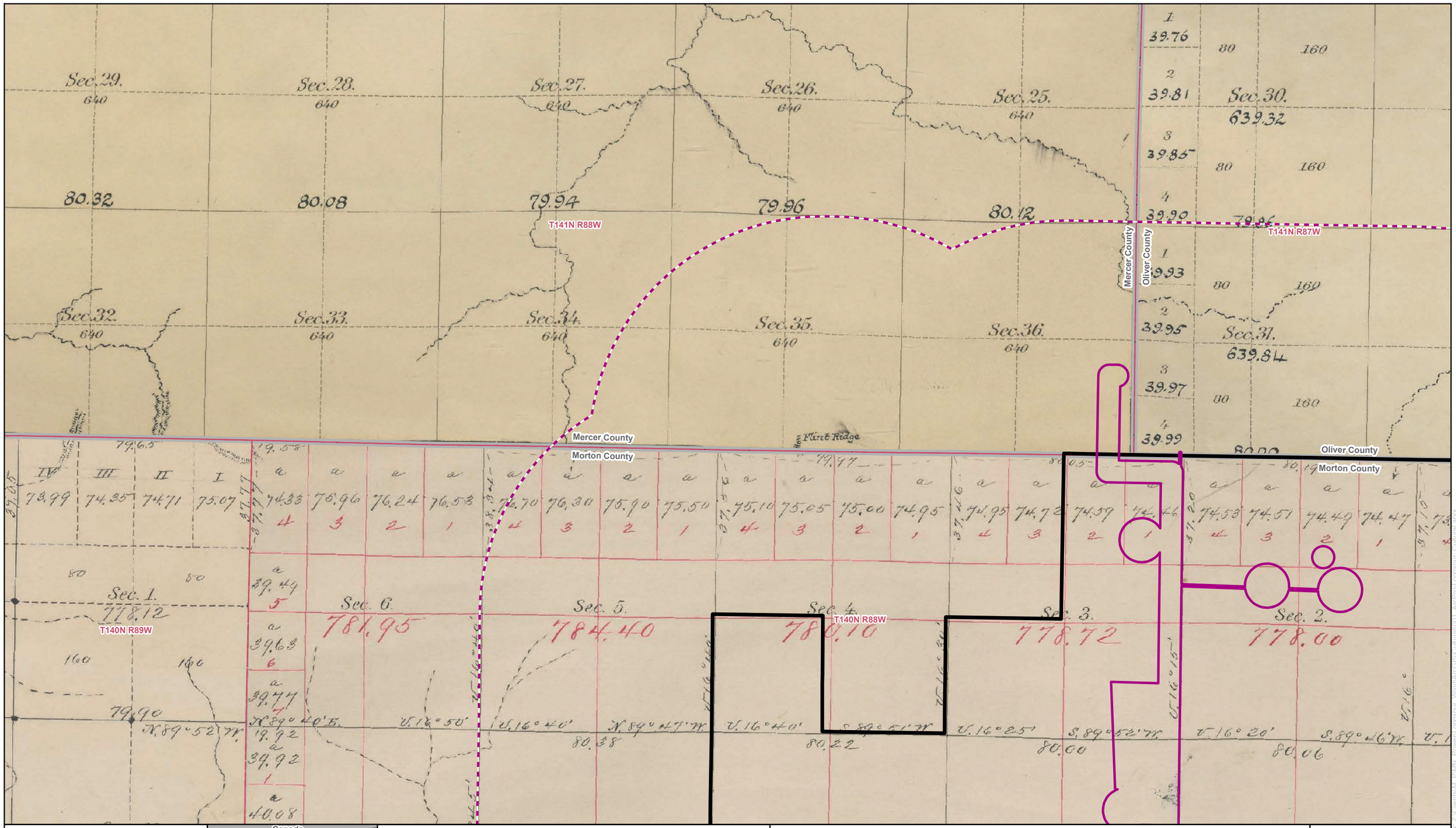
APPENDIX A

Figures



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N W E S

For Environmental Review Purposes Only

Figure 2.1: 1880-1883 GLO Map

Minnesota Power
Longspur Wind Project
Mercer, Morton, and Oliver Counties, North Dakota

- Project Area
- One-Mile Buffer
- Project Boundary
- Township Boundary
- County Boundary

merjent

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Oliver County
Morton County
T140N R88W
T140N R87W
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Sec. 4.
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N W E S
For Environmental Review Purposes Only

Canada
North Dakota
MT
MN
SD

Figure 2.2: 1880-1883 GLO Map
Minnesota Power
Longspur Wind Project
Morton and Oliver Counties, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Township Boundary
County Boundary

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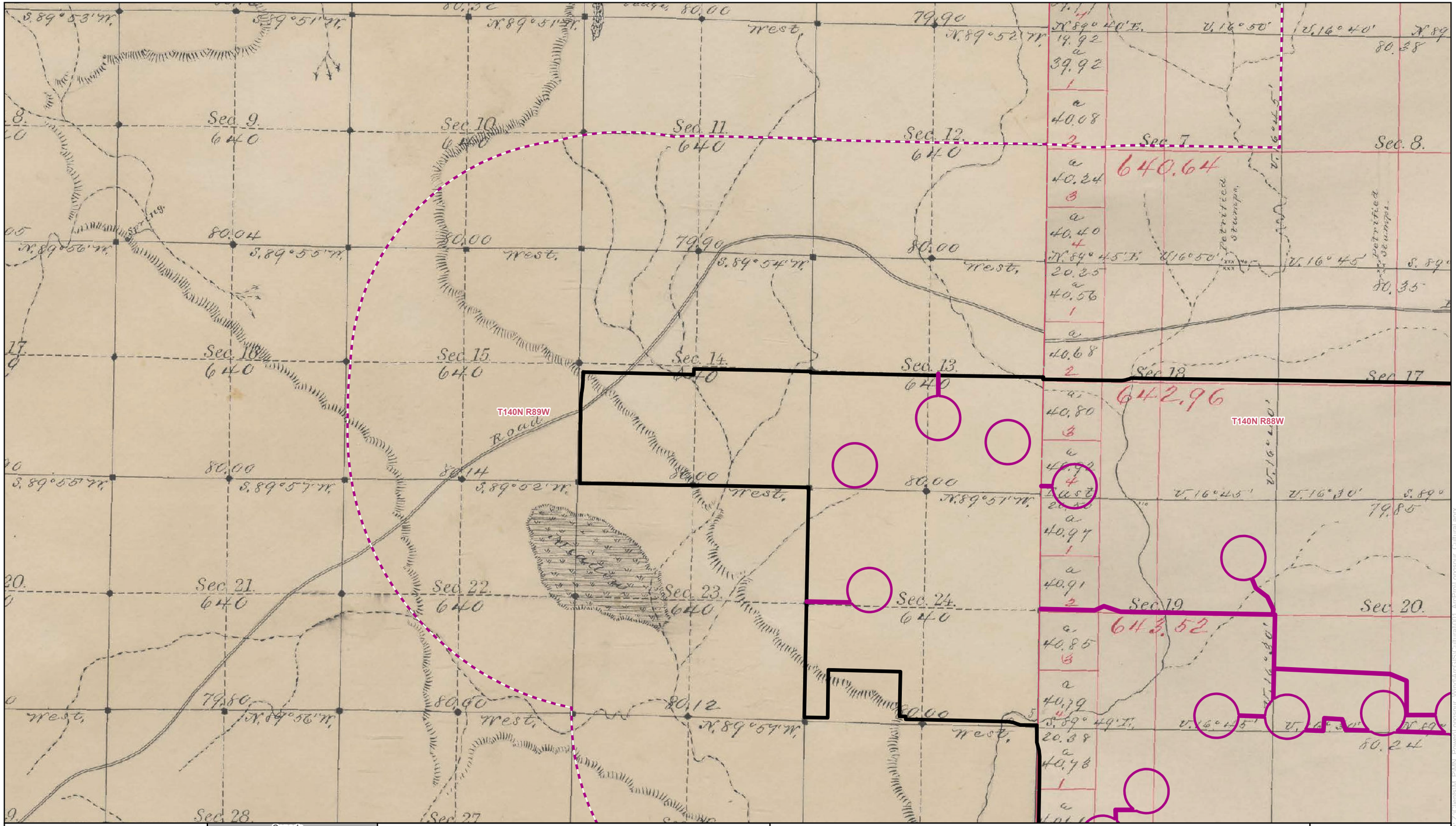

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N W E S

For Environmental Review Purposes Only

Figure 2.3: 1880-1883 GLO Map
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

- Project Area
- One-Mile Buffer
- Project Boundary
- Township Boundary
- County Boundary

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Petrified Stumps

Bismarck and Fort Keogh Stage road

West.

492.50

480.24

488.88

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N W E S

For Environmental Review Purposes Only

Canada

North Dakota

MT MN SD

Figure 2.4: 1880-1883 GLO Map
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Township Boundary
County Boundary

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T140N R86W

sandstone ledge.

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N W E S

For Environmental Review Purposes Only

Canada

North Dakota

MT MN SD

Figure 2.5: 1880-1883 GLO Map
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Township Boundary
County Boundary

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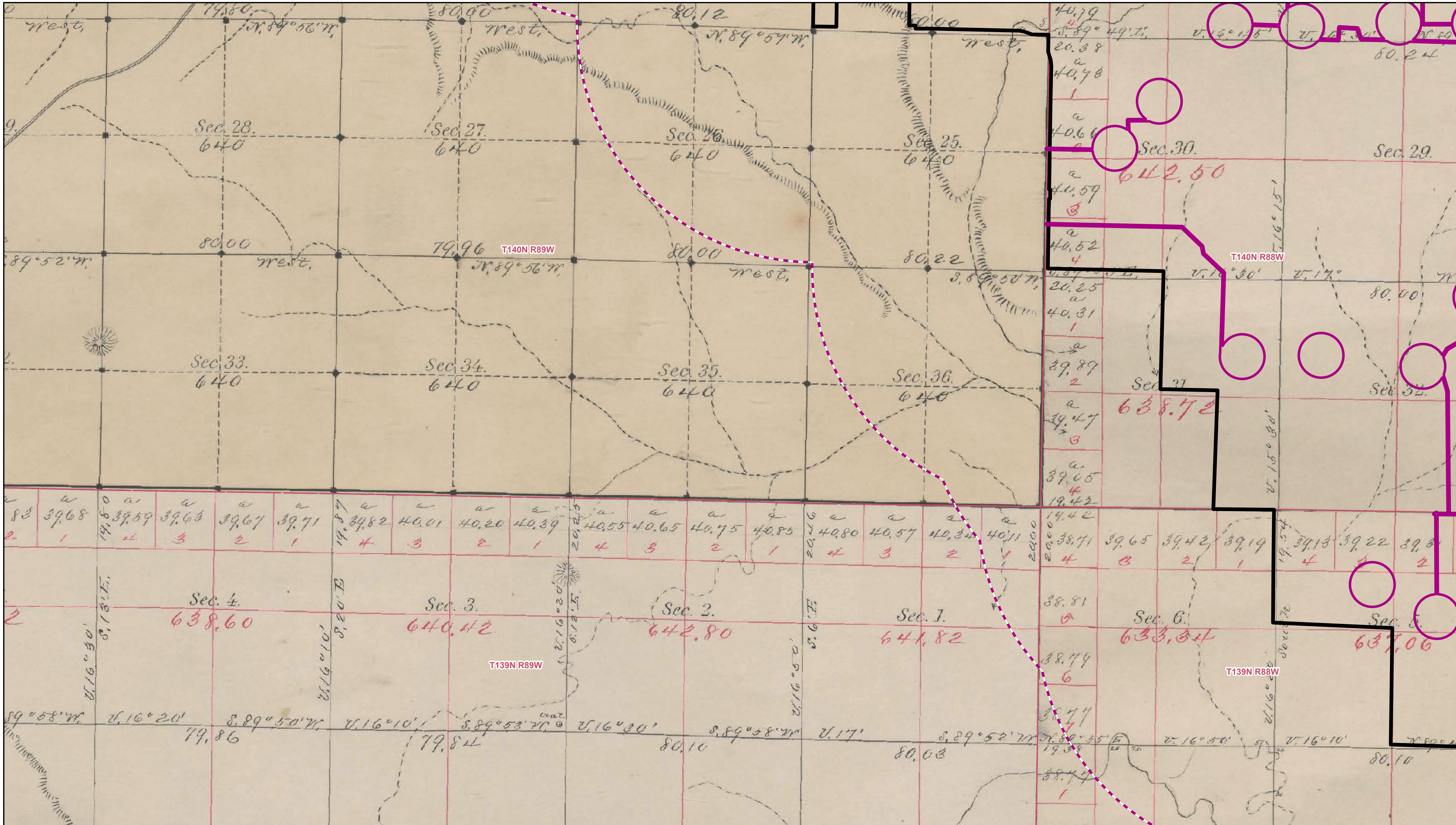

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For Environmental Review Purposes Only

Figure 2.6: 1880-1883 GLO Map
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Township Boundary
County Boundary

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West. West. West. West.

Cañon

Sandstone ledge.

Petrified stumps

496.82

503.12

633.06 637.86 637.54 636.80 638.22 640.87 641.76

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N W E S

For Environmental Review Purposes Only

Canada

North Dakota

MT MN SD

Figure 2.7: 1880-1883 GLO Map

Minnesota Power

Longspur Wind Project

Morton County, North Dakota

Project Area

One-Mile Buffer

Project Boundary

Township Boundary

County Boundary

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For Environmental Review Purposes Only

Canada

North Dakota

MT

MN

SD

Figure 2.8: 1880-1883 GLO Map

Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Township Boundary
County Boundary

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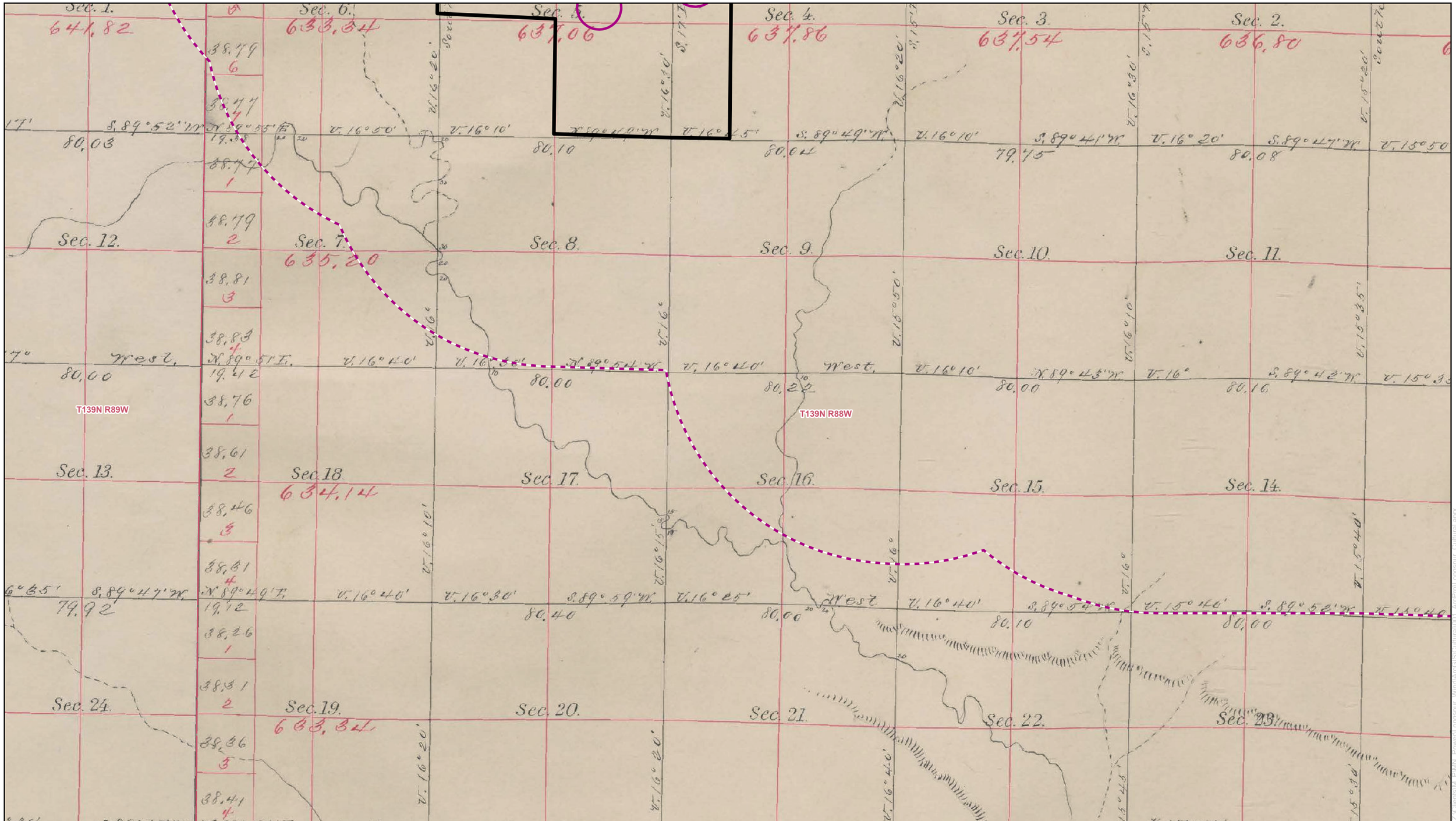

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For Environmental Review Purposes Only

Figure 2.9: 1880-1883 GLO Map
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Township Boundary
County Boundary

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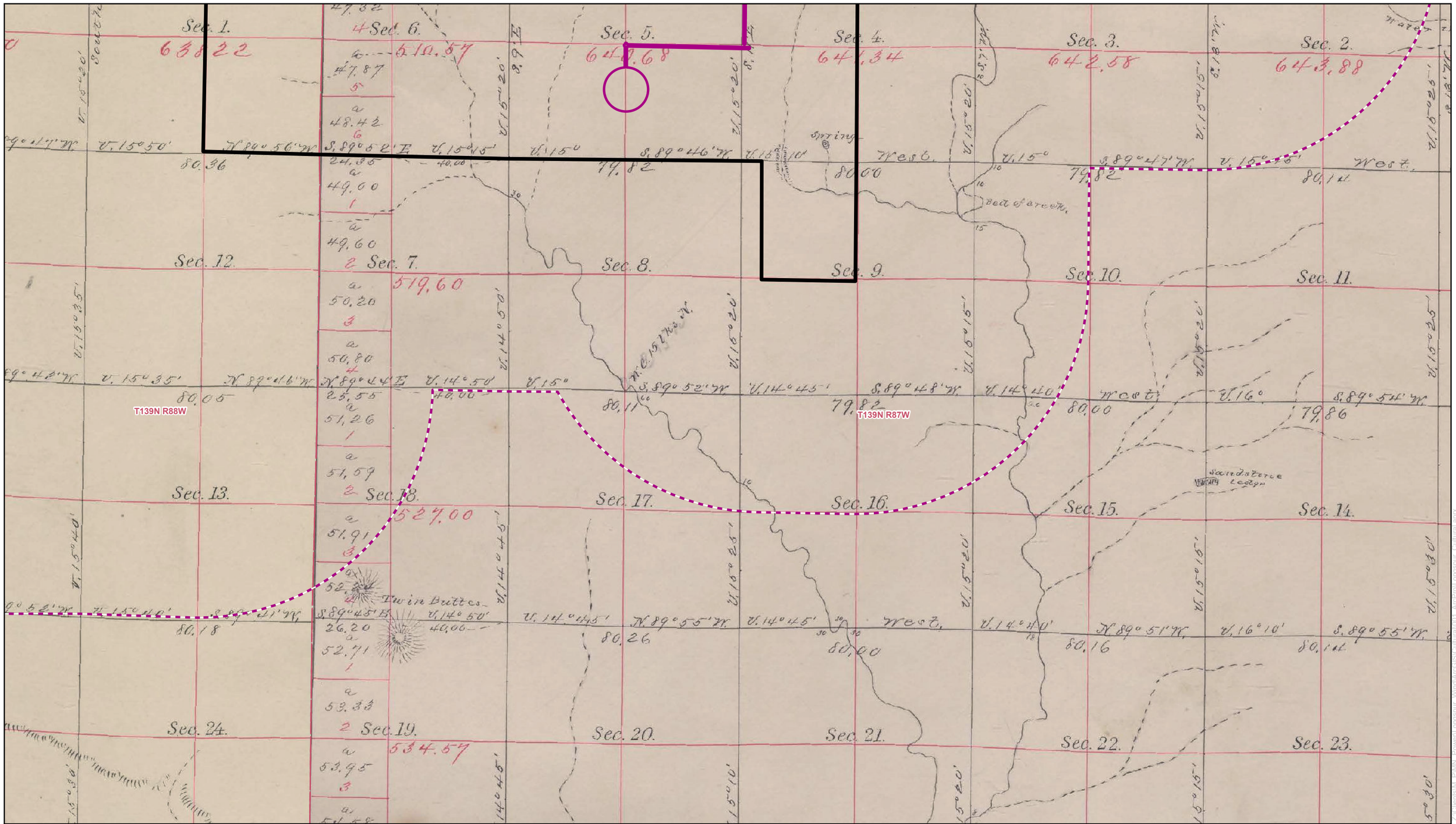

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For Environmental Review Purposes Only

Figure 2.10: 1880-1883 GLO Map
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

- Project Area
- One-Mile Buffer
- Project Boundary
- Township Boundary
- County Boundary

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For Environmental Review Purposes Only

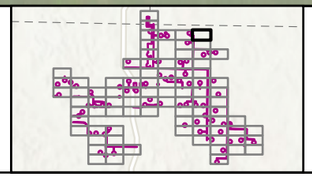

Figure 3.6: Survey Results
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Section Boundary

merjent

Contains Privileged Information
Do Not Distribute

Source: Z:\Clients\M_P\MN_PowerLongspur_Wind\ArcGIS\Cultural\001_AtcProLongspur_Cultural.aprx

Date: (8/7/2025)

[redacted]

0 150 300 Feet
1:3,600

N
W E
S

For Environmental Review Purposes Only

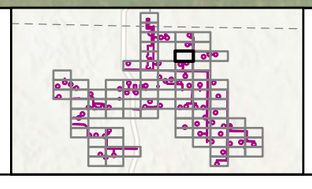

Figure 3.11: Survey Results
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Section Boundary

merjent

Contains Privileged Information
Do Not Distribute

Source: Z:\Clients\M_P\MN_PowerLongspur_Wind\ArcGIS\Cultural\001_ArcPro\Longspur_Cultural.aprx
Date: 8/7/2025)

0 150 300 Feet
1:3,600

N
W E
S

For Environmental Review Purposes Only

Figure 3.13: Survey Results
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Proposed Turbine
Section Boundary

merjent

Contains Privileged Information
Do Not Distribute

Source: Z:\Clients\M_P\MN_PowerLongspur_Wind\ArcGIS\Cultural\001_ArcPro\Longspur_Cultural.aprx
Date: (8/7/2025)

0 150 300 Feet
1:3,600

N
W E
S

For Environmental Review Purposes Only

Figure 3.18: Survey Results
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Section Boundary

merjent

Contains Privileged Information
Do Not Distribute

Source: Z:\Clients\MI_PMN_PowerLongspur_WindArcGIS\Cultural\001_ArcPro\Longspur_Cultural.aprx
Date: (8/7/2025)

018093

018192

007159

T140N,
R89W,
Sec. 14

T140N,
R89W,
Sec. 13

Co Rd 140

67th Ave

0 150 300 Feet

1:3,600

N

W E

S

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Figure 3.19: Survey Results
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Previous Survey
Section Boundary

merjent

Contains Privileged Information
Do Not Distribute

Source: Z:\Clients\M_P\MN_PowerLongspur_wind\ArcGIS\Cultural\001_ArcPro\Longspur_Cultural.aprx

Date: 10/7/2025

T140N, R87W, Sec. 7

T140N, R87W, Sec. 8

59th Ave

60th Ave

T140N, R87W, Sec. 18

T140N, R87W, Sec. 17

016512

0 150 300 Feet

1:3,600

N

W E

S

For Environmental Review Purposes Only

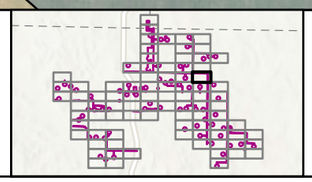


Figure 3.23: Survey Results

Minnesota Power
Longspur Wind Project
Morton County, North Dakota

- Project Area
- One-Mile Buffer
- Project Boundary
- Previous Survey
- Section Boundary

merjent

Contains Privileged Information
Do Not Distribute

Source: Z:\Clients\M_P\MN_PowerLongspur_Wind\ArcGIS\Cultural\001_ArcPro\Longspur_Cultural.aprx

Date: (8/7/2025)

T140N, R88W, Sec. 17

T140N, R88W, Sec. 16

T140N, R88W, Sec. 20

T140N, R88W, Sec. 21

0 150 300 Feet

1:3,600

N W E S

For Environmental Review Purposes Only

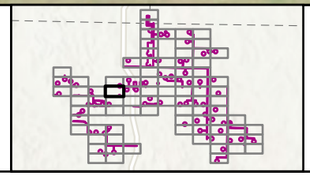


Figure 3.36: Survey Results
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Section Boundary

merjent

Contains Privileged Information
Do Not Distribute

Source: Z:\Clients\M_P\MN_PowerLongspur_Wind\Arc\GIS\Cultural\007_ArcPro\Longspur_Cultural.aprx
Date: (8/7/2025)

T140N, R88W, Sec. 13

33rd St

60th Ave

016512
T140N, R87W, Sec. 18

T140N, R88W, Sec. 24

T140N, R87W, Sec. 19

0 150 300 Feet
1:3,600

N
W E
S

For Environmental Review Purposes Only

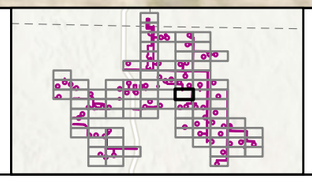


Figure 3.39: Survey Results
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Previous Survey
Section Boundary

merjent

Contains Privileged Information
Do Not Distribute

Source: Z:\Clients\M_P\MN_PowerLongspur_Wind\ArcGIS\Cultural\001_ArcPro\Longspur_Cultural.aprx
Date: 10/7/2025

0 150 300 Feet

1:3,600

N W E S

For Environmental Review Purposes Only

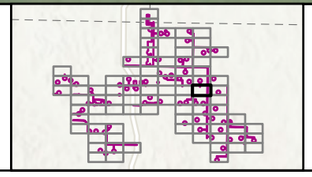


Figure 3.40: Survey Results
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Previous Survey
Section Boundary

merjent

Contains Privileged Information
Do Not Distribute

Source: Z:\Clients\M_P\MN_PowerLongspur_Wind\ArcGIS\Cultural\007_ArcPro\Longspur_Cultural.aprx
Date: (8/7/2025)

0 150 300 Feet

1:3,600

N

W E

S

For Environmental Review Purposes Only

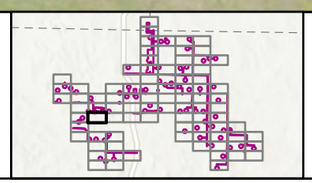


Figure 3.51: Survey Results
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Section Boundary

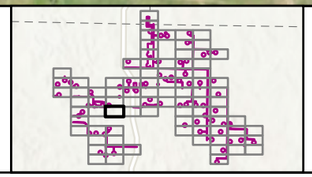
merjent

Contains Privileged Information
Do Not Distribute

Source: Z:\Clients\M_P\MN_PowerLongspur_Wind\ArcGIS\Cultural\001_ArcPro\Longspur_Cultural.aprx
Date: (8/7/2025)

0 150 300 Feet
1:3,600

N
W E
S



For Environmental Review Purposes Only

Figure 3.52: Survey Results
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Section Boundary

merjent

Contains Privileged Information
Do Not Distribute

Source: Z:\Clients\M_P\MN_PowerLongspur_Wind\ArcGIS\Cultural\001_ArcPro\Longspur_Cultural.aprx
Date: (8/7/2025)

0 150 300 Feet
1:3,600

N
W E
S

For Environmental Review Purposes Only

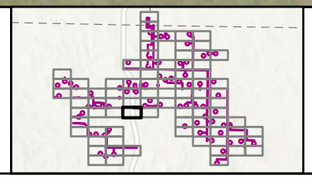


Figure 3.53: Survey Results
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

- Project Area
- One-Mile Buffer
- Project Boundary
- Previous Survey
- Section Boundary

merjent

Contains Privileged Information
Do Not Distribute

Source: Z:\Clients\M_P\MN_PowerLongspur_Wind\ArcGIS\Cultural\001_ArcPro\Longspur_Cultural.aprx
Date: (8/7/2025)

T140N, R88W, Sec. 22

T140N, R88W, Sec. 23

T140N, R88W, Sec. 27

T140N, R88W, Sec. 26

0 150 300 Feet

1:3,600

N W E S

For Environmental Review Purposes Only

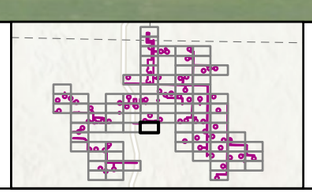


Figure 3.54: Survey Results
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Section Boundary

merjent

Contains Privileged Information
Do Not Distribute

Source: Z:\Clients\M_P\MN_PowerLongspur_Wind\ArcGIS\Cultural\001_ArcPro\Longspur_Cultural.aprx
Date: (8/7/2025)

T140N, R88W, Sec. 24

T140N, R87W, Sec. 19

T140N, R88W, Sec. 25

T140N, R87W, Sec. 30

0 150 300 Feet

1:3,600

N W E S

For Environmental Review Purposes Only

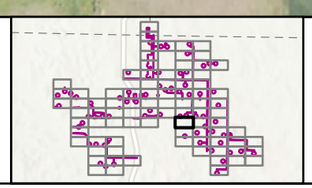


Figure 3.55: Survey Results
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Section Boundary

merjent

Contains Privileged Information
Do Not Distribute

Source: Z:\Clients\M_P\MN_PowerLongspur_Wind\ArcGIS\Cultural\001_AtkProLongspur_Cultural.aprx
Date: (8/7/2025)

0 150 300 Feet
1:3,600

N
W E
S

For Environmental Review Purposes Only

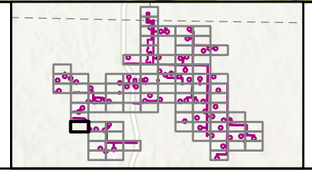


Figure 3.63: Survey Results
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Section Boundary

merjent

Contains Privileged Information
Do Not Distribute

Source: Z:\Clients\M_P\MN_PowerLongspur_Wind\ArcGIS\Cultural\001_ArcPro\Longspur_Cultural.aprx
Date: (8/7/2025)

T140N, R87W, Sec. 28

T140N, R87W, Sec. 27

35th St

016512

T140N, R87W, Sec. 33

57th Ave

015938

T140N, R87W, Sec. 34

0 150 300 Feet

1:3,600

N W E S

For Environmental Review Purposes Only

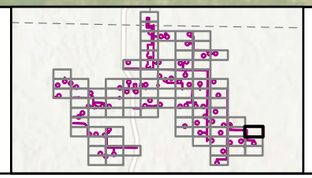


Figure 3.70: Survey Results
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Previous Survey
Section Boundary

merjent

Contains Privileged Information
Do Not Distribute

Source: Z:\Client\MP_PWN_PowerLongspur_Wind\ArcGIS\Cultural\001_ArcPro\Longspur_Cultural.aprx

Date: (8/7/2025)

0 150 300 Feet
1:3,600

N
W E
S

For Environmental Review Purposes Only

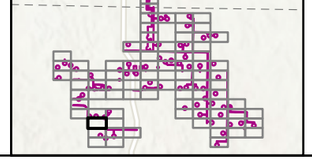


Figure 3.71: Survey Results
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Section Boundary

merjent

Contains Privileged Information
Do Not Distribute

Source: Z:\Clients\M_P\MN_PowerLongspur_Wind\ArcGIS\Cultural\01_ArcPro\Longspur_Cultural.aprx
Date: (8/7/2025)

0 150 300 Feet
1:3,600

N
W E
S

For Environmental Review Purposes Only

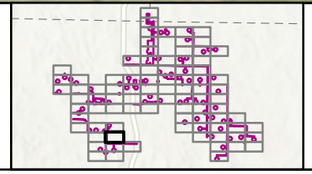


Figure 3.72: Survey Results
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Section Boundary

merjent

Contains Privileged Information
Do Not Distribute

Source: Z:\Clients\M_P\MN_PowerLongspur_Wind\ArcGIS\Cultural\001_ArcPro\Longspur_Cultural.aprx
Date: (8/7/2025)

T140N,
R87W,
Sec. 31

T140N,
R87W,
Sec. 32

0 150 300 Feet
1:3,600

N
W E
S

For Environmental Review Purposes Only

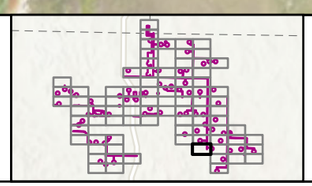


Figure 3.73: Survey Results
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Section Boundary

merjent

Contains Privileged Information
Do Not Distribute

Source: Z:\Clients\M_P\MN_PowerLongspur_Wind\ArcGIS\Cultural\001_ArcPro\Longspur_Cultural.aprx
Date: (8/7/2025)

T140N,
R88W,
Sec. 33

T140N,
R88W,
Sec. 34

36th St

State Hwy 49

006880

T139N,
R88W,
Sec. 4

T139N,
R88W,
Sec. 3

0 150 300
Feet
1:3,600

N
W E
S

For Environmental Review Purposes Only

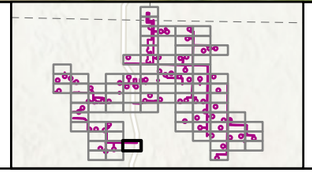


Figure 3.79: Survey Results
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Previous Survey
Section Boundary

merjent

Contains Privileged Information
Do Not Distribute

Source: Z:\Clients\M_P\MN_PowerLongspur_Wind\ArcGIS\Cultural\01_ArcPro\Longspur_Cultural.aprx
Date: 8/7/2025

T140N,
R87W,
Sec. 33

T139N,
R87W,
Sec. 4

0 150 300 Feet
1:3,600

N
W E
S

For Environmental Review Purposes Only

Figure 3.81: Survey Results
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Section Boundary

merjent

Contains Privileged Information
Do Not Distribute

Source: Z:\Clients\MP_PWN_PowerLongspur_Wind\ArcGIS\Cultural\v10\1_ArcPro\Longspur_Cultural.aprx
Date: (8/7/2025)

016512

T140N,
R87W,
Sec. 33

T140N,
R87W,
Sec. 34

T139N,
R87W,
Sec. 4

T139N,
R87W,
Sec. 3

0 150 300 Feet
1:3,600

N
W E
S

For Environmental Review Purposes Only

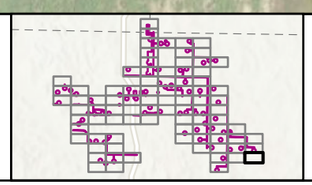


Figure 3.82: Survey Results
Minnesota Power
Longspur Wind Project
Morton County, North Dakota

Project Area
One-Mile Buffer
Project Boundary
Previous Survey
Section Boundary

merjent

Contains Privileged Information
Do Not Distribute

Source: Z:\Clients\M_P\MN_PowerLongspur_Wind\ArcGIS\Cultural\007_ArcPro\Longspur_Cultural.aprx
Date: (8/7/2025)

APPENDIX B

Site Forms (Detached)