

**Appendix I**  
**Studies and Assessments**

**I – 1**

**Cultural Resources Report (public version)**



# **NORTH PLAINS CONNECTOR**

**A Grid United Project**

## **Archaeology Summary Report North Plains Connector Project**

**Prepared by:**

**Merjent, Inc.**

**Submitted to:**

**North Plains Connector LLC**

**January 2026**

**TABLE OF CONTENTS**

**LIST OF APPENDICES..... II**

**ACRONYMS AND ABBREVIATIONS..... II**

**1.0 INTRODUCTION..... 1**

    1.1 PROJECT OVERVIEW ..... 1

    1.2 REGULATORY FRAMEWORK ..... 1

    1.3 CULTURAL RESOURCE CONSULTANTS..... 2

**2.0 CLASS I LITERATURE REVIEW ..... 2**

    2.1 METHODS ..... 2

    2.2 PREVIOUS ARCHAEOLOGICAL SURVEYS..... 2

    2.3 PREVIOUSLY RECORDED ARCHAEOLOGICAL SITES ..... 3

**3.0 CLASS III INTENSIVE CULTURAL RESOURCE INVENTORY ..... 3**

    3.1 OBJECTIVE..... 3

    3.2 FIELD METHODS..... 3

    3.3 SURVEY RESULTS..... 5

**4.0 CONCLUSIONS ..... 5**

**5.0 REFERENCES ..... 6**

**LIST OF APPENDICES**

**APPENDIX A SURVEY CORRIDOR MAP**

**ACRONYMS AND ABBREVIATIONS**

APE	Area of Potential Effects
Collector	Esri’s Collector application
DOE	U.S. Department of Energy
Ethnoscience	Ethnoscience Inc.
GPS	Global Positioning System
Merjent	Merjent, Inc.
Metcalf	Metcalf Archaeological Consultants
NHPA	National Historic Preservation Act
North Plains	North Plains Connector LLC
NRHP	National Register of Historic Places
Project	North Plains Connector Project in North Dakota

QSI	Quality Services, Inc.
SHPO	North Dakota State Historic Preservation Office
SHSND	State Historical Society of North Dakota
Siting Act	North Dakota Energy Conversion and Transmission Facility Siting Act
TRC	TRC Companies, Inc.
USFS	U.S. Forest Service

## **1.0 INTRODUCTION**

### **1.1 PROJECT OVERVIEW**

Merjent, Inc. (Merjent) submits this archaeology summary report to North Plains Connector LLC (North Plains) for inclusion in the North Dakota Public Service Commission Application for the North Dakota portion of the North Plains Connector Project (Project). North Plains is developing the North Plains Connector, an approximately 422-mile high-voltage direct current electric transmission line system and associated infrastructure designed to connect the east and west energy grids in the United States. The North Plains Connector is designed for bi-directional transport of electricity and is located in southeastern Montana and southwestern North Dakota. For the purposes of this report, "Project" refers solely to the portion of North Plains Connector located in North Dakota.

This summary report presents a public overview of cultural resource investigations for the Project, summarizing the results of a Class I Literature Review and a Class III intensive cultural resource inventory completed from 2022 to 2025. These investigations were conducted to identify and document cultural resources within and near the Project, support state and federal permitting, and inform review under Section 106 of the National Historic Preservation Act. Detailed site location information and other sensitive data have been withheld to comply with North Dakota Century Code Section 49-22-26.

The survey corridor consisted of a 300-foot-wide corridor centered on the proposed transmission centerline, 70-foot-wide buffers along all proposed access roads, 750-foot-wide buffers around wire-pulling and tensioning locations, additional survey areas requested by the engineering team, and block surveys at all proposed workspaces, storage yards, and substation sites. A map depicting the survey corridor is provided in Appendix A.

North Plains coordinated with the State Historical Society of North Dakota (SHSND) to determine the appropriate scope and survey level for cultural resources and was assigned North Dakota State Historic Preservation Office (SHPO) reference number 22-5249. Consultation with Tribes was also completed to identify resources of cultural significance. Fieldwork was conducted in accordance with SHSND guidelines, and the results will be documented in a 2022–2023 Class III report, which will be submitted to the U.S. Department of Energy (DOE) and provided to the SHPO as part of the Section 106 consultation process. The 2024-2025 Class III addendum report is also currently in progress.

### **1.2 REGULATORY FRAMEWORK**

The Project is regulated under the North Dakota Energy Conversion and Transmission Facility Siting Act (Siting Act), which requires a Certificate of Corridor Compatibility and a Transmission Facility Route Permit from the North Dakota Public Service Commission prior to locating, constructing, or operating the facility. Applications must meet criteria set forth in the Siting Act and North Dakota Administrative Code Article 69-06.

The Project is also subject to federal review under Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended. For the purpose of NHPA consultation, the Area of Potential Effects (APE) for the Project is defined under 36 CFR 800 as "the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist." In accordance with Title 18 CFR Part 380.16(f), the investigations address the nature and extent of cultural resources, including Tribally identified resources, within the APE.

The DOE is the lead federal agency supporting NHPA consultation for this Project. Cooperating federal agencies within North Dakota include the U.S. Forest Service (USFS). The Project crosses federal lands administered under the USFS and North Dakota State Trust Lands.

### 1.3 CULTURAL RESOURCE CONSULTANTS

North Plains contracted Merjent to coordinate cultural resource investigations for the Project in collaboration with Metcalf Archaeological Consultants (Metcalf), TRC Companies, Inc. (TRC), Ethnoscience, Inc. (Ethnoscience), and Quality Services, Inc. (QSI; formerly Impact 7G, now Eocene). The table below summarizes these firms, their field survey activities, and the permits they held during the applicable field seasons.

Consultant	Scope of Work	Field Survey Periods	North Dakota Antiquities Permit Years	Special Use / Other Permits
Metcalf	Class I Literature Review (with updates as needed); Class III inventory of the APE	September–November 2022; June–August 2023; June–November 2024	2022–2024	–
TRC	Class I Literature Review (with updates as needed); Class III inventory of the APE	October 2022; June–October 2023; June–November 2024; May–October 2025	2022–2025	North Dakota State Trust Lands permit (issued December 12, 2022; expires December 31, 2027); USFS special use permit: 2024-2027 permit MCK230032
Ethnoscience	Class I Literature Review (with updates as needed); Class III inventory of the APE	June 2023; June–August 2023; June–November 2024; May–October 2025	2022–2025	USFS special use permits: FY2022 permit MCK22016; 2023–2025 permit MCK23004
QSI	Class I Literature Review (with updates as needed); Class III inventory of the APE	June–October 2022	2022–2023	USFS special use permits: FY2022 permit 22012; FY2023 permit MCK23006

## 2.0 CLASS I LITERATURE REVIEW

### 2.1 METHODS

The Class I Literature Review followed the SHPO Guidelines Manual for Cultural Resources Inventory Projects (SHSND, 2020) and included records searches at the SHSND. The search focused on previously identified archaeological sites within the Study Area, defined as the survey corridor plus a 1-mile buffer. Review of the North Dakota Cultural Resources Survey data files included archaeological, historical, and architectural resource forms, cultural resources survey reports, and Cultural Heritage Forms available at SHSND in Bismarck. Archival resources, including General Land Office maps, county atlases, historical aerial imagery, historic plat maps, and U.S. Geological Survey topographic maps, were also examined to identify potential cultural features. The file search included the National Register of Historic Places (NRHP) records maintained by the National Park Service. No properties listed on the NRHP were identified within the Study Area or survey corridor.

### 2.2 PREVIOUS ARCHAEOLOGICAL SURVEYS

The Study Area includes 158 previously conducted surveys that were completed between 1978 and 2024. The most common project type consists of 33 projects pertaining to roads, followed by 27

projects related to water conveyance, and 23 projects related to electrical transmission. Other common project survey types include 23 for grazing and grazing improvement, 12 for material borrow areas, 11 for wind energy, 5 for oil and gas, and 6 for telecommunication. The remainder of previous surveys pertain to federal and local lands improvement and other federal projects, and archaeological studies.

Of the 158 previous surveys within 1 mile, there are 56 previously conducted surveys intersecting the survey corridor that were completed between 1979 and 2024. The majority of these surveys are linear and are associated with water pipeline systems, road construction and improvement, and telecommunication projects. The remaining projects pertain to electric transmission, oil and gas production, land or grazing projects, two material borrow pits, and a wind energy project. The previous surveys constitute a very small area (less than half of 1 percent) of the overall Project alignment.

### **2.3 PREVIOUSLY RECORDED ARCHAEOLOGICAL SITES**

The Class I Literature Review and subsequent records search updates identified 215 previously identified sites within the Study Area. Of these 215 sites, nine previously identified sites intersect the survey corridor. One consists of a precontact stone circle and cairn site, which was previously recommended eligible for the NRHP, and two previous sites were recommended not eligible for the NRHP; these consist of a precontact isolated find and a historic railroad segment. The remaining resources intersecting the survey corridor are unevaluated regarding their NRHP eligibility. These unevaluated, intersecting resources are one precontact cultural material scatter; one precontact lithic scatter site; and four historic-period site leads consisting of two mines, the Burnt Creek Skirmish site lead and a Custer Camp site lead.

## **3.0 CLASS III INTENSIVE CULTURAL RESOURCE INVENTORY**

### **3.1 OBJECTIVE**

The general objective of a Class III inventory is to identify cultural resources within the survey corridor and assess which resources may meet the definition of historic properties, typically those 45 years of age or older. Archaeological resource types considered for this investigation included both precontact and historic period archaeological 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 the Class III inventory was to identify any unknown resources that could be present in the survey corridor.

### **3.2 FIELD METHODS**

Throughout all stages of the investigation, Merjent, Ethnoscience, Metcalf, TRC, and QSI applied industry (i.e., cultural resource management) best practices and adhered to the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 Federal Register 44716) and SHPO Guidelines Manual for Cultural Resource Inventory Projects (SHSND, 2020).

The survey corridor was established based on files provided by North Plains. The survey corridor underwent pedestrian survey for surface features, foundations, densities of surface artifacts, and/or other surface indications of archaeological sites, regardless of field conditions (i.e., in areas of excessive slope, low standing water, or any minor shifts or additions to the Project that were less than 25 feet in width), while considering the safety of the field team. Survey transects were spaced no wider than 15 meters apart and were conducted in a sinuous manner. The pedestrian survey

was conducted without subsurface testing in areas where ground surface visibility was not hindered by vegetation. This methodology was used by the Principal Investigators to assess the potential for truncated cultural features, buried deposits, and/or relict landforms. When seasonal conditions hindered ground surface visibility, the conditions were recorded to determine scheduling for future investigations, as necessary. Subsurface testing was generally avoided in or near stone feature sites such as cairns, alignments, stone circles, and effigies, or in sensitive areas identified by the Traditional Cultural Surveyors as sites or features with special significance to Native American Tribes.

Portions of the survey corridor required subsurface testing to explore subsurface potential, substantiate surface observations or delineate the horizontal extent of the site boundary, or when vegetation obscured the ground surface in high probability areas. In these instances, shovel probes were excavated, per SHPO guidelines (SHSND, 2020), where ground surface visibility was not sufficient to meet the good faith standard for pedestrian surveys and to better delineate vertical and horizontal extents of cultural materials. If shovel probes were not excavated (e.g., disturbed, such as areas containing buried utilities and/or paved roads), it was documented and justification for non-excavation was noted.

Each shovel probe measured 30 to 40 centimeters (12 to 15 inches) in diameter and extended no less than 25 centimeters (10 inches) deep and at least 10 centimeters (4 inches) into sterile subsoil. Shovel probes did not exceed a maximum depth of 70 centimeters (28 inches). Soil deposits, which contained the potential for cultural material below 70 centimeters (28 inches), were evaluated by the Principal Investigator to determine if additional testing was needed. Shovel probes were excavated in either natural stratigraphy or arbitrary 10 centimeter levels. Soils from each stratum were screened separately through one-quarter-inch wire mesh onto a tarp. Data from all shovel probes were recorded on standardized forms. Soil profiles were recorded using the Munsell color system and standard texture classifications as well as additional notes and comments (e.g., “disturbed matrix,” “heavily compacted,” “inundated at 20 centimeters below surface”). Once completed, each shovel probe was immediately backfilled.

The location of survey corridor start-and-end points, all shovel probes, surface artifacts, and features were mapped using a Global Positioning System (GPS) equipped with Esri’s Collector application (Collector) at sub-meter accuracy. Digital photography was used to record surface conditions of all tracts, select excavation profiles, cultural features, and identified archaeological sites.

When a scatter of artifacts or a single artifact was found on the surface, pedestrian survey intervals decreased to 5-meter (16-foot) interval transects aligned parallel to the survey corridor to delineate the surface expression of the resource. All artifacts identified on the surface were mapped using Collector and on a paper site sketch map with a unique identifier (e.g., “FS 1”). No artifacts were collected.

Overview photographs were taken within each surveyed tract. Additional photographs were taken at the discretion of the Principal Investigator to document specific disturbances, archaeological sites, artifacts, and anything else that would contribute to describing surveyed areas in Project deliverables. Photographs were taken in Collector.

The recent nature of relevant archaeological investigations, safety concerns, and the high level of disturbance that resulted from the construction of any associated infrastructure influenced conventional archaeological survey strategies. In the boundary areas of these corridors, shovel probes were excavated to determine the edge of disturbance and beginning of intact soil deposits.

Once intact soils were encountered, archaeologists back tracked in increments until the limits of the disturbance were definitively established and documented by GPS.

### 3.3 SURVEY RESULTS

The Class III inventory of the Project's survey corridor was completed over 229 days-from June 7, 2022, to October 21, 2023-and over 234 days-from June 11, 2024, to September 23, 2025. A total of 615 tracts (14,602 acres) were surveyed in North Dakota during the 2022 and 2023 field seasons, and a total of 357 tracts (3,988 acres) were surveyed in North Dakota during the 2024 and 2025 field seasons. Of the total surveyed acreage, 7,519 acres were removed from the Project layout after survey. As of January 2026, 225 acres within the survey corridor are yet to be surveyed.

During the 2022 and 2023 field seasons, 253 new archaeological resources (sites, site leads, and isolated finds), and 338 Tribally identified sites were recorded. In addition, one previously recorded isolated find and one previously recorded archaeological site lead were revisited. Merjent recommends 99 newly recorded archaeological sites and isolated finds as not eligible for the NRHP, with no further work recommended. The remaining 153 newly recorded archaeological sites and site leads are unevaluated for the NRHP. Of the two revisited previously recorded resources, both are recommended as not eligible for the NRHP, and no further work is recommended. All 338 Tribally identified sites remain unevaluated, and avoidance is recommended.

During the 2024 and 2025 field seasons, a total of 136 new archaeological resources (sites, site leads, and isolated finds) and 175 Tribally identified sites were recorded. In addition, 18 previously recorded isolated finds, one previously recorded archaeological site lead, and 12 previously recorded archaeological sites were revisited. Merjent recommends 96 newly recorded archaeological sites, site leads, and isolated finds and 24 site updates as not eligible for the NRHP, with no further work recommended. Merjent recommends avoidance for 38 newly recorded archaeological sites, site leads, and isolated finds with 27 being unevaluated, five being potentially eligible for the NRHP, and six being recommended not eligible for the NRHP. The remaining 23 newly recorded archaeological sites and site leads are unevaluated for the NRHP and are recommended for avoidance. Of the 30 revisited previously recorded resources, one site lead remains unevaluated, and further work is recommended in the surveyed portions; 20 isolated finds and three sites are recommended as not eligible for the NRHP, and no further work is recommended; one isolated find is recommended as unevaluated and further work is recommended; two sites are recommended as unevaluated, and avoidance is recommended; two sites are recommended as potentially eligible for the NRHP, and avoidance is recommended; and one site is recommended not eligible for the NRHP, but avoidance is recommended due to the number of artifacts found during surveys. All 175 Tribally identified sites are unevaluated for the NRHP, and avoidance is recommended.

### 4.0 CONCLUSIONS

The Class III inventory of the survey corridor was completed over 229 days-from June 7, 2022, to October 21, 2023-and over 234 days-from June 11, 2024, to September 23, 2025. During the surveys, 398 new archaeological resources (sites, site leads, and isolated finds) and 513 Tribally identified sites were recorded, and 32 previously recorded archaeological resources (site lead, sites, and isolated finds) were revisited. A total of 18,590 acres were surveyed in North Dakota during the 2022 to 2025 field seasons.

When applying the NHPA criteria listed in National Register Bulletin No. 15, Merjent recommends that 716 of the 902 newly recorded resources are unevaluated regarding eligibility for listing on the

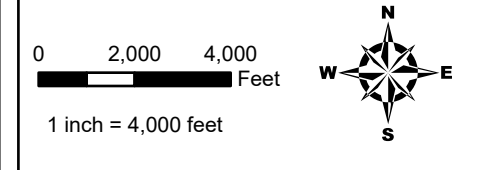
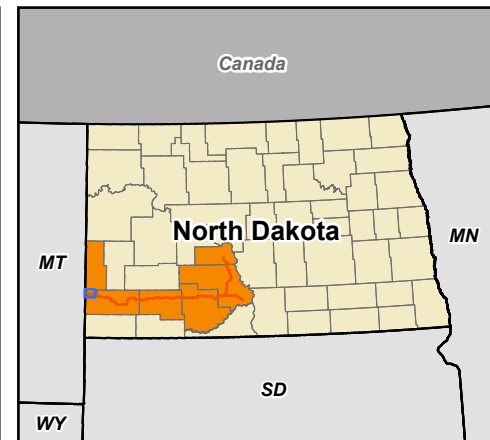
NRHP. The unevaluated sites, including all 513 Tribally identified sites, are recommended for avoidance. If avoidance is infeasible, further investigation or mitigation is recommended. The remaining 201 resources are recommended as not eligible, as the investigation of each site clearly demonstrated the lack of physical integrity or research potential to yield information for a better understanding of historic and prehistoric culture that is not already available through archival research. Of the 32 revisited previously recorded resources, one site lead remains unevaluated for the NRHP, but no further work or avoidance is recommended in the surveyed portions; one site lead and one isolated find remain unevaluated for the NRHP, and further work is recommended; 21 isolated finds and three sites are recommended as not eligible for the NRHP, and no further work is recommended; two sites are recommended as unevaluated for the NRHP, and avoidance is recommended; two sites are recommended as potentially eligible for the NRHP, and avoidance is recommended; and one site is recommended not eligible for the NRHP, but avoidance is still recommended due to the number of artifacts found during surveys. North Plains is avoiding impacts to resources recommended for avoidance through adjustments in the Project design and use of existing roads wherever possible. No historic properties will be adversely affected by the proposed Project, provided the recommendations outlined in the Class III inventory reports are followed, the Programmatic Agreement is adhered to, and the work proceeds as planned.





## 5.0 REFERENCES

State Historical Society of North Dakota (SHSND). 2020. *North Dakota SHPO Guidelines for Cultural Resource Inventory Projects* (Revised Edition).

<https://www.history.nd.gov/hp/PDFinfo/North-Dakota-SHPO-Guidelines-Manual-for-Cultural-Resource-Inventory-Projects.pdf>. Accessed September 24, 2025.

**Appendix A**  
**Survey Corridor Map**

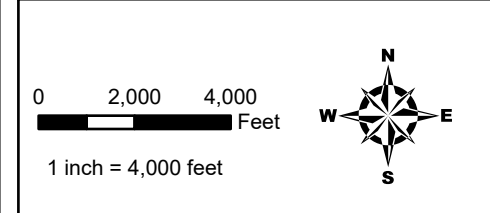
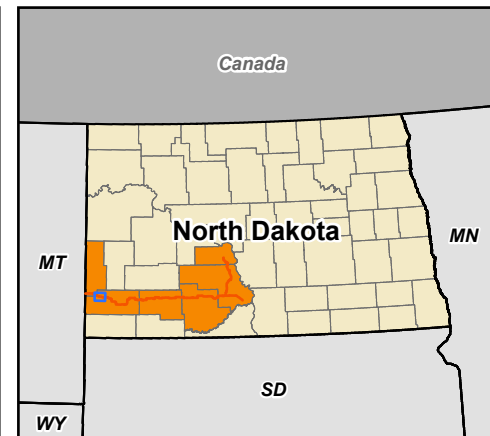






-  Project Route
-  Project Corridor
-  Survey Corridor
-  County Boundary

**Figure 1**  
**Cultural Survey Corridor**  
 North Plains Connector  
 Golden Valley, Slope, Hettinger,  
 Grant, Morton, Oliver Counties,  
 North Dakota

Page 1 of 21

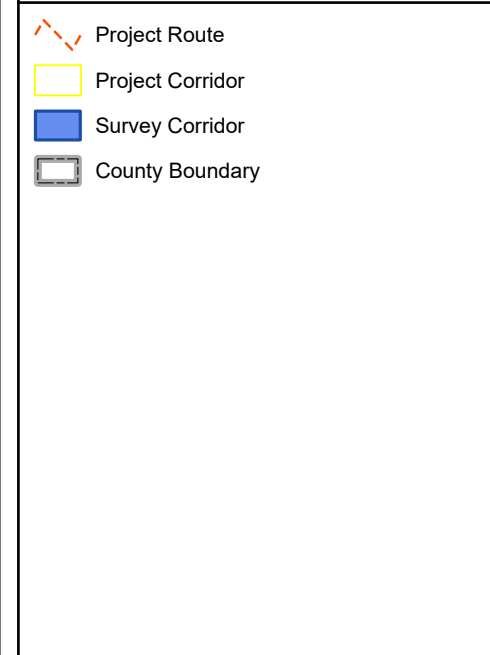
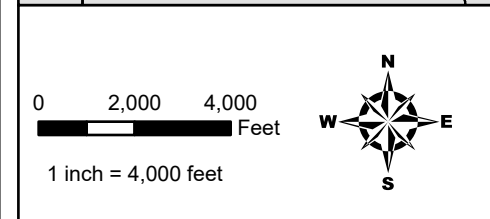
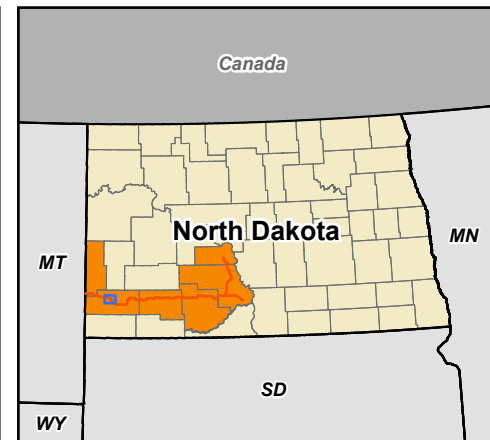
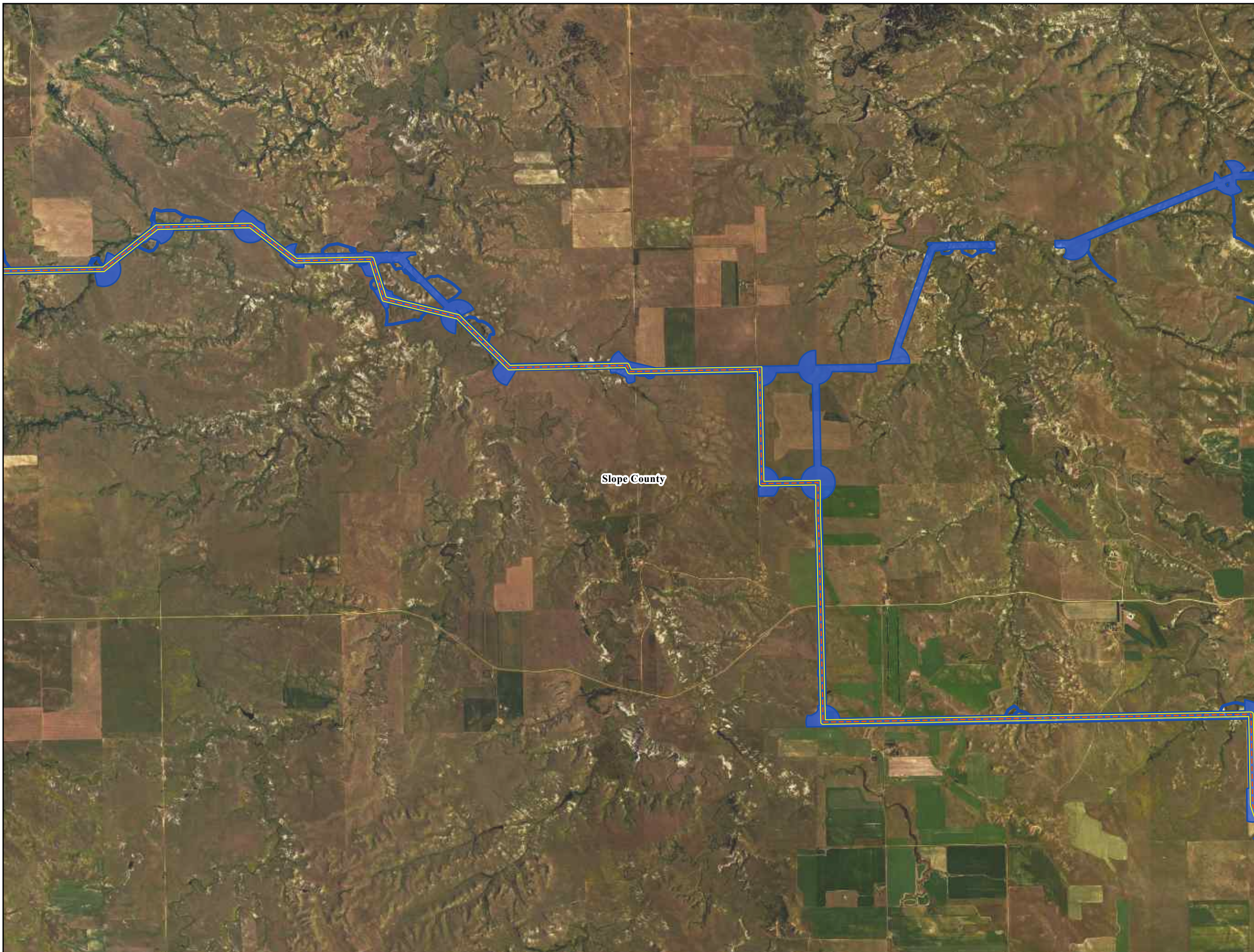
Date: (12/12/2025) Source: Z:\Client\LE\_H\GRI\North\_Plains\Field\_Data\Cultural\003\_Data\_Processing\Survey\_Corridor\00\_ArcPro\GIR\_Cultural\_SurveyCorridor.aprx



-  Project Route
-  Project Corridor
-  Survey Corridor
-  County Boundary

**Figure 1**  
**Cultural Survey Corridor**  
 North Plains Connector  
 Golden Valley, Slope, Hettinger,  
 Grant, Morton, Oliver Counties,  
 North Dakota

Date: (12/12/2025) Source: Z:\Client\LE\_H\GRI\North\_Plains\Feld\_Data\Processing\Survey\_Corridor00\_ArcPro\GIR\_C\_NPC\_Cultural\_SurveyCorridor.aprx

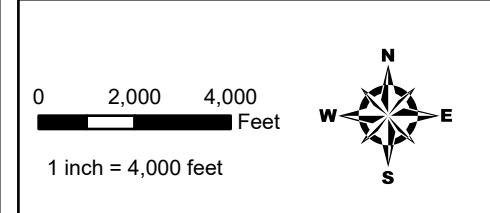
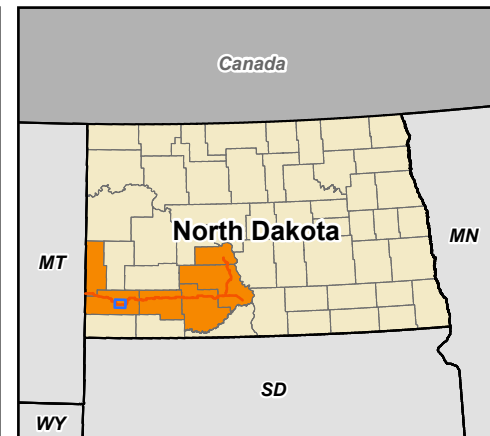
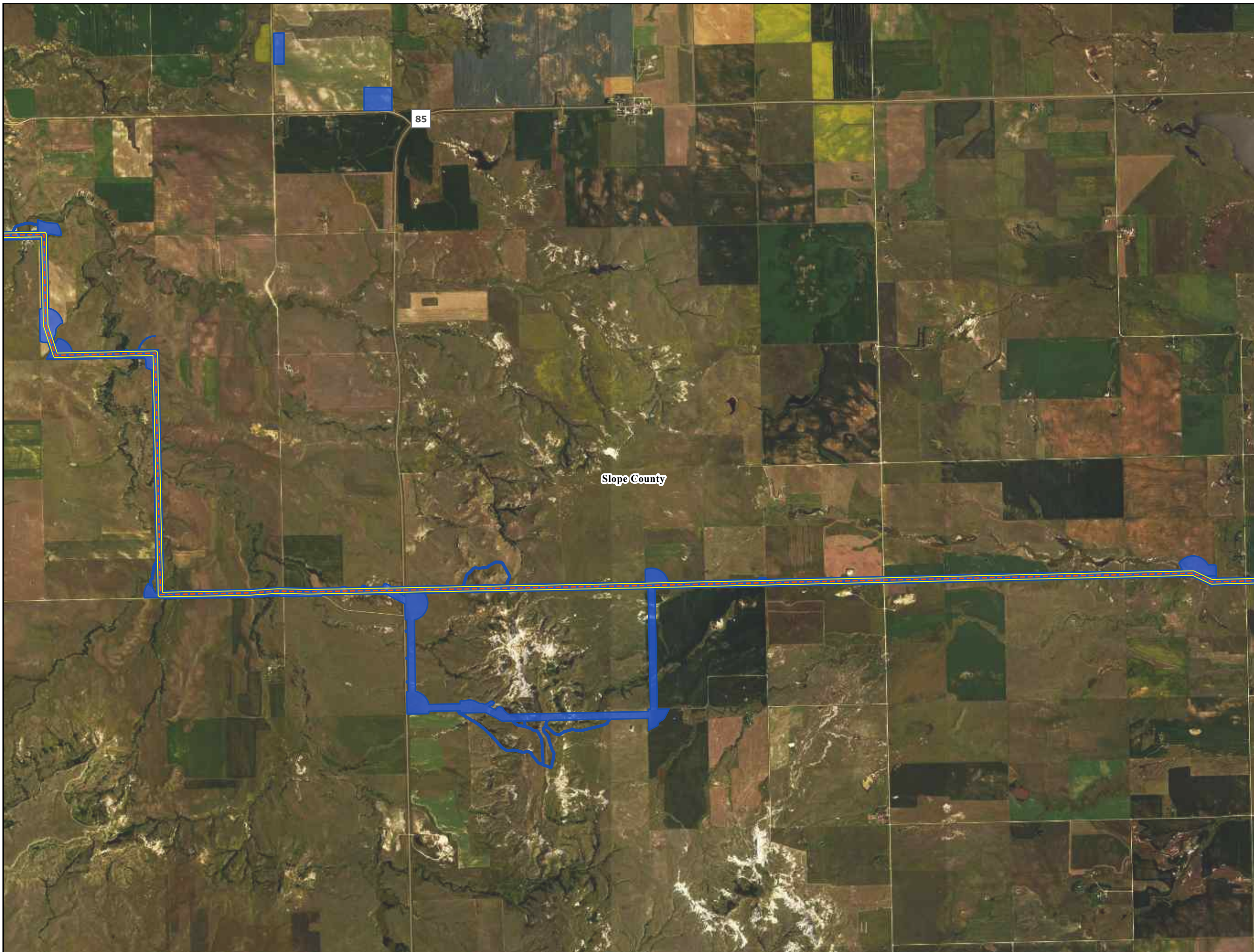






**Figure 1**  
**Cultural Survey Corridor**  
 North Plains Connector  
 Golden Valley, Slope, Hettinger,  
 Grant, Morton, Oliver Counties,  
 North Dakota

Page 3 of 21

For Environmental Review Purposes Only

Date: (12/12/2025) Source: Z:\Client\LE\_H\GRI\North\_Plains\Feld\_Data\Cultural\003\_Data\_Processing\Survey\_Corridor\00\_ArcPro\GIR\_C\_NPC\_Cultural\_SurveyCorridor.aprx

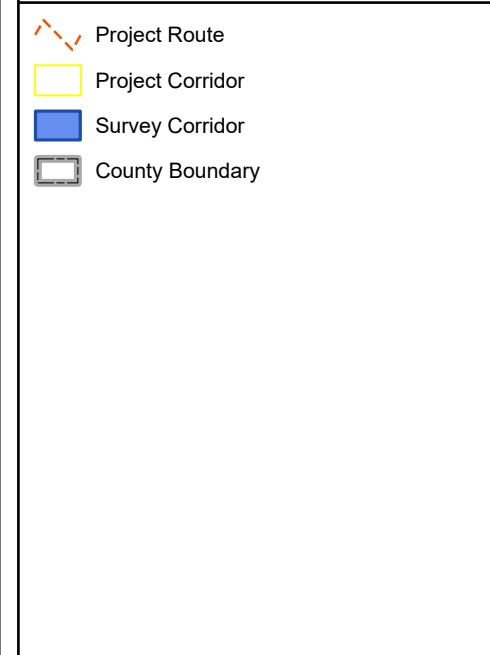
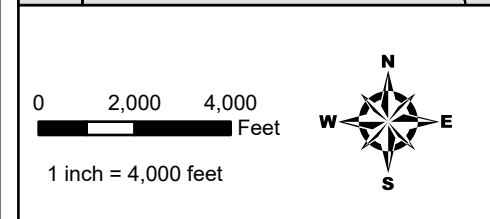
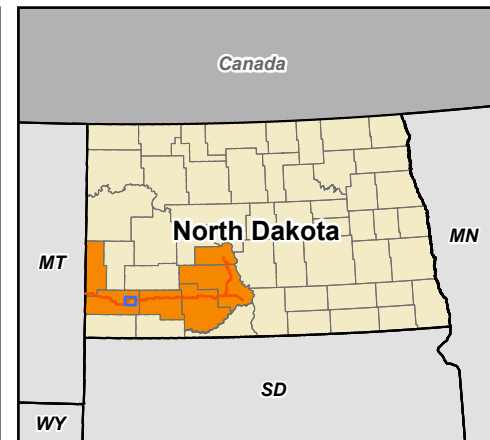
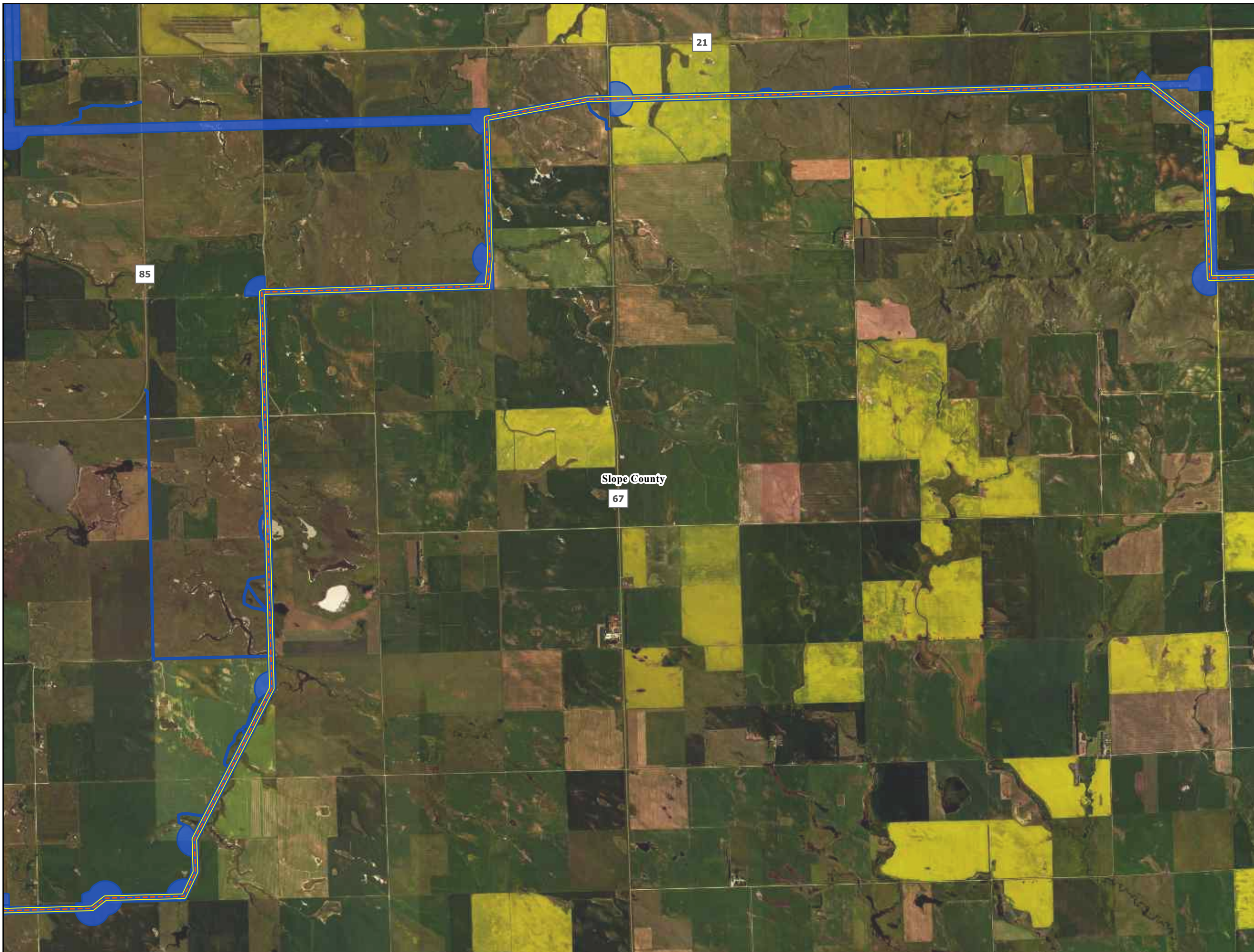


-  Project Route
-  Project Corridor
-  Survey Corridor
-  County Boundary

**Figure 1**  
**Cultural Survey Corridor**  
 North Plains Connector  
 Golden Valley, Slope, Hettinger,  
 Grant, Morton, Oliver Counties,  
 North Dakota

Page 4 of 21

Date: (12/12/2025) Source: Z:\Client\LE\_H\GRI\North\_Plains\Field\_Data\Cultural\003\_Data\_Processing\Survey\_Corridor\00\_ArcPro\GIR\_C\_NPC\_Cultural\_SurveyCorridor.aprx

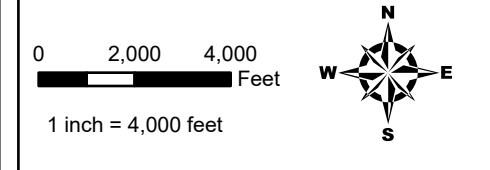
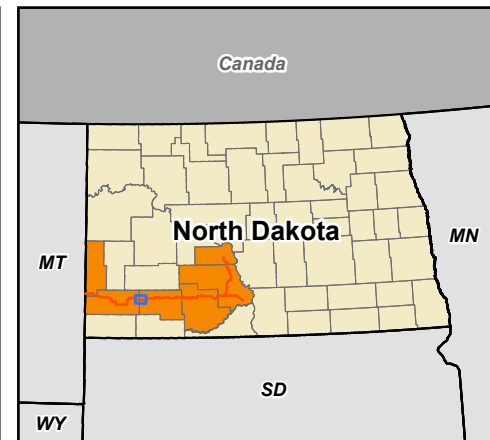






**Figure 1**  
**Cultural Survey Corridor**  
 North Plains Connector  
 Golden Valley, Slope, Hettinger,  
 Grant, Morton, Oliver Counties,  
 North Dakota

Page 5 of 21

For Environmental Review Purposes Only

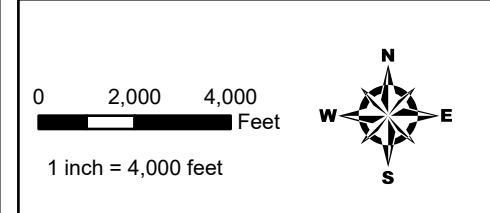
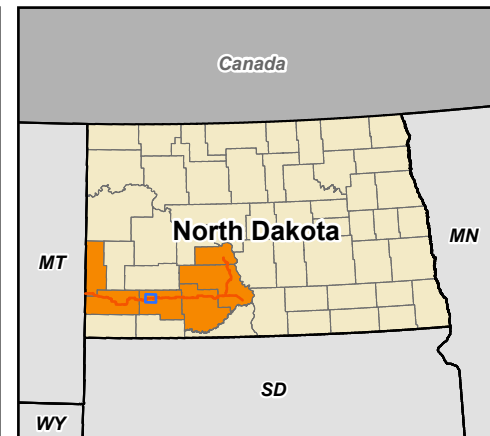
Date: (12/12/2025) Source: Z:\Client\LE\_H\GRI\North\_Plains\Field\_Data\Cultural\003\_Data\_Processing\Survey\_Corridor\00\_ArcPro\GIR\_Cultural\_SurveyCorridor.aprx



-  Project Route
-  Project Corridor
-  Survey Corridor
-  County Boundary

**Figure 1**  
**Cultural Survey Corridor**  
 North Plains Connector  
 Golden Valley, Slope, Hettinger,  
 Grant, Morton, Oliver Counties,  
 North Dakota

Date: (12/12/2025) Source: Z:\Client\LE\_H\GRI\North\_Plains\Field\_Data\Cultural\003\_Data\_Processing\Survey\_Corridor\00\_ArcPro\GIR\_Cultural\_SurveyCorridor.aprx

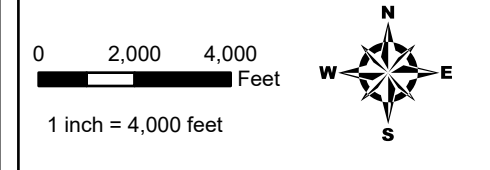
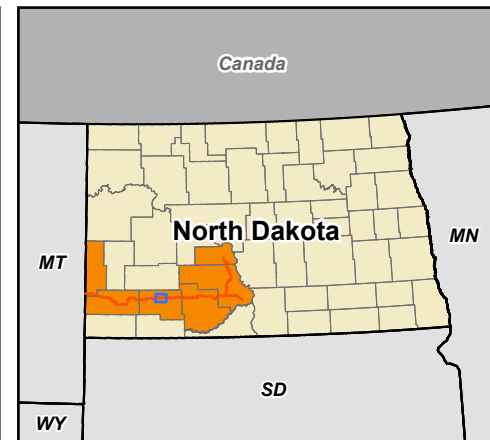
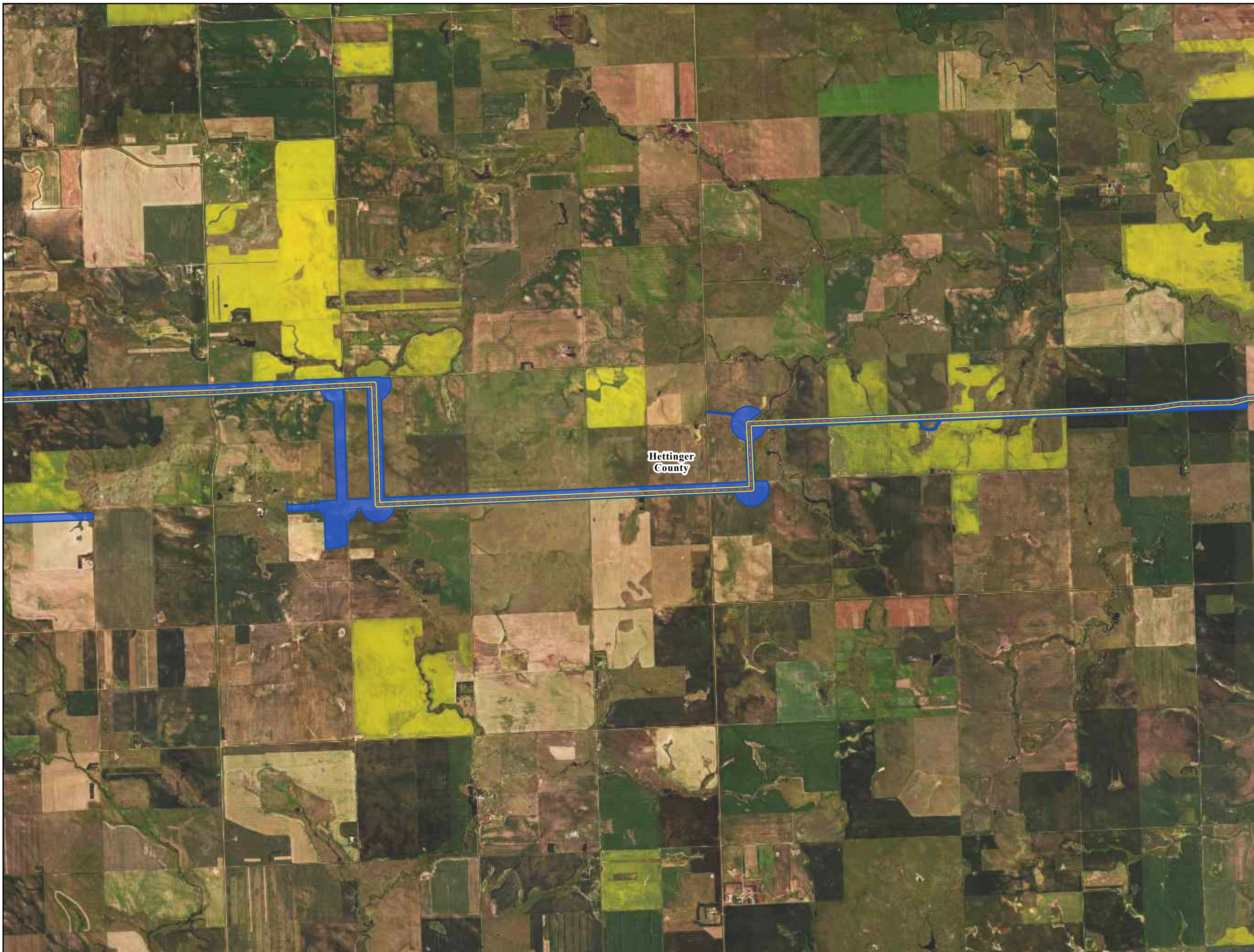






- Project Route
- Project Corridor
- Survey Corridor
- County Boundary

**Figure 1**  
**Cultural Survey Corridor**  
 North Plains Connector  
 Golden Valley, Slope, Hettinger,  
 Grant, Morton, Oliver Counties,  
 North Dakota

Page 7 of 21

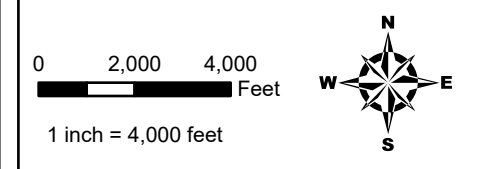
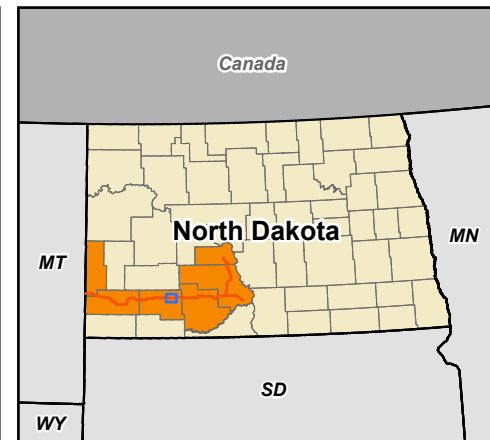
Date: (12/12/2025) Source: Z:\Client\LE\_H\GRI\North\_Plains\Field\_Data\Cultural\003\_Data\_Processing\Survey\_Corridor\00\_ArcPro\GIR\_C\_NPC\_Cultural\_SurveyCorridor.aprx







-  Project Route
-  Project Corridor
-  Survey Corridor
-  County Boundary

**Figure 1**  
**Cultural Survey Corridor**  
 North Plains Connector  
 Golden Valley, Slope, Hettinger,  
 Grant, Morton, Oliver Counties,  
 North Dakota

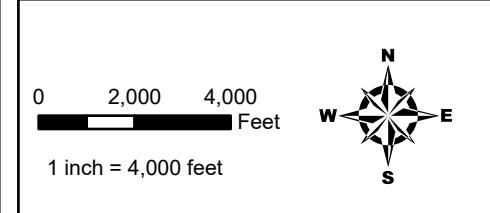
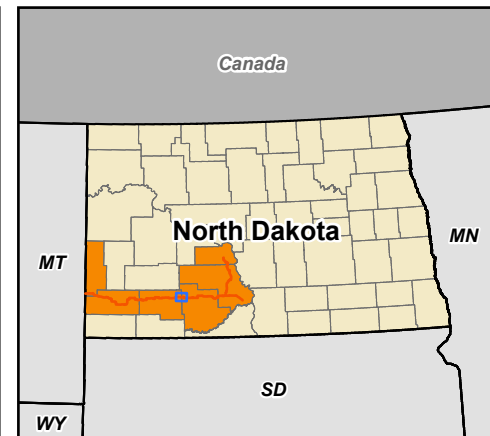
Date: (12/12/2025) Source: Z:\Client\LE\_H\GRI\North\_Plains\Field\_Data\Cultural\003\_Data\_Processing\Survey\_Corridor\00\_ArcPro\GIR\_Cultural\_NPC\_Cultural\_SurveyCorridor.aprx







-  Project Route
-  Project Corridor
-  Survey Corridor
-  County Boundary

**Figure 1**  
**Cultural Survey Corridor**  
 North Plains Connector  
 Golden Valley, Slope, Hettinger,  
 Grant, Morton, Oliver Counties,  
 North Dakota

Date: (12/12/2025) Source: Z:\Client\LE\_H\GRI\North\_Plains\Field\_Data\Processing\Survey\_Corridor00\_ArcPro\GIR\_Cultural\_NPC\_Cultural\_SurveyCorridor.aprx

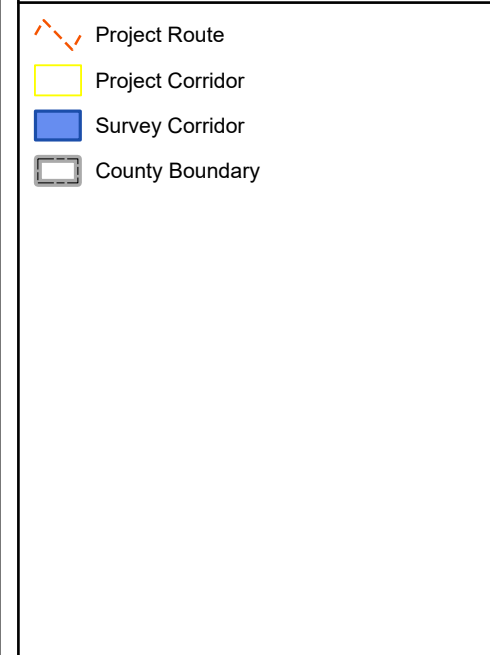
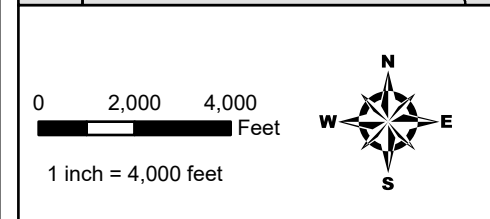
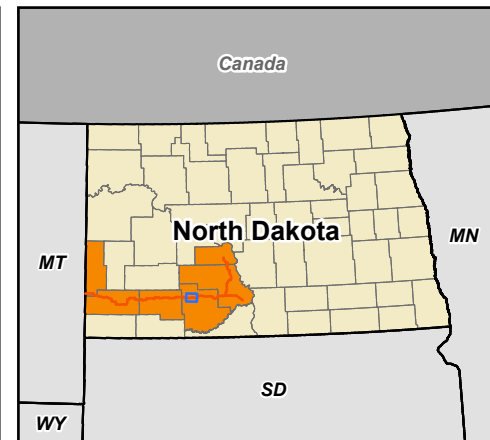


-  Project Route
-  Project Corridor
-  Survey Corridor
-  County Boundary

**Figure 1**  
**Cultural Survey Corridor**  
 North Plains Connector  
 Golden Valley, Slope, Hettinger,  
 Grant, Morton, Oliver Counties,  
 North Dakota

Page 10 of 21

Date: (12/12/2025) Source: Z:\Client\LE\_H\GR\North\_Plains\FIELD\_Data\Processing\Survey\_Corridor00\_ArcPro\GIR\_Cultural\_SurveyCorridor.aprx

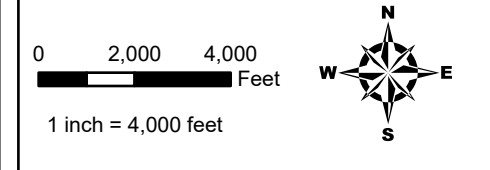
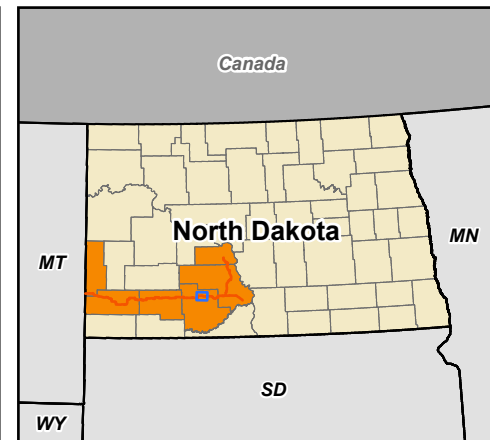
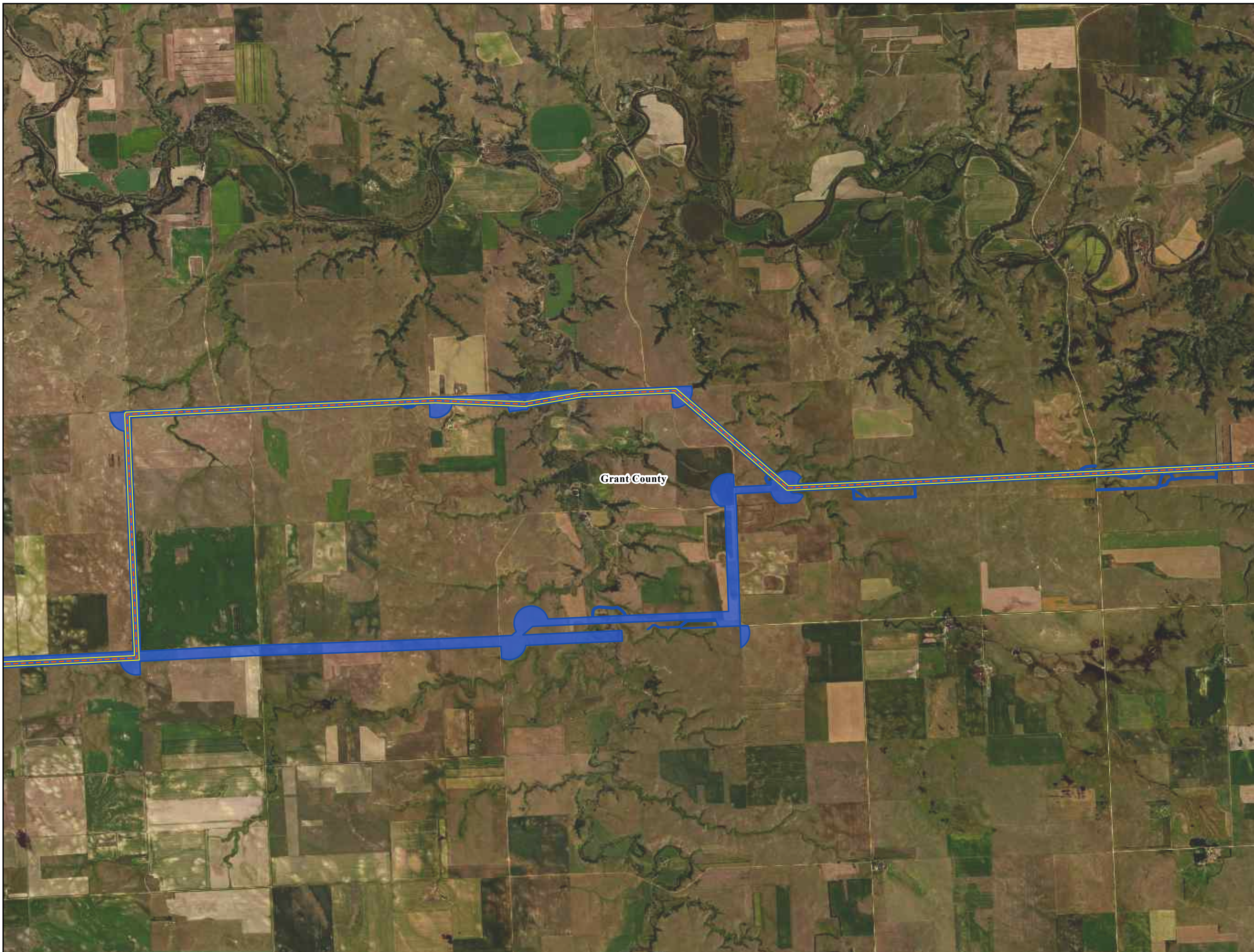






**Figure 1**  
**Cultural Survey Corridor**  
 North Plains Connector  
 Golden Valley, Slope, Hettinger,  
 Grant, Morton, Oliver Counties,  
 North Dakota

Page 11 of 21

For Environmental Review Purposes Only

Date: (12/12/2025) Source: Z:\Client\LE\_H\GRD\North\_Plains\Field\_Data\Cultural\003\_Data\_Processing\Survey\_Corridor\00\_ArcPro\GIR\_Cultural\_SurveyCorridor.aprx

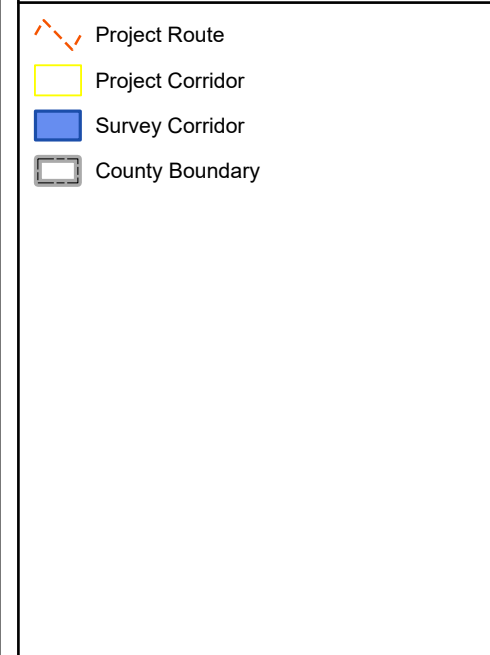
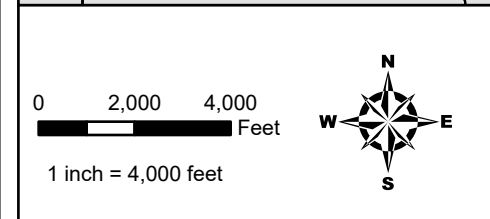
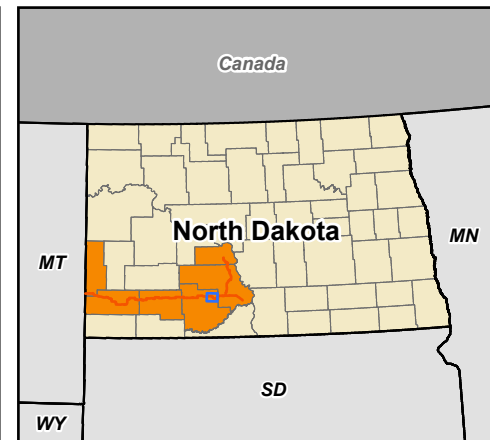
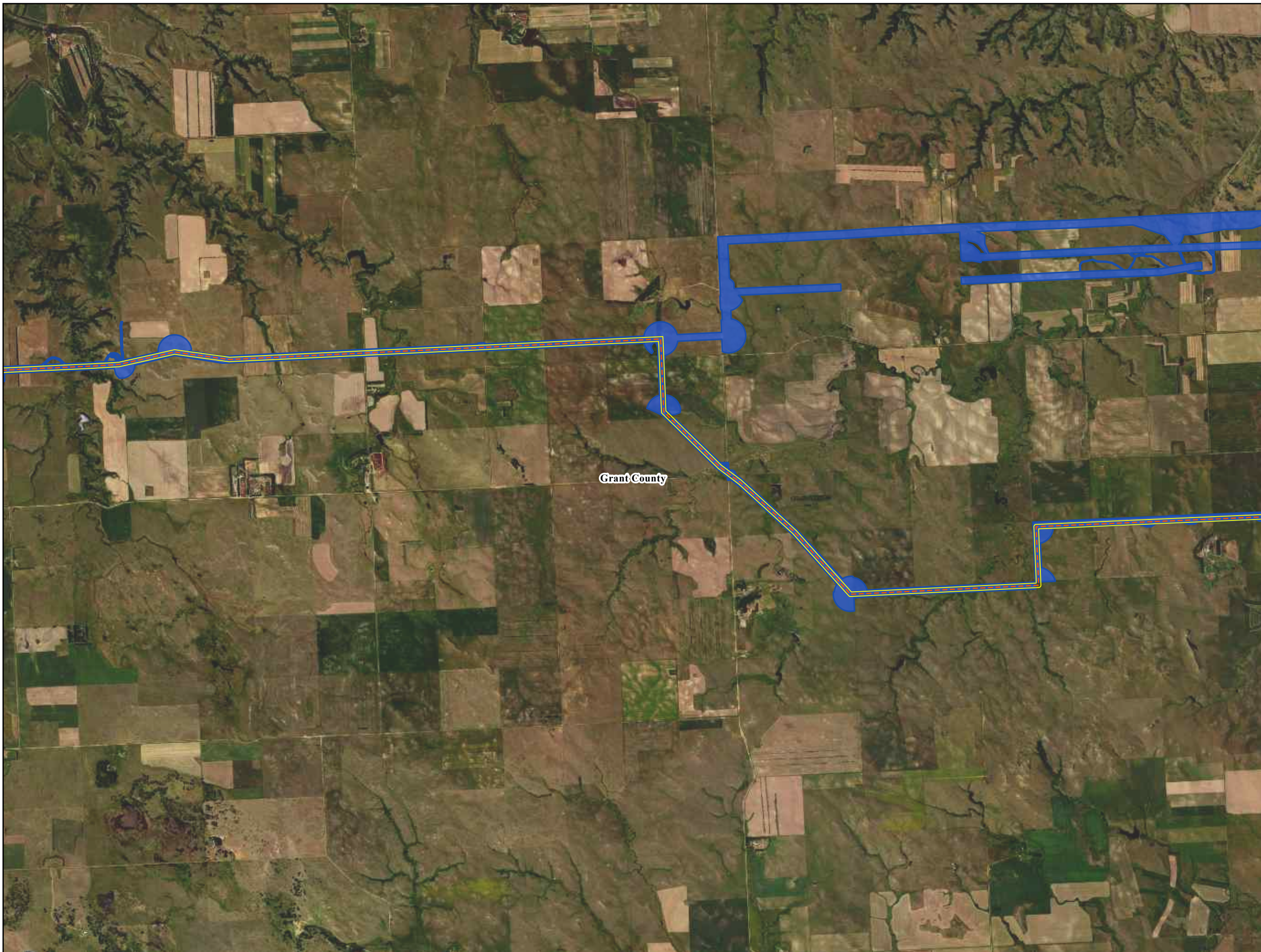


-  Project Route
-  Project Corridor
-  Survey Corridor
-  County Boundary

**Figure 1**  
**Cultural Survey Corridor**  
 North Plains Connector  
 Golden Valley, Slope, Hettinger,  
 Grant, Morton, Oliver Counties,  
 North Dakota

Page 12 of 21

Date: (12/12/2025) Source: Z:\Client\LE\_H\GRD\North\_Plains\Field\_Data\Cultural\003\_Data\_Processing\Survey\_Corridor\00\_ArcPro\GIR\_C\_NPC\_Cultural\_SurveyCorridor.aprx

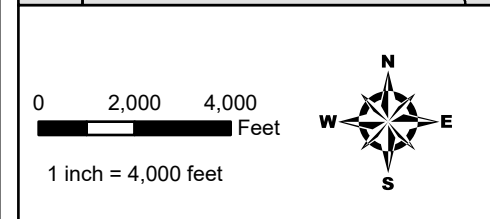
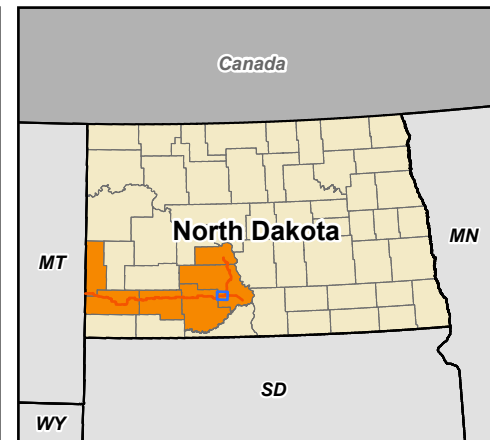
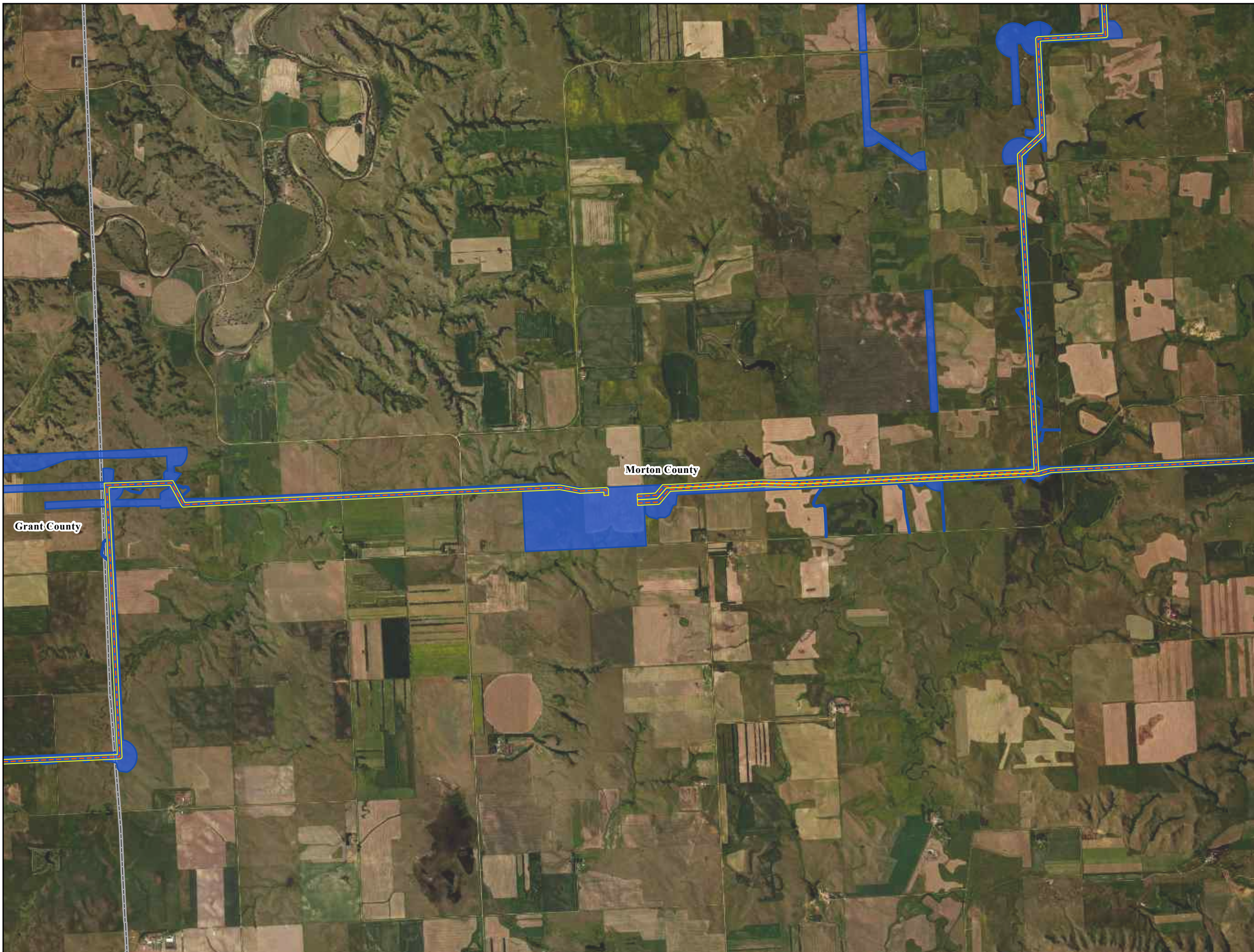






**Figure 1**  
**Cultural Survey Corridor**  
 North Plains Connector  
 Golden Valley, Slope, Hettinger,  
 Grant, Morton, Oliver Counties,  
 North Dakota

Page 13 of 21

For Environmental Review Purposes Only

Date: (12/12/2025) Source: Z:\Client\LE\_H\GRI\North\_Plains\Feld\_Data\Processing\Survey\_Corridor00\_ArcPro\GIR\_Cultural\_NPC\_Cultural\_SurveyCorridor.aprx

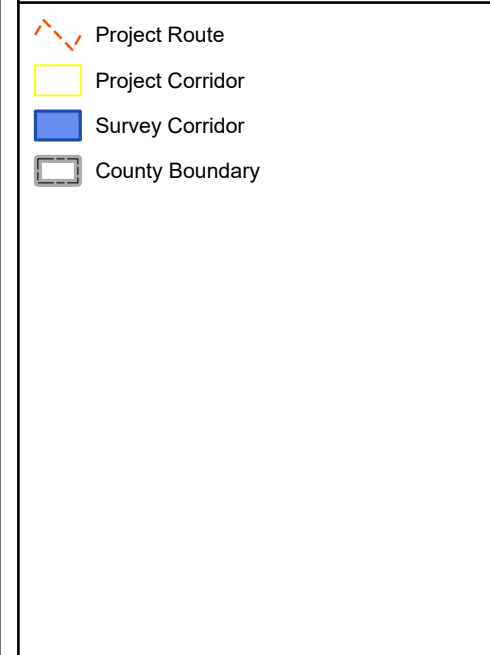
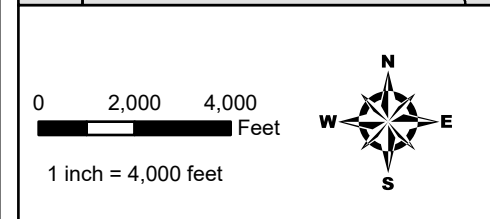
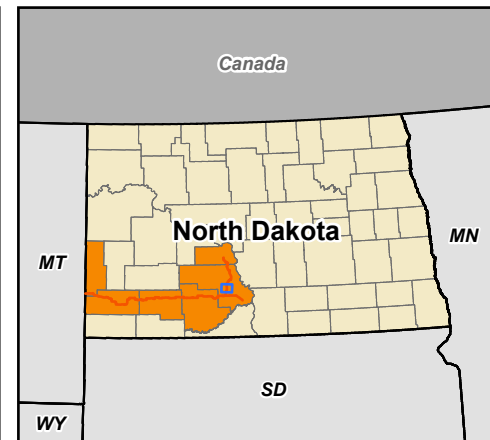


-  Project Route
-  Project Corridor
-  Survey Corridor
-  County Boundary

**Figure 1**  
**Cultural Survey Corridor**  
 North Plains Connector  
 Golden Valley, Slope, Hettinger,  
 Grant, Morton, Oliver Counties,  
 North Dakota

Page 14 of 21

Date: (12/12/2025) Source: Z:\Client\LE\_H\GRI\North\_Plains\Field\_Data\Cultural\003\_Data\_Processing\Survey\_Corridor\00\_ArcPro\GIR\_C\_NPC\_Cultural\_SurveyCorridor.aprx

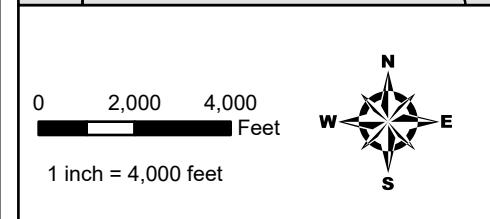
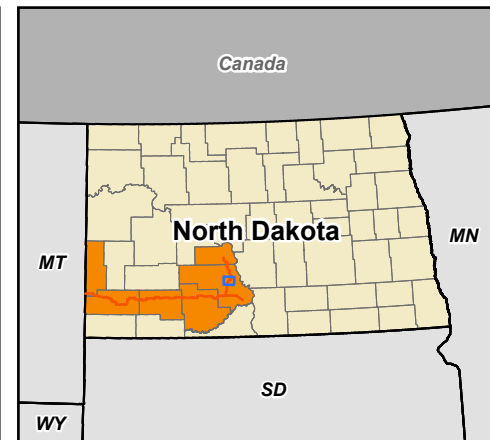
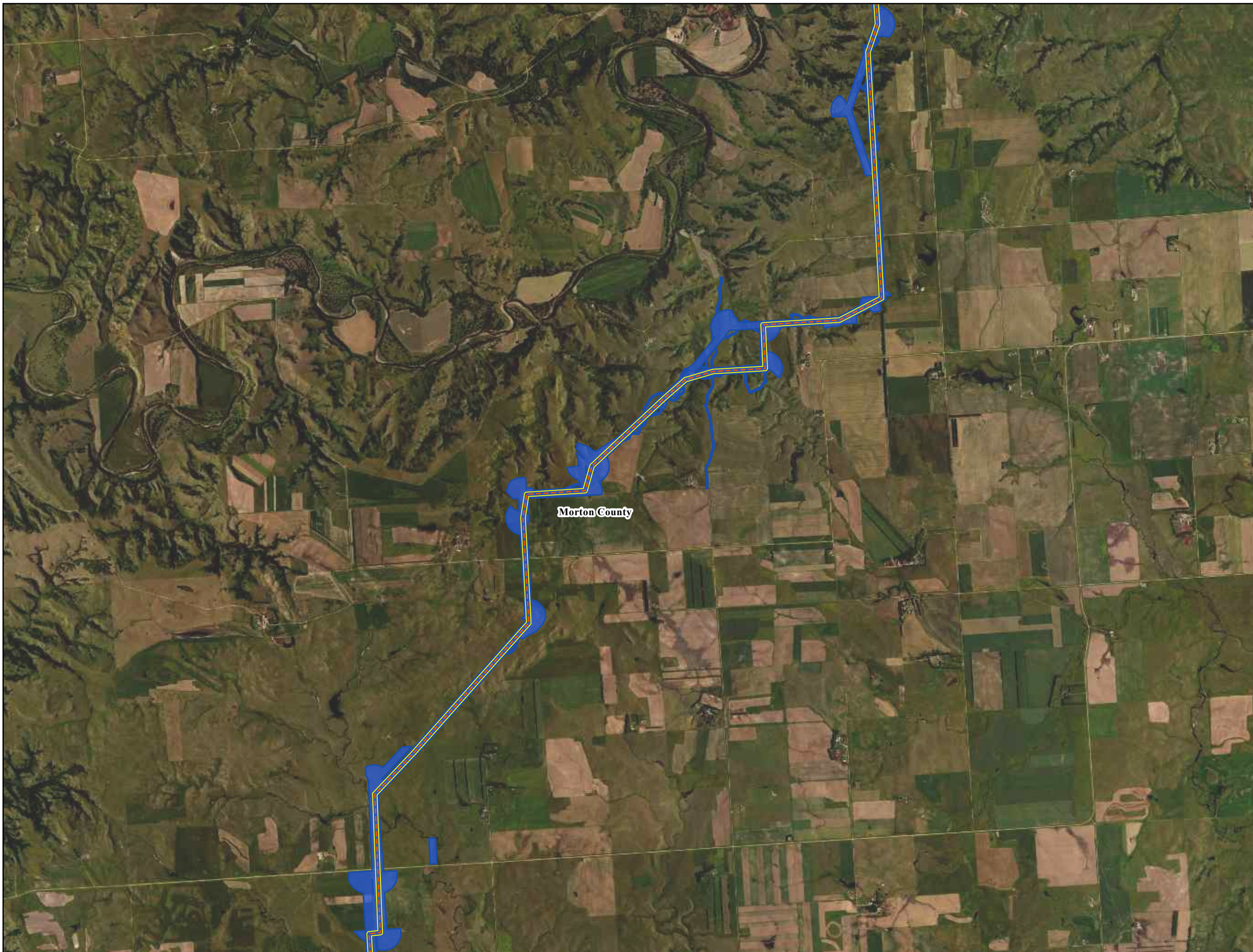






**Figure 1**  
**Cultural Survey Corridor**  
 North Plains Connector  
 Golden Valley, Slope, Hettinger,  
 Grant, Morton, Oliver Counties,  
 North Dakota

Page 15 of 21

For Environmental Review Purposes Only

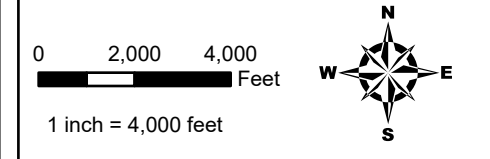
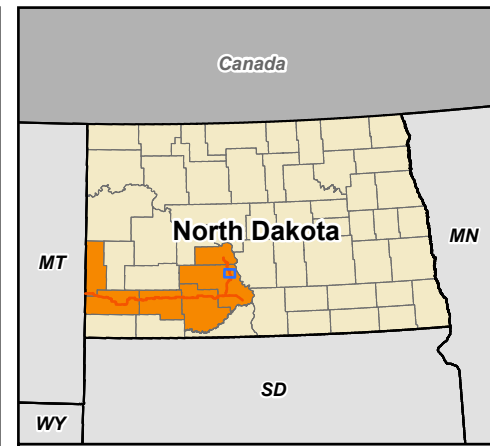
Date: (12/12/2025) Source: Z:\Client\LE\_H\GRI\North\_Plains\Feld\_Data\Processing\Survey\_Corridor00\_ArcPro\GIR\_Cultural\_NPC\_Cultural\_SurveyCorridor.aprx







-  Project Route
-  Project Corridor
-  Survey Corridor
-  County Boundary

**Figure 1**  
**Cultural Survey Corridor**  
 North Plains Connector  
 Golden Valley, Slope, Hettinger,  
 Grant, Morton, Oliver Counties,  
 North Dakota

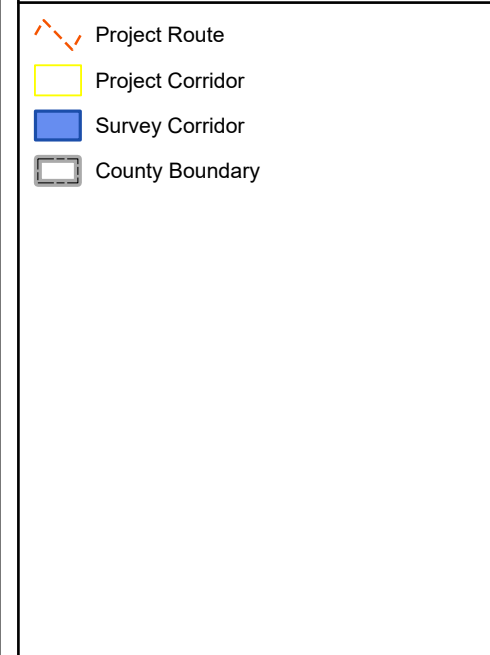
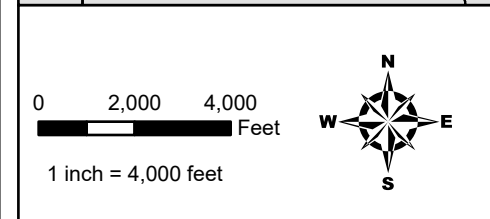
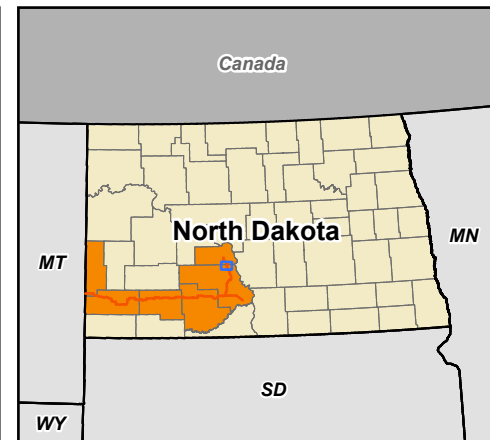
Date: (12/12/2025) Source: Z:\Client\LE\_H\GRI\North\_Plains\Field\_Data\Cultural\003\_Data\_Processing\Survey\_Corridor\00\_ArcPro\GIR\_Cultural\_SurveyCorridor.aprx



-  Project Route
-  Project Corridor
-  Survey Corridor
-  County Boundary

**Figure 1**  
**Cultural Survey Corridor**  
 North Plains Connector  
 Golden Valley, Slope, Hettinger,  
 Grant, Morton, Oliver Counties,  
 North Dakota

Date: (12/12/2025) Source: Z:\Client\LE\_H\GRI\North\_Plains\Field\_Data\Cultural\003\_Data\_Processing\Survey\_Corridor\00\_ArcPro\GIR\_Cultural\_SurveyCorridor.aprx

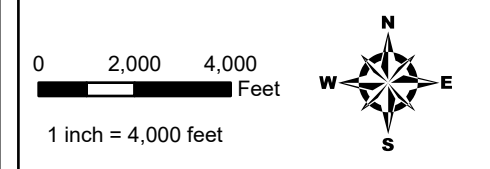
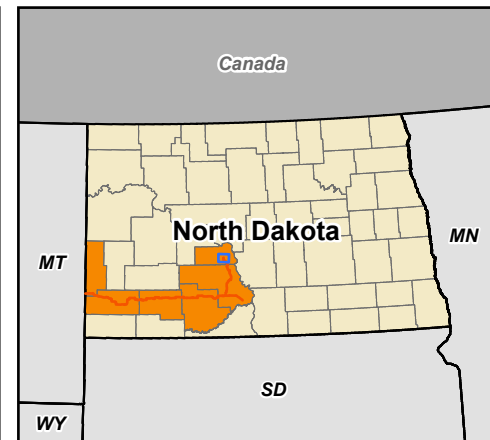






**Figure 1**  
**Cultural Survey Corridor**  
**North Plains Connector**  
**Golden Valley, Slope, Hettinger,**  
**Grant, Morton, Oliver Counties,**  
**North Dakota**

Page 18 of 21

For Environmental Review Purposes Only

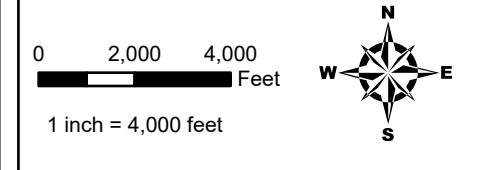
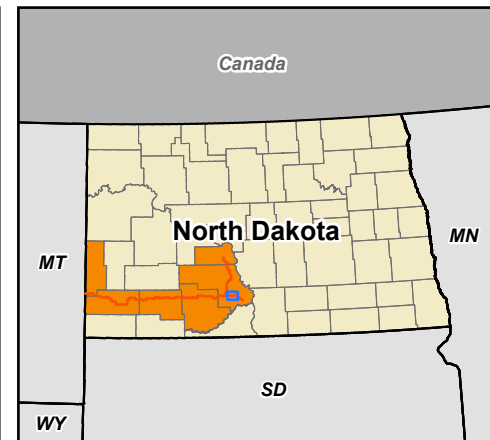
Date: (12/12/2025) Source: Z:\Client\LE\_H\GRI\North\_Plains\Feld\_Data\Processing\Survey\_Corridor00\_ArcPro\GIR\_Cultural\_SurveyCorridor.aprx







-  Project Route
-  Project Corridor
-  Survey Corridor
-  County Boundary

**Figure 1**  
**Cultural Survey Corridor**  
 North Plains Connector  
 Golden Valley, Slope, Hettinger,  
 Grant, Morton, Oliver Counties,  
 North Dakota

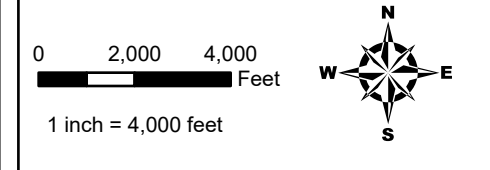
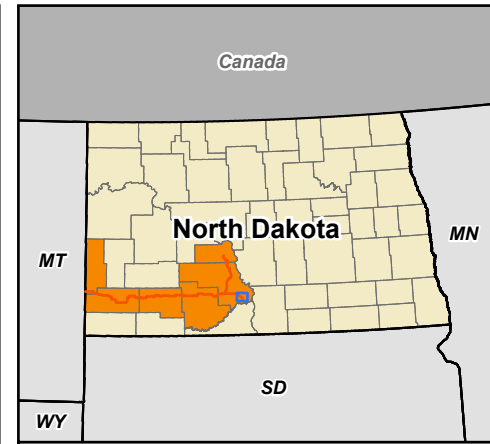
Date: (12/12/2025) Source: Z:\Client\LE\_H\GRI\North\_Plains\Field\_Data\Cultural\003\_Data\_Processing\Survey\_Corridor\00\_ArcPro\GIR\_Cultural\_NPC\_Cultural\_SurveyCorridor.aprx







-  Project Route
-  Project Corridor
-  Survey Corridor
-  County Boundary

**Figure 1**  
**Cultural Survey Corridor**  
 North Plains Connector  
 Golden Valley, Slope, Hettinger,  
 Grant, Morton, Oliver Counties,  
 North Dakota

Date: (12/12/2025) Source: Z:\Client\LE\_H\GRI\North\_Plains\Field\_Data\Cultural\003\_Data\_Processing\Survey\_Corridor\00\_ArcPro\GIR\_Cultural\_NPC\_Cultural\_SurveyCorridor.aprx



-  Project Route
-  Project Corridor
-  Survey Corridor
-  County Boundary

**Figure 1**  
**Cultural Survey Corridor**  
 North Plains Connector  
 Golden Valley, Slope, Hettinger,  
 Grant, Morton, Oliver Counties,  
 North Dakota

Date: (12/12/2025) Source: Z:\Client\LE\_H\GRI\North\_Plains\Field\_Data\Cultural\003\_Data\_Processing\Survey\_Corridor\00\_ArcPro\GIR\_Cultural\_SurveyCorridor.aprx

**I – 2**

**Aquatic Resources Inventory Report**



# **NORTH PLAINS CONNECTOR**

**A Grid United Project**

## **2022 – 2025 Aquatic Resources Inventory North Dakota**

**Prepared by:**



**January 2026**

**2022 – 2025 Aquatic Resources Inventory Report  
North Dakota**

**North Plains Connector Project**

**TABLE OF CONTENTS**

1.0	INTRODUCTION.....	1
2.0	SURVEY AREA.....	1
3.0	METHODS .....	5
3.1	Desktop Review .....	5
3.2	Aquatic Resource Field Surveys .....	6
3.2.1	Wetlands .....	6
3.2.2	Waterbodies .....	7
3.2.3	Seeps and Springs.....	8
3.2.4	Non-Waters Points.....	8
4.0	RESULTS.....	8
4.1	Wetlands.....	8
4.2	Waterbodies .....	9
4.3	Seeps and Springs.....	10
4.4	Non-Waters Points .....	10
5.0	DISCUSSION.....	10
6.0	REFERENCES.....	11

**LIST OF TABLES**

Table 1.	Wetlands delineated during aquatic resource inventory surveys along the North Plains Connector Project in North Dakota from 2022 – 2025.....	9
Table 2.	Waterbodies identified during aquatic resource inventory surveys along the North Plains Connector Project in North Dakota from 2022 – 2025.....	9
Table 3.	Seeps and springs identified during ARI surveys along the North Plains Connector Project. ....	10

**LIST OF FIGURES**

Figure 1. Overview of the proposed North Plains Connector Project location in North Dakota .....3

Figure 2. Wetland and waterbody survey area along the North Plains Connector Project in North Dakota. ....4

**LIST OF APPENDICES**

Appendix A. Aquatic Resource Inventory Survey Results in North Dakota from 2022 – 2025

Appendix B. Representative Photographs of Surveyed Wetlands and Waterbodies

## 1.0 INTRODUCTION

North Plains Connector LLC (North Plains) is developing the North Plains Connector Project, an approximately 422 mile, high-voltage direct current electric transmission line system and associated infrastructure designed to connect the east and west energy grids in the United States. The North Plains Connector Project is designed for bi-directional transport of electricity and is located in southeastern Montana and southwestern North Dakota (Figure 1). For the purposes of this report, "Project" refers solely to the portion located in North Dakota.

North Plains contracted Western EcoSystems Technology, Inc. (WEST), to conduct an aquatic resource inventory (ARI) for the Project. During the ARI, biologists identified and delineated wetlands, waterbodies, seeps, and springs (cumulatively referred to as aquatic resources). Biologists also documented locations where publicly available datasets indicated aquatic resources may be present, but where no such resources were present during field surveys. The ARI surveys described in this report were conducted during the summer and fall of 2022, 2023, 2024, and 2025.

This report summarizes the methods and results of the desktop review and field surveys. Aquatic features recorded during ARI surveys will be used for construction planning, to minimize impacts during Project construction, and to support state and federal permitting for the Project, including compliance with the Clean Water Act.

This report was written specifically for the North Dakota Public Service Commission and only includes survey results pertinent to the Project route discussed in North Plain's *Consolidated Application For A Certificate Of Corridor Compatibility And Transmission Facility Route Permit*. Section 2.0 includes a description of the survey area along this Project route. The original survey reports provided to relevant state and/or federal resource agencies include additional technical survey details not included in this summary.

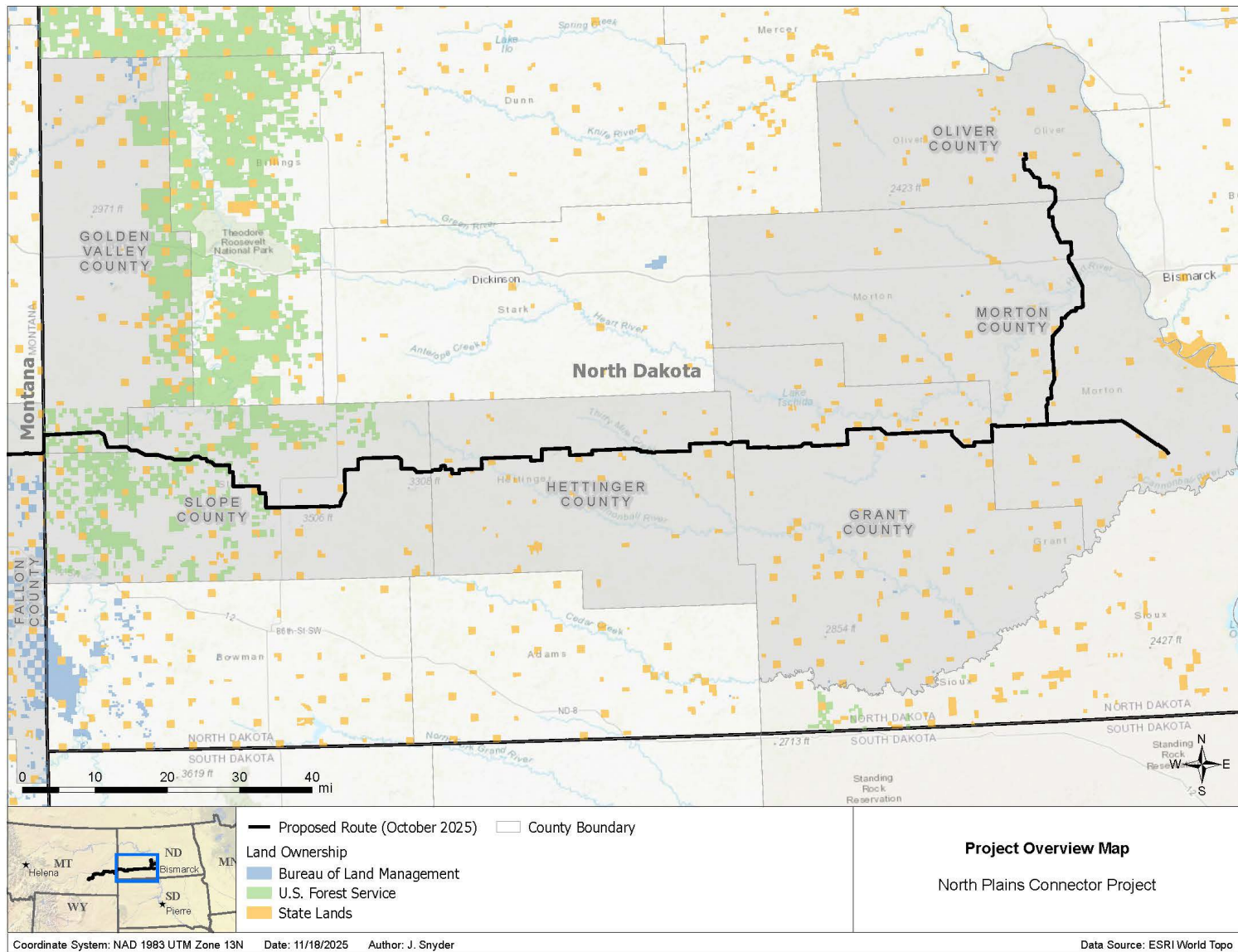
## 2.0 SURVEY AREA

The proposed Project route crosses approximately 242 miles in Golden Valley, Slope, Hettinger, Grant, Morton, and Oliver counties in North Dakota (Figure 1). The Project route falls within the Northwestern Great Plains Level III Ecoregion, which encompasses portions of eastern Montana, western North Dakota and South Dakota, northeastern Wyoming, and northern Nebraska (U.S. Environmental Protection Agency [USEPA], 2013). This ecoregion is semiarid and characterized by rolling plains, sporadic buttes, and badlands. Much of the region was originally dominated by native grasslands, which are now fragmented but persist in rangeland patches. Agricultural uses, including rangeland and crop production, occur throughout, but can be limited due to inconsistent precipitation and access to irrigation (USEPA, 2013).

ARI surveys were conducted along the proposed Project route within the Project's typical survey area. The typical Project-wide survey area included the 300-foot-wide transmission line survey

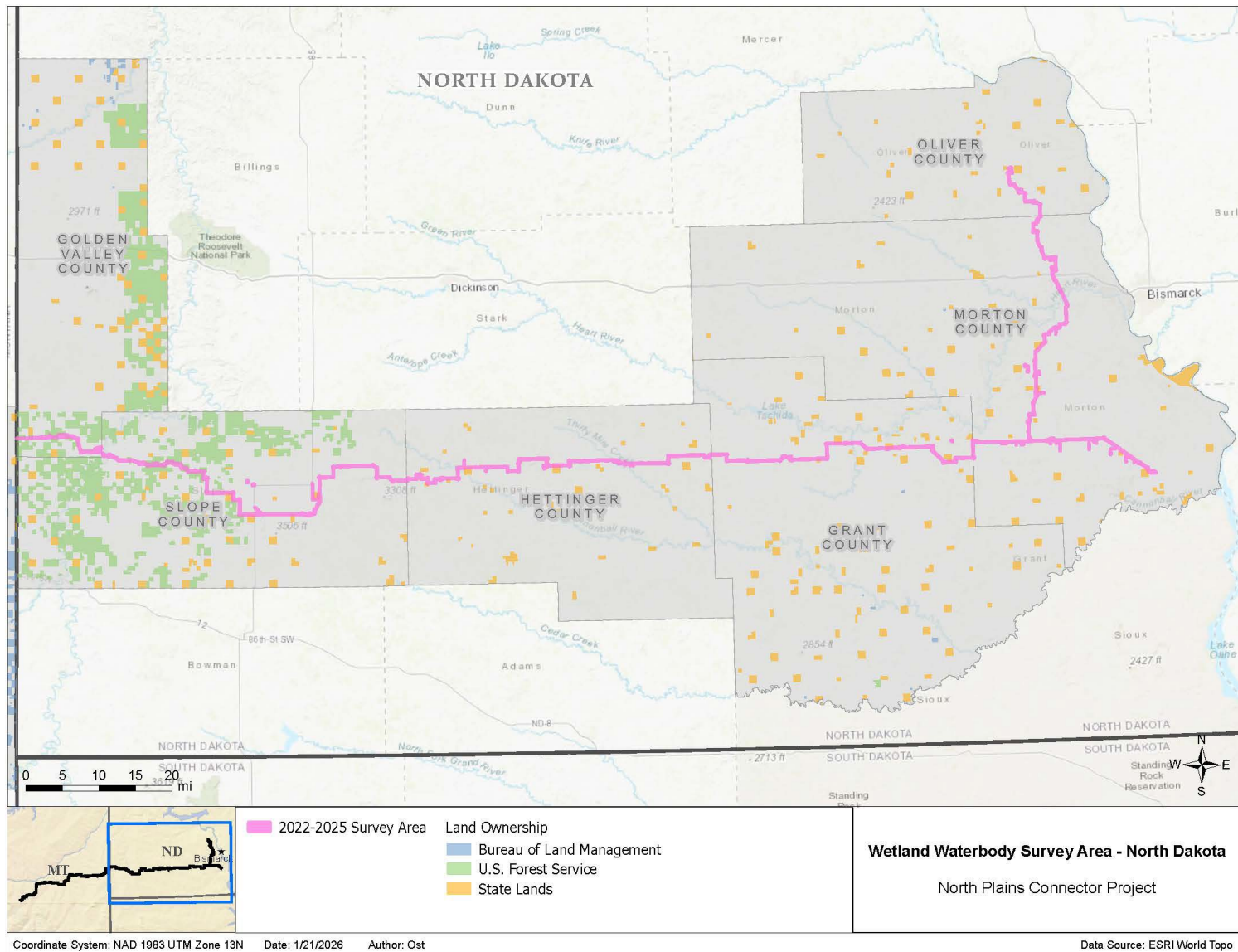
corridor, 50-foot-wide access road survey corridors, pulling and tensioning sites, laydown yards, facility footprints, and additional construction areas, as needed. On National Forest System lands managed by the U.S. Forest Service (USFS), the survey area included wider 100-foot-wide access road survey corridors. The survey area associated with the proposed Project route is shown in North Dakota (Figure 2).

**North Plains Connector Project  
2022 – 2025 Aquatic Resources Inventory**



**Figure 1. Overview of the proposed North Plains Connector Project location in North Dakota.**

**North Plains Connector Project  
2022 – 2025 Aquatic Resources Inventory**



**Figure 2. Wetland and waterbody survey area along the North Plains Connector Project in North Dakota.**

### 3.0 METHODS

ARI surveys followed standardized protocols and guidance provided by the U.S. Army Corps of Engineers (USACE) and North Dakota Department of Water Resources (NDDWR). USACE representatives in North Dakota were contacted prior to field mobilization to confirm ARI survey methods. In addition, ARI methods were confirmed with NDDWR staff regarding surveys along state navigable waters in North Dakota (i.e., the Cannonball River and Heart River).

Prior to each survey season, a Project survey plan that included survey methodologies for habitat, wildlife, and ARI surveys was provided to the U.S. Fish and Wildlife Service (USFWS), USFS, and North Dakota Game and Fish Department to seek agency feedback and approval for new and revised survey methodologies. The Project's *2022 Biological Survey Plan* was initially submitted to these agencies on March 7, 2022, and a revised survey plan incorporating feedback from each agency was submitted on May 20, 2022. Updated survey plans were also submitted on June 15, 2023, and June 5, 2024 to incorporate annual updates and/or agency recommendations unrelated to the ARI surveys. The current *2025 Ground-Based Survey Plan* was submitted on April 18, 2025.

The ARI surveys involved two steps to identify wetlands and waterbodies. First, a desktop review using publicly available geographic information system (GIS) data was completed to identify potential wetlands and waterbodies. Results of the desktop review provided baseline information to inform and direct ARI surveys to delineate wetlands and waterbodies, and to document observed seeps and springs. Each of these aquatic resource types are defined further in the sections below.

#### 3.1 Desktop Review

Prior to mobilizing to complete the ARI surveys, WEST conducted a desktop review to identify potential wetlands and waterbodies that may be present in the survey area. The results of the desktop review were then used to direct the ARI surveys in the field. The following desktop data sources were reviewed to determine the potential for presence of wetlands and waterbodies:

- U.S. Department of Agriculture (USDA) Natural Resource Conservation Service Web Soil Survey (hydric soils);
- USFWS National Wetlands Inventory (NWI);
- United States Geological Survey (USGS) National Hydrography Dataset (NHD);
- USGS 7.5-minute series topographic maps (topographic maps); and
- Aerial imagery from a variety of sources, including USGS, USDA Farm Service Agency, and other sources.

Hydric soils and USGS NHD streams and waterbodies within and along the ARI survey area are included on the maps in Appendix A.

## 3.2 Aquatic Resource Field Surveys

Maps and digital files from the desktop review were supplied to field biologists and reviewed prior to or during field surveys. Field biologists investigated areas identified during desktop review as potentially containing wetland or waterbody features during ARI surveys, including areas where USFWS NWI and/or USGS NHD datasets indicated the potential presence of aquatic resources. Upland areas were also evaluated in the field to confirm the lack of aquatic resources.

USACE protocols were used to assess the survey area for potential wetlands and waterbodies. Seep and spring features were also documented if encountered during ARI surveys. Field biologists walked meandering transects throughout the survey area to identify aquatic resources. Where aquatic resources were present, biologists delineated the features within the survey area using a global positioning system (GPS) unit capable of sub-meter accuracy (e.g., Juniper Systems Inc. Geode, Trimble R1, or Trimble GeoXT).

### 3.2.1 Wetlands

Wetlands were delineated in accordance with the 1987 Corps of Engineers Wetlands Delineation Manual (1987 Manual; Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains (Version 2.0; USACE, 2010). Wetlands are defined by the Clean Water Act Section 404; 33 Code of Federal Regulations Part 328.3 – Definition of the Waters of the U.S. (2023), as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” The 1987 Manual outlines a three-parameter approach, which requires the presence of hydrophytic plants, hydric soils, and indicators of wetland hydrology. For an area to be considered a wetland, the following three parameters must be present:

- **Wetland Hydrology** – Wetland hydrology indicators provided evidence an area is periodically saturated or inundated by water. Examples of wetland hydrology indicators included surface water, saturation, watermarks, drift lines, water-borne sediment deposits, water-stained leaves, and drainage patterns (Environmental Laboratory, 1987; USACE, 2010).
- **Hydrophytic Vegetation** – Hydrophytic plants are those adapted to wetland or aquatic conditions. Plant species nomenclature and indicator status were assigned according to the Great Plains regional sub-list of *The National Wetland Plant List* (USACE, 2022). A list of plant species was documented at each sample point and dominant species were identified based on USACE methods to determine if the sample point supported wetland vegetation.
- **Hydric Soils** – Hydric soils are those that have developed under reducing conditions, such as prolonged and repeated saturation or inundation. Hydric soil characteristics include a variety of hydric soil indicators described in the regional supplement (USACE, 2010). Soils were excavated to the necessary depth to document observations of soil color and texture of the soil profile to evaluate hydric soil indicators.

Wetlands were delineated using the routine determination approach from the 1987 Manual, where paired wetland and upland data points were established and evaluated to define the boundaries

of delineated wetlands. The wetland boundaries and paired wetland and upland data points were recorded using a sub-meter GPS unit. USACE Great Plains regional data forms were completed for each data point, and photographs were collected to clearly document each data point location. Data points were also collected in locations where mapped wetland features (USFWS NWI wetlands) were identified in the desktop review but not present during field surveys (see Section 3.2.4 below).

Delineated wetlands were classified as described in *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979). Common Cowardin et al. (1979) wetland classifications include:

- **Palustrine Emergent (PEM) Wetlands** – PEM wetlands are composed of 30% or more herbaceous vegetation and are typically dominated by perennial plants present for the majority of the growing season.
- **Palustrine Scrub-shrub (PSS) Wetlands** – PSS wetlands are composed of 30% or more woody vegetation generally less than 20 feet tall, including shrubs, young trees, and stunted trees or shrubs.
- **Palustrine Forested (PFO) Wetlands** – PFO wetlands are composed of 30% or more woody vegetation that is greater than 20 feet tall with an understory of small trees and shrubs, as well as an herbaceous layer.

### 3.2.2 Waterbodies

Potential waterbodies (e.g., lakes, ponds, rivers, streams) identified during the desktop review were investigated in the field; waters not previously identified by desktop review but encountered in the field were also recorded. Waterbodies documented in the field were given classifications, as described by Cowardin et al. (1979).

Potential waterbodies within the survey area were evaluated for the presence of key waterbody-defining characteristics, the most significant of these characteristics is the ordinary high water mark (OHWM). The OHWM is defined by USACE Regulatory Guidance Letter 05-05 and includes physical characteristics such as a defined bed and bank, scouring, change in vegetation, and evidence of flow (USACE, 2005). The area within the OHWM of waterbodies is typically the regulated portion of a waterbody.

Linear waterbodies (e.g., streams, ditches) less than 10 feet wide were delineated with a single line along the centerline of dry waterbodies, or along one bank of flowing waterbodies, and the approximate width was recorded for post-processing. Linear drainages equal to or wider than 10 feet were delineated on each side of the OHWM. A GIS technician generated polygons from the linear GIS features by buffering each feature according to the field-recorded waterbody widths. Photographs were collected for each linear waterbody feature. Coordination with NDDWR prior to ARI surveys and during the pre-permitting calls indicated that these protocols would be satisfactory for identifying the OHWM of navigable waters in North Dakota.

Open waterbodies (e.g., lakes, ponds) were delineated and documented in a similar manner, focusing on the OHWM around the open waterbody. These features primarily included ponded areas within larger drainage systems where a continuous channel was not evident, or ponds associated with an impounded area. Photographs were collected for each documented open waterbody.

### **3.2.3 Seeps and Springs**

Seeps and springs consist of features on the landscape where water is discharging or flowing from the ground but do not meet the definitions of a wetland or waterbody. Seeps are generally ephemeral, occurring along hillsides after precipitation events. Seeps are not well defined and typically appear on the landscape as water seeping from a roadside cut or in a ditch. Springs are characterized by water flowing or emanating from a single point. Springs tend to be perennial and are often recorded on USGS maps where present. Seeps and springs were recorded as GPS points in the field, where observed.

### **3.2.4 Non-Waters Points**

During ARI surveys, USGS NHD flowlines (also referred to as blue lines) and USFWS NWI polygons that intersected the survey area were evaluated. The USGS NHD and USFWS NWI features that did not meet the definition of a wetland (lacking the three required parameters) or waterbody (lacking an OHWM) based on field evaluation were instead documented as non-water points. A photograph, GPS point, and general habitat attribute data were collected at each non-water point location.

## **4.0 RESULTS**

ARI surveys were completed between June 15 and October 28 in 2022, June 7 and October 12 in 2023, June 11 and November 1 in 2024, and June 2 and October 2, 2025. Between 2022 and 2025, ARI surveys were conducted across approximately 12,563 acres (99.9%) of the Project survey area. The remaining approximately 5 acres (0.1%) were not surveyed as of October 2025.

Figures depicting desktop review results and field-delineated wetlands, waterbodies, seeps, and springs identified during ARI surveys within the proposed Project route between 2022 – 2025 are provided in Appendix A. Representative photographs of wetland and waterbody features are provided in Appendix B.

### **4.1 Wetlands**

A total of 262 wetlands were delineated in North Dakota during ARI surveys between 2022 and 2025 (Appendix A). Of the 262 wetlands documented, 261 were recorded as PEM wetlands with the one remaining wetland recorded as a PFO wetland. Table 1 summarizes the delineated wetlands by county and Cowardin et al. (1979) classification. Representative photographs of wetland features are provided in Appendix B.

**Table 1. Wetlands delineated during aquatic resource inventory surveys along the North Plains Connector Project in North Dakota from 2022 – 2025.**

County	Cowardin Wetland Classification <sup>1</sup>			Total Wetlands
	PEM	PFO	PSS	
Golden Valley	18	0	0	18
Slope	69	0	0	69
Hettinger	36	0	0	36
Grant	42	1	0	43
Morton	89	0	0	89
Oliver	7	0	0	7
<b>Total</b>	<b>261</b>	<b>1</b>	<b>0</b>	<b>262</b>

<sup>1</sup> Cowardin et al. (1979) classifications: PEM = palustrine emergent wetland, PFO = palustrine forested wetland, PSS = palustrine scrub/shrub wetland.

## 4.2 Waterbodies

A total of 106 waterbodies were delineated in North Dakota during ARI surveys between 2022 and 2025 (Appendix A). Of the 106 waterbodies surveyed, 33 (31%) are open waterbodies (natural ponds or artificial stock ponds), 37 (35%) are perennial streams, 20 (19%) are intermittent streams, and 16 (15%) are ephemeral streams. Table 2 summarizes the delineated waterbodies by county and waterbody type. Representative photographs for waterbody features are provided in Appendix B.

**Table 2. Waterbodies identified during aquatic resource inventory surveys along the North Plains Connector Project in North Dakota from 2022 – 2025.**

County	Streams by Flow Regime			Open Waterbodies by Type		Total Waterbodies
	Ephemeral	Intermittent	Perennial	Natural Pond	Stock Pond	
Golden Valley	3	5	0	1	1	10
Slope	3	6	20	1	5	35
Hettinger	1	3	6	5	2	17
Grant	0	0	3	3	5	11
Morton	6	6	4	3	7	26
Oliver	3	0	4	0	0	7
<b>Total</b>	<b>16</b>	<b>20</b>	<b>37</b>	<b>13</b>	<b>20</b>	<b>106</b>

### 4.3 Seeps and Springs

Two seeps and one spring were documented during the ARI surveys between 2022 and 2025. Table 3 summarizes the recorded features by county and classification.

**Table 3. Seeps and springs identified during ARI surveys along the North Plains Connector Project.**

<b>County</b>	<b>Seep</b>	<b>Spring</b>
Golden Valley	0	0
Slope	0	1
Hettinger	1	0
Grant	0	0
Morton	1	0
Oliver	0	0
<b>Total</b>	<b>2</b>	<b>1</b>

### 4.4 Non-Waters Points

In addition to the delineated wetlands and waterbodies, 209 non-water points were recorded in locations identified during the desktop review of USFWS NWI and USGS NHD as potential wetland and/or waterbody features. These documented non-water features are depicted on the maps in Appendix A.

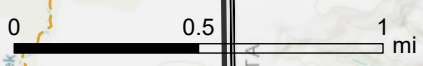
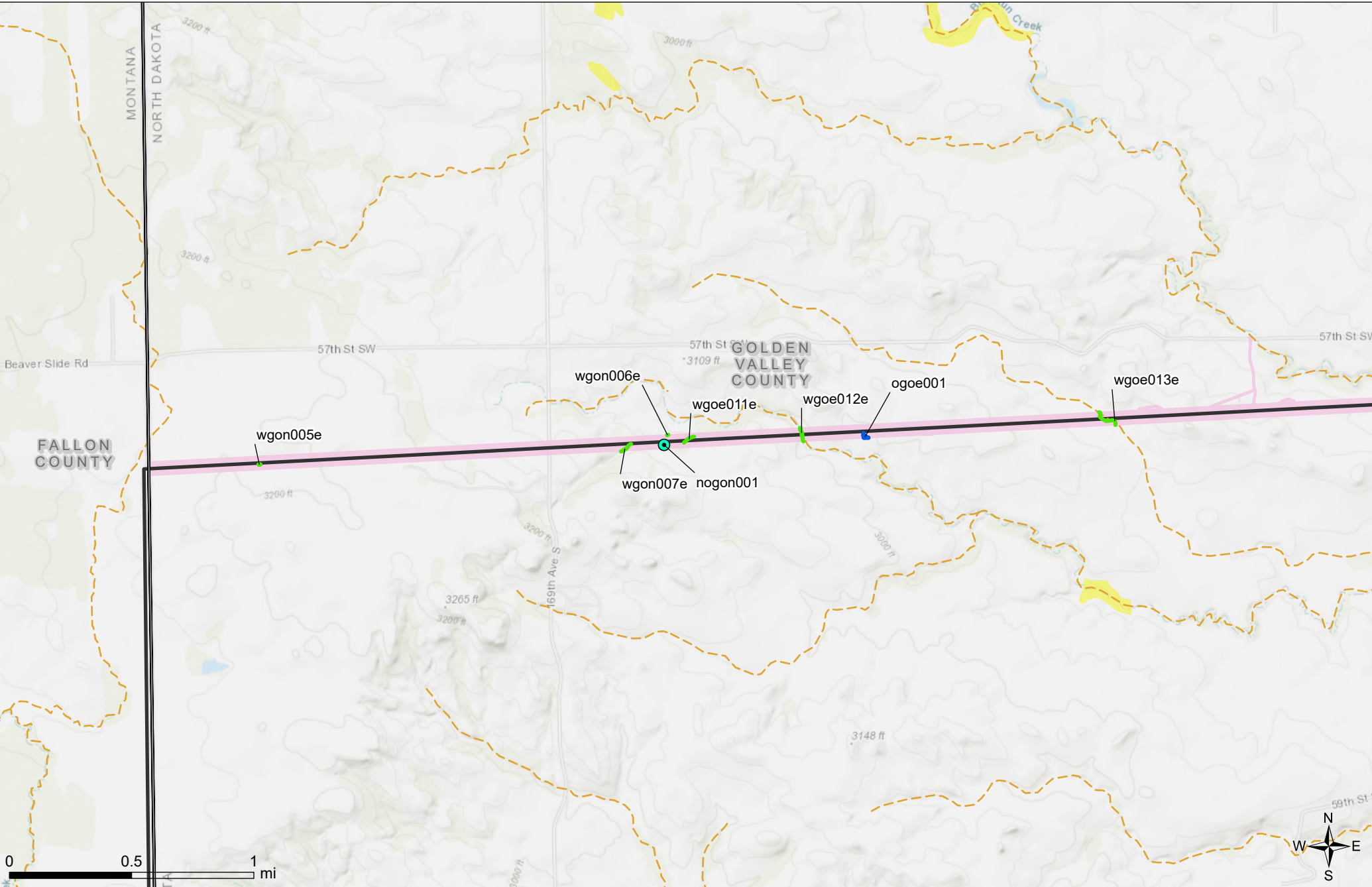
## 5.0 DISCUSSION

During Project ARI surveys between 2022 and 2025, 262 wetlands, 106 waterbodies, one seep, and two springs were documented along the proposed Project route in North Dakota. ARI survey results will be used to support Project permitting with the USACE and NDDWR.

## 6.0 REFERENCES

- Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Office of Biological Services, Washington, D.C. Available online: <https://www.fws.gov/media/classification-wetlands-and-deepwater-habitats-united-states>.
- Environmental Laboratory. 1987. 1987 Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1 (on-line edition), Wetlands Research Program. Prepared by Environmental Laboratory, U.S. Corps of Engineers, Vicksburg, Mississippi. January 1987.
- U.S. Army Corps of Engineers (USACE). 2005. Ordinary High Water Mark Identification. Regulatory Guidance Letter. No. 05-05. December 7, 2005. 4 pp. Available online: <https://www.nap.usace.army.mil/Portals/39/docs/regulatory/rqls/rql05-05.pdf>.
- U.S. Army Corps of Engineers (USACE). 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region. (Version 2.0). Engineer Research and Development Center/Engineering Laboratory, TR-10-1. Wetlands Regulatory Assistance Program, USACE, Vicksburg, Mississippi. March 2010. Available online: <https://usace.contentdm.oclc.org/utils/getfile/collection/p266001coll1/id/7613>.
- U.S. Army Corps of Engineers (USACE). 2022. National Wetland Plant List (NWPL), Version 3.6. USACE Engineer Research and Development Center, Vicksburg, Mississippi. Available online: <http://wetland-plants.usace.army.mil/>. Accessed October 2025.
- U.S. Environmental Protection Agency (USEPA). 2013. Level III and Level IV Ecoregions of the Continental United States. Ecosystems Research, USEPA. April 16, 2013. Available online: <https://www.epa.gov/eco-research/level-iii-and-iv-ecoregions-continental-united-states>. Accessed October 2025.

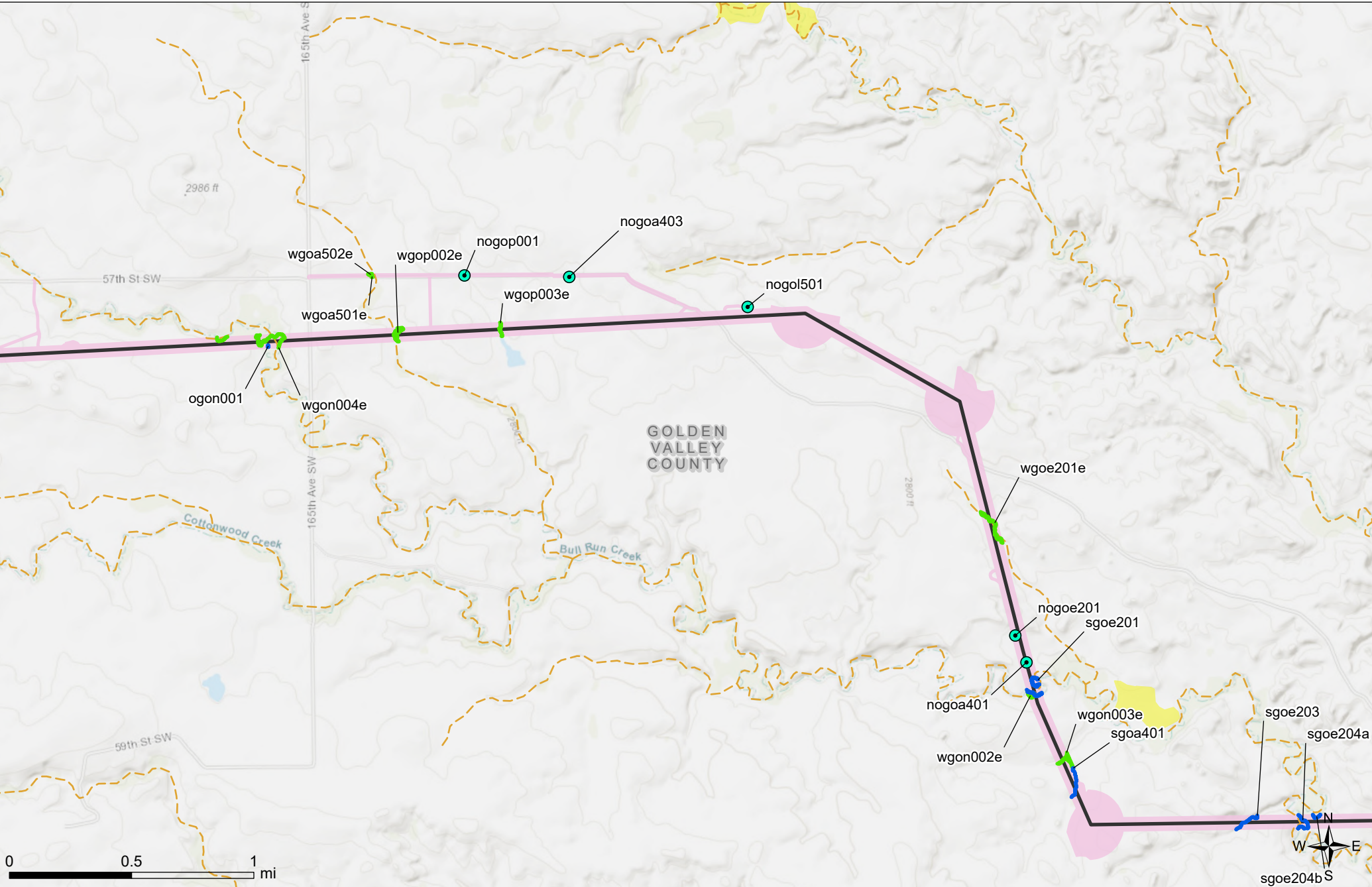
**Appendix A. Aquatic Resource Inventory Survey Results in North Dakota from 2022 –  
2025**



- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 2px; background-color: black; margin-right: 5px;"></span> Proposed Route (October 2025)</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: pink; margin-right: 5px;"></span> 2022-2025 Survey Area</li> </ul> <p><b>Field Survey Results</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: blue; margin-right: 5px;"></span> Waterbody</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: green; margin-right: 5px;"></span> Wetland</li> <li><span style="display: inline-block; width: 10px; height: 10px; border: 1px solid cyan; border-radius: 50%; margin-right: 5px;"></span> No Water Point</li> </ul> | <p><b>Desktop Review</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: yellow; margin-right: 5px;"></span> NRCS Web Soil Survey: Hydric Soil</li> <li><span style="display: inline-block; width: 20px; border-bottom: 1px dashed orange; margin-right: 5px;"></span> NHD Stream/River Intermittent</li> </ul> |
|--|---|

**Aquatic Resource Inventory Survey Results**

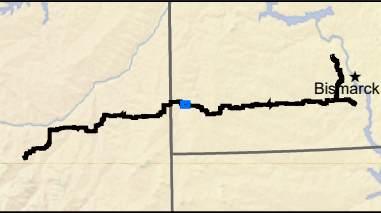
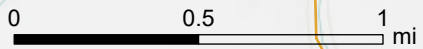
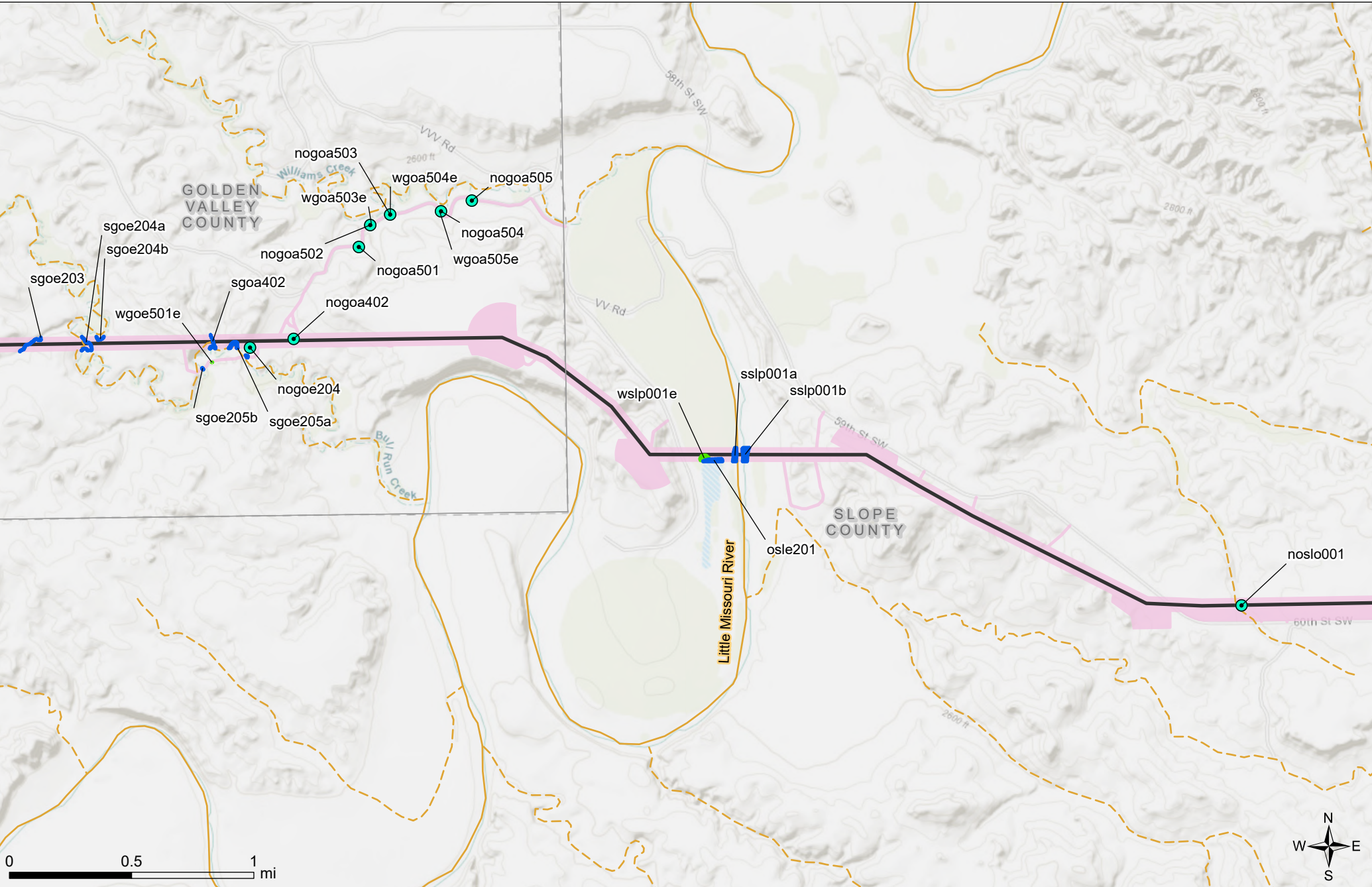
North Plains Connector Project



- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 2px; background-color: black; margin-right: 5px;"></span> Proposed Route (October 2025)</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: pink; margin-right: 5px;"></span> 2022-2025 Survey Area</li> <li><b>Field Survey Results</b></li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: blue; margin-right: 5px;"></span> Waterbody</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: green; margin-right: 5px;"></span> Wetland</li> <li><span style="display: inline-block; width: 10px; height: 10px; border: 1px solid cyan; border-radius: 50%; margin-right: 5px;"></span> No Water Point</li> </ul> | <ul style="list-style-type: none"> <li><b>Desktop Review</b></li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: yellow; margin-right: 5px;"></span> NRCS Web Soil Survey: Hydric Soil</li> <li>NHD Stream/River</li> <li><span style="display: inline-block; width: 20px; border-bottom: 2px dashed orange; margin-right: 5px;"></span> Intermittent</li> </ul> |
|---|--|

**Aquatic Resource Inventory Survey Results**

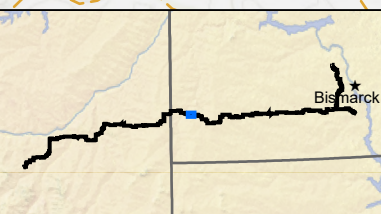
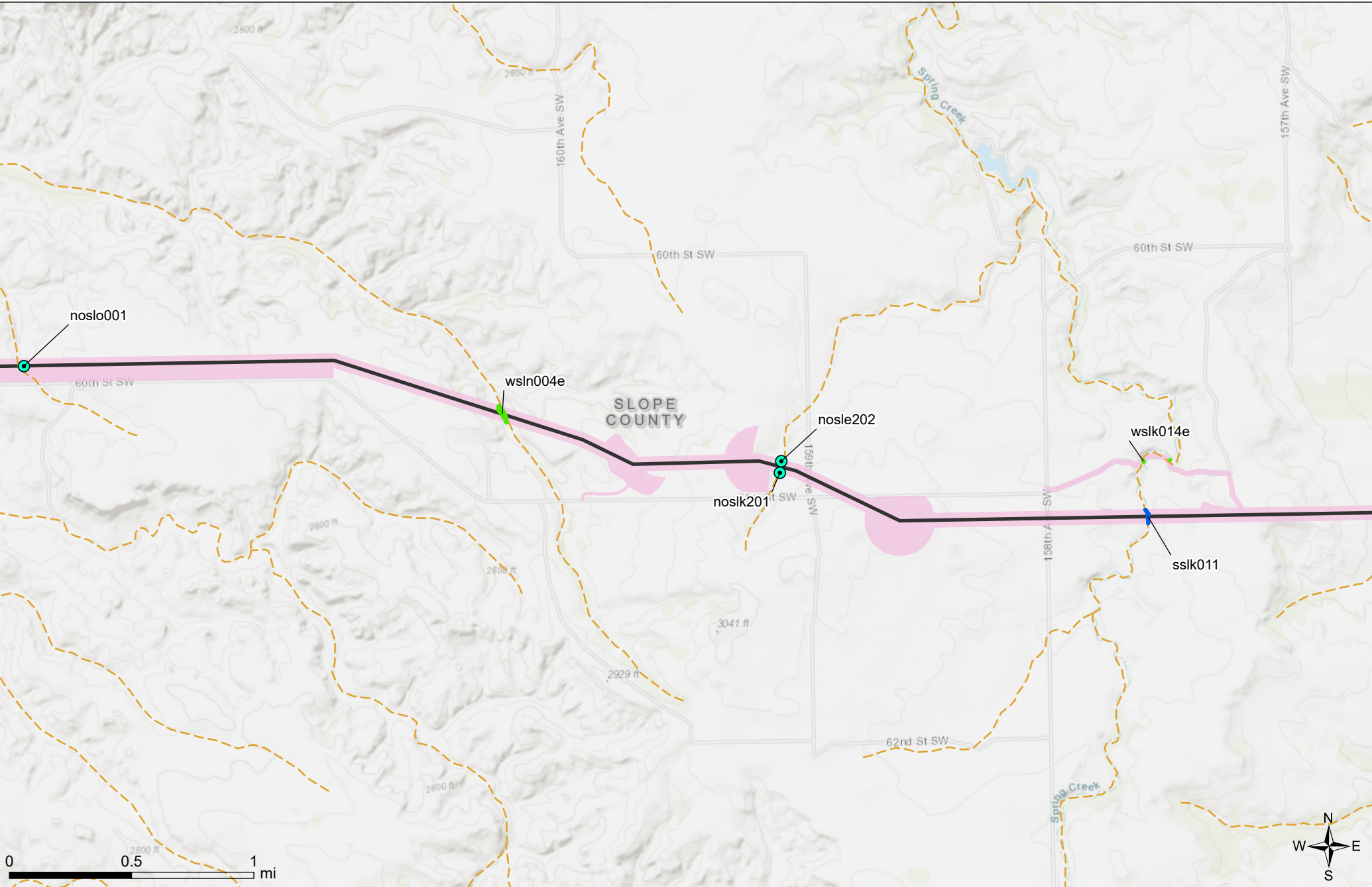
North Plains Connector Project



- Proposed Route (October 2025)
- 2022-2025 Survey Area
- Field Survey Results**
- Waterbody
- Wetland
- No Water Point
- Desktop Review**
- NHD Stream/River
- Intermittent
- Perennial

**Aquatic Resource Inventory Survey Results**

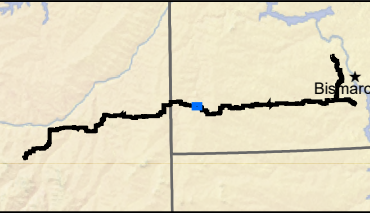
North Plains Connector Project



<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 2px; background-color: black; margin-right: 5px;"></span> Proposed Route (October 2025)</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: pink; margin-right: 5px;"></span> 2022-2025 Survey Area</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: blue; margin-right: 5px;"></span> Waterbody</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: green; margin-right: 5px;"></span> Wetland</li> <li><span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; border-radius: 50%; margin-right: 5px;"></span> No Water Point</li> </ul>	<p><b>Desktop Review</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; border-bottom: 2px dashed orange; margin-right: 5px;"></span> NHD Stream/River</li> <li><span style="display: inline-block; width: 20px; border-bottom: 2px dashed orange; margin-right: 5px;"></span> Intermittent</li> </ul>
---	---

**Aquatic Resource Inventory Survey Results**

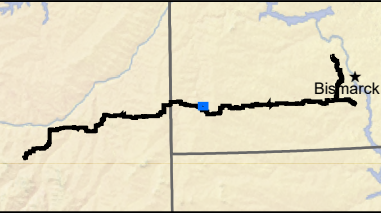
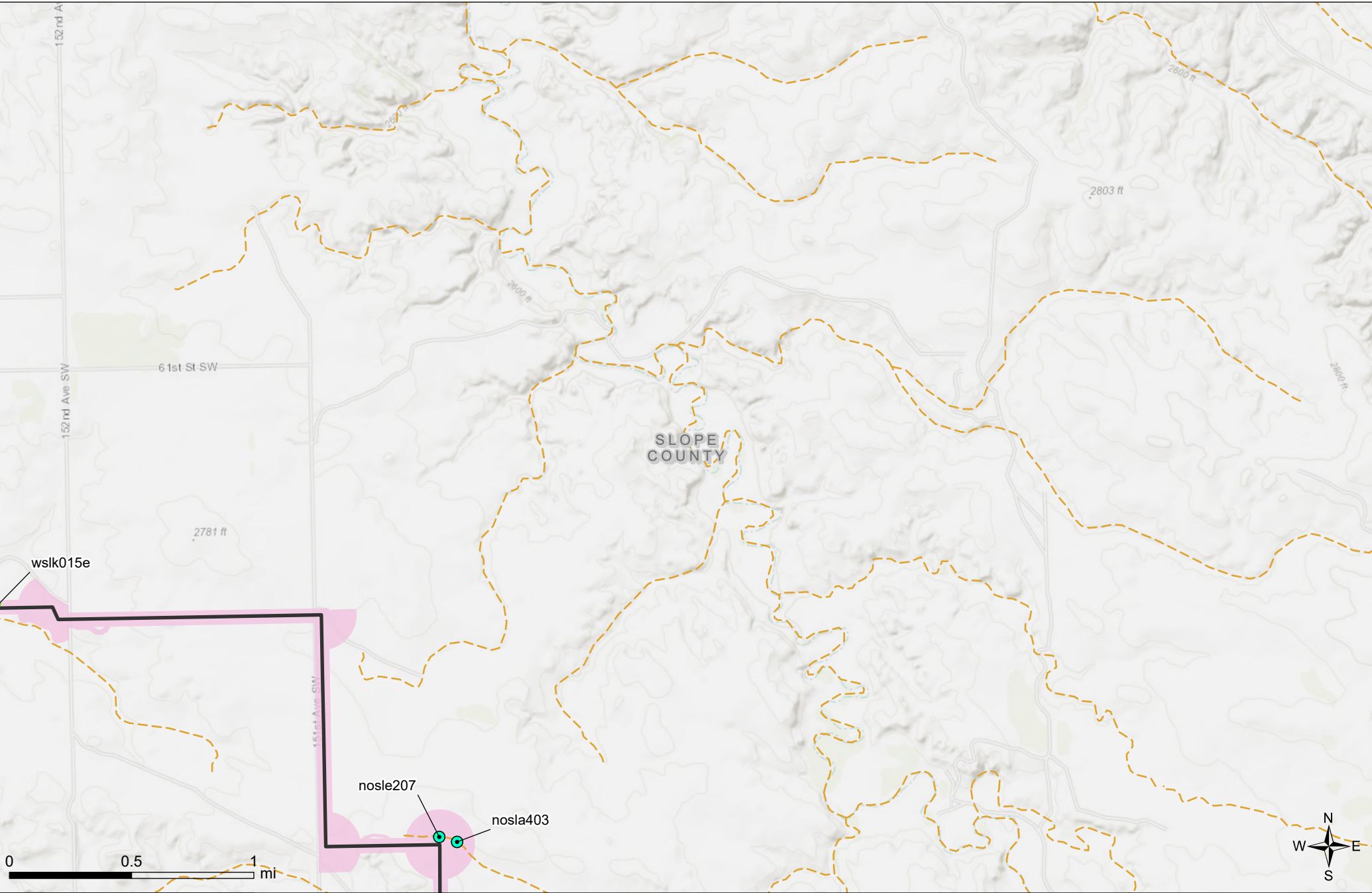
North Plains Connector Project



- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 2px; background-color: black; margin-right: 5px;"></span> Proposed Route (October 2025)</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: pink; margin-right: 5px;"></span> 2022-2025 Survey Area</li> </ul>   | <p><b>Desktop Review</b></p> <ul style="list-style-type: none"> <li>NHD Stream/River</li> <li><span style="display: inline-block; width: 20px; border-bottom: 1px dashed orange; margin-right: 5px;"></span> Intermittent</li> <li><span style="display: inline-block; width: 20px; border-bottom: 1px solid orange; margin-right: 5px;"></span> Perennial</li> </ul> |
| <p><b>Field Survey Results</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: blue; margin-right: 5px;"></span> Waterbody</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: green; margin-right: 5px;"></span> Wetland</li> <li><span style="display: inline-block; width: 10px; height: 10px; border: 1px solid green; border-radius: 50%; margin-right: 5px;"></span> No Water Point</li> </ul> |   |

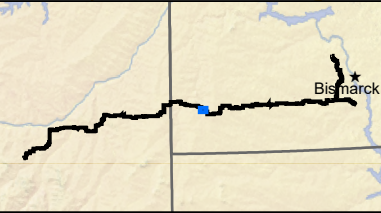
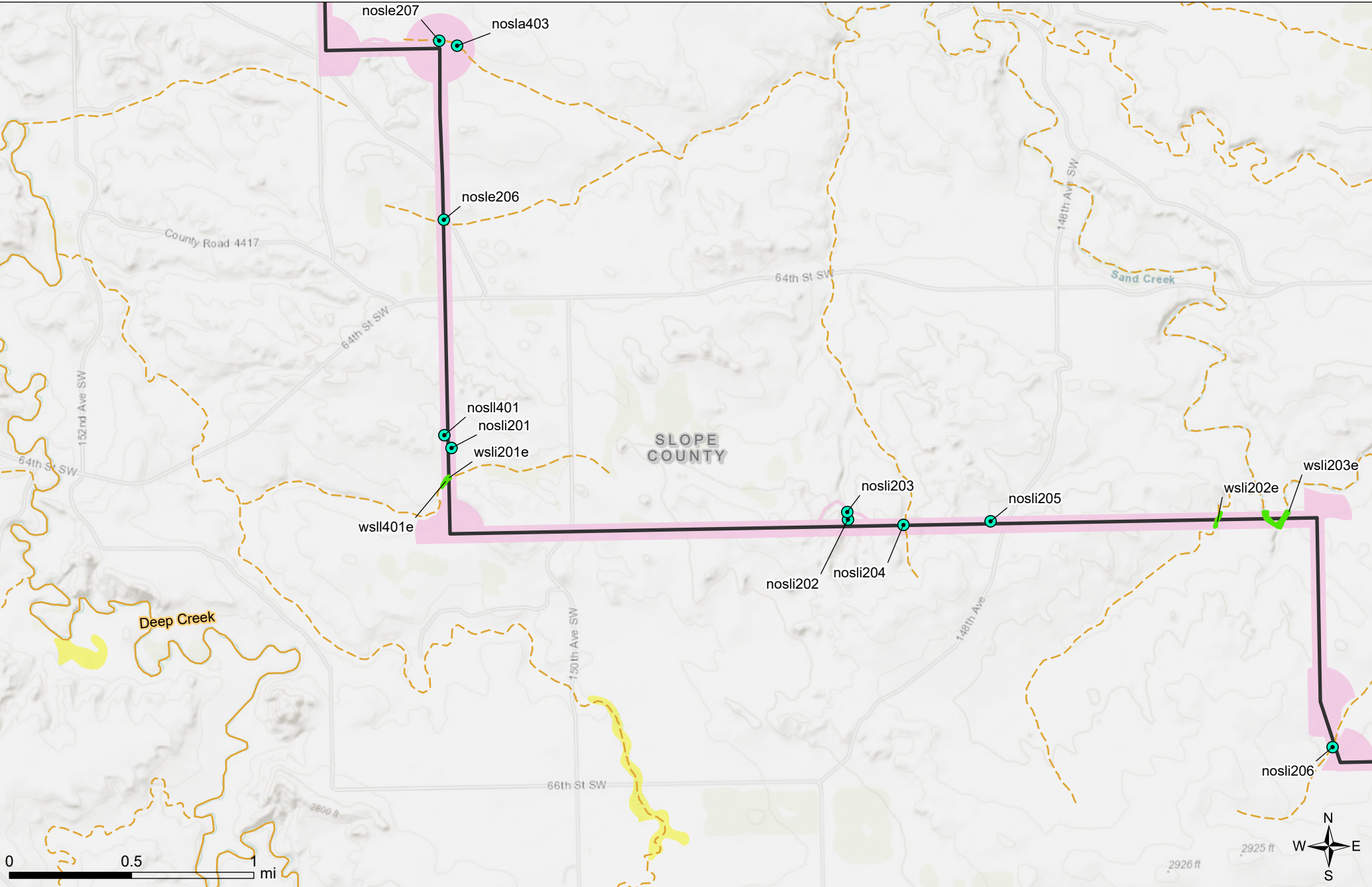
**Aquatic Resource Inventory Survey Results**

North Plains Connector Project



<ul style="list-style-type: none"> <li> Proposed Route (October 2025)</li> <li> 2022-2025 Survey Area</li> <li><b>Field Survey Results</b></li> <li> Wetland</li> <li> No Water Point</li> </ul>	<ul style="list-style-type: none"> <li><b>Desktop Review</b></li> <li> NHD Stream/River</li> <li> Intermittent</li> </ul>
--	---

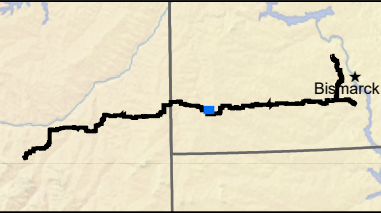
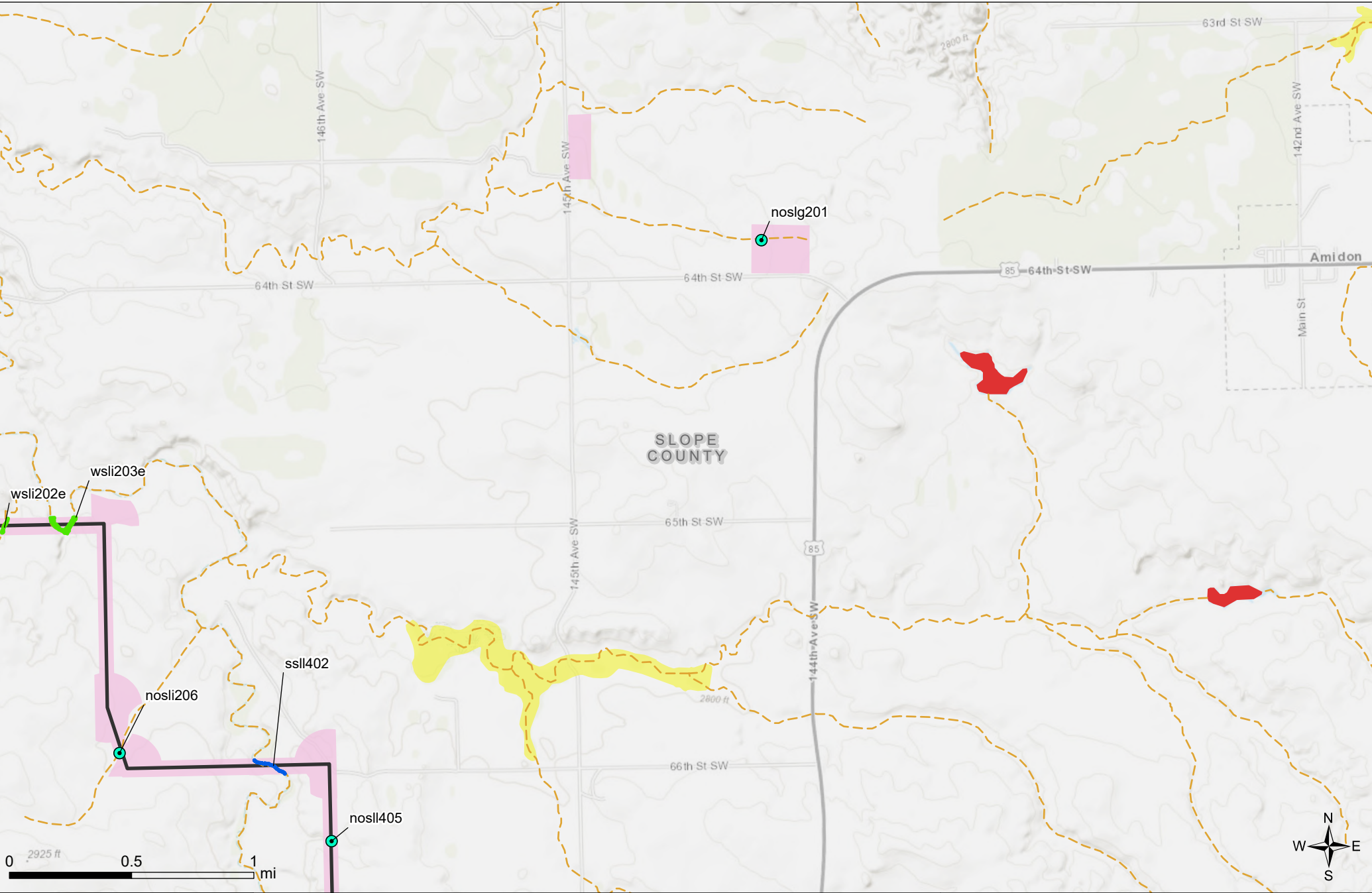
**Aquatic Resource Inventory Survey Results**  
North Plains Connector Project



<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 2px; background-color: black; margin-right: 5px;"></span> Proposed Route (October 2025)</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: pink; margin-right: 5px;"></span> 2022-2025 Survey Area</li> </ul>	<p><b>Desktop Review</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: yellow; margin-right: 5px;"></span> NRCS Web Soil Survey: Hydric Soil</li> <li><span style="display: inline-block; width: 20px; border-bottom: 1px dashed orange; margin-right: 5px;"></span> NHD Stream/River</li> <li><span style="display: inline-block; width: 20px; border-bottom: 1px dashed orange; margin-right: 5px;"></span> Intermittent</li> <li><span style="display: inline-block; width: 20px; border-bottom: 1px solid orange; margin-right: 5px;"></span> Perennial</li> </ul>
<p><b>Field Survey Results</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: green; margin-right: 5px;"></span> Wetland</li> <li><span style="display: inline-block; width: 10px; height: 10px; border: 1px solid green; border-radius: 50%; margin-right: 5px;"></span> No Water Point</li> </ul>	

**Aquatic Resource Inventory Survey Results**

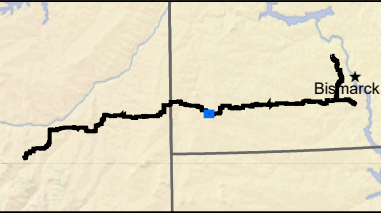
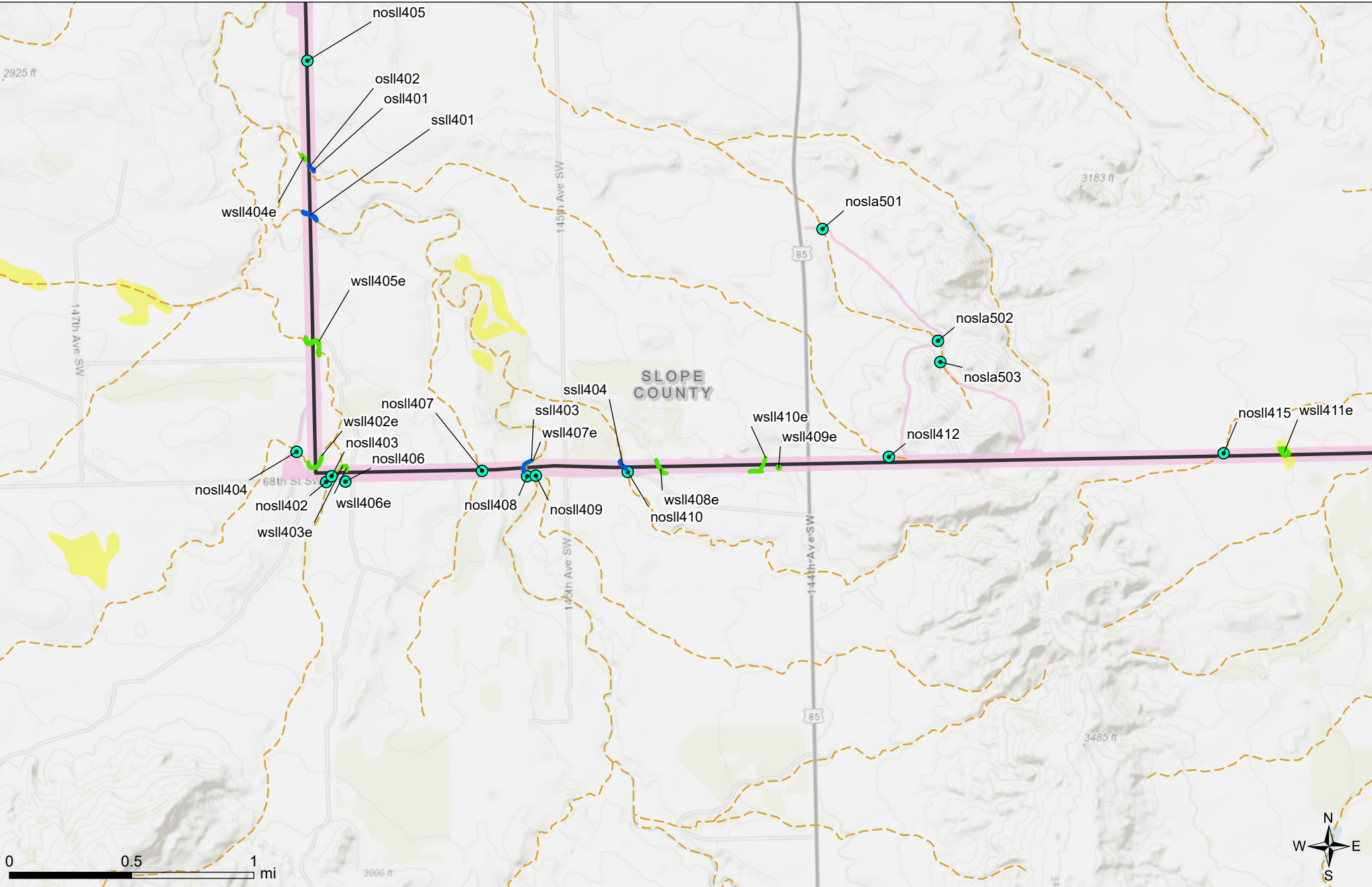
North Plains Connector Project



Proposed Route (October 2025)	<b>Desktop Review</b>
2022-2025 Survey Area	NRCS Web Soil Survey: Hydric Soil
<b>Field Survey Results</b>	NHD Stream/River
Waterbody	Intermittent
Wetland	NHD Waterbodies
No Water Point	Lakes, Ponds, Reservoirs, and Estuaries

**Aquatic Resource Inventory Survey Results**

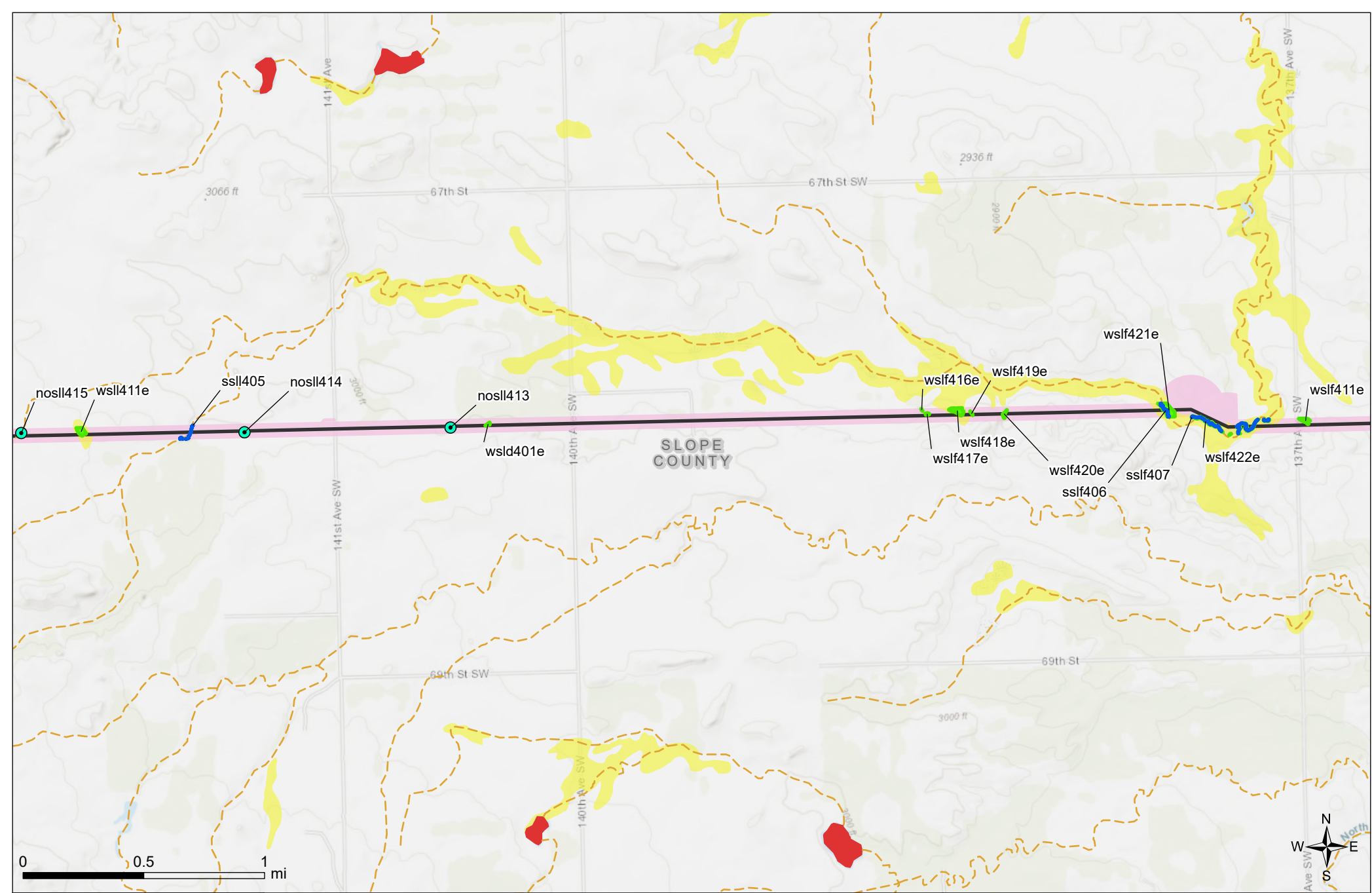
North Plains Connector Project



<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 2px; background-color: black; margin-right: 5px;"></span> Proposed Route (October 2025)</li> <li><span style="display: inline-block; width: 20px; height: 2px; background-color: pink; margin-right: 5px;"></span> 2022-2025 Survey Area</li> </ul>	<p><b>Desktop Review</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: yellow; margin-right: 5px;"></span> NRCS Web Soil Survey: Hydric Soil</li> <li><span style="display: inline-block; width: 20px; border-bottom: 1px dashed orange; margin-right: 5px;"></span> NHD Stream/River</li> <li><span style="display: inline-block; width: 20px; border-bottom: 1px dashed orange; margin-right: 5px;"></span> Intermittent</li> </ul>
<p><b>Field Survey Results</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: blue; border-radius: 50%; margin-right: 5px;"></span> Waterbody</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: green; border-radius: 50%; margin-right: 5px;"></span> Wetland</li> <li><span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; border-radius: 50%; margin-right: 5px;"></span> No Water Point</li> </ul>	

**Aquatic Resource Inventory Survey Results**

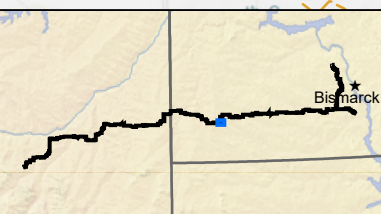
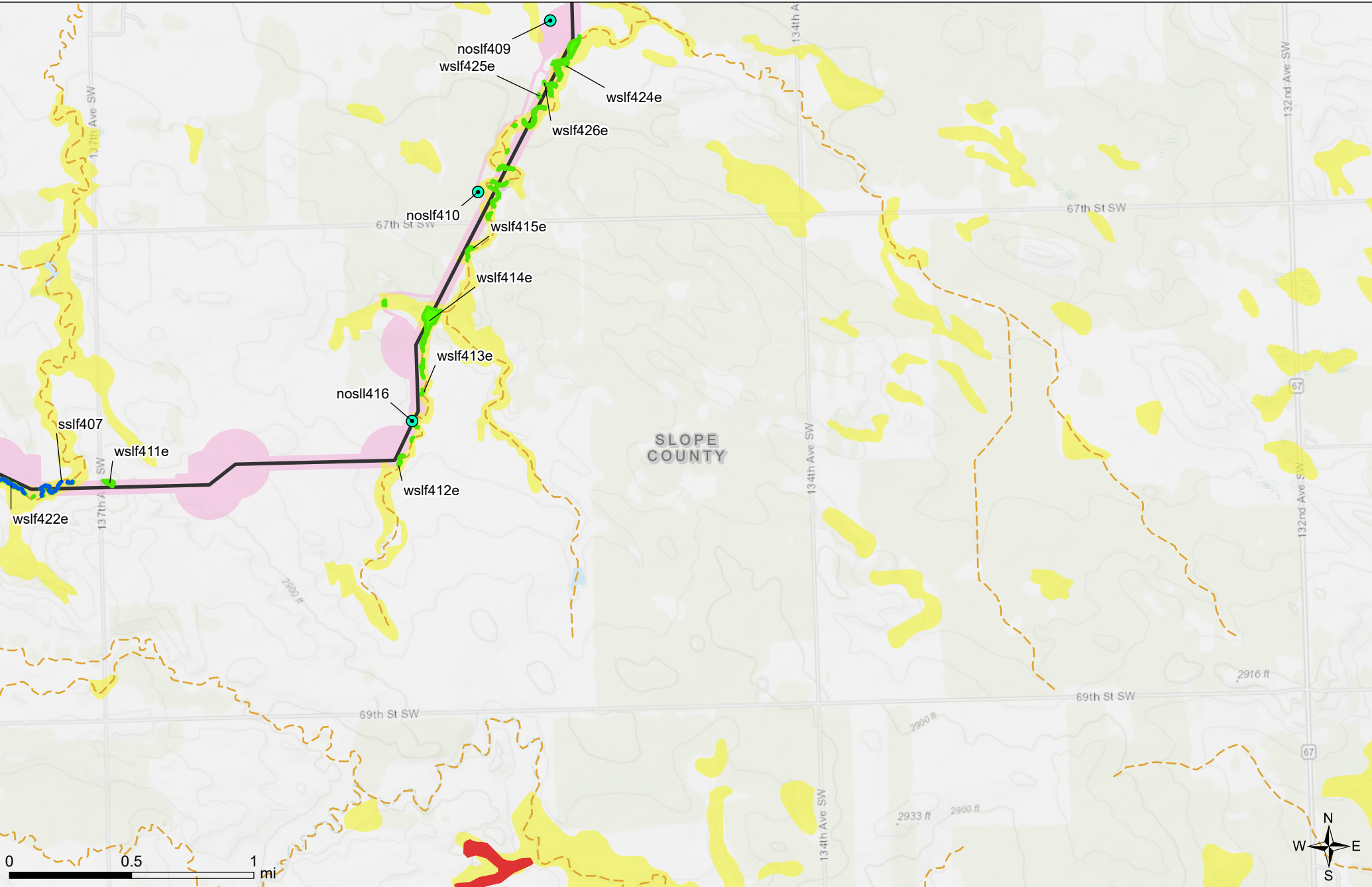
North Plains Connector Project



- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 2px; background-color: black; margin-right: 5px;"></span> Proposed Route (October 2025)</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: pink; margin-right: 5px;"></span> 2022-2025 Survey Area</li> </ul> <p><b>Field Survey Results</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: blue; margin-right: 5px;"></span> Waterbody</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: green; margin-right: 5px;"></span> Wetland</li> <li><span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; border-radius: 50%; margin-right: 5px;"></span> No Water Point</li> </ul> | <p><b>Desktop Review</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: yellow; margin-right: 5px;"></span> NRCS Web Soil Survey: Hydric Soil</li> <li>NHD Stream/River</li> <li><span style="display: inline-block; width: 20px; border-bottom: 1px dashed orange; margin-right: 5px;"></span> Intermittent</li> <li>NHD Waterbodies</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: red; margin-right: 5px;"></span> Lakes, Ponds, Reservoirs, and Estuaries</li> </ul> |
|---|--|

**Aquatic Resource Inventory Survey Results**

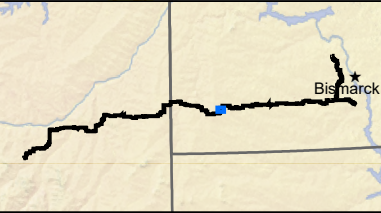
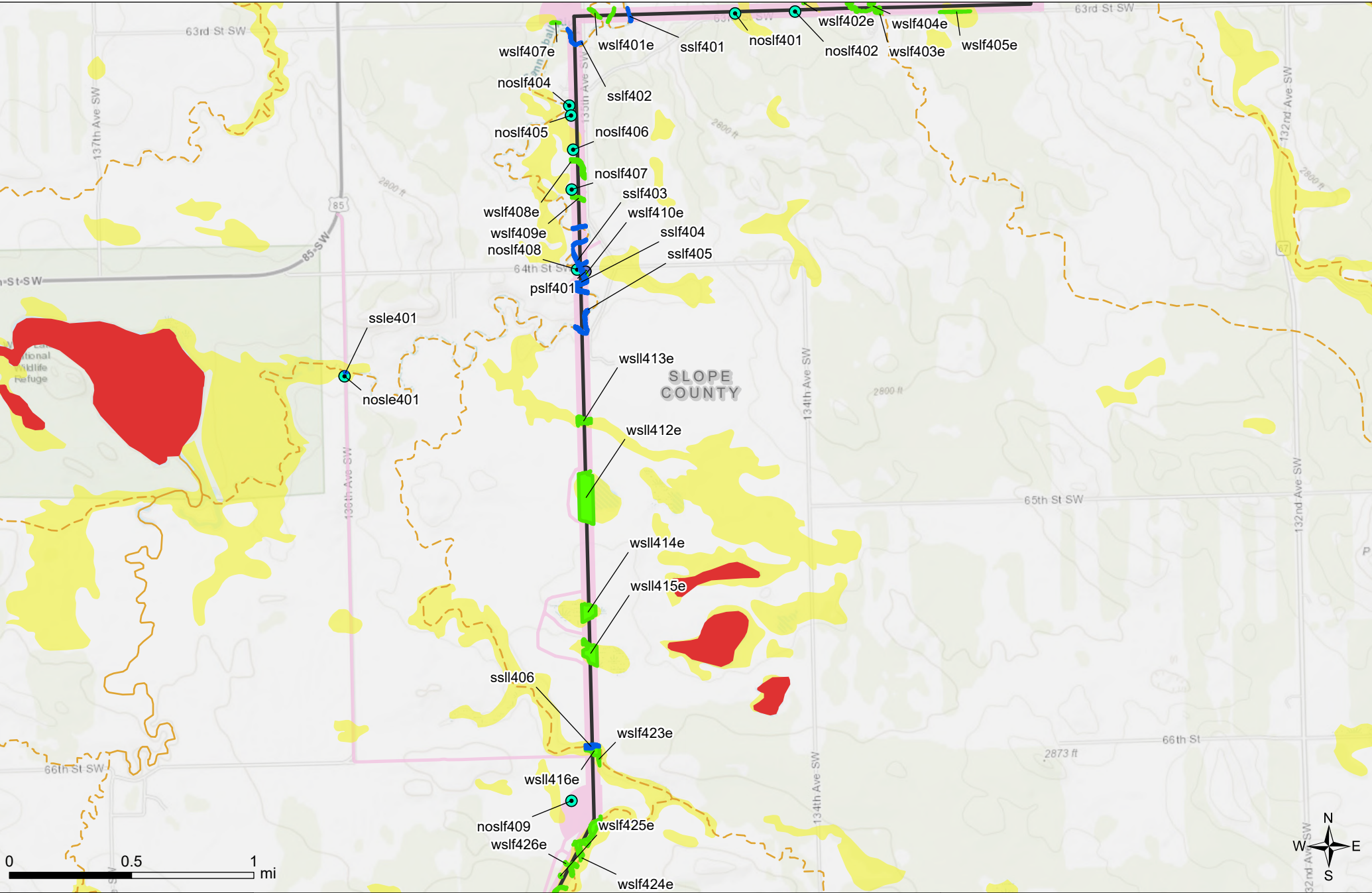
North Plains Connector Project



Proposed Route (October 2025)	<b>Desktop Review</b>
2022-2025 Survey Area	NRCS Web Soil Survey: Hydric Soil
<b>Field Survey Results</b>	NHD Stream/River
Waterbody	Intermittent
Wetland	NHD Waterbodies
No Water Point	Lakes, Ponds, Reservoirs, and Estuaries

**Aquatic Resource Inventory Survey Results**

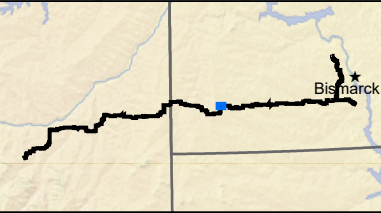
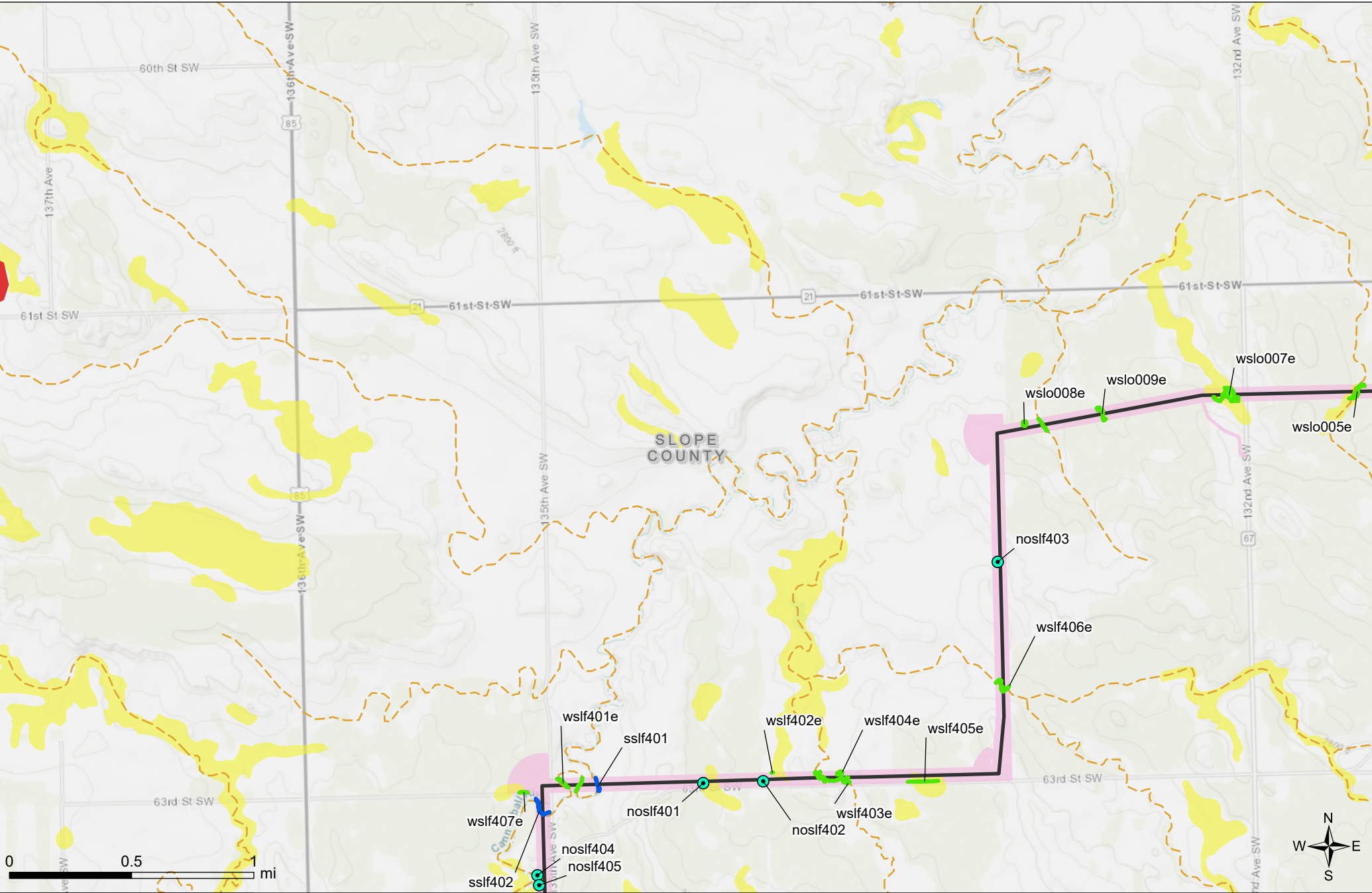
North Plains Connector Project



Proposed Route (October 2025)	2022-2025 Survey Area	<b>Desktop Review</b>
Waterbody	NRCS Web Soil Survey: Hydric Soil	NHD Stream/River Intermittent
Wetland	No Water Point	NHD Stream/River Perennial
No Water Point	Seep Point	<b>NHD Waterbodies</b>
		Lakes, Ponds, Reservoirs, and Estuaries

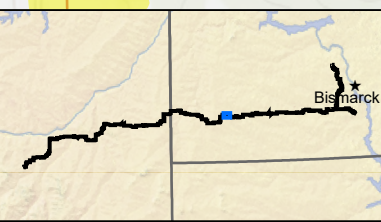
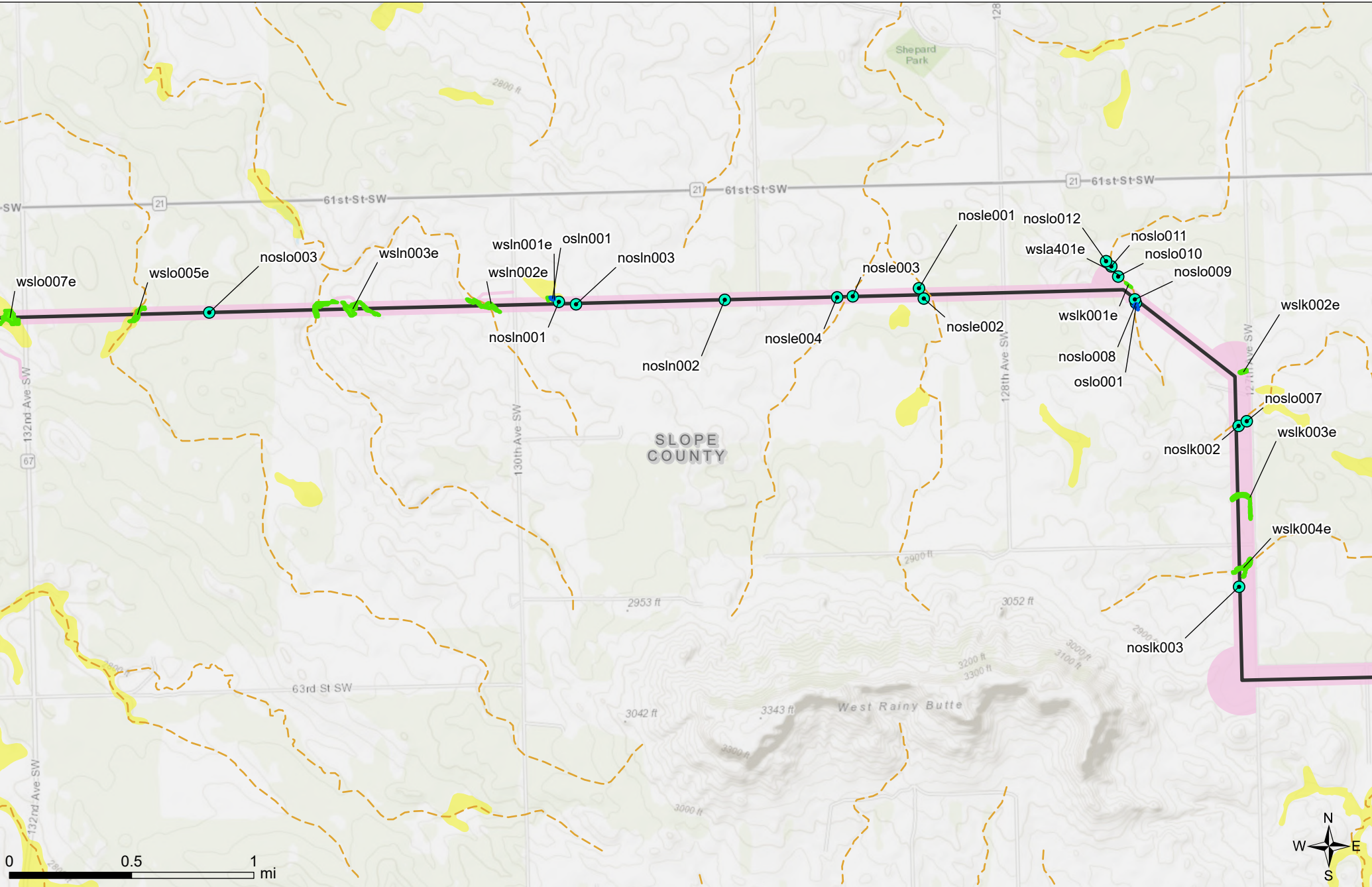
**Aquatic Resource Inventory Survey Results**

North Plains Connector Project



Proposed Route (October 2025)	<b>Desktop Review</b>
2022-2025 Survey Area	NRCS Web Soil Survey: Hydric Soil
<b>Field Survey Results</b>	NHD Stream/River
Waterbody	Intermittent
Wetland	NHD Waterbodies
No Water Point	Lakes, Ponds, Reservoirs, and Estuaries

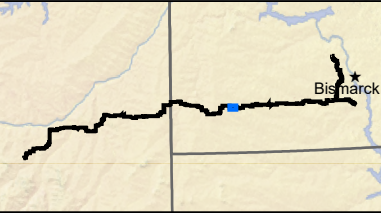
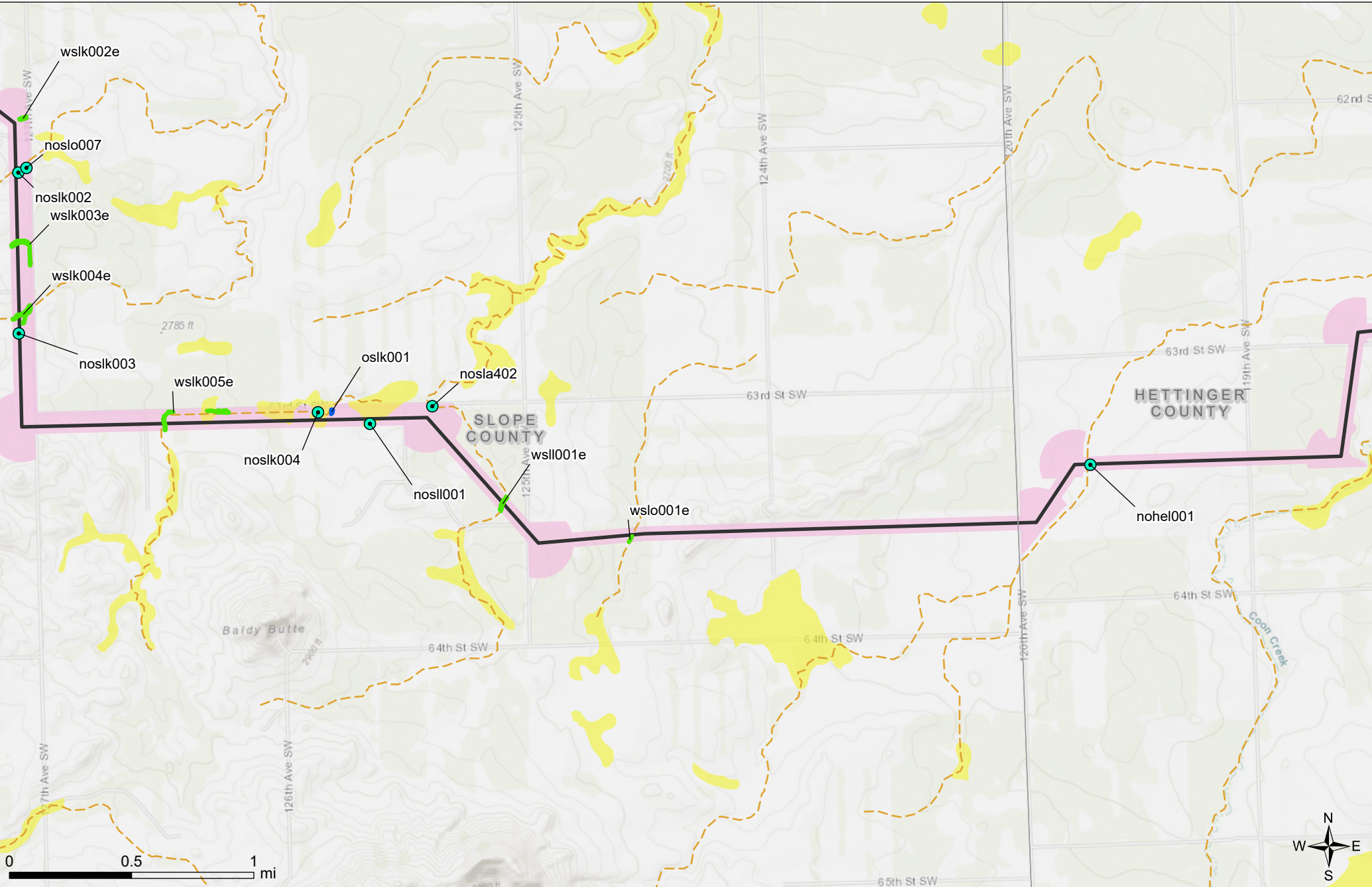
**Aquatic Resource Inventory Survey Results**  
North Plains Connector Project



<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 2px; background-color: black; margin-right: 5px;"></span> Proposed Route (October 2025)</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: pink; margin-right: 5px;"></span> 2022-2025 Survey Area</li> <li><b>Field Survey Results</b></li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: blue; margin-right: 5px;"></span> Waterbody</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: green; margin-right: 5px;"></span> Wetland</li> <li><span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; border-radius: 50%; margin-right: 5px;"></span> No Water Point</li> </ul>	<ul style="list-style-type: none"> <li><b>Desktop Review</b></li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: yellow; margin-right: 5px;"></span> NRCS Web Soil Survey: Hydric Soil</li> <li>NHD Stream/River</li> <li><span style="display: inline-block; width: 20px; border-top: 1px dashed orange; margin-right: 5px;"></span> Intermittent</li> </ul>
--	---

**Aquatic Resource Inventory Survey Results**

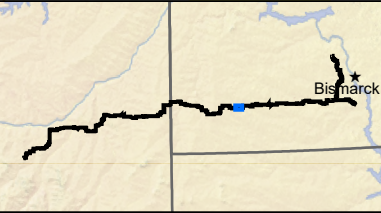
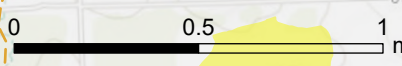
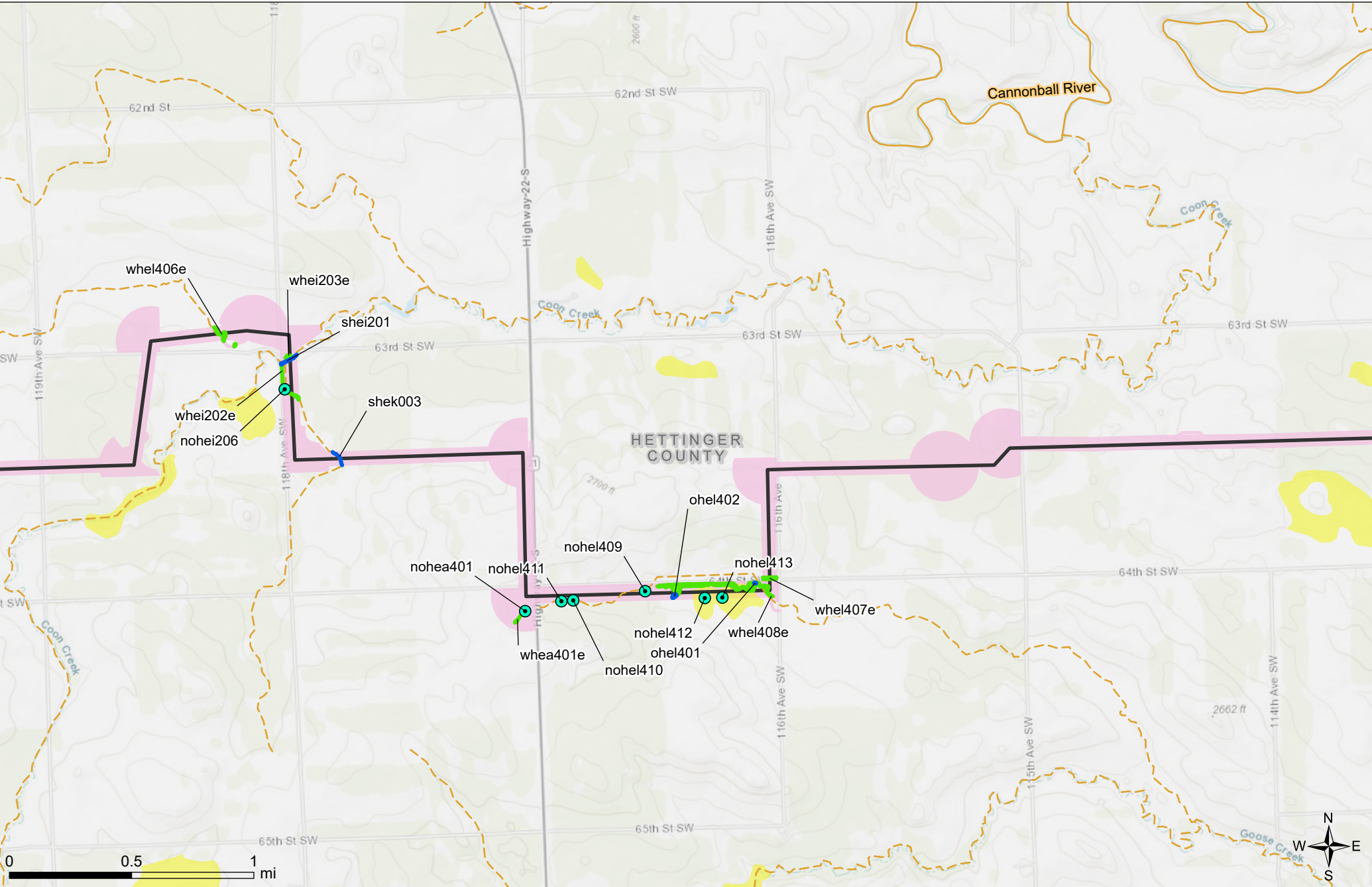
North Plains Connector Project



Proposed Route (October 2025)	<b>Desktop Review</b>
2022-2025 Survey Area	NRCS Web Soil Survey: Hydric Soil
<b>Field Survey Results</b>	NHD Stream/River
Waterbody	Intermittent
Wetland	
No Water Point	

**Aquatic Resource Inventory Survey Results**

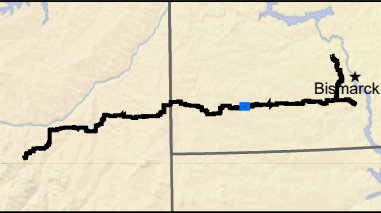
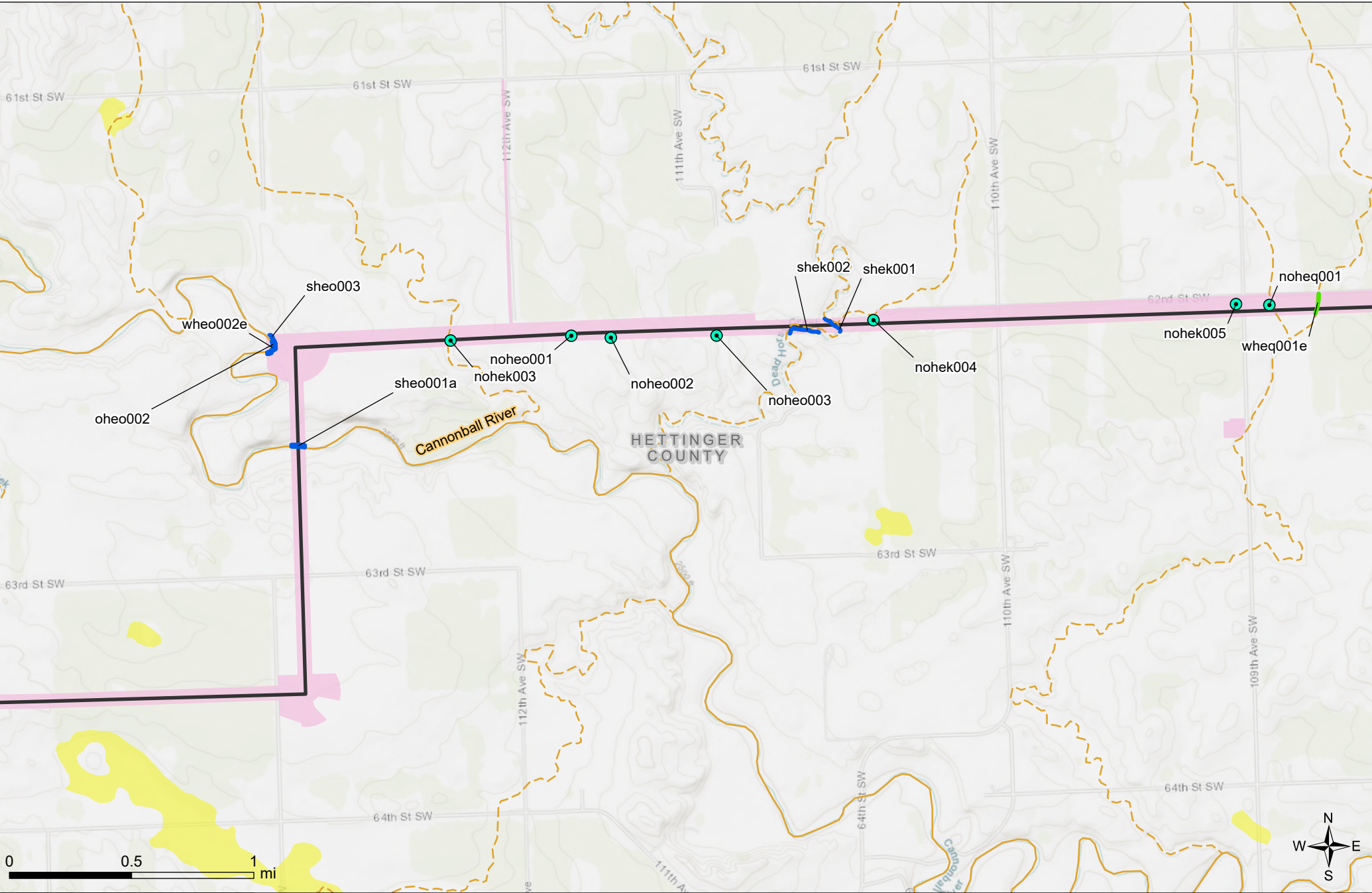
North Plains Connector Project



Proposed Route (October 2025)	<b>Desktop Review</b>
2022-2025 Survey Area	NRCS Web Soil Survey: Hydric Soil
<b>Field Survey Results</b>	NHD Stream/River
Waterbody	Intermittent
Wetland	Perennial
No Water Point	

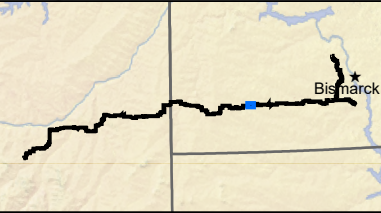
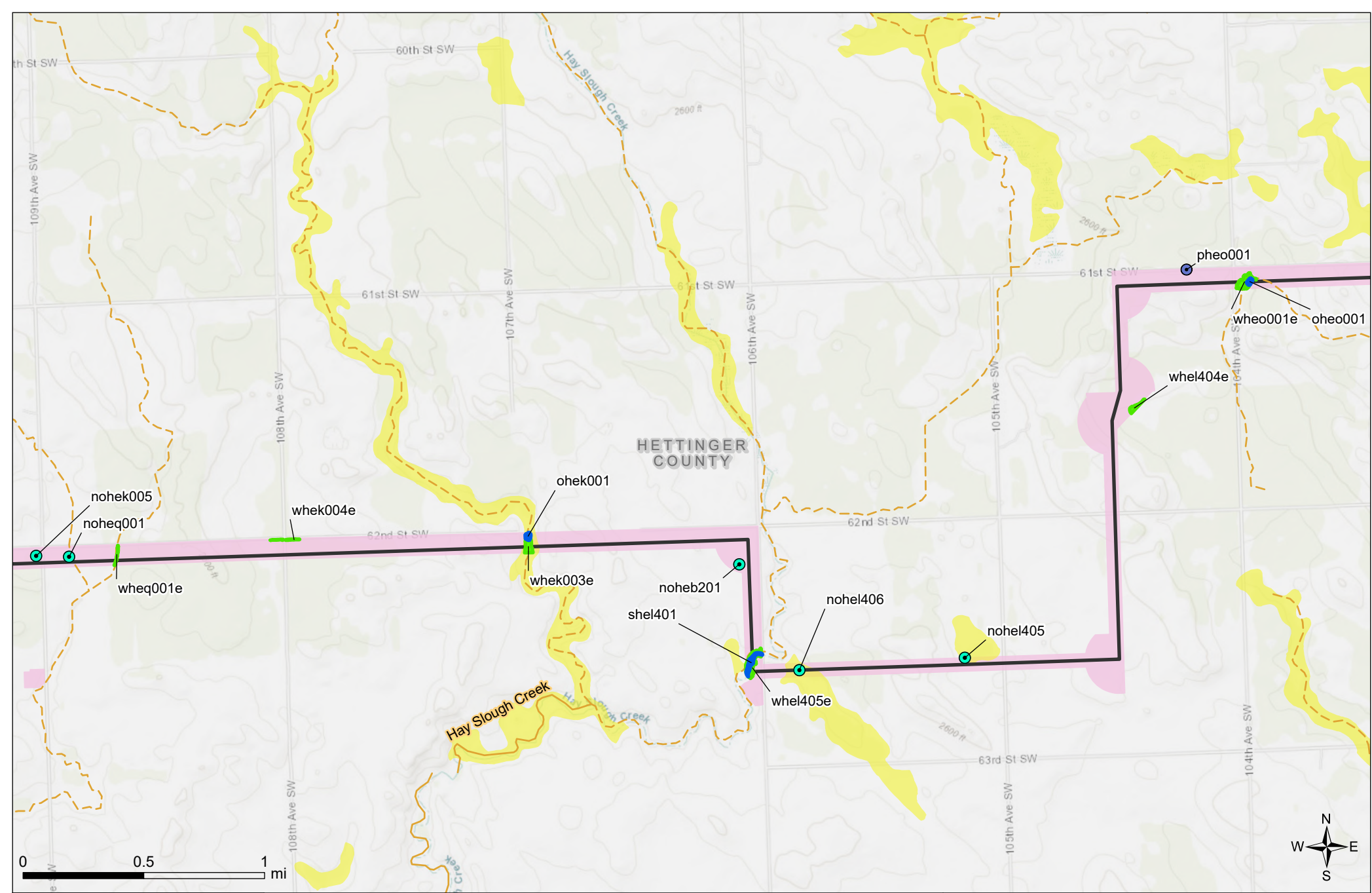
**Aquatic Resource Inventory Survey Results**

North Plains Connector Project



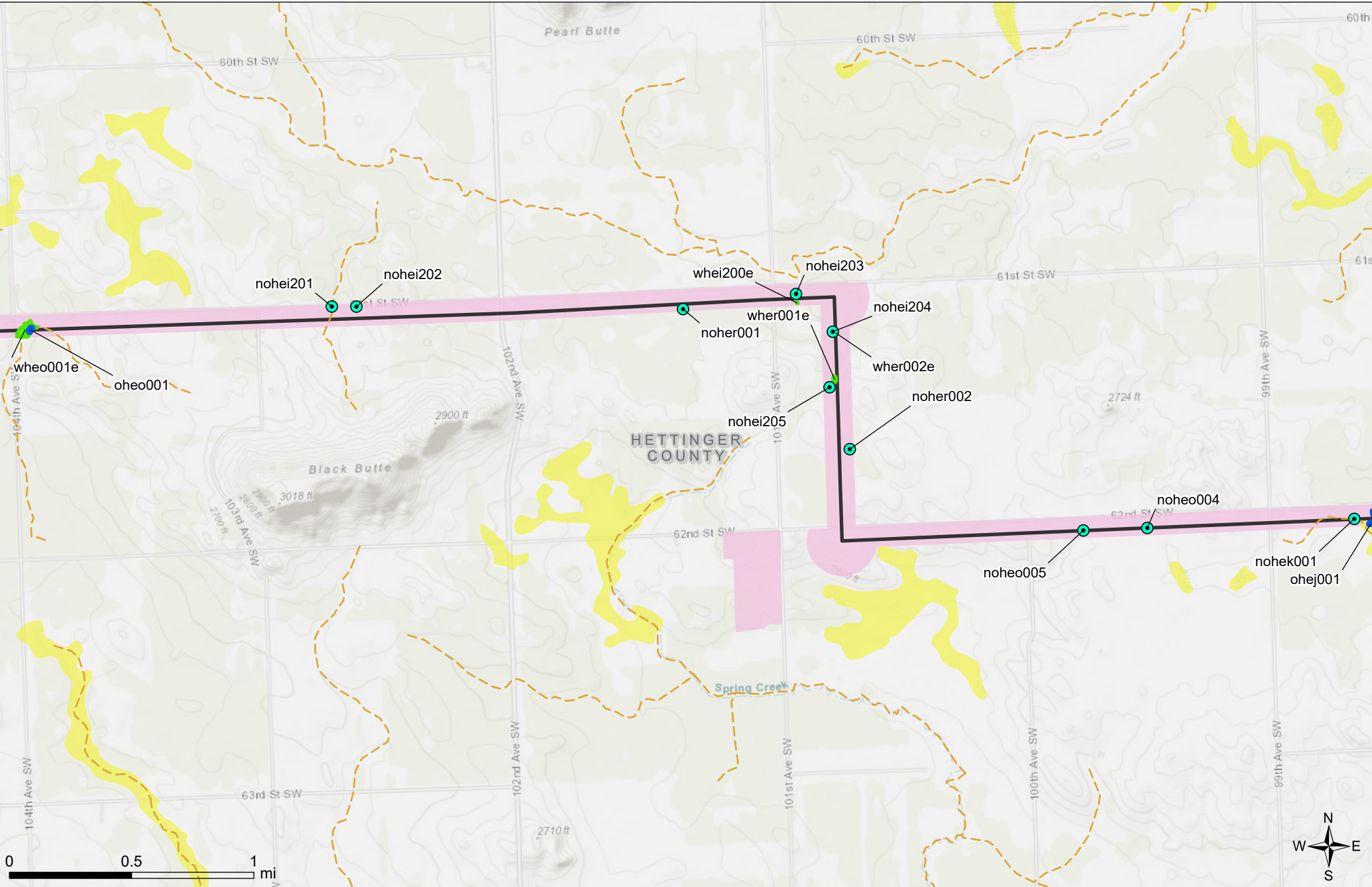
Proposed Route (October 2025)	<b>Desktop Review</b>
2022-2025 Survey Area	NRCS Web Soil Survey: Hydric Soil
<b>Field Survey Results</b>	NHD Stream/River
Waterbody	Intermittent
Wetland	Perennial
No Water Point	

**Aquatic Resource Inventory Survey Results**  
North Plains Connector Project



Proposed Route (October 2025)	<b>Desktop Review</b>
2022-2025 Survey Area	NRCS Web Soil Survey: Hydric Soil
<b>Field Survey Results</b>	NHD Stream/River
Waterbody	Intermittent
Wetland	Perennial
No Water Point	
Seep Point	

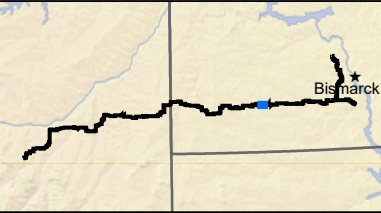
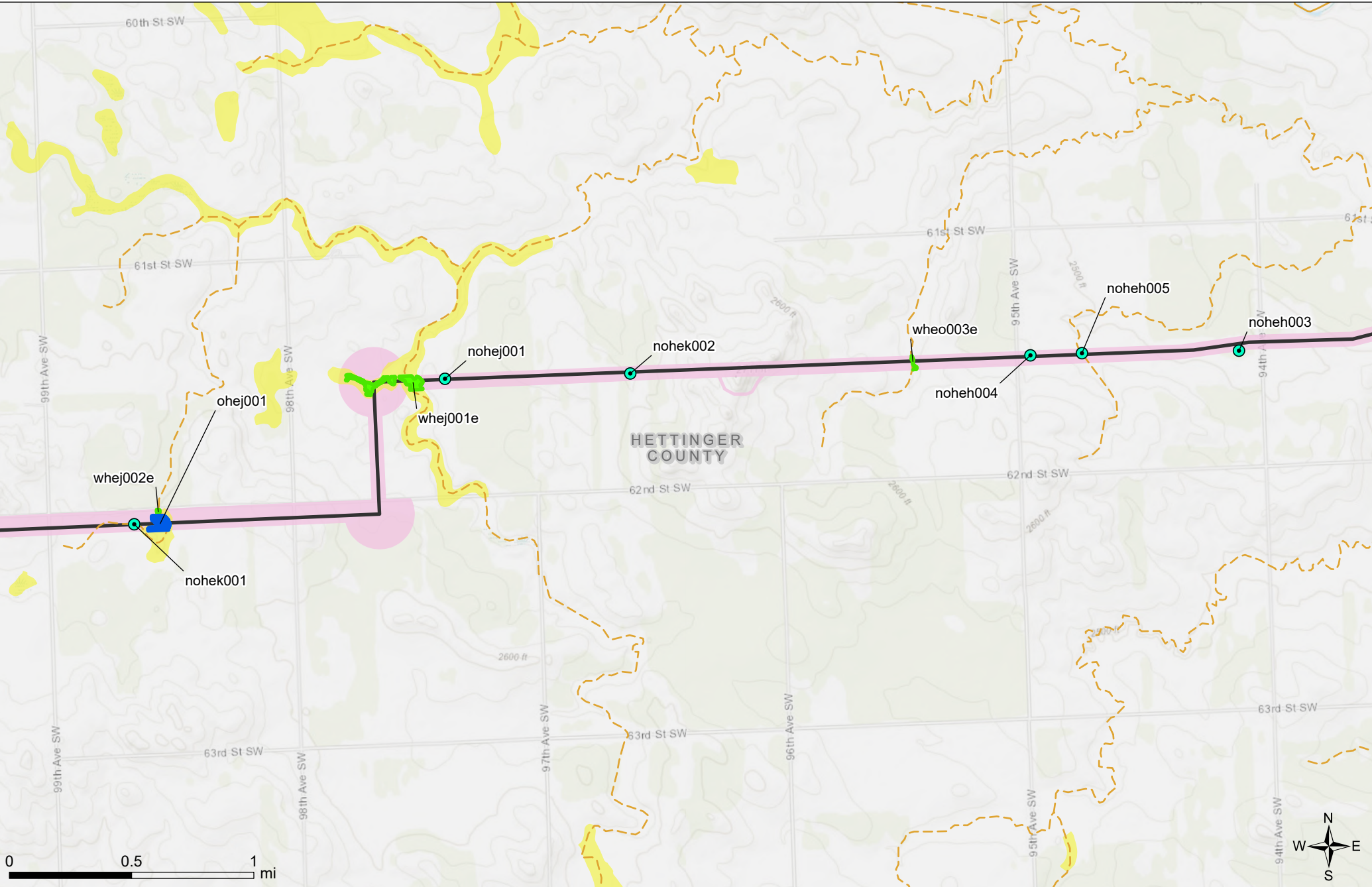
**Aquatic Resource Inventory Survey Results**  
North Plains Connector Project



<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 2px; background-color: black; margin-right: 5px;"></span> Proposed Route (October 2025)</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: pink; margin-right: 5px;"></span> 2022-2025 Survey Area</li> <li><b>Field Survey Results</b></li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: blue; border-radius: 50%; margin-right: 5px;"></span> Waterbody</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: green; border-radius: 50%; margin-right: 5px;"></span> Wetland</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; border-radius: 50%; margin-right: 5px;"></span> No Water Point</li> </ul>	<ul style="list-style-type: none"> <li><b>Desktop Review</b></li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: yellow; margin-right: 5px;"></span> NRCS Web Soil Survey: Hydric Soil</li> <li>NHD Stream/River</li> <li><span style="display: inline-block; width: 20px; border-bottom: 2px dashed orange; margin-right: 5px;"></span> Intermittent</li> </ul>
--	--

**Aquatic Resource Inventory Survey Results**

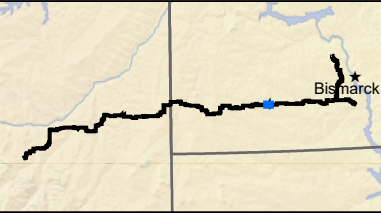
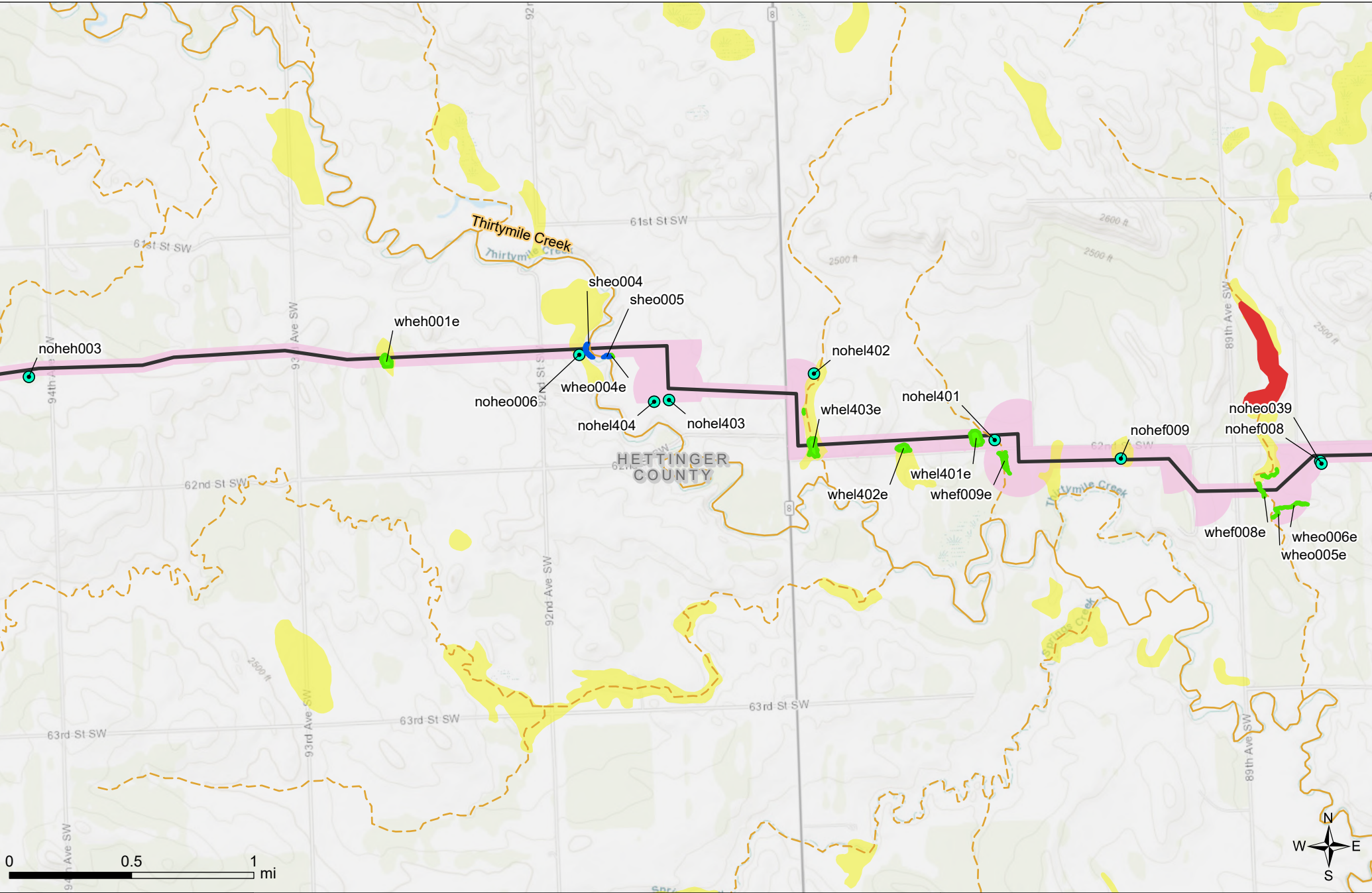
North Plains Connector Project



- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 2px; background-color: black; margin-right: 5px;"></span> Proposed Route (October 2025)</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: pink; margin-right: 5px;"></span> 2022-2025 Survey Area</li> </ul>  | <p><b>Desktop Review</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: yellow; margin-right: 5px;"></span> NRCS Web Soil Survey: Hydric Soil</li> <li>NHD Stream/River           <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; border-bottom: 1px dashed orange; margin-right: 5px;"></span> Intermittent</li> <li><span style="display: inline-block; width: 20px; border-bottom: 1px solid orange; margin-right: 5px;"></span> Perennial</li> </ul> </li> </ul> |
| <p><b>Field Survey Results</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: blue; margin-right: 5px;"></span> Waterbody</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: green; margin-right: 5px;"></span> Wetland</li> <li><span style="display: inline-block; width: 0; height: 0; border-left: 5px solid transparent; border-right: 5px solid transparent; border-bottom: 10px solid black; margin-right: 5px;"></span> No Water Point</li> </ul> |   |

**Aquatic Resource Inventory Survey Results**

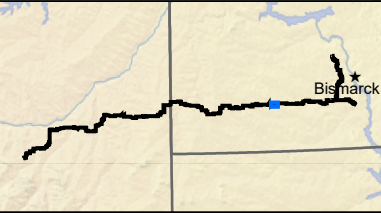
North Plains Connector Project



<ul style="list-style-type: none"> <li> Proposed Route (October 2025)</li> <li> 2022-2025 Survey Area</li> </ul>	<p><b>Desktop Review</b></p> <ul style="list-style-type: none"> <li> NRCS Web Soil Survey: Hydric Soil</li> <li>NHD Stream/River <ul style="list-style-type: none"> <li> Intermittent</li> <li> Perennial</li> </ul> </li> <li>NHD Waterbodies <ul style="list-style-type: none"> <li> Lakes, Ponds, Reservoirs, and Estuaries</li> </ul> </li> </ul>
<p><b>Field Survey Results</b></p> <ul style="list-style-type: none"> <li> Waterbody</li> <li> Wetland</li> <li> No Water Point</li> </ul>	

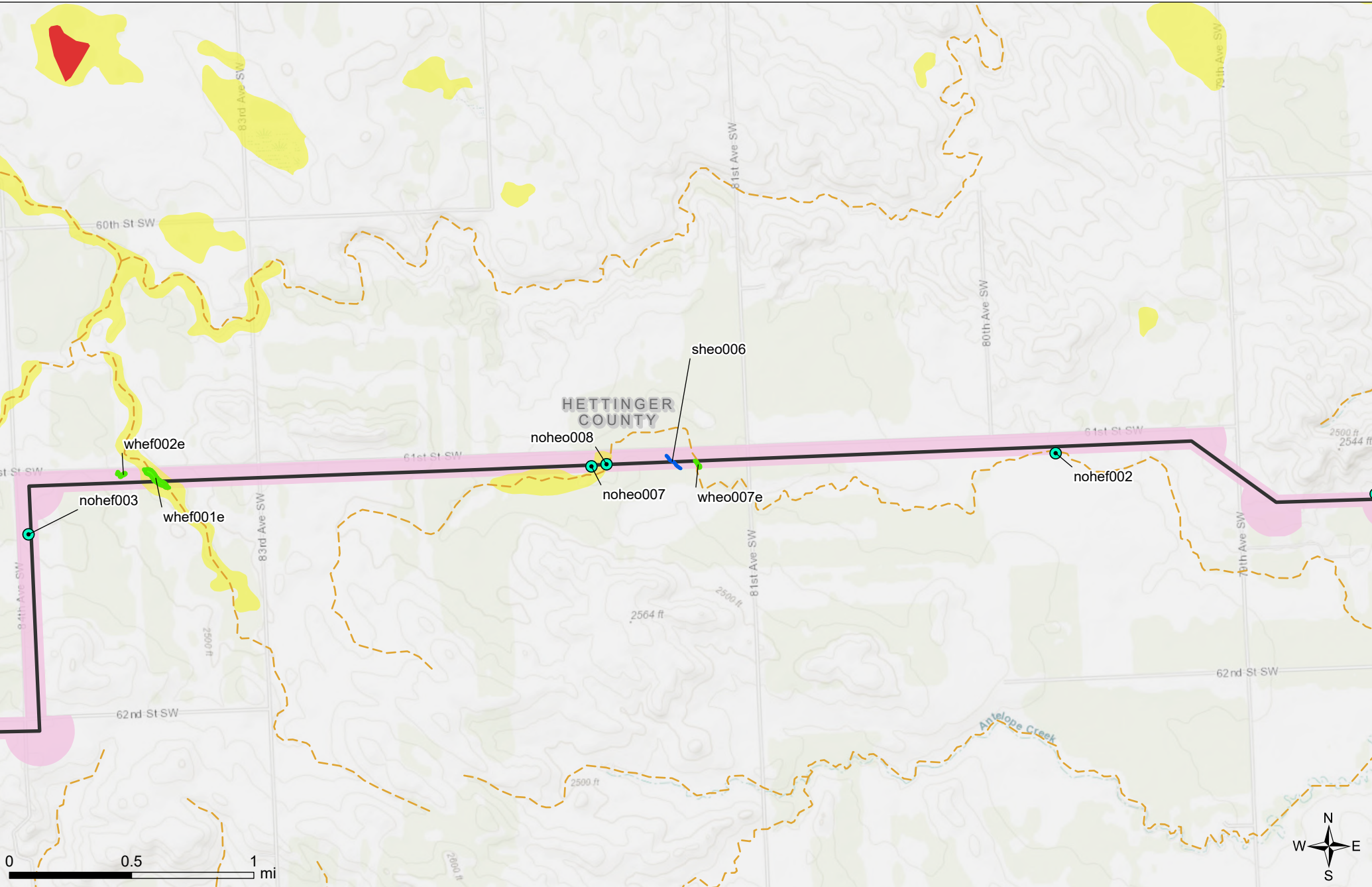
## Aquatic Resource Inventory Survey Results

### North Plains Connector Project



Proposed Route (October 2025)	<b>Desktop Review</b>
2022-2025 Survey Area	NRCS Web Soil Survey: Hydric Soil
<b>Field Survey Results</b>	NHD Stream/River
Waterbody	Intermittent
Wetland	Perennial
No Water Point	<b>NHD Waterbodies</b>
	Lakes, Ponds, Reservoirs, and Estuaries

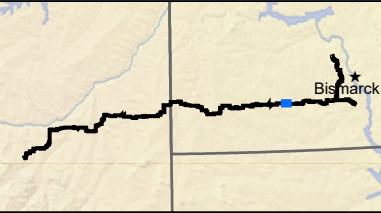
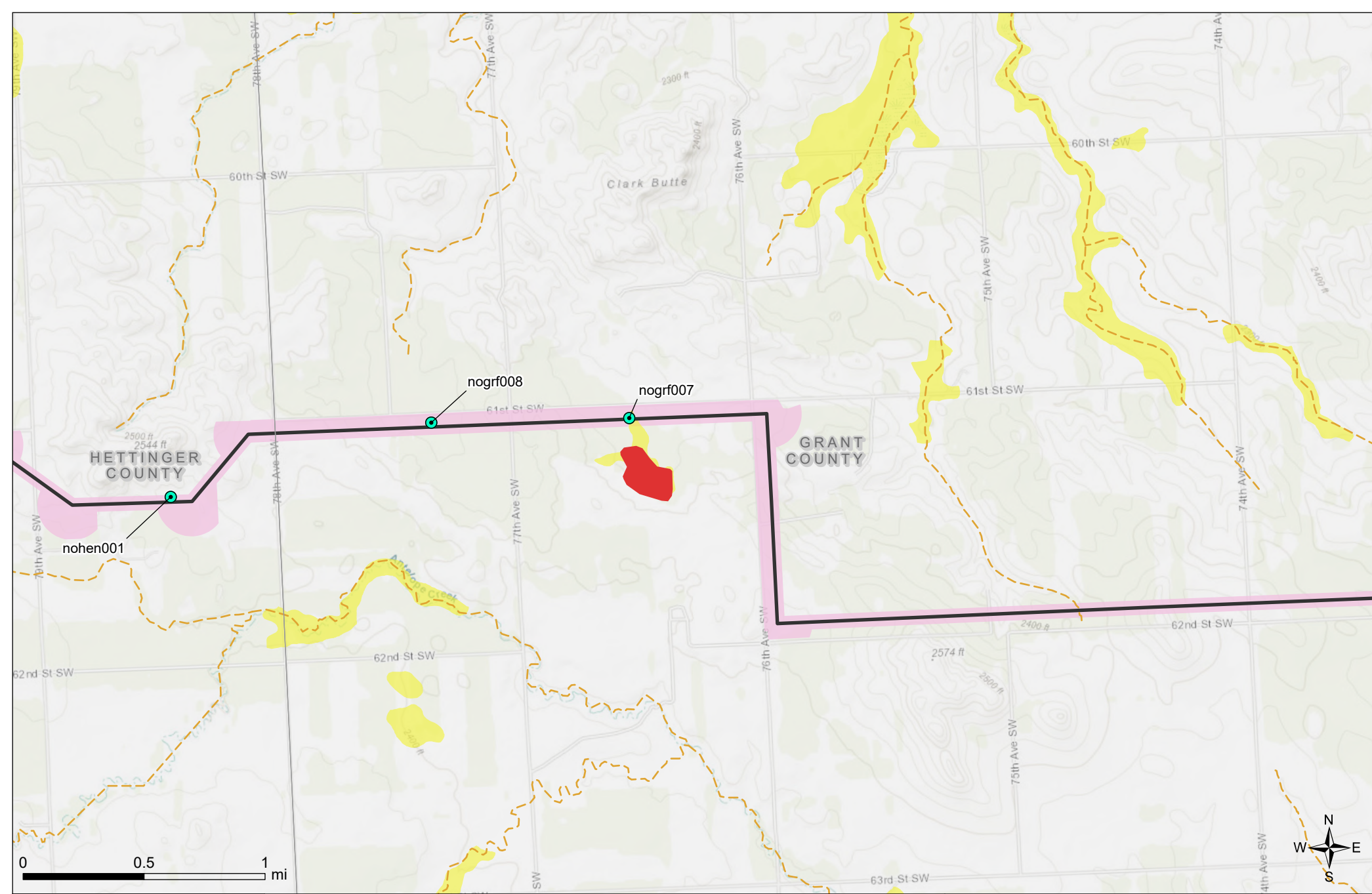
**Aquatic Resource Inventory Survey Results**  
North Plains Connector Project



- |  |  |  |
|--|--|--|
| <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 2px; background-color: black; margin-right: 5px;"></span> Proposed Route (October 2025)</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: pink; margin-right: 5px;"></span> 2022-2025 Survey Area</li> </ul> | <p><b>Field Survey Results</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: blue; margin-right: 5px;"></span> Waterbody</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: green; margin-right: 5px;"></span> Wetland</li> <li><span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; border-radius: 50%; margin-right: 5px;"></span> No Water Point</li> </ul> | <p><b>Desktop Review</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: yellow; margin-right: 5px;"></span> NRCS Web Soil Survey: Hydric Soil</li> <li><span style="display: inline-block; width: 20px; border-bottom: 2px dashed orange; margin-right: 5px;"></span> NHD Stream/River</li> <li><span style="display: inline-block; width: 20px; height: 10px; border: 1px dashed orange; margin-right: 5px;"></span> Intermittent</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: lightblue; margin-right: 5px;"></span> NHD Waterbodies</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: red; margin-right: 5px;"></span> Lakes, Ponds, Reservoirs, and Estuaries</li> </ul> |
|--|--|--|

**Aquatic Resource Inventory Survey Results**

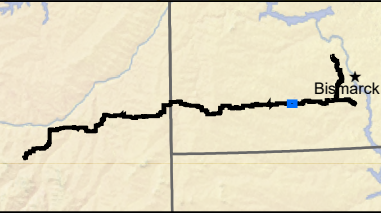
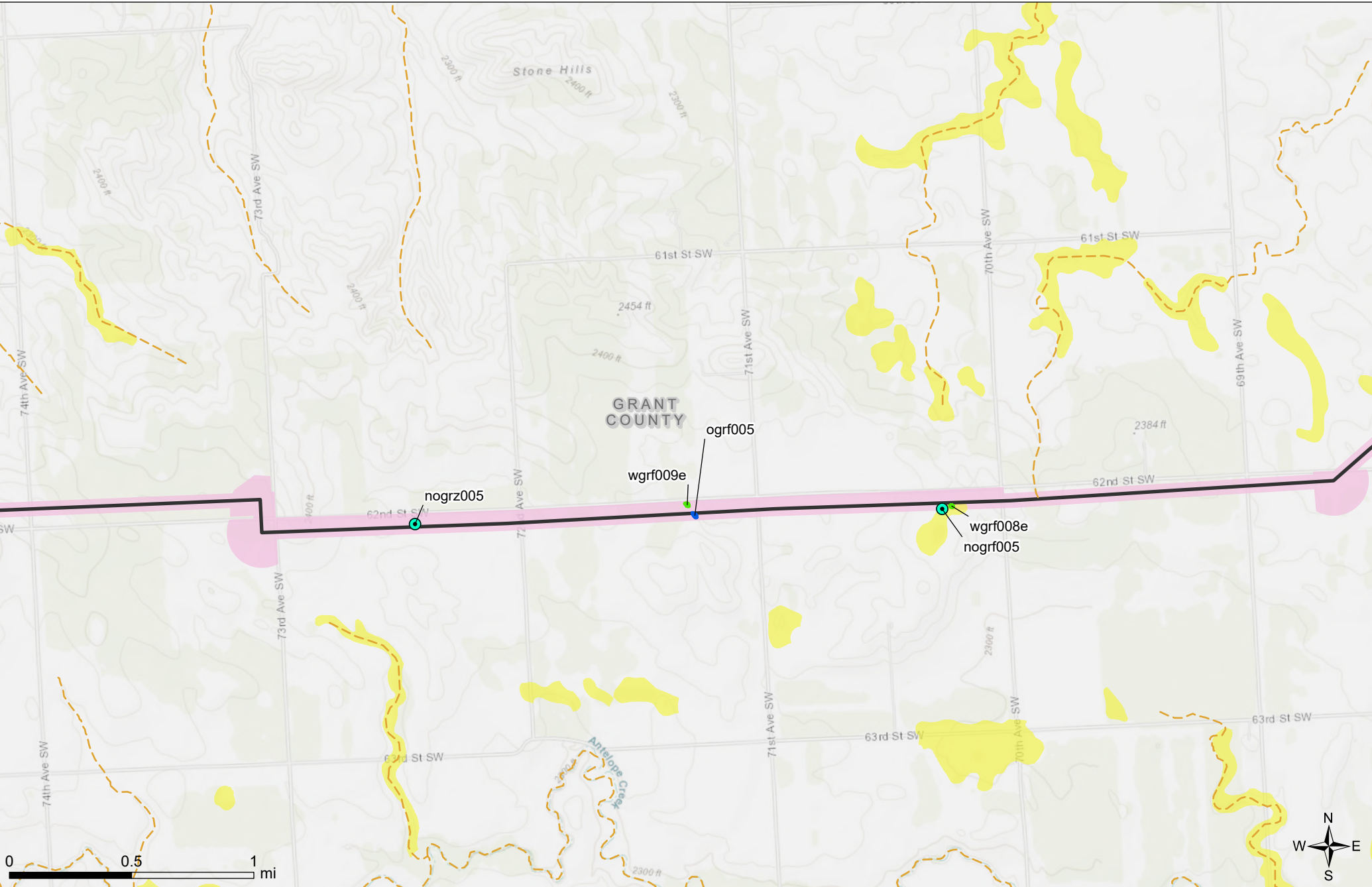
North Plains Connector Project



<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 2px; background-color: black; margin-right: 5px;"></span> Proposed Route (October 2025)</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: pink; margin-right: 5px;"></span> 2022-2025 Survey Area</li> </ul>	<p><b>Field Survey Results</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 10px; height: 10px; border: 1px solid green; border-radius: 50%; margin-right: 5px;"></span> No Water Point</li> </ul>	<p><b>Desktop Review</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: yellow; margin-right: 5px;"></span> NRCs Web Soil Survey: Hydric Soil</li> <li><span style="display: inline-block; width: 20px; border-bottom: 1px dashed orange; margin-right: 5px;"></span> NHD Stream/River</li> <li><span style="display: inline-block; width: 20px; border-bottom: 1px dashed orange; margin-right: 5px;"></span> Intermittent</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: lightblue; margin-right: 5px;"></span> NHD Waterbodies</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: red; margin-right: 5px;"></span> Lakes, Ponds, Reservoirs, and Estuaries</li> </ul>
--	---	---

**Aquatic Resource Inventory Survey Results**

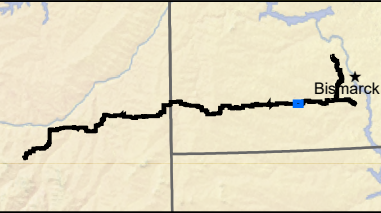
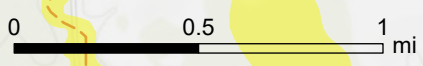
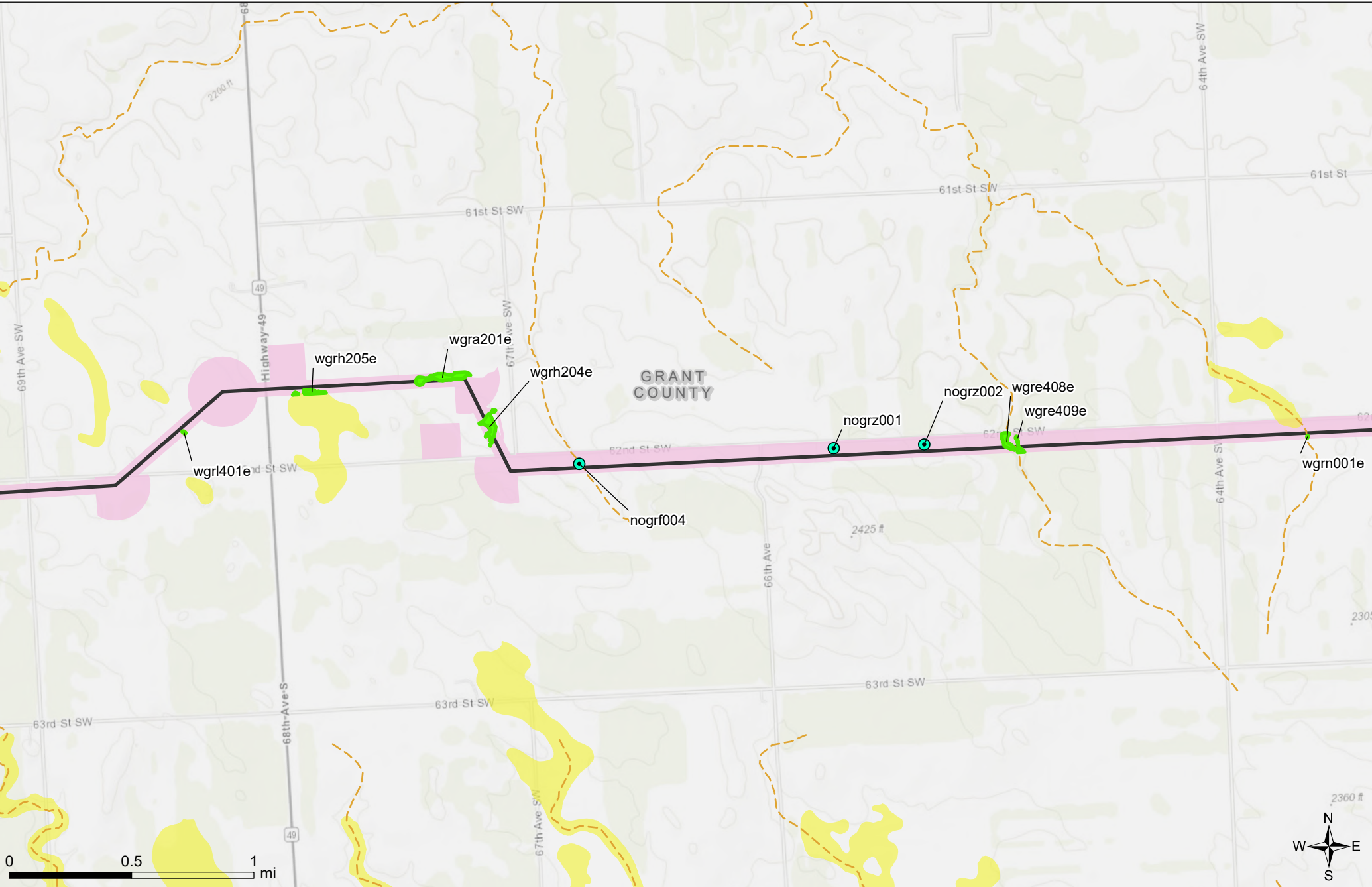
North Plains Connector Project



<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 2px; background-color: black; margin-right: 5px;"></span> Proposed Route (October 2025)</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: pink; margin-right: 5px;"></span> 2022-2025 Survey Area</li> </ul>	<p><b>Desktop Review</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: yellow; margin-right: 5px;"></span> NRCS Web Soil Survey: Hydric Soil</li> <li>NHD Stream/River</li> <li><span style="display: inline-block; width: 20px; border-bottom: 2px dashed orange; margin-right: 5px;"></span> Intermittent</li> </ul>
<p><b>Field Survey Results</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: blue; border-radius: 50%; margin-right: 5px;"></span> Waterbody</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: green; border-radius: 50%; margin-right: 5px;"></span> Wetland</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 2px solid cyan; border-radius: 50%; margin-right: 5px;"></span> No Water Point</li> </ul>	

**Aquatic Resource Inventory Survey Results**

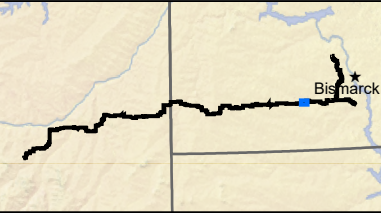
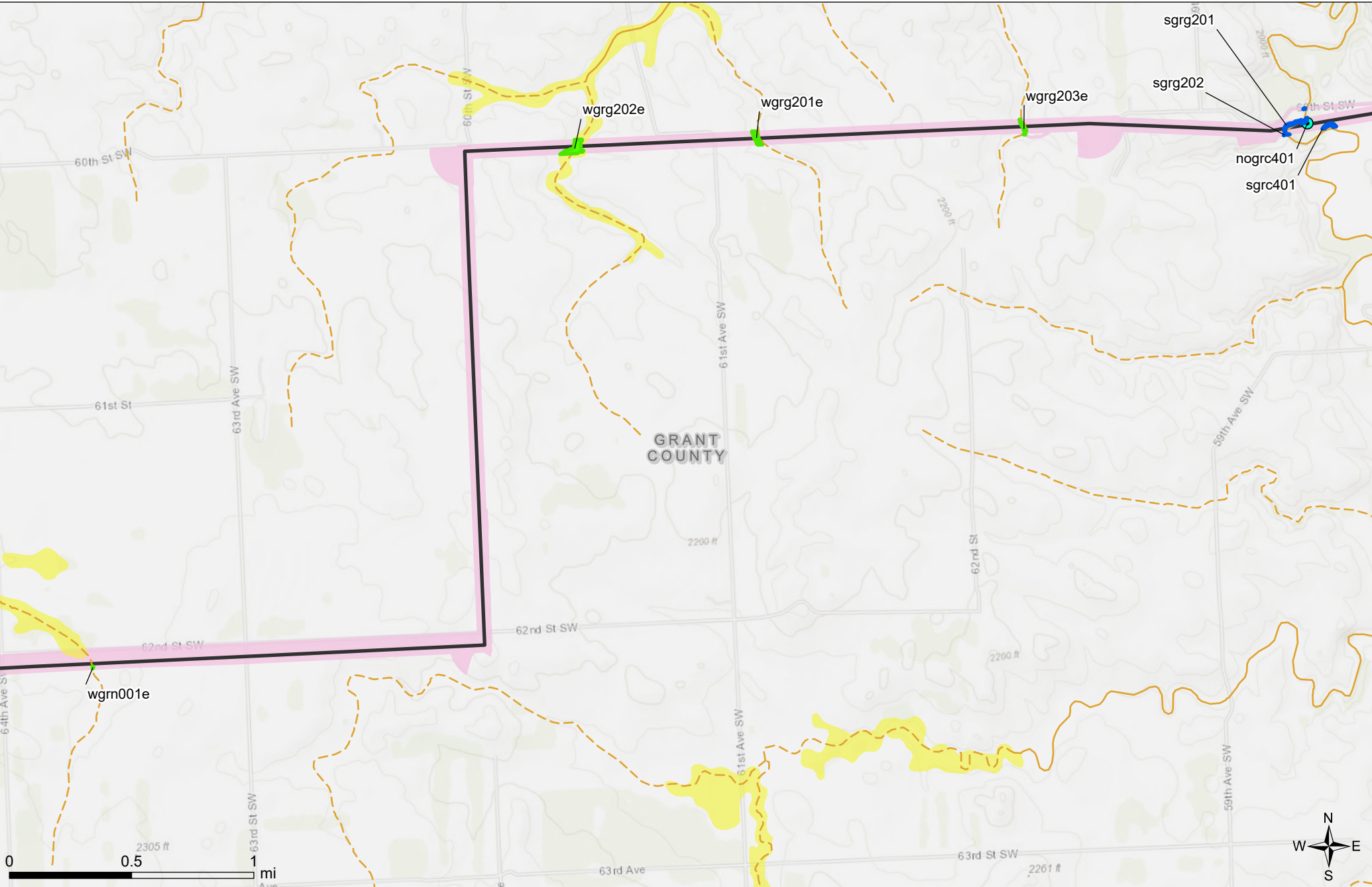
North Plains Connector Project



- Proposed Route (October 2025)
- 2022-2025 Survey Area
- Desktop Review
- NRCS Web Soil Survey: Hydric Soil
- Field Survey Results
- NHD Stream/River
- Intermittent
- Wetland
- No Water Point

**Aquatic Resource Inventory Survey Results**

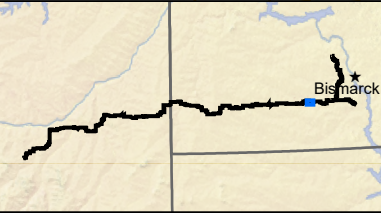
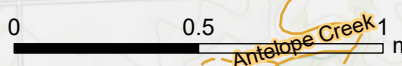
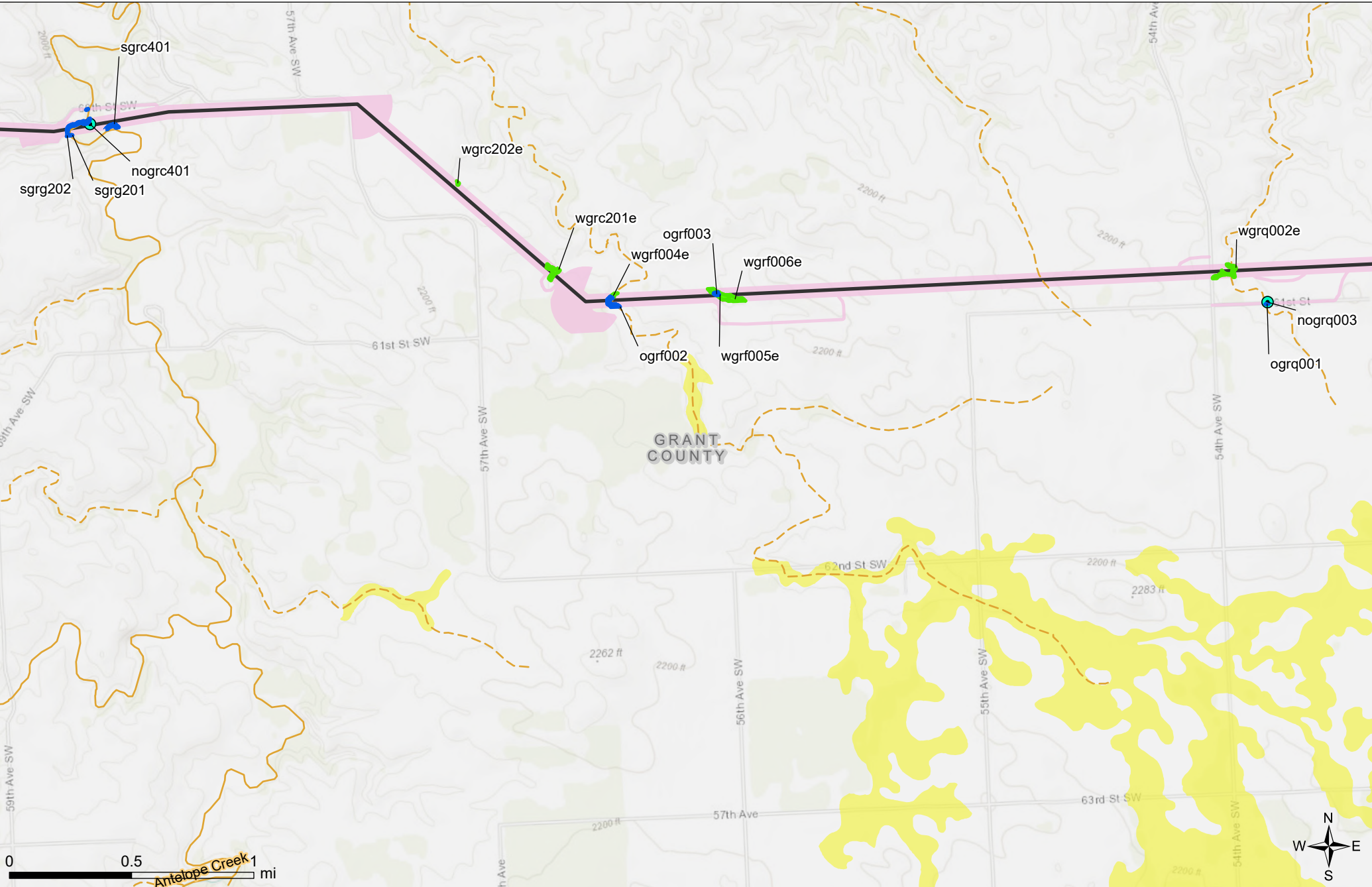
North Plains Connector Project



- Proposed Route (October 2025)
- 2022-2025 Survey Area
- Field Survey Results**
- Waterbody
- Wetland
- No Water Point
- Desktop Review**
- NRCS Web Soil Survey: Hydric Soil
- NHD Stream/River
- Intermittent
- Perennial

**Aquatic Resource Inventory Survey Results**

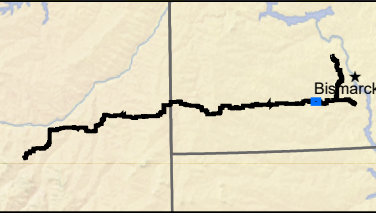
North Plains Connector Project



- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 2px; background-color: black; margin-right: 5px;"></span> Proposed Route (October 2025)</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: pink; margin-right: 5px;"></span> 2022-2025 Survey Area</li> </ul> <p><b>Field Survey Results</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: blue; border-radius: 50%; margin-right: 5px;"></span> Waterbody</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: green; border-radius: 50%; margin-right: 5px;"></span> Wetland</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid cyan; border-radius: 50%; margin-right: 5px;"></span> No Water Point</li> </ul> | <p><b>Desktop Review</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: yellow; border: 1px dashed orange; margin-right: 5px;"></span> NRCS Web Soil Survey: Hydric Soil</li> <li><span style="display: inline-block; width: 20px; border-bottom: 1px dashed orange; margin-right: 5px;"></span> NHD Stream/River</li> <li><span style="display: inline-block; width: 20px; border-bottom: 1px solid orange; margin-right: 5px;"></span> Intermittent</li> <li><span style="display: inline-block; width: 20px; border-bottom: 1px solid orange; margin-right: 5px;"></span> Perennial</li> </ul> |
|--|--|

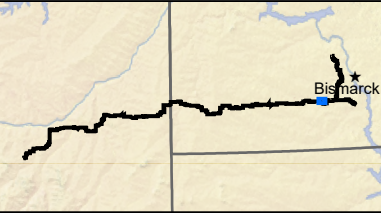
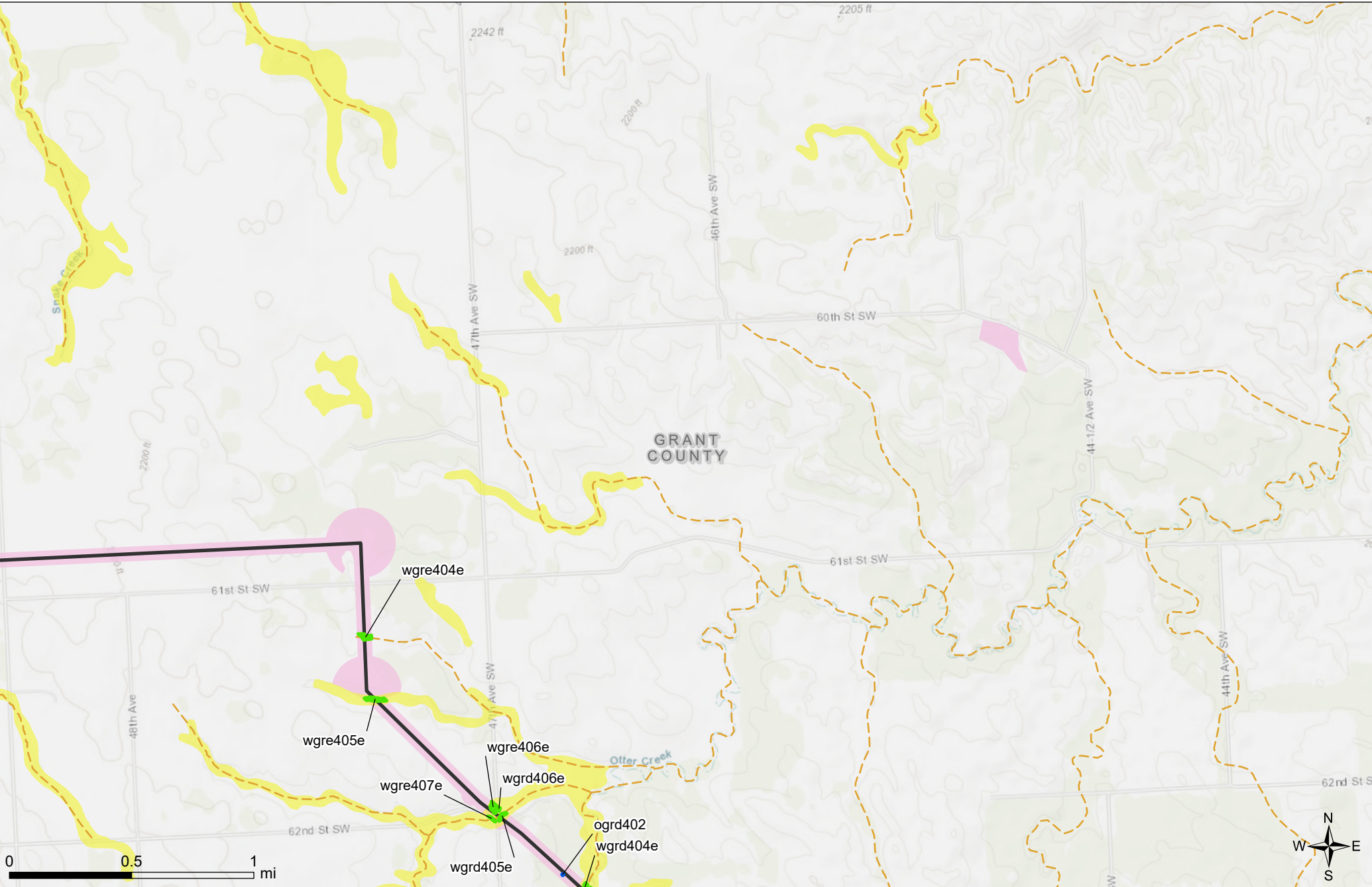
**Aquatic Resource Inventory Survey Results**

North Plains Connector Project



Proposed Route (October 2025)	<b>Desktop Review</b>
2022-2025 Survey Area	NRCS Web Soil Survey: Hydric Soil
<b>Field Survey Results</b>	NHD Stream/River
Waterbody	Intermittent
Wetland	Perennial
No Water Point	NHD Waterbodies
	Lakes, Ponds, Reservoirs, and Estuaries

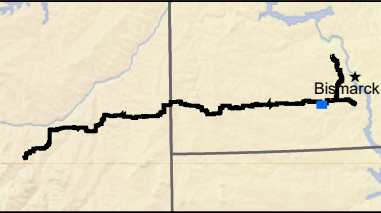
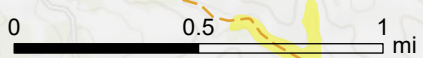
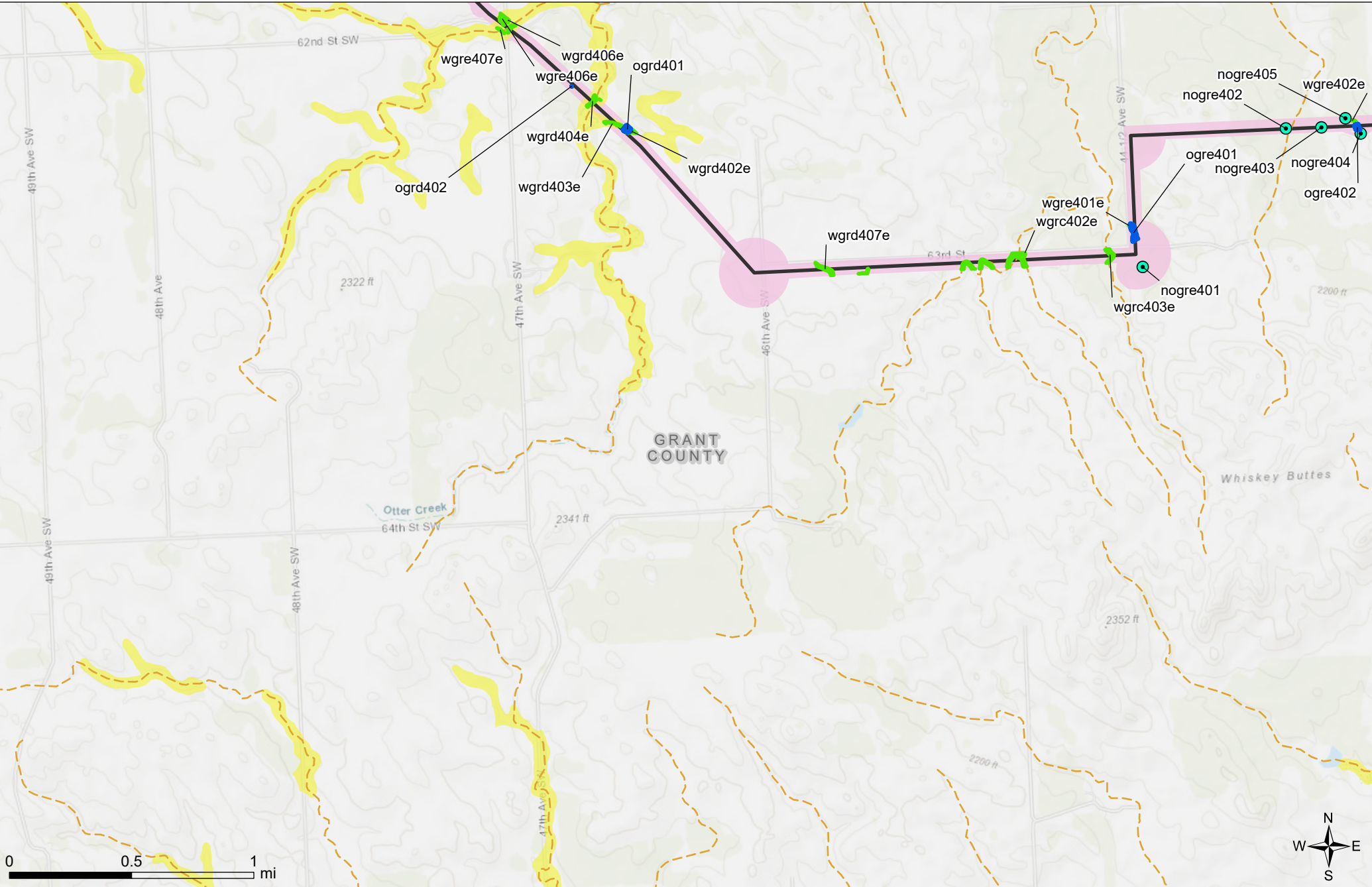
**Aquatic Resource Inventory Survey Results**  
 North Plains Connector Project



<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 2px; background-color: black; margin-right: 5px;"></span> Proposed Route (October 2025)</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: pink; margin-right: 5px;"></span> 2022-2025 Survey Area</li> </ul>	<p><b>Desktop Review</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: yellow; margin-right: 5px;"></span> NRCS Web Soil Survey: Hydric Soil</li> <li>NHD Stream/River</li> <li><span style="display: inline-block; width: 20px; border-bottom: 2px dashed orange; margin-right: 5px;"></span> Intermittent</li> </ul>
<p><b>Field Survey Results</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: blue; margin-right: 5px;"></span> Waterbody</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: green; margin-right: 5px;"></span> Wetland</li> </ul>	

**Aquatic Resource Inventory Survey Results**

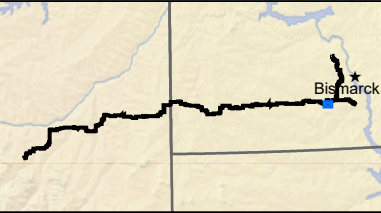
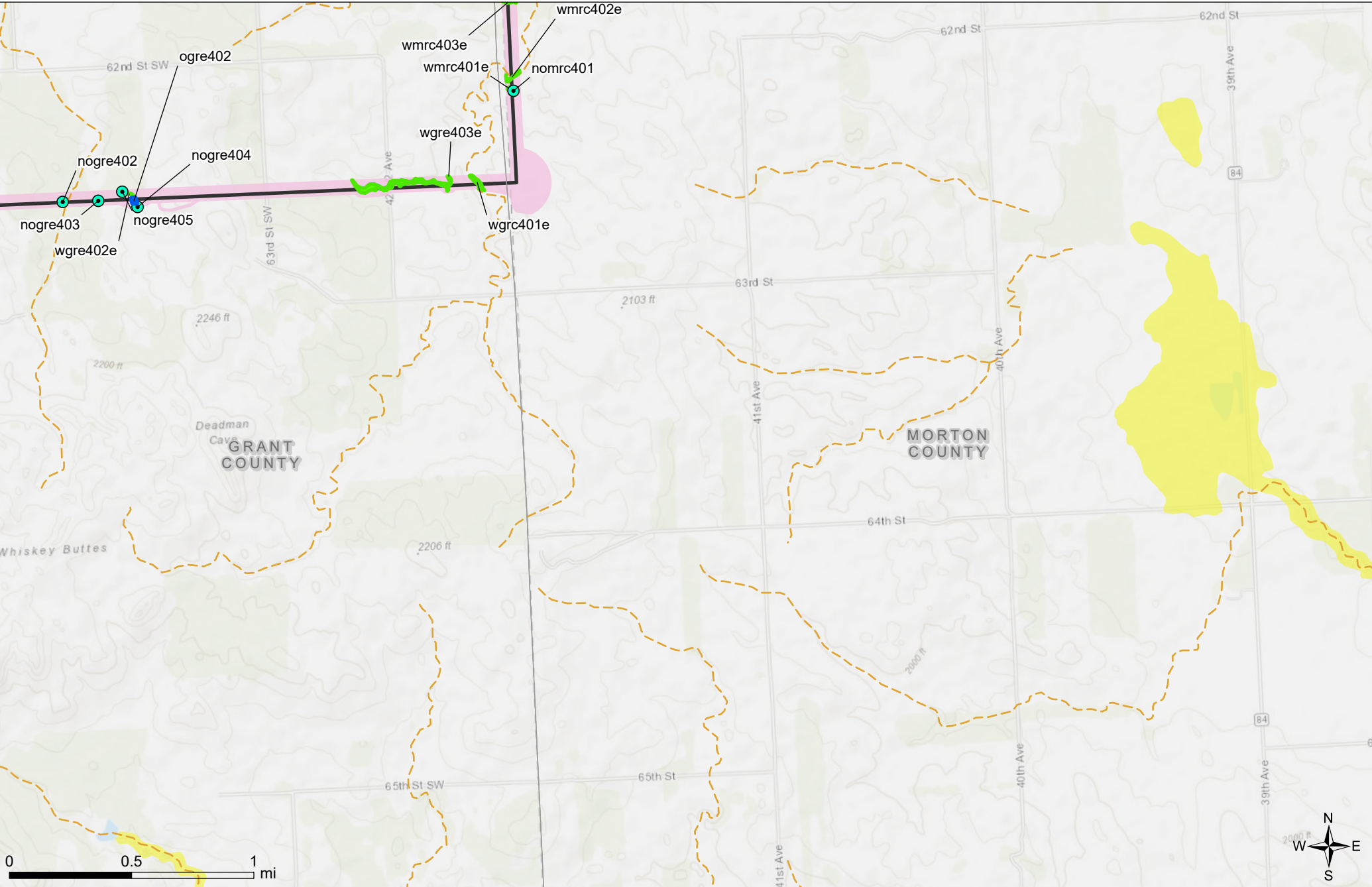
North Plains Connector Project



- Proposed Route (October 2025)
- 2022-2025 Survey Area
- Field Survey Results**
- Waterbody
- Wetland
- No Water Point
- Desktop Review**
- NRCS Web Soil Survey: Hydric Soil
- NHD Stream/River
- Intermittent

**Aquatic Resource Inventory Survey Results**

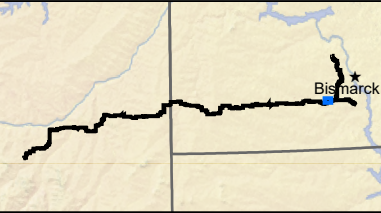
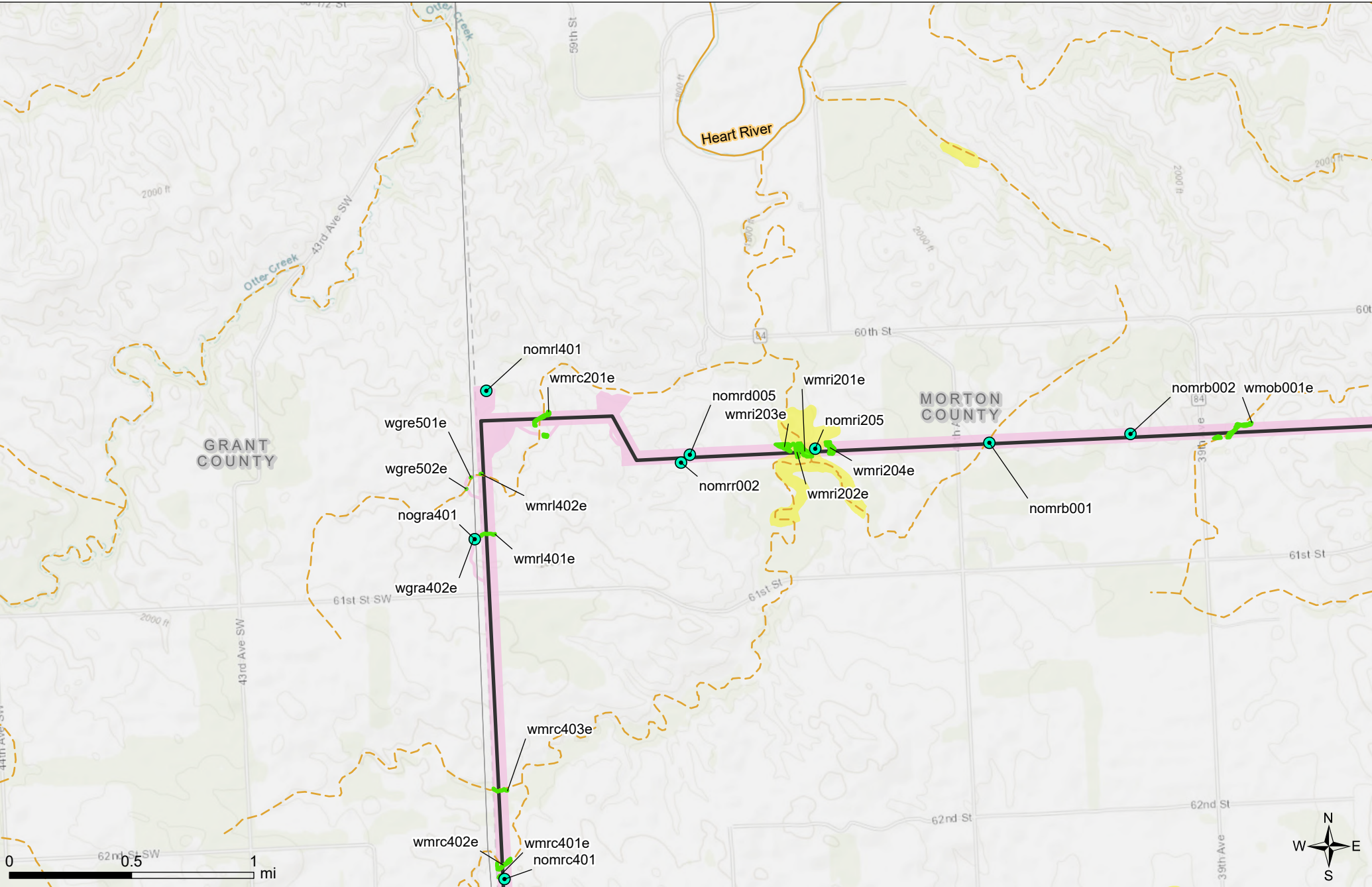
North Plains Connector Project



- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 2px; background-color: black; margin-right: 5px;"></span> Proposed Route (October 2025)</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: pink; margin-right: 5px;"></span> 2022-2025 Survey Area</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: blue; margin-right: 5px;"></span> Waterbody</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: green; margin-right: 5px;"></span> Wetland</li> <li><span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; border-radius: 50%; margin-right: 5px;"></span> No Water Point</li> </ul> | <p><b>Desktop Review</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: yellow; margin-right: 5px;"></span> NRCS Web Soil Survey: Hydric Soil</li> <li>NHD Stream/River</li> <li><span style="display: inline-block; width: 20px; border-bottom: 2px dashed orange; margin-right: 5px;"></span> Intermittent</li> </ul> |
|---|--|

**Aquatic Resource Inventory Survey Results**

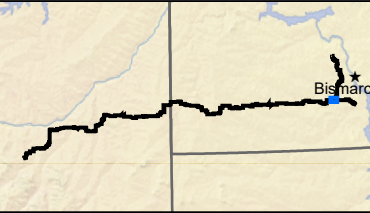
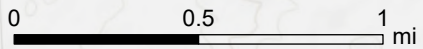
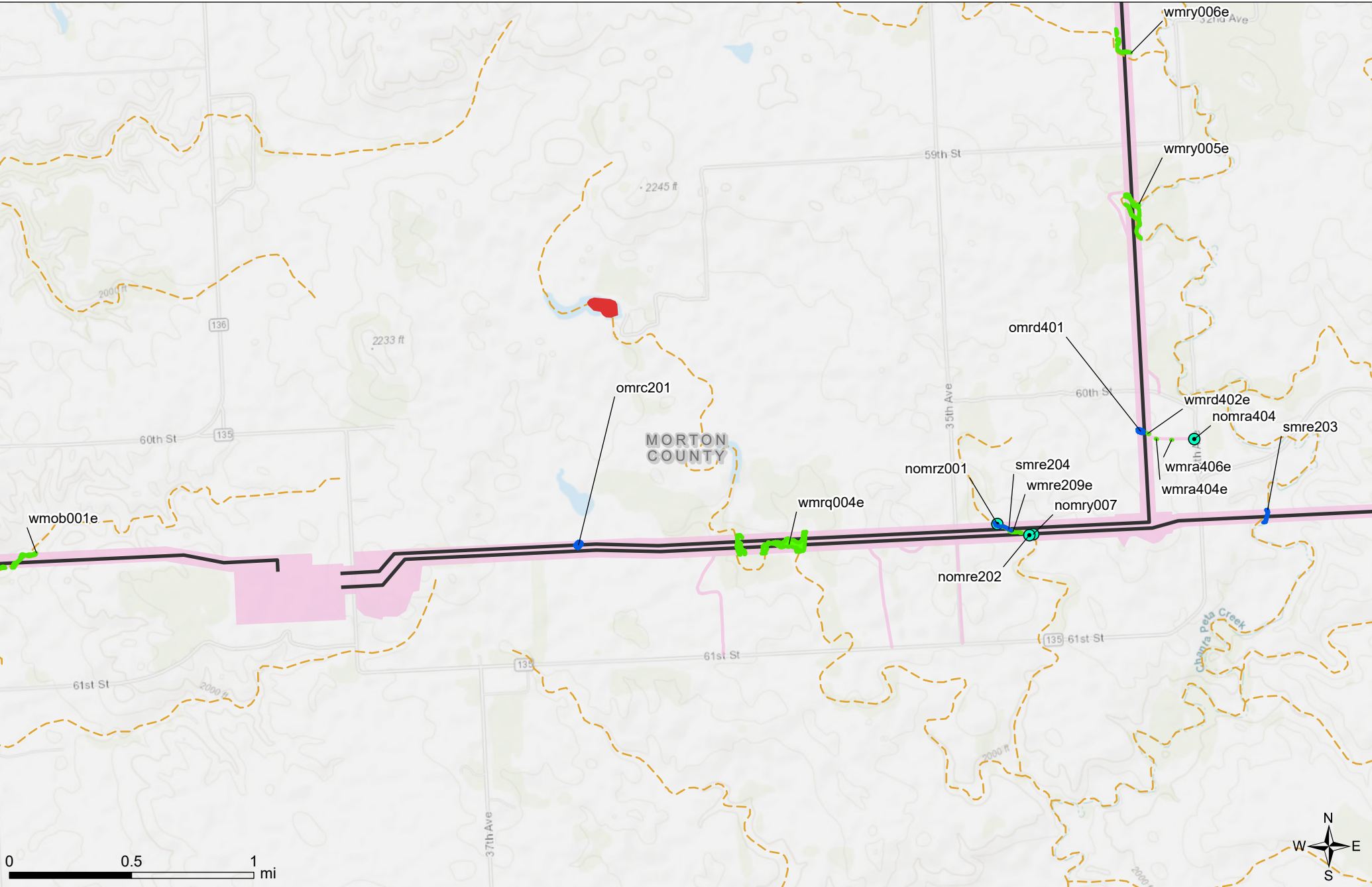
North Plains Connector Project



<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 2px; background-color: black; margin-right: 5px;"></span> Proposed Route (October 2025)</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: pink; margin-right: 5px;"></span> 2022-2025 Survey Area</li> </ul> <p><b>Field Survey Results</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: green; margin-right: 5px;"></span> Wetland</li> <li><span style="display: inline-block; width: 10px; height: 10px; border: 1px solid cyan; border-radius: 50%; margin-right: 5px;"></span> No Water Point</li> </ul>	<p><b>Desktop Review</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: yellow; margin-right: 5px;"></span> NRCS Web Soil Survey: Hydric Soil</li> <li>NHD Stream/River</li> <li><span style="display: inline-block; width: 20px; border-bottom: 1px dashed orange; margin-right: 5px;"></span> Intermittent</li> <li><span style="display: inline-block; width: 20px; border-bottom: 1px solid orange; margin-right: 5px;"></span> Perennial</li> </ul>
--	---

**Aquatic Resource Inventory Survey Results**

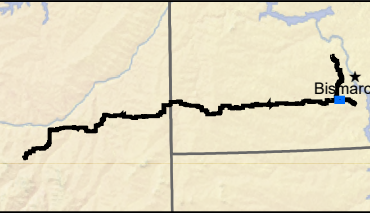
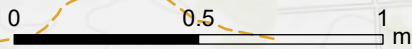
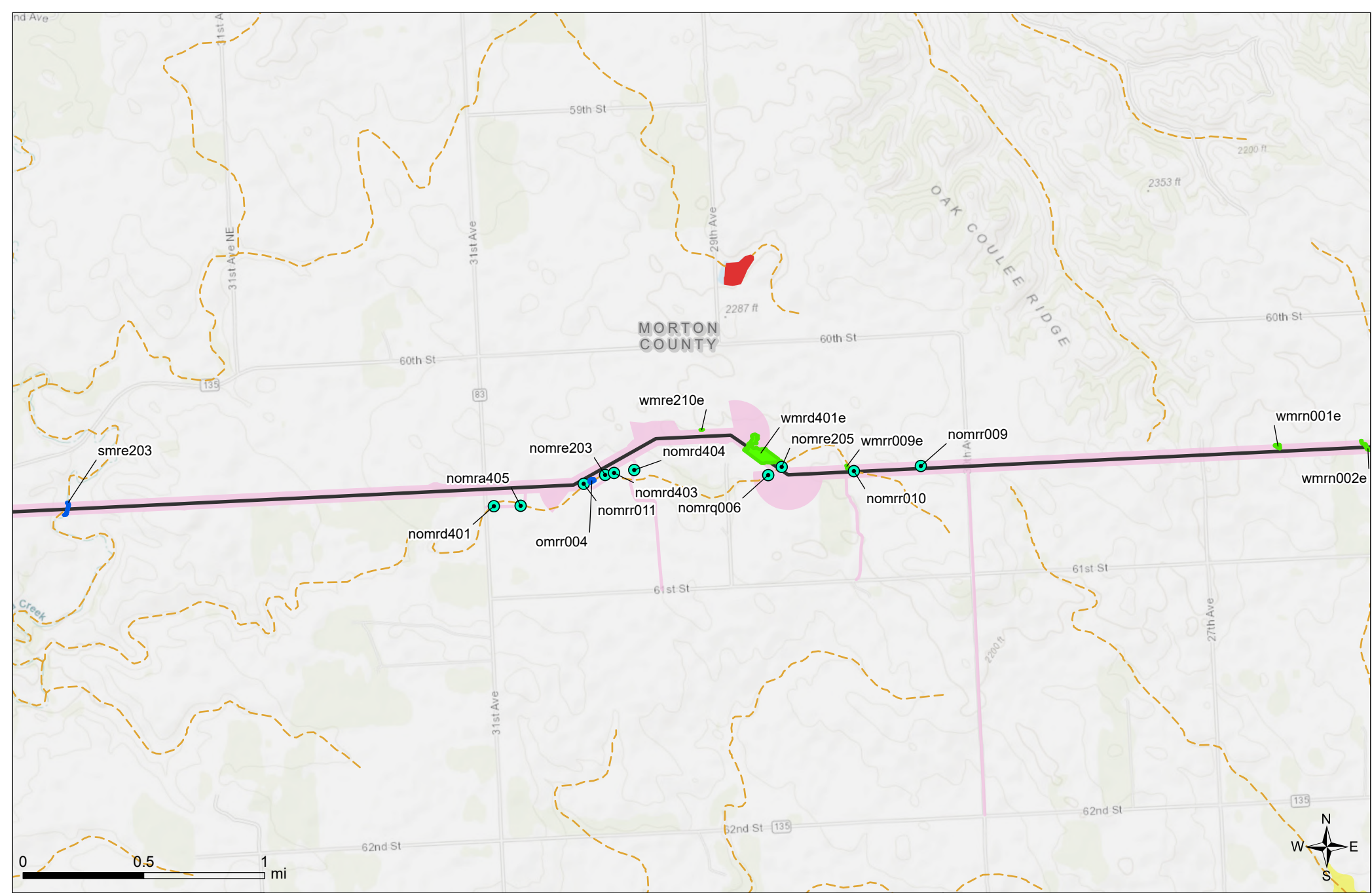
North Plains Connector Project



Proposed Route (October 2025)	<b>Desktop Review</b>
2022-2025 Survey Area	NHD Stream/River
<b>Field Survey Results</b>	Intermittent
Waterbody	NHD Waterbodies
Wetland	Lakes, Ponds, Reservoirs, and Estuaries
No Water Point	

**Aquatic Resource Inventory Survey Results**

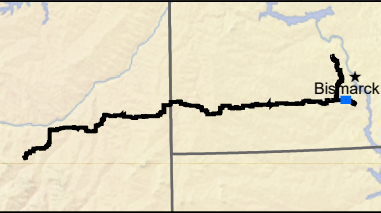
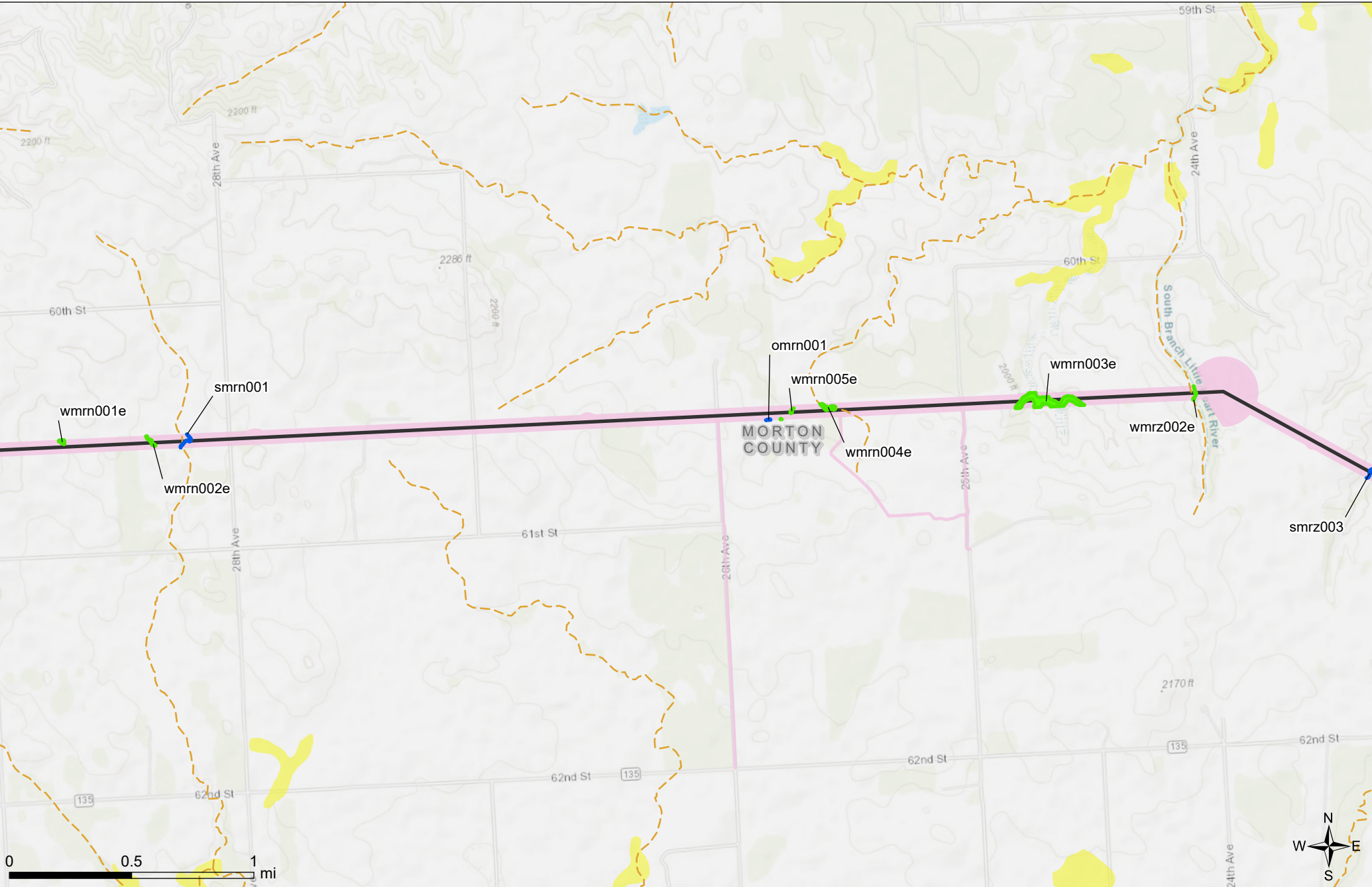
North Plains Connector Project



<ul style="list-style-type: none"> <li><span style="color: black; font-weight: bold;">—</span> Proposed Route (October 2025)</li> <li><span style="background-color: pink; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> 2022-2025 Survey Area</li> <li><b>Field Survey Results</b></li> <li><span style="background-color: blue; border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span> Waterbody</li> <li><span style="background-color: green; border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span> Wetland</li> <li><span style="color: green; font-weight: bold;">●</span> No Water Point</li> </ul>	<ul style="list-style-type: none"> <li><b>Desktop Review</b></li> <li><span style="background-color: yellow; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> NRCS Web Soil Survey: Hydric Soil</li> <li>NHD Stream/River</li> <li><span style="border-bottom: 1px dashed orange; display: inline-block; width: 20px;"></span> Intermittent</li> <li>NHD Waterbodies</li> <li><span style="background-color: red; border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span> Lakes, Ponds, Reservoirs, and Estuaries</li> </ul>
---	---

**Aquatic Resource Inventory Survey Results**

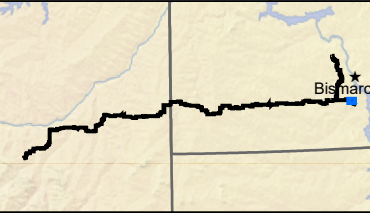
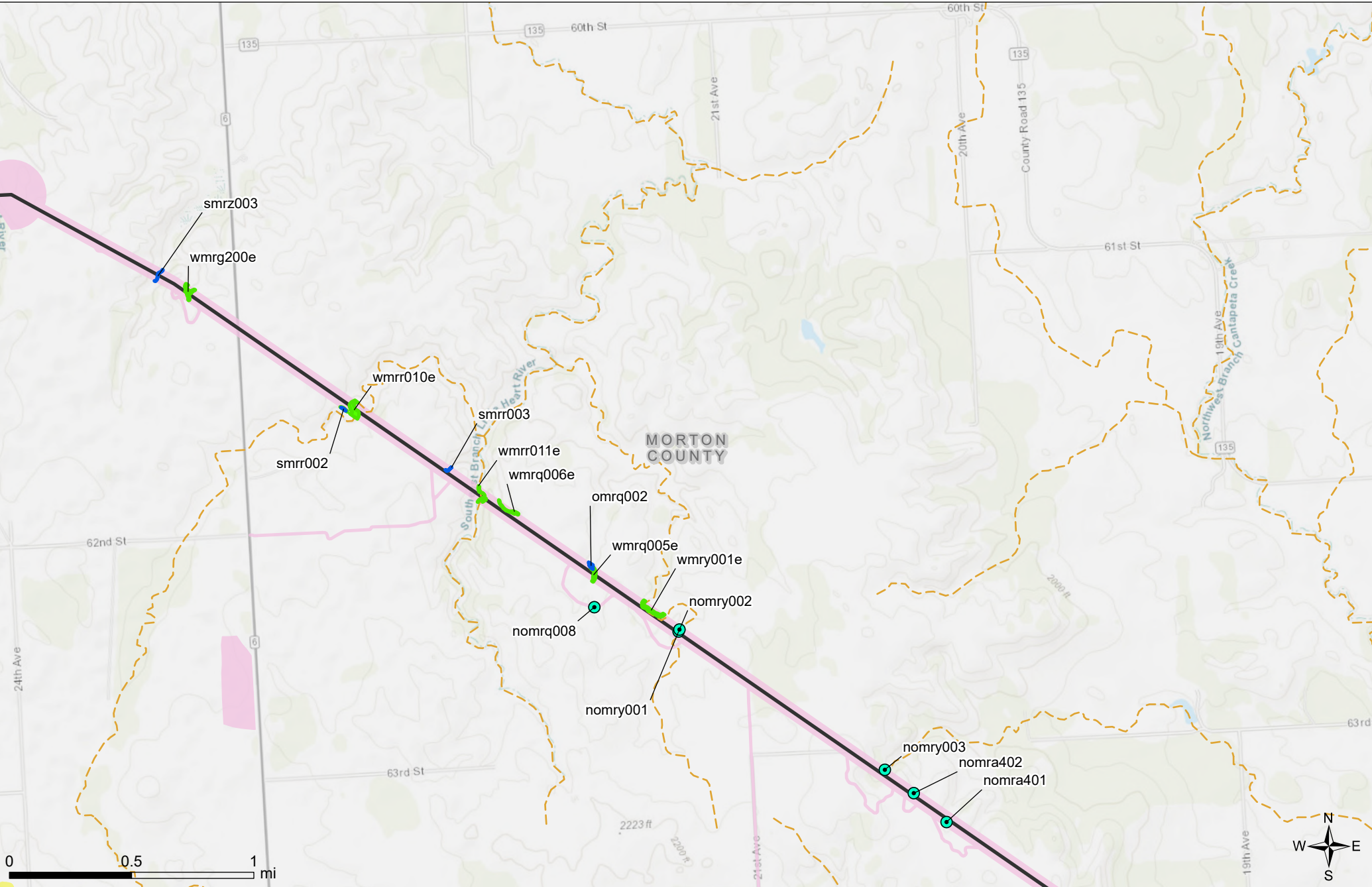
North Plains Connector Project



<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 2px; background-color: black; margin-right: 5px;"></span> Proposed Route (October 2025)</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: pink; margin-right: 5px;"></span> 2022-2025 Survey Area</li> </ul>	<p><b>Desktop Review</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: yellow; margin-right: 5px;"></span> NRCS Web Soil Survey: Hydric Soil</li> <li>NHD Stream/River</li> <li><span style="display: inline-block; width: 20px; border-bottom: 2px dashed orange; margin-right: 5px;"></span> Intermittent</li> </ul>
<p><b>Field Survey Results</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: blue; margin-right: 5px;"></span> Waterbody</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: green; margin-right: 5px;"></span> Wetland</li> </ul>	

**Aquatic Resource Inventory Survey Results**

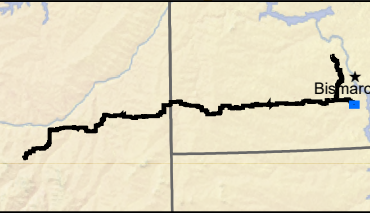
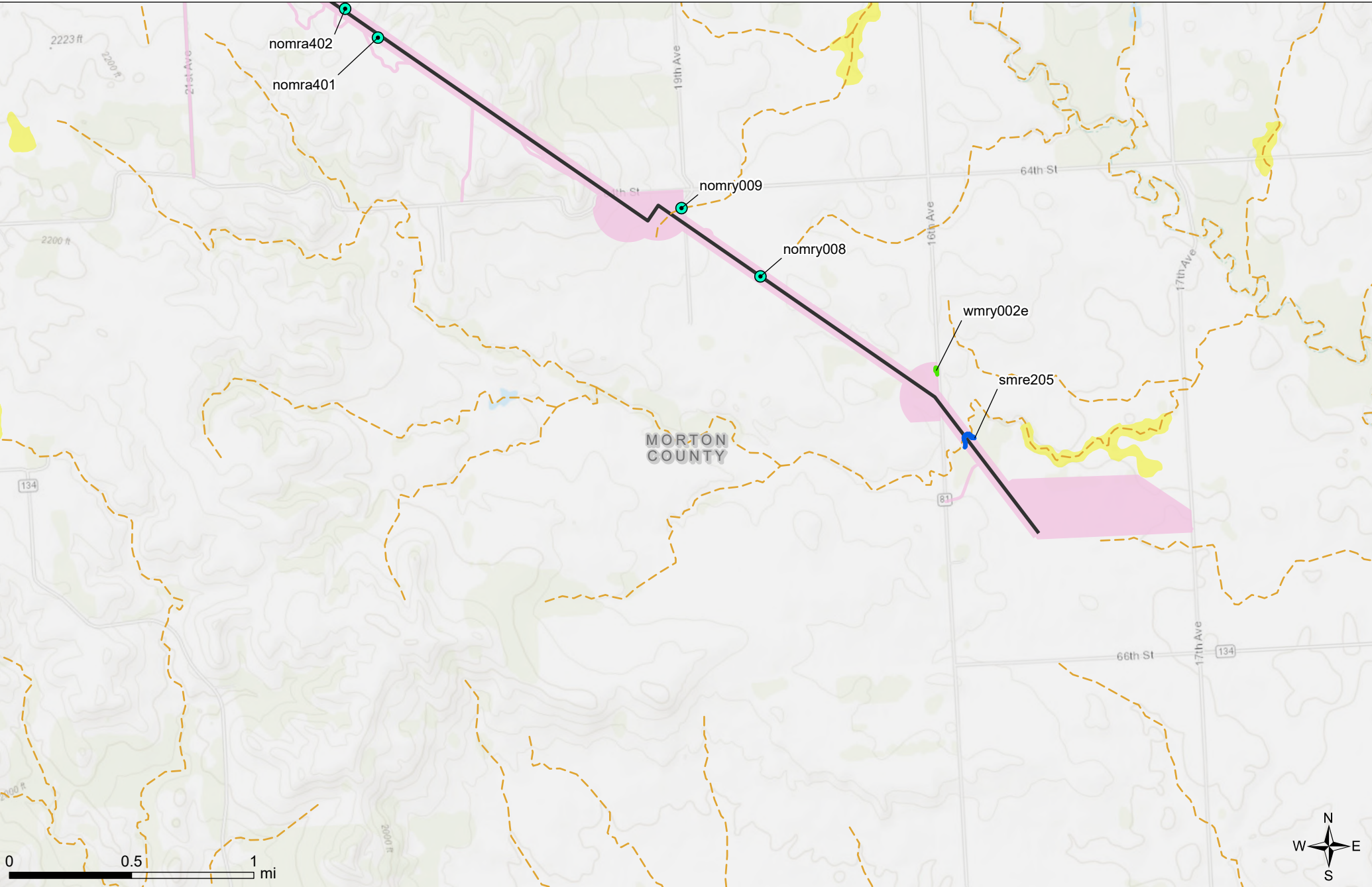
North Plains Connector Project



Proposed Route (October 2025)	<b>Desktop Review</b>
2022-2025 Survey Area	NRCS Web Soil Survey: Hydric Soil
<b>Field Survey Results</b>	NHD Stream/River
Waterbody	Intermittent
Wetland	
No Water Point	

**Aquatic Resource Inventory Survey Results**

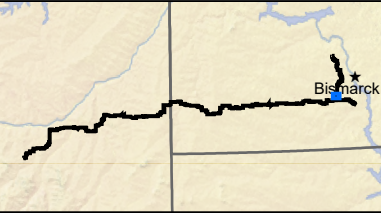
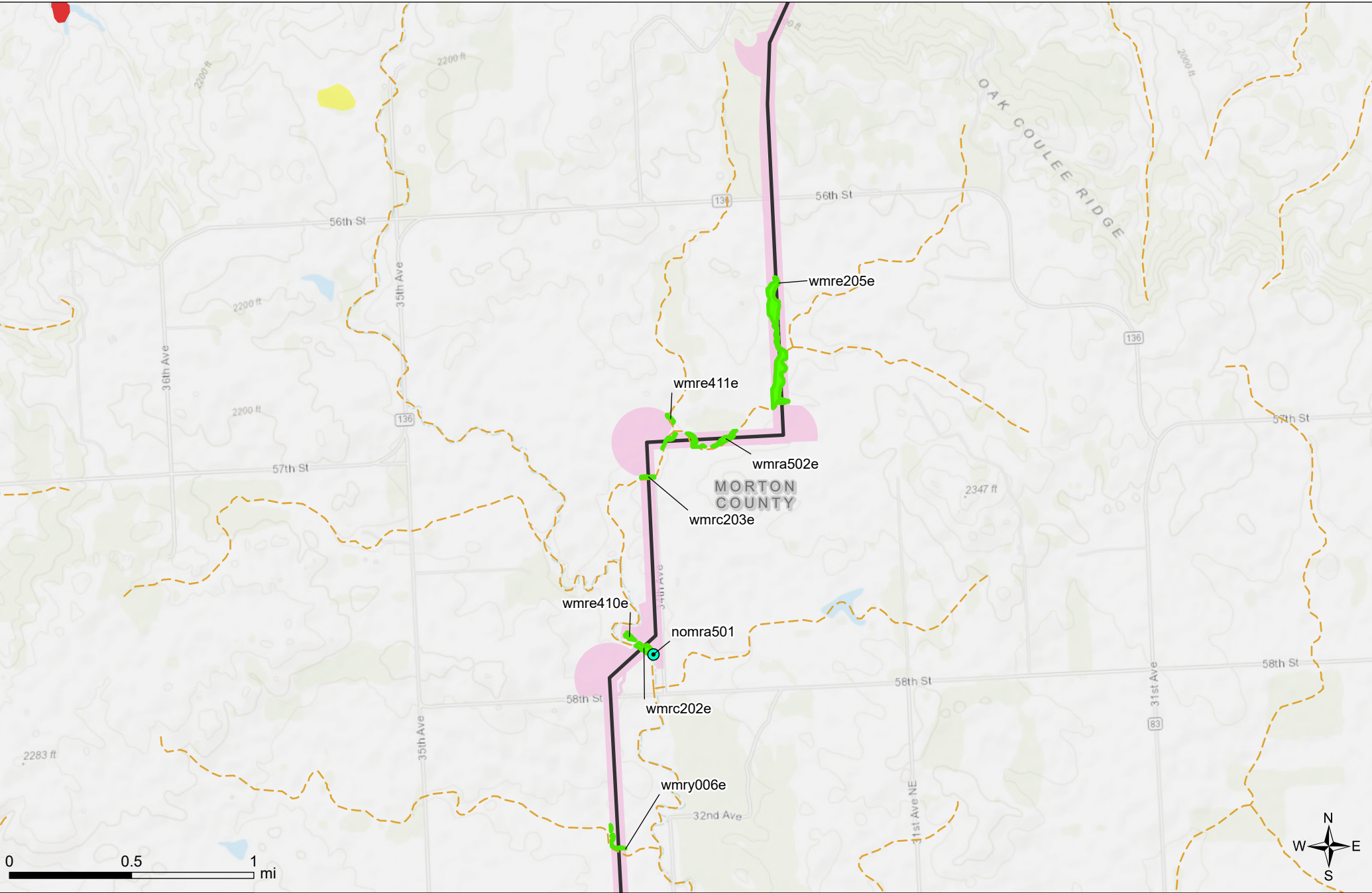
North Plains Connector Project



- Proposed Route (October 2025)
- 2022-2025 Survey Area
- NRCS Web Soil Survey: Hydric Soil
- NHD Stream/River Intermittent
- Waterbody
- Wetland
- No Water Point

**Aquatic Resource Inventory Survey Results**

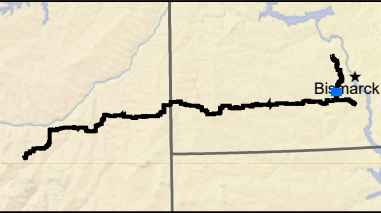
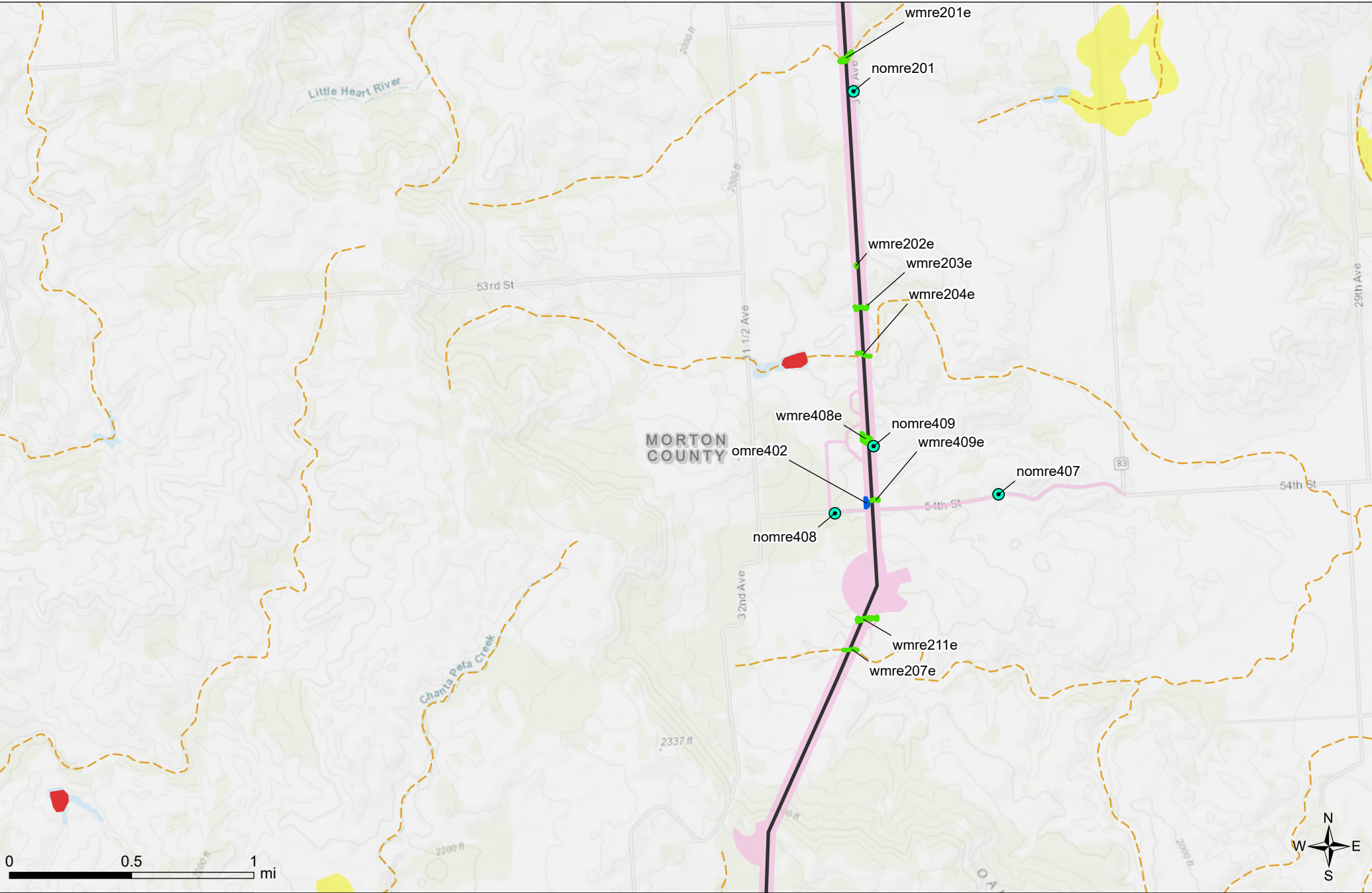
North Plains Connector Project



Proposed Route (October 2025)	<b>Desktop Review</b>
2022-2025 Survey Area	NRCS Web Soil Survey: Hydric Soil
<b>Field Survey Results</b>	NHD Stream/River
Wetland	Intermittent
No Water Point	NHD Waterbodies
	Lakes, Ponds, Reservoirs, and Estuaries

**Aquatic Resource Inventory Survey Results**

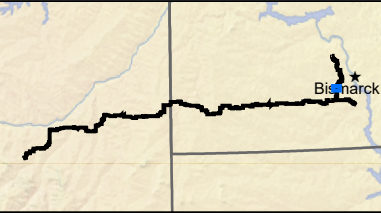
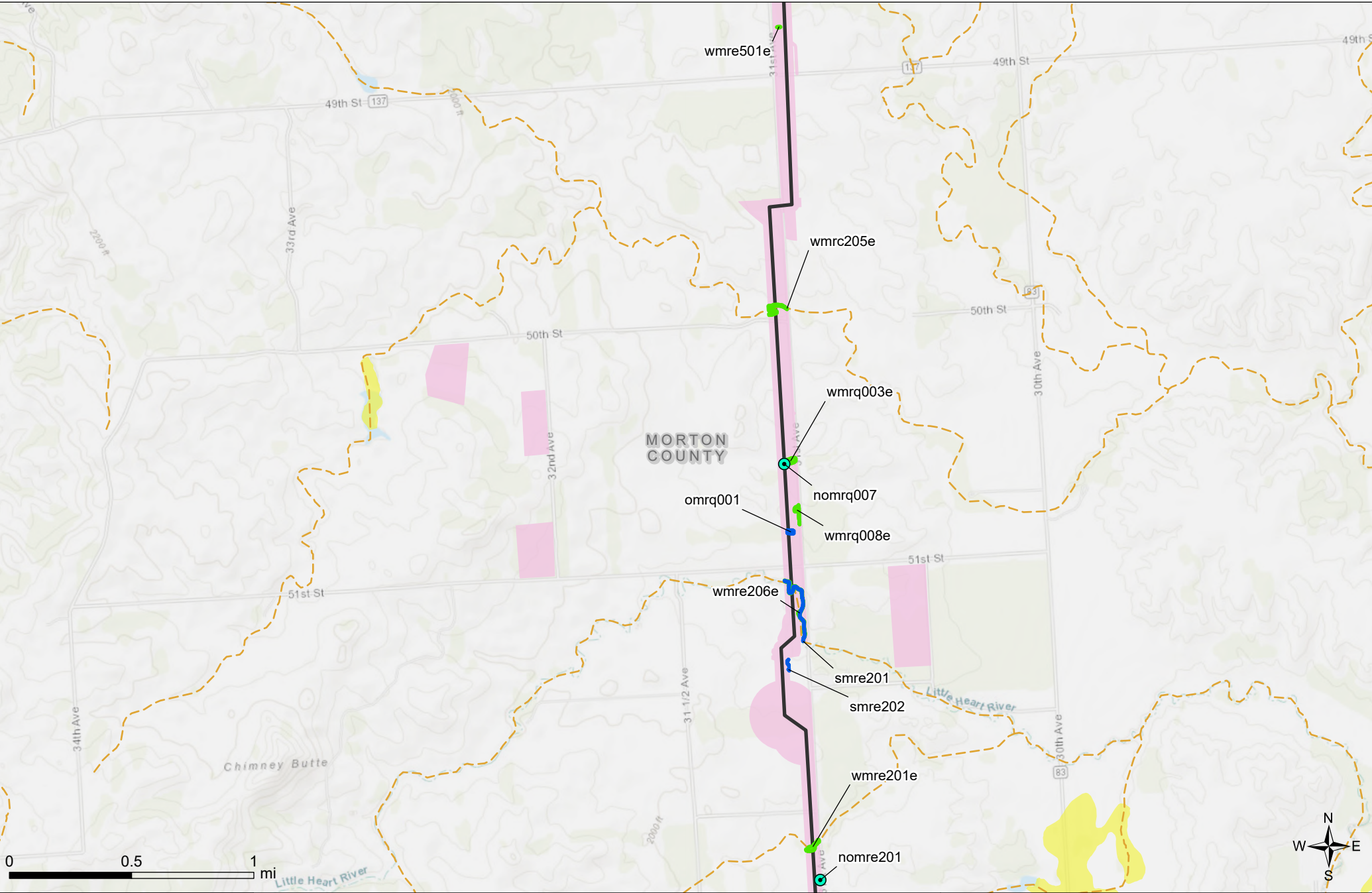
North Plains Connector Project



Proposed Route (October 2025)	<b>Desktop Review</b>
2022-2025 Survey Area	NRCS Web Soil Survey: Hydric Soil
<b>Field Survey Results</b>	NHD Stream/River
Waterbody	Intermittent
Wetland	NHD Waterbodies
No Water Point	Lakes, Ponds, Reservoirs, and Estuaries

**Aquatic Resource Inventory Survey Results**

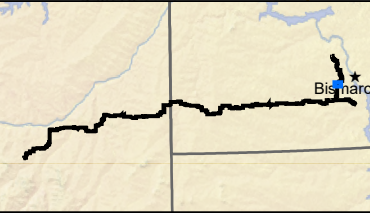
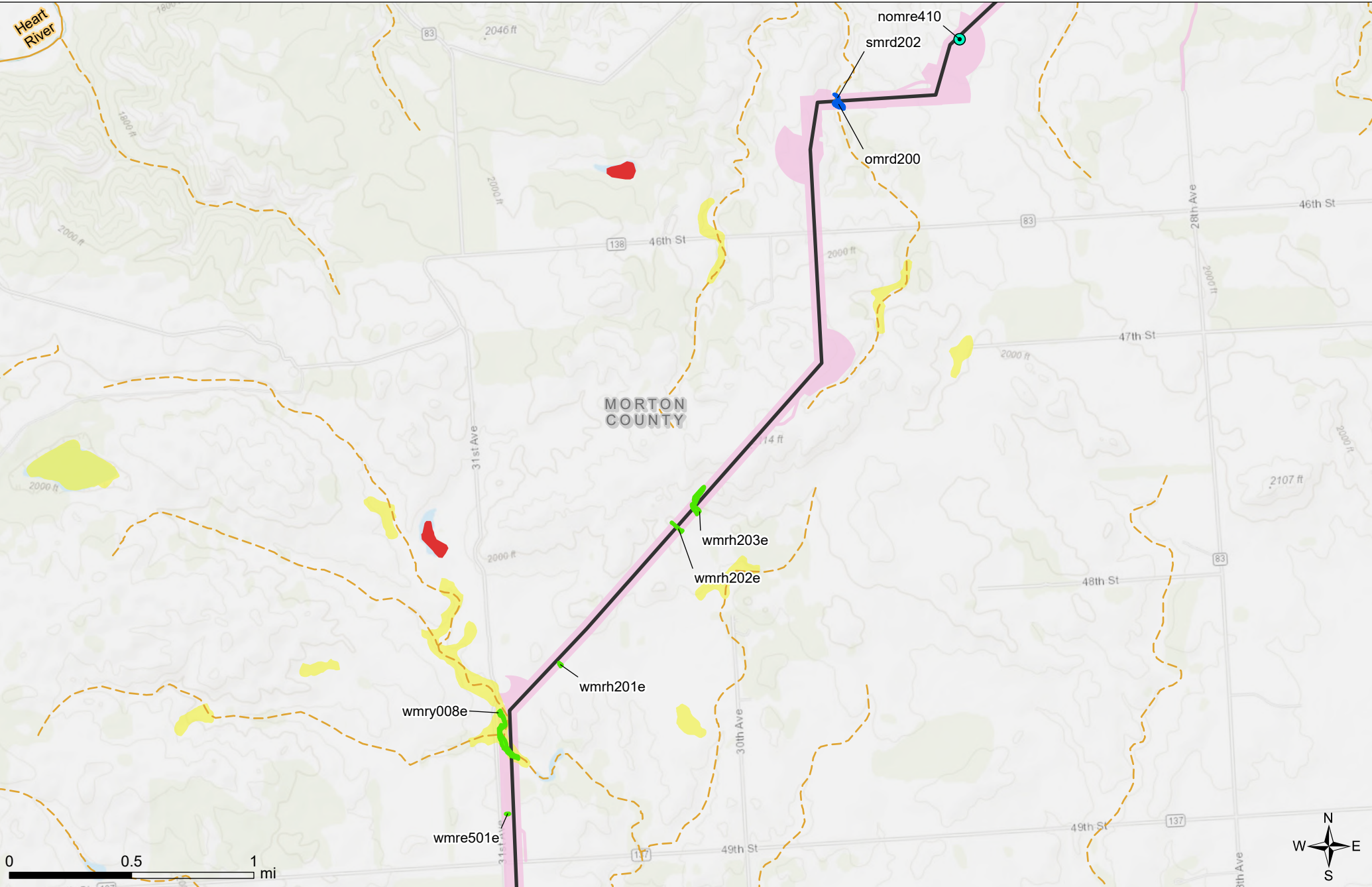
North Plains Connector Project



Proposed Route (October 2025)	<b>Desktop Review</b>
2022-2025 Survey Area	NRCS Web Soil Survey: Hydric Soil
<b>Field Survey Results</b>	NHD Stream/River
Waterbody	Intermittent
Wetland	
No Water Point	

**Aquatic Resource Inventory Survey Results**

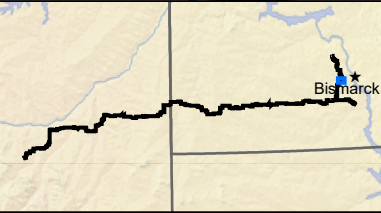
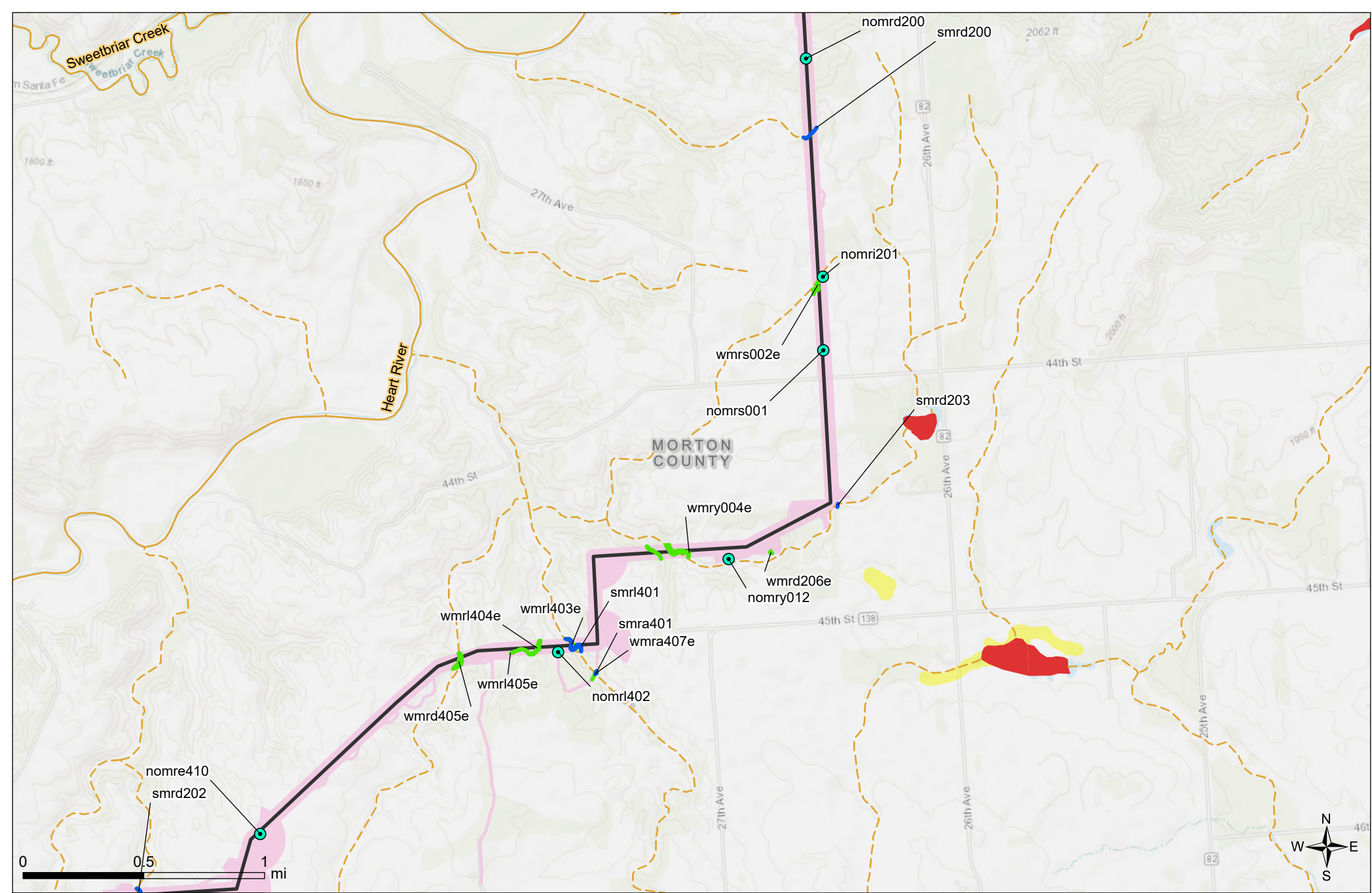
North Plains Connector Project



- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 2px; background-color: black; margin-right: 5px;"></span> Proposed Route (October 2025)</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: pink; margin-right: 5px;"></span> 2022-2025 Survey Area</li> </ul> <p><b>Field Survey Results</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: blue; margin-right: 5px;"></span> Waterbody</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: green; margin-right: 5px;"></span> Wetland</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid green; border-radius: 50%; margin-right: 5px;"></span> No Water Point</li> </ul> | <p><b>Desktop Review</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: yellow; margin-right: 5px;"></span> NRCS Web Soil Survey: Hydric Soil</li> <li>NHD Stream/River</li> <li><span style="display: inline-block; width: 20px; border-bottom: 1px dashed orange; margin-right: 5px;"></span> Intermittent</li> <li><span style="display: inline-block; width: 20px; border-bottom: 1px solid orange; margin-right: 5px;"></span> Perennial</li> <li>NHD Waterbodies</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: red; margin-right: 5px;"></span> Lakes, Ponds, Reservoirs, and Estuaries</li> </ul> |
|---|---|

**Aquatic Resource Inventory Survey Results**

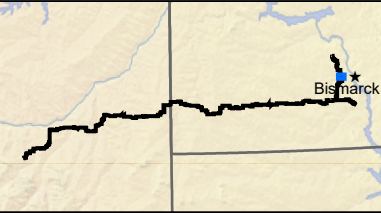
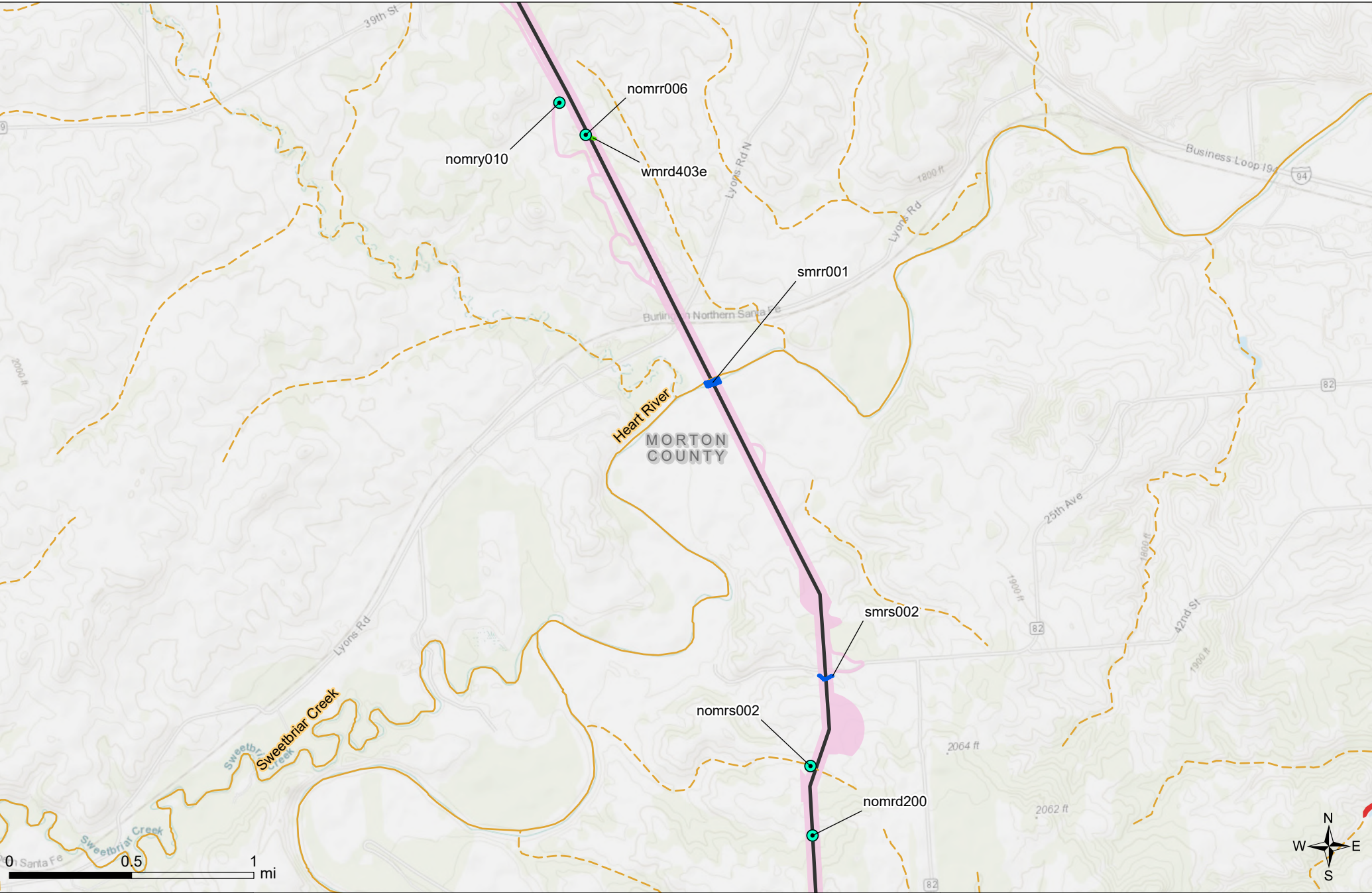
North Plains Connector Project



Proposed Route (October 2025)	<b>Desktop Review</b>
2022-2025 Survey Area	NRCS Web Soil Survey: Hydric Soil
<b>Field Survey Results</b>	NHD Stream/River
Waterbody	Intermittent
Wetland	Perennial
No Water Point	NHD Waterbodies
	Lakes, Ponds, Reservoirs, and Estuaries

**Aquatic Resource Inventory Survey Results**

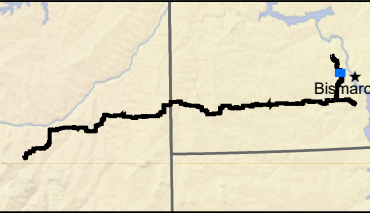
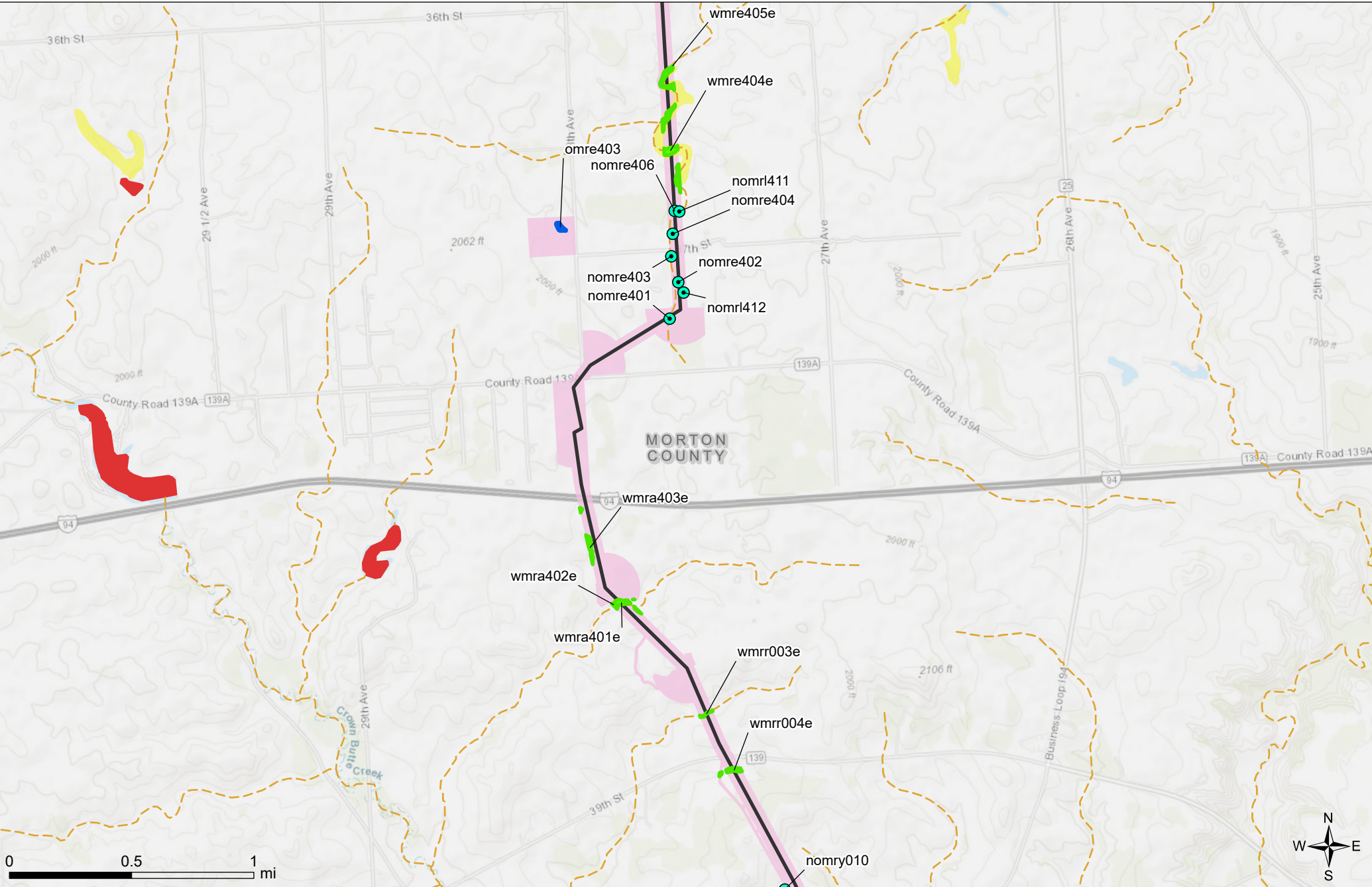
North Plains Connector Project



<ul style="list-style-type: none"> <li> Proposed Route (October 2025)</li> <li> 2022-2025 Survey Area</li> </ul> <p><b>Field Survey Results</b></p> <ul style="list-style-type: none"> <li> Waterbody</li> <li> Wetland</li> <li> No Water Point</li> </ul>	<p><b>Desktop Review</b></p> <ul style="list-style-type: none"> <li> NHD Stream/River</li> <li> Intermittent</li> <li> Perennial</li> </ul> <p><b>NHD Waterbodies</b></p> <ul style="list-style-type: none"> <li> Lakes, Ponds, Reservoirs, and Estuaries</li> </ul>
---	--

**Aquatic Resource Inventory Survey Results**

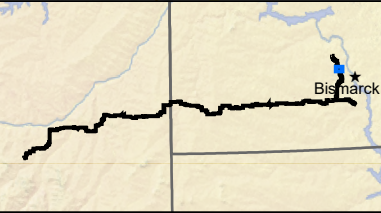
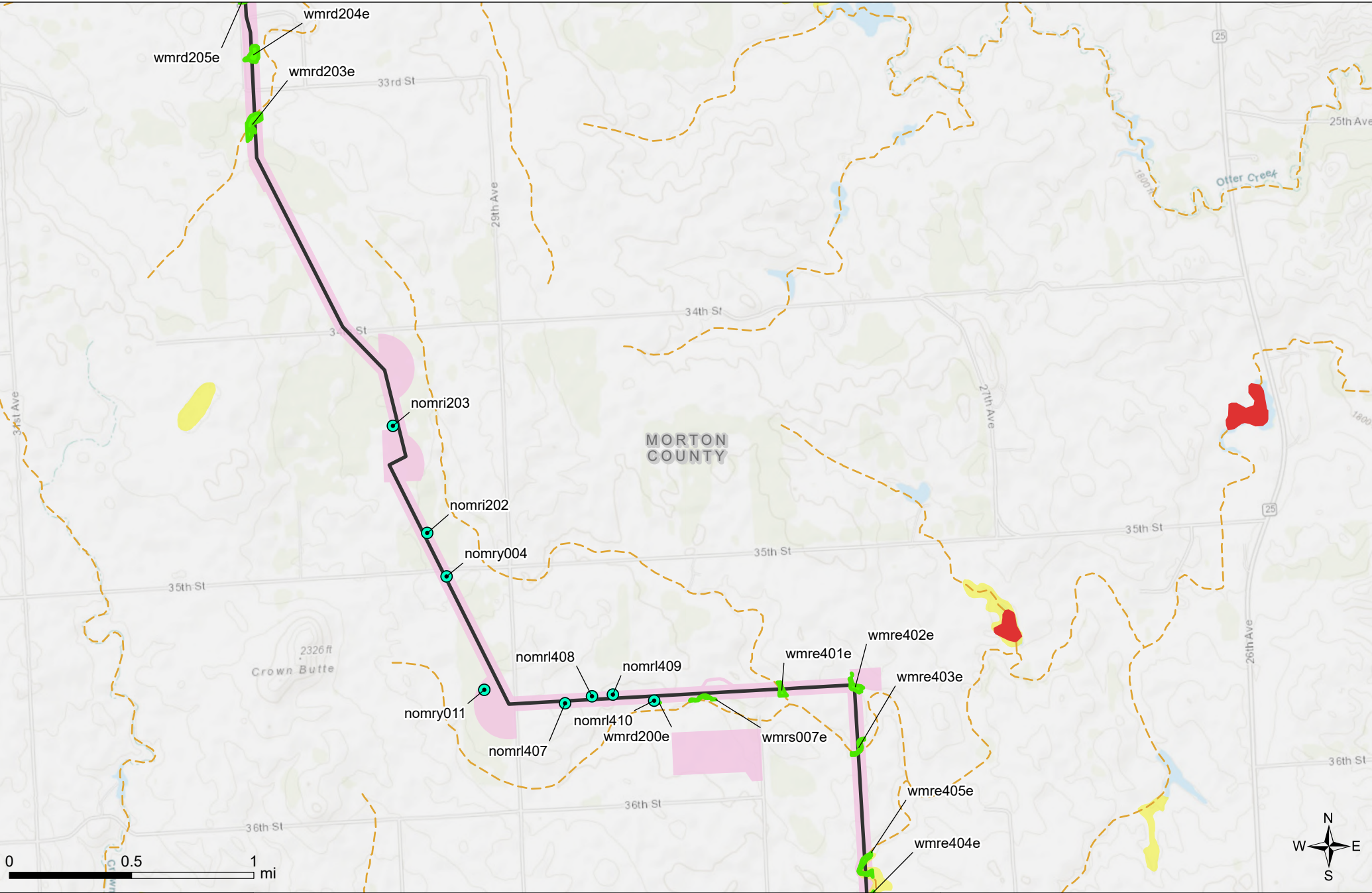
North Plains Connector Project



Proposed Route (October 2025)	<b>Desktop Review</b>
2022-2025 Survey Area	NRCS Web Soil Survey: Hydric Soil
<b>Field Survey Results</b>	NHD Stream/River
Waterbody	Intermittent
Wetland	NHD Waterbodies
No Water Point	Lakes, Ponds, Reservoirs, and Estuaries

**Aquatic Resource Inventory Survey Results**

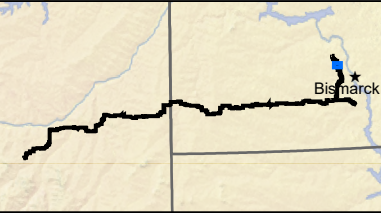
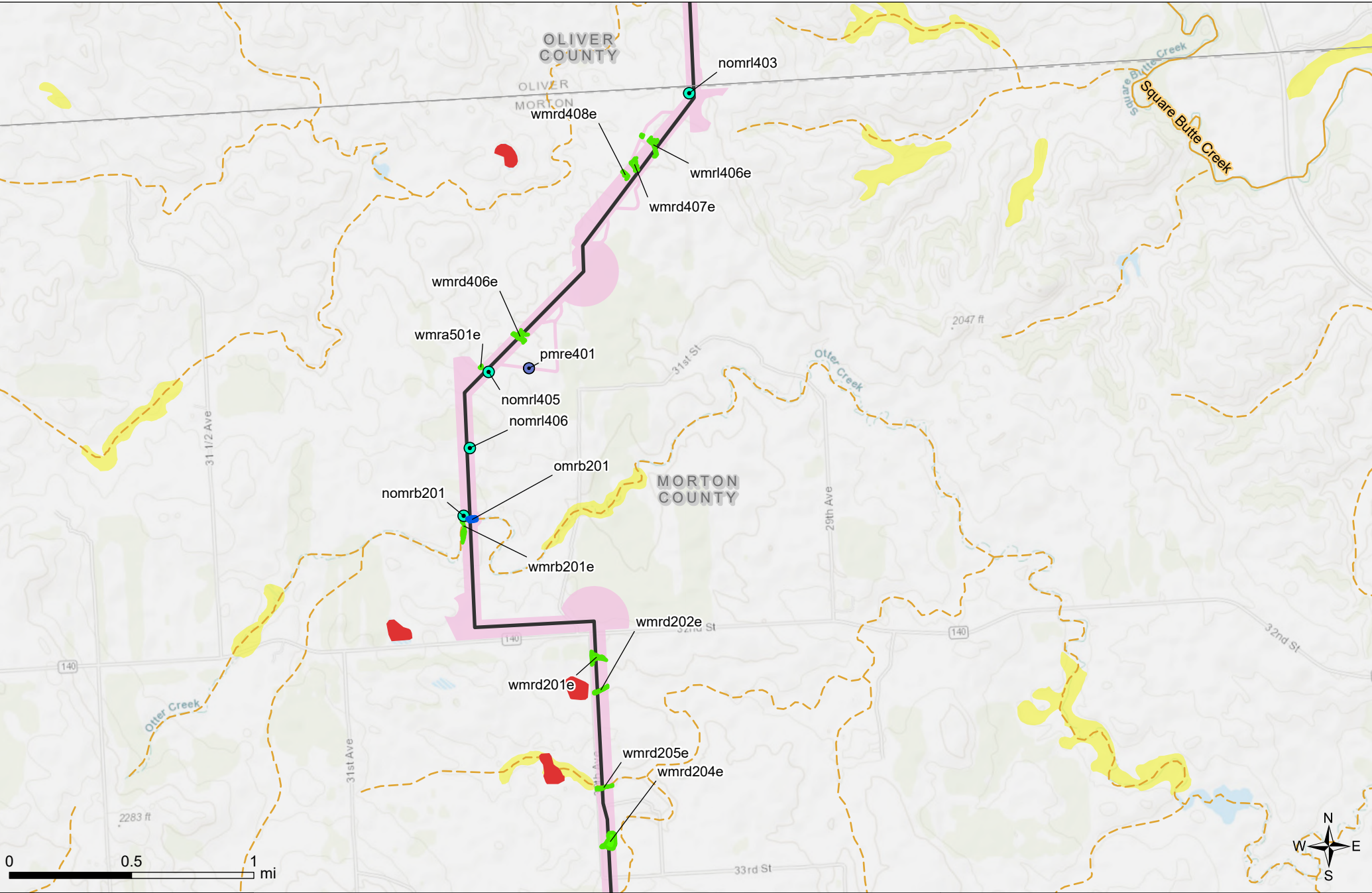
North Plains Connector Project



<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 2px; background-color: black; margin-right: 5px;"></span> Proposed Route (October 2025)</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: pink; margin-right: 5px;"></span> 2022-2025 Survey Area</li> </ul> <p><b>Field Survey Results</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: green; border-radius: 50%; margin-right: 5px;"></span> Wetland</li> <li><span style="display: inline-block; width: 10px; height: 10px; border: 1px solid green; border-radius: 50%; margin-right: 5px;"></span> No Water Point</li> </ul>	<p><b>Desktop Review</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: yellow; border: 1px dashed orange; margin-right: 5px;"></span> NRCS Web Soil Survey: Hydric Soil</li> <li><span style="display: inline-block; width: 20px; border-bottom: 1px dashed orange; margin-right: 5px;"></span> NHD Stream/River</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: red; border-radius: 50%; margin-right: 5px;"></span> NHD Waterbodies</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: red; margin-right: 5px;"></span> Lakes, Ponds, Reservoirs, and Estuaries</li> </ul>
---	---

**Aquatic Resource Inventory Survey Results**

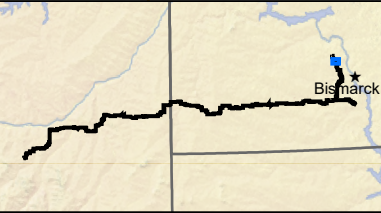
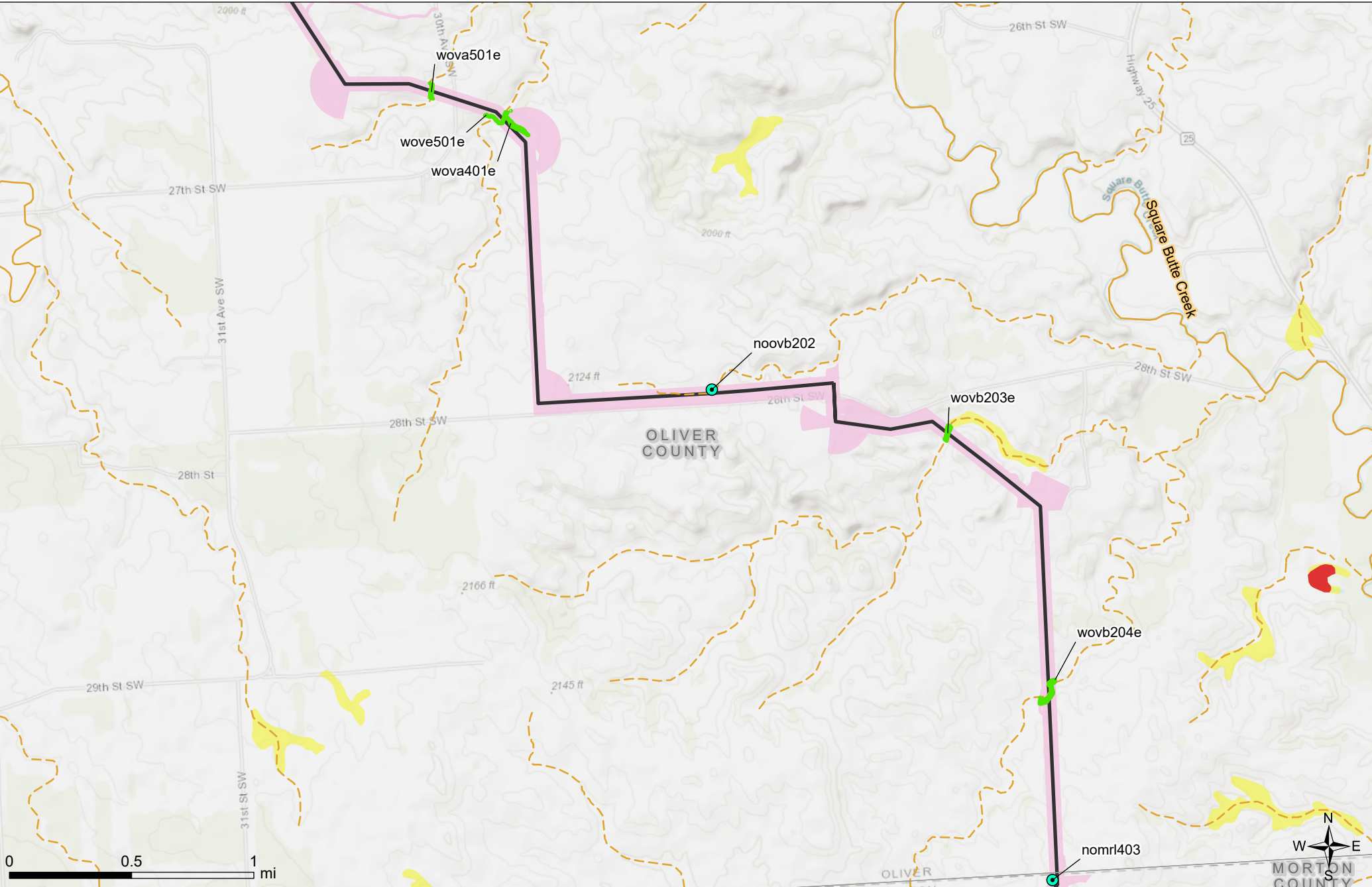
North Plains Connector Project



<ul style="list-style-type: none"> <li>Proposed Route (October 2025)</li> <li>2022-2025 Survey Area</li> </ul>	<p><b>Desktop Review</b></p> <ul style="list-style-type: none"> <li>NRCS Web Soil Survey: Hydric Soil</li> <li>NHD Stream/River <ul style="list-style-type: none"> <li>Intermittent</li> <li>Perennial</li> </ul> </li> <li>NHD Waterbodies <ul style="list-style-type: none"> <li>Lakes, Ponds, Reservoirs, and Estuaries</li> </ul> </li> </ul>
<p><b>Field Survey Results</b></p> <ul style="list-style-type: none"> <li>Waterbody</li> <li>Wetland</li> <li>No Water Point</li> <li>Seep Point</li> </ul>	

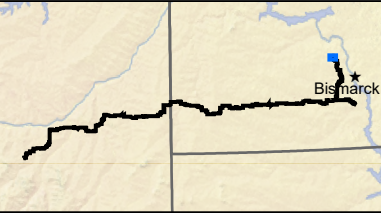
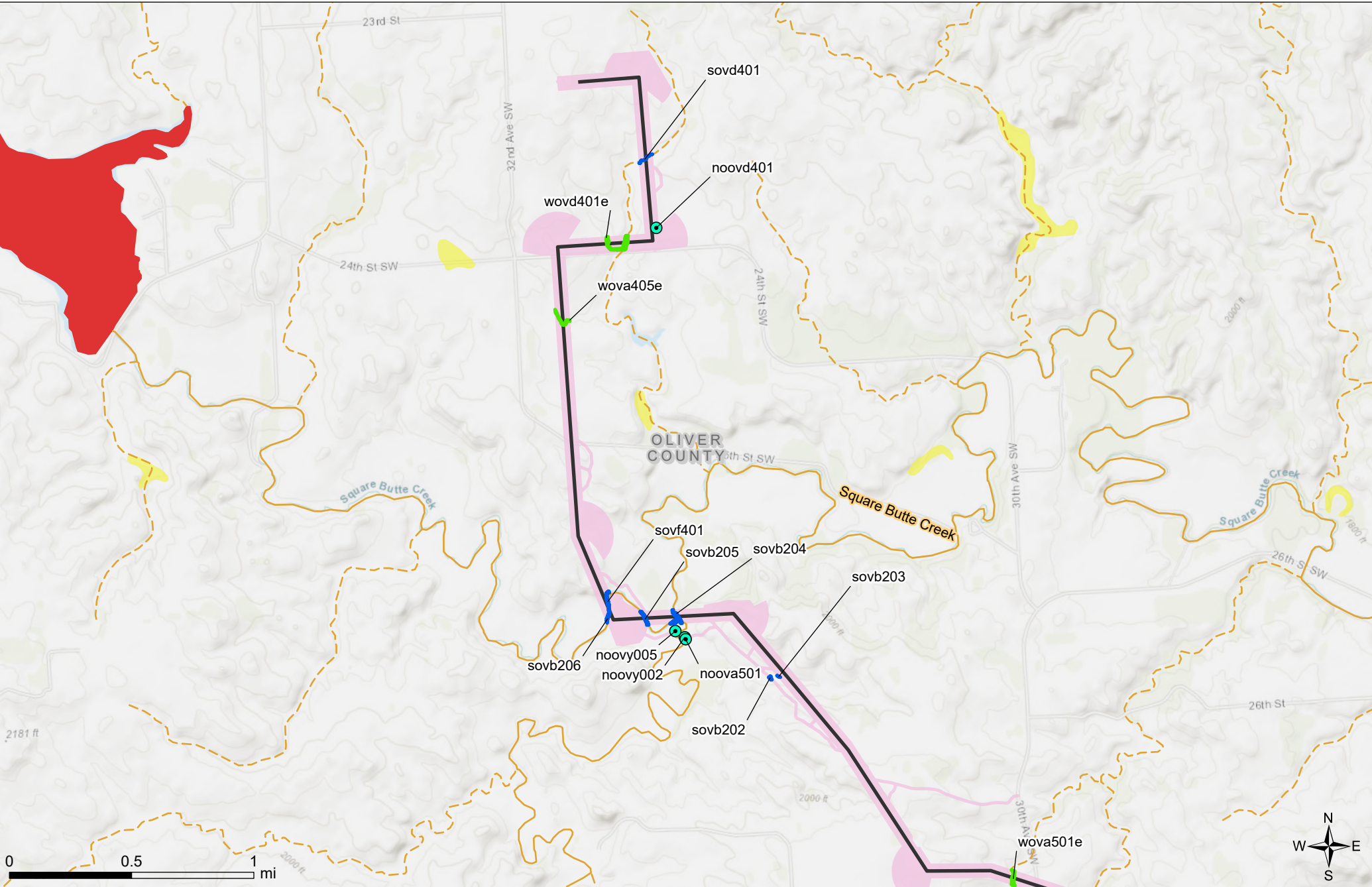
**Aquatic Resource Inventory Survey Results**

North Plains Connector Project



Proposed Route (October 2025)	<b>Desktop Review</b>
2022-2025 Survey Area	NRCS Web Soil Survey: Hydric Soil
<b>Field Survey Results</b>	NHD Stream/River
Wetland	Intermittent
No Water Point	Perennial
	<b>NHD Waterbodies</b>
	Lakes, Ponds, Reservoirs, and Estuaries

**Aquatic Resource Inventory Survey Results**  
North Plains Connector Project



Proposed Route (October 2025)	<b>Desktop Review</b>
2022-2025 Survey Area	NRCS Web Soil Survey: Hydric Soil
<b>Field Survey Results</b>	NHD Stream/River
Waterbody	Intermittent
Wetland	Perennial
No Water Point	NHD Waterbodies
	Lakes, Ponds, Reservoirs, and Estuaries

**Aquatic Resource Inventory Survey Results**

North Plains Connector Project

## **Appendix B. Representative Photographs of Surveyed Wetlands and Waterbodies**





**Appendix B1. View of wetland wovd401e facing north from the southwest corner of the delineated wetland. Wetland wovd401e is a palustrine emergent (PEM) wetland delineated in Oliver County, North Dakota.**



**Appendix B2. View of wetland wmr405e facing north from the southeastern end of the delineated wetland. Wetland wmr405e is a PEM drainage wetland delineated in Morton County, North Dakota.**



**Appendix B3. View of stream sheo001 (Cannonball River) facing west from the northeast corner of the stream. Stream sheo001 is a perennial waterbody mapped in Hettinger County, North Dakota.**



**Appendix B4. View of stream sslp001 (Little Missouri River) facing southwest from the northeast corner of the stream. Stream sslp001 is a perennial waterbody mapped in Slope County, North Dakota.**

**I – 3**

**Bat Survey Report**



# **NORTH PLAINS CONNECTOR**

**A Grid United Project**

## **2023 – 2025 Bat Survey Report North Dakota**

**Prepared by:**



**January 2026**

**2023 – 2025 Bat Survey Report  
North Dakota**

**North Plains Connector Project**

**TABLE OF CONTENTS**

1.0	INTRODUCTION.....	1
2.0	SURVEY AREA.....	1
3.0	METHODS .....	4
3.1	Acoustic Presence/Probable Absence Surveys .....	4
3.1.1	Survey Effort .....	4
3.1.2	Acoustic Survey Field Methods.....	6
3.1.3	Acoustic Survey Analytical Methods .....	7
3.2	Hibernacula Assessments.....	9
3.2.1	Desktop Assessment .....	9
3.2.2	Roadside Reconnaissance Survey .....	9
3.2.3	Hibernacula Field Assessments.....	10
3.3	Hibernacula Presence/Probable Absence Surveys .....	13
3.3.1	Survey Effort .....	13
3.3.2	Hibernacula Survey Field Methods .....	13
3.4	Mist-net Surveys .....	14
3.4.1	Survey Effort .....	14
3.4.2	Mist-net Survey Field Methods.....	16
4.0	RESULTS.....	17
4.1	Acoustic Presence/Probable Absence Surveys .....	17
4.2	Hibernacula Assessments.....	23
4.2.1	Roadside Reconnaissance Surveys .....	23
4.2.2	Hibernacula Field Assessments.....	25
4.3	Hibernacula Presence/Probable Absence Surveys .....	27
4.4	Mist-net Surveys .....	27
5.0	DISCUSSION.....	28
6.0	REFERENCES.....	29

## LIST OF TABLES

Table 1.	Bat species with potential to occur within the North Plains Connector Project in North Dakota (ND), categorized by echolocation call frequency.....	7
Table 2.	U.S. Fish and Wildlife Service approved automated identification software programs used to evaluate acoustic data recorded at all acoustic survey locations at the North Plains Connector Project in North Dakota (ND). ....	8
Table 3.	Number of acoustic site locations with confirmed acoustic presence of the target species along the North Plains Connector Project in North Dakota in 2023, 2024, and 2025. ....	17
Table 4.	Summary of confirmed talus slopes identified in 2024 along the North Plains Connector Project in North Dakota.....	23
Table 5.	Summary of potential hibernacula assessments conducted in 2023 and 2024 along the North Plains Connector Project in North Dakota. ....	25
Table 6.	Summary of acoustic bat calls recorded by hour during hibernacula surveys conducted in 2025 for the North Plains Connector Project in North Dakota. ....	27
Table 7.	Details of bats captured during mist-net surveys in North Dakota along the North Plains Connector Project in 2023. ....	28

## LIST OF FIGURES

Figure 1.	Overview of the North Plains Connector Project route in North Dakota.....	3
Figure 2.	Acoustic sites surveyed along the North Plains Connector Project in North Dakota from 2023–2025. ....	5
Figure 3.	Standard settings for Song Meter 4 full-spectrum ultrasonic detectors, North Plains Connector Project in North Dakota.....	6
Figure 4.	Steep slopes targeted for roadside reconnaissance surveys along the North Plains Connector Project in North Dakota.....	11
Figure 5.	Potential hibernacula locations identified in 2023 and 2024 along the North Plains Connector Project in North Dakota.....	12
Figure 6.	Mist-net site locations in 2023 along the North Plains Connector Project in North Dakota. ....	15
Figure 7.	Acoustic survey sites with qualitatively confirmed northern long-eared bat ( <i>Myotis septentrionalis</i> ) presence along the North Plains Connector Project in North Dakota from 2023–2025.....	18
Figure 8.	Acoustic survey sites with qualitatively confirmed little brown bat ( <i>Myotis lucifugus</i> ) presence along the North Plains Connector Project in North Dakota from 2023–2025. ....	19
Figure 9.	Acoustic survey sites with qualitatively confirmed long-legged myotis ( <i>Myotis volans</i> ) presence along the North Plains Connector Project in North Dakota from 2023–2025. ....	20

Figure 10. Acoustic survey sites with qualitatively confirmed western long-eared bat (*Myotis evotis*) presence along the North Plains Connector Project in North Dakota from 2023–2025. .... 21

Figure 11. Acoustic survey sites with qualitatively confirmed western small-footed bat (*Myotis ciliolabrum*) presence along the North Plains Connector Project in North Dakota from 2023–2025. .... 22

Figure 12. Results of 2024 roadside surveys identifying talus slope locations along the North Plains Connector Project in North Dakota. .... 24

Figure 13. Results of potential hibernacula surveys conducted from 2023–2024 along the North Plains Connector Project in North Dakota. .... 26

**LIST OF APPENDICES**

Appendix A. Representative Photographs of Acoustic Survey Sites

Appendix B. Representative Photographs from 2024 Roadside Reconnaissance Survey

Appendix C. Representative Photographs of Suitable Hibernaculum

Appendix D. Representative Photographs from 2025 Hibernacula Surveys

Appendix E. Representative Photographs of 2023 Mist-Net Survey Sites

## 1.0 INTRODUCTION

North Plains Connector LLC (North Plains) is developing the North Plains Connector Project, an approximately 422-mile high-voltage direct current electric transmission line system and associated infrastructure designed to connect the east and west energy grids in the United States. The North Plains Connector Project is designed for bi-directional transport of electricity and is located in southeastern Montana and southwestern North Dakota (Figure 1). For the purposes of this report, "Project" refers solely to the portion located in North Dakota.

North Plains contracted Western EcoSystems Technology, Inc. (WEST), to conduct summer presence/probable absence acoustic surveys, hibernacula assessments, and hibernacula surveys for sensitive bat species, including the federally listed as endangered northern long-eared bat (*Myotis septentrionalis*; MYSE),<sup>1</sup> proposed endangered tricolored bat (*Perimyotis subflavus*; PESU),<sup>2</sup> and under review little brown bat (*Myotis lucifugus*; MYLU).<sup>3</sup> In addition, WEST conducted supplemental summer mist-net surveys (at a non-presence/probable absence level of effort) in 2023. The objective of the bat acoustic surveys was to determine the presence or probable absence of MYSE, PESU, and MYLU at the Project during the 2023, 2024, and 2025 summer survey seasons (May 15 – August 15). The hibernacula assessments were conducted to identify talus slopes, caves, and portals along the Project and evaluate the suitability of potential hibernacula identified along the Project in 2023 and 2024. The objective of the hibernacula surveys was to determine whether bats emerged from potentially suitable hibernacula (identified in 2023 and 2024) along the Project during the 2025 fall survey season (September 1 – October 31).

This report was written specifically for the North Dakota Public Service Commission and only includes survey results pertinent to the Project route discussed in North Plain's *Consolidated Application For A Certificate Of Corridor Compatibility And Transmission Facility Route Permit*. Section 2.0 includes a description of the survey area along this Project route. The original survey reports provided to relevant state and federal resource agencies include additional technical survey details not included in this summary.

## 2.0 SURVEY AREA

The proposed Project route crosses approximately 242 miles in Golden Valley, Slope, Hettinger, Grant, Morton, and Oliver counties in North Dakota (Figure 1). The Project route falls within the Northwestern Great Plains Level III Ecoregion, which encompasses portions of eastern Montana, western North Dakota and South Dakota, northeastern Wyoming, and northern Nebraska (U.S. Environmental Protection Agency [USEPA], 2013). The ecoregion is semiarid and characterized by rolling plains,

---

<sup>1</sup> Effective on March 31, 2023, the MYSE was reclassified as federally endangered (88 Federal Register 4908 [January 26, 2023]).

<sup>2</sup> The PESU was proposed for federal listing as endangered on September 14, 2022 (87 Federal Register 56381) and expected in 2024; however, a final listing decision is still pending as of January 2026.

<sup>3</sup> The MYLU is under review for listing with a decision expected sometime in Fiscal Year 2026, per the May 2024 version of the U.S. Fish and Wildlife Service National Domestic Listing Workplan.

sporadic buttes, and badlands. Much of the region was originally dominated by native grasslands, which are now fragmented, but persist in rangeland patches. Agricultural uses, including rangeland and crop production, occur throughout, but can be limited due to inconsistent precipitation and access to irrigation (USEPA, 2013).

Ground-based surveys were conducted along the proposed Project route within the Project's typical survey area. The typical Project-wide survey area included the 300-foot-wide transmission line survey corridor, 50-foot-wide access road survey corridors, pulling and tensioning sites, laydown yards, facility footprints, and additional construction areas, as needed. On National Forest Service lands managed by U.S. Forest Service, the survey area included wider 100-foot-wide access road survey corridors. The survey locations displayed in this report's figures reflect the proposed Project route; however, due to previous reroutes along the Project, adjacent surveyed locations up to 1 kilometer from the Project route have been included for completeness.

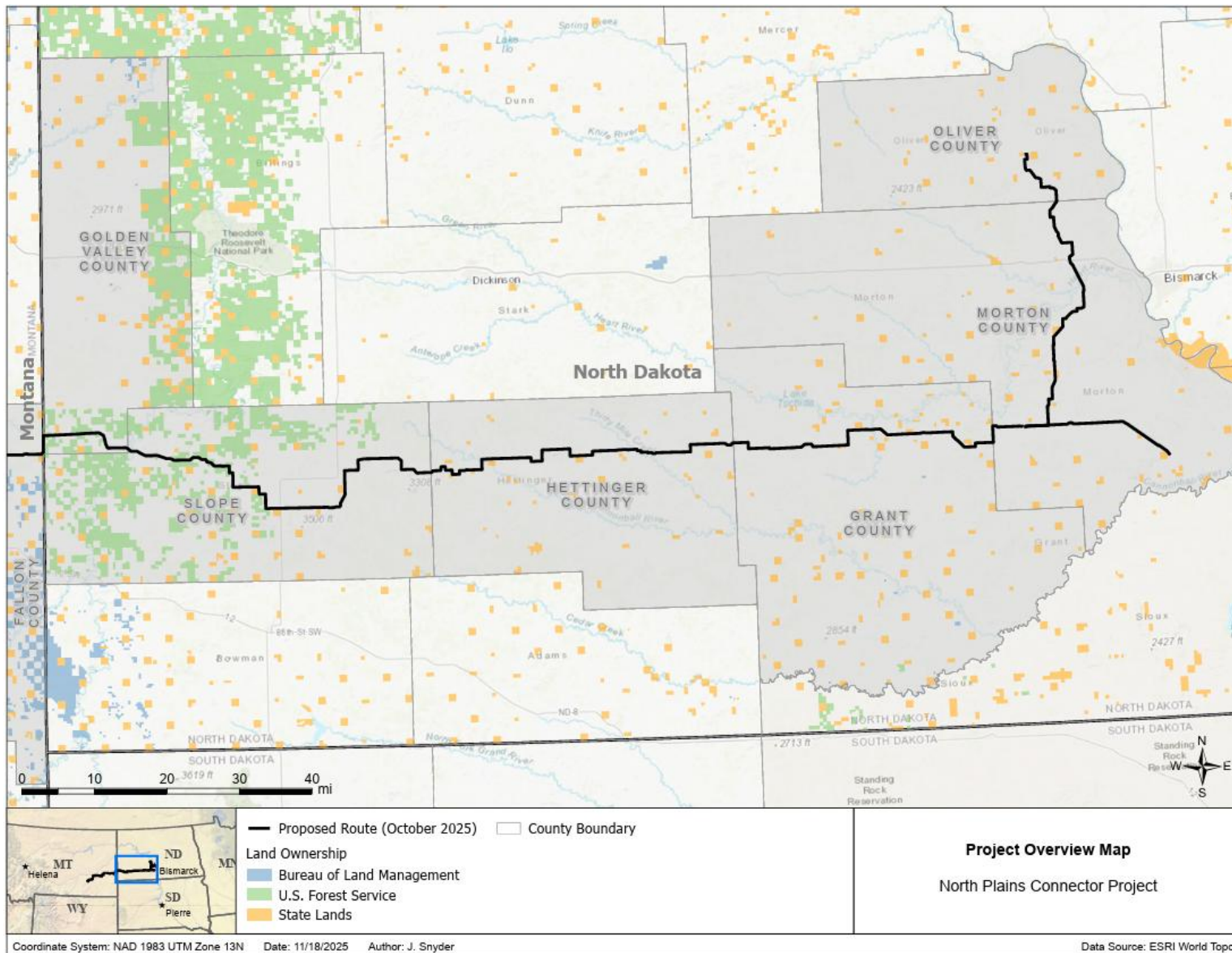


Figure 1. Overview of the North Plains Connector Project route in North Dakota.

## 3.0 METHODS

WEST conducted summer presence/probable absence acoustic surveys in 2023, 2024, and 2025. Supplemental mist-net surveys were conducted in June and July of 2023. Hibernacula assessment surveys were conducted in November 2023 and September 2024, with roadside reconnaissance surveys for steep and talus slopes in North Dakota also completed in September 2024. Hibernacula presence/probable absence surveys were completed in September 2025. Surveys conducted in 2023 followed U.S Fish and Wildlife Service (USFWS) *2023 Range-Wide Indiana Bat & Northern Long Eared Bat Survey Guidelines* (2023 Guidelines; USFWS, 2023), while 2024 and 2025 surveys followed the USFWS *2024 Range-Wide Indiana Bat & Northern Long Eared Bat Survey Guidelines* (2024 Guidelines; USFWS, 2024); collectively, these documents are referred to as the Guidelines. Per the Guidelines, these protocols may also be used for PESU presence/probable absence surveys using the MYSE level of effort (USFWS, 2024). While no published guidance currently exists for the MYLU, USFWS approved the Project's approach to use the MYSE level of effort for this species.

The Project's *2023 Ground-Based Survey Plan* was submitted to the USFWS on June 15, 2023, and was approved by the North Dakota Ecological Services Office on June 23, 2023. The *2024 Ground-Based Survey Plan* was submitted to the USFWS on June 5, 2024, and was approved by the North Dakota Ecological Services Office on June 14, 2024. The *2025 Ground-Based Survey Plan* was submitted to the USFWS on April 18, 2025, and was approved by the North Dakota Ecological Services Office on May 7, 2025.

### 3.1 Acoustic Presence/Probable Absence Surveys

#### 3.1.1 Survey Effort

For linear projects such as transmission lines, the Guidelines recommend surveying one acoustic survey site per kilometer of intersecting suitable habitat, for a minimum of four valid (i.e., meeting weather requirements of the Guidelines) detector-nights. Prior to acoustic site selection, a desktop habitat assessment was completed to identify forested habitat that may provide potentially suitable summer bat habitat. A permitted bat biologist (Brenna Hyzy, federal permit number ES26854C-2) reviewed the preliminary desktop habitat assessment in relation to the most recent Project route at the time and selected acoustic detector sites within the Project's typical survey area. Based on this assessment, the number of acoustic presence/probable absence survey sites needed to meet the minimum level of effort required by the Guidelines was calculated for 2023, 2024, and 2025. The final number of acoustic survey sites completed between 2023 and 2025 was dependent on available land access; sites were adjusted as necessary to incorporate multiple Project reroutes (Figure 2). WEST placed detectors in suitable habitat for bats, including small clearings, near water sources, along forest path edges, and road and/or stream corridors.

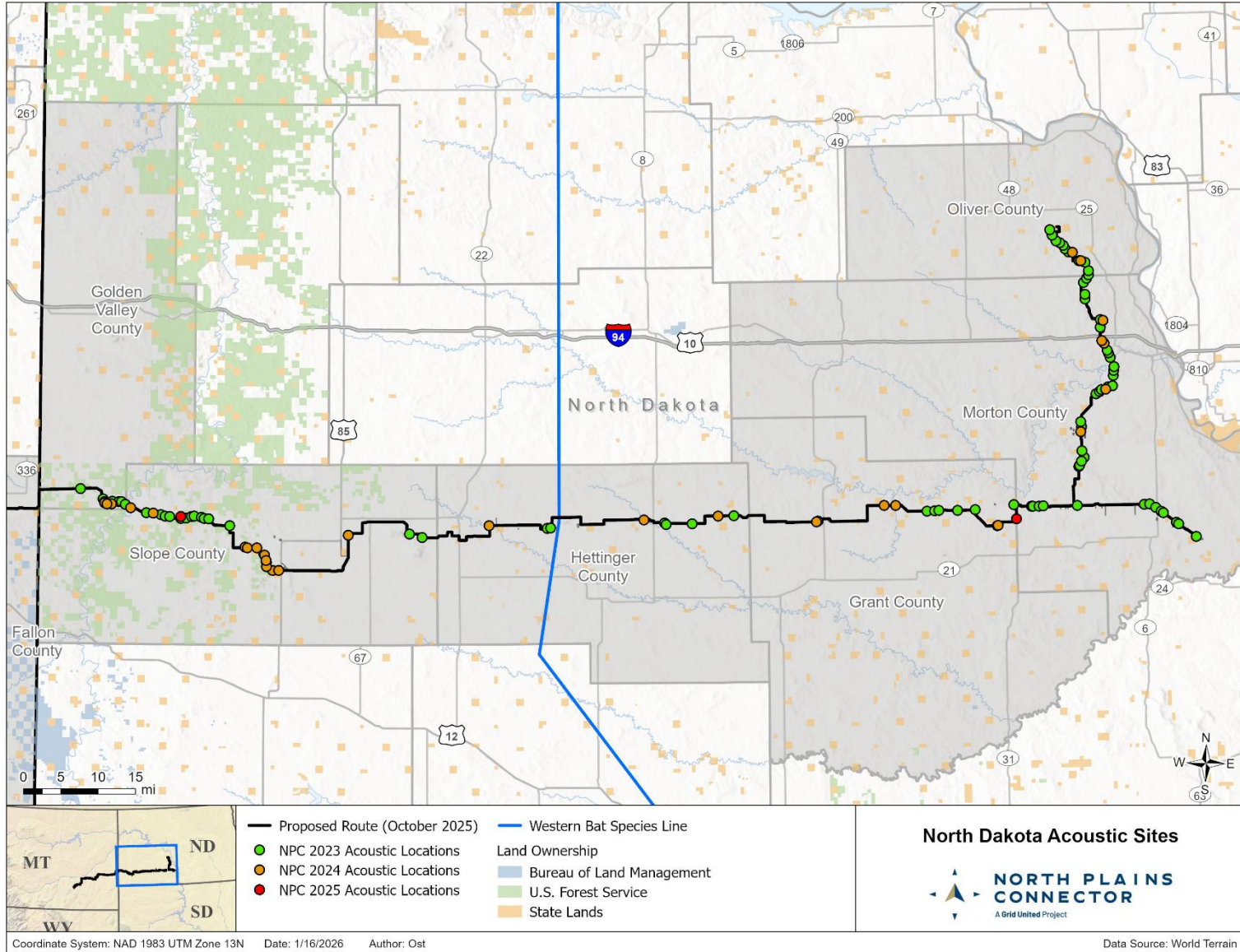


Figure 2. Acoustic sites surveyed along the North Plains Connector Project in North Dakota from 2023–2025.

### 3.1.2 Acoustic Survey Field Methods

Full spectrum bat echolocation calls were recorded using Song Meter 4 full-spectrum ultrasonic detectors (SM4; Wildlife Acoustics, Inc. [Wildlife Acoustics], Maynard, Massachusetts; [www.wildlifeacoustics.com](http://www.wildlifeacoustics.com)). Detectors were positioned in suitable habitat with areas of open tree canopies or canopy heights greater than 10 meters and were spaced at least 200 meters apart, per the Guidelines. Omnidirectional or hemispherical detector microphones (SMM-U1 or SMM-U2, respectively; Wildlife Acoustics) were elevated at least three meters above ground level and were positioned at least three meters from any vegetation or other obstructions to minimize acoustic interference and echoes that would complicate the species identification process (USFWS, 2023, 2024). No weatherproofing was used on the microphones. For each acoustic survey location, the setup and completion dates, site description, site coordinates, and detector specifics were recorded. Location coordinates were recorded on handheld tablets using Esri's ArcGIS Field Maps application.

Each detector was tested for proper functioning prior to deployment, as recommended in the Guidelines and according to testing procedures from the detector manufacturer. Microphones were also tested with an ultrasonic calibrator to confirm they were within manufacturer recommendations with no sensitivity loss. Detectors were programmed to record from 18:00 to 08:00 each survey night to fully encompass the active bat period (Figure 3). During deployment, biologists used the internal SM4 microphone calibration utility and check status screens to verify the microphone was connected and functioning, data cards were installed, battery voltage was sufficient, and the unit was programmed properly. Detector log files were also recorded for each survey site and are available upon request.

**Deployment Scenario**

<input type="text" value="SM4BAT-FS"/>	Simulation Start <small>yyyy/mm/dd hh:mm:ss</small>	<input type="text" value="2025/04/16"/>	<input type="text" value="18:10:36"/>	<small>NOTE: Remember to select the correct model of SM4 recorder e.g. SM4, SM4BAT-FS, or SM4BAT-ZC</small>
SD Card Slot A:	<input type="text" value="Empty"/>	SD Card Slot B:	<input type="text" value="Empty"/>	<small>NOTE: Run time estimates assume power-efficient flash cards and high quality batteries at room temperature. Run times can vary significantly (by as much as 50%) otherwise.</small>
Mic 0:	<input type="text" value="SMM-U1"/>			
Trig Ratio (%):	<input type="text" value="10%"/>	Battery (Wh):	<input type="text" value="72 Wh"/>	

---

**Settings**

<input type="checkbox"/> Prefix:	<input type="text" value="S4U02782"/>	Gain:	<input type="text" value="12 dB"/>
<input type="checkbox"/> Timezone:	<input type="text" value="UTC+00"/>	:00	16k High Filter: <input type="text" value="off"/>
<input type="checkbox"/> Position:	Lat: <input type="text" value="0.00000 N"/>	Lon: <input type="text" value="0.00000 W"/>	Sample Rate: <input type="text" value="256 kHz"/>
	<input type="text" value="sunrise/sunset"/>		Min Duration: <input type="text" value="1.5 ms"/>
	Delay Start <small>(yyyy/mm/dd):</small>	<input type="checkbox"/>	<input type="text" value="2000/01/01"/>
	<input type="text" value="LED always"/>		Max Duration: <input type="text" value="none"/>
<input type="checkbox"/> Battery Cutoff:	<input type="text" value="0.0 V"/>		Min Trig Freq: <input type="text" value="16 kHz"/>
	Schedule mode:	<input type="text" value="Schedule Mode daily"/>	Trigger Level: <input type="text" value="12 dB"/>
			Trigger Window: <input type="text" value="5.0 s"/>
			Max Length <small>(mm:ss):</small> <input type="text" value="00:15"/>

Figure 3. Standard settings for Song Meter 4 full-spectrum ultrasonic detectors, North Plains Connector Project in North Dakota.

If weather conditions, such as persistent rain, strong sustained winds greater than 9 miles per hour, or cold temperatures below 50 degrees Fahrenheit occurred for more than 30 minutes during the first 5 hours of the survey period, then that survey night was deemed invalid, and the location was surveyed for an additional night (USFWS, 2023, 2024). Weather conditions were checked with eight different weather stations along the Project route in 2023, nine different weather stations along the Project route in 2024, and seven different weather stations along the Project route in 2025 using Weather Underground’s Wundermap (Weather Underground, 2023, 2024, 2025).

### 3.1.3 Acoustic Survey Analytical Methods

Bat species with potential to occur along the Project are listed in Table 1. Known range and occurrence information for the federally listed, proposed, and under review species are described below.

MYSE are known to occur along the Little Missouri and Missouri rivers in North Dakota. MYLU have the potential to occur along the Project route and are known to occur state-wide in North Dakota. PESUs are not known to occur in North Dakota; however, they have been documented in northeastern Wyoming and were added to the target species list per USFWS request. Four additional western *Myotis* species can have call characteristics similar to MYSE and are also known to occur in North Dakota. These include: the long-legged myotis (*Myotis volans*; MYVO), western long-eared bat (*Myotis evotis*; MYEV), western small-footed bat (*Myotis ciliolabrum*; MYCI), and fringed myotis (*Myotis thysanodes*; MYTH).

**Table 1. Bat species with potential to occur within the North Plains Connector Project in North Dakota (ND), categorized by echolocation call frequency.**

Common Name	Scientific Name	Federal Status	Kaleidoscope Pro and SonoBat Species List	
			ND East	ND West
<b>High Frequency (≥30 kHz)</b>				
Eastern red bat	<i>Lasiurus borealis</i>	Not listed	x	x
Western small-footed bat	<i>Myotis ciliolabrum</i>	Not listed	x	x
Little brown bat	<i>Myotis lucifugus</i>	Under Review	x	x
Northern long-eared bat	<i>Myotis septentrionalis</i>	Endangered	x	x
Long-legged myotis	<i>Myotis volans</i>	Not listed	x	x
Tricolored bat	<i>Perimyotis subflavus</i>	Proposed	x	x
Western long-eared bat	<i>Myotis evotis</i>	Not listed		x
Fringed myotis	<i>Myotis thysanodes</i>	Not listed		x
<b>Low Frequency (15–29 kHz)</b>				
Townsend’s big-eared bat	<i>Corynorhinus townsendii</i>	Not listed	x	x
Big brown bat	<i>Eptesicus fuscus</i>	Not listed	x	x
Hoary bat	<i>Lasiurus cinereus</i>	Not listed	x	x
Silver-haired bat	<i>Lasionycteris noctivagans</i>	Not listed	x	x

kHz = kilohertz.

For all acoustic sites east of central Hettinger County in North Dakota, recorded bat calls were evaluated using one approved USFWS automated identification software program (Kaleidoscope Pro v. 5.4.7 in 2023 and 2024, v. 5.7.0 in 2025; Table 2, Figure 2).<sup>4</sup> For the portions of the Project west of central Hettinger County in North Dakota (Table 2, Figures 2), where the MYSE range overlaps with western *Myotis* species with similar echolocation calls (MYVO, MYEV, MYCI, MYTH; USFWS, 2023, 2024), two USFWS candidate automated identification software programs were used: Kaleidoscope Pro v. 5.4.7 (in 2023 and 2024) and v. 5.7.0 (in 2025) and SonoBat v. 4.4.5 (in 2023 and 2024) and v. 30.2 (in 2025).<sup>5</sup> A list of species included in each species list within Kaleidoscope Pro and SonoBat is provided in Table 2. PESU were added to the North Dakota species list within Kaleidoscope Pro and SonoBat, per USFWS request. Kaleidoscope Pro converted bat calls to zero-crossing format prior to identification. SonoBat identified full spectrum calls.

**Table 2. U.S. Fish and Wildlife Service approved automated identification software programs used to evaluate acoustic data recorded at all acoustic survey locations at the North Plains Connector Project in North Dakota (ND).**

Counties	Species List	Software Program
Oliver	ND East	Kaleidoscope Only
Morton	ND East	Kaleidoscope Only
Grant	ND East	Kaleidoscope Only
Hettinger <sup>1</sup>	ND East	Kaleidoscope Only
Hettinger <sup>1</sup>	ND West	Kaleidoscope + 1 SonoBat Run <sup>2</sup>
Slope	ND West	Kaleidoscope + 1 SonoBat Run <sup>2</sup>

<sup>1</sup> Hettinger County, North Dakota, is where the western bat species line falls (Figure 2), which triggers the use of two software programs.

<sup>2</sup> Dakota Species Suite and ND\_Black\_Hills classifier for North Dakota used within Sonobat.

All bat files identified by the automated identification software as potential MYSE, PESU, MYLU, MYVO, MYEV, MYCI, and MYTH (regardless of maximum likelihood estimator value) were qualitatively analyzed (i.e., manually vetted) by a qualified permitted bat biologist, Dr. Kevin Murray (permit number TE234121-10). In 2023, MYSE identifications were reviewed by a second qualified permitted bat biologist (Larisa Bishop-Boros, permit number TE21829B-2). In addition, all high-frequency calls (including NoID calls) from nights with maximum likelihood estimator p-values less than 0.1 for MYSE in 2023 and less than 0.05 for MYSE and PESU in 2024 and 2025 were reviewed qualitatively (USFWS, 2023, 2024).

Bat calls were identified by comparing the call characteristics to calls from a known library internal to WEST as well as published echolocation call parameters for bat species in the United States (Murray et al., 2001 [p. 732]; Britzke et al., 2011 [Table S1]; SonoBat Bat Call Analysis Software, 2017). During qualitative review, bat calls were either verified as aligning with the Kaleidoscope Pro and/or SonoBat automated species identification or they were reclassified. Bat calls were reclassified for one or more of the following reasons:

---

<sup>4</sup> Kaleidoscope Pro settings include the North Dakota species set and a sensitivity of -1.

<sup>5</sup> SonoBat settings include autofilter set to “auto-low,” acceptable call quality set to 0.80, sequence decision threshold set to 0.90, and the maximum number of calls to consider set to 16.

- call sequence was not characteristic of the target species;
- call sequence contained distinct calls produced by species other than the target species; or
- call sequence was of insufficient quality to confirm the target species (i.e., contained fragmented pulses, the call sequence was short [five or fewer pulses], or contained primarily approach-phase calls).

## 3.2 Hibernacula Assessments

### 3.2.1 Desktop Assessment

To identify potential bat hibernacula for MYSE, PESU, and/or MYLU, WEST completed an initial desktop assessment of available datasets within three miles of the Project in North Dakota in 2023 and 2024. Information and spatial datasets used during this desktop review included North Dakota Public Service Commission – Abandoned Mine Lands Division abandoned mine data and U.S. Geological Survey (USGS) – Mineral Resources Program active mine data.

The desktop assessment of these data sources in 2023 found many active and abandoned mines within three miles of the Project; however, most features documented surficial mining activities, such as gravel pits and reclaimed (historical) coal mines with no underground activities. WEST repeated the desktop assessment in 2024 but did not identify any mine sites with documented underground openings, bat gates, or potential portals.

Per USFWS request, WEST expanded the desktop assessment in 2024 to identify karst terrain and steep talus (rocky) slopes that may contain portals or caves and could provide suitable overwintering locations for bat species. Six very small, isolated patches of carbonite karst geology were identified within three miles of the Project in Slope and Hettinger counties (Weary and Doctor, 2014). Each of these areas was associated with a mapped butte, and only one of the six (Black Butte in Hettinger County) was located within 0.5 mile of the Project. Piping pseudokarst (erosional karst features) were also mapped north of the Project in Slope County (Weary and Doctor, 2014), and extend slightly into the Project survey areas in the vicinity of the Little Missouri National Grassland. To identify steep and potentially talus slopes, WEST used the USGS Gap Analysis Project slope data (USGS, 2011) to identify areas within 0.5 mile of the Project with slopes of 20 degrees or higher. Due to limited survey access, field surveys of the steep slope areas outside the typical Project survey area were limited to areas within 0.5 mile of the Project that could be visually assessed from public roads.

### 3.2.2 Roadside Reconnaissance Survey

Roadside reconnaissance surveys to document steep and talus slopes were completed in September 2024 (Figure 4). During the reconnaissance surveys, surveyors recorded the approximate locations of potential hibernacula features and rocky or talus slopes. Potential hibernacula identified within 0.5 mile of the Project during roadside surveys were then evaluated by a permitted bat biologist for potential suitability and further evaluation, if warranted and accessible. Photographs were collected to document the observed slopes, crevices, and caves, where possible.

### 3.2.3 *Hibernacula Field Assessments*

WEST conducted field surveys to identify features such as caves, portals, rocky outcrops, or mineshafts within the typical survey area that may provide hibernacula for overwintering bats. Surveys to identify potential hibernacula within the typical Project survey area were initiated during the Project's general habitat mapping surveys in 2022 and continued through 2024.

WEST ground crews identified and photographed four potential hibernacula locations (i.e., cave openings, sinkholes, fissures, or other rocky features) in North Dakota that were within three miles of the Project route during ground surveys in 2022, 2023, and 2024 (Figure 5). Potential hibernacula features located more than three miles away from the current Project footprint due to route changes were considered outside the Project area and not evaluated further. Federally permitted bat biologists (Curtis Hart, federal permit number ES81968B-2, or Brenna Hyzy, federal permit number ES26854C-2) reviewed aerial imagery and photographs of these potential hibernacula and determined that all four locations merited additional field verification to determine suitability. Field assessments of these potential hibernacula were completed in November 2023 and September 2024. Recommendations provided in the 2023 and 2024 Guidelines were used to determine whether these potential hibernacula locations were suitable for MYSE, PESU, and/or MYLU (USFWS, 2023, 2024).



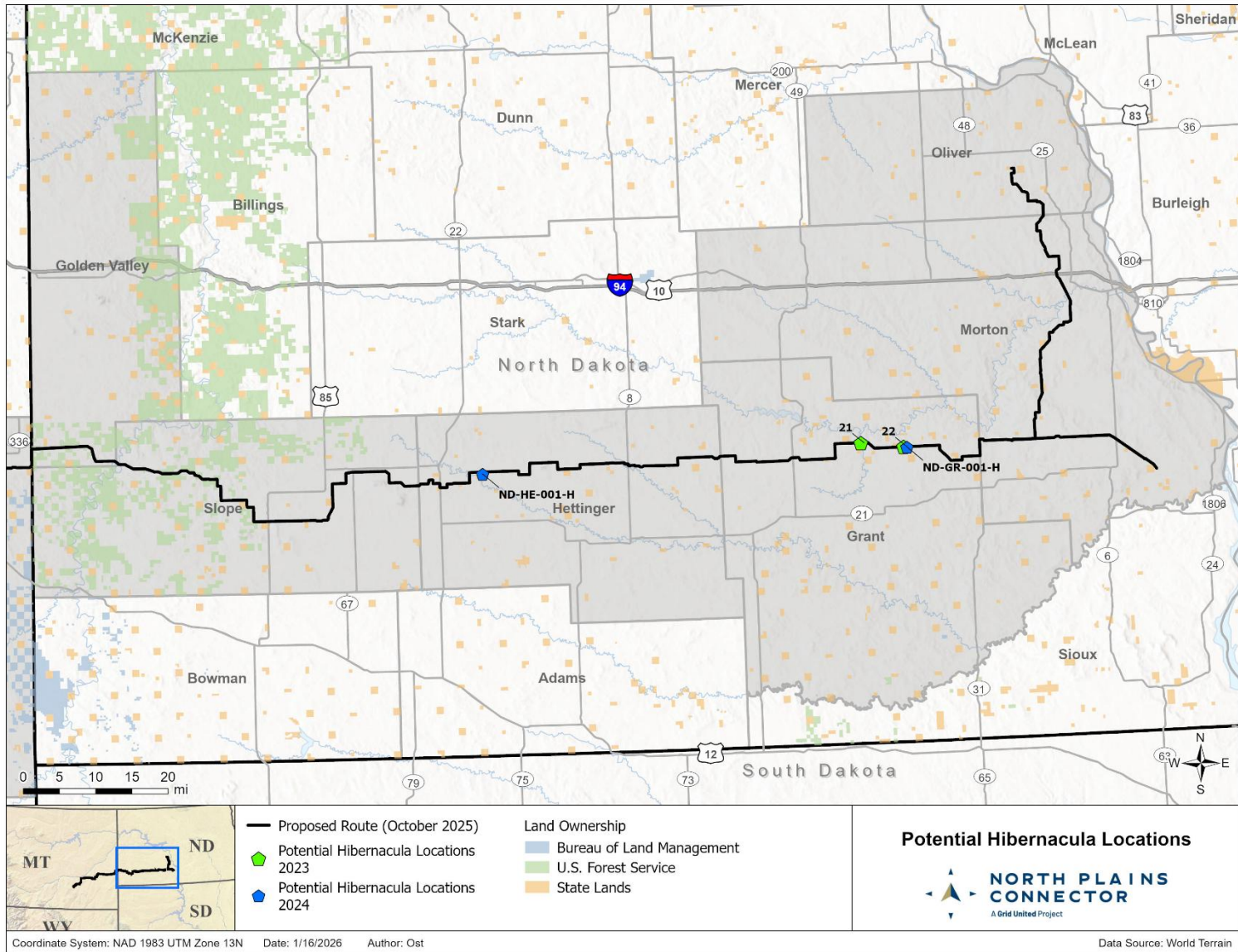


Figure 5. Potential hibernacula locations identified in 2023 and 2024 along the North Plains Connector Project in North Dakota.

### 3.3 Hibernacula Presence/Probable Absence Surveys

#### 3.3.1 Survey Effort

WEST conducted hibernacula presence/probable absence surveys at one potentially suitable hibernacula location confirmed during the hibernacula assessments in Grant County, North Dakota. Based on the field assessment, one of the four potential hibernacula locations (ND-GR-001-H; Figure 5) met the Guidelines' criteria for suitability. Due to the proximity of this feature to the proposed Project, Phase 2 hibernacula surveys were conducted at this location in fall 2025.

#### 3.3.2 Hibernacula Survey Field Methods

Phase 2 hibernacula surveys followed the 2024 Guidelines and were conducted by individuals holding the proper state and federal permits (Meredith Hoggatt, permit number ESPER0039249; Zeinab Haidar, permit number ESPER174552-2). Following recommendations provided by the local USFWS North Dakota Field Office on March 13, 2025, fall hibernacula surveys were conducted between September 1 – October 31, 2025.

Per the 2024 Guidelines, WEST planned to conduct a minimum of one night of survey per week for six weeks (i.e., six total nights of survey). The surveys began at sunset and continued for at least 5 hours each night, for a planned total of 30 hours of survey over 6 weeks. Factors affecting survey timing and duration in the 2024 Guidelines also applied, as listed below:

- Each night of surveying was separated by at least one week, if allowed by forecasted weather conditions.
- Surveys would be suspended if no bats (of any species) were captured after the first two nights of valid survey.
- If captures increased during a survey night or if six or more bats of any species were captured during the last hour of monitoring in a survey night, the survey effort continued until activity declined to a capture rate of fewer than six bats per hour.
- The capture of MYSE would trigger an additional three nights of surveying per week for three consecutive weeks (nine additional nights) to determine the relative significance of the hibernacula.

A SM3 or SM4 acoustic detector was deployed at the site during surveys to monitor bat activity. Total number of bat calls recorded per hour will be reported for each survey night. Analysis of recorded bat calls for noise filtering and species identification was not completed.

If MYSE or bats closely resembling MYSE were captured, a DNA sample was collected for species confirmation via opportunistic guano collection or wing punches. Wing punch tissue samples would be collected from bats of either sex and any age class. Guano samples would be extracted from the storage bag.

Harp traps were monitored continuously to minimize the number of bats that escape, and surveyors minimized noise, lights, and movement within 300 feet of the harp trap. For each night of surveying, the survey date, start and end times, site description and coordinates, and weather

data (e.g., moonlight, precipitation, temperature, wind speed) were recorded. A permitted bat biologist confirmed the species of captured bats and record each bat's sex, age, reproductive condition, body mass (grams), forearm length (millimeters), ear length (millimeters), wing damage index (Reichard, 2009), time of capture, flight direction, and capture status (recapture or new). Captured bats were measured and processed immediately and usually released within 15 minutes. Representative photographs of captured bats were taken, including voucher (i.e., diagnostic) photographs of all federally listed or under review bat species and state species of concern. All bats captured were marked with a sharpie to identify any recaptures during subsequent survey nights. All surveys adhered to the most recent USFWS decontamination protocol regarding white-nose syndrome (WNS). WEST personnel also utilized COVID-specific personal protective equipment and methods for safe bat handling, as described in discussions with the USFWS and listed on federal permits (Condition H of federal permit).

If any of the following weather conditions occurred during a survey, the survey effort for that night was repeated:

- Winds sufficiently strong and variable enough to move equipment more than 50 percent of the time;
- Precipitation, including rain and/or fog, that does not stop within 30 minutes or continues intermittently during the survey period; or
- Temperatures that are less than 50 degrees Fahrenheit for the first 2 hours, and/or that drop below 40 degrees Fahrenheit at any point during the survey.

### **3.4 Mist-net Surveys**

#### **3.4.1 Survey Effort**

Due to the number of *Myotis* species with potential to occur at the Project and the similarity of some species' acoustic calls, WEST conducted mist-net surveys in optimal habitat along the Project in 2023. These mist-netting surveys were an elective addition to supplement the 2023 acoustic presence/probable absence survey efforts and identify the bat species present within the highest quality habitat along the Project.

Mist-netting surveys were conducted at four sites along the Project in North Dakota (Figure 6). Each mist-net site was surveyed for at least 4 net-nights of survey effort (e.g., at least 2 net-sets open for 2 nights) to provide at least 16 net-nights focused on the best available bat habitat along the Project in North Dakota.

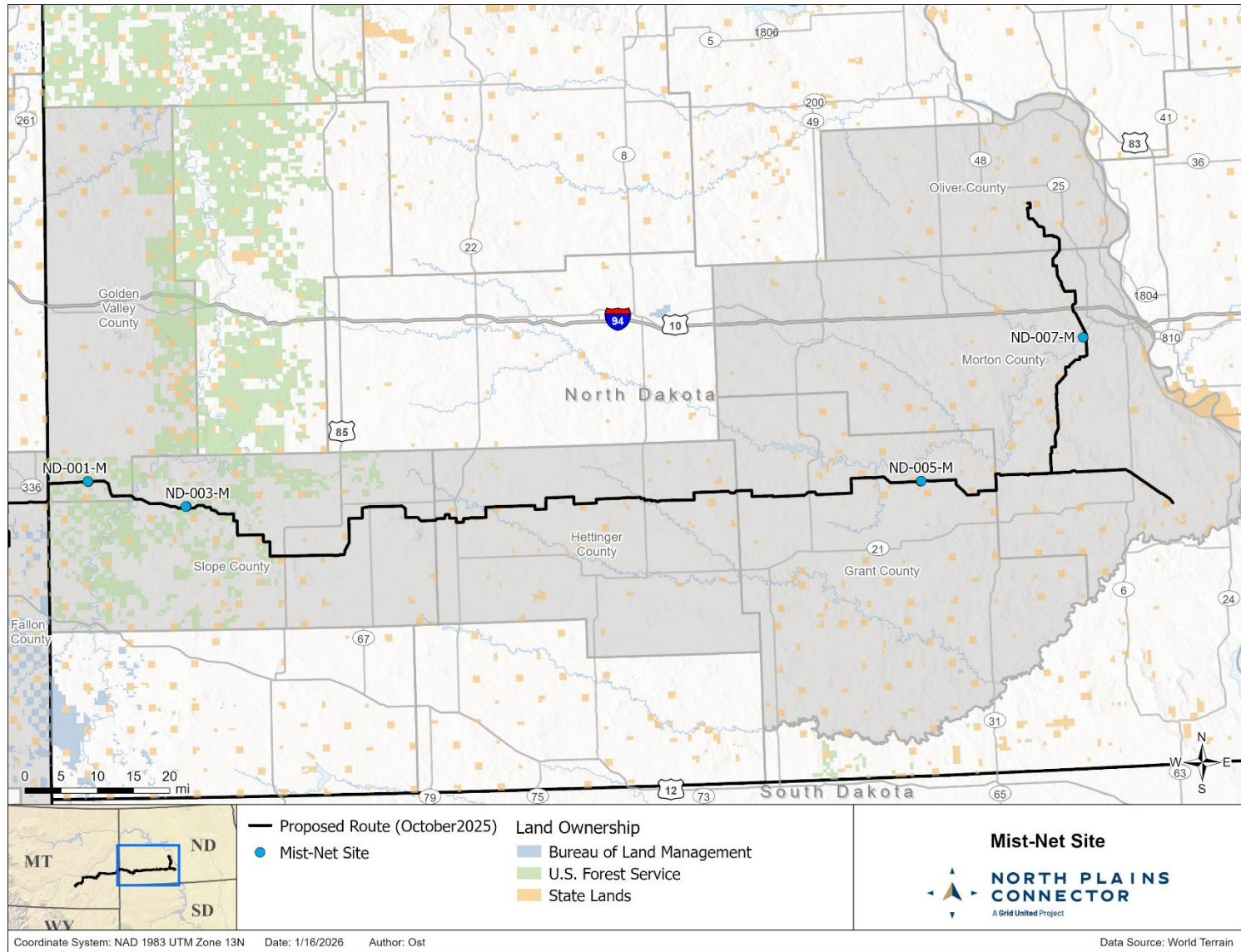


Figure 6. Mist-net site locations in 2023 along the North Plains Connector project in North Dakota.

### 3.4.2 Mist-net Survey Field Methods

Mist-net surveys were conducted by an individual holding the proper state- and federal-endangered species recovery permits (Curtis Hart, federal permit number ES81968B-2, North Dakota Game and Fish Department License number OLN06068732). WEST secured the proper site-specific authorizations from USFWS in North Dakota prior to survey commencement .

Standard 2-ply, 50-denier, nylon mist-nets with a mesh size of 1.5 inches were used at each mist-net site. Mist-nets were placed in the best available suitable habitat and positioned perpendicularly across flight corridors to fill the corridor from side-to-side and extended from ground-level up to the overhanging canopy, when possible. A minimum of 2 net-sets containing 1–3 stacked nets each was placed at least 98 feet apart at each mist-net site.

Mist-netting began at sunset and continued for at least 5 hours at each site; during this period, nets were checked approximately every 10 minutes. Upon capture and extraction from a mist-net, each captured bat was placed into a single-use storage bag (e.g., brown lunch bag or canvas bag); bats were processed and released within 15 minutes of capture. The USFWS *National White-nose Syndrome Decontamination Protocol* was followed for all netting efforts to prevent cross contamination of captured bats with *Pseudogymnoascus destructans*, the fungus that causes WNS (White-nose Syndrome Disease Management Working Group, 2020). Captured bats were marked with a sharpie to identify recaptured individuals.

For each mist-net night, the date, survey start and end times, site description and coordinates, net size and net-set count, net-set location details and weather data (e.g., temperature, cloud cover, wind speed, precipitation, and moon phase) were recorded. A permitted bat biologist was present at all mist-net sites to identify captured bats to species. In addition, sex, age, reproductive condition, body mass (grams), ear length (millimeters), forearm length (millimeters), time of capture, and capture status (re-capture/new) were recorded. Representative photographs of captured bats were also taken, including voucher (diagnostic) photographs of all federally listed or under review bat species and state species of concern. To assess WNS damage, a Reichard Index score (0–3) was recorded for captured bats (Reichard, 2009). If MYSE, PESU, MYLU, or any *Myotis* species where the identification was questionable were captured, either fecal samples or wing punches were taken for DNA confirmation.

If adverse weather conditions, such as persistent rain or heavy fog, strong sustained winds (greater than 9 miles per hour), or cold temperatures (below 50 degrees Fahrenheit) occurred for more than 30 minutes during the survey night, then the mist-net site was surveyed for an additional night unless federally listed species were captured (USFWS, 2023).

## 4.0 RESULTS

### 4.1 Acoustic Presence/Probable Absence Surveys

Acoustic presence/probable absence surveys were completed at 118 acoustic survey sites in North Dakota between June 8 – August 15, 2023, June 12 – August 15, 2024, and May 31 – June 13, 2025. As of 2025, bat surveys are complete in North Dakota.

In North Dakota, detectors were deployed for 4–14 days at each site, for a total of 891 detector-nights. Some detectors were deployed for more than the required minimum of four days due to invalid nights, scheduling constraints, safety concerns, and/or land access delays. Across all sites deployed in North Dakota, four were re-deployed due to invalid nights; these are denoted in the site name with an ‘R’ replacing the initial ‘A’ (i.e., ND-168-R). There were 255 invalid detector-nights due to weather or equipment malfunction, resulting in 636 valid detector-nights for the Project in North Dakota. Representative photographs of acoustic survey sites are provided in Appendix A. Additional information including locations and descriptions of acoustic survey sites, datasheets, site location maps, and daily weather logs for verification of valid weather nights have been omitted from this summary report, but were provided in the 2023, 2024, and 2025 bat survey reports, which were submitted to the USFWS.

All recordings preliminarily identified as potential MYSE, PESU, MYLU, MYVO, MYEV, MYCI, and MYTH were qualitatively reviewed.<sup>6</sup> Table 3 summarizes counties in North Dakota that had qualitative confirmation of these target species. Qualitative analysis confirmed the presence of MYSE at 4 acoustic survey sites (Figure 7, Table 3), MYLU at 72 acoustic survey sites (Figure 8, Table 3), MYVO at 6 acoustic survey sites (Figure 9, Table 3), MYEV at 9 acoustic survey sites (Figure 10, Table 3), MYTH at 1 acoustic survey site (Table 3), and MYCI at 29 acoustic survey sites (Figure 11, Table 3). No PESU passes were confirmed in North Dakota during qualitative analysis.

**Table 3. Number of acoustic site locations with confirmed acoustic presence of the target species along the North Plains Connector Project in North Dakota in 2023, 2024, and 2025.**

State	County	Species						
		Little Brown Bat (MYLU)	Northern Long-eared Bat (MYSE)	Tricolored Bat (PESU)	Long-legged Myotis (MYVO)	Western Long-eared Bat (MYEV)	Western Small-footed Bat (MYCI)	Fringed Myotis (MYTH)
North Dakota	Golden Valley	10	0	0	0	1	3	1
	Slope	19	0	0	1	8	20	0
	Hettinger	6	0	0	0	0	1	0
	Grant	11	0	0	2	0	1	0
	Morton	20	4	0	2	0	4	0
	Oliver	6	0	0	1	0	0	0
<b>Total</b>		<b>72</b>	<b>4</b>	<b>0</b>	<b>6</b>	<b>9</b>	<b>29</b>	<b>1</b>

<sup>6</sup> Per agency request in 2023, any bat calls identified as western Myotis species were qualitatively analyzed, due to their similar echolocation call structures to MYSE.

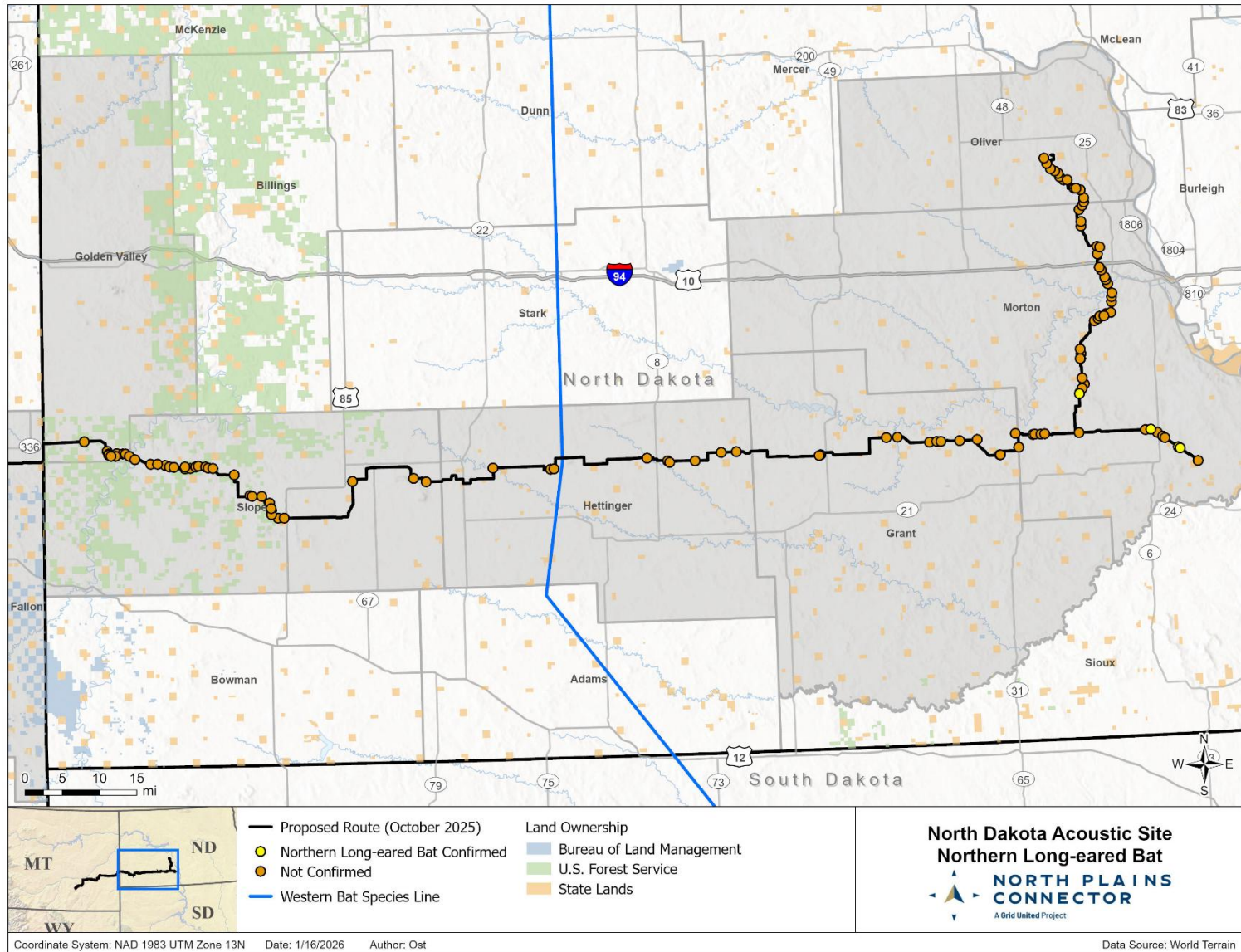


Figure 7. Acoustic survey sites with qualitatively confirmed northern long-eared bat (*Myotis septentrionalis*) presence along the North Plains Connector Project in North Dakota from 2023–2025.

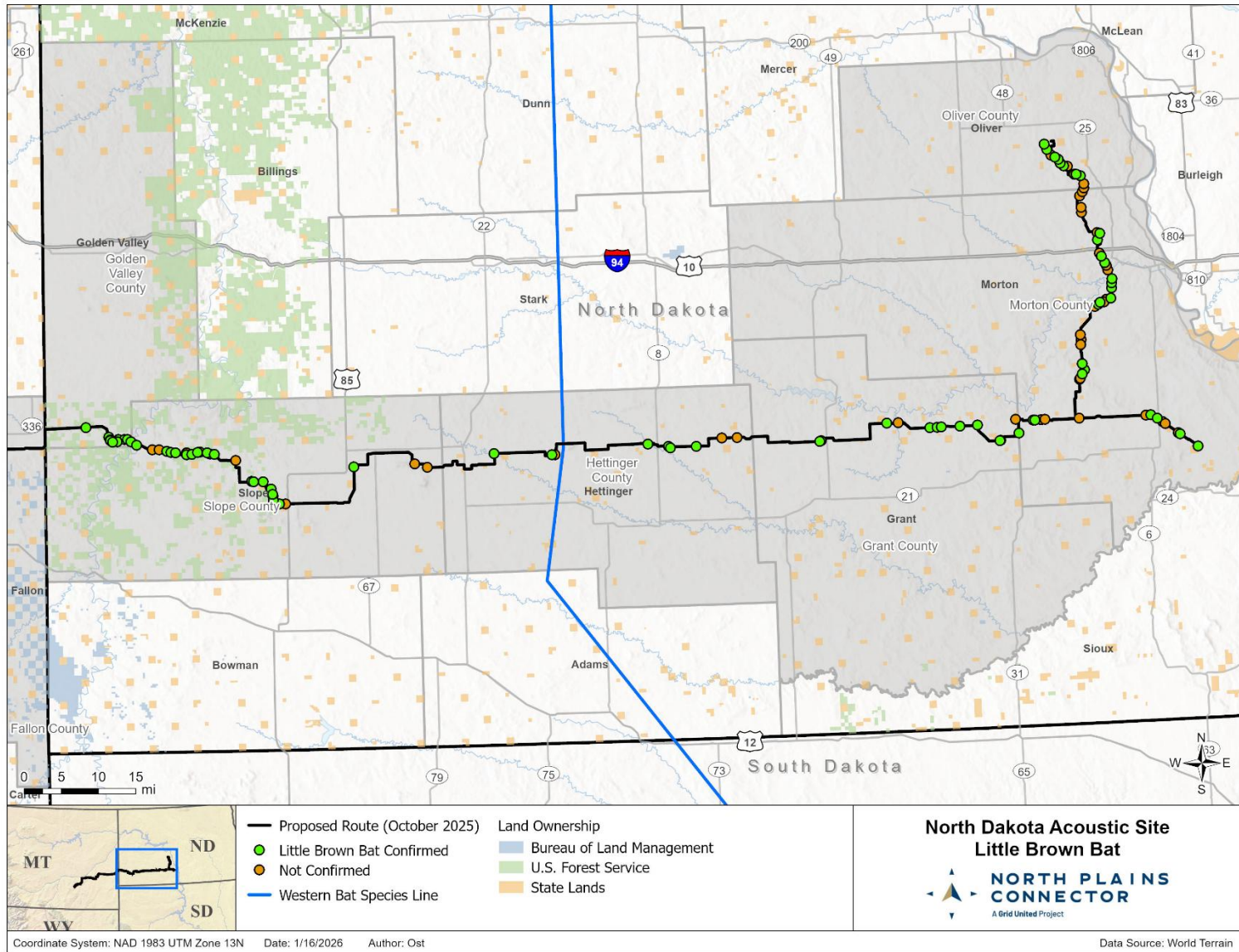


Figure 8. Acoustic survey sites with qualitatively confirmed little brown bat (*Myotis lucifugus*) presence along the North Plains Connector Project in North Dakota from 2023–2025.



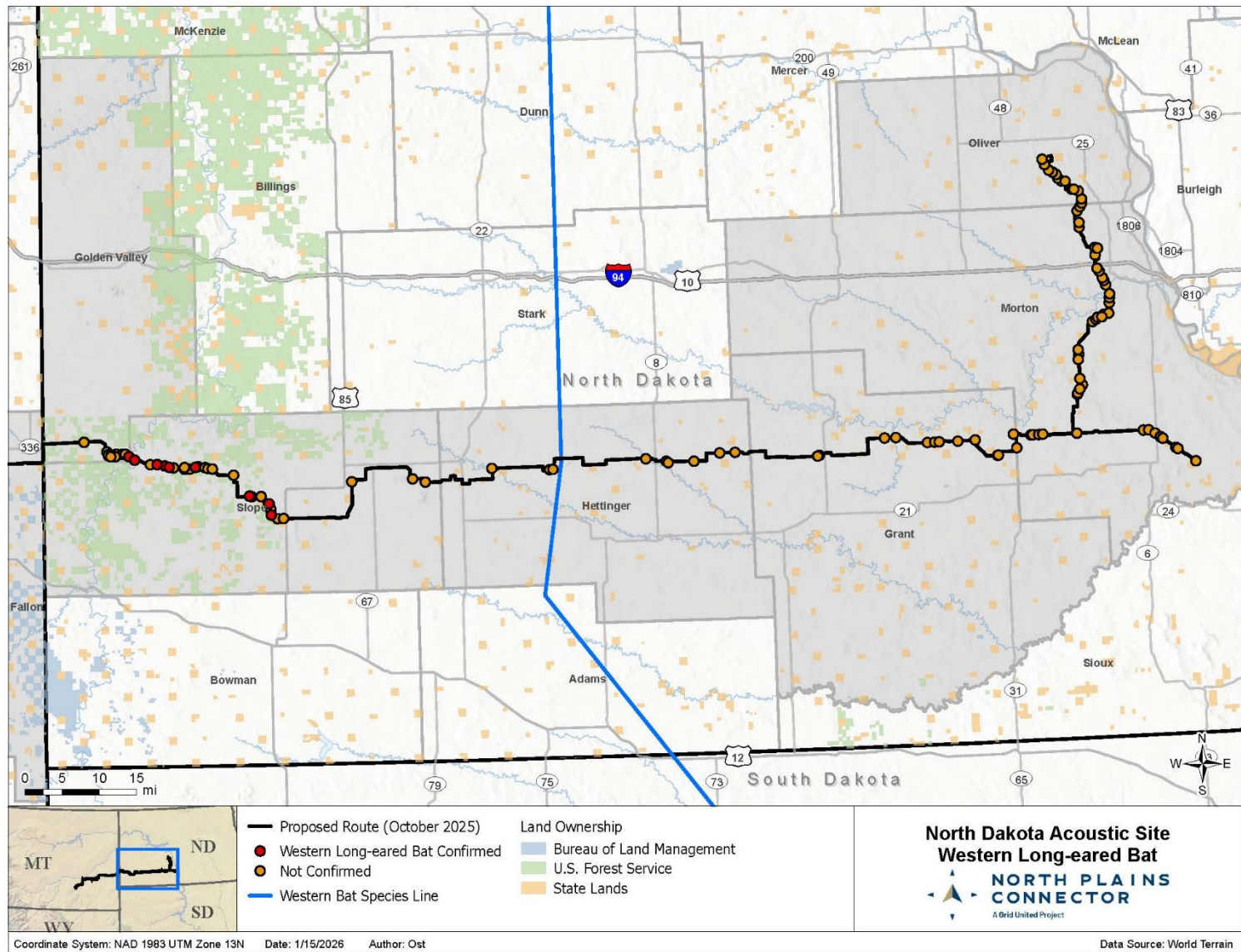


Figure 10. Acoustic survey sites with qualitatively confirmed western long-eared bat (*Myotis evotis*) presence along the North Plains Connector Project in North Dakota from 2023–2025.

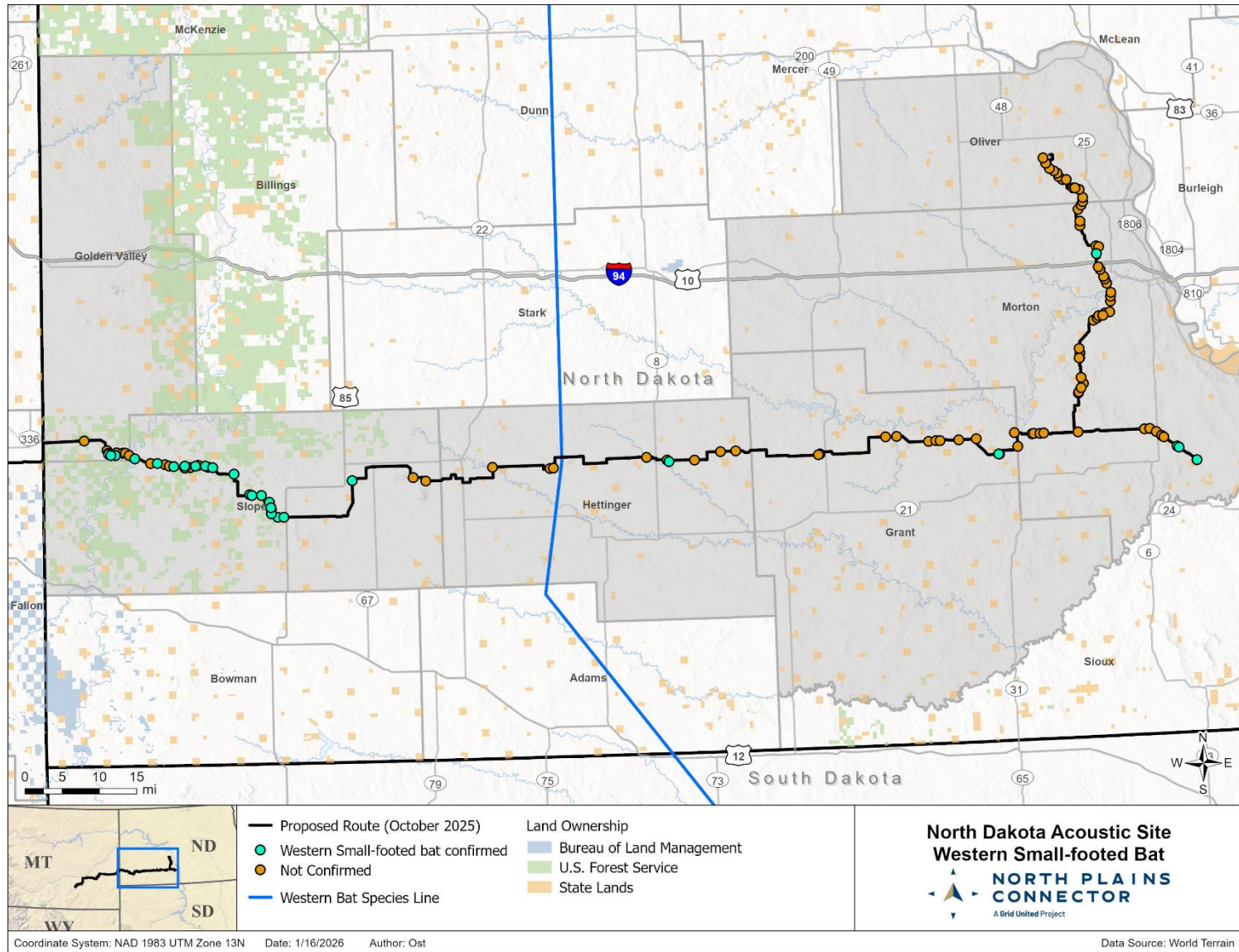


Figure 11. Acoustic survey sites with qualitatively confirmed western small-footed bat (*Myotis ciliolabrum*) presence along the North Plains Connector Project in North Dakota from 2023–2025.

## 4.2 Hibernacula Assessments

### 4.2.1 Roadside Reconnaissance Surveys

Field biologists completed roadside reconnaissance surveys for steep and talus slopes in September 2024. Due to these roadside surveys being restricted to public roads, the majority of the steep slope areas identified during the desktop assessment were not visible and, therefore, could not be surveyed for the presence of talus slopes or potential hibernacula features. However, there were a number of areas that were visible from public roads, and field biologists were able to confirm the presence of talus slopes in eight locations along the Project route in North Dakota (Table 4, Figure 12). Six locations were confirmed to have visible talus slopes in Slope County, along with one location each in Grant and Oliver counties.

Representative photographs of talus slope locations identified during roadside reconnaissance surveys are included in Appendix B. A permitted bat biologist reviewed the talus slope photographs as well as surrounding land cover and topography via desktop after the roadside survey in 2024. Based on photo and desktop assessment, no features that could be considered potential hibernacula were observed and no follow-up hibernacula assessments are planned in these talus slope areas.

**Table 4. Summary of confirmed talus slopes identified in 2024 along the North Plains Connector Project in North Dakota.**

<b>Survey Point</b>	<b>County</b>	<b>Latitude</b>	<b>Longitude</b>
ND-SL-001-T	Slope	46.5466	-103.7600
ND-SL-002-T	Slope	46.5275	-103.7172
ND-SL-003-T	Slope	46.4212	-103.3529
ND-SL-004-T	Slope	46.4202	-103.3486
ND-SL-005-T	Slope	46.4188	-103.3489
ND-SL-006-T	Slope	46.4181	-103.3480
ND-GR-001-T	Grant	46.5318	-101.5081
ND-OV-001-T	Oliver	47.0088	-101.0743

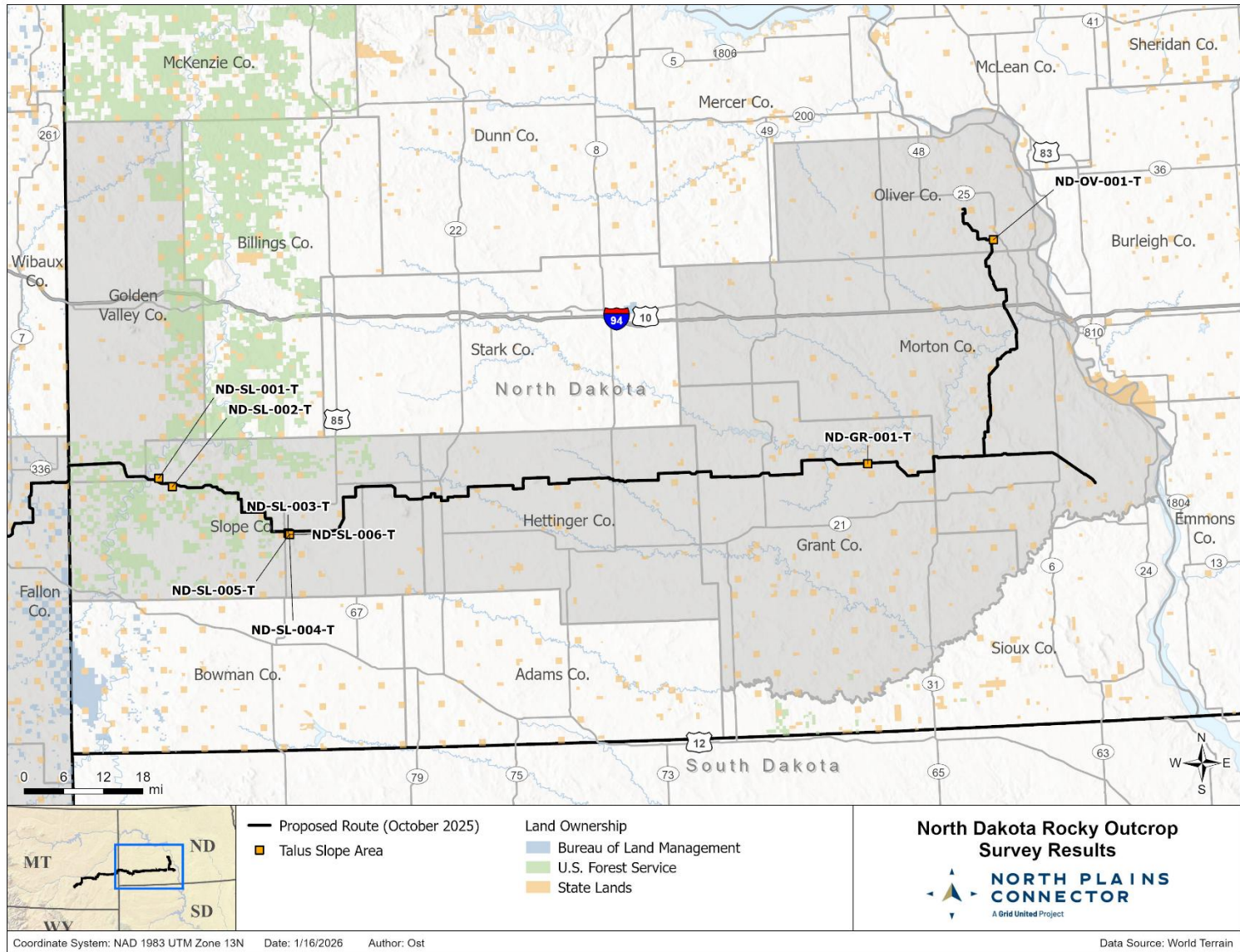


Figure 12. Results of 2024 roadside surveys identifying talus slope locations along the North Plains Connector Project in North Dakota.

#### 4.2.2 Hibernacula Field Assessments

Field biologists visited the four potential hibernacula identified within three miles of the Project in November 2023 and September 2024 to conduct a field-based hibernacula assessment at each feature and evaluate suitability according to the criteria listed in the Guidance (USFWS, 2023, 2024; Figure 13).

Three of the potential hibernacula locations assessed in the field were determined to be unsuitable for use as a bat hibernacula (Table 5). Results of the field assessment indicated these locations lacked any cavities deep enough to provide winter bat habitat. One of the potential hibernacula locations was determined to be potentially suitable (ND-GR-001-H). The original location identified by the ground crew included a long stretch of rocky habitat (approximately 443 feet in length) characterized by stretches of rocky overhangs, boulders, and cliff faces. During the suitability assessment, the field biologist evaluated this entire area for potential hibernacula and identified one location within the typical survey corridor with an internal cave opening close to the ground. The opening was approximately 24 inches wide and 10 inches tall, displayed slight airflow coming from inside, and the temperature was cooler inside the opening compared to external temperatures.

Representative photographs of the suitable hibernaculum identified during field visits are included in Appendix C.

**Table 5. Summary of potential hibernacula assessments conducted in 2023 and 2024 along the North Plains Connector Project in North Dakota.**

<b>Survey Location</b>	<b>Year</b>	<b>County</b>	<b>Field Verified<sup>1</sup></b>	<b>Structure Type</b>	<b>Determination</b>
21	2023	Grant	Yes	Rocky Outcrop	Unsuitable
22	2023	Grant	Yes	Rocky Outcrop	Unsuitable
ND-GR-001-H	2024	Grant	Yes	Potential Cave	Suitable
ND-HE-001-H	2024	Hettinger	Yes	Potential Cave	Unsuitable

<sup>1</sup> Field survey completed by a qualified biologist who holds a U.S. Fish and Wildlife Service Recovery Permit (2023).

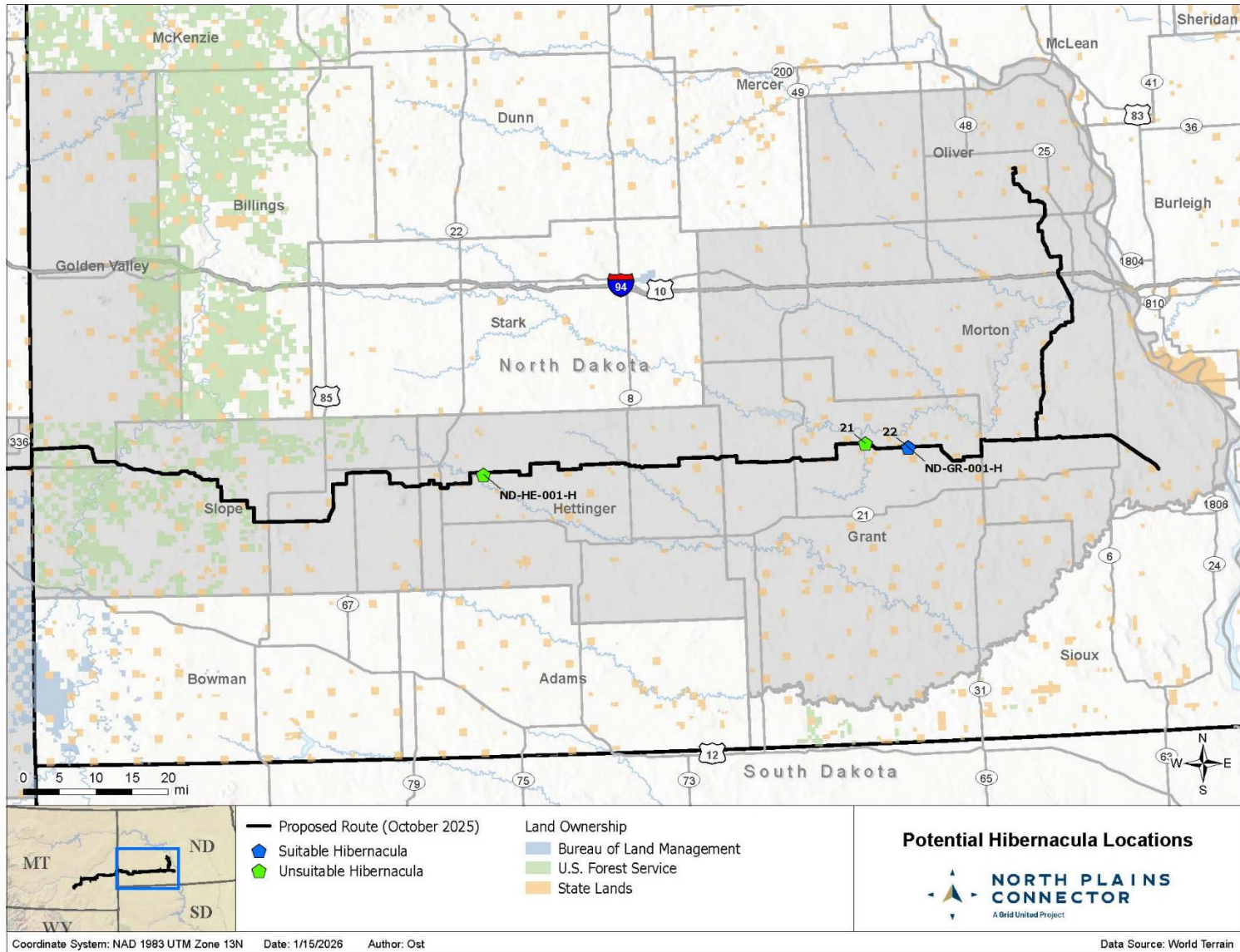


Figure 13. Results of potential hibernacula surveys conducted from 2023–2024 along the North Plains Connector Project in North Dakota.

### 4.3 Hibernacula Presence/Probable Absence Surveys

Hibernacula surveys were conducted at one suitable hibernaculum (ND-GR-001-H) in Grant County, North Dakota between September 3 – 28, 2025. The first night of survey (September 3) was invalid due to temperatures dropping below 50 degrees Fahrenheit within the first 2 hours of survey. One MYCI was captured within the first hour of this survey night, but it did not emerge from the potential hibernacula entrance, it was observed flying around the survey site and was likely captured as a result of investigative behavior. A DNA sample was not taken for this bat, as MYCI are easily distinguishable from MYSE based on morphological features alone. The second night of survey (September 10) was also invalid due to high wind speeds, the harp trap was closed one hour after sunset, with no bats were seen or captured. Surveys were not attempted the week of September 13 due to persistent thunderstorms in the area. The third night of survey (September 21) was the first valid survey night completed; no bats were seen or captured. The fourth night of survey (September 28) was the second valid survey night completed; no bats were seen or captured.

After completing two valid nights of survey with no bat captures, along with poor weather conditions forecasted, surveys were abandoned at site ND-GR-001-H. In addition to the lack of bat captures during valid survey nights, biologists observed a high number of western prairie rattlesnakes (*Crotalus viridis*) both within the portal itself and surrounding the opening on the third and fourth nights of survey. This presented a health and safety risk to surveyors and prevented additional surveys; it also suggests that this location is being used as an active rattlesnake den and is therefore unlikely to be used as a bat hibernaculum.

Table 6 summarizes the total number of acoustic bat calls recorded per hour during each night of survey. Appendix D provides representative photographs of the harp trap set up at the survey site.

**Table 6. Summary of acoustic bat calls recorded by hour during hibernacula surveys conducted in 2025 for the North Plains Connector Project in North Dakota.**

Survey Location	Survey Night	Survey Night Status	Number of Files Recorded					Total
			Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	
ND-GR-001-H	9/3/2025	Invalid	14	8	–	–	–	<b>22</b>
ND-GR-001-H	9/10/2025	Invalid	0	–	–	–	–	<b>0</b>
ND-GR-001-H	9/21/2025	Valid	2	2	1	1	2	<b>8</b>
ND-GR-001-H	9/28/2025	Valid	2	1	0	1	2	<b>6</b>

### 4.4 Mist-net Surveys

Mist-netting surveys were conducted at four sites in North Dakota between June 26 – July 8, 2023. Each mist-net site was surveyed for four to six net-nights of survey effort (e.g., at least two net-sets open for two or three nights) focused on the best available bat habitat along the Project. No MYSE or PESU were captured during mist-net surveys (Table 7). However, three MYLU were captured, including one adult female in Morton County, North Dakota (ND-007-M), and one adult female

and one escaped individual of unknown age or sex in Golden Valley County, North Dakota (ND-001-M).

A wing punch sample was collected from the adult female MYLU captured at site ND-001-M; this sample was confirmed as MYLU by genetic testing (Bat Ecology & Genetics Lab, 2023). A wing punch sample was not collected from the adult female MYLU captured at site ND-007-M due to this individual displaying signs of previous wing damage (scarring, tears, and pinholes). Additionally, no wing punch sample was collected from the escaped MYLU at site ND-001-M.

Appendix E provides representative photographs of mist-net locations surveyed in 2023. Additional information including datasheets, photographs of captured bats, maps of all mist-net locations, and descriptions of mist-net sites has been omitted from this summary report but was provided in the 2023 bat survey report.

**Table 7. Details of bats captured during mist-net surveys in North Dakota along the North Plains Connector Project in 2023.**

Site ID	Survey		Species <sup>1</sup>	Sex <sup>2</sup>	Age <sup>3</sup>	Reproductive Status <sup>4</sup>	Reichard Score	Forearm	Weight (g)	Re-captured (Yes/No)
	Date	Time						Length (mm)		
ND-007-M	6/26/2023	23:09	MYLU	F	A	N	0	37.9	8.25	No
ND-001-M	7/6/2023	21:20	MYLU	F	A	N	0	37.1	8.50	No
ND-001-M	7/6/2023	21:22	MYLU*	U	U	U	U	–	–	No

<sup>1</sup> MYLU = little brown bat.

<sup>2</sup> F = female.

<sup>3</sup> A = adult.

<sup>4</sup> N = non-reproductive.

\* Escaped from net or hand.

mm = millimeter; g = gram; U = unknown.

## 5.0 DISCUSSION

Acoustic surveys were completed at 118 sites over 634 valid detector-nights along the Project in North Dakota. Of the federally listed, proposed, and under review species with potential to occur along the Project, MYSE were confirmed present acoustically at 4 sites and MYLU were confirmed present acoustically in 72 sites in North Dakota. No PESU calls were confirmed present during Project surveys in North Dakota. Steep and talus slopes were confirmed present at the Project at eight locations in North Dakota across three counties. Hibernacula field assessments were completed at four potential hibernacula locations identified in North Dakota during Project ground surveys in 2023 and 2024; only one location in Grant County was deemed suitable for bat use, based on the criteria in the Guidelines. This location was surveyed in the fall of 2025; however, no bats were captured emerging from this location and surveys were abandoned after two valid survey nights with no bat captures. Additionally, this site is being used as an active rattlesnake den. Supplemental mist-net surveys were completed at four sites in North Dakota in 2023. No MYSE or PESU were captured during mist-net surveys. However, three MYLU were captured.

North Plains will continue to coordinate with USFWS as the Project progresses.

## 6.0 REFERENCES

- Bat Ecology & Genetics Lab. 2023. Species from Feces Genetic Results. Prepared for Western EcoSystems Technology, Inc., Golden Valley, Minnesota. Prepared by Bat Ecology & Genetics Lab, School of Forestry, Northern Arizona University, Flagstaff, Arizona. September 7, 2023.
- Britzke, E. R., J. E. Duchamp, K. L. Murray, R. K. Swihart, and L. W. Robbins. 2011. Acoustic Identification of Bats in the Eastern United States: A Comparison of Parametric and Nonparametric Methods. *Journal of Wildlife Management* 75(3): 660-667.
- Esri. 2009. World Terrain Base. ArcGIS Resource Center. Environmental Systems Research Institute (Esri), producers of ArcGIS software, Redlands, California. July 1, 2009. Updated August 28, 2025. Available online at: <https://www.arcgis.com/home/item.html?id=c61ad8ab017d49e1a82f580ee1298931>. Accessed November 2025.
- Esri. 2025. World Imagery and Aerial Photos (World Topo). ArcGIS Resource Center. Environmental Systems Research Institute (Esri), producers of ArcGIS software, Redlands, California. Available online at: <https://www.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=10df2279f9684e4a9f6a7f08febac2a9>. Accessed November 2025.
- Murray, K. L., E. R. Britzke, and L. W. Robbins. 2001. Variation in the Search-Phase Calls of Bats. *Journal of Mammalogy* 82(3): 728-737. doi: 10.1644/1545-1542(2001)082<0728: VISPCO>2.0.CO;2.
- Reichard, J. E. 2009. Wing-Damage Index Used for Characterizing Wing Condition of Bats Affected by White-Nose Syndrome. Center for Ecology and Conservation, Boston University, Boston, Massachusetts.
- SonoBat Bat Call Analysis Software. 2017. Echolocation Call Characteristics of Southwestern U.S. bats (table). Available online at: <https://www.sonobat.com>.
- U.S. Environmental Protection Agency (USEPA). 2013. Level III and Level IV Ecoregions of the Continental United States. Ecosystems Research, USEPA. April 16, 2013. Available online at: <https://www.epa.gov/eco-research/level-iii-and-iv-ecoregions-continental-united-states>. Accessed December 2025.
- U.S. Fish and Wildlife Service (USFWS). 2023. Range-Wide Indiana Bat & Northern Long-Eared Bat Survey Guidelines. USFWS, Region 3, Bloomington, Minnesota. March 2023. 76 pp. Available online at: [https://www.fws.gov/sites/default/files/documents/USFWS\\_Range-wide\\_IBat\\_%26\\_NLEB\\_Survey\\_Guidelines\\_2023.05.10\\_0.pdf](https://www.fws.gov/sites/default/files/documents/USFWS_Range-wide_IBat_%26_NLEB_Survey_Guidelines_2023.05.10_0.pdf).
- U.S. Fish and Wildlife Service (USFWS). 2024. Range-Wide Indiana Bat & Northern Long-Eared Bat Survey Guidelines. USFWS, Region 3, Bloomington, Minnesota. March 2024. 95 pp. Available online at: [https://www.fws.gov/sites/default/files/documents/2024-04/final-usfws\\_range-wide\\_ibat-nleb\\_survey\\_guidelines\\_508-compliant.pdf](https://www.fws.gov/sites/default/files/documents/2024-04/final-usfws_range-wide_ibat-nleb_survey_guidelines_508-compliant.pdf).
- U.S. Geological Survey (USGS). 2011. USGS Gap Analysis Project - Additional Data – Slope. USGS Core Science Analytics, Synthesis, and Library - Gap Analysis Project. Available online at: <https://doi.org/10.5066/F75D8QQF>.
- Weary, D. J. and D. H. Doctor. 2014. Karst in the United States: A Digital Map Compilation and Database. Open-File Report 2014–1156. US Geological Survey. 23 pp. doi: 10.3133/ofr20141156. Available online at: <http://pubs.usgs.gov/of/2014/1156/pdf/of2014-1156.pdf>.
- Weather Underground. 2023, 2024, 2025. Wundermap. Available online at: <https://www.wunderground.com/wundermap>.
- White-nose Syndrome Disease Management Working Group. 2020. National White-Nose Syndrome Decontamination Protocol. Version 10.14.2020. October 2020. Available online at: [https://s3.us-west-2.amazonaws.com/prod-is-cms-assets/wns/prod/dfb0a4f0-ff7e-11eb-9953-191cff2d5300-WNS%20Decon%20Protocol\\_October2020.pdf](https://s3.us-west-2.amazonaws.com/prod-is-cms-assets/wns/prod/dfb0a4f0-ff7e-11eb-9953-191cff2d5300-WNS%20Decon%20Protocol_October2020.pdf).

## Appendix A. Representative Photographs of Acoustic Survey Sites



**Appendix A1. Representative photographs of an acoustic detector deployment (left to right: cone, location, orientation) at the North Plains Connector Project in Morton County, North Dakota.**



**Appendix A2. Representative photographs of an acoustic detector deployment (left to right: cone, location, orientation) at the North Plains Connector Project in Slope County, North Dakota.**

**Appendix B. Representative Photographs from 2024 Roadside Reconnaissance Survey**



**Appendix B1. Representative photos of rocky outcrop location identified in 2024 in North Dakota.**



**Appendix B2. Representative photos of rocky outcrop location identified in 2024 in North Dakota.**



**Appendix B3. Representative photograph of a rocky outcrop location identified in 2024 in North Dakota.**

**Appendix C. Representative Photographs of Suitable Hibernaculum**



**Appendix C1. Location ND-GR-001-H, deemed suitable during 2024 hibernacula surveys in North Dakota.**

## Appendix D. Representative Photographs from 2025 Hibernacula Surveys



**Appendix D1. Representative photograph of hibernacula survey site ND-GR-001-H at the North Plains Connector Project in Grant County, North Dakota.**

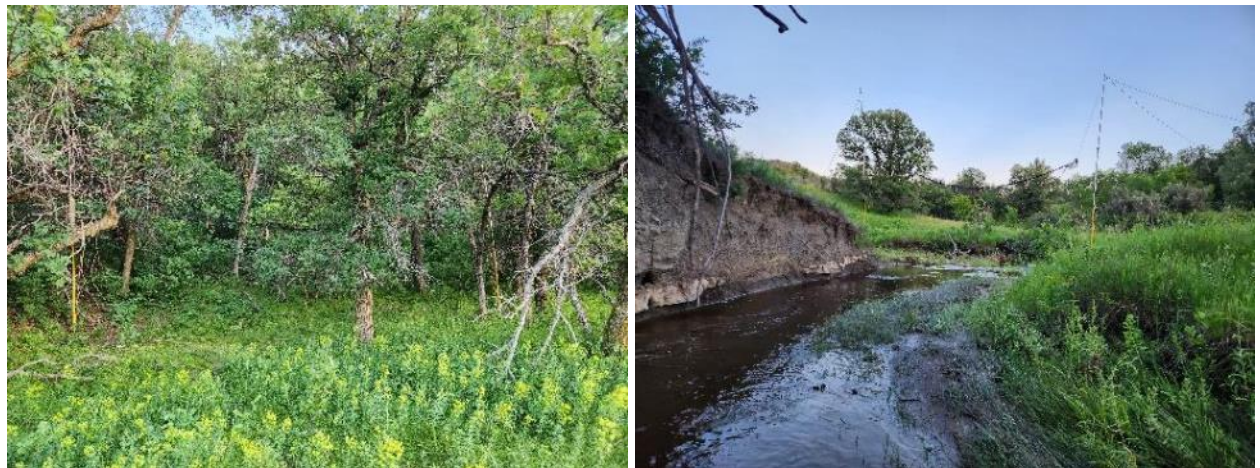
**Appendix E. Representative Photographs of 2023 Mist-Net Survey Sites**



**Appendix E1. Representative photographs of a mist-net survey site in 2023 at the North Plains Connector Project in Golden Valley County, North Dakota.**



**Appendix E2. Representative photographs of a mist-net survey site in 2023 at the North Plains Connector Project in Slope County, North Dakota.**



**Appendix E3. Representative photographs of a mist-net survey site in 2023 at the North Plains Connector Project in Grant County, North Dakota.**



**Appendix E4. Representative photographs of a mist-net survey site in 2023 at the North Plains Connector Project in Morton County, North Dakota.**

**I – 4**

**Dakota Skipper Habitat Assessment Survey Report**



# **NORTH PLAINS CONNECTOR**

**A Grid United Project**

## **2022 – 2025 Dakota Skipper Habitat Assessment Survey Report North Dakota**

Prepared by:



January 2026

**2022 – 2025 Dakota Skipper Habitat Assessment Survey Report  
North Dakota**

**North Plains Connector Project**

**TABLE OF CONTENTS**

1.0	INTRODUCTION.....	1
2.0	SURVEY AREA.....	1
3.0	METHODS .....	4
3.1	Preliminary Dakota Skipper Habitat Assessment.....	4
3.2	Dakota Skipper Reproductive and Foraging Habitat Survey .....	7
3.2.1	Desktop Evaluation.....	7
3.2.2	Field Survey.....	8
4.0	RESULTS.....	11
4.1	Preliminary Dakota Skipper Habitat Assessment.....	11
4.2	Dakota Skipper Reproductive and Foraging Habitat Survey .....	11
5.0	DISCUSSION .....	12
6.0	REFERENCES.....	13

**LIST OF TABLES**

Table 1.	Requisite native forb and grass species for Dakota skipper in North Dakota.....	9
Table 2.	Dakota skipper habitat identified during reproductive and foraging habitat surveys along the North Plains Connector Project in North Dakota.....	12

**LIST OF FIGURES**

Figure 1.	Overview of the proposed North Plains Connector Project location in North Dakota.....	3
Figure 2.	Preliminary Dakota skipper habitat assessment survey areas along the North Plains Connector Project in North Dakota.....	6
Figure 3.	Dakota skipper reproductive and foraging habitat survey areas along the North Plains Connector Project in North Dakota.....	10

## LIST OF APPENDICES

- Appendix A. U.S. Fish and Wildlife Service Predicted Dakota Skipper Habitat Suitability
- Appendix B. Mapped Reproductive and Foraging Habitats

## 1.0 INTRODUCTION

North Plains Connector LLC (North Plains) is developing the North Plains Connector Project, an approximately 422-mile, high-voltage direct current electric transmission line system and associated infrastructure designed to connect the east and west energy grids in the United States. The North Plains Connector Project is designed for bi-directional transport of electricity and is located in southeastern Montana and southwestern North Dakota (Figure 1). For the purposes of this report, "Project" refers solely to the portion located in North Dakota.

Based on Project coordination with U.S. Fish and Wildlife Service (USFWS), the Dakota skipper butterfly (DASK; *Hesperia dacotae*), which is federally listed as threatened, has the potential to occur within suitable grassland habitats throughout the Project in North Dakota. On behalf of North Plains, Western EcoSystems Technology, Inc. (WEST), and Midwest Natural Resources, Inc. (MNR) conducted DASK habitat assessments for the Project in eastern Montana and North Dakota. The DASK habitat assessment was conducted in two phases. The first phase was intended to identify both unsuitable and potentially suitable DASK habitats along the Project through preliminary field surveys in 2022, 2023, and 2024. The second phase, which was initiated in 2023 and continued through 2025, included a desktop evaluation and detailed field data collection targeting potential reproductive (larval) and adult foraging habitats within grasslands identified as potentially suitable for DASK.

This report summarizes the survey methods and results of the desktop and field survey efforts for DASK habitat assessments conducted between 2022 and 2025, including both the preliminary phase one and detailed phase two survey efforts. The DASK data collected for this Project will be used for routing, construction planning, and permitting efforts, in support of the Project's compliance with the Endangered Species Act of 1973 and federal land-managing agency resource plans.

This report was written specifically for the North Dakota Public Service Commission and only includes survey results pertinent to the Project route discussed in North Plain's *Consolidated Application For A Certificate Of Corridor Compatibility And Transmission Facility Route Permit*. Section 2.0 includes a description of the survey area along this Project route. The original survey report provided to relevant state and federal resource agencies included additional technical survey details not included in this summary.

## 2.0 SURVEY AREA

The proposed Project route crosses approximately 242 miles in Golden Valley, Slope, Hettinger, Grant, Morton, and Oliver counties in North Dakota (Figure 1). The Project route falls within the Northwestern Great Plains Level III Ecoregion, which encompasses portions of eastern Montana, western North Dakota and South Dakota, northeastern Wyoming, and northern Nebraska (U.S. Environmental Protection Agency, 2013). This ecoregion is semiarid and characterized by rolling plains, sporadic buttes, and badlands. Much of the region was originally dominated by native grasslands, which are now fragmented, but persist in rangeland patches with steep or rugged

topography. Agricultural uses, including rangeland and crop production occur throughout, but can be limited due to inconsistent precipitation and inconsistent access to irrigation (U.S. Environmental Protection, 2013).

The DASK habitat surveys were conducted within the Project's typical survey corridor. The typical Project-wide survey area included the 300-foot-wide transmission line survey corridor, 50-foot-wide access road survey corridors, pulling and tensioning sites, laydown yards, facility footprints, and additional potential construction areas, as needed. On National Forest System lands managed by U.S. Forest Service (USFS), the survey area included wider 100-foot-wide access road survey corridors.

Based on agency requests, the survey area for the preliminary DASK habitat assessment was expanded to encompass a 1,000-foot-wide transmission line buffer (2,000-foot-wide corridor) on USFS-managed lands, where accessible and not landlocked by non-participating landowners.

The areas displayed in this report's figures reflect the preliminary DASK habitat assessment and DASK reproductive and foraging habitat surveys conducted within the proposed Project route's survey area in North Dakota.

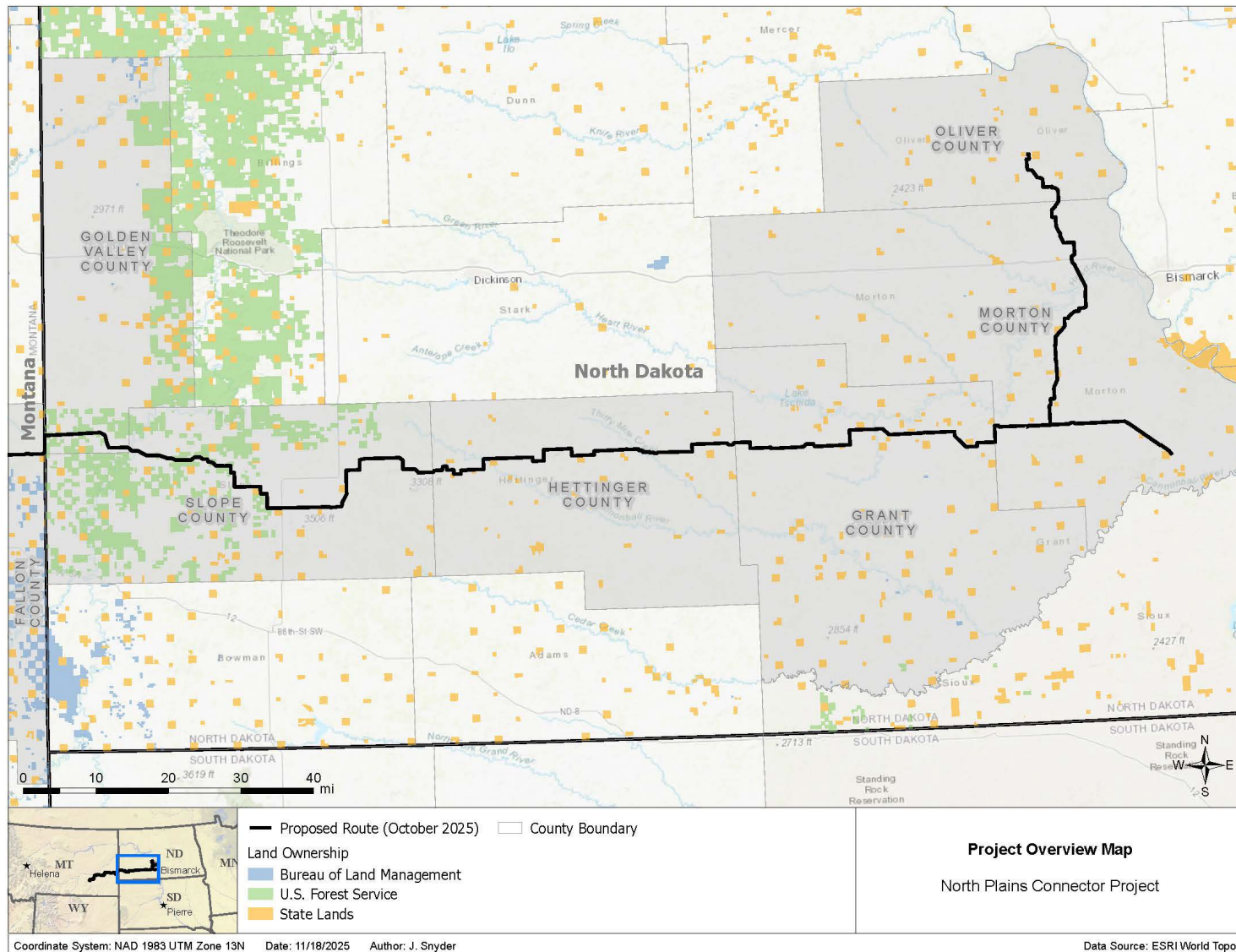


Figure 1. Overview of the proposed North Plains Connector Project location in North Dakota.

### 3.0 METHODS

The DASK survey methodologies were developed in accordance with the USFS *Biological Survey and Reporting Guidelines* (USFS, 2021, 2023), as well as guidance provided by the USFWS and USFS during agency meetings and communications in 2022 and 2023.

The Project's *Biological Survey Plan* was initially submitted to the USFWS, USFS, and North Dakota Game and Fish Department (NDGFD) on March 7, 2022, and a revised survey plan incorporating agency feedback was submitted on May 20, 2022. This survey plan described the preliminary DASK habitat assessment surveys that were conducted from 2022 to 2024 to distinguish potentially suitable DASK habitats along the Project and habitats unsuitable for DASK, such as previously disturbed or heavily modified grasslands and non-grassland habitats.

The Project's *2023 Ground Survey Plan* was submitted to the USFWS, USFS, and NDGFD on May 12, 2023, and approved shortly after. A revised survey plan incorporating agency recommendations unrelated to DASK was submitted on June 14, 2023. DASK reproductive and foraging habitat surveys initiated in 2023 were described in this plan. Updated survey plans were also submitted on June 15, 2023, and June 5, 2024 to incorporate annual updates, new surveys, and/or agency recommendations unrelated to the DASK habitat surveys. The current *2025 Ground-Based Survey Plan* was submitted on April 18, 2025.

#### 3.1 Preliminary Dakota Skipper Habitat Assessment

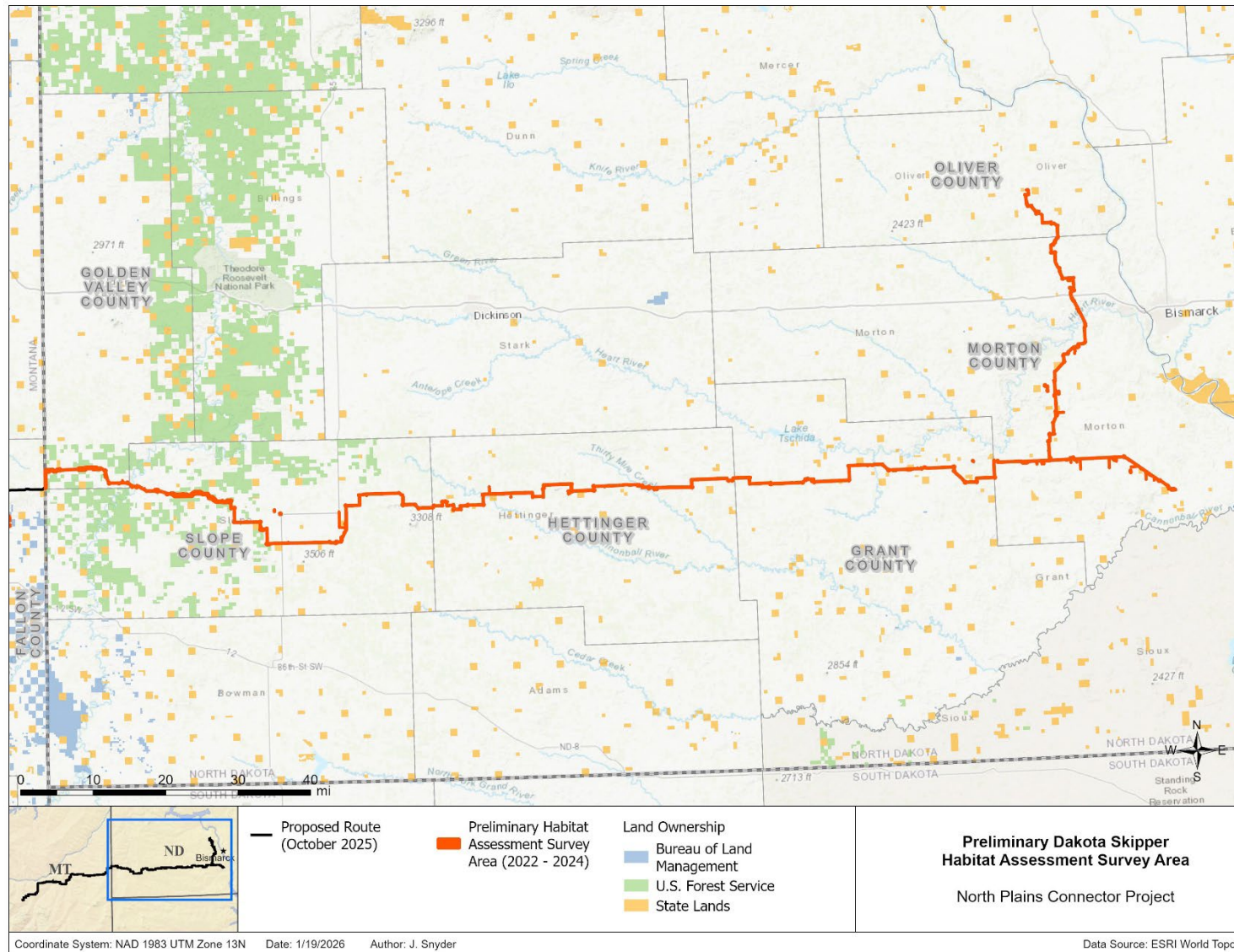
DASK generally occupy remnant (i.e., unplowed/unbroken) native prairie grasslands and pastures or grazing areas dominated by native prairie vegetation and are not likely to be present in areas with current or past row crop use or in areas dominated by non-native vegetation with limited forb presence. Based on coordination with the USFWS, DASK may have the potential to occur within suitable grassland habitats in North Dakota; thus, preliminary reconnaissance-level DASK habitat assessments along the Project were conducted throughout the Project area in North Dakota (Figure 2).

Preliminary DASK habitat assessment surveys were performed as part of the Project's general habitat surveys between June and November in 2022, 2023, and 2024, to differentiate potentially suitable and unsuitable DASK habitats along the Project. These surveys provided important results to inform survey locations for the more detailed DASK reproductive and foraging habitat assessments, which were initiated in 2023 and continued through 2025 (see Section 3.2 below).

During the field assessments, biologists walked meandering transects in the survey area to document dominant plant species, record ground cover estimates of native and non-native vegetation, and identify native grasses and forbs commonly associated with DASK habitat. Areas with visible disturbances or factors that may affect DASK suitability, such as heavy grazing or evidence of tilling, were also recorded. As discussed in Section 2.0, the survey area for the preliminary DASK habitat assessment included an expanded survey area on USFS-managed lands, where accessible.

If potentially suitable DASK habitat (i.e., unbroken grassland with native grasses and/or forb species) was present, biologists collected photographs of the representative vegetation and habitat conditions observed. Biologists mapped the potential habitat polygon within the survey area using a global positioning system (GPS) unit capable of sub-meter accuracy (e.g., Juniper Systems Inc. Geode, Trimble R1, or Trimble GeoXT), and Esri Field Maps. These data were then used to target more detailed DASK reproductive and foraging habitat surveys in subsequent years, as described below.

**North Plains Connector Project  
2022 – 2025 Dakota Skipper Habitat Assessment Survey Report**



**Figure 2. Preliminary Dakota skipper habitat assessment survey areas along the North Plains Connector Project in North Dakota.**

### 3.2 Dakota Skipper Reproductive and Foraging Habitat Survey

Per the 2022 Dakota Skipper (*Hesperia dacotae*) North Dakota Survey Protocol (USFWS, 2022) and discussions with USFWS following the 2022 survey season, DASK are known to occur in two counties crossed by the Project (Golden Valley and Oliver counties), including recent detections within approximately 8 miles of the Project in northeastern Oliver County (USFWS, 2022). Given these documented occurrences and the abundance of potentially suitable DASK habitat identified during preliminary DASK habitat assessments in 2022, WEST contracted MNR to complete more detailed DASK habitat surveys within the Project survey areas beginning in 2023.

These surveys provided the additional details needed to divide potentially suitable DASK habitats into the categories below.

- Dispersal habitat includes grassland areas lacking adequate forbs or native grass species to support DASK foraging or reproduction. These areas can include previously disturbed grasslands and typically contain more than 50% non-native species, more than 50% woody vegetation, or a combination of non-native species and woody vegetation that collectively exceed 50% cover.
- Foraging habitat includes grassland areas comprised of at least 50% cover of native grasses, containing requisite nectar-producing forb species. Suitable foraging habitats must provide sufficient nectar-producing forbs during the flight period (a 13- to 19-day period that typically occurs between mid-June and mid-July). Common nectar producing forbs and requisite species include purple coneflower (*Echinacea angustifolia*), bluebell bellflower (*Campanula rotundifolia*), blanketflower (*Gaillardia aristata*), and wood lily (*Lilium philadelphicum*), among others (Table 1).
- Reproductive (larval) habitat includes grassland areas containing at least 75% native grass cover and at least 50% requisite DASK forb species with a general patch size of at least 0.25 acre. In western North Dakota, reproductive habitat typically includes stands of bunchgrass and requisite species such as big bluestem (*Andropogon gerardii*), sideoats grama (*Bouteloua curtipendula*), little bluestem (*Schizachyrium scoparium*), and needle-and-thread grass (*Hesperostipa comata*). Suitable reproductive habitat is commonly found in moist to mesic sites with steep north or east aspects where grazing pressure is lower than other areas.

#### 3.2.1 Desktop Evaluation

Prior to the commencement of reproductive and foraging habitat field surveys each year, WEST conducted a desktop evaluation to identify grassland habitats within the typical Project survey corridor throughout North Dakota that may contain DASK reproductive or foraging habitats and warranted follow-up DASK reproductive and foraging habitat survey.

As part of the desktop evaluations, WEST reviewed field-verified land use/land cover, noxious weed, and preliminary DASK habitat assessment data collected as part of the Project's general habitat surveys in 2022, 2023, and 2024. Unsuitable (non-grassland) habitats such as croplands, forests, shrub-scrub, open waters, wetlands, and developed areas were excluded from further

DASK assessment or survey. Dispersal habitats, defined as grassland areas lacking adequate forbs or native grass species to support DASK foraging or reproduction, were also excluded from follow-up surveys if the field data confirmed the presence of previous tilling or other ground disturbance, the presence of greater than 50% non-native species cover, or greater than 50% woody vegetation cover (or a combination of the two).

The desktop evaluations also incorporated the USFWS DASK habitat suitability model<sup>1</sup> (shown in Appendix A) to identify Project areas with a predicted habitat suitability of greater than 50%. Grassland areas with a predicted suitability value of 50% or less and no field-verified evidence of native unbroken grassland were assumed to contain dispersal habitat and excluded from follow-up surveys. Grasslands dominated by native grasses and forbs per the Project's preliminary DASK habitat survey results were surveyed regardless of the USFWS model's predicted habitat value.

Areas containing potential reproductive or foraging habitat based on the desktop evaluations were provided to MNR for confirmation and surveyed in the field.

### 3.2.2 *Field Survey*

DASK reproductive and foraging habitat surveys targeted the peak mid-summer blooming period of requisite forbs (USFWS, 2018, 2022, 2024; USFS, 2021), where possible. Surveyors followed meandering transects within the survey corridor to assess the native grass and forb species present within each survey area and to map the DASK habitats observed according to the DASK habitat categories defined above.

Data collected in each DASK habitat area included:

- DASK habitat category (reproductive or foraging);
- observed requisite native grass and forb species (listed in Table 1 below);
- absolute cover of native grasses and forbs;
- absolute cover by sight of bare ground, grasses, forbs, shrubs, and trees; and
- general site characteristics, including grazing pressure, existing disturbances, slope, and aspect.

Reproductive and foraging habitat areas meeting the criteria for DASK reproductive habitat were delineated in the field using a sub-meter-capable GPS unit. Photographs of each reproductive habitat area were also collected. The extents of foraging habitat were documented using tablet mapping software and digitized via desktop, to prevent area overlap. Dispersal areas were not the focus of surveys and were typically created via desktop for surveyed grasslands that were not mapped as either reproductive or foraging habitat.

---

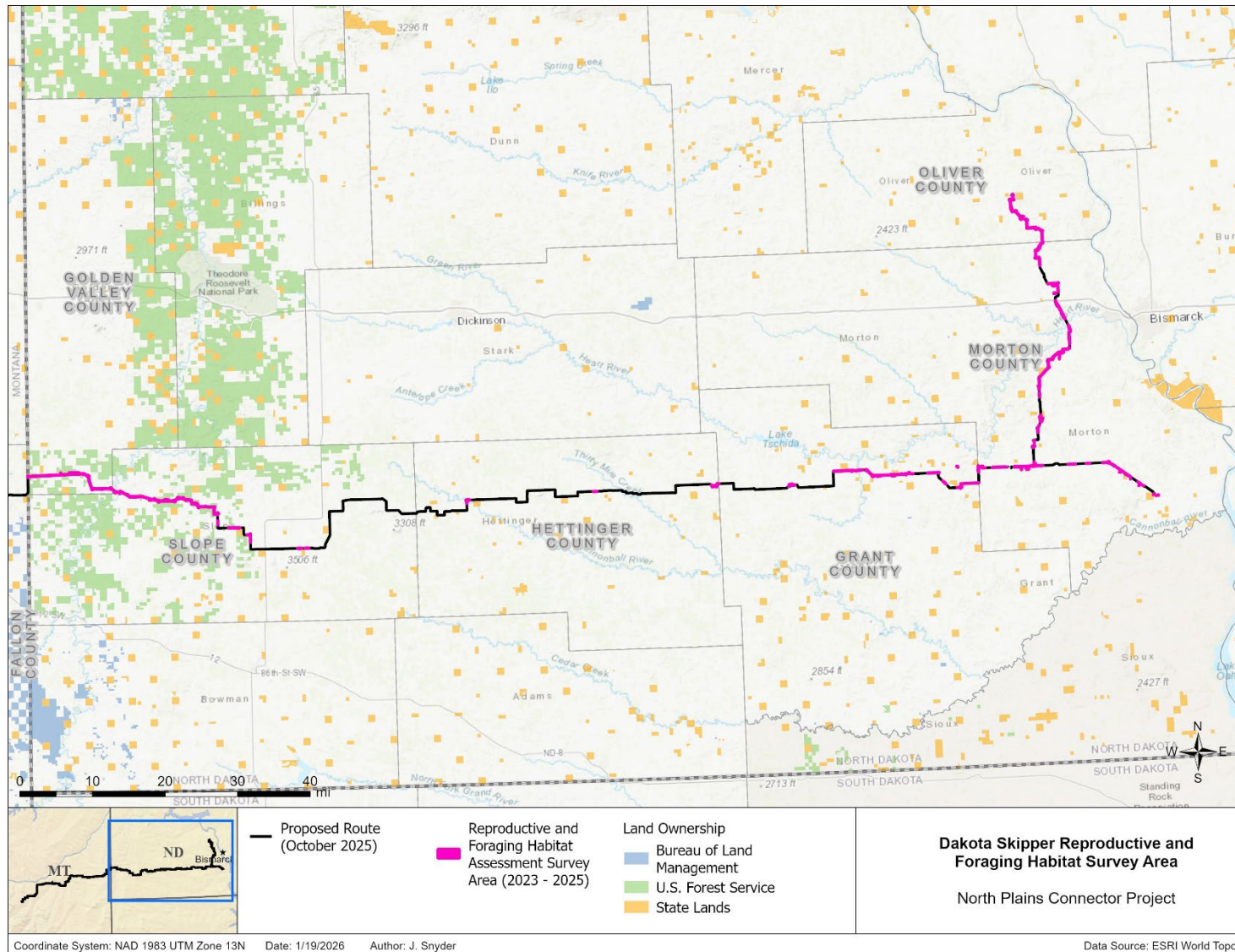
<sup>1</sup> In 2022 and early 2023, the USFWS developed a predictive model to identify potential DASK habitats and support field survey planning. Per USFWS (L. Toso, pers. comm., March 2023), this model uses known DASK occurrence locations and ecological indicators to predict the potential habitat suitability for DASK. The resulting data layer assigns a probability value (1-100%) to each 30-meter by 30-meter grid cell in the DASK species range.

Table 1. Requisite native forb and grass species for Dakota skipper in North Dakota.

Species	
Common Name	Scientific Name
<b>Forbs</b>	
black-eyed susan	<i>Rudbeckia hirta</i>
blanketflower	<i>Gaillardia aristata</i>
bluebell bellflower	<i>Campanula rotundifolia</i>
dotted blazing star	<i>Liatris punctata</i>
eastern pasqueflower	<i>Pulsatilla patens</i>
groundplum milkvetch	<i>Astragalus crassicaarpus</i>
Heartleaf golden alexanders	<i>Zizia aptera</i>
leadplant	<i>Amorpha canescens</i>
prairie groundsel	<i>Packera plattensis</i>
prairie sagewort	<i>Artemisia frigida</i>
prairie smoke	<i>Geum triflorum</i>
purple coneflower	<i>Echinacea angustifolia</i>
purple prairie clover	<i>Dalea purpurea</i>
tall blazing star	<i>Liatris aspera</i>
upright prairie coneflower	<i>Ratibida columnifera</i>
western silver aster	<i>Symphotrichum sericeum</i>
white prairie clover	<i>Dalea candida</i>
wood lily	<i>Lilium philadelphicum</i>
yellow sundrops	<i>Calylophus serrulatus</i>
<b>Graminoids</b>	
big bluestem	<i>Andropogon gerardii</i>
Indiangrass	<i>Sorghastrum nutans</i>
little bluestem	<i>Schizachyrium scoparium</i>
needle-and-thread grass	<i>Hesperostipa comata</i>
porcupinegrass	<i>Hesperostipa spartea</i>
prairie dropseed	<i>Sporobolus heterolepis</i>
sideoats grama	<i>Bouteloua curtipendula</i>
western wheatgrass	<i>Pascopyrum smithii</i>

From *Biological Survey and Reporting Guidelines* (USFS, 2023).

**North Plains Connector Project  
2022 – 2025 Dakota Skipper Habitat Assessment Survey Report**



**Figure 3. Dakota skipper reproductive and foraging habitat survey areas along the North Plains Connector Project in North Dakota.**

## 4.0 RESULTS

### 4.1 Preliminary Dakota Skipper Habitat Assessment

Preliminary DASK habitat surveys were completed between June 15 and October 28, 2022, June 7 and October 12, 2023, and June 11 and November 1, 2024. Preliminary surveys were discontinued after 2024, based on the minimal amount of new survey in 2025.

Between 2022 and 2024, preliminary DASK habitat assessments were conducted across approximately 15,012 acres, including 2,613 acres within the expanded survey area on USFS-managed lands. The preliminary DASK habitat surveys identified 418.5 acres of potential DASK habitat for inclusion in the DASK reproductive and foraging habitat surveys.

### 4.2 Dakota Skipper Reproductive and Foraging Habitat Survey

MNR conducted DASK reproductive and foraging habitat surveys between July 7 and August 12, 2023; June 25 and August 16, 2024; and August 5 and 9, 2025. The surveys were completed across approximately 5,011 acres between 2023 and 2025. A total of 67 distinct foraging habitat polygons encompassing approximately 55.7 acres and 396 distinct reproductive polygons encompassing approximately 496.1 acres were identified within the proposed Project route's survey area (Table 2). The remaining approximately 2.3 acres (<0.1% of the Project survey area) were not surveyed as of October 2025. These remaining areas and any additional route changes, if proposed, will be surveyed in 2026 or prior to construction.

While suitable DASK reproductive habitat was documented throughout the Project survey area, the prevalence of reproductive habitat was higher on the eastern end of the Project, particularly in Morton County (Table 2). Overall, Oliver, Morton, and Grant counties contain a relatively high density of dry-mesic prairie habitat suitable for DASK. These areas contain larger swaths of continuous prairie, including connectivity to occupied DASK habitat in northern Oliver County. The western portions of the route are more arid, and while suitable habitat patches are present, they are often smaller and more fragmented than habitats documented to the east. These observations are consistent with the USFWS predicted habitat suitability map shown in Appendix A.

The most common species recorded during foraging and reproductive habitat assessments were purple coneflower, little bluestem, and big bluestem. The most common species recorded during dispersal habitat assessments were non-native grasses such as Kentucky bluegrass (*Poa pratensis*), crested wheatgrass (*Agropyron cristatum*), and smooth brome (*Bromus inermis*).

Figures depicting mapped DASK reproductive and foraging habitat areas identified between 2023 and 2025 are provided in Appendix B. Information such as general site descriptions, a representative photograph of the habitat polygon, a list of abundant or notable plant species observed, and the estimated abundance of critical plant species observed within each habitat polygon was collected for reproductive habitat polygons, and included in a datasheet specific to each habitat polygon; however, these datasheets were excluded from this report due to size.

**Table 2. Dakota skipper habitat identified during reproductive and foraging habitat surveys along the North Plains Connector Project in North Dakota.**

<b>County</b>	<b>Habitat Type</b>	<b>Acres</b>	<b>Mean Patch Size (acres)</b>	<b>Maximum Patch Size (acres)<sup>1</sup></b>
Golden Valley	Foraging	5.3	0.7	2.7
	Reproductive	36.1	0.6	7.4
Slope	Foraging	24.6	1.4	10.4
	Reproductive	83.9	1.0	9.9
Hettinger	Foraging	1.5	0.3	0.5
	Reproductive	8.9	1.0	2.8
Grant	Foraging	5.2	0.7	1.8
	Reproductive	108.8	1.0	23.6
Morton	Foraging	17.2	0.7	3.0
	Reproductive	197.4	1.5	21.4
Oliver	Foraging	1.7	0.3	0.6
	Reproductive	61.1	1.0	5.5
<b>Totals</b>	<b>Foraging</b>	<b>55.7</b>	-	-
	<b>Reproductive</b>	<b>496.1</b>	-	-

<sup>1</sup> Maximum patch size within the survey area.

Sums may not equal total due to rounding.

## 5.0 DISCUSSION

Preliminary DASK habitat assessments were conducted as part of the Project’s general habitat surveys between 2022 and 2024. These surveys provided important results to inform survey locations for the DASK reproductive and foraging habitat assessments, which were initiated in 2023.

Between 2023 and 2025, DASK reproductive and foraging habitat surveys identified approximately 496.1 acres of DASK reproductive habitat and approximately 55.7 acres of DASK foraging habitat within the Project survey area.

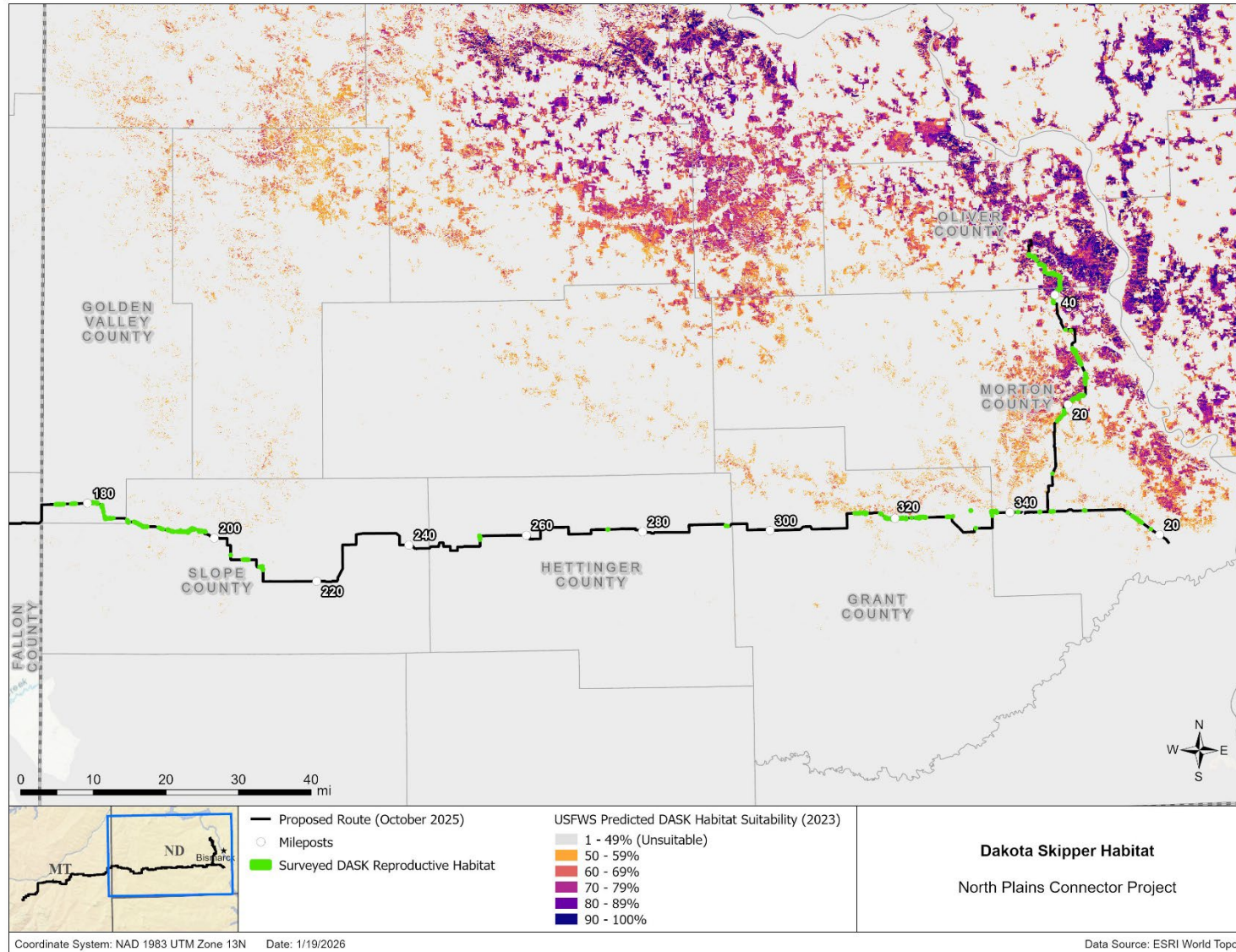
The Project route and associated construction workspaces continue to be refined based on DASK habitat assessment results and agency discussions. North Plains will continue to coordinate with state and federal agencies as the Project progresses.

## 6.0 REFERENCES

- Esri. 2025. World Imagery and Aerial Photos (World Topo). ArcGIS Resource Center. Environmental Systems Research Institute (Esri), producers of ArcGIS software, Redlands, California. Available online: <https://www.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=10df2279f9684e4a9f6a7f08febac2a9>. Accessed November 2025.
- U.S. Environmental Protection Agency (USEPA). 2013. Level III and Level IV Ecoregions of the Continental United States. Ecosystems Research, USEPA. April 16, 2013. Available online: <https://www.epa.gov/eco-research/level-iii-and-iv-ecoregions-continental-united-states>. Accessed February 2024.
- U.S. Fish and Wildlife Service (USFWS). 2018. 2018 Dakota Skipper (*Hesperia Dacotae*) North Dakota Survey Protocol. USFWS, Ecological Services, North Dakota Field Office. Available online: [https://www.fws.gov/mountain-prairie/es/protocols/2018\\_FINAL%20Dakota%20Skipper%20Survey%20Protocol\\_4202018.pdf](https://www.fws.gov/mountain-prairie/es/protocols/2018_FINAL%20Dakota%20Skipper%20Survey%20Protocol_4202018.pdf).
- U.S. Fish and Wildlife Service (USFWS). 2022. 2022 Dakota Skipper (*Hesperia Dacotae*) North Dakota Survey Protocol. USFWS, Midwest and Mountain-Prairie Region. Minnesota-Wisconsin, North Dakota, and South Dakota Ecological Field Offices.
- U.S. Fish and Wildlife Service (USFWS). 2024. 2024 Dakota Skipper (*Hesperia Dacotae*) North Dakota Survey Protocol. USFWS, Midwest and Mountain-Prairie Region. Minnesota-Wisconsin, North Dakota, and South Dakota Ecological Field Offices. Available online: [Dakota Skipper Occupancy Survey Protocol for North Dakota](#).
- U.S. Forest Service (USFS). 2021. Biological Survey and Reporting Guidelines, Little Missouri National Grasslands. Dakota Prairie Grasslands, McKenzie and Medora Ranger Districts, USFS. Updated June 2021.
- U.S. Forest Service (USFS). 2023. Biological Survey and Reporting Guidelines, Dakota Prairie Grasslands. USFS. Updated May 2023. Available online: [https://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/fseprd1108382.pdf](https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd1108382.pdf).

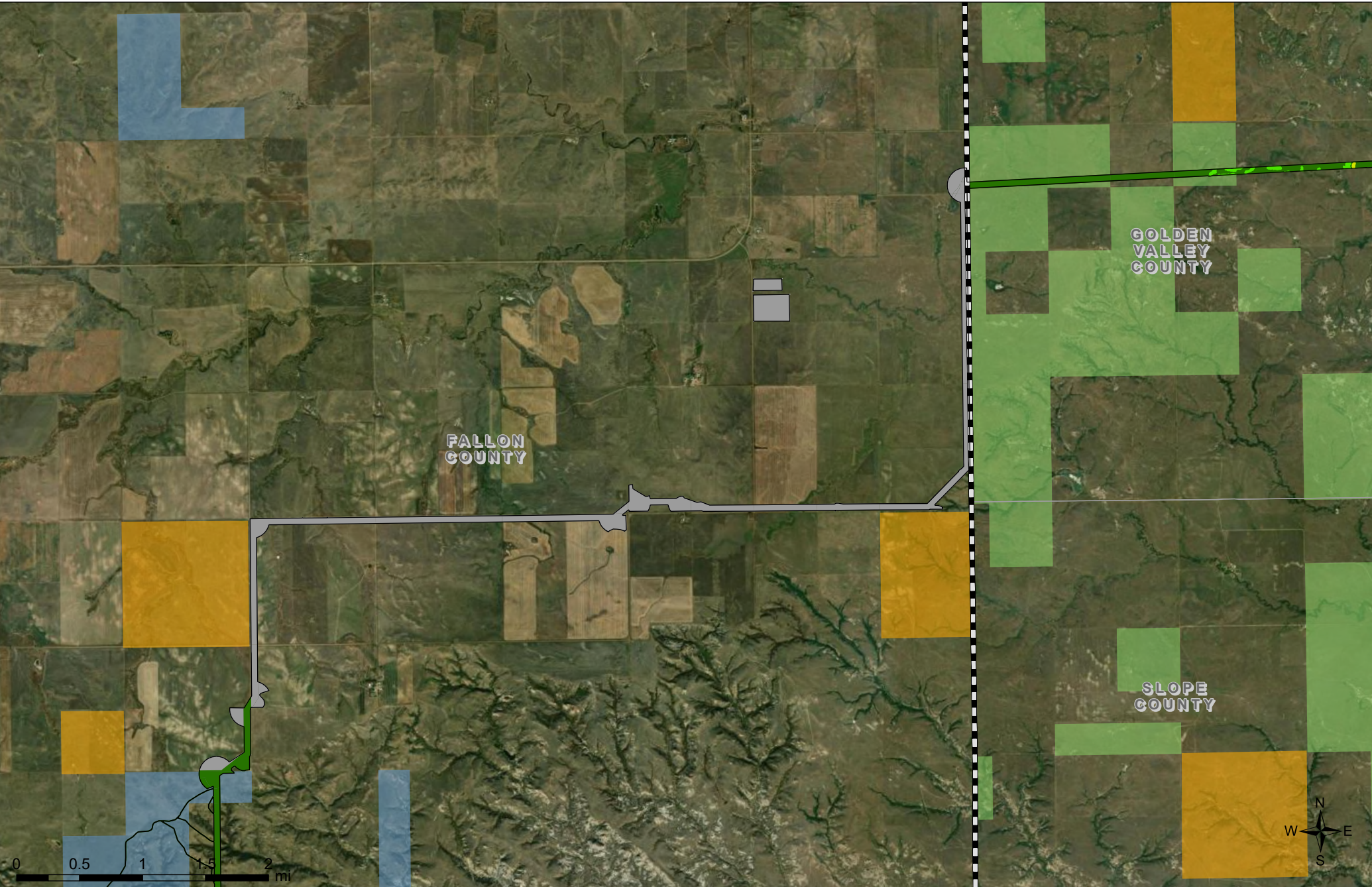
**Appendix A. U.S. Fish and Wildlife Service Predicted Dakota Skipper Habitat Suitability**

**North Plains Connector Project  
2022 – 2025 Dakota Skipper Habitat Assessment Survey Report**



**Appendix A. U.S. Fish and Wildlife Service Predicted Dakota Skipper Habitat Suitability in North Dakota.**

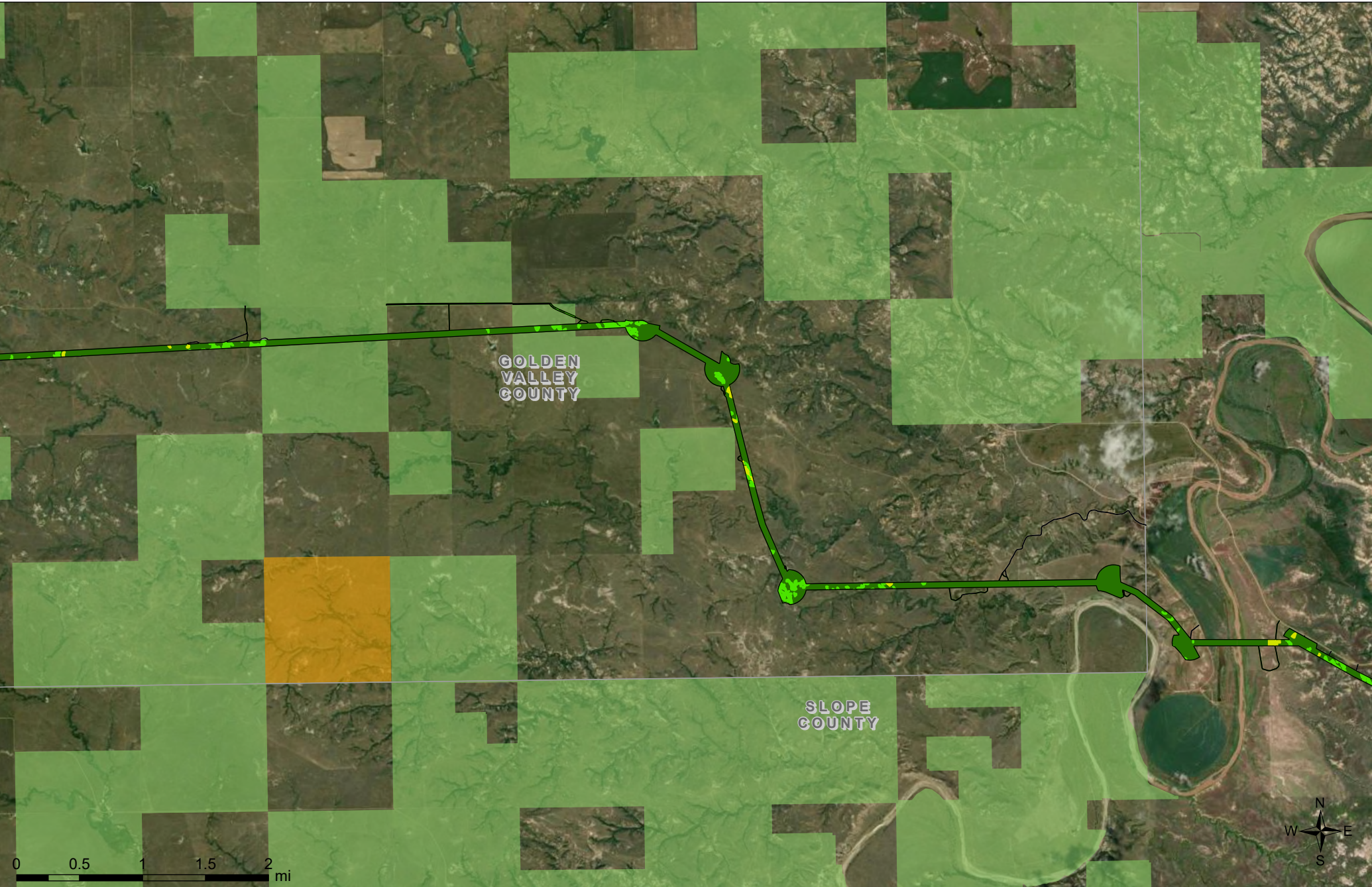
## **Appendix B. Mapped Reproductive and Foraging Habitats**



Dakota Skipper Habitat Categories		Survey Area		Land Ownership	
<span style="color: green;">■</span>	Reproductive Habitat	<span style="border: 1px solid grey; display: inline-block; width: 10px; height: 10px;"></span>	Survey Complete	<span style="background-color: lightblue; border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>	Bureau of Land Management
<span style="color: yellow;">■</span>	Foraging Habitat	<span style="background-color: grey; border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>	Survey Not Needed	<span style="background-color: lightgreen; border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>	U.S. Forest Service
				<span style="background-color: orange; border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>	State Lands

**Dakota Skipper Habitat**  
**Fallon County, MT and Golden Valley County, ND**

North Plains Connector Project  
Page 1 of 25



**Dakota Skipper Habitat Categories**

- Reproductive Habitat
- Foraging Habitat

**Survey Area**

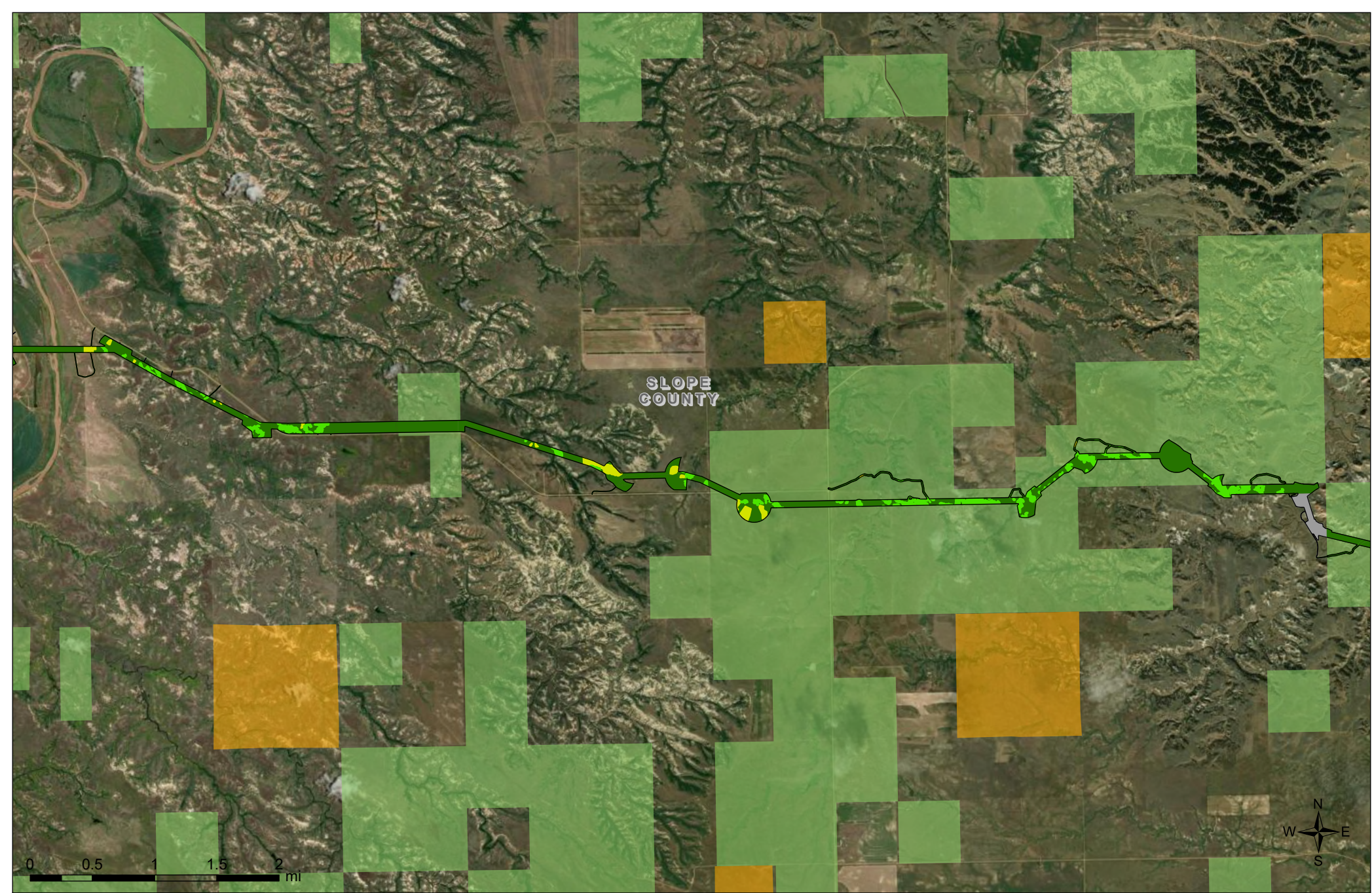
- Survey Area
- Survey Complete
- Survey Not Needed

**Land Ownership**

- U.S. Forest Service
- State Lands

**Dakota Skipper Habitat  
Golden Valley and Slope Counties, ND**

North Plains Connector Project  
Page 2 of 25



Dakota Skipper Habitat Categories		Survey Area		Land Ownership	
<span style="color: #00FF00;">■</span>	Reproductive Habitat	<span style="border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>	Survey Area	<span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>	U.S. Forest Service
<span style="color: #FFFF00;">■</span>	Foraging Habitat	<span style="background-color: #008000; border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>	Survey Complete	<span style="background-color: #FFA500; border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>	State Lands
		<span style="background-color: #808080; border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>	Survey Not Needed		

**Dakota Skipper Habitat  
Slope County, ND**

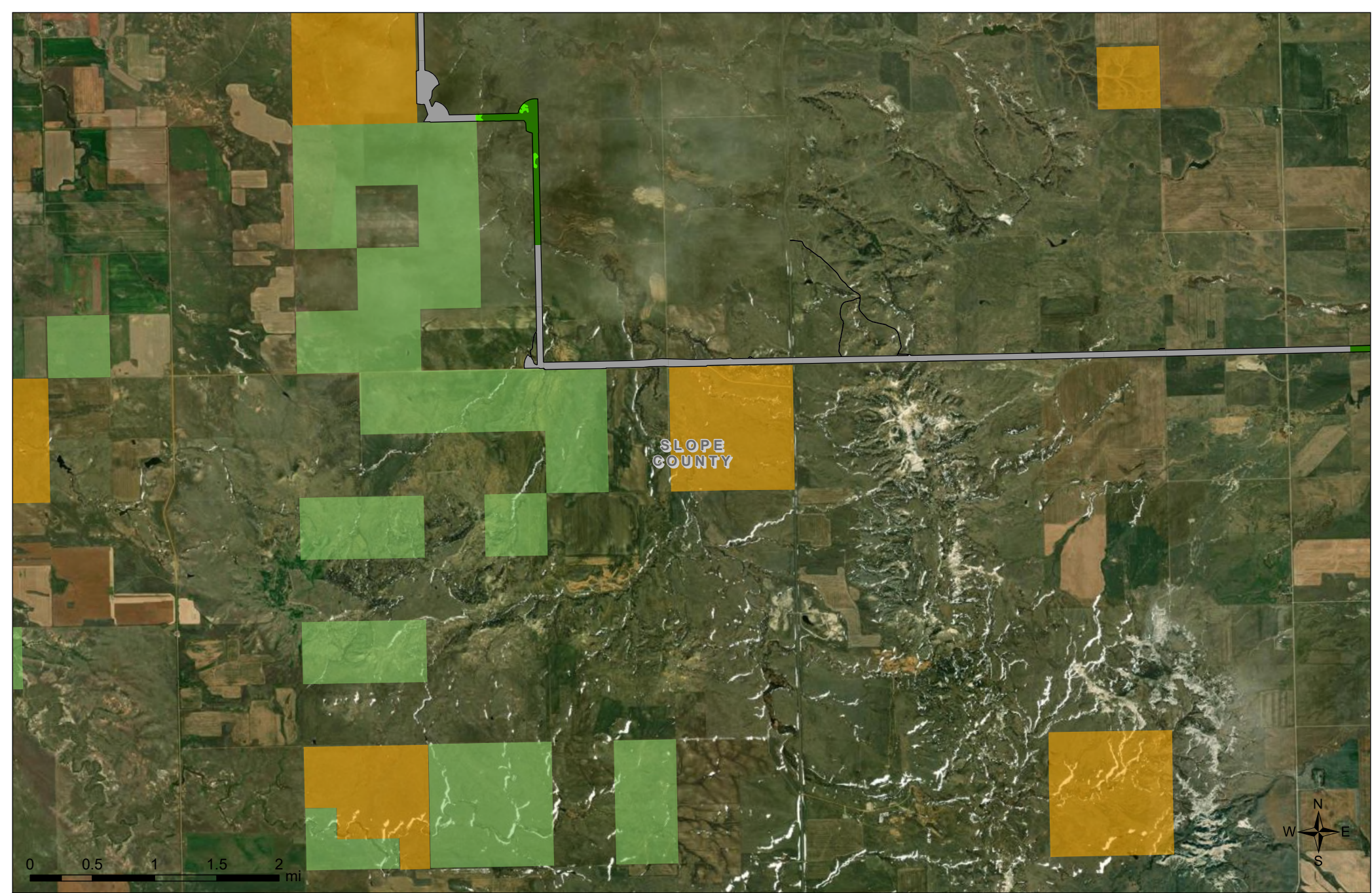
North Plains Connector Project  
Page 3 of 25



Dakota Skipper Habitat Categories		Land Ownership	
<span style="color: green;">■</span>	Reproductive Habitat	<span style="border: 1px solid grey;"> </span>	Survey Area
<span style="color: yellow;">■</span>	Foraging Habitat	<span style="color: darkgreen;">■</span>	Survey Complete
		<span style="color: lightgreen;">■</span>	U.S. Forest Service
		<span style="color: orange;">■</span>	State Lands
		<span style="background-color: grey;">■</span>	Survey Not Needed

**Dakota Skipper Habitat  
Slope County, ND**

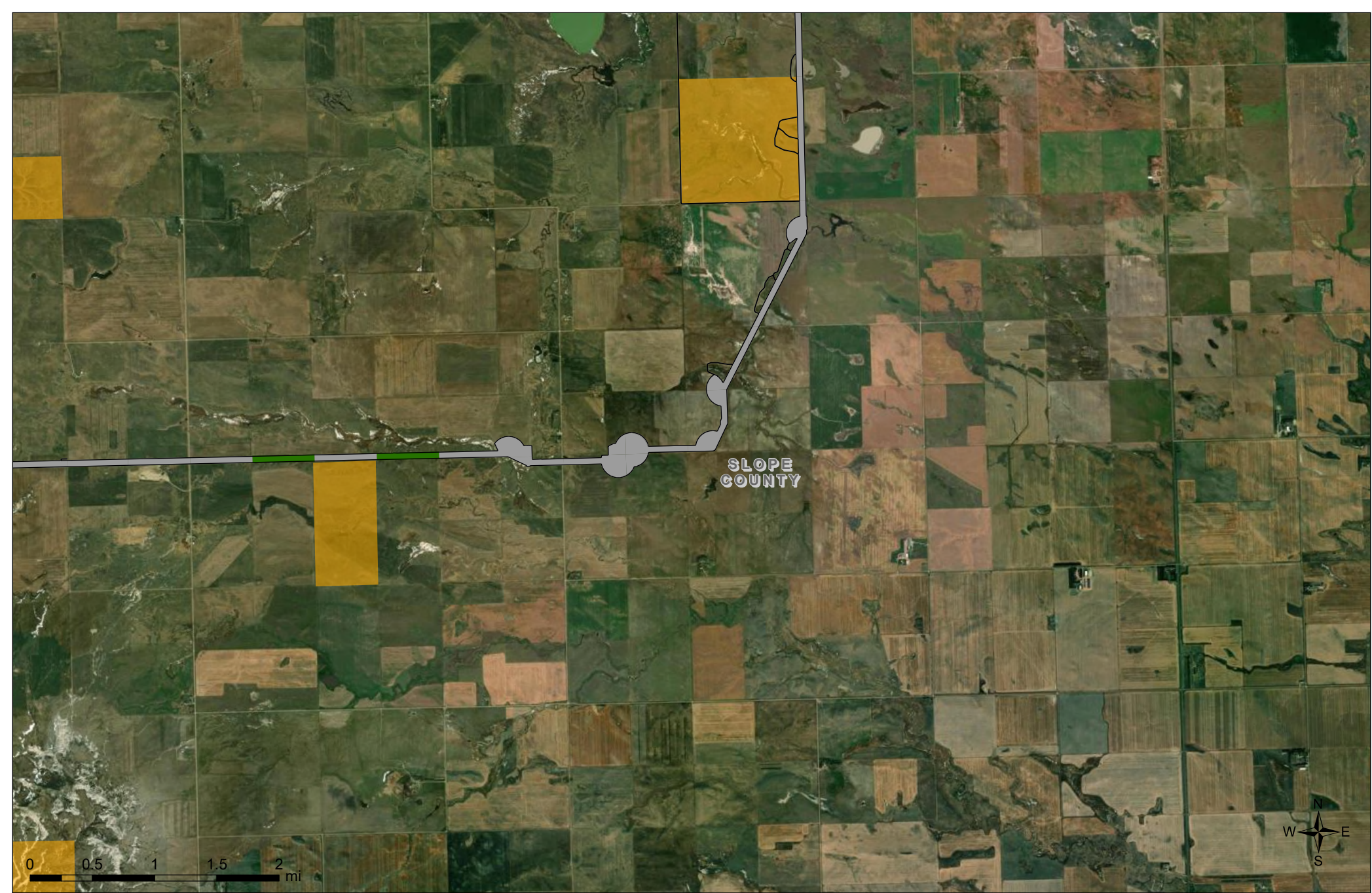
North Plains Connector Project  
Page 4 of 25



Dakota Skipper Habitat Categories		Survey Area		Land Ownership	
<span style="color: #00FF00;">■</span>	Reproductive Habitat	<span style="border: 1px solid grey;"> </span>	Survey Complete	<span style="background-color: #90EE90;"> </span>	U.S. Forest Service
<span style="color: #FFD700;">■</span>	Foraging Habitat	<span style="background-color: #808080;"> </span>	Survey Not Needed	<span style="background-color: #FFA500;"> </span>	State Lands

**Dakota Skipper Habitat  
Slope County, ND**

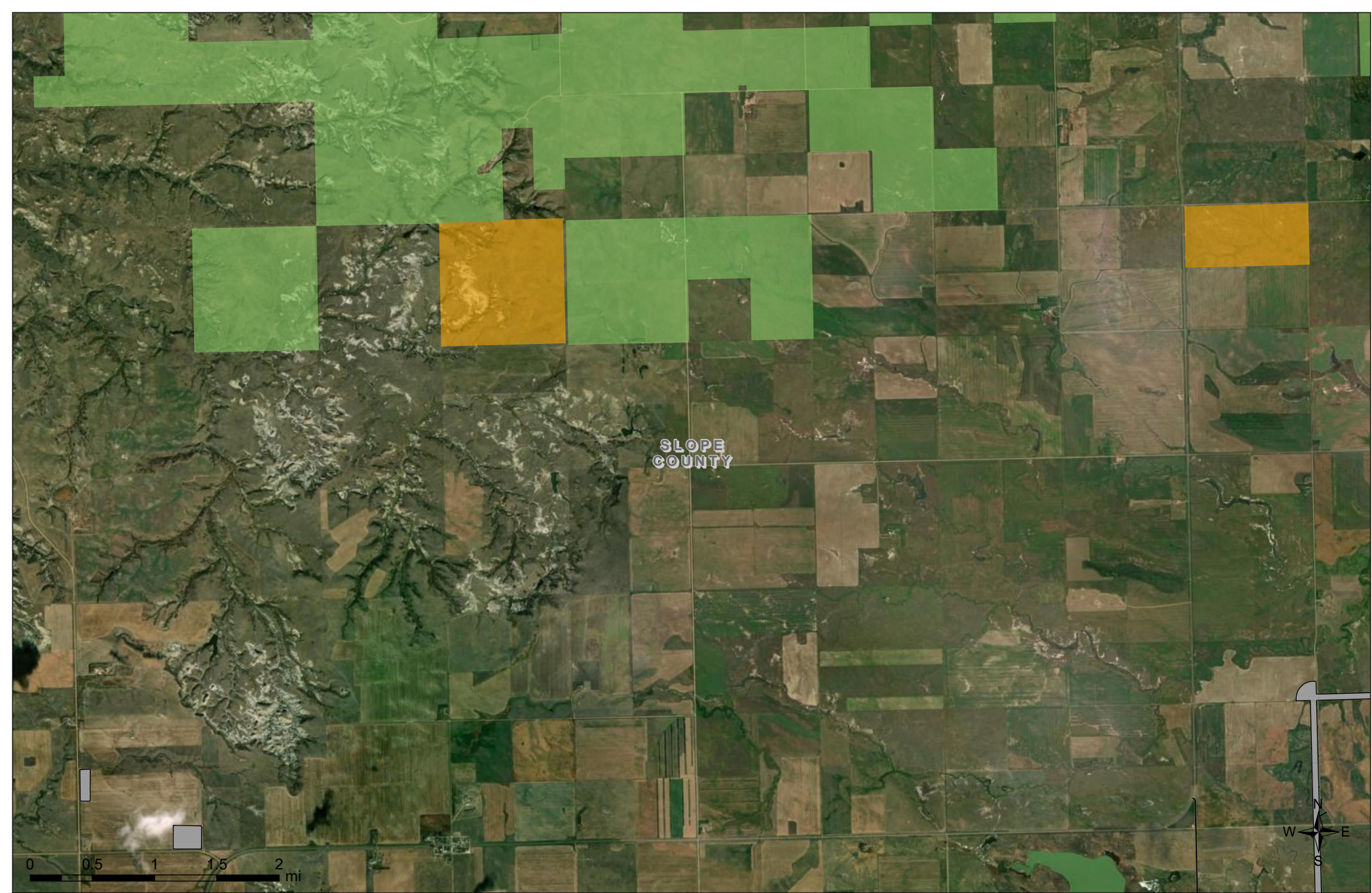
North Plains Connector Project  
Page 5 of 25



<b>Dakota Skipper Habitat Categories</b>		Survey Area	<b>Land Ownership</b>	
Reproductive Habitat	Survey Complete	State Lands		
Foraging Habitat	Survey Not Needed			

**Dakota Skipper Habitat  
Slope County, ND**

North Plains Connector Project  
Page 6 of 25



Dakota Skipper Habitat Categories		Survey Area		Land Ownership	
<span style="color: green;">■</span>	Reproductive Habitat	<span style="border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>	Survey Area	<span style="color: lightgreen;">■</span>	U.S. Forest Service
<span style="color: yellow;">■</span>	Foraging Habitat	<span style="background-color: gray; display: inline-block; width: 10px; height: 10px;"></span>	Survey Not Needed	<span style="color: orange;">■</span>	State Lands

**Dakota Skipper Habitat  
Slope County, ND**

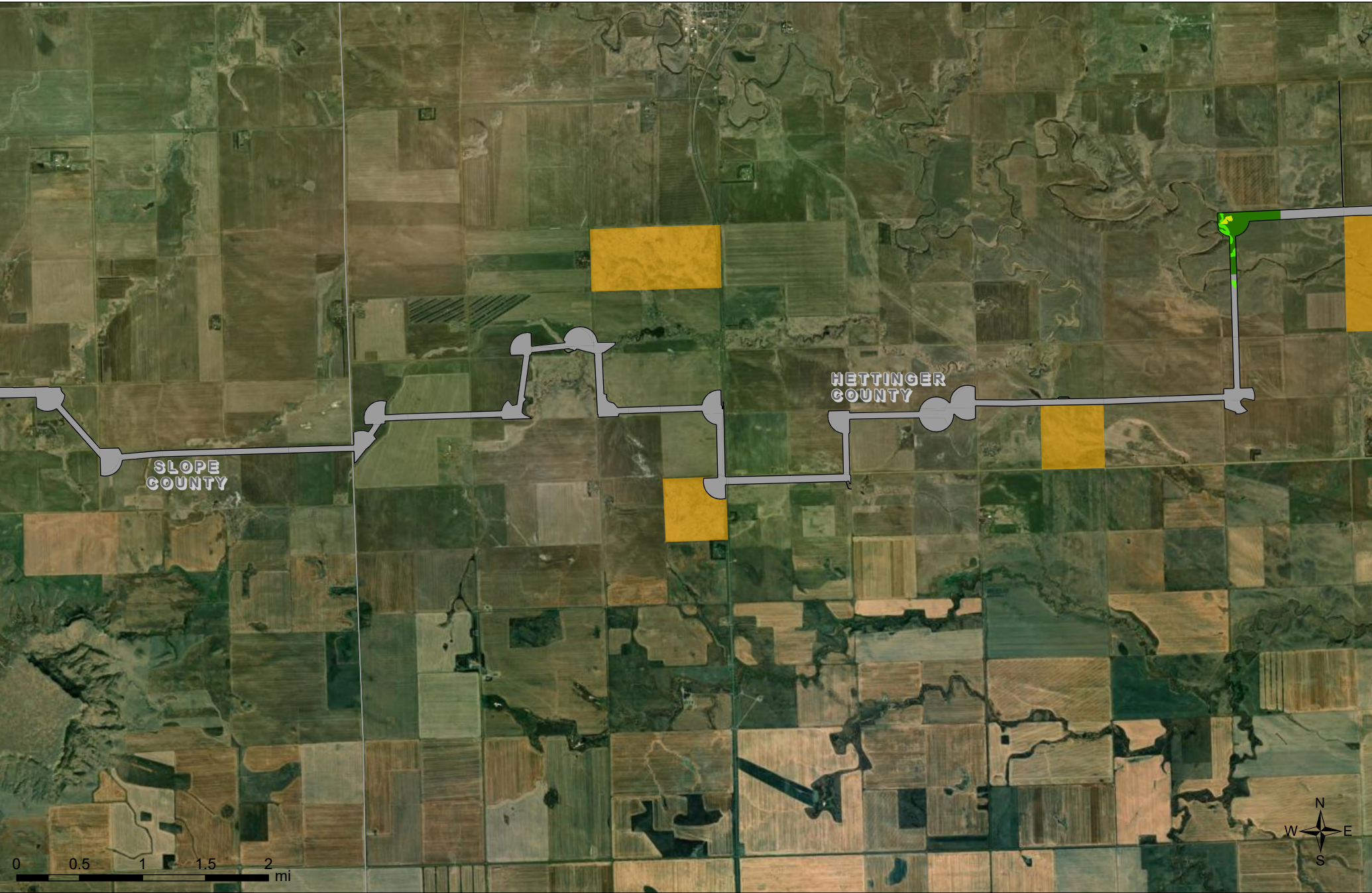
North Plains Connector Project  
Page 7 of 25



Dakota Skipper Habitat Categories		Survey Area		Land Ownership	
<span style="color: green;">■</span>	Reproductive Habitat	<span style="border: 1px solid grey; display: inline-block; width: 15px; height: 10px;"></span>	Survey Area	<span style="background-color: lightgreen; display: inline-block; width: 15px; height: 10px;"></span>	U.S. Forest Service
<span style="color: yellow;">■</span>	Foraging Habitat	<span style="background-color: grey; display: inline-block; width: 15px; height: 10px;"></span>	Survey Not Needed	<span style="background-color: orange; display: inline-block; width: 15px; height: 10px;"></span>	State Lands

**Dakota Skipper Habitat  
Slope County, ND**

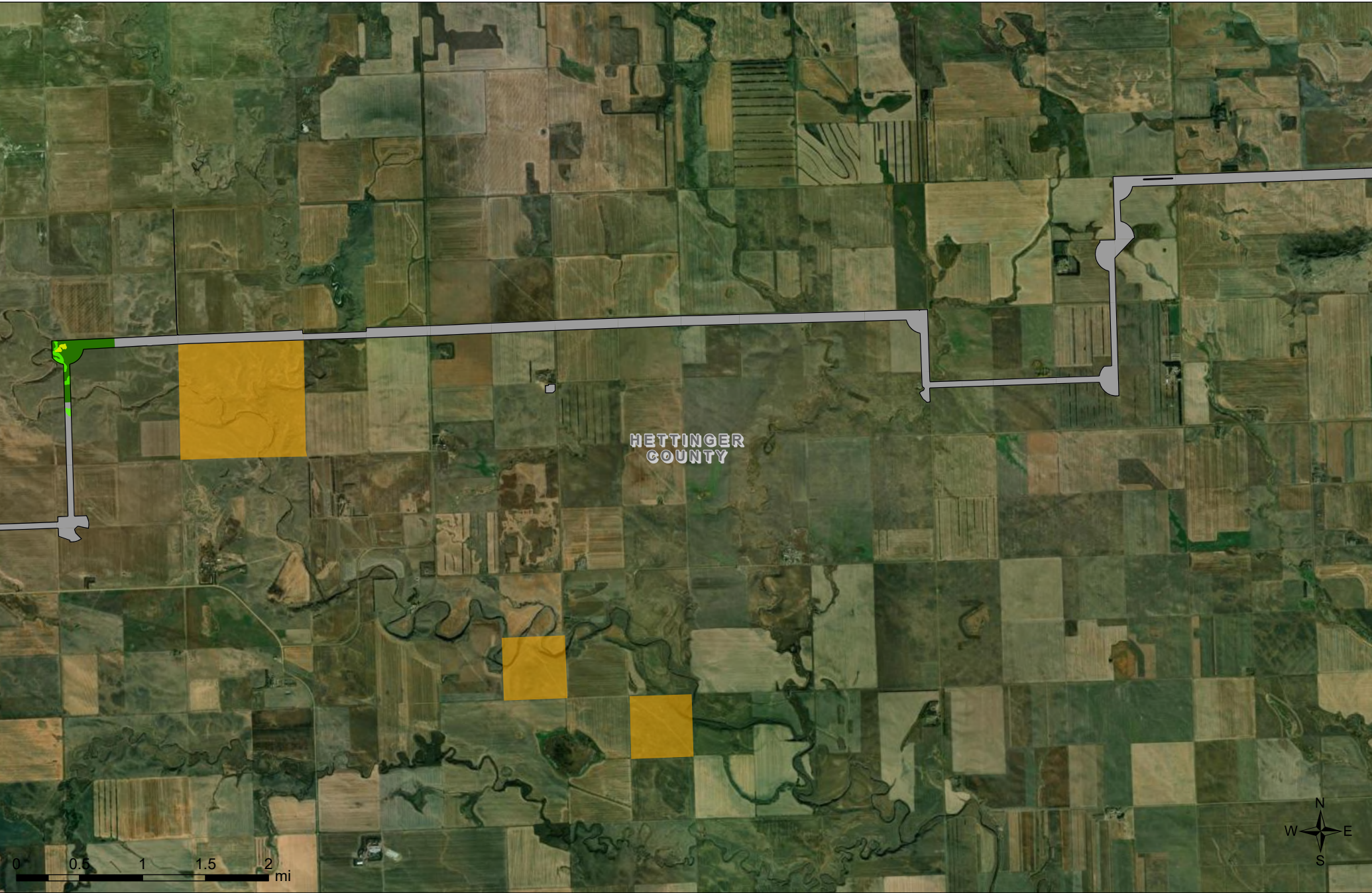
North Plains Connector Project  
Page 8 of 25



Dakota Skipper Habitat Categories		Survey Area		Land Ownership	
<span style="color: green;">■</span>	Reproductive Habitat	<span style="border: 1px solid grey;"> </span>	Survey Complete	<span style="background-color: yellow;"> </span>	State Lands
<span style="color: yellow;">■</span>	Foraging Habitat	<span style="background-color: grey;"> </span>	Survey Not Needed		

**Dakota Skipper Habitat**  
**Slope and Hettinger Counties, ND**

North Plains Connector Project  
Page 9 of 25



HETTINGER COUNTY



Dakota Skipper Habitat Categories

- Reproductive Habitat
- Foraging Habitat

Survey Area

- Survey Complete
- Survey Not Needed

Land Ownership

- State Lands

**Dakota Skipper Habitat  
Hettinger County, ND**

North Plains Connector Project  
Page 10 of 25



Dakota Skipper Habitat Categories		Land Ownership	
<span style="color: green;">█</span>	Reproductive Habitat	<span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span>	Survey Area
<span style="color: yellow;">█</span>	Foraging Habitat	<span style="background-color: green; display: inline-block; width: 15px; height: 10px;"></span>	Survey Complete
		<span style="background-color: yellow; display: inline-block; width: 15px; height: 10px;"></span>	State Lands
		<span style="background-color: grey; display: inline-block; width: 15px; height: 10px;"></span>	Survey Not Needed

**Dakota Skipper Habitat  
Hettinger County, ND**

North Plains Connector Project  
Page 11 of 25



**Dakota Skipper Habitat Categories**

- Reproductive Habitat
- Foraging Habitat

**Survey Area**

- Survey Area
- Survey Not Needed

**Land Ownership**

- State Lands

**Dakota Skipper Habitat  
Hettinger County, ND**

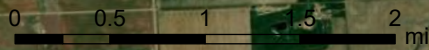
North Plains Connector Project  
Page 12 of 25



Dakota Skipper Habitat Categories		Land Ownership	
<span style="color: green;">■</span>	Reproductive Habitat	<span style="border: 1px solid grey; display: inline-block; width: 15px; height: 10px;"></span>	Survey Area
<span style="color: yellow;">■</span>	Foraging Habitat	<span style="background-color: green; display: inline-block; width: 15px; height: 10px;"></span>	Survey Complete
		<span style="background-color: yellow; display: inline-block; width: 15px; height: 10px;"></span>	State Lands
		<span style="background-color: grey; display: inline-block; width: 15px; height: 10px;"></span>	Survey Not Needed

**Dakota Skipper Habitat  
Hettinger and Grant Counties, ND**

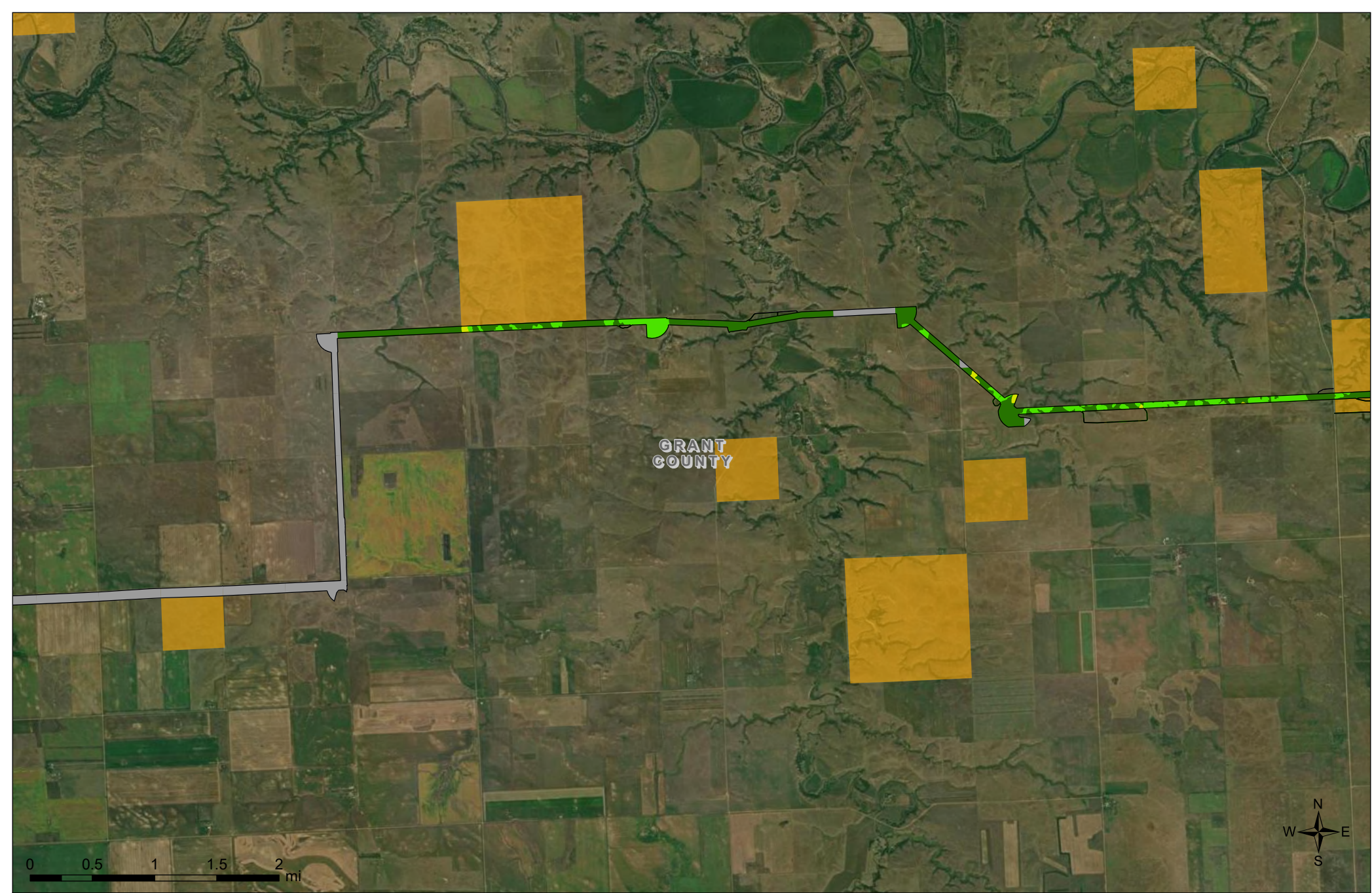
North Plains Connector Project  
Page 13 of 25



Dakota Skipper Habitat Categories		Land Ownership	
<span style="color: green;">■</span>	Reproductive Habitat	<span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span>	Survey Area
<span style="color: yellow;">■</span>	Foraging Habitat	<span style="background-color: green; display: inline-block; width: 15px; height: 10px;"></span>	Survey Complete
		<span style="background-color: orange; display: inline-block; width: 15px; height: 10px;"></span>	State Lands
		<span style="background-color: grey; display: inline-block; width: 15px; height: 10px;"></span>	Survey Not Needed

**Dakota Skipper Habitat  
Grant County, ND**

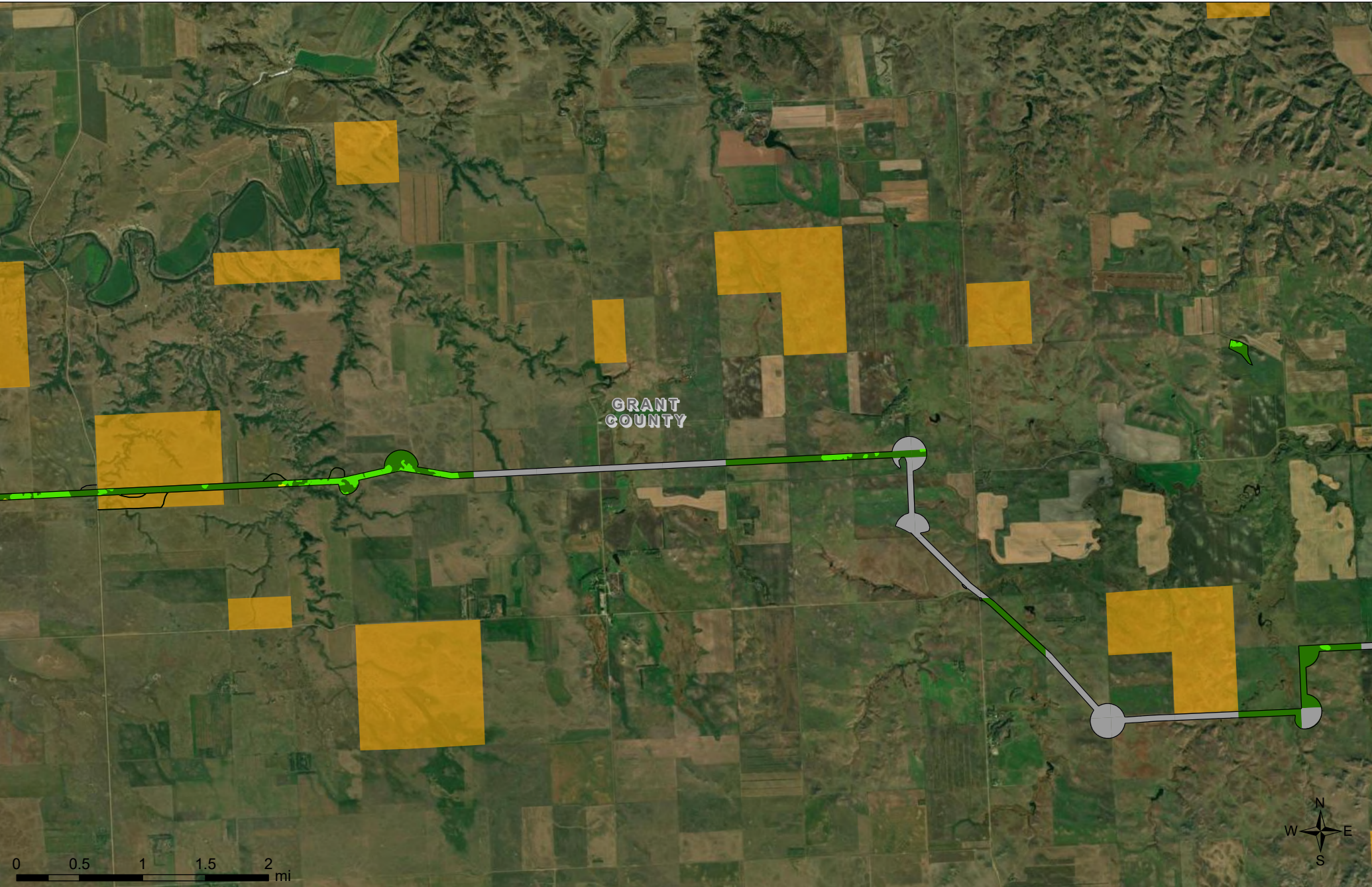
North Plains Connector Project  
Page 14 of 25



Dakota Skipper Habitat Categories		Land Ownership	
<span style="color: green;">█</span>	Reproductive Habitat	<span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span>	Survey Area
<span style="color: yellow;">█</span>	Foraging Habitat	<span style="background-color: green; display: inline-block; width: 15px; height: 10px;"></span>	Survey Complete
		<span style="background-color: yellow; display: inline-block; width: 15px; height: 10px;"></span>	State Lands
		<span style="background-color: gray; display: inline-block; width: 15px; height: 10px;"></span>	Survey Not Needed

**Dakota Skipper Habitat  
Grant County, ND**

North Plains Connector Project  
Page 15 of 25



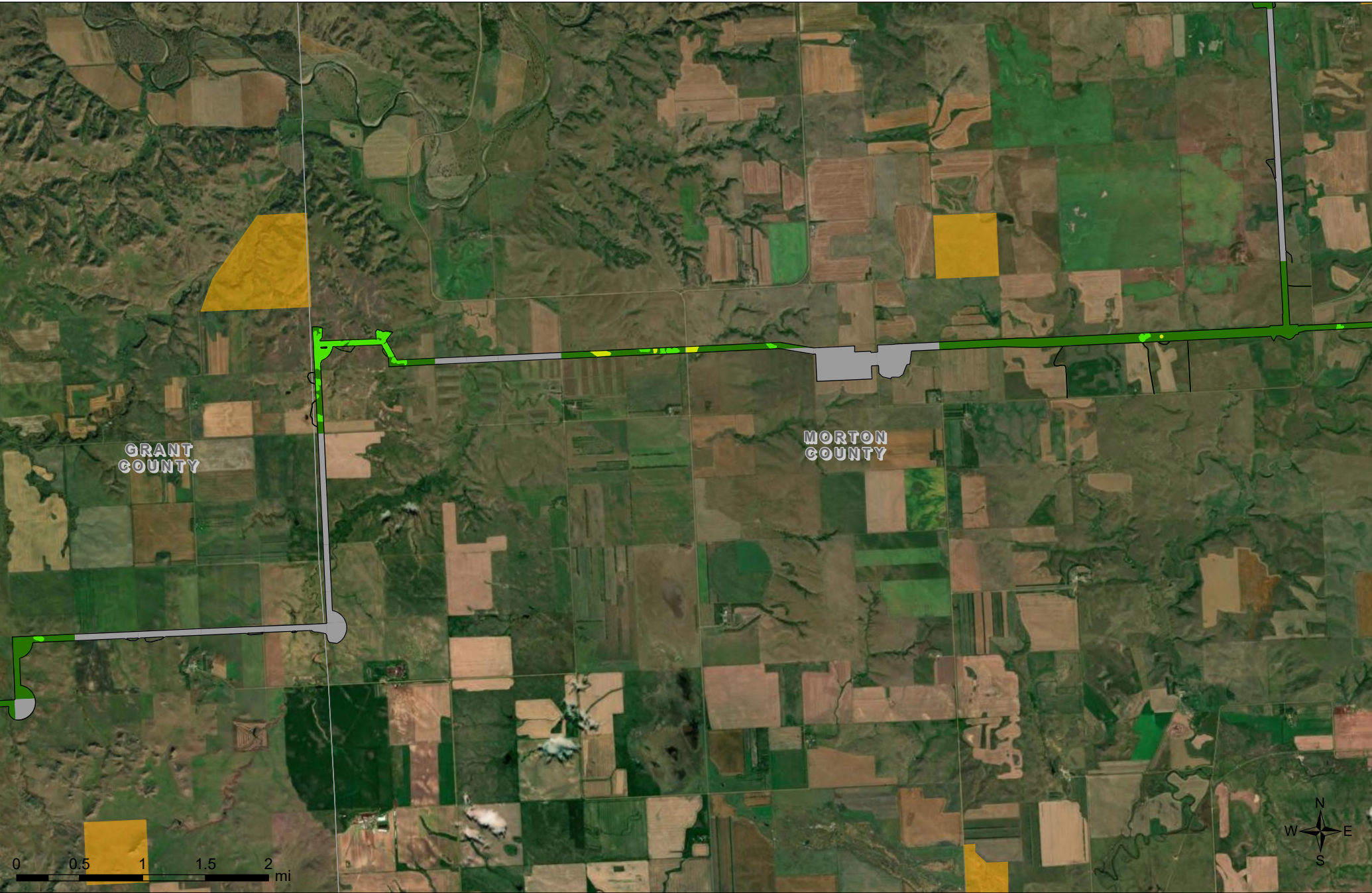
GRANT COUNTY



Dakota Skipper Habitat Categories		Survey Area		Land Ownership	
<span style="color: green;">█</span>	Reproductive Habitat	<span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span>	Survey Complete	<span style="background-color: yellow; display: inline-block; width: 15px; height: 10px;"></span>	State Lands
<span style="color: yellow;">█</span>	Foraging Habitat	<span style="background-color: grey; display: inline-block; width: 15px; height: 10px;"></span>	Survey Not Needed		

**Dakota Skipper Habitat  
Grant County, ND**

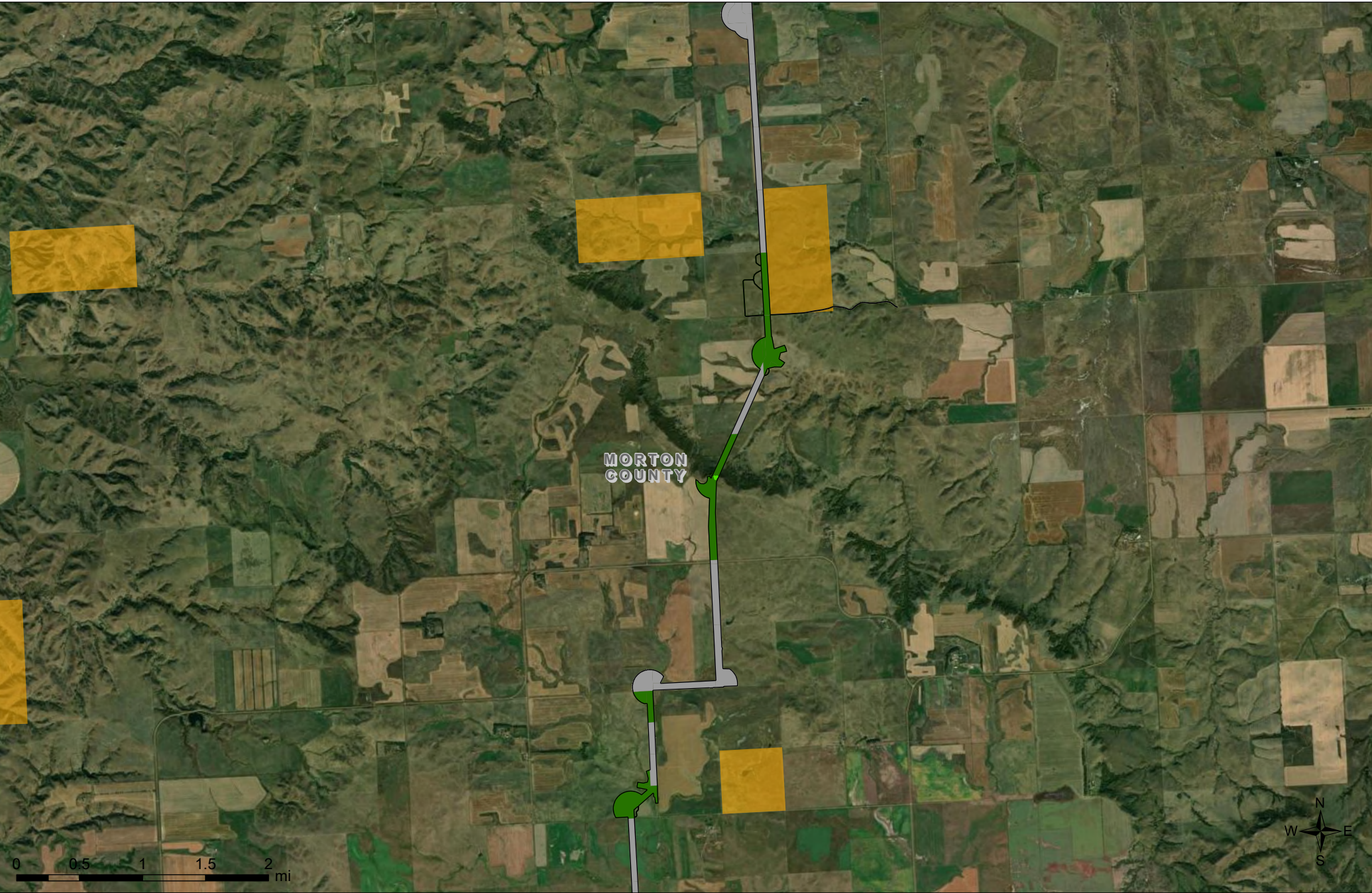
North Plains Connector Project  
Page 16 of 25



Dakota Skipper Habitat Categories		Land Ownership	
<span style="color: green;">█</span>	Reproductive Habitat	<span style="border: 1px solid grey;"> </span>	Survey Area
<span style="color: yellow;">█</span>	Foraging Habitat	<span style="background-color: green;"> </span>	Survey Complete
		<span style="background-color: yellow;"> </span>	State Lands
		<span style="background-color: grey;"> </span>	Survey Not Needed

**Dakota Skipper Habitat  
Grant and Morton Counties, ND**

North Plains Connector Project  
Page 17 of 25



Dakota Skipper Habitat Categories		Land Ownership	
<span style="color: green;">■</span> Reproductive Habitat	<span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Survey Area	<span style="color: darkgreen;">■</span> Survey Complete	<span style="background-color: yellow; display: inline-block; width: 15px; height: 10px;"></span> State Lands
<span style="background-color: yellow; display: inline-block; width: 15px; height: 10px;"></span> Foraging Habitat	<span style="background-color: grey; display: inline-block; width: 15px; height: 10px;"></span> Survey Not Needed		

**Dakota Skipper Habitat  
Morton County, ND**

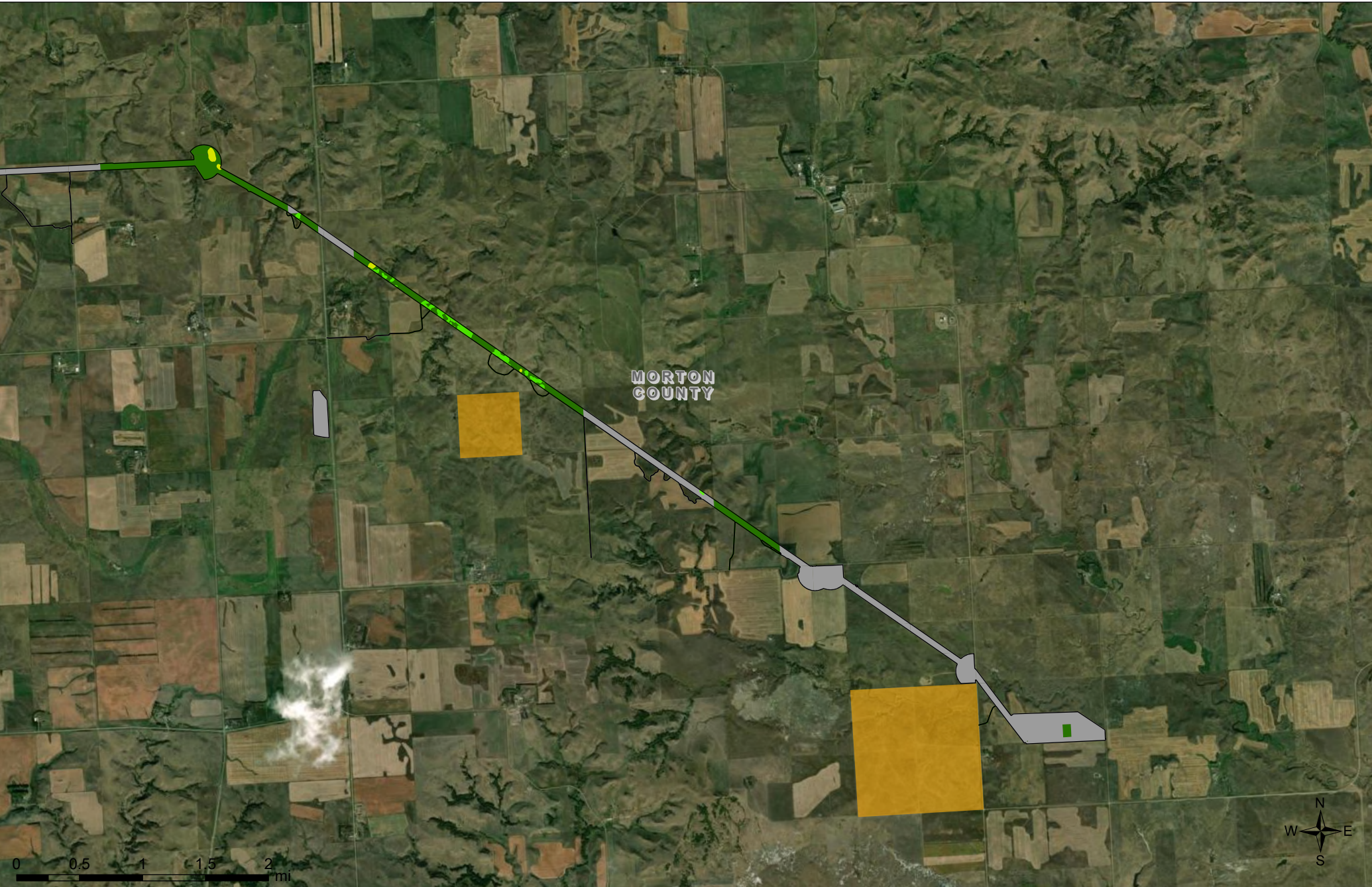
North Plains Connector Project  
Page 18 of 25



Dakota Skipper Habitat Categories		Survey Area		Land Ownership	
<span style="color: green;">■</span>	Reproductive Habitat	<span style="border: 1px solid grey;"> </span>	Survey Complete	<span style="background-color: yellow;"> </span>	State Lands
<span style="color: yellow;">■</span>	Foraging Habitat	<span style="background-color: grey;"> </span>	Survey Not Needed		

**Dakota Skipper Habitat  
Morton County, ND**

North Plains Connector Project  
Page 19 of 25



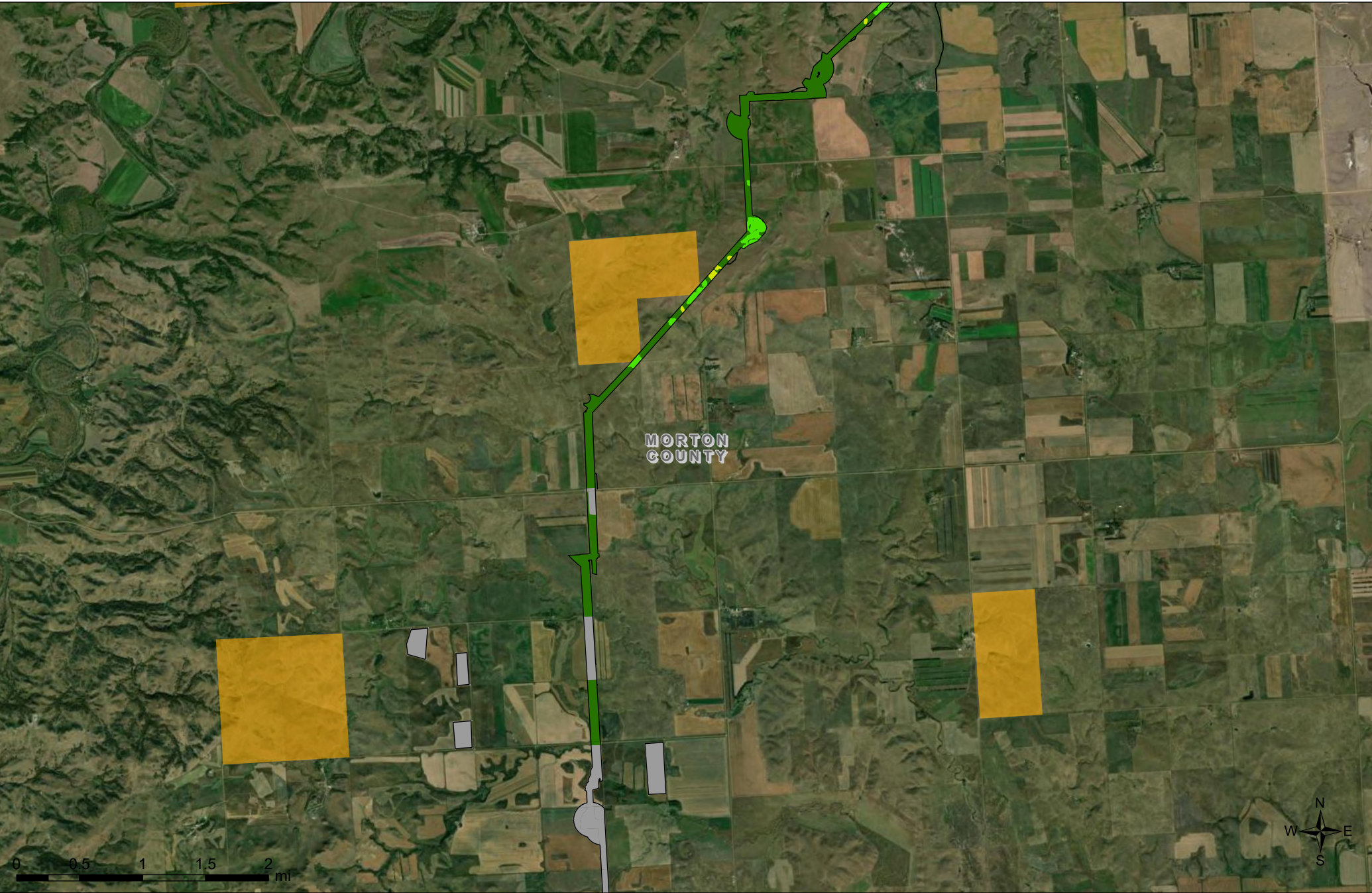
MORTON COUNTY



Dakota Skipper Habitat Categories		Survey Area		Land Ownership	
<span style="color: green;">█</span>	Reproductive Habitat	<span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span>	Survey Complete	<span style="background-color: orange; display: inline-block; width: 15px; height: 10px;"></span>	State Lands
<span style="color: yellow;">█</span>	Foraging Habitat	<span style="background-color: grey; display: inline-block; width: 15px; height: 10px;"></span>	Survey Not Needed		

**Dakota Skipper Habitat  
Morton County, ND**

North Plains Connector Project  
Page 20 of 25



Dakota Skipper Habitat Categories		Survey Area		Land Ownership	
<span style="color: green;">■</span>	Reproductive Habitat	<span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span>	Survey Complete	<span style="background-color: yellow; display: inline-block; width: 15px; height: 10px;"></span>	State Lands
<span style="color: yellow;">■</span>	Foraging Habitat	<span style="background-color: gray; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span>	Survey Not Needed		

**Dakota Skipper Habitat  
Morton County, ND**

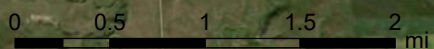
North Plains Connector Project  
Page 21 of 25



Dakota Skipper Habitat Categories		Survey Area		Land Ownership	
<span style="color: green;">█</span>	Reproductive Habitat	<span style="border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>	Survey Complete	<span style="background-color: orange; display: inline-block; width: 10px; height: 10px;"></span>	State Lands
<span style="color: yellow;">█</span>	Foraging Habitat	<span style="background-color: grey; display: inline-block; width: 10px; height: 10px;"></span>	Survey Not Needed		

**Dakota Skipper Habitat  
Morton County, ND**

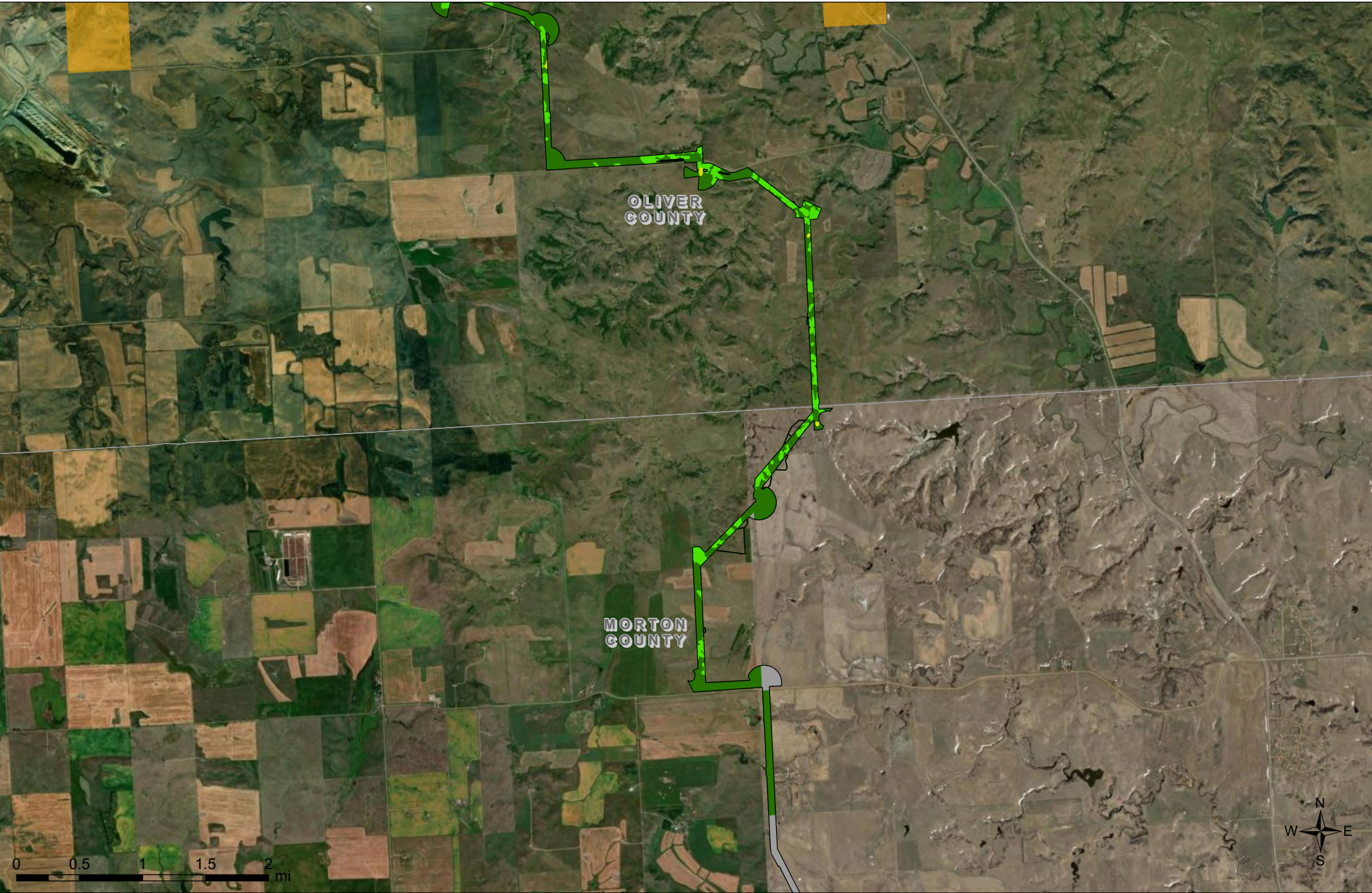
North Plains Connector Project  
Page 22 of 25



Dakota Skipper Habitat Categories		Land Ownership	
<span style="color: green;">■</span> Reproductive Habitat	<span style="border: 1px solid black;"> </span> Survey Area	<span style="color: darkgreen;">■</span> Survey Complete	<span style="color: orange;">■</span> State Lands
<span style="color: yellow;">■</span> Foraging Habitat	<span style="background-color: grey;"> </span> Survey Not Needed		

**Dakota Skipper Habitat  
Morton County, ND**

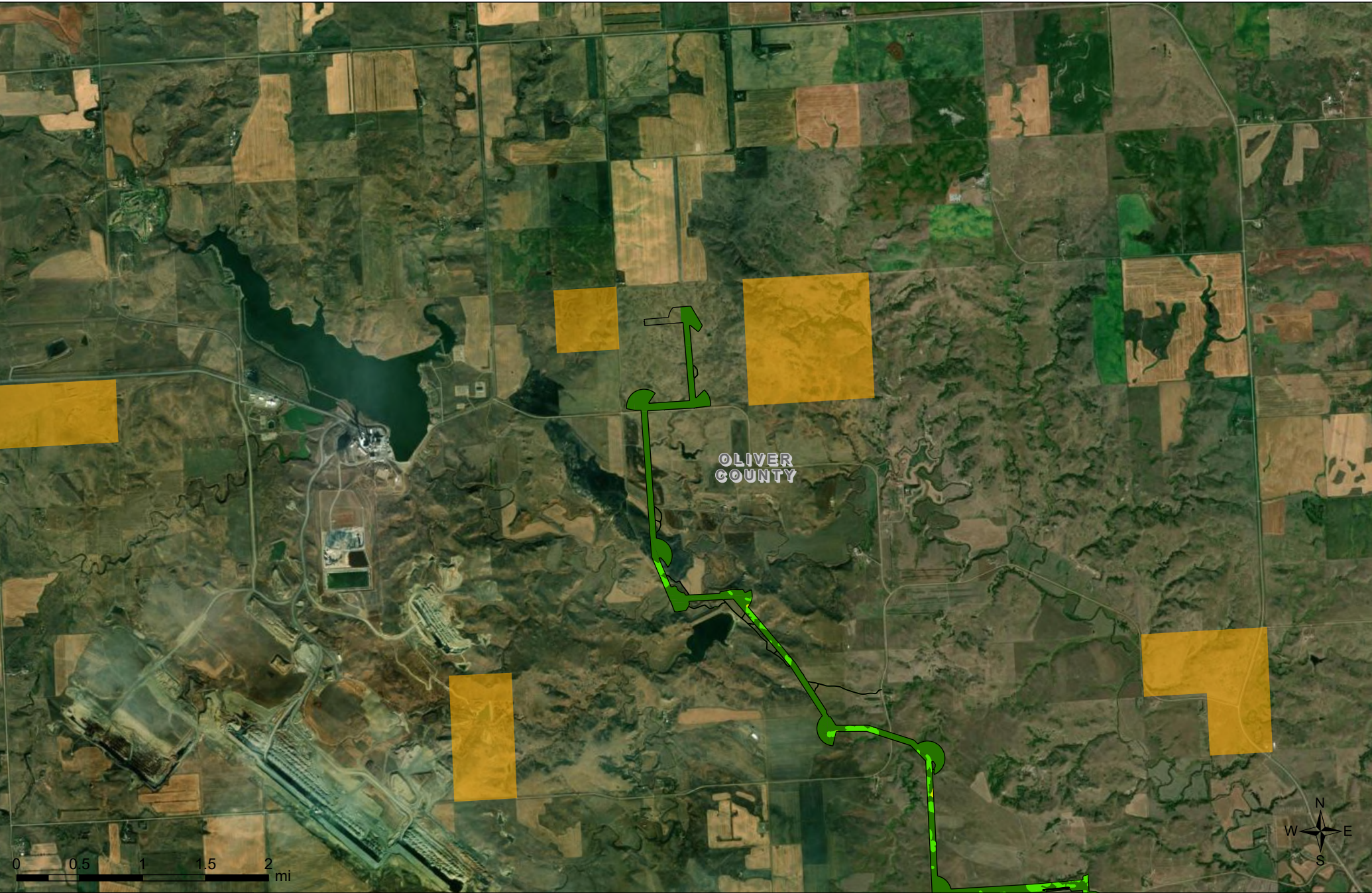
North Plains Connector Project  
Page 23 of 25



Dakota Skipper Habitat Categories		Land Ownership	
<span style="color: green;">█</span>	Reproductive Habitat	<span style="border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>	Survey Area
<span style="color: yellow;">█</span>	Foraging Habitat	<span style="background-color: green; display: inline-block; width: 10px; height: 10px;"></span>	Survey Complete
		<span style="background-color: orange; display: inline-block; width: 10px; height: 10px;"></span>	State Lands
		<span style="background-color: gray; display: inline-block; width: 10px; height: 10px;"></span>	Survey Not Needed

**Dakota Skipper Habitat  
Morton and Oliver Counties, ND**

North Plains Connector Project  
Page 24 of 25



**Dakota Skipper Habitat Categories**

- █ Reproductive Habitat
- █ Foraging Habitat

**Survey Area**

- Survey Area
- Survey Complete
- Survey Not Needed

**Land Ownership**

- State Lands

**Dakota Skipper Habitat  
Oliver County, ND**

North Plains Connector Project  
Page 25 of 25

**I – 5**

**Dakota Skipper Occupancy Survey Report**



# NORTH PLAINS CONNECTOR

A Grid United Project

## 2024 – 2025 Dakota Skipper Occupancy Survey Report North Dakota

Prepared by:



With Support from:



January 2026

**2024 and 2025 Dakota Skipper Occupancy Survey Report  
North Dakota**

**North Plains Connector Project**

**TABLE OF CONTENTS**

1.0	INTRODUCTION.....	1
2.0	SURVEY AREA.....	1
3.0	METHODS .....	7
4.0	RESULTS.....	8
5.0	DISCUSSION.....	11
6.0	REFERENCES.....	12

**LIST OF TABLES**

Table 1.	Details of Dakota Skipper occupancy survey sites identified along the North Plains Connector Project.....	4
Table 2.	Survey dates by site for Dakota skipper occupancy surveys along the North Plains Connector Project.....	8
Table 3.	Summary of incidental Dakota skipper observation recorded along the North Plains Connector Project in Morton County.....	8
Table 4.	Summary of weather conditions recorded for each site visit along the North Plains Connector Project.....	10

**LIST OF FIGURES**

Figure 1.	Overview of the proposed North Plains Connector Project route in North Dakota. ....	2
Figure 2.	Primary and secondary Dakota Skipper occupancy survey areas along the North Plains Connector Project. ....	6
Figure 3.	Ventral view, male individual Dakota skipper observed incidentally in 2024 along the North Plains Connector Project in Morton County. ....	9
Figure 4.	Dorsal view, male individual Dakota skipper observed incidentally in 2024 along the North Plains Connector Project in Morton County. ....	9

## LIST OF APPENDICES

Appendix A. Occupancy Survey Site Maps

Appendix B. Comprehensive List of Butterfly Species Observed Along the North Plains  
Connector Project

## 1.0 INTRODUCTION

North Plains Connector LLC (North Plains) is developing the North Plains Connector Project, an approximately 422-mile, high-voltage direct current electric transmission line system and associated infrastructure designed to connect the east and west energy grids in the United States. The North Plains Connector Project is designed for bi-directional transport of electricity and is located in southeastern Montana and southwestern North Dakota (Figure 1). For the purposes of this report, "Project" refers solely to the portion located in North Dakota.

On behalf of North Plains, Western EcoSystems Technology, Inc. (WEST), contracted Midwest Natural Resources (MNR) to conduct occupancy surveys to determine the presence or absence of the federally listed Dakota skipper (*Hesperia dacotae*) along the Project. The survey methods were adapted from the U.S. Fish and Wildlife Service (USFWS) *2024 Dakota Skipper Survey Protocol* (Protocol; 2024), based on coordination with the USFWS prior to and during the surveys. This report summarizes the methods and results of field surveys conducted in 2024 and 2025. Survey results will be used to support state and federal permitting for the Project, including compliance with the Endangered Species Act of 1973.

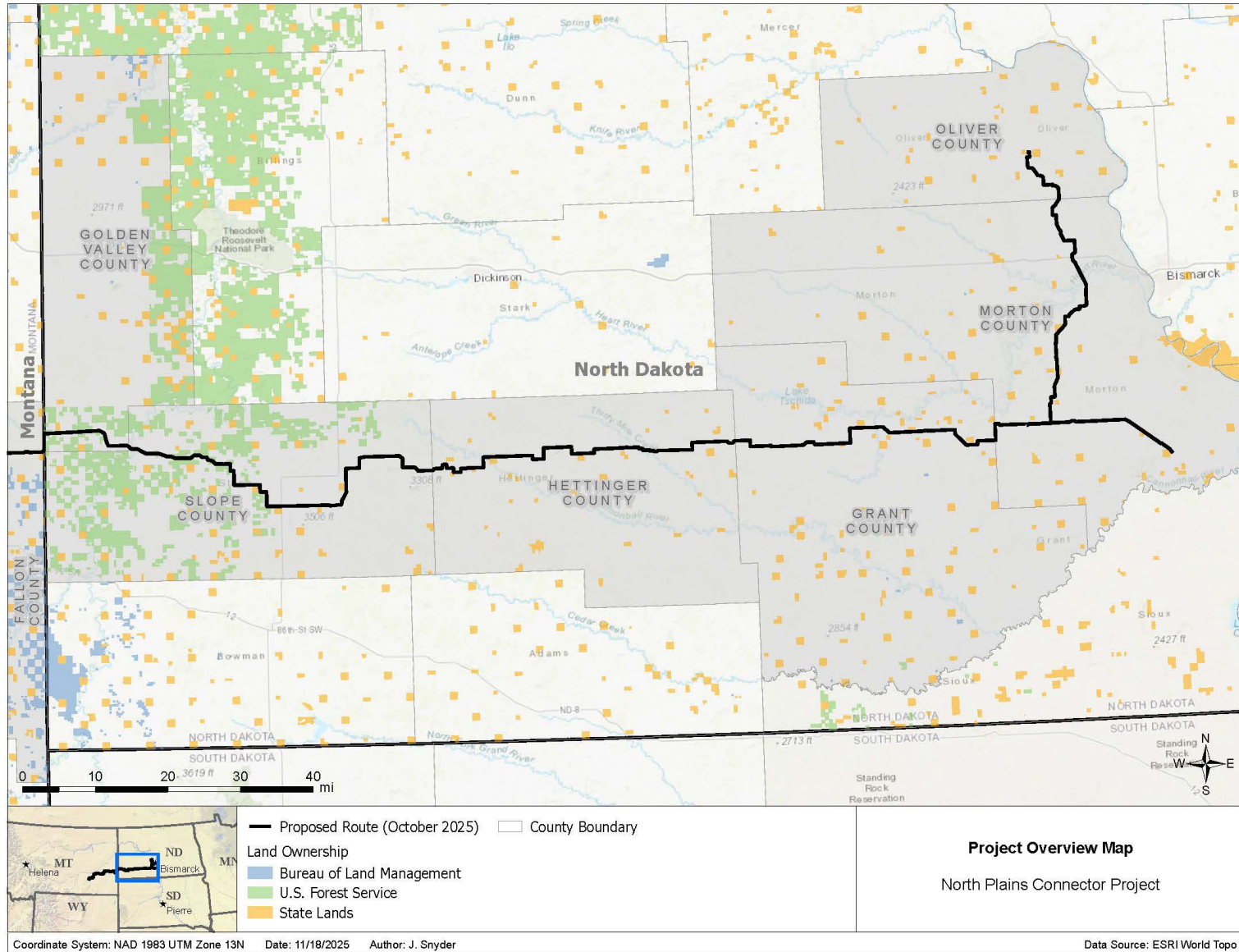
This report was written specifically for the North Dakota Public Service Commission and only includes survey results pertinent to the Project route discussed in North Plain's *Consolidated Application For A Certificate Of Corridor Compatibility And Transmission Facility Route Permit*. Section 2.0 includes a description of the survey area along this Project route.

## 2.0 SURVEY AREA

The proposed Project route spans approximately 242 miles in Golden Valley, Slope, Hettinger, Grant, Morton, and Oliver counties, North Dakota (Figure 1). The Project is located within the Northwestern Great Plains Level III Ecoregion, characterized by its rolling plains with semiarid conditions and the intermittent presence of buttes and badlands (U.S. Environmental Protection [USEPA], 2013). Originally, this region was dominated by native grasslands; now, it consists of fragmented patches of rangeland and fields used for agriculture. Most of the remaining remnant prairies and grasslands are now restricted to areas unsuitable for agriculture, such as those that are too steep or rocky to till (USEPA, 2013).

Dakota skipper occupancy surveys were conducted along the proposed Project route within a subset of the Project's typical survey area. The typical Project-wide survey area included the 300-foot-wide transmission line survey corridor, 50-foot-wide access road survey corridors, pulling and tensioning sites, laydown yards, facility footprints, and additional construction areas, as needed. The survey area displayed in this report's figures reflects the proposed Project route's survey area in North Dakota (Figure 2).

**North Plains Connector Project  
2024 – 2025 Dakota Skipper Occupancy Survey Report**



**Figure 1. Overview of the proposed North Plains Connector Project route in North Dakota.**

The Dakota skipper is generally found in untilled high-quality native prairie containing a high diversity of wildflowers. Habitat includes two prairie types: 1) high quality, low (wet-mesic) prairie with little topographic relief dominated by little bluestem (*Schizachyrium scoparium*) grass, wood lily (*Lilium philadelphicum*), bluebell bellflower (*Campanula rotundifolia*), and mountain deathcamas (*Zigadenus elegans*); and 2) rolling native-prairie terrain over gravelly glacial moraine deposits dominated by bluestem grasses and needlegrass (e.g., *Hesperostipa spartea*) with bluebell bellflower, wood lily, narrow-leaved purple coneflower (*Echinacea angustifolia*), upright prairie coneflower (*Ratibida columnifera*), and common gaillardia (*Gillardia aritata*). Dakota skipper populations have declined historically due to widespread conversion of native prairie. The species specifically requires native bunch grasses, particularly bluestem grasses and needlegrasses, to provide habitat during the larval stage, and forbs, particularly narrow-leaved purple coneflower, as a nectar source during the flight period (typically a 2-week period around July 4).

Separate Project surveys to identify suitable Dakota skipper habitat were initiated in 2023 and continued through 2025, as needed (see the *2022 – 2025 Dakota Skipper Habitat Assessment Survey Report* for additional details on both preliminary habitat surveys and detailed reproductive and foraging habitat assessments for Dakota skipper conducted within the Project survey area). These surveys primarily focused on mapping areas of high-quality prairie dominated by specific native larval host grasses, including big bluestem (*Andropogon gerardii*) and little bluestem (i.e., Dakota skipper reproductive habitat). These areas were also noted as having a diversity of native forbs, including nectar source species like narrow-leaved purple coneflower, along with black-eyed Susan (*Rudbeckia hirta*) and mountain deathcamas.

A subset of the highest quality Dakota skipper reproductive habitat, as identified by MNR during Project reproductive and foraging habitat surveys in 2023 and 2024, was selected for Dakota skipper occupancy surveys in 2024. This subset contained sites deemed to have the greatest potential for Dakota skipper occupancy. These areas were generally within large, continuous stretches of reproductive habitat that typically extended beyond the Project survey area (Appendix A). Additionally, these areas contained both larval host grasses and key forb species (e.g., narrow-leaved purple coneflower).

Selected sites were located in Oliver, Morton, and Grant counties, along with one site in Slope County which was specifically requested by the USFWS. The sites in Oliver, Morton, and Grant counties were included in a second year of occupancy survey in 2025, with only minor survey area adjustments. These high-quality Dakota skipper habitats were then ranked as either primary or secondary survey areas based on the ranking criteria below (Figure 2, Table 1):

- **Primary survey areas** contain large, contiguous areas of intact native plant communities in landscapes with minimal anthropogenic alteration. They have high forb diversity, abundant larval host grasses, and consistent narrow-leaved purple coneflower presence. They are often actively grazed, but not to a degree where biomass is significantly decreased.

- **Secondary survey areas** are similar to primary sites but differ in the degree to which each factor listed above is present. Secondary areas are often more heavily grazed, and because of this, they often exhibit reduced biomass and native species diversity. They contain the required plant species to sustain populations of Dakota skipper, but some of the larval host grasses, particularly big bluestem, may be absent or greatly reduced in abundance. Often, non-native species such as smooth brome (*Bromus inermis*), sweet clover (*Melilotus* spp.), and crested wheatgrass (*Agropyron cristatum*), are present in higher quantities than were observed in the primary survey areas, and may degrade the quality of the habitat or fragment suitable habitat patches.

The naming conventions for each site consist of the 2-letter Project code for the county in which they occur, followed by a “P” for primary sites or an “S” for secondary sites, and a unique number corresponding to the position of the site within the county in which it occurs.

**Table 1. Details of Dakota Skipper occupancy survey sites identified along the North Plains Connector Project.**

Site Name	County	Tract ID	Acres Surveyed (2024/2025) <sup>1</sup>	Habitat Type
SL-P-01 <sup>2</sup>	Slope	ND-SL-0015.000 <sup>2</sup>	155.8 / 0	Primary
GR-P-01	Grant	ND-GR-0064.000	91.2 / 83.7	Primary
		ND-GR-0065.000		
		ND-GR-0066.000		
		ND-GR-0067.000		
GR-S-01	Grant	ND-GR-0054.000	121.1 / 120.6	Secondary
		ND-GR-0055.000		
		ND-GR-0056.000		
		ND-GR-0056.300 <sup>3</sup>		
		ND-GR-0057.000		
		ND-GR-0058.000		
MR-P-01	Morton	ND-MR-0001.000	53.6 / 54.3	Primary
		ND-MR-0002.000		
		ND-MR-0003.000		
		ND-MR-0004.000		
MR-S-01	Morton	SPP-ND-MR-0037.300 <sup>3</sup>	70.5 / 59.5	Secondary
		SPP-ND-MR-0038.200		
		SPP-ND-MR-0039.000		
		SPP-ND-MR-0040.000		
		SPP-ND-MR-0041.000		
		SPP-ND-MR-0042.000		
MR-P-02	Morton	ND-MR-0050.200	115.5 / 129.6	Primary
		ND-MR-0051.300		
		ND-MR-0055.100 <sup>3</sup>		
		ND-MR-0055.110		
		ND-MR-0056.000		
		ND-MR-0056.120		
MR-P-03	Morton	ND-MR-0056.300 <sup>3</sup>	58.5 / 59.8	Primary
		ND-MR-0066.000		
		ND-MR-0067.000		
		ND-MR-0068.000		
		ND-MR-0069.000		

North Plains Connector Project  
 2024 – 2025 Dakota Skipper Occupancy Survey Report

Table 1. Details of Dakota Skipper occupancy survey sites identified along the North Plains Connector Project.

Site Name	County	Tract ID	Acres Surveyed (2024/2025) <sup>1</sup>	Habitat Type
MR-S-02	Morton	ND-MR-0070.000	43.9 / 45.1	Secondary
		ND-MR-0071.000		
		ND-MR-0072.000		
		ND-MR-0072.200 <sup>3</sup>		
MR-OL-S-03	Morton/Oliver	ND-OV-0004.180	258.7 / 242.9	Secondary
		ND-OV-0004.170		
		ND-OV-0004.160		
		ND-OV-0004.140		
		ND-OV-0004.130		
		ND-OV-0003.110		
		ND-OV-0003.100 <sup>3</sup>		
		ND-OV-0002.110		
		ND-MR-0093.130		
OV-P-01	Oliver	ND-MR-0093.120	40.1 / 83.1	Primary
		ND-MR-0093.110		
		ND-OV-0004.190		
		ND-OV-0006.100		
		ND-OV-0007.100 <sup>3</sup>		
		ND-OV-0008.100 <sup>3</sup>		

<sup>1</sup>. Acres surveyed in 2024 and 2025, where applicable.

<sup>2</sup>. Only surveyed during 2024.

<sup>3</sup>. Only surveyed during 2025.

ID = identification.

**North Plains Connector Project  
2024 – 2025 Dakota Skipper Occupancy Survey Report**



**Figure 2. Primary and secondary Dakota Skipper occupancy survey areas along the North Plains Connector Project.**

### 3.0 METHODS

The survey methods described below were adapted from the Protocol (USFWS, 2024) based on coordination with the USFWS in the spring of 2024. The Protocol adjustments described below address the challenges of conducting Dakota skipper occupancy surveys, which require repeat visits to suitable patches of reproductive habitat, along a sizable project with during the short 13- to 19-day Dakota skipper flight period. The Project's *2024 Ground-Based Survey Plan* was submitted on June 5, 2024 and approved by USFWS on June 14, 2024. The current *2025 Ground-Based Survey Plan* was submitted on April 18, 2025 and incorporated minor annual updates.

The 2024 and 2025 Dakota skipper occupancy survey efforts were led by Otto Gockman, Jake Walden, and Heather Jensen, each of whom are authorized to conduct Dakota skipper surveys under MNR's USFWS-issued Recovery Permit.

Occupancy surveys followed the Protocol and involved visiting each primary survey site three separate times within the flight period, with each survey separated by at least 48 hours, if possible based on weather. Survey timing, daily site selection, and/or survey areas within each site were based on the survey lead's discretion and followed conversations with the USFWS.

Although surveying each site three times was the goal, it was not always possible based on available time (i.e., the brief Dakota skipper flight period) and weather. As discussed in the Project's approved survey plans, secondary survey sites were incorporated into the surveys where possible, based on the survey time and weather constraints, but primary sites were the main survey focus. Thus, secondary survey sites were not expected to receive the full three visits.

Surveys were conducted between approximately 10:00 and 17:30 on clear days with average wind speeds less than 30 kilometers per hour, as defined in the Protocol. Weather conditions (i.e., temperature, cloud cover, and wind speed) and other notes were recorded at each survey location. In addition, Global Positioning System tracking was used to record the survey routes. Survey crews also recorded a tally of butterfly species observed at each site.

When Dakota skippers were found, the documentation process followed the guidelines in the Protocol, which included recording weather conditions (e.g., temperature, cloud cover, and wind speed), time of observation, physical condition, and sex of the observed individual, along with spatial location, and pictures for identification confirmation.

## 4.0 RESULTS

Surveys were conducted between June 26 and July 14, 2024, and June 28 and July 6, 2025, following correspondence with the USWFS regarding the status of the Dakota skipper flight period. Survey dates for each site are provided in Table 2.

**Table 2. Survey dates by site for Dakota skipper occupancy surveys along the North Plains Connector Project.**

Site Name	2024			2025		
	First Visit	Second Visit	Third Visit	First Visit	Second Visit	Third Visit
SL-P-01	June 28	July 5	–	–	–	–
GR-S-01	–	–	–	July 1	–	–
GR-P-01	July 3	July 9	July 10	June 29	July 2	July 6
MR-P-01	July 3	July 11	July 13	June 29	July 2	–
MR-S-01	–	–	–	June 30	July 5	–
MR-P-02	June 28	July 8	–	June 29	July 3	July 6
MR-P-03	July 6	July 14	–	June 28	July 1	July 5
MR-S-02	–	–	–	July 1	–	–
MR-OL-S-03	June 26	July 12	–	June 30	July 3	July 5
OV-P-01	July 7	July 11	–	June 28	July 1	July 5

During the occupancy survey efforts, 43 identifiable butterfly species were observed Project-wide (Appendix B). This included a new Dakota skipper population observed at the edge of a targeted polygon in Morton County in 2024, which is also the first documented record of this species in the county. A lone male Dakota skipper individual was sighted and documented (Table 3; Figures 3 and 4); however, this single Dakota skipper observation was an incidental record and was detected on a non-survey day, so no associated butterfly species list was recorded. No Dakota skipper individuals were documented in 2025.

**Table 3. Summary of incidental Dakota skipper observation recorded along the North Plains Connector Project in Morton County.**

Date	Time	Site Location	Weather Conditions	Temperature (°F)	Average Wind Speed (mph)	Sex	Physical Remarks
July 2, 2024	17:00	MR-P-02	Slightly cloudy, a large wall cloud of thunderstorms in the afternoon, cleared skies at 16:00	82.5	3.5	Male	Semi-worn

° = degree; F = Fahrenheit; mph = mile per hour.



**Figure 1. Ventral view, male individual Dakota skipper observed incidentally in 2024 along the North Plains Connector Project in Morton County.**



**Figure 4. Dorsal view, male individual Dakota skipper observed incidentally in 2024 along the North Plains Connector Project in Morton County.**

**North Plains Connector Project  
2024 – 2025 Dakota Skipper Occupancy Survey Report**

Weather conditions were not optimal for many of the 12 survey days in 2024, due to cool temperatures, frequent rain events, and high cloud cover. Recorded weather conditions by site and date of visit are listed in Table 4. Weather conditions were better for survey during most of the eight survey days in 2025.

**Table 4. Summary of weather conditions recorded for each site visit along the North Plains Connector Project.**

Site Name	Date	Temperature (°F)	Wind Speed (mph)	Precipitation	Cloud Cover (%)
SL-P-01	June 28, 2024	65.5	9.9	No	25–50
	July 5, 2024	80.2	4.6	Yes	25–50
GR-S-01	July 1, 2025	83.0	2.4	No	0
	July 3, 2024	75.9	6.2	No	25–50
	July 9, 2024	80.2	3.3	No	1–25
GR-P-01	July 10, 2024	82.0	0.6	No	0
	June 29, 2025	– <sup>1</sup>	2.8	No	1–25
	July 2, 2025	86.3	0.8	No	0
	July 6, 2025	71.0	2.2	No	0
MR-P-01	July 3, 2024	75.0	11.2	No	1–25
	July 11, 2024	83.5	11.2	No	0
	July 13, 2024	84.8	7.1	No	50–75
	June 29, 2025	74.0	3.9	No	1–25
	July 2, 2025	83.0	– <sup>2</sup>	No	0
MR-S-01	June 30, 2025	72.0	10.0	No	1–25
	July 5, 2025	81.5	3.1	No	1–25
MR-P-02	June 28, 2024	73.3	4.2	Yes	1–25
	July 8, 2024	81.4	1.1	No	1–25
	June 29, 2025	81.9	4.6	No	1–25
	July 3, 2025	84.9	8.4	No	25–50
	July 6, 2025	79.1	3.3	No	1–25
MR-P-03	July 6, 2024	76.0	2.0	No	25–50
	July 14, 2024	82.6	2.2	No	0
	June 28, 2025	75.0	4.4	No	25–50
	July 1, 2025	82.4	0.8	No	0
	July 5, 2025	77.0	1.9	No	0
MR-S-02	July 1, 2025	86.7	1.1	No	0
	June 26, 2024	69.5	6.0	No	50–75
	July 12, 2024	89.0	5.3	No	0
MR-OL-S-03	June 30, 2025	77.4	5.5	No	1–25
	July 3, 2025	81.0	6.3	No	1–25
	July 5, 2025	73.0	7.6	No	75–100
	July 7, 2024	80.8	3.3	Yes	50–75
OV-P-01	July 11, 2024	81.0	7.8	No	0
	June 28, 2025	80.3	4.2	Yes	75–100
	July 1, 2025	77.0	3.9	No	0
	July 5, 2025	74.0	10.4	No	1–25

<sup>1</sup> Temperature not recorded.

<sup>2</sup> Wind speed not recorded.

° = degree; % = percent; F = Fahrenheit; mph = miles per hour.

Note: Values for temperature and wind speed are the recorded averages. Temperature is shown as the mean value of the recorded start and end temperatures.

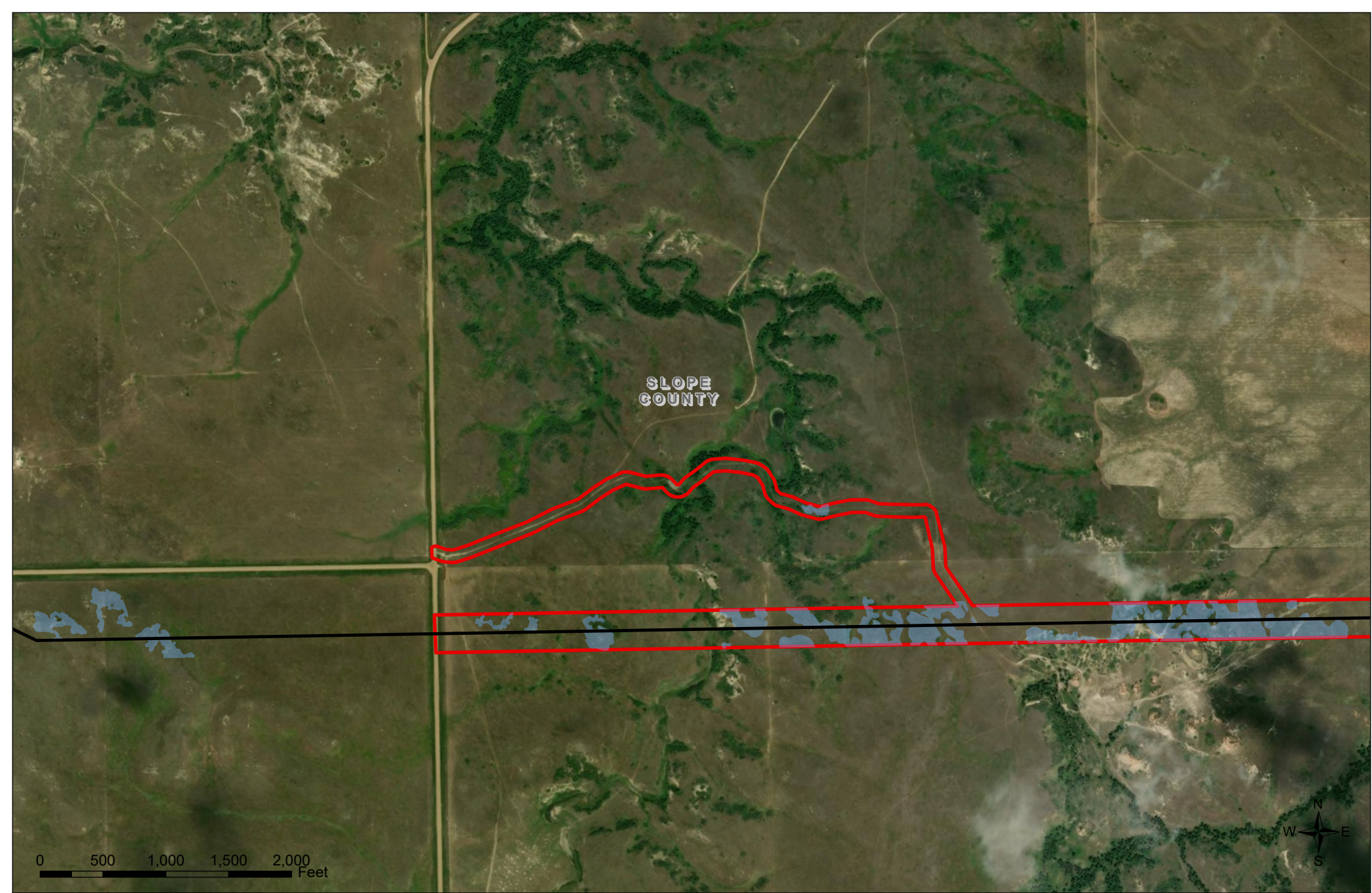
## 5.0 DISCUSSION

Dakota skipper occupancy surveys were conducted during the Dakota skipper flight period between June 26 and July 14, 2024, and June 28 and July 6, 2025. Surveys targeted the best areas within each site, based on the surveyor's discretion. Although weather conditions during 2024 were generally suboptimal for occupancy surveys, one male Dakota skipper was documented incidentally on a non-survey day in Morton County. This occurrence was the first record of a Dakota skipper in Morton County. No additional Dakota skippers were documented during occupancy surveys in 2024 or 2025.

## 6.0 REFERENCES

- Esri. 2025. World Imagery and Aerial Photos (World Topo). ArcGIS Resource Center. Environmental Systems Research Institute (Esri), producers of ArcGIS software, Redlands, California. Available online: <https://www.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=10df2279f9684e4a9f6a7f08febac2a9>. Accessed November 2025.
- U.S. Environmental Protection Agency (USEPA). 2013. Level III and Level IV Ecoregions of the Continental United States. Ecosystems Research, USEPA. April 16, 2013. Available online: <https://www.epa.gov/eco-research/level-iii-and-iv-ecoregions-continental-united-states>. Accessed November 2025.
- U.S. Fish and Wildlife Service (USFWS). 2024. 2024 Dakota Skipper (*Hesperia dacotae*) Survey Protocol. USFWS, Midwest and Mountain Prairie Regions, Minnesota-Wisconsin, North Dakota, and South Dakota Ecological Services Field Offices. Available online: <https://www.fws.gov/sites/default/files/documents/2024-05/2024-usfws-dakota-skipper-survey-protocol.pdf>.




**Appendix A. Occupancy Survey Site Maps**



SLOPE  
COUNTY

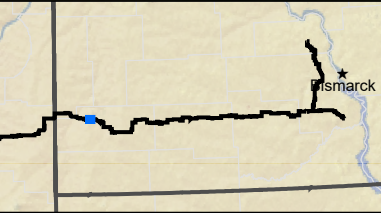
0 500 1,000 1,500 2,000 Feet

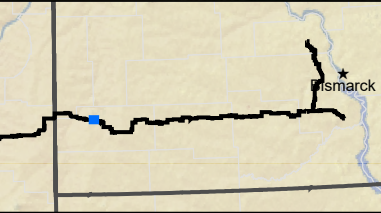
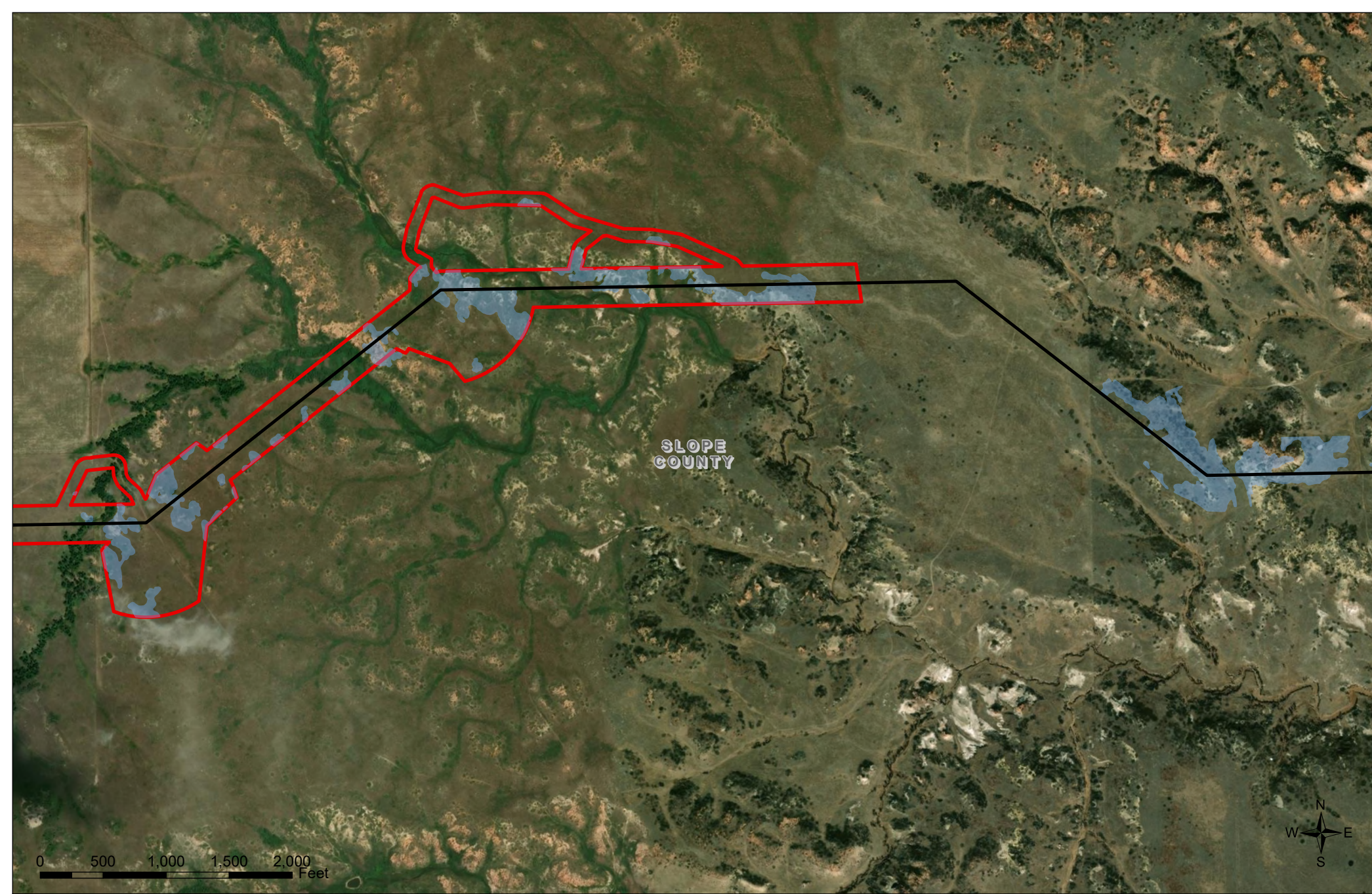


-  Proposed Route (October 2025)
-  Occupancy Survey Area
-  Dakota Skipper Reproductive Habitat

**Dakota Skipper  
Occupancy Survey  
Sites S-P-01**

North Plains Connector Project  
Page 1 of 15

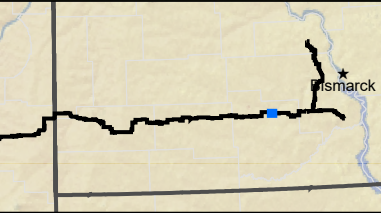
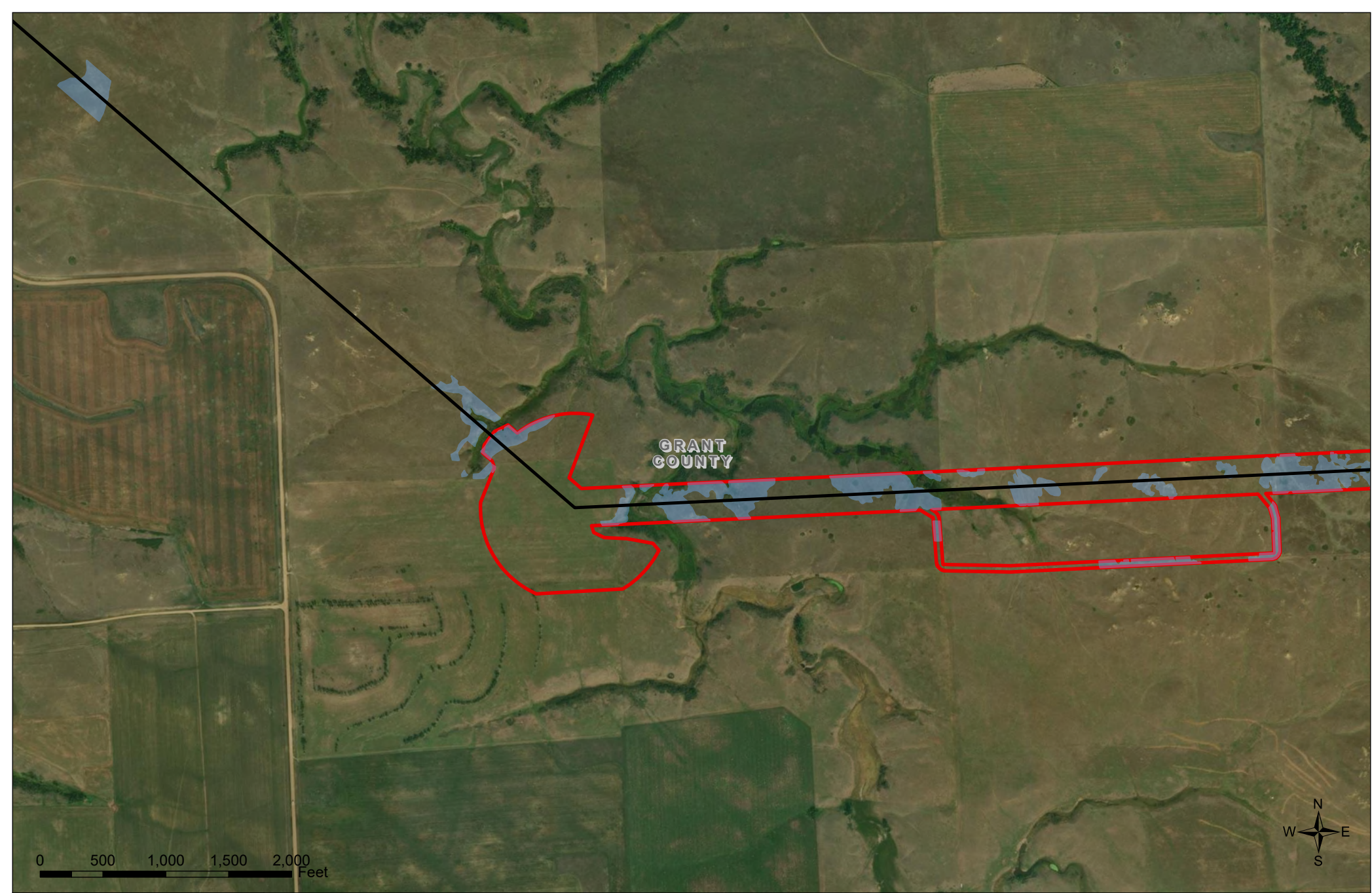




- Proposed Route (October 2025)
- ▭ Occupancy Survey Area
- Dakota Skipper Reproductive Habitat

**Dakota Skipper  
Occupancy Survey  
Sites S-P-01**

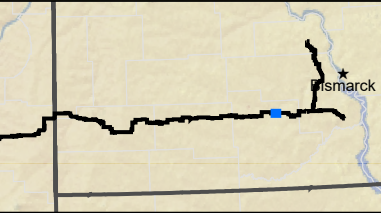
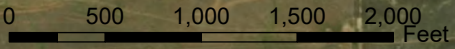
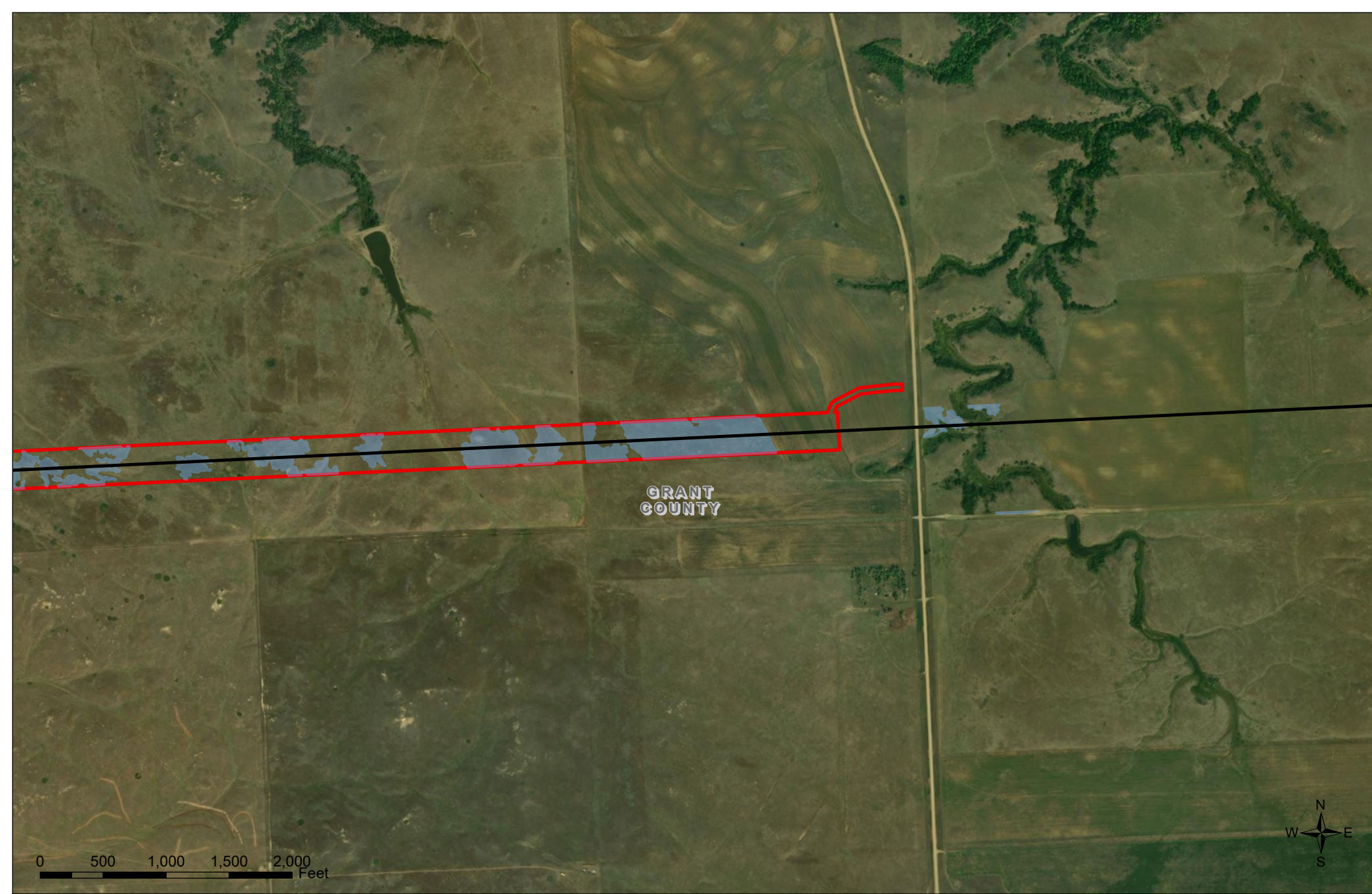
North Plains Connector Project  
Page 2 of 15






- Proposed Route (October 2025)
- Occupancy Survey Area
- Dakota Skipper Reproductive Habitat

**Dakota Skipper  
Occupancy Survey  
Sites GR-S-01**

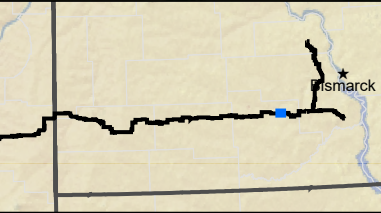
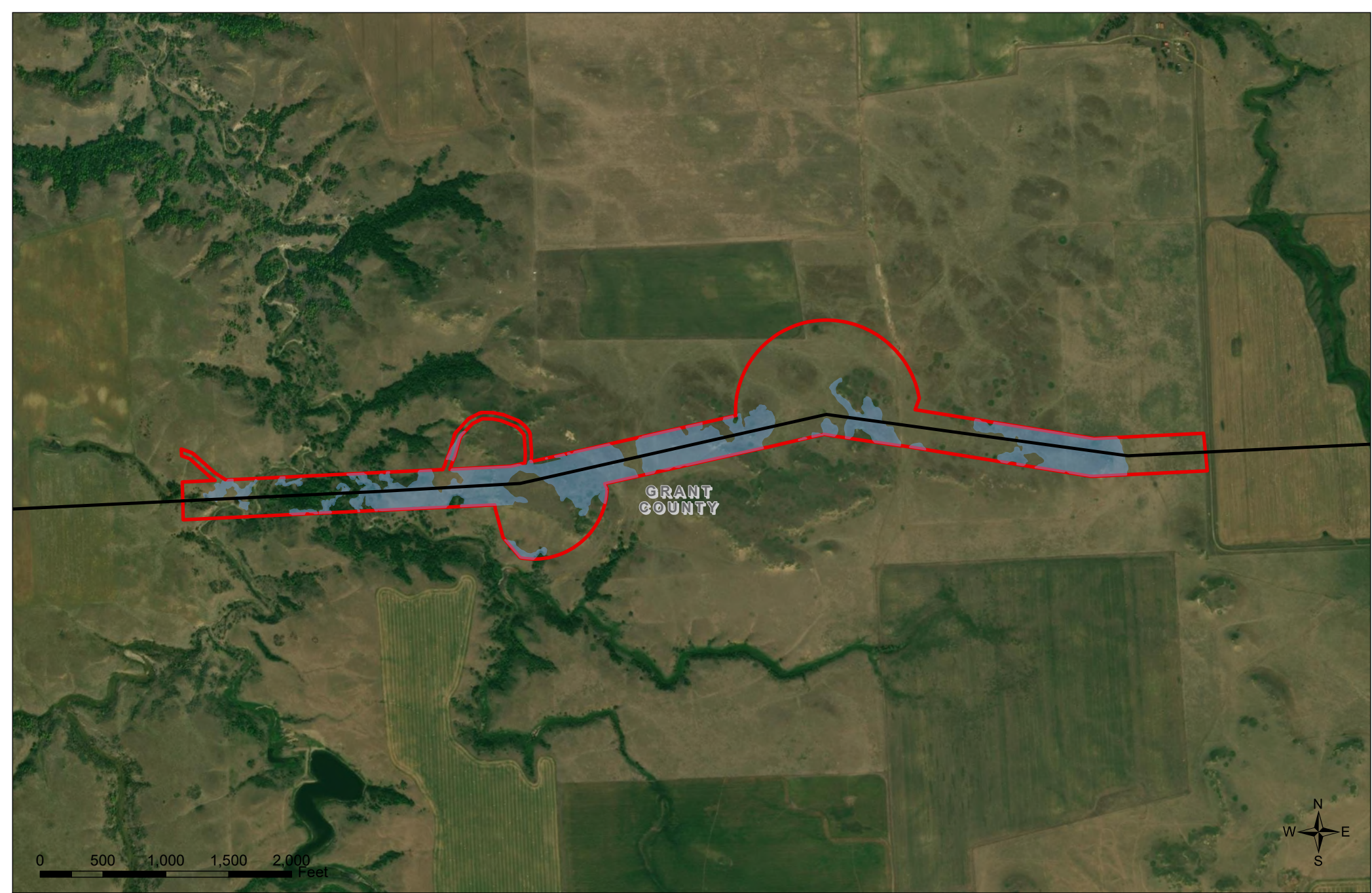
North Plains Connector Project  
Page 3 of 15



-  Proposed Route (October 2025)
-  Occupancy Survey Area
-  Dakota Skipper Reproductive Habitat

**Dakota Skipper  
Occupancy Survey  
Sites GR-S-01**

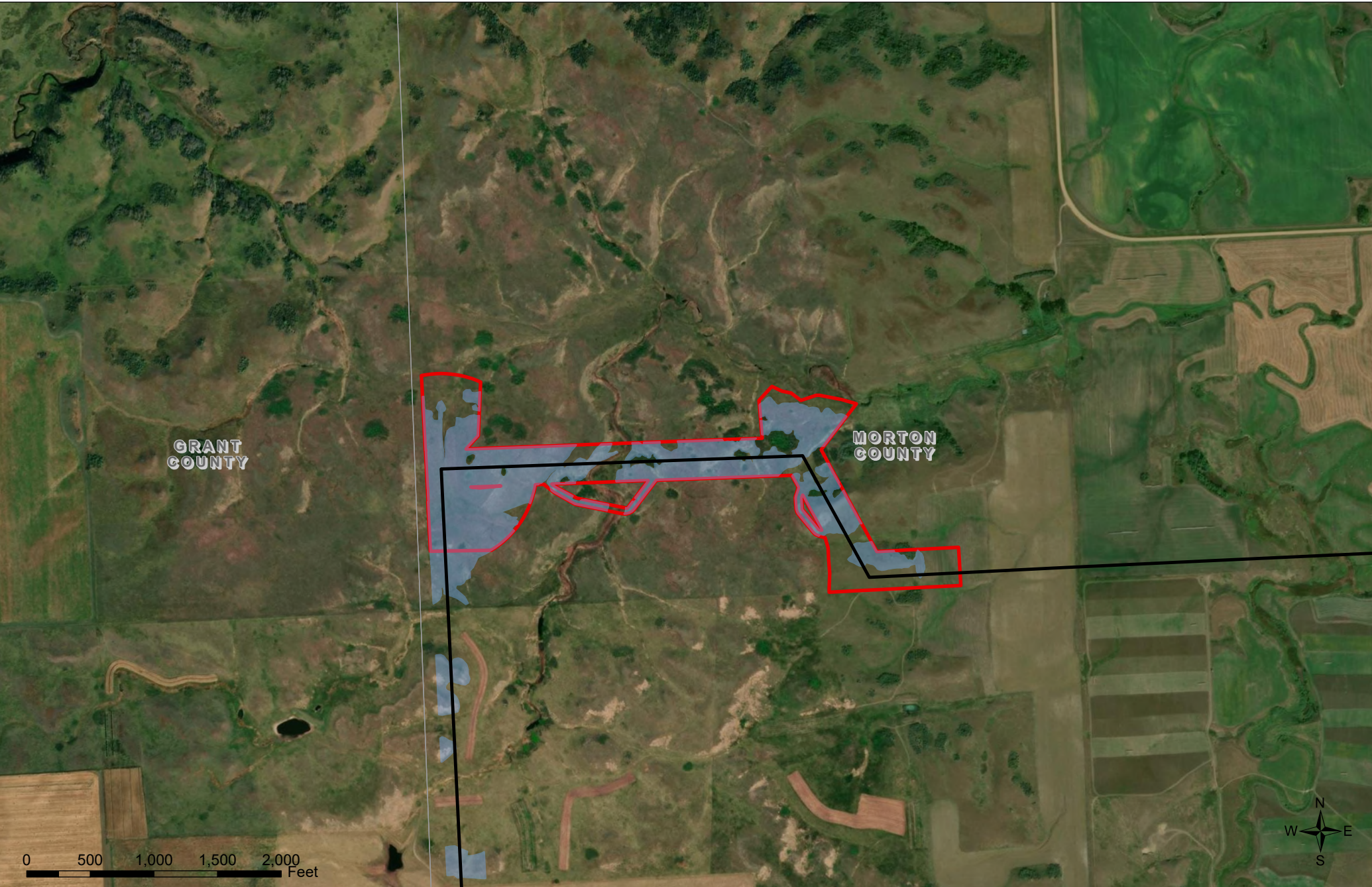
North Plains Connector Project  
Page 4 of 15



- Proposed Route (October 2025)
- Occupancy Survey Area
- Dakota Skipper Reproductive Habitat

**Dakota Skipper  
Occupancy Survey  
Sites GR-P-01**

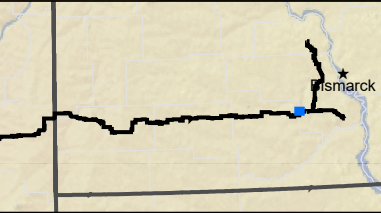
North Plains Connector Project  
Page 5 of 15



GRANT COUNTY

MORTON COUNTY

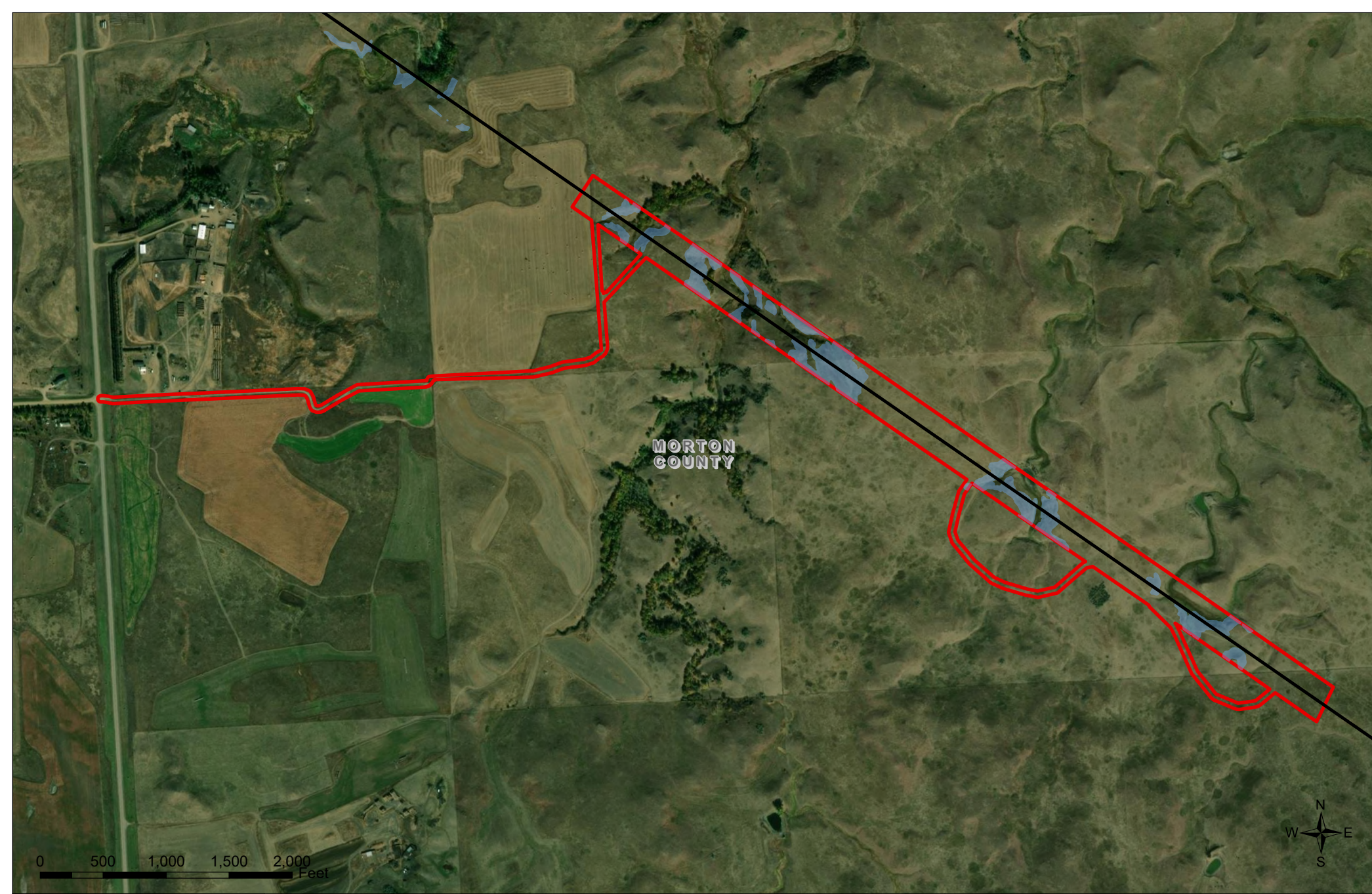
0 500 1,000 1,500 2,000 Feet



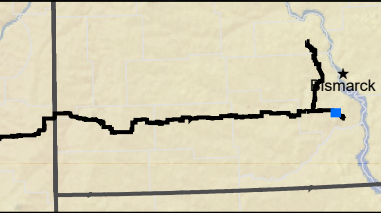
- Proposed Route (October 2025)
- ▭ Occupancy Survey Area
- ▭ Dakota Skipper Reproductive Habitat

**Dakota Skipper  
Occupancy Survey  
Sites MR-P-01**

North Plains Connector Project  
Page 6 of 15



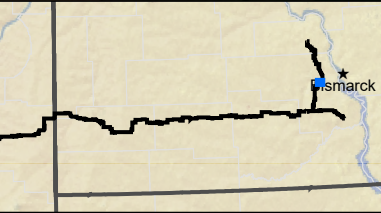
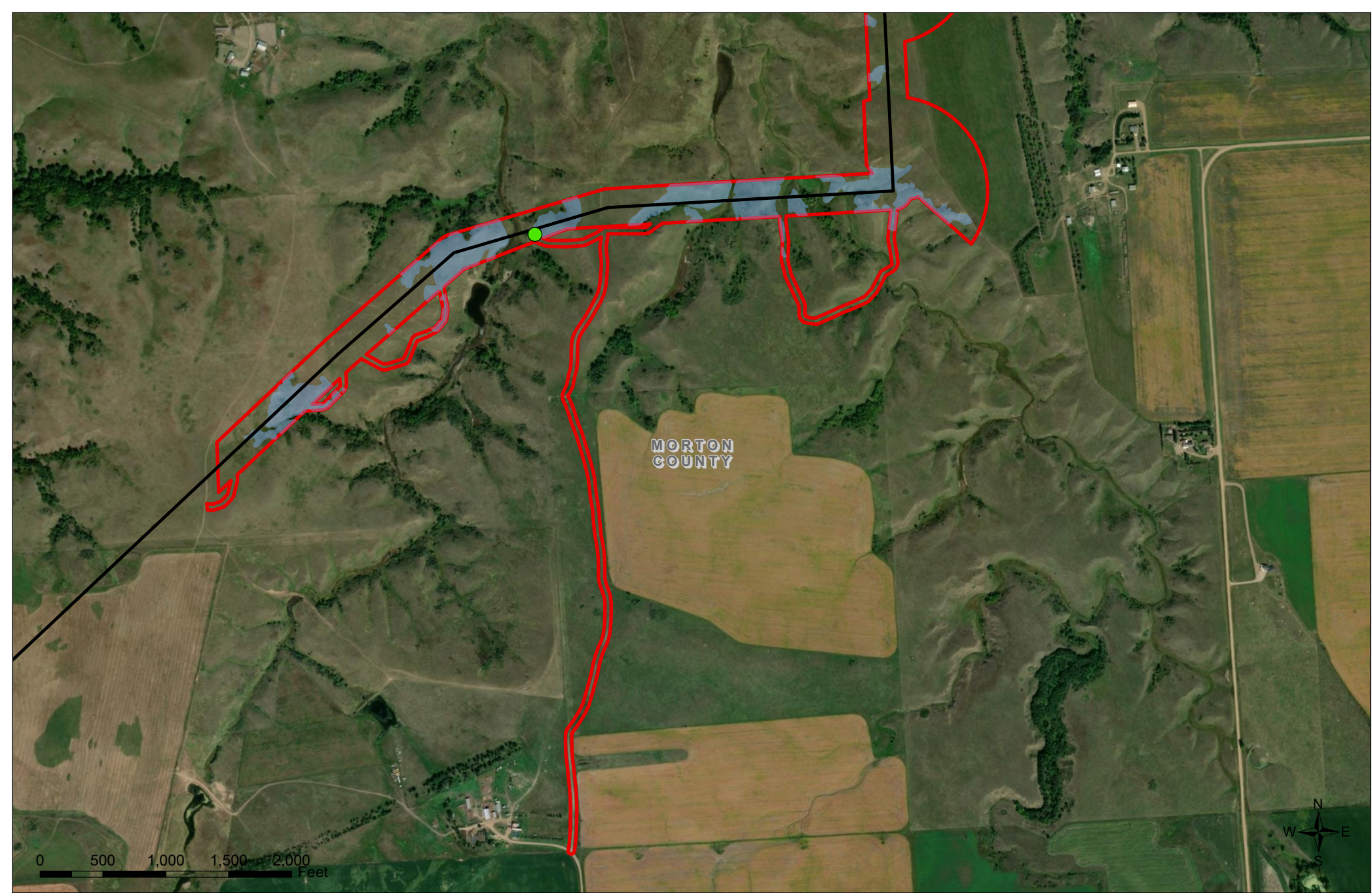
MORTON COUNTY



- Proposed Route (October 2025)
- ▭ Occupancy Survey Area
- ▭ Dakota Skipper Reproductive Habitat

**Dakota Skipper  
Occupancy Survey  
Sites MR-S-01**

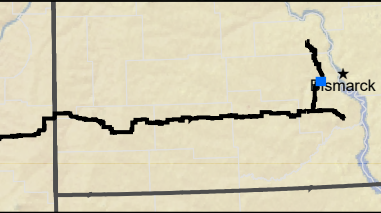
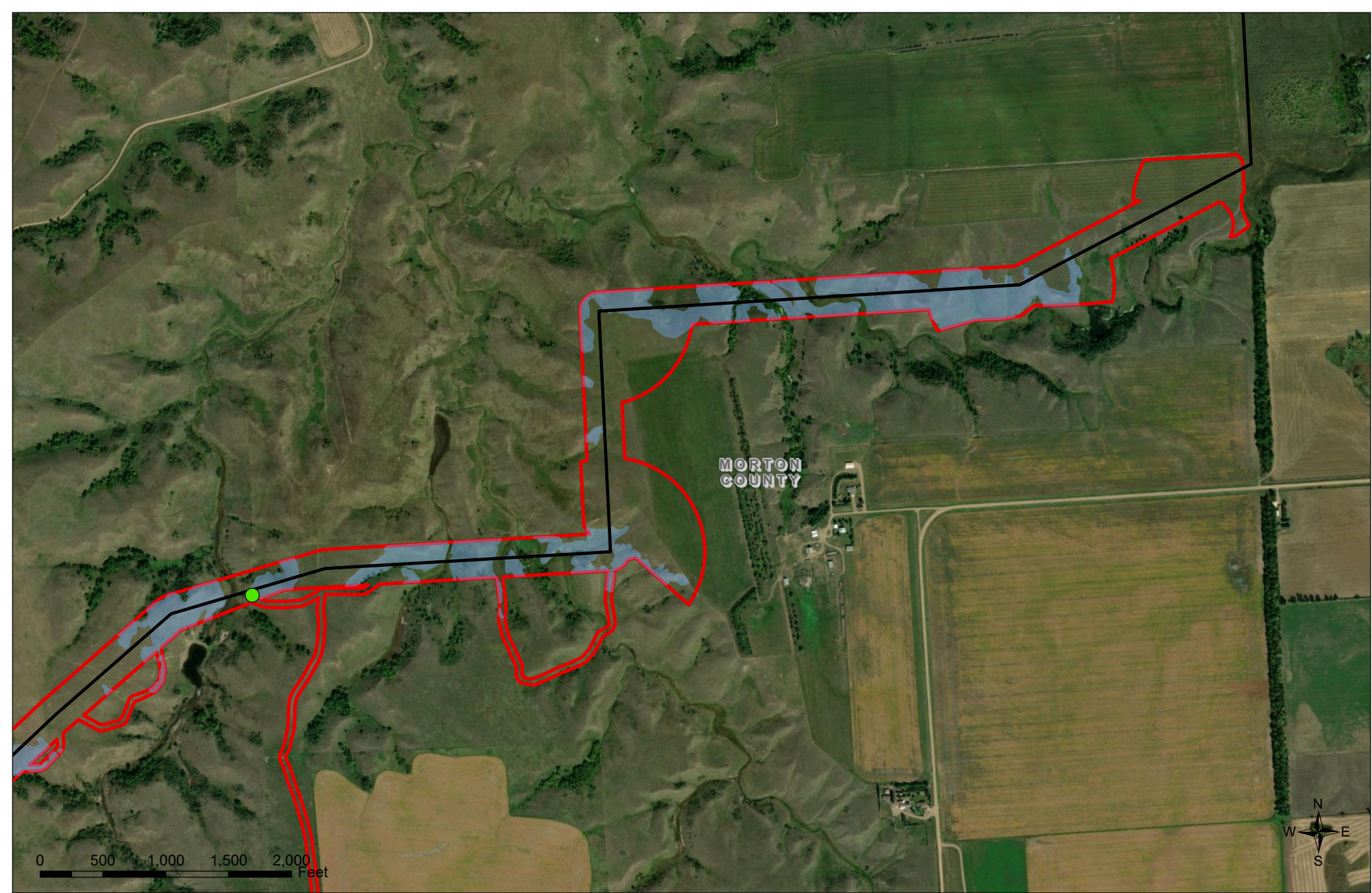
North Plains Connector Project  
Page 7 of 15



- Proposed Route (October 2025)
- ▭ Occupancy Survey Area
- Dakota Skipper Reproductive Habitat
- Dakota Skipper Incidental Observation

**Dakota Skipper  
Occupancy Survey  
Sites MR-P-02**

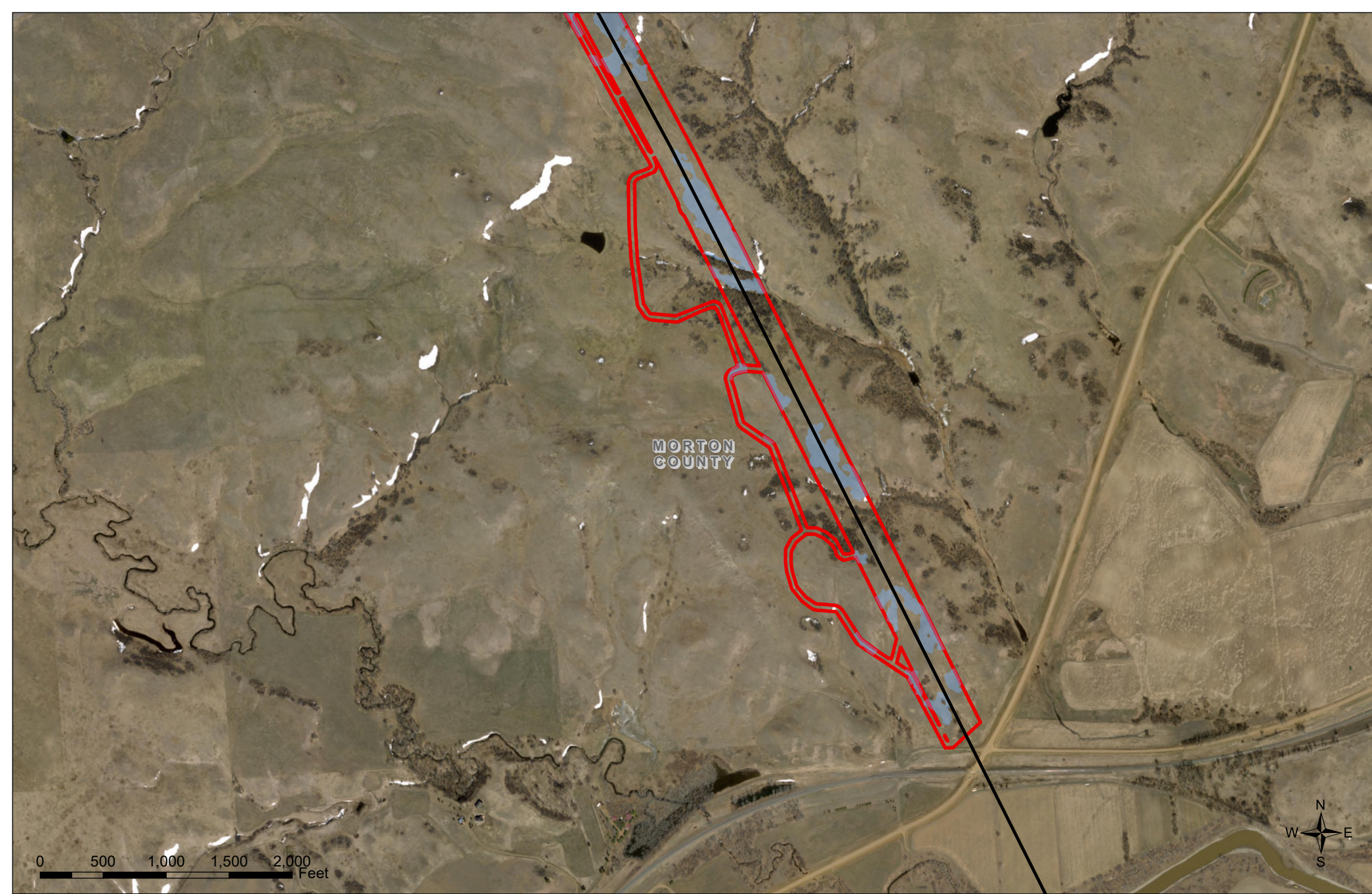
North Plains Connector Project  
Page 8 of 15



- Proposed Route (October 2025)
- ▭ Occupancy Survey Area
- Dakota Skipper Reproductive Habitat
- Dakota Skipper Incidental Observation

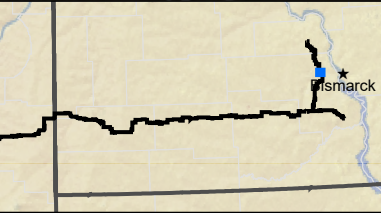
**Dakota Skipper  
Occupancy Survey  
Sites MR-P-02**

North Plains Connector Project  
Page 9 of 15



MORTON  
COUNTY

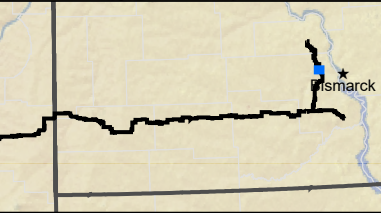
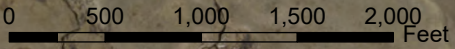
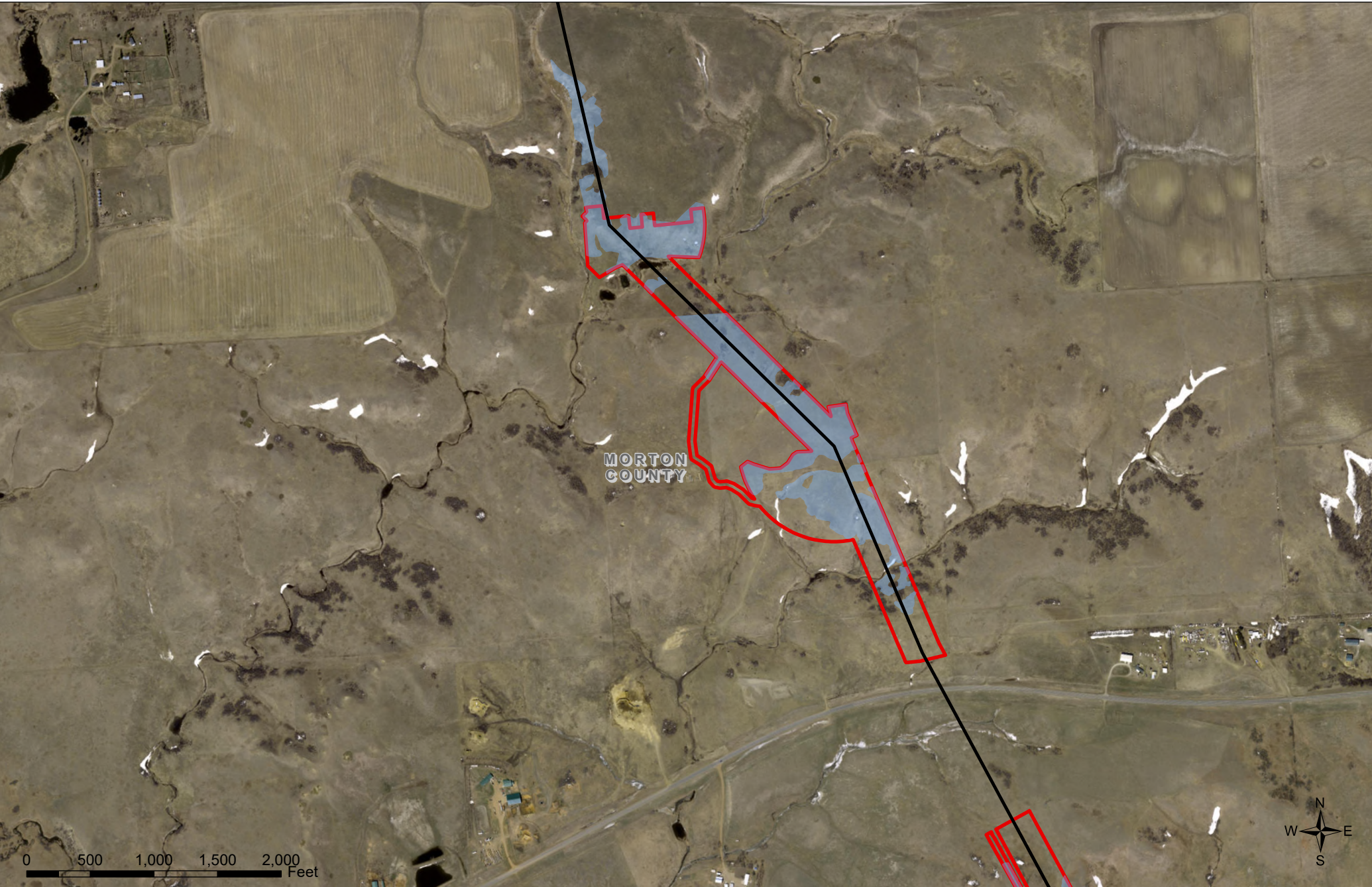
0 500 1,000 1,500 2,000 Feet






- Proposed Route (October 2025)
- ▭ Occupancy Survey Area
- ▭ Dakota Skipper Reproductive Habitat

**Dakota Skipper  
Occupancy Survey  
Sites MR-P-03**

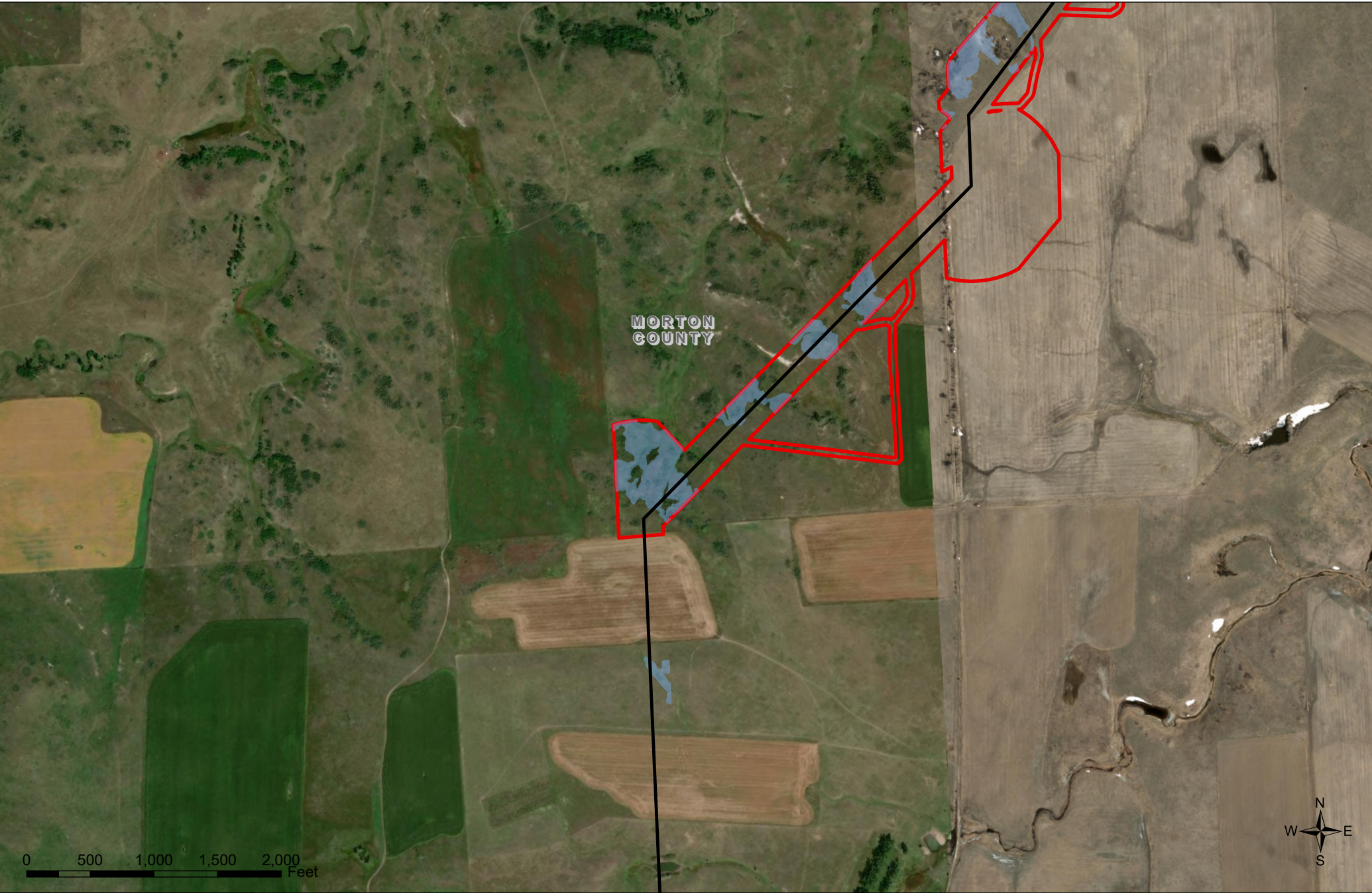
North Plains Connector Project  
Page 10 of 15



-  Proposed Route (October 2025)
-  Occupancy Survey Area
-  Dakota Skipper Reproductive Habitat

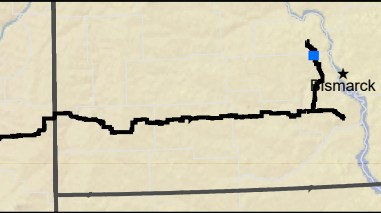
**Dakota Skipper  
Occupancy Survey  
Sites MR-P-03, MR-S-02**




North Plains Connector Project  
Page 11 of 15



MORTON COUNTY

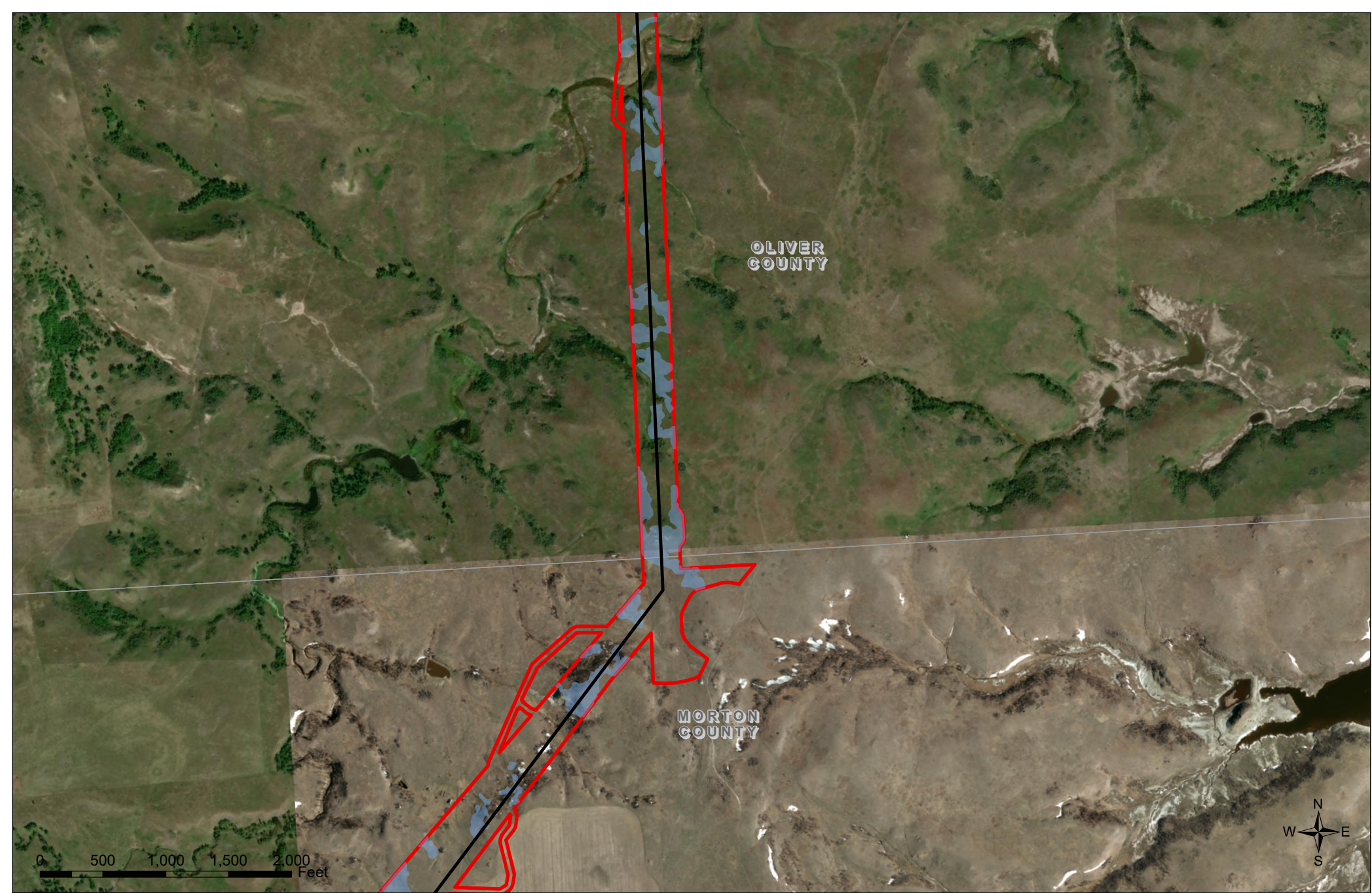
0 500 1,000 1,500 2,000 Feet



-  Proposed Route (October 2025)
-  Occupancy Survey Area
-  Dakota Skipper Reproductive Habitat

**Dakota Skipper  
Occupancy Survey  
Sites MR-OL-S-03**

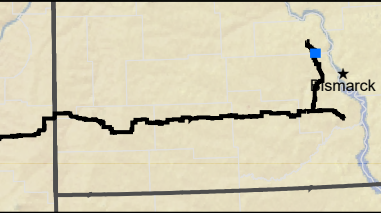
North Plains Connector Project  
Page 12 of 15



OLIVER  
COUNTY

MORTON  
COUNTY

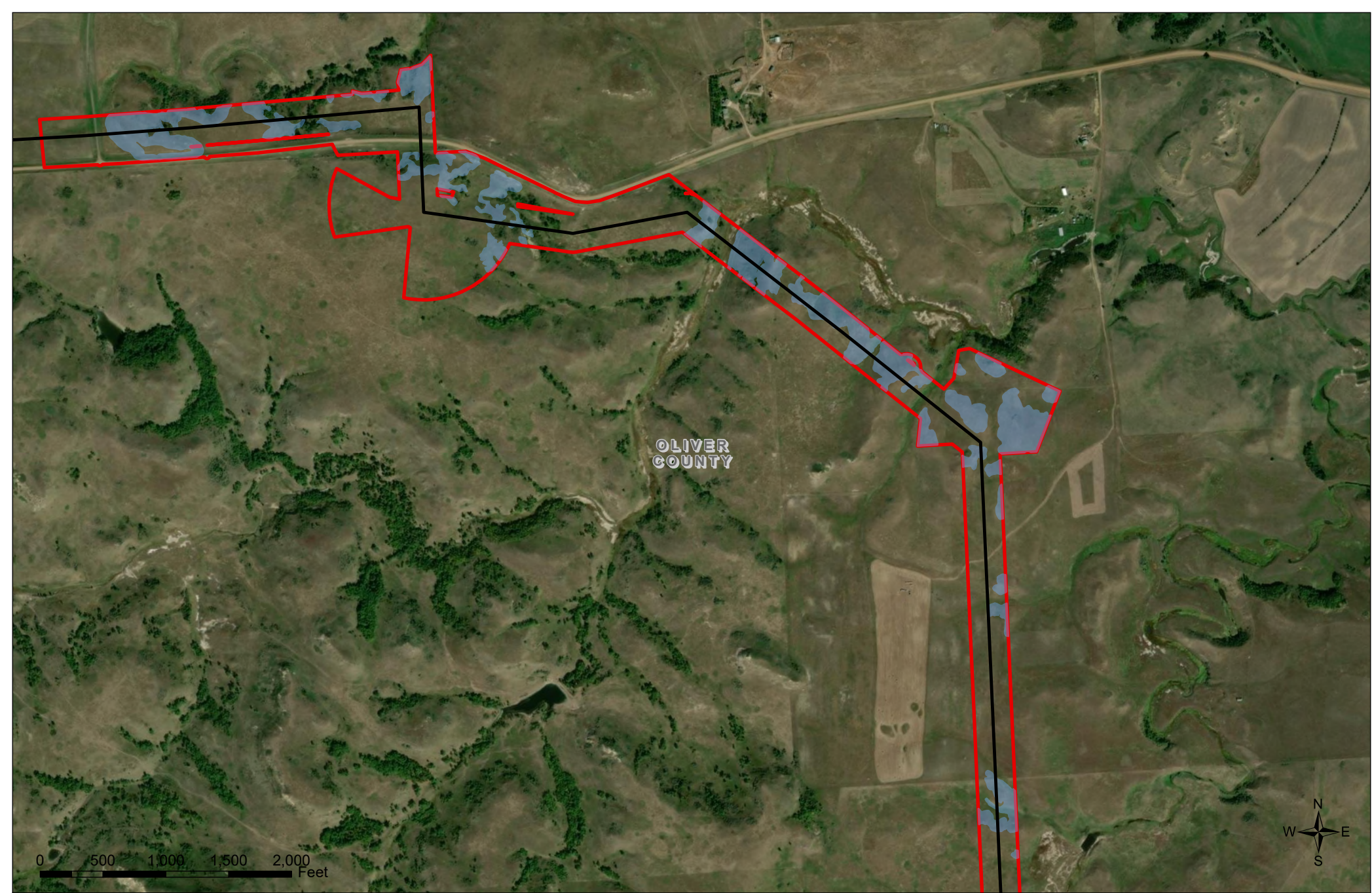
0 500 1,000 1,500 2,000 Feet



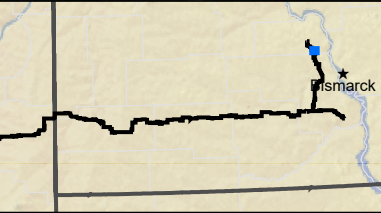
- Proposed Route (October 2025)
- ▭ Occupancy Survey Area
- ▭ Dakota Skipper Reproductive Habitat

**Dakota Skipper  
Occupancy Survey  
Sites MR-OL-S-03**

North Plains Connector Project  
Page 13 of 15



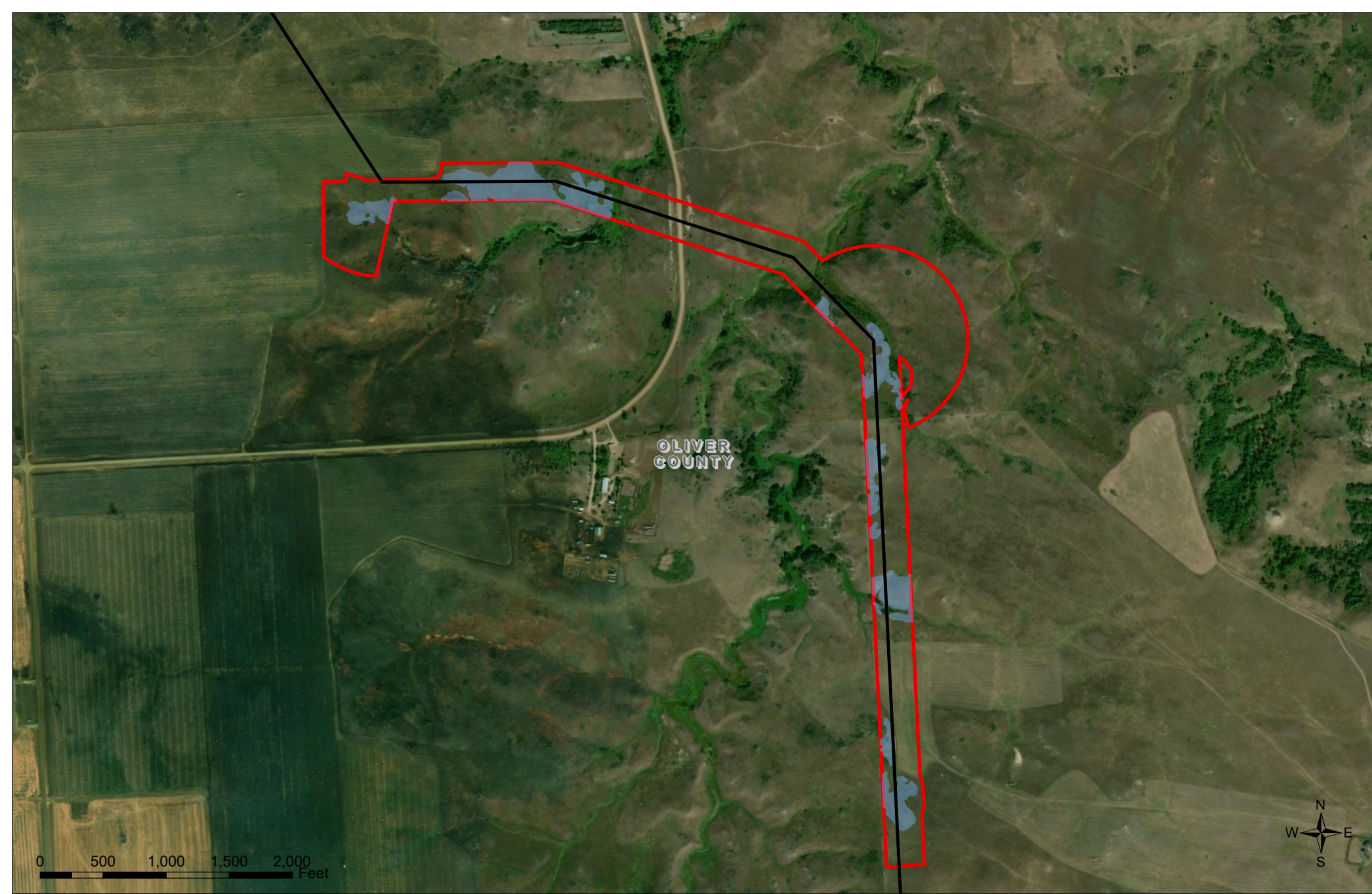
0 500 1,000 1,500 2,000 Feet



- Proposed Route (October 2025)
- ▭ Occupancy Survey Area
- Dakota Skipper Reproductive Habitat

**Dakota Skipper  
Occupancy Survey  
Sites MR-OL-S-03**

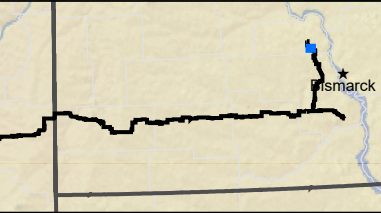
North Plains Connector Project  
Page 14 of 15



OLIVER COUNTY



0 500 1,000 1,500 2,000 Feet



- Proposed Route (October 2025)
- ▭ Occupancy Survey Area
- Dakota Skipper Reproductive Habitat

**Dakota Skipper  
Occupancy Survey  
Sites OV-P-01**

North Plains Connector Project  
Page 15 of 15

**Appendix B. Comprehensive List of Butterfly Species Observed Along the North Plains  
Connector Project**

**Appendix B. Comprehensive list of butterfly species documented during occupancy surveys along the North Plains Connector Project in 2024 and 2025.**

<b>Species Name</b>	<b>Number of Observations</b>
acadian hairstreak	2
acmon blue	1
American lady	9
aphrodite fritillary	5
cabbage white	21
callippe fritillary	2
clouded sulphur	138
common checkered-skipper	24
common ringlet	18
common sootywing	2
common wood-nymph	682
coral hairstreak	116
crescent spp.	15
Dakota skipper	1
Delaware skipper	37
fritillary spp.	12
fritillary spp. (large)	35
fritillary spp. (small)	11
gorgone checkerspot	1
gray copper	4
gray hairstreak	6
great spangled fritillary	32
hairstreak spp.	2
karnar blue	14
lady spp.	5
little wood-satyr	1
long dash	149
meadow fritillary	24
melissa blue	131
monarch	15
northern crescent	4
northern pearly-eye	3
old world swallowtail	3
orange sulphur	365
otloe skipper	8
painted lady	7
pearl crescent	24
red admiral	15
regal fritillary	432
sachem	2
silver-bordered fritillary	40
silver-spotted skipper	7
skipper spp.	90
skipper spp. (non-Dakota skipper)	4
small checkered-skipper	2
Strecker's Giant-Skipper	14
sulphur spp.	194

**Appendix B. Comprehensive list of butterfly species documented during occupancy surveys along the North Plains Connector Project in 2024 and 2025.**

<b>Species Name</b>	<b>Number of Observations</b>
swallowtail spp.	2
tawny-edged skipper	79
vanessa spp.	1
variegated fritillary	70
viceroi	2
western white	9
white admiral	9
white spp.	19

---

**I – 6**

**Botanical Survey Report for the Little Missouri National  
Grassland, North Dakota**



# **NORTH PLAINS CONNECTOR**

**A Grid United Project**

## **2022 – 2025 Botanical Survey Report for Little Missouri National Grassland, North Dakota**

**Prepared by:**



**January 2026**

**2022 – 2025 Botanical Survey Report for  
Little Missouri National Grassland, North Dakota**

**North Plains Connector Project**

**TABLE OF CONTENTS**

1.0	INTRODUCTION.....	1
2.0	SURVEY AREA.....	1
3.0	METHODS .....	4
3.1	Desktop Analysis.....	4
3.2	Field Survey Methodology.....	5
4.0	RESULTS.....	8
4.1	Sensitive Species Occurrences .....	8
4.2	Non-native Invasive and Noxious Weed Observations .....	11
4.3	Potentially Suitable Habitats .....	11
5.0	DISCUSSION.....	12
6.0	REFERENCES.....	13

**LIST OF TABLES**

Table 1.	U.S. Forest Service sensitive plant species, blooming periods, and documented habitat with potential to occur within Little Missouri National Grassland along the North Plains Connector Project. <sup>1</sup> .....	6
Table 2.	Habitat characteristics of potentially suitable habitats for U.S. Forest Service sensitive plant species within Little Missouri National Grassland along the North Plains Connector Project.....	7
Table 3.	Hooker’s Townsend-daisy occurrences observed during surveys along the North Plains Connector Project within Little Missouri National Grassland.....	10
Table 4.	Presence of potentially suitable habitat for U.S. Forest Service sensitive plant species within Little Missouri National Grassland along the North Plains Connector Project.....	11

**LIST OF FIGURES**

Figure 1. Overview of the proposed North Plains Connector Project location in North Dakota .....2

Figure 2. Botanical survey area within Little Missouri National Grassland along the North Plains Connector Project .....3

**LIST OF APPENDICES**

Appendix A. U.S. Forest Service Sensitive, Watchlist, and Noxious Plant Species

Appendix B. 2022 – 2025 Botanical Survey Results Summarized by Project Parcel

Appendix C. U.S. Forest Service Sensitive Species Occurrence Photos

## 1.0 INTRODUCTION

North Plains Connector LLC (North Plains) is developing the North Plains Connector Project, an approximately 422-mile, high-voltage direct current electric transmission line system and associated infrastructure designed to connect the east and west energy grids in the United States. The North Plains Connector Project is designed for bi-directional transport of electricity and is located in southeastern Montana and southwestern North Dakota (Figure 1). For the purposes of this report, "Project" refers solely to the portion located in North Dakota.

North Plains contracted Western EcoSystems Technology, Inc. (WEST), to conduct botanical surveys along the proposed Project on National Forest System (NFS) lands in Little Missouri National Grassland (LMNG). Botanists conducted presence/probable absence surveys for designated U.S. Forest Service (USFS) sensitive and watchlist plant species during multiple blooming periods from 2022 to 2025 to document occurrences along the proposed Project route in LMNG. Surveys also mapped potentially suitable habitats for USFS sensitive plants and recorded USFS-recognized non-native invasive and state-designated noxious weed presence. Sensitive plant occurrences identified in 2023 and 2024 were used to revise the proposed Project design and avoid or minimize potential construction impacts to USFS sensitive plant species. The botanical survey data will also be used to support a special-use authorization for construction, operation, and maintenance of the proposed Project on NFS-administered public lands.

This report was written specifically for the North Dakota Public Service Commission and only includes survey results pertinent to the Project route discussed in North Plain's *Consolidated Application For A Certificate Of Corridor Compatibility And Transmission Facility Route Permit*. Section 2.0 includes a description of the survey area along this Project route. The original survey reports provided to relevant state and federal resource agencies include additional technical survey details not included in this summary.

## 2.0 SURVEY AREA

The proposed Project route crosses approximately 69 miles in Golden Valley and Slope counties in North Dakota, including 10.2 miles within LMNG. The botanical survey area on NFS lands included a 300-foot-wide transmission line survey corridor, 100-foot-wide access road survey corridors, pulling and tensioning sites, and additional potential construction areas, as needed (Figure 2). The survey area associated with proposed Project route is shown on Figure 2.

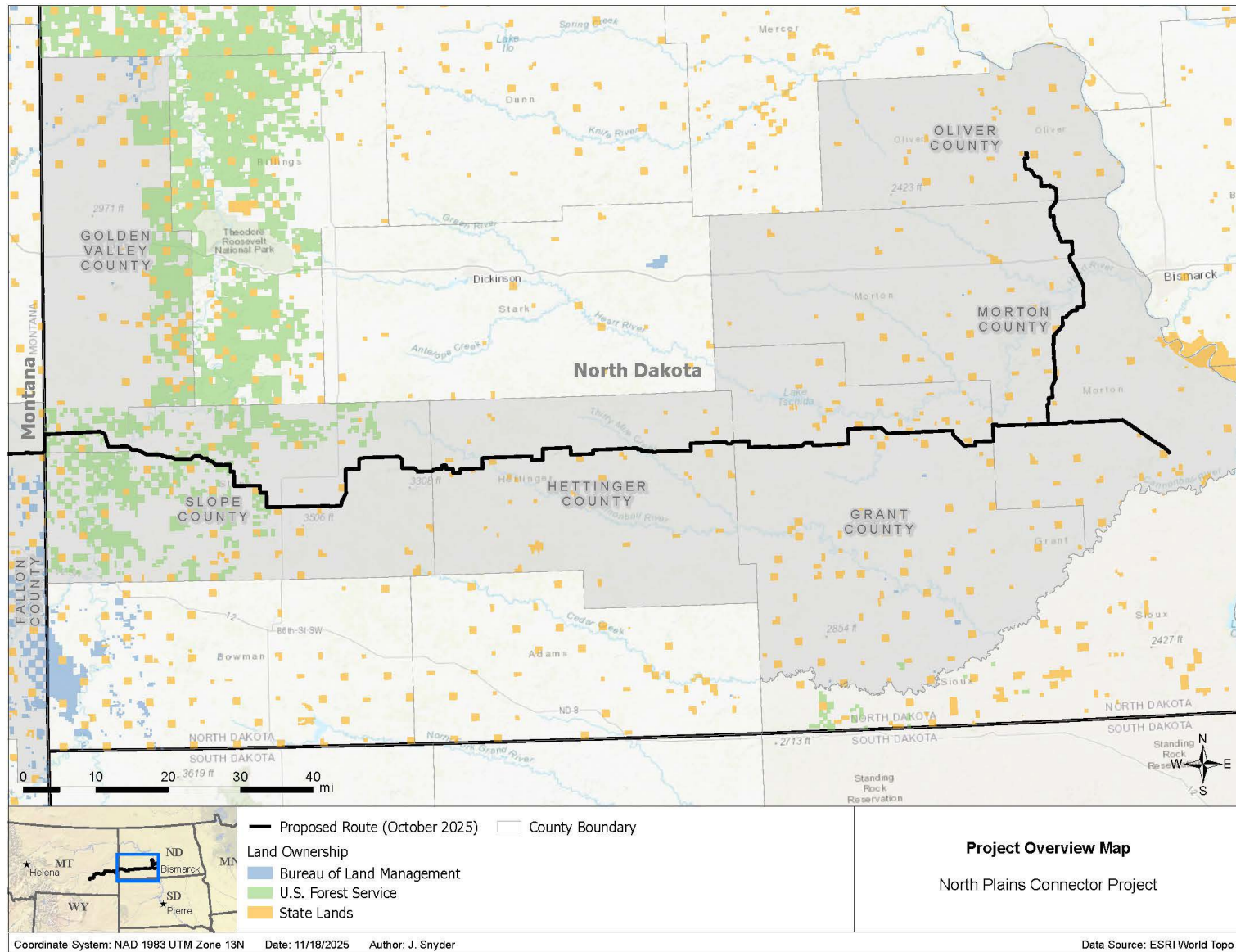
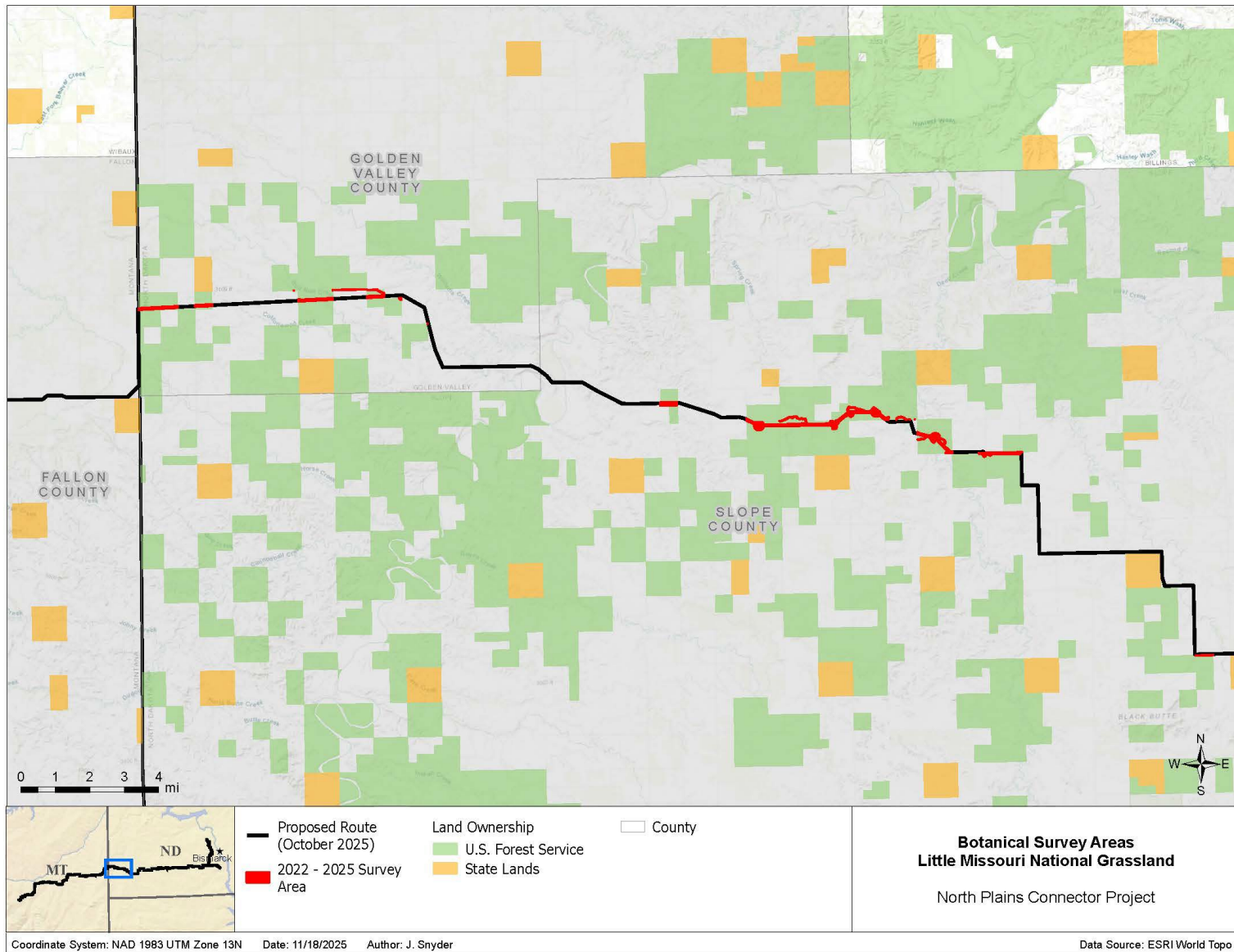


Figure 1. Overview of the proposed North Plains Connector Project location in North Dakota.



**Figure 2. Botanical survey area within Little Missouri National Grassland along the North Plains Connector Project.**

The survey area in LMNG falls within two Level IV ecoregions, Missouri Plateau and Little Missouri Badlands (U.S. Environmental Protection Agency, 2012). The Missouri Plateau ecoregion encompasses the majority of southwestern North Dakota west of the Missouri River. This region is generally characterized by wide open plains of shortgrass prairie and complex stream drainage patterns; grazing and hay production are the primary land uses, though sporadic row-crop agriculture is also present. The Missouri Badlands ecoregion bisects the Missouri Plateau ecoregion along the Little Missouri River and was formed by the Little Missouri River, which created caverns and steep hillslopes prone to flashy and ephemeral stream flows. Vegetative communities in the region are dominated by native grassland with juniper (*Juniperus* spp.), cottonwood (*Populus* spp.), and green ash (*Fraxinus pennsylvanica*) present along steep slopes and in riparian areas. Much of the ecoregion was originally dominated by native grasslands, which are now fragmented, but persist in rangeland patches. Both ecoregions are semiarid and contain rolling plains, occasional buttes, and badlands.

### 3.0 METHODS

The botanical survey methodology was originally developed in accordance with the *Biological Survey and Reporting Guidelines: Dakota Prairie Grasslands* (USFS, 2021) and *Biological Survey and Report Guidelines: Little Missouri National Grasslands* (USFS, 2020) and was updated to incorporate the revised Regional Forester’s Sensitive Species (RFSS) plant list prior to field surveys (USFS, 2023a; 2024; 2025). Based on USFS guidance, 13 USFS-designated sensitive species were targeted for presence/probable absence surveys within the survey area in 2022, 2024, and 2025, and 14 species were targeted in 2023 due to a change in the RFSS sensitive species list (USFS, 2023b). Potentially suitable habitats associated with the USFS sensitive species were also mapped within the survey area. An additional 24 USFS watchlist species were included in the presence/probable absence surveys (USFS, 2021); however, the habitat mapping effort did not include these species. Noxious weeds, including those recognized by North Dakota Department of Agriculture (2025) and a USFS-specific list of non-native invasive plants, were documented during Project botanical and non-botanical surveys. A complete list of the USFS sensitive and watchlist plant species can be found in Appendix A1; a table of USFS-listed non-native invasive and state-listed noxious weeds is included in Appendix A2.

The Project’s 2022 *Biological Survey Plan* was initially submitted to USFS on March 7, 2022, and approved on April 4, 2022. Revised survey plans were submitted annually, including updates on June 15, 2023, to incorporate the RFSS list updates and June 5, 2024, to incorporate other unrelated agency recommendations. The current 2025 *Ground Survey Plan* was submitted on April 18, 2025.

#### 3.1 Desktop Analysis

Prior to each year of field surveys, a desktop analysis of potentially suitable habitats was completed by visually assessing areas with similar vegetation, land use/land cover (including unbroken grasslands), aquatic features, and/or topographical characteristics against the habitat preferences of the USFS sensitive species published in the Montana Field Guide and LMNG

survey guidance (Montana Natural Heritage Program, 2025; USFS, 2025). Prior to surveys each year, WEST biologists also reviewed current USFS occurrence data for known sensitive and watchlist plant locations near the survey areas. Areas of potential habitat were noted for reference and follow-up by surveyors in the field.

### 3.2 Field Survey Methodology

Based on USFS recommendations, botanists planned to visit each USFS Project parcel within the survey area at least twice during the survey period: once to conduct presence/probable absence searches during the optimal blooming period for early spring (*Townsendia* spp.) plants (April 15 to May 14), and at least once within the mid-to-late summer blooming period for other USFS sensitive and watchlist species (May 15 to September 15). In areas where the Project route has been modified, the survey visits may have been conducted across two or more survey years. Blooming periods for the USFS sensitive species are provided in Table 1 below.

Botanical surveys for USFS sensitive and watchlist plant species were conducted by experienced biologists with extensive botany and field survey credentials. Surveyors walked meandering paths across the survey area to identify potentially suitable habitat and to conduct presence/probable absence surveys for the target RFSS sensitive and watchlist species. As previously mentioned, though the 24 watchlist plant species were included in the presence/probable absence searches, the suitable habitat mapping targeted only the 13 or 14 plants (i.e., 14 in 2023, due to the pending RFSS list change) designated as USFS sensitive species. Surveyors mapped potentially suitable habitats for USFS sensitive species by recording general soil/substrate, topographical, and plant community observations within the survey area. Given the overlapping habitat preferences of many of the sensitive species, potentially suitable habitats were combined into five habitat groups. A detailed description of expected habitat characteristics for each species can be found in Table 2.

If a target species was observed in the field, biologists documented the site characteristics and utilized a submeter-capable Global Positioning System (GPS) unit (e.g., Juniper Geode) to map the population location. Documentation included occurrence and habitat photographs, and attributes such as species, estimated stem count, and population status (e.g., blooming, fruiting, senescent). Small occurrences (less than seven feet in diameter) were captured as a single GPS point; for larger populations, the extent of the occurrence was delineated within the survey area and an occurrence polygon was generated. The data collected were also used to complete a USFS Plant Survey Field Form and Sensitive Plant Field Forms, which were provided by USFS annually. The USFS was notified within seven days of each potential target species observation.

**Table 1. U.S. Forest Service sensitive plant species, blooming periods, and documented habitat with potential to occur within Little Missouri National Grassland along the North Plains Connector Project.<sup>1</sup>**

Scientific Name	Common Name	Blooming Period	Documented Habitat on Little Missouri National Grassland
<i>Chenopodium subglabrum</i>	Smooth goosefoot	June - July	Sandbars, terraces, and dune complexes along rivers and creeks. Exposed sandy substrates in uplands, blowouts, outcrops, and colluvium.
<i>Collinsia parviflora</i>	Blue lips	April - July	Sparsely vegetated soils of forest openings, including green ash/elm draws, Rocky Mountain juniper, mesic shrub communities, grasslands, meadows, and occasional xeric shrub communities.
<i>Cryptantha torreyana</i>	Torrey's cryptantha	April - July	Sparsely vegetated soils, talus, sagebrush steppe, or partial shade near base of trees and less commonly, scoria ridgelines. Also reported on dry plains, rock outcrops, escarpments, and pine slopes.
<i>Equisetum variegatum</i> <sup>3</sup>	Variiegated scouring rush	Late-summer	Exposed, wet, gravelly, often calcareous soils, wet meadows, alluvial thickets, ditches, seeps, streams, and lakeshores.
<i>Eriogonum cernuum</i>	Nodding buckwheat	April - October	Sandy to gravelly or clayey flats and slopes, mixed grassland, saltbush, sagebrush, and mountain mahogany communities, oak, pinyon-juniper, and conifer woodlands. Exposed sand substrates with low plant cover in grasslands, hillsides, sandstone outcrops.
<i>Eriogonum visherii</i>	Dakota buckwheat	April - October	Relatively exposed clay/silt substrates with low plant cover such as outwash zone around eroding buttes, saddles, steep convex slopes, erosional breaks on prairie slopes. Occasional populations among dense saltgrass communities.
<i>Leucocrinum montanum</i>	Sand lily	April - June	Generally, shortgrass communities with fine textured substrates but also found in crested wheatgrass communities. Reported from open coniferous woodlands and hillsides, sagebrush scrub, and sandy flats, but common name seems to be a misnomer.
<i>Mentzelia pumila</i>	Dwarf mentzelia	June - July	Scoria exposures and colluvium with low plant cover. Also reported on slopes and sandy plains; occasionally on hard clays and rocky soils.
<i>Phlox alyssifolia</i>	Alyssum-leaved phlox	May - June	Sandy or gravelly soil on and around Bullion Butte. Also reported on clay banks and limestone ridges of open prairie.
<i>Pinus flexilis</i>	Limber pine	NA	Semi-arid exposed rocky ridges and foothills in the Limber Pines Research Natural Area.
<i>Populus x accuminata</i>	Lanceleaf cottonwood	NA	Mesic woody draws, often with springs/seeps, occasional near springs on open hillsides. Floodplains and stream banks.
<i>Sporobolus airoides</i> <sup>2</sup>	Alkali sacaton	June - August	Secondary succession on clay outwash where tolerant of saline conditions, also on dry to moist sandy or gravelly soil.
<i>Townsendia exscapa</i>	Easter daisy	April - May	Dry plains and hillsides, often with loamy or increased soil development and increased plant cover relative to <i>Townsendia hookeri</i> .
<i>Townsendia hookeri</i>	Hooker's Townsend daisy	April - May	Low to moderate plant cover on dry plains, hillsides, gravelly benches and weathered scoria, but often clay matrix subsoil.

<sup>1</sup> Adapted from *Biological Survey and Reporting Guidelines: Little Missouri National Grasslands* and *Biological Survey and Reporting Guidelines: Dakota Prairie Grasslands* (USFS, 2020, 2025).

<sup>2</sup> Species was removed from the sensitive species list, effective October 1, 2023 (USFS, 2023b).

<sup>3</sup> Species was added to the sensitive species list, effective October 1, 2023 (USFS, 2023b).

**Table 2. Habitat characteristics of potentially suitable habitats for U.S. Forest Service sensitive plant species within Little Missouri National Grassland along the North Plains Connector Project.**

Habitat Group <sup>1</sup>	Species	Soil/Substrate	Topography	Plant Community/Habitat
A	<b>Smooth goosefoot</b>	sandy	sparsely vegetated to exposed	grassland blowouts, floodplains/banks
	<b>Lanceleaf cottonwood</b>	sandy to clayey, shallow rocky	sparsely vegetated to exposed	mesic woodlands, floodplains/riparian, springs/seeps
B	<b>Nodding buckwheat</b>	sandy, gravelly	sparsely vegetated to exposed	grasslands, shrub-scrub, mountain mahogany/oak/pinyon-juniper/conifer woodlands
	<b>Dwarf mentzelia</b>	sandy to hard clay, scoria, colluvium	sparsely vegetated to exposed	grasslands
	<b>Dakota buckwheat</b>	silty to clayey, rocky	sparsely vegetated to exposed slopes and ridgelines	grasslands
	<b>Sandy lily</b>	silty to clayey, rocky	exposed slopes and flats	grassland/shortgrass, shrub-scrub, conifer woodlands
	<b>Easter daisy</b>	sandy to clayey, gravelly, scoria	sparsely vegetated to exposed slopes	grasslands, meadows, shrublands
C	<b>Hooker's Townsend daisy</b>	clayey, gravelly, scoria	sparsely vegetated to exposed slopes	dry grasslands, meadows, shrublands
	<b>Alyssum-leaved phlox</b>	sandy to clayey, gravelly, limestone	sparsely vegetated to exposed	dry grasslands, woodlands
	<b>Alkali sacaton</b>	sandy to clayey, gravelly, alkaline	outwash, flats, plateaus	grasslands
	<b>Blue lips</b>	rocky talus	sparsely vegetated flats and ridgelines	green ash/elm/juniper woodlands, mesic/xeric shrublands, grasslands, meadows
D	<b>Torrey's cryptantha</b>	rocky scoria, talus	sparsely vegetated ridgelines, partially shaded forests	shrublands, woodlands
	<b>Limber pine</b>	rocky	exposed ridgelines and foothills	montane woodlands
E	<b>Variegated scouring rush</b>	gravelly, calcareous, alluvial, wet	exposed depressions	wetlands, streams, seeps

<sup>1</sup> Habitat groups compiled utilizing the Montana Field Guide (Montana Natural Heritage Program, 2025) and field observations.

## 4.0 RESULTS

Presence/probable absence surveys for two early spring blooming *Townsendia* spp. took place from April 15 – May 14 in 2022, May 8 – 10 in 2023, April 23 – 24 in 2024, and on April 24 in 2025. Surveys for the mid-to-late summer blooming USFS plant species were completed between June 23 – September 2 in 2022, June 29 – September 12 in 2023, July 2 – 3 in 2024, and on June 30 in 2025.

Between 2022 and 2025, presence/probable absence plant surveys were conducted across a 543.6-acre survey area. As of 2025, at least one early spring survey and at least one mid- to late-summer survey have been completed) across the survey area within the LMNG, and USFS botanical surveys are complete.

Additional Project surveys were conducted within the botanical survey area between 2022 and 2025. While these surveys focused primarily on non-botanical Project surveys, relevant observations such as non-native invasive or noxious weed observations and incidental wildlife observations are included in this report.

One USFS sensitive species was observed during presence/probable absence surveys within the early spring survey window in 2023 and 2024. A summary of the occurrences is provided in Section 4.1. Non-native invasive and noxious weed observations and the results of potential habitat mapping for sensitive species are described in Sections 4.2 and 4.3, respectively. A table summarizing the survey results between 2022 and 2025 by Project parcel is included in Appendix B.

### 4.1 Sensitive Species Occurrences

Multiple observations of RFSS Hooker's Townsend-daisy (*Townsendia hookeri*) were recorded within LMNG in 2023 and 2024. Occurrences ranged from small single-plant sightings to populations containing up to 44 plants; collectively, Project surveys recorded 22 occurrences containing 160 plants with 336 flowering stems and 9 vegetative plants (Table 3).

Hooker's Townsend-daisy occurrences were recorded in 3 of the 12 LMNG parcels crossed by the survey area. Within these 3 parcels, 3 occurrences containing 11 flowering or budding plants with 44 stems were recorded in Project parcel ND-SL-0015.000 and 10 occurrences containing 9 vegetative plants and 132 flowering or budding plants with 255 stems were recorded within Project parcel ND-SL-0018.000. Nine additional occurrences containing 17 flowering or budding plants with 37 stems were recorded in Project parcel ND-SL-0023.320. Representative photographs of the species and associated habitat are provided in Appendix C.

The topography of each occurrence area was generally flat to gently sloping gravel with bare eroded soils. The plants occupied shoulder slopes that transitioned uphill into native grassland benches and downslope to steeper, more highly eroded slopes. The dominant plant species surrounding the populations included needleleaf sedge (*Carex duriuscula*), blue grama (*Bouteloua gracilis*), little bluestem (*Schizachyrium scoparium*), creeping juniper (*Juniperus*

*horizontalis*), and narrowleaf purple coneflower (*Echinacea angustifolia*). Non-native introduced grasses, including crested wheatgrass (*Agropyron cristatum*), smooth brome (*Bromus inermis*), and Kentucky bluegrass (*Poa pratensis*), were common throughout the surrounding survey area. Grazing activity was also observed within each occupied Project parcel.

No additional USFS sensitive or watchlist plant species were observed during presence/probable absence surveys on LMNG between 2022 and 2025.

**Table 3. Hooker’s Townsend-daisy occurrences observed during surveys along the North Plains Connector Project within Little Missouri National Grassland.**

Occurrence Name	Date Observed	Project Parcel	Population Size (Plants)	Flowering or Budding Stems	Vegetative Plants	Aspect	Slope Position
fsslb003	5/9/2023	ND-SL-0015.000	6	14	0	Northwest	Shoulder
fsslb005	5/9/2023	ND-SL-0015.000	3	27	0	South	Shoulder
fsslb007	5/9/2023	ND-SL-0015.000	2	3	0	South	Shoulder
fsslc003	4/23/2024	ND-SL-0023.320	1	1	0	South	Footslope
fsslc004	4/23/2024	ND-SL-0023.320	1	1	0	South	Footslope
fsslc005	4/23/2024	ND-SL-0023.320	3	4	0	South	Footslope
fsslc006	4/23/2024	ND-SL-0023.320	1	1	0	South	Footslope
fsslc007	4/23/2024	ND-SL-0023.320	3	7	0	South	Footslope
fsslc008	4/23/2024	ND-SL-0023.320	1	2	0	South	Footslope
fsslc009	4/23/2024	ND-SL-0023.320	3	6	0	South	Footslope
fsslc010	4/23/2024	ND-SL-0023.320	3	10	0	South	Footslope
fsslc011	4/23/2024	ND-SL-0023.320	1	5	0	South	Footslope
fsslc020	4/24/2024	ND-SL-0018.000	28	52	6	Southwest	Summit
fsslc021	4/24/2024	ND-SL-0018.000	3	8	0	South	Summit
fsslc022	4/24/2024	ND-SL-0018.000	3	6	0	South	Summit
fsslc023	4/24/2024	ND-SL-0018.000	1	1	0	South	Summit
fsslc024	4/24/2024	ND-SL-0018.000	13	32	0	South	Summit
fsslc025	4/24/2024	ND-SL-0018.000	16	43	0	Southeast	Summit
fsslc026	4/24/2024	ND-SL-0018.000	1	5	0	East	Shoulder
fsslc027	4/24/2024	ND-SL-0018.000	2	2	0	East	Shoulder
fsslc028	4/24/2024	ND-SL-0018.000	21	27	3	West	Footslope
fsslc029	4/24/2024	ND-SL-0018.000	44	79	0	Variable	Summit
<b>Total</b>			<b>160</b>	<b>336</b>	<b>9</b>		

## 4.2 Non-native Invasive and Noxious Weed Observations

USFS-recognized non-native invasive species or state-listed noxious weeds were observed throughout the botanical survey area. The most commonly recorded USFS non-native invasive species included introduced grasses of crested wheatgrass, smooth brome, and Kentucky bluegrass; however, the invasive annual grasses field brome (*Bromus arvensis*) and introduced grass intermediate wheatgrass (*Thinopyrum intermedium*) were also observed. Leafy spurge (*Euphorbia esula*) and houndstongue (*Cynoglossum officinale*) were also recorded (see Project parcels ND-SL-0015.000 and ND-SL-0018.000 in Appendix B). A summary of the state-listed noxious weeds and USFS non-native invasive species observed in each Project parcel can be found in Appendix B.

## 4.3 Potentially Suitable Habitats

Potentially suitable habitat was identified for Habitat Group A during surveys in 2022 and 2023 and Habitat Group B in 2022, 2023, and 2024 (Table 4). Habitat Groups C, D, and E were not observed during Project surveys. No new areas of potentially suitable habitat (Habitat Groups A–E) were observed in the field in 2025. A summary of the dominant habitat types and potentially suitable habitat by Project parcel can be found in Appendix B.

**Table 4. Presence of potentially suitable habitat for U.S. Forest Service sensitive plant species within Little Missouri National Grassland along the North Plains Connector Project.**

Scientific Name	Common Name	Project-Defined Habitat Group	Potential Suitable Habitat Identified during surveys?
<i>Chenopodium subglabrum</i>	Smooth goosefoot	A	Yes <sup>1,2</sup>
<i>Collinsia parviflora</i>	Blue lips	D	No
<i>Cryptantha torreyana</i>	Torrey's cryptantha	D	No
<i>Equisetum variegatum</i>	Variegated scouring rush	E	No
<i>Eriogonum cernuum</i>	Nodding buckwheat	B	Yes <sup>1,2,3</sup>
<i>Eriogonum visherii</i>	Dakota buckwheat	B	Yes <sup>1,2,3</sup>
<i>Leucocrinum montanum</i>	Sand lily	B	Yes <sup>1,2,3</sup>
<i>Mentzelia pumila</i>	Dwarf mentzelia	B	Yes <sup>1,2,3</sup>
<i>Phlox alyssifolia</i>	Alyssum-leaved phlox	B	Yes <sup>1,2,3</sup>
<i>Pinus flexilis</i>	Limber pine	D	No
<i>Populus x acuminata</i>	Lanceleaf cottonwood	A	Yes <sup>1,2</sup>
<i>Sporobolus airoides</i>	Alkali sacaton	C	No
<i>Townsendia exscapa</i>	Easter daisy	B	Yes <sup>1,2,3</sup>
<i>Townsendia hookeri</i>	Hooker's Townsend daisy	B	Yes <sup>1,2,3</sup>

<sup>1</sup> Suitable habitat identified in 2022.

<sup>2</sup> Suitable habitat identified in 2023.

<sup>3</sup> Suitable habitat identified in 2024.

## 5.0 DISCUSSION

Potentially suitable habitats for nine USFS RFSS plant species were mapped as part of Habitat Groups A and B within the LMNG survey area between 2022 and 2024. Presence/probable absence surveys for USFS-designated sensitive and watchlist plant species identified 22 occurrences of Hooker's Townsend-daisy within multiple areas mapped as Habitat Group B in 2023 and 2024. Project workspaces have been modified since these occurrences were identified to avoid the identified RFSS plants to the extent feasible and minimize potential impacts to occupied Habitat Group B polygons. No other sensitive or watchlist plants were identified during Project surveys between 2022 and 2025.

Introduced grasses were the most common non-native invasive or state-listed noxious weed species identified and were recorded throughout the survey area.

Coordination with USFS regarding Hooker's Townsend-daisy is ongoing.

## 6.0 REFERENCES

- Montana Fish, Wildlife, and Parks (MFWP). 2025. Montana Field Guides. Montana Natural Heritage Program and MFWP. Available online: <http://fieldguide.mt.gov>. Accessed August 2025.
- North Dakota Department of Agriculture (NDDA). 2025. Noxious Weeds. NDDA, Bismark, North Dakota. Available online: <https://www.ndda.nd.gov/divisions/plant-industries/noxious-weeds>. Accessed August 2025.
- U.S. Environmental Protection Agency (USEPA). 2012. Level III and Level IV Ecoregions of North Dakota. Ecoregions of the United States. USEPA Office of Research and Development National Health and Environmental Effects Research Laboratory, Corvallis, Oregon. May 2012. Available online: <https://www.epa.gov/eco-research/ecoregion-download-files-state-region-8#pane-32>. Accessed August 2025.
- U.S. Forest Service (USFS). 2020. Biological Survey and Reporting Guidelines: Little Missouri National Grasslands. McKenzie Ranger District and Medora Ranger District, Dakota Prairie Grasslands, USFS.
- U.S. Forest Service (USFS). 2021. Biological Survey and Reporting Guidelines: Dakota Prairie Grasslands. USFS. Updated June 2021.
- U.S. Forest Service (USFS). 2023a. Biological Survey and Reporting Guidelines, Dakota Prairie Grasslands. U.S. Forest Service. Updated May 2023.
- U.S. Forest Service (USFS). 2023b. 2023 Dakota Prairie Grassland Supervisor Memo and Revised 2023 Regional Forester's Sensitive Species List. Letter dated May 18, 2023.
- U.S. Forest Service (USFS). 2024. Biological Survey and Reporting Guidelines, Dakota Prairie Grasslands. USFS. Updated May 2024.
- U.S. Forest Service (USFS). 2025. Biological Survey and Reporting Guidelines: Dakota Prairie Grasslands. Updated March 2025. Available online: [https://www.fs.usda.gov/sites/nfs/files/r01/dpg/publication/2025%20DPG%20Biological%20Survey%20and%20Reporting%20Guidelines\\_1.pdf](https://www.fs.usda.gov/sites/nfs/files/r01/dpg/publication/2025%20DPG%20Biological%20Survey%20and%20Reporting%20Guidelines_1.pdf).

**Appendix A. U.S. Forest Service Sensitive, Watchlist, and Noxious Plant Species**

**Appendix A1. U.S. Forest Service Little Missouri National Grassland sensitive and watchlist plant species.**

Scientific Name	Common Name	NRCS Code	Global Rank	State Rank	USFS Status
<i>Chenopodium subglabrum</i>	smooth goosefoot	CHSU2	G2G4	S1	Sensitive
<i>Collinsia parviflora</i>	blue lips	COPA3	G5	S2	Sensitive
<i>Cryptantha torreyana</i>	Torrey's cryptantha	CRTO4	G5	S1	Sensitive
<i>Equisetum variegatum</i>	Variiegated scouring rush <sup>1</sup>	EQVA	G5	S2	Sensitive
<i>Eriogonum cernuum</i>	nodding buckwheat	ERCE2	G5	S1	Sensitive
<i>Eriogonum visherii</i>	Dakota buckwheat	ERV114	G3	S2S3	Sensitive
<i>Leucocrinum montanum</i>	sand lily	LEMO4	G5	S2	Sensitive
<i>Mentzelia pumila</i>	dwarf mentzelia	MEPU3	G4	S1	Sensitive
<i>Phlox alyssifolia</i>	alyssum-leaved phlox	PHAL3	G5	S1S2	Sensitive
<i>Pinus flexilis</i>	limber pine	PIFL2	G5	S1	Sensitive
<i>Populus x acuminata</i>	lanceleaf cottonwood	POAC5	HYB	S2	Sensitive
<i>Sporobolus airoides</i>	alkali sacaton <sup>2</sup>	SPAI	G5	S2	Sensitive
<i>Townsendia exscapa</i>	Easter daisy	TOEX2	G5	SNR	Sensitive
<i>Townsendia hookeri</i>	Hooker's Townsendia	TOHO	G5	S1	Sensitive
<i>Agrostis exarata</i>	spike bentgrass	AGEX	G5	S1	Watchlist
<i>Astragalus australis</i> ( <i>Astragalus aboriginum</i> )	Indian milkvetch	ASAU4	G5	S2S3	Watchlist
<i>Astragalus drummondii</i>	Drummond's milkvetch	ASDR3	G5	S1	Watchlist
<i>Astragalus vexilliflexus</i>	bentflower milkvetch	ASVE5	G4	S3	Watchlist
<i>Bromus carinatus</i>	mountain brome	BRCA5	G5	S1	Watchlist
<i>Carex scirpoidea</i> ( <i>Carex scirpiformi</i> )	bulrush sedge	CASCS8	G5	S1S2	Watchlist
<i>Carex siccata</i> ( <i>Carex foenea</i> )	dry spike sedge	CASI12	G5	SNR	Watchlist
<i>Clematis columbiana</i> var. <i>tenuiloba</i> ( <i>Clematis tenuiloba</i> )	rock clematis	CLCOT	G5?T4?	S1	Watchlist
<i>Epilobium pygmaeum</i> ( <i>Boisduvalia glabella</i> )	smooth spike-primrose	EPPY4	G5	S1S2	Watchlist
<i>Erigeron divergens</i>	spreading fleabane	ERDI4	G5	S1	Watchlist
<i>Erigeron radicans</i>	taproot fleabane	ERRA2	G3G4	S1	Watchlist
<i>Fritillaria pudica</i>	yellow fritillary	FRPU2	G5	SH	Watchlist
<i>Myosurus apetalus</i> var. <i>montanus</i>	bristly mousetail	MYAPM	G5T3T5	S1	Watchlist
<i>Oenothera laciniata</i>	cutleaf evening primrose	OELA	G5	S3	Watchlist
<i>Orobanche ludoviciana</i> ssp. <i>multiflora</i>	manyflowered broomrape	ORLUM	G5	S1	Watchlist
<i>Oxytropis sericea</i>	white locoweed	OXSE	G5	S1	Watchlist

**Appendix A1. U.S. Forest Service Little Missouri National Grassland sensitive and watchlist plant species.**

Scientific Name	Common Name	NRCS Code	Global Rank	State Rank	USFS Status
<i>Phemeranthus parviflorus</i> ( <i>Talinum parviflorum</i> )	prairie fameflower	PHPA29	G5	S2	Watchlist
<i>Potamogeton diversifolius</i>	waterthread pondweed	PODI	G5	S2S3	Watchlist
<i>Potentilla diversifolia</i>	varileaf potentilla	PODI2	G5	S1	Watchlist
<i>Populus x jackii</i>	balm-of-Gilead	POJA2	GNA	SNR	Watchlist
<i>Ranunculus cardiophyllus</i>	heartleaf buttercup	RACA4	G4	S1	Watchlist
<i>Rorippa calycina</i>	persistent sepal yellowcress	ROCA	G3	SH	Watchlist
<i>Sibbaldiopsis tridentata</i> ( <i>Potentilla tridentata</i> )	shrubby fivefingers	SITR3	G5	S1	Watchlist
<i>Smilax ecirrhata</i>	upright carrionflower	SMEC	G?	S1S2	Watchlist

Source: U.S. Forest Service (USFS), 2025.

NRCS = Natural Resources Conservation Service.

G1/S1 = Critically Imperiled, G2/S2 = Imperiled, G3/S3 = Vulnerable, G4/S4 = Apparently Secure, G5/S5 = Secure.

GNA/SNR = Unranked, SH = Possibly Extirpated.

<sup>1</sup> New addition to the USFS Regionally Sensitive Species plant list, effective October 1, 2023.

<sup>2</sup> Species removed from the USFS Regional Forester's Sensitive Species plant list, effective October 1, 2023.

**Appendix A2. U.S. Forest Service non-native invasive and North Dakota Department of Agriculture noxious weed lists.**

Scientific Name	Common Name	North Dakota State List	USFS List
<i>Arctium minus</i>	common burdock	Golden Valley <sup>1</sup>	
<i>Agropyron cristatum</i>	crested wheatgrass		X
<i>Amaranthus palmeri</i>	Palmer amaranth	X	
<i>Artemisia absinthium</i>	absinth wormwood	X	
<i>Astragalus cicer</i>	Cicer milkvetch		X
<i>Bromus arvensis</i>	field brome (Japanese)		X
<i>Bromus inermis</i>	smooth brome		X
<i>Bromus tectorum</i>	downy brome / cheatgrass		X
<i>Cardaria draba</i>	hoary cress	Golden Valley <sup>1</sup>	
<i>Carduus acanthoides</i>	spiny plumeless thistle		X
<i>Carduus nutans</i>	musk thistle	X	
<i>Centaurea diffusa</i>	diffuse knapweed	X	
<i>Centaurea repens</i> ( <i>Acroptilon repens</i> )	Russian knapweed	X	
<i>Centaurea solstitialis</i>	yellow star-thistle		X
<i>Centaurea stoebe</i> ssp. <i>micranthos</i> (formerly <i>C. maculosa</i> )	spotted knapweed	X	
<i>Cirsium arvense</i>	Canada thistle	X	
<i>Cynoglossum officinale</i>	houndstongue	X	
<i>Elymus repens</i>	quackgrass		X
<i>Euphorbia esula</i>	leafy spurge	X	
<i>Hyoscyamus niger</i>	black henbane	Slope and Golden Valley <sup>1</sup>	
<i>Linaria genistifolia</i> ssp. <i>dalmatica</i>	dalmation toadflax	X	
<i>Linaria vulgaris</i>	yellow toadflax	X	
<i>Lythrum salicaria</i> (also <i>Lythrum virgatum</i> and all cultivars)	purple loosestrife	X	
<i>Melilotus officinalis</i>	yellow or white sweetclover		X
<i>Poa compressa</i>	Canada bluegrass		X
<i>Poa pratensis</i>	Kentucky bluegrass		X
<i>Sonchus arvensis</i>	sowthistle		X
<i>Tamarisk</i> spp.	saltcedar	X	
<i>Thinopyrum intermedium</i>	intermediate wheatgrass		X
<i>Thinopyrum ponticum</i>	tall wheatgrass		X
<i>Verbascum thapsus</i>	common mullein	Golden Valley <sup>1</sup>	

Sources: U.S. Forest Service (USFS) 2025 Plant Field Datasheet; North Dakota Department of Agriculture, 2025.

<sup>1</sup> Additional noxious weeds listed within the specified counties.

**Appendix B. 2022 – 2025 Botanical Survey Results Summarized by Project Parcel**

**Appendix B. 2022 – 2025 botanical survey results summarized by Project parcel, including dominant habitats, USFS sensitive species, and non-native invasive or noxious weed occurrences identified within Little Missouri National Grassland along the North Plains Connector Project.**

Survey Area/ Project Parcel Number	Dominant Habitat <sup>1</sup>	Secondary Habitat <sup>1</sup>	Suitable Habitat Group	Target Species Observed <sup>2</sup>	USFS Non-native Invasive Species Observed <sup>2</sup>					State Noxious Weeds Observed <sup>2</sup>	
					AGRCRI	BROARV	BROINE	POACOM	POAPRA	THIINT	CYNOFF
ND-GO-0001.000	NNG	G	B	No	✓		✓		✓		
ND-GO-0002.000	G	NNG	None	No	✓		✓	✓	✓		
ND-GO-0004.000	NNG	G	B	No	✓		✓		✓	✓	
ND-GO-0008.000	NNG	DF	A, B	No	✓	✓	✓		✓		
ND-GO-0009.200	NNG	G	None	No	✓		✓		✓		
ND-GO-0010.000	NNG	G	B	No	✓		✓				
ND-SL-0008.000	NNG	G	B	No	✓	✓					
ND-SL-0015.000	NNG	G	A, B	TOWHOO	✓	✓	✓		✓	✓	✓
ND-SL-0018.000	G	NNG	B	TOWHOO	✓	✓					✓
ND-SL-0023.320	G	NNG	B	TOWHOO	✓				✓		
ND-SL-FEDL-002	NNG	G	None	No	✓		✓		✓		

<sup>1</sup> NNG = Non-native grassland, G = Native grassland, DF = Deciduous forest

<sup>2</sup> AGRCRI = *Agropyron cristatum* (crested wheatgrass)  
 BROARV = *Bromus arvensis* (field brome)  
 BROINE = *Bromus inermis* (smooth brome)  
 CYNOFF = *Cynoglossum officinale* (houndstongue)  
 EUPESU = *Euphorbia esula* (leafy spurge)  
 POACOM = *Poa compressa* (Canada bluegrass)  
 POAPRA = *Poa pratensis* (Kentucky bluegrass)  
 THIINT = *Thinopyrum intermedium* (intermediate wheatgrass)  
 TOWHOO = *Townsendia hookeri* (Hooker's Townsend daisy)

**Appendix C. U.S. Forest Service Sensitive Species Occurrence Photos**



**Appendix C1. Occupied Habitat B recorded in conjunction with recorded Hooker's Townsend-daisy site fsslc028 within tract ND-SL-0018.000 on April 24, 2024.**



**Appendix C2. Representative observation of Hooker's Townsend-daisy on April 23, 2024.**

**I – 7**

**Raptor Nest Survey Report**



# **NORTH PLAINS CONNECTOR**

**A Grid United Project**

## **2022 – 2023 Raptor Nest Survey Report North Dakota**

**Prepared by:**



**January 2026**

**2022 – 2023 Raptor Nest Survey Report  
North Dakota**

**North Plains Connector Project**

**TABLE OF CONTENTS**

1.0	INTRODUCTION.....	1
2.0	SURVEY AREA.....	1
3.0	METHODS .....	2
3.1	Aerial Survey Methodology.....	5
3.2	Data Collection Methods and Terminology .....	6
4.0	RESULTS.....	7
4.1	Raptor Nests .....	8
4.1.1	2022 Raptor Nest Surveys.....	8
4.1.2	2023 Raptor Nest Surveys.....	9
4.2	Wading Bird Rookeries/Heronries.....	10
4.3	Water Bird Concentrations.....	10
5.0	DISCUSSION.....	17
6.0	REFERENCES.....	18

**LIST OF TABLES**

Table 1.	Nest status, species, and location of nests documented during the raptor nest surveys conducted within the May 2022 survey area in North Dakota.....	11
Table 2.	Nest status, species, and location of nests documented within 2 miles of the proposed Project route during raptor nest surveys in North Dakota. ....	12
Table 3.	Nest status, species, and location of nests documented on federal lands during the raptor nest surveys within the May 2022 survey area in North Dakota. ....	13
Table 4.	Nest status, species, and location of nests documented on federal lands within 2 miles of the proposed Project route during raptor nest surveys in North Dakota. ....	14

**LIST OF FIGURES**

Figure 1. Overview of the proposed North Plains Connector Project location in North Dakota ..... 3

Figure 2. 2022 and 2023 raptor nest survey areas along the North Plains Connector Project in North Dakota..... 4

Figure 3a. Eagle nests, potential eagle nests, and sensitive species nests documented during 2022 aerial surveys along the North Plains Connector Project in North Dakota ..... 15

Figure 3b. Eagle nests, potential eagle nests, and sensitive species nests documented during 2023 aerial surveys along the North Plains Connector Project in North Dakota ..... 16

**LIST OF APPENDICES**

Appendix A. Representative Nest Photos

Appendix B. Raptor Nests and Heronries Recorded during Aerial Surveys in North Dakota

Appendix C. Maps of Sensitive Non-eagle-sized Raptor Nests and Heronries Recorded during Aerial Surveys

## 1.0 INTRODUCTION

North Plains Connector LLC (North Plains) is developing the North Plains Connector Project, an approximately 422-mile, high-voltage direct current electric transmission line system and associated infrastructure designed to connect the east and west energy grids in the United States. The North Plains Connector Project is designed for bi-directional transport of electricity and is located in southeastern Montana and southwestern North Dakota (Figure 1). For the purposes of this report, "Project" refers solely to the portion located in North Dakota.

North Plains contracted Western EcoSystems Technology, Inc. (WEST), to conduct aerial surveys for raptor nests and wading bird rookeries/heronries for the proposed Project in 2022 and 2023. Water bird concentration areas were also documented along the proposed Project route in 2022. In both years, surveys were conducted within a 1-mile buffer on either side of the proposed Project route at the time of survey and expanded to a 2-mile buffer in areas with high potential golden eagle (*Aquila chrysaetos*) nest density. The 2023 survey area also incorporated alternative routes and changes to the proposed Project route implemented after the 2022 raptor nest surveys were completed.

Surveyors documented raptor stick nests, with a particular focus on sensitive species<sup>1</sup>, such as bald eagle (*Haliaeetus leucocephalus*), golden eagle, ferruginous hawk (*Buteo regalis*), and prairie falcon (*Falco mexicanus*). The data will be used for Project routing, construction planning, and compliance with the federal Bald and Golden Eagle Protection Act of 1940 (BGEPA) and Migratory Bird Treaty Act of 1918.

This report was written specifically for the North Dakota Public Service Commission and only includes survey results pertinent to the Project route discussed in North Plain's *Consolidated Application For A Certificate Of Corridor Compatibility And Transmission Facility Route Permit*. Section 2.0 includes a description of the survey area along this Project route. The original survey reports provided to relevant state and federal resource agencies include additional technical survey details not included in this summary.

## 2.0 SURVEY AREA

The proposed Project route crosses approximately 242 miles in Golden Valley, Slope, Hettinger, Grant, Morton, and Oliver counties in North Dakota (Figure 1). The Project is located within the Northwestern Great Plains Level III Ecoregion, which encompasses portions of eastern Montana, western North Dakota and South Dakota, northeastern Wyoming, and northern Nebraska (U.S. Environmental Protection Agency [USEPA], 2013). This ecoregion is semiarid and characterized by rolling plains, sporadic buttes, and badlands. Much of the region was originally dominated by native grasslands, which are now fragmented but persist in rangeland patches. Agricultural uses,

---

<sup>1</sup> Sensitive raptor species within the Project vicinity include eagles federally protected by the Bald and Golden Eagle Protection Act of 1940, sensitive species identified by the U.S. Forest Service in the Little Missouri National Grasslands, and U.S. Fish and Wildlife Service Birds of Conservation Concern within Bird Conservation Region 17.

including rangeland and crop production, occur throughout, but can be limited due to inconsistent precipitation and access to irrigation (USEPA, 2013).

In both 2022 and 2023, the survey areas encompassed a 1-mile buffer on either side of the proposed Project route at the time of each survey, including several short alternative segments. In areas where U.S. Fish and Wildlife Service (USFWS) modeling (USFWS, 2019) indicated contiguous areas of moderate-high to very high predicted golden eagle nest site density, the survey buffer was increased to 2 miles (Figure 2). In addition, bald and golden eagle nests that were documented in 2022 or provided by the agencies were surveyed if they were located within 2 miles of the Project route.

The May 2022 and April/May 2023 survey areas do not fully align with the proposed Project route due to post-survey reroutes. All raptor nests identified within the May 2022 and April/May 2023 survey areas have been included in this report to provide a complete overview of surveyed nests near the Project; as such, some of the included nests are located over 2 miles from the proposed Project route.

### 3.0 METHODS

The raptor survey methodology was developed in accordance with the USFWS *Eagle Conservation Plan Guidance* (ECPG; USFWS, 2013), the *Interim Golden Eagle Technical Guidance* (Pagel et al., 2010), and the 2020 *Eagle Surveys* memo (USFWS, 2020). Survey methods also followed guidance provided by the USFWS, U.S. Forest Service (USFS), and North Dakota Game and Fish Department (NDGFD) during agency meetings in early 2022.

The Project's *Biological Survey Plan*, which included raptor nest surveys, was initially submitted to the agencies on March 7, 2022. A revised survey plan incorporating agency feedback was submitted on May 20, 2022 revisions were confirmed with the agencies prior to survey.

The Project's *2023 Aerial Survey Plan* was submitted to the USFWS and NDGFD on March 27, 2023. The raptor nest survey methodologies were similar to the approved Project survey methods from 2022; however, surveys in 2023 focused on documenting eagle nests, other regionally sensitive raptor species nests, and wading bird rookeries/heronries rather than all raptor nests. Surveys in 2023 also avoided areas within 500 feet of residences and other structures (e.g., barns) in order to minimize potential impacts to landowners and cattle.

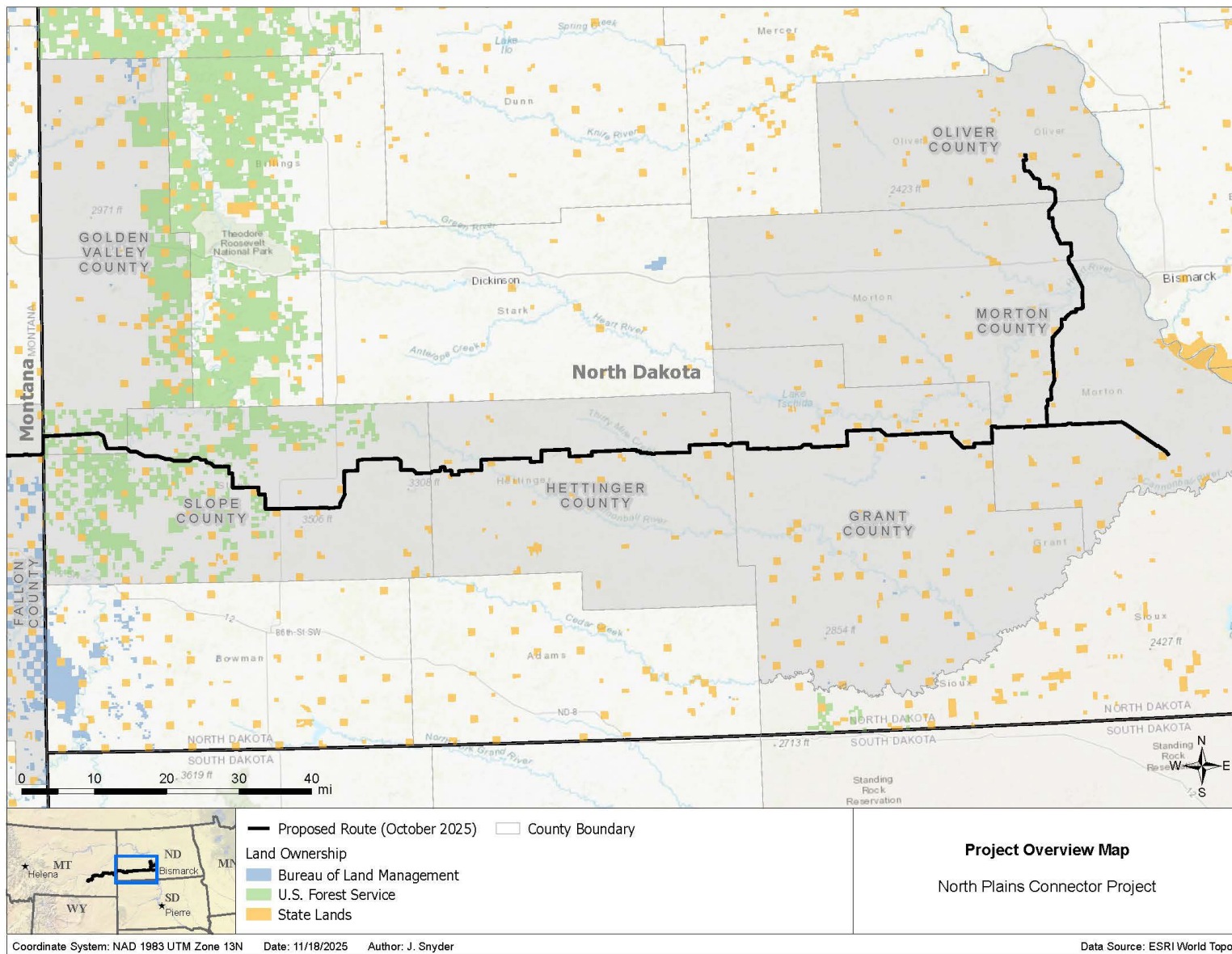
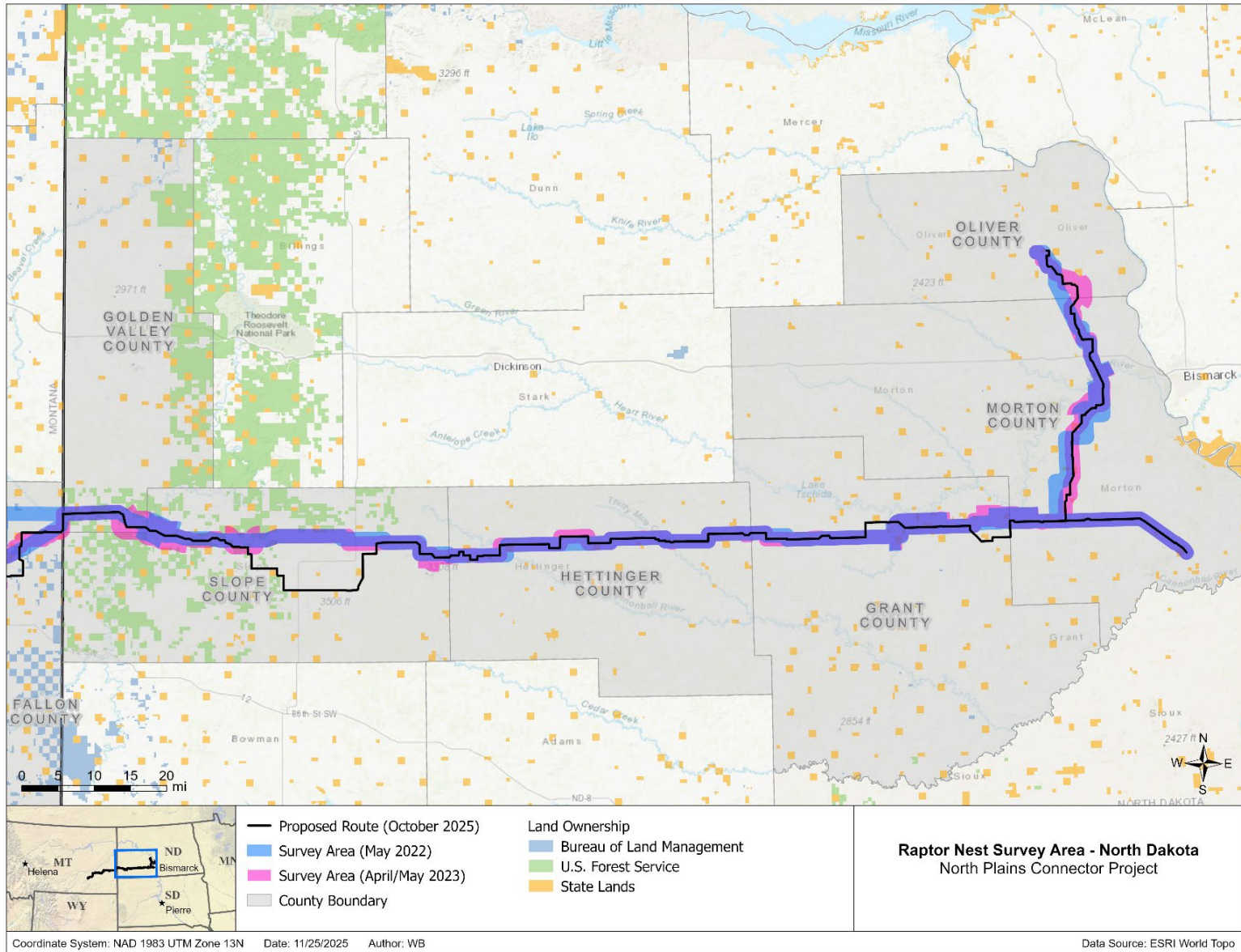


Figure 1. Overview of the proposed North Plains Connector Project location in North Dakota.

**North Plains Connector Project  
2022 – 2023 Raptor Nest Survey Report**



**Figure 2. 2022 and 2023 raptor nest survey areas along the North Plains Connector Project in North Dakota.**

### 3.1 Aerial Survey Methodology

Aerial surveys were conducted to locate eagle and other sensitive raptor nests and wading bird<sup>2</sup> rookeries/heronries<sup>3</sup> and water bird concentrations<sup>4</sup> along the Project route. The use of aerial methods allowed for a thorough visual inspection of potentially suitable habitats throughout the survey area. Pre-flight planning included a desktop review of aerial imagery and land cover data to identify potential raptor nesting and wading bird rookery/heronry habitats; nest datasets provided by the NDGFD were reviewed and incorporated into the survey design in both 2022 and 2023. In 2023, nests identified during Project surveys in 2022 were also flagged for revisit. Additionally, USFWS golden eagle nest density data models (2019) were used to expand the survey area to encompass areas containing moderate-high to very high predicted golden eagle nest site density within 2 miles of the proposed Project route at the time of survey in 2022 and 2023. Potential nesting habitats for raptors included riparian corridors, woodlands and forested areas, large trees, cliffs or rocky outcrops, and anthropogenic structures such as power poles. Potential habitat for wading bird rookeries/heronries included riparian corridors and areas with trees near waterbodies. Potential habitat for water bird concentrations was comprised of waterbodies, including stock ponds.

Two WEST biologists conducted dual observer (i.e., a primary and a secondary observer) aerial surveys from a Robinson R-44 Raven II helicopter that provided good visibility (Pagel et al., 2010; USFWS, 2013). Surveys were conducted between April 15 and June 15, consistent with agency survey recommendations. This timing was intended to capture peak eagle nesting activity while avoiding disturbance during sensitive breeding and nesting periods. This timeframe also allowed assessment of rookery/heronry activity (April 15 to August 31, per agency guidance).

The biologists searched for nests and rookeries/heronries throughout the survey area flying meandering transects to cover suitable nesting habitat; water bird concentrations were also documented in 2022. The helicopter was flown at approximately 100–300 feet above ground level at an air speed of approximately 50 miles per hour, depending on the terrain and wind conditions or as appropriate for the terrain and nesting habitat. Survey effort was focused on providing thorough coverage of potential habitats; survey effort was reduced in unsuitable habitats (e.g., agricultural fields). Flight paths and elevations were adjusted to avoid a 500-foot buffer (hereafter, avoidance area) around known structures (e.g., barns or residences) and known sensitive livestock areas (e.g., calving areas). Transmission lines and towers were also avoided, as these areas increased the safety risk to the surveyor and pilot.

When a nest was located, the pilot reduced speed and adjusted the flight track such that at least one of the biologists could clearly see the nest for a thorough visual inspection. The pilot approached the nest slowly and maintained the greatest possible distance at which the nest status

---

<sup>2</sup> Wading birds were surveyed per agency suggestion and include herons and cormorants.

<sup>3</sup> For the purposes of these surveys, rookeries were defined as colonial nests with multiple species present and heronries were defined as colonial nests with a single species of heron present.

<sup>4</sup> Water bird concentrations were defined as large groups of migrating waterfowl and/or shorebirds; water bird concentrations were only documented in 2022.

could be accurately documented. Heronry/rookery and water bird concentration areas were observed and recorded in a similar manner. Survey flight paths were recorded using a GPS-enabled tablet running Locus Pro software to ensure the survey area was covered adequately.

### 3.2 Data Collection Methods and Terminology

To determine the status of a nest, the biologists evaluated the behavior of adults on or near the nest and the presence of eggs, young, whitewash, or fresh building materials. Species, nest type, nest status, nest condition, and nest substrate were recorded at each nest location, to the extent possible.

During the survey, each nest and rookery/heronry was assigned a waypoint number. For raptor nests, attribute data including species, status, condition, substrate, relative nest size, and nest characteristics were documented on a datasheet. Similar data were recorded for rookeries/heronries; however, because wading birds nest colonially, nest condition and size were not recorded because these often vary between nests present within the rookery/heronry. Because the water bird concentrations are temporal features and not nests, a waypoint was recorded along with an approximate number and type of birds observed; no other data were collected. After the survey, each waypoint was assigned a unique observation identifier (ID). Below are detailed descriptions of attributes and applicable definitions and terms. Photographs of eagle nests and potentially suitable eagle nests were taken, when possible.

*Species* – For raptor nests and rookeries/heronries, if a bird or birds were observed on or near the nest(s), the species was recorded. If no birds were observed on or near the nest(s), “unidentified raptor” or “unidentified wading bird” was recorded as the species for raptor nests and rookeries/heronries, respectively. If eggs were present in a raptor nest but the species could not be identified during the survey and no adult birds were observed nearby, “unidentified raptor” was also used. For observations of water bird concentrations, many species were often present that could not all be discerned. Observers maintained distance from the concentration to avoid flushing a large flock of birds near the helicopter and creating an unnecessary safety risk. Therefore, concentrations were recorded as “unidentified waterfowl,” “unidentified water birds,” or “unidentified shorebirds,” based on the general type of birds observed.

*Nest status* – In the field, nest status was categorized for raptors and wading birds using definitions originally proposed by Postupalsky (1974) and outlined by the USFWS within the ECPG for wind energy.<sup>5</sup>

- Occupied (O): nests were classified as occupied if any of the following were observed at the nest structure: 1) an adult in an incubating position; 2) eggs; 3) nestlings or fledglings; 4) presence of an adult (sometimes sub-adults); 5) a newly constructed or refurbished stick nest in the area where territorial behavior of a raptor had been observed earlier in

---

<sup>5</sup> Although the Project is not a wind project, the USFWS nest status definitions in the ECPG allow for thorough classification in the field and have general applicability to subsequent status definitions provided by the USFWS.

the breeding season; or 6) a recently repaired nest with fresh sticks (clean breaks) or fresh boughs on top, droppings, and/or molted feathers on the nest rim or underneath.

- Occupied active (OA): nest eggs, nestlings, and/or an adult in incubating/brooding position were present at the time of the survey.
- Occupied inactive (OI): nest had evidence of recent tending or presence of an adult, but there were no eggs, nestlings, or adult in incubating/brooding position.
- Inactive (I): nest with no evidence of nest tending and no eggs, nestlings, or adults present.
- Missing (M): nest is completely missing or could not be found; this status applied to eagle nests provided by NDGFD in 2022 and 2023, as well as Project-identified nests or rookeries documented during the 2022 Project survey and missing in 2023.

The most recent eagle nest status definitions posed by the USFWS are simply “in-use” and “alternate.” An in-use eagle nest is defined as “a bald or golden eagle nest characterized by the presence of one or more eggs or dependent young in the nest, or, for golden eagles only, adult eagles on the nest in the past 10 days during the breeding season;” all other eagle nests are defined as “alternate” nests (USFWS, 2022). Since each nest was limited to a single visit per survey, these terms were not used because it was not always possible to determine an “alternate” nest from an “in-use” nest, particularly for golden eagles. When possible, these definitions are provided with the eagle nest results.

*Nest size* – Both bald and golden eagles build nests that can range from 50% to 200% larger than the nests of other raptors known to nest in the region (Katzner et al., 2020; Buehler, 2022). USFWS defines “eagle nest” to mean any assemblage of materials built, maintained, or used by bald eagles or golden eagles for the purpose of reproduction. During surveys, when nests are observed that are consistent in size and structure with eagle nests, they are recorded as eagle-sized. If eagles were not observed on or associated with an eagle-sized nest, or if a non-eagle species was observed on an eagle-sized nest, the nest was recorded as a potential eagle nest. Eagle nests may be used by great horned owls, osprey, ferruginous hawks, and, in some instances, Canada geese (*Branta canadensis*).

## 4.0 RESULTS

Aerial surveys were completed between May 10 and 16, 2022, and on May 4, 2023. A total of 275 raptor nests were observed within the survey area in 2022, including 237 nests within 2 miles of the proposed Project route. In 2023, a total of 20 raptor nests, including 16 raptor nests within 2 miles of the proposed Project route, were observed during the with the survey area. Additionally, surveys recorded 1 heronry in both 2022 and 2023 and 2 water bird concentration areas in 2022, all of which were located within 2 miles of the proposed Project route.

Raptor nest and wading bird rookery/heronry survey results are summarized below. Representative photographs of eagle nests and potential eagle nests are provided in Appendix A.

Additional nest observation details are presented in Appendix B. Appendix C includes maps of nest locations for sensitive non-eagle raptors and rookeries/heronries.

## 4.1 Raptor Nests

### 4.1.1 2022 Raptor Nest Surveys

Of the 275 raptor nests identified within the May 2022 raptor nest survey area, 9 were consistent in size and structure with eagle nests (Table 1; Appendix B1). These included one bald eagle nest (occupied active), one golden eagle nest (occupied active), and seven nests with no identifiable occupant (one occupied inactive and six inactive; Figure 3a). Eight of these nests (all except the one occupied inactive nest) are located within 2 miles of the proposed Project route (Table 2). Of the six inactive nests with no occupant, two nests were previously recorded as bald eagle nests, based on NDGFD nest data. Four historical golden eagle nest locations provided by NDGFD could not be located and were determined to be missing (Appendix B2). Bald and golden eagles are federally protected by the BGEPA; bald eagles are also considered sensitive on USFS lands.

Using the latest eagle nest status terminology provided by the USFWS, the one occupied active bald eagle nest and one occupied active golden eagle nest were considered “in-use” for the 2022 breeding season. Not enough information could be collected to determine whether the one occupied inactive unidentified raptor nest was “in-use” or “alternate” because, while the nest was in good condition, there was no way to know if a golden eagle had been present in the last 10 days. Based on the fair and poor conditions of the six inactive unidentified raptor nests, these were presumed to be “alternate” nests based on USFWS nest status definitions.

Two additional sensitive raptor species were observed nesting within the May 2022 survey area (Appendices B3 and C1): prairie falcon (two nests; ND-PRFA-23371 and ND-PRFA-22886) and ferruginous hawk (two nests; ND-FEHA-23366 and ND-FEHA-23038). Of these, one prairie falcon nest and both ferruginous hawk nests are within 2 miles of the proposed Project route. Both prairie falcon and ferruginous hawk are Birds of Conservation Concern (BCC) species in Bird Conservation Region (BCR) 17, where the Project is located.

Common species observed occupying stick nests within the May 2022 survey area included the following: red-tailed hawk (66 nests), Swainson’s hawk (7 nests), Cooper’s hawk (*Accipiter cooperii*; 2 nests), great horned owl (31 nests), and Canada goose (5 nests). Both great horned owls and Canada geese nest in structures built by other raptor species; these nests may be used by other raptor species in the future. Species could not be discerned for 1 occupied active nest<sup>6</sup>, 10 occupied inactive nests, and 140 inactive nests. Appendix C1 shows the locations of non-sensitive species raptor nest locations. See Table 2 for nest counts of common raptor species within 2 miles of the proposed Project route.

Of the nests summarized above, a total of 12 raptor nests were documented within the May 2022 survey area on USFS-managed land in Little Missouri National Grassland in western North

---

<sup>6</sup> Eggs were present on the nest, but no adult birds were observed nearby; therefore, the nest was classified as an occupied active unidentified raptor nest.

Dakota. No confirmed bald or golden nests were found on federal lands, but one nest (occupied inactive; Table 3) consistent in size and structure to an eagle's nest was recorded. Other species documented on federal lands included prairie falcon (one nest), red-tailed hawk (two nests), and great horned owl (one nest). The remaining seven nests were inactive with no identifiable species. Raptor nests identified on federal lands are summarized in Table 3. See Table 4 for nest counts within 2 miles of the proposed Project route on USFS-managed lands.

#### 4.1.2 2023 Raptor Nest Surveys

As mentioned in Section 3.0, surveys in 2023 focused on documenting eagle nests and sensitive raptor species nests rather than documenting all raptor nests. Of the 20 raptor nests identified within the April/May 2023 raptor nest survey area, 16 were consistent in size and structure with eagle nests (Table 1; Appendix B1). These eagle and potential eagle nests included four bald eagle nests (three occupied active and one inactive), seven golden eagle nests (two occupied active and five inactive), one ferruginous hawk nest (occupied active), three unidentified raptor nests (one occupied inactive and two inactive), and one nest occupied by a Canada goose (occupied active; Figure 3b). Thirteen of these nests were located within 2 miles of the proposed Project route; the three nests beyond that distance were inactive golden eagle nests (Table 2).

Two of the raptor nests documented in 2023 had not previously been documented by NDGFD or during Project surveys in 2022; however, these nests were not within the 2022 survey area. These two nests included one golden eagle nest (occupied active) and one bald eagle nest (occupied active). Six historical golden eagle nest locations provided by NDGFD were determined to be missing in 2023 (Appendix B2). One nest provided by NDGFD (ND-GOEA-27370) was outside of the survey area in 2022 and was not observed in 2023. Nest ND-GOEA-23266 was surveyed in 2022 and included in the data provided by NDGFD in 2023. This nest was documented in a transmission line tower structure in 2022 but has since been removed and was not observed during aerial surveys in 2023. The remaining four missing eagle nests were labeled as “destroyed” in the NDGFD data and were not observed during surveys in 2023 (ND-GOEA-22782, ND-GOEA-22789, ND-GOEA-22887, and ND-GOEA-23168).

Using the latest eagle nest status terminology provided by the USFWS, the three occupied active bald eagle nests and two occupied active golden eagle nests were considered “in-use” for the 2023 breeding season. Similarly, two potential eagle occupied active nests with non-eagle occupants (Canada goose and a ferruginous hawk) and one inactive eagle-size nest in good condition<sup>7</sup> also cannot be assigned an “in-use” or “alternate” status. Based on the fair and poor conditions of eight inactive raptor nests (one bald eagle, five golden eagle, and two unidentified raptor nests), these were presumed to be “alternate” nests based on USFWS nest status definitions.

Four nests not consistent with the size or structure of eagle nests but belonging to sensitive raptor species were also observed within the April/May 2023 survey area, including one occupied active

---

<sup>7</sup> ND-RAPT-23158 was an eagle-sized nest in good condition with a Swainson's hawk observed near the nest; however, the nest was not consistent with size and structure of a Swainson's hawk nest, thus the species was recorded as unidentified raptor.

prairie falcon nest (ND-PRFA-22886) and one occupied active ferruginous hawk nest (ND-FEHA-23038; Table 1; Appendix B3). Two inactive unidentified raptor nests that were not consistent with the size or structure of an eagle nest were also recorded. One of these nests was recorded as a prairie falcon nest in 2022 (ND-PRFA-23371) and one new nest<sup>8</sup> was a potential ferruginous hawk nest (ND-RAPT-27369). Appendix C2 shows the locations of non-sensitive species raptor nest locations; one occupied active ferruginous hawk nest (ND-FEHA-23366) that was consistent in size and structure with an eagle nest is presented in Figure 3b. See Table 2 for nest counts within 2 miles of the proposed Project route on USFS-managed lands.

Of the 20 nests recorded in 2023 and summarized above, a total of 4 raptor nests were documented within the April/May 2023 survey area on USFS-managed land within Little Missouri National Grassland in western North Dakota, including three inactive golden eagle nests and one occupied active prairie falcon nest. In addition to being federally protected by the BGEPA; bald eagles are also considered sensitive species on USFS lands. Raptor nests identified on federal lands are summarized in Table 2. See Table 4 for nest counts within 2 miles of the proposed Project route on USFS-managed lands.

#### **4.2 Wading Bird Rookeries/Heronries**

One great blue heron (*Ardea herodias*) heronry (ND-GBHE-23422) was observed during surveys in North Dakota in both 2022 and 2023; this heronry is within 2 miles of the proposed Project route. No heronries were recorded on federal lands, and no other rookeries were observed during surveys. See Appendix B4 for additional survey information and Appendix C3 for the heronry location.

#### **4.3 Water Bird Concentrations**

WEST biologists observed two concentrations of migratory water birds during surveys in 2022, both of which are within 2 miles of the proposed Project route. These included one group of unidentified waterfowl and one group of unidentified shorebirds. No water bird concentrations were recorded on federal lands. Although these surveys were conducted late in the migration season, the results provide information about suitable stopover habitat for these birds that may be used during Project planning. See Appendix B5 for additional survey information and Appendix C3 for water bird concentration areas.

---

<sup>8</sup> ND-RAPT-27369 was an inactive nest that was consistent in size and structure with a ferruginous hawk nest.

**Table 1. Nest status, species, and location of nests documented during the raptor nest surveys conducted within the May 2022 survey area in North Dakota.<sup>1</sup>**

Species	2022				2023 <sup>9</sup>			
	Occupied Active	Occupied Inactive	Inactive	Subtotal	Occupied Active	Occupied Inactive	Inactive	Subtotal
<i>Nests Consistent in Size and Structure with Eagle Nests</i>								
Bald eagle <sup>2</sup>	1	–	–	1	3 <sup>2</sup>	–	1 <sup>6</sup>	4
Golden eagle <sup>3</sup>	1	–	–	1	2 <sup>3</sup>	–	5 <sup>6</sup>	7
Ferruginous hawk <sup>5</sup>	–	–	–	–	1 <sup>7</sup>	–	–	1
Unidentified raptor <sup>4</sup>	–	1	6	7	–	1 <sup>7</sup>	2 <sup>6</sup>	3
Canada goose	–	–	–	–	1 <sup>7</sup>	–	–	1
<i>Sensitive Species, Not in Eagle-size Nests</i>								
Prairie falcon <sup>5</sup>	2	–	–	2	1	–	–	1
Ferruginous hawk <sup>5</sup>	2	–	–	2	1	–	–	1
Unidentified raptor <sup>8</sup>	–	–	–	–	–	–	2	2
<i>All Other Stick Nests</i>								
Red-tailed hawk	65	1	–	66	–	–	–	0
Swainson’s hawk	3	4	–	7	–	–	–	0
Cooper’s hawk	2	–	–	2	–	–	–	0
Great horned owl	31	–	–	31	–	–	–	0
Unidentified raptor	1	10	140	151	–	–	–	0
Canada goose	5	–	–	5	–	–	–	0
<b>Total</b>	<b>113</b>	<b>16</b>	<b>146</b>	<b>275</b>	<b>9</b>	<b>1</b>	<b>10</b>	<b>20</b>

<sup>1</sup> Missing nests are not included in the table.

<sup>2</sup> All occupied active bald eagle nests were “in-use” based on U.S. Fish and Wildlife service (USFWS) terminology.

<sup>3</sup> All occupied active golden eagle nests were “in-use” based on USFWS terminology.

<sup>4</sup> All inactive nests consistent in size and structure to eagle nests were “alternate” based on USFWS terminology. Occupied inactive nests consistent in size and structure to eagle nests could not be classified with the most recent USFWS terminology.

<sup>5</sup> Prairie falcon and ferruginous hawk are both Birds of Conservation Concern in USFWS Bird Conservation Region 17.

<sup>6</sup> Eight inactive raptor potential eagle nests were presumed to be “alternate” based on USFWS terminology.

<sup>7</sup> One occupied inactive potential eagle nest and two eagle-sized occupied active nests with non-eagle occupants could not be classified with the most recent USFWS terminology.

<sup>8</sup> Formerly or potentially occupied by a sensitive raptor species.

<sup>9</sup> Surveys in 2023 focused on documenting eagle nests and other regionally sensitive raptor species nests rather than all raptor nests.

**Table 2. Nest status, species, and location of nests documented within 2 miles of the proposed Project route during raptor nest surveys in North Dakota.<sup>1</sup>**

Species	2022				2023 <sup>9</sup>			
	Occupied Active	Occupied Inactive	Inactive	Subtotal	Occupied Active	Occupied Inactive	Inactive	Subtotal
<i>Nests Consistent in Size and Structure with Eagle Nests</i>								
Bald eagle <sup>2</sup>	1	–	–	1	3 <sup>2</sup>	–	1 <sup>6</sup>	4
Golden eagle <sup>3</sup>	1	–	–	1	2 <sup>3</sup>	–	2 <sup>6</sup>	4
Ferruginous hawk <sup>5</sup>	–	–	–	–	1 <sup>7</sup>	–	–	1
Unidentified raptor <sup>4</sup>	–	–	6	6	–	1 <sup>7</sup>	2 <sup>6</sup>	3
Canada goose	–	–	–	–	1 <sup>7</sup>	–	–	1
<i>Sensitive Species, Not in Eagle-size Nests</i>								
Prairie falcon <sup>5</sup>	1	–	–	1	1	–	–	1
Ferruginous hawk <sup>5</sup>	2	–	–	2	1	–	–	1
Unidentified raptor <sup>8</sup>	–	–	–	–	–	–	1	1
<i>All Other Stick Nests</i>								
Red-tailed hawk	55	1	–	56	–	–	–	0
Swainson’s hawk	2	4	–	6	–	–	–	0
Cooper’s hawk	2	–	–	2	–	–	–	0
Great horned owl	27	–	–	27	–	–	–	0
Unidentified raptor	–	8	124	132	–	–	–	0
Canada goose	3	–	–	3	–	–	–	0
<b>Total</b>	<b>94</b>	<b>13</b>	<b>130</b>	<b>237</b>	<b>9</b>	<b>1</b>	<b>6</b>	<b>16</b>

<sup>1</sup> Missing nest are not included in the table.

<sup>2</sup> All occupied active bald eagle nests were “in-use” based on U.S. Fish and Wildlife service (USFWS) terminology.

<sup>3</sup> All occupied active golden eagle nests were “in-use” based on USFWS terminology.

<sup>4</sup> All inactive nests consistent in size and structure to eagle nests were “alternate” based on USFWS terminology. Occupied inactive nests consistent in size and structure to eagle nests could not be classified with the most recent USFWS terminology.

<sup>5</sup> Prairie falcon and ferruginous hawk are both Birds of Conservation Concern in USFWS Bird Conservation Region 17.

<sup>6</sup> Five inactive raptor potential eagle nests were presumed to be “alternate” based on USFWS terminology.

<sup>7</sup> One occupied inactive potential eagle nest and two eagle-sized occupied active nests with non-eagle occupants could not be classified with the most recent USFWS terminology.

<sup>8</sup> Formerly or potentially occupied by a sensitive raptor species.

<sup>9</sup> Surveys in 2023 focused on documenting eagle nests and other regionally sensitive raptor species nests rather than all raptor nests.

**Table 3. Nest status, species, and location of nests documented on federal lands during the raptor nest surveys within the May 2022 survey area in North Dakota.**

Species	USFS-managed Lands – 2022				USFS-managed Lands – 2023			
	Occupied Active	Occupied Inactive	Inactive	Subtotal	Occupied Active	Occupied Inactive	Inactive	Subtotal
<i>Nests Consistent in Size and Structure with Eagle Nests</i>								
Bald eagle	–	–	–	0	–	–	–	0
Golden eagle	–	–	–	0	–	–	3	3
Ferruginous hawk	–	–	–	0	–	–	–	0
Unidentified raptor <sup>1</sup>	–	1	–	1	–	–	–	0
Canada goose	–	–	–	0	–	–	–	0
<i>Sensitive Species, Not in Eagle-size Nests</i>								
Prairie falcon <sup>2</sup>	1	–	–	1	1	–	–	1
Ferruginous hawk	–	–	–	0	–	–	–	0
Unidentified raptor	–	–	–	0	–	–	–	0
<i>All Other Stick Nests</i>								
Red-tailed hawk	2	–	–	2	–	–	–	0
Swainson’s hawk	–	–	–	0	–	–	–	0
Cooper’s hawk	–	–	–	0	–	–	–	0
Great horned owl	1	–	–	1	–	–	–	0
Unidentified raptor	–	–	7	7	–	–	–	0
Canada goose	–	–	–	0	–	–	–	0
<b>Total</b>	<b>4</b>	<b>1</b>	<b>7</b>	<b>12</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>4</b>

<sup>1</sup> All inactive nests consistent in size and structure to eagle nests were “alternate” based on U.S. Fish and Wildlife Service (USFWS) terminology. Occupied inactive nests consistent in size and structure to eagle nests could not be classified with the most recent USFWS terminology.

<sup>2</sup> Prairie falcon is a Birds of Conservation Concern in USFWS Bird Conservation Region 17.

USFS = U.S. Forest Service.

**Table 4. Nest status, species, and location of nests documented on federal lands within 2 miles of the proposed Project route during raptor nest surveys in North Dakota.**

Species	USFS-managed Lands – 2022				USFS-managed Lands – 2023			
	Occupied Active	Occupied Inactive	Inactive	Subtotal	Occupied Active	Occupied Inactive	Inactive	Subtotal
<i>Nests Consistent in Size and Structure with Eagle Nests</i>								
Bald eagle	–	–	–	0	–	–	–	0
Golden eagle	–	–	–	0	–	–	–	0
Ferruginous hawk	–	–	–	0	–	–	–	0
Unidentified raptor <sup>1</sup>	–	–	–	0	–	–	–	0
Canada goose	–	–	–	0	–	–	–	0
<i>Sensitive Species, Not in Eagle-size Nests</i>								
Prairie falcon <sup>2</sup>	1	–	–	1	1	–	–	1
Ferruginous hawk	–	–	–	0	–	–	–	0
Unidentified raptor	–	–	–	0	–	–	–	0
<i>All Other Stick Nests</i>								
Red-tailed hawk	2	–	–	2	–	–	–	0
Swainson’s hawk	–	–	–	0	–	–	–	0
Cooper’s hawk	–	–	–	0	–	–	–	0
Great horned owl	1	–	–	1	–	–	–	0
Unidentified raptor	–	–	6	6	–	–	–	0
Canada goose	–	–	–	0	–	–	–	0
<b>Total</b>	<b>4</b>	<b>0</b>	<b>6</b>	<b>10</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>

<sup>1</sup> All inactive nests consistent in size and structure to eagle nests were “alternate” based on U.S. Fish and Wildlife Service (USFWS) terminology. Occupied inactive nests consistent in size and structure to eagle nests could not be classified with the most recent USFWS terminology.

<sup>2</sup> Prairie falcon is a Birds of Conservation Concern in USFWS Bird Conservation Region 17.

USFS = U.S. Forest Service.



Figure 3a. Eagle nests, potential eagle nests, and sensitive species nests documented during 2022 aerial surveys along the North Plains Connector Project in North Dakota.

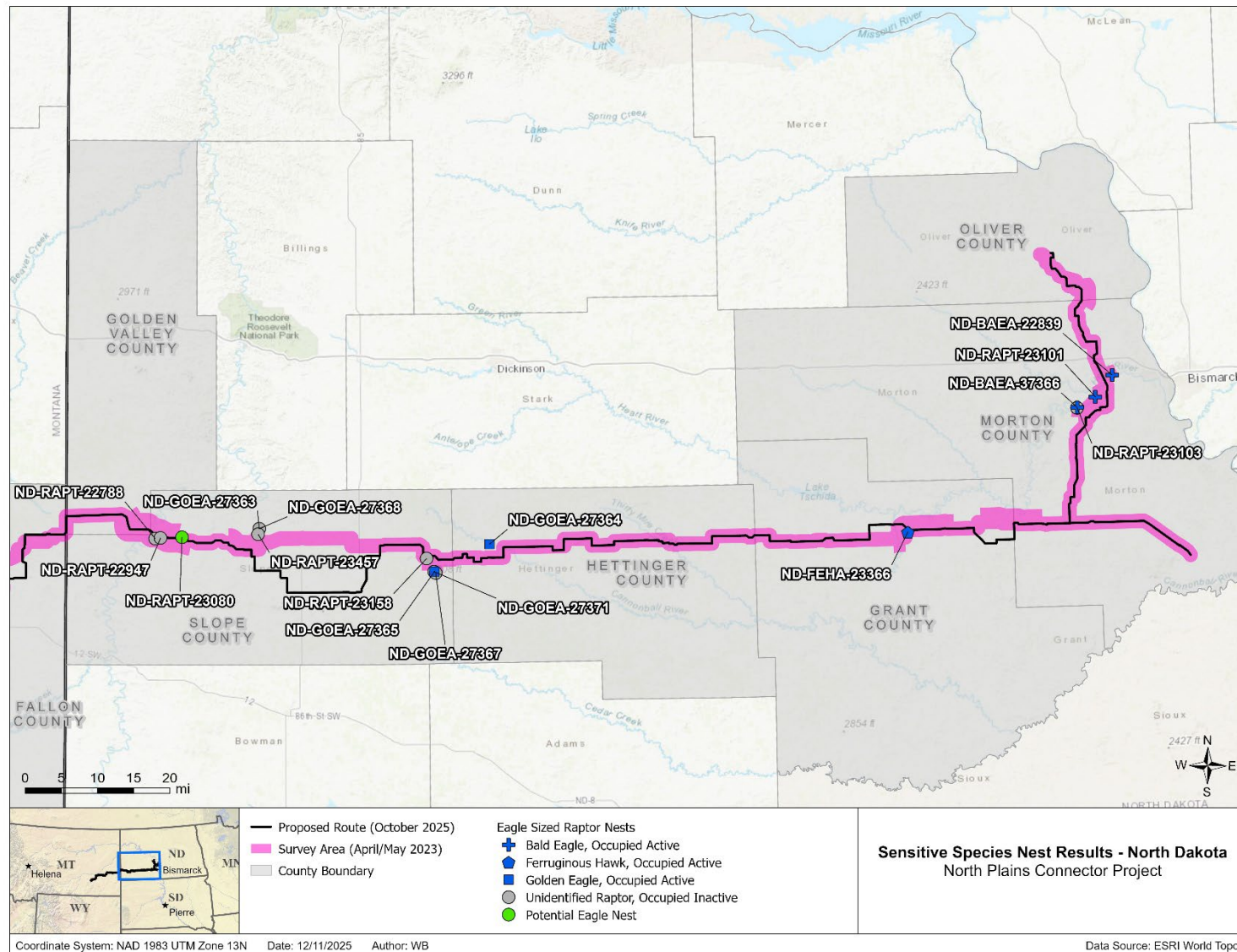


Figure 3b. Eagle nests, potential eagle nests, and sensitive species nests documented during 2023 aerial surveys along the North Plains Connector Project in North Dakota.

## 5.0 DISCUSSION

During the 2022 aerial surveys, 237 raptor nests were documented within 2 miles of the proposed Project route, including one bald eagle nest, one golden eagle nest, and six nests consistent in size and structure with eagle nests. Three nests belonging to two other sensitive species were also documented within 2 miles of the proposed Project route, including one prairie falcon nests and two ferruginous hawk nests.

In 2023, a total of 16 raptor nests were observed within 2 miles of the proposed Project route. Thirteen of these nests were eagle or potential eagle nests, including 4 bald eagle nests, 4 golden eagle nests, and 5 nests consistent in size and structure with eagle nests. Three sensitive species nests, including one prairie falcon nest, one ferruginous hawk nest, and one unidentified raptor nest considered a potential ferruginous hawk nest, were also documented within 2 miles of the proposed Project route.

Additionally, surveys recorded 1 heronry (2022 and 2023) and 2 water bird concentration areas (2022), all of which were located within 2 miles of the proposed Project route.

Coordination with state and federal agencies will continue as the Project progresses.

## 6.0 REFERENCES

- Buehler, D. A. 2022. Bald Eagle (*Haliaeetus leucocephalus*), Version 2.0. In: P. G. Rodewald and S. G. Mlodinow, eds. Birds of the World. Cornell Lab of Ornithology, Ithaca, New York. doi: 10.2173/bow.baleag.02. Available online: <http://birdsoftheworld.org/bow/species/baleag/cur/>.
- Katzner, T. E., M. N. Kochert, K. Steenhof, C. L. McIntyre, E. H. Craig, and T. A. Miller. 2020. Golden Eagle (*Aquila chrysaetos*), Version 2.0. In: P. G. Rodewald and B. K. Keeney, eds. Birds of the World. Cornell Lab of Ornithology, Ithaca, New York. doi: 10.2173/bow.goleag.02. Available online: <http://birdsoftheworld.org/bow/species/goleag/cur/>.
- Pagel, J. E., D. M. Whittington, and G. T. Allen. 2010. Interim Golden Eagle Technical Guidance: Inventory and Monitoring Protocols; and Other Recommendations in Support of Golden Eagle Management and Permit Issuance. U.S. Fish and Wildlife Service, Division of Migratory Bird Management. February 2010. Available online: <https://tethys.pnnl.gov/sites/default/files/publications/Pagel-2010.pdf>.
- Postupalsky, S. 1974. Raptor Reproductive Success: Some Problems with Methods, Criteria and Terminology. Pp. 21-31. In: F. N. Hamerstrom, Jr., B. E. Harrell, and R. R. Olendorff, eds. Management of Raptors. Raptor Research Foundation, Vermillion, South Dakota.
- U.S. Environmental Protection Agency (USEPA). 2013. Level III and Level IV Ecoregions of the Continental United States. Ecosystems Research, USEPA. April 16, 2013. Available online: <https://www.epa.gov/eco-research/level-iii-and-iv-ecoregions-continental-united-states>. Accessed December 2025.
- U.S. Fish and Wildlife Service (USFWS). 2013. Eagle Conservation Plan Guidance: Module 1 - Land-Based Wind Energy, Version 2. U.S. Department of the Interior, USFWS, Division of Migratory Bird Management. April 2013. Available online: <https://www.fws.gov/sites/default/files/documents/eagle-conservation-plan-guidance.pdf>.
- U.S. Fish and Wildlife Service (USFWS). 2019. Modeling Spatial Variation in Density of Golden Eagle Nest Sites in the Western United States: Spatial Data and Maps. USFWS, Western Golden Eagle Team. Lakewood, Colorado. Available online: <https://ecos.fws.gov/ServCat/Reference/Profile/111283>.
- U.S. Fish and Wildlife Service (USFWS). 2020. Eagle Surveys. Memorandum to Regional Directors, Regions 1-12. From J. Ford, Assistant Director for Migratory Birds. Ecological Services, USFWS, Washington, D.C. April 21, 2020. Available online: <https://www.fws.gov/sites/default/files/documents/eagle-nest-survey%20guidance-memo.pdf>.
- U.S. Fish and Wildlife Service (USFWS). 2022. Permits for Incidental Take of Eagles and Eagle Nests - Proposed Rule. 87 Federal Register 59598, published September 30, 2022. Available online: <https://www.federalregister.gov/documents/2022/09/30/2022-21025/permits-for-incidental-take-of-eagles-and-eagle-nests>.
- Watson, J. 2010. The Golden Eagle. Second Edition. Yale University Press, London, U.K.

**Appendix A.**  
**Representative Nest Photos**



**Appendix A1. ND-RAPT-22788 was an inactive unidentified raptor nest in 2022 and an occupied inactive unidentified raptor nest in 2023.**



**Appendix A2. ND-RAPT-22947 was an inactive unidentified raptor nest in 2022 and 2023.**



**Appendix A3. ND-GOEA-23457 was an occupied inactive golden eagle nest in 2022 and inactive in 2023.**



**Appendix A4. ND-GOEA-27363 was an inactive nest in 2023.**



**Appendix A5. ND-GOEA-27368 was an inactive nest in 2023.**



**Appendix A6. ND-RAPT-23158 was an inactive unidentified raptor nest in 2022 and 2023. A Swainson's hawk was observed near the nest, but it was not consistent in size and structure with a Swainson's hawk nest.**



**Appendix A7. ND-GOEA-27365 was an occupied active golden eagle nest in 2023.**



**Appendix A8. ND-GOEA-27364 was an occupied active golden eagle nest in 2023.**



**Appendix A9. ND-FEHA-23366 was an occupied active ferruginous hawk nest in 2022 and 2023.**



**Appendix A10. ND-BAEA-23103 was inactive in 2022 and 2023.**



**Appendix A11. ND-BAEA-27366 was an occupied active bald eagle nest in 2023.**



**Appendix A12. ND-BAEA-23101 was inactive in 2022 and an occupied active bald eagle nest in 2023.**



**Appendix A13. ND-BAEA-22839 was an occupied active bald eagle nest in 2022 and 2023.**

**Appendix B.**  
**Raptor Nests and Heronries Recorded during Aerial Surveys in North Dakota**

**Appendix B1. Eagle nests and potential eagle nests recorded during aerial surveys along the North Plains Connector Project in North Dakota in 2022 and/or 2023.**

<b>Nest ID</b>	<b>Species</b>	<b>Nest Status</b>	<b>Nest Condition</b>	<b>Substrate</b>	<b>Nest Size</b>	<b>Longitude</b>	<b>Latitude</b>	<b>County</b>
ND-RAPT-22788	unidentified raptor	OI	good	DT	giant	-103.7872	46.5331	Slope
ND-RAPT-22947	unidentified raptor	I	poor	CL	large	-103.7718	46.5344	Slope
ND-RAPT-23080 <sup>1</sup>	Canada goose	OA	good	DT	large	-103.7098	46.5361	Slope
<b>ND-GOEA-23457 <sup>1,2</sup></b>	<b>golden eagle</b>	<b>I</b>	<b>fair</b>	<b>CL</b>	<b>giant</b>	<b>-103.4893</b>	<b>46.5421</b>	<b>Slope</b>
<b>ND-GOEA-27363 <sup>2,4</sup></b>	<b>golden eagle</b>	<b>I</b>	<b>poor</b>	<b>CL</b>	<b>giant</b>	<b>-103.4859</b>	<b>46.5529</b>	<b>Slope</b>
<b>ND-GOEA-27368 <sup>2,4</sup></b>	<b>golden eagle</b>	<b>I</b>	<b>poor</b>	<b>CL</b>	<b>giant</b>	<b>-103.4859</b>	<b>46.5530</b>	<b>Slope</b>
ND-RAPT-23158	unidentified raptor <sup>6</sup>	I	good	DT	large	-103.0014	46.4915	Slope
ND-GOEA-27371 <sup>2,4</sup>	golden eagle	I	poor	CL	giant	-102.9799	46.4654	Slope
ND-GOEA-27365 <sup>4</sup>	golden eagle	OA	good	DT	giant	-102.9787	46.4655	Slope
ND-GOEA-27367 <sup>2,4</sup>	golden eagle	I	poor	CL	giant	-102.9752	46.4626	Slope
ND-GOEA-27364 <sup>2,4</sup>	golden eagle	OA	good	DT	giant	-102.8188	46.5193	Hettinger
ND-FEHA-23366 <sup>6</sup>	ferruginous hawk	OA	good	DT	large	-101.6063	46.5289	Grant
ND-BAEA-23103 <sup>1,3</sup>	bald eagle	I	poor	DT	giant	-101.1051	46.7674	Morton
ND-BAEA-27366 <sup>4</sup>	bald eagle	OA	good	DT	giant	-101.1047	46.7685	Morton
ND-BAEA-23101 <sup>1,3,5</sup>	bald eagle	OA	good	DT	giant	-101.0508	46.7880	Morton
ND-BAEA-22839 <sup>3</sup>	bald eagle	OA	good	DT	giant	-101.0002	46.8306	Morton
ND-GOEA-23266 <sup>7</sup>	golden eagle	OA	Good	P	giant	-100.7997	46.4734	Morton

OA = occupied active; OI = occupied inactive; I = inactive; CL = cliff; DT = deciduous tree; CT = coniferous tree; P = powerline; NA = not applicable.

**Bold text** indicates a nest on federal land (U.S. Forest Service).

- <sup>1</sup> Species changed from unidentified raptor in 2022 to the indicated species in 2023.
- <sup>2</sup> Historical golden eagle nest, per North Dakota Game and Fish Department nest data.
- <sup>3</sup> Historical bald eagle nest, per North Dakota Game and Fish Department nest data.
- <sup>4</sup> Identified in 2023 but not in 2022.
- <sup>5</sup> Nest was inactive in 2022 and occupied active in 2023.
- <sup>6</sup> Nest changed from medium in 2022 to large (eagle-sized) in 2023.
- <sup>7</sup> Nest present in powerline structure in 2022 but was removed prior to survey in 2023.

**Appendix B2. Previously documented eagle nests and nests consistent in size and structure with eagle nests that were not documented during aerial surveys along the North Plains Connector Project in 2023.**

Nest ID	Species	Nest Status	Nest Condition	Substrate	Nest Size	Longitude	Latitude	County
ND-GOEA-22789 <sup>2</sup>	golden eagle	M	NA	NA	NA	-103.8102	46.5493	Golden Valley
ND-GOEA-23168 <sup>2</sup>	golden eagle	M	NA	NA	NA	-103.8072	46.5495	Golden Valley
ND-GOEA-22887 <sup>2</sup>	golden eagle	M	NA	NA	NA	-103.7985	46.5441	Slope
ND-GOEA-22782 <sup>2</sup>	golden eagle	M	NA	NA	NA	-103.3502	46.5309	Slope
ND-GOEA-27370 <sup>2,3</sup>	golden eagle	M	NA	NA	NA	-103.0049	46.4791	Slope
ND-GOEA-23266 <sup>1</sup>	golden eagle	M	NA	NA	NA	-100.7997	46.4734	Morton

M = missing; NA = not applicable.

<sup>1</sup> Nest present in powerline structure in 2022 but was removed prior to survey in 2023.

<sup>2</sup> Historical golden eagle nest, per North Dakota Game and Fish Department nest data.

<sup>3</sup> Not within 2022 previous survey area.

**Appendix B3. Sensitive species nests recorded during aerial surveys along the North Plains Connector Project in 2022 and/or 2023.**

Nest ID	Species	Nest Status	Nest Condition	Substrate	Nest Size	Longitude	Latitude	County
<b>ND-PRFA-22886</b>	<b>prairie falcon</b>	<b>OA</b>	<b>good</b>	<b>CL</b>	<b>small</b>	<b>-103.8049</b>	<b>46.5354</b>	<b>Slope</b>
ND-RAPT-27369 <sup>2,3</sup>	unidentified raptor	I	fair	CL	medium	-103.1536	46.5139	Slope
ND-FEHA-23038	ferruginous hawk	OA	good	DT	medium	-102.6883	46.5005	Hettinger
ND-PRFA-23371 <sup>1</sup>	prairie falcon	I	fair	CL	small	-101.6285	46.5082	Grant
ND-FEHA-23366 <sup>4</sup>	ferruginous hawk	OA	good	DT	medium / large	-101.6063	46.5289	Grant

OA = occupied active; I = inactive; CL = cliff; DT = deciduous tree.

**Bold text** indicates a nest on federal land (U.S. Forest Service).

<sup>1</sup> Active prairie falcon nest in 2022 but inactive in 2023.

<sup>2</sup> Possible ferruginous hawk nest.

<sup>3</sup> Identified in 2023 but not in 2022.

<sup>4</sup> Nest changed from medium in 2022 to large (eagle-sized) in 2023, and is also included in Appendix B1 for this reason.

**Appendix B4. Heronries recorded during aerial surveys along the North Plains Connector Project in 2022 and 2023.**

<b>Nest ID</b>	<b>Species</b>	<b>Nest Status</b>	<b>Notes</b>	<b>Longitude</b>	<b>Latitude</b>	<b>County</b>
ND-GBHE-23422	great blue heron	OA	Approximately 20 occupied active nests	-101.9198	46.5062	Grant

**Appendix B5. Water bird concentrations recorded during aerial surveys along the North Plains Connector Project in 2022.**

<b>Nest ID</b>	<b>Species</b>	<b>Notes</b>	<b>Longitude</b>	<b>Latitude</b>	<b>County</b>
ND-CONC-00005	unidentified shorebird	Approximately 200 small shorebirds	-100.9991	46.7589	Morton
ND-CONC-00006	unidentified waterfowl	Approximately 100 waterfowl (ducks and geese)	-103.7889	46.5397	Slope

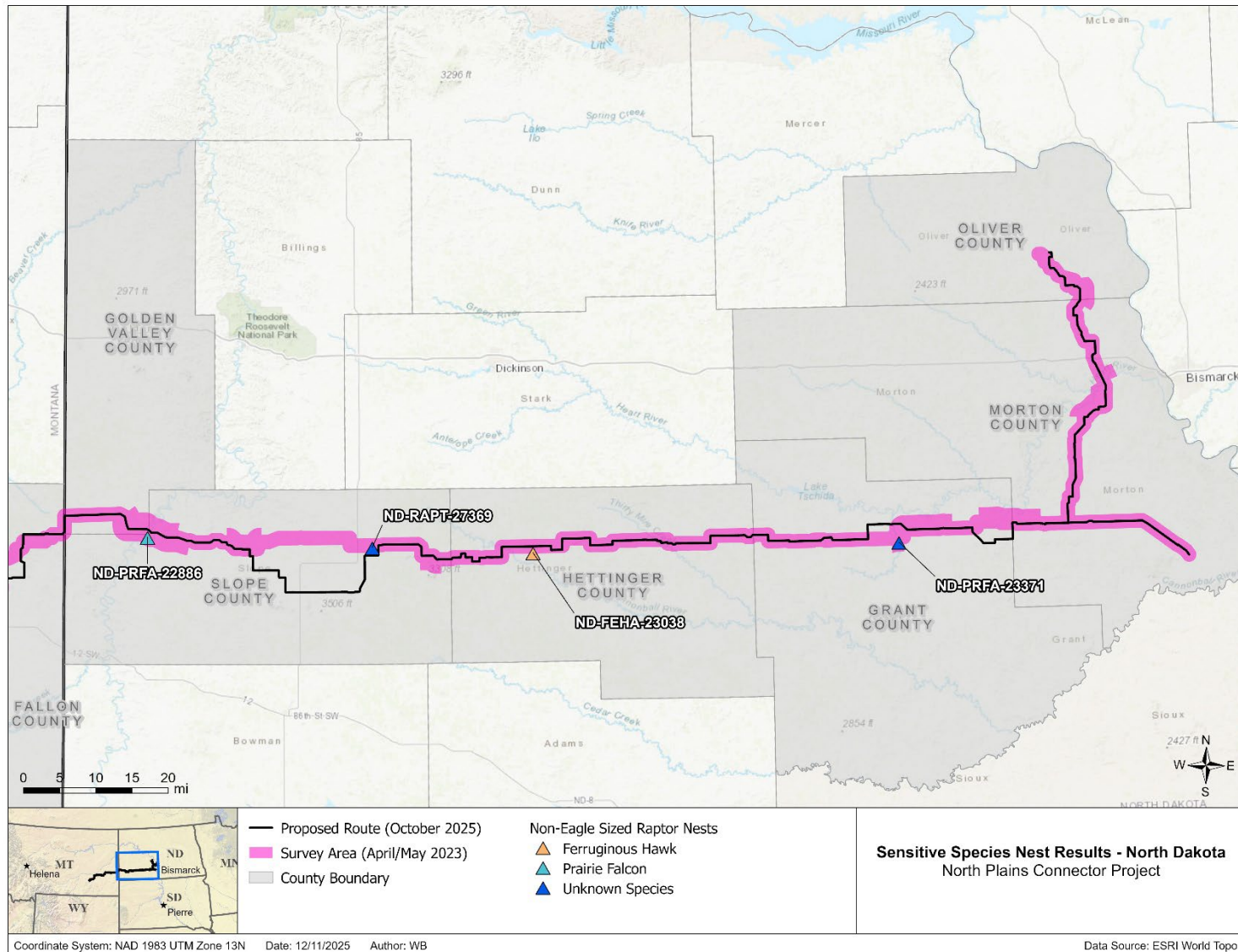
**Appendix C.**  
**Maps of Sensitive Non-eagle-sized Raptor Nests and Heronries Recorded during Aerial Surveys**

**North Plains Connector Project  
2022 – 2023 Raptor Nest Survey Report**

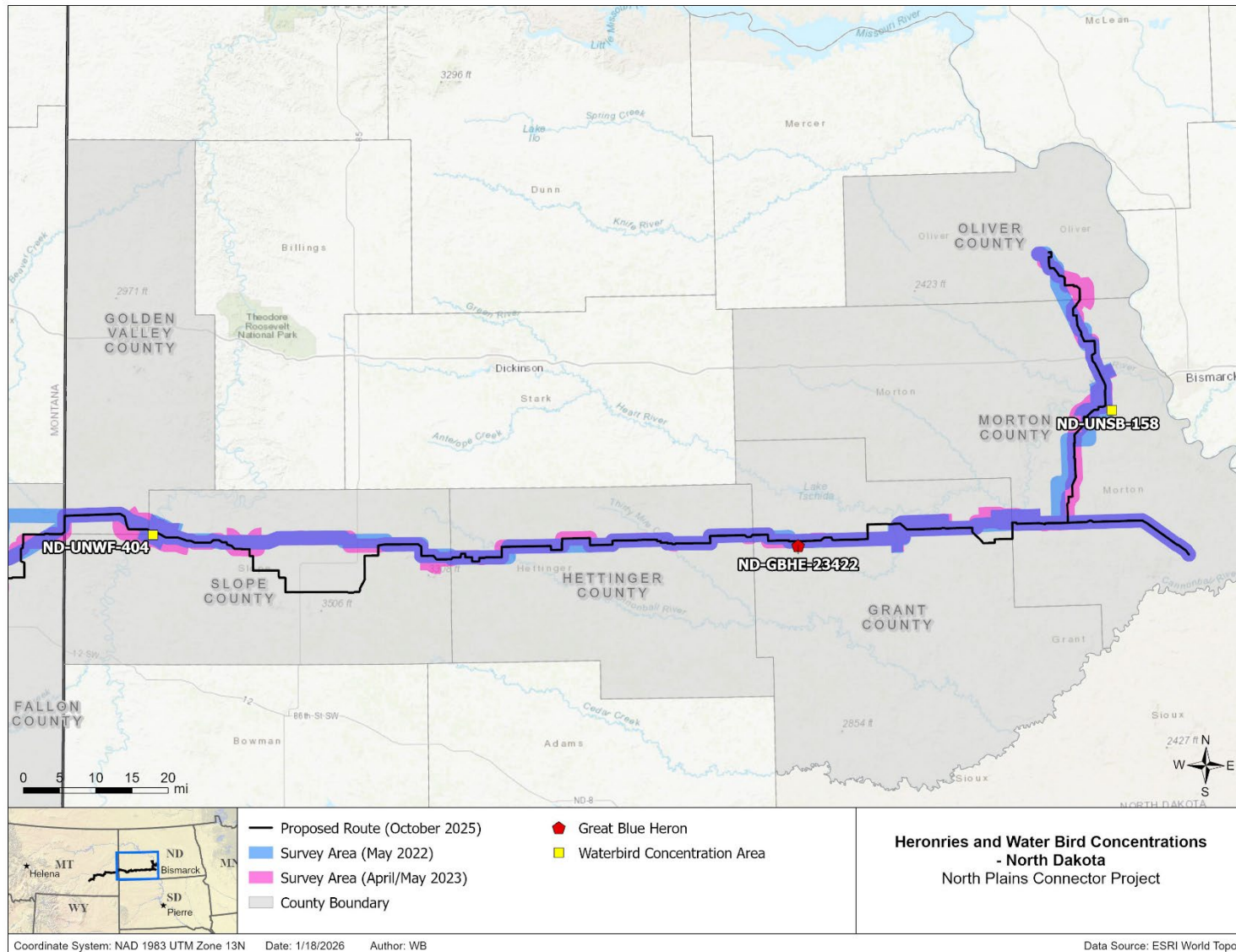


**Appendix C1. Sensitive non-eagle-sized raptor nests documented during 2022 aerial surveys along the North Plains Connector Project in North Dakota.**

**North Plains Connector Project  
2022 – 2023 Raptor Nest Survey Report**



**Appendix C2. Sensitive non-eagle-sized raptor nests documented during 2023 aerial surveys along the North Plains Connector Project in North Dakota.**



**Appendix C3. Heronries and water bird concentration areas documented during aerial surveys along the North Plains Connector Project in North Dakota.**

**I – 8**

**Greater Sage-grouse and Sharp-tailed Grouse Lek Survey  
Report**



# **NORTH PLAINS CONNECTOR**

**A Grid United Project**

## **2022 Greater Sage-grouse and Sharp-tailed Grouse Lek Survey Report North Dakota**

**Prepared by:**



**January 2026**

**2022 Greater Sage-grouse and Sharp-tailed Grouse Lek Survey Report  
North Dakota**

**North Plains Connector Project**

**TABLE OF CONTENTS**

1.0	INTRODUCTION.....	1
2.0	REGULATORY SETTING .....	1
2.1.	Federal Regulations.....	1
2.2.	North Dakota State Regulations.....	1
3.0	SURVEY AREA.....	2
4.0	METHODS .....	5
4.1.	Aerial Survey Methodology .....	5
4.2.	Data Collection Methodology .....	6
5.0	RESULTS.....	6
5.1.	Greater Sage-grouse .....	7
5.2.	Sharp-tailed-grouse .....	7
6.0	DISCUSSION.....	10
7.0	REFERENCES.....	11

**LIST OF TABLES**

Table 1.	Active sharp-tailed grouse leks found during aerial lek surveys conducted along the North Plains Connector Project in North Dakota.....	8
----------	---	---

**LIST OF FIGURES**

Figure 1.	Overview of the proposed North Plains Connector Project location in North Dakota. ....	3
Figure 2.	2022 lek survey area along the North Plains Connector Project in North Dakota .....	4
Figure 3.	Active sharp-tailed grouse leks documented during aerial surveys along the North Plains Connector Project in North Dakota.....	9

**LIST OF APPENDICES**

Appendix A.	Previously Unknown Sharp-tailed Grouse Leks
Appendix B.	Representative Lek Photos

## 1.0 INTRODUCTION

North Plains Connector LLC (North Plains) is developing the North Plains Connector Project, an approximately 422-mile high-voltage direct current electric transmission line system and associated infrastructure designed to connect the east and west energy grids in the United States. The North Plains Connector Project is designed for bi-directional transport of electricity and is located in southeastern Montana and southwestern North Dakota (Figure 1). For the purposes of this report, “Project” refers solely to the portion located in North Dakota.

North Plains contracted Western EcoSystems Technology, Inc. (WEST), to conduct aerial lek surveys for greater sage-grouse (GRSG; *Centrocercus urophasianus*) and sharp-tailed grouse (STGR; *Tympanuchus phasianellus*), collectively grouse, for the Project in 2022. The survey area included a 2-mile buffer on either side of the Project route in North Dakota at the time of survey in May 2022.

Portions of the 2022 survey area overlap the range of GRSG and STGR. Known (i.e., historic) GRSG leks previously documented by North Dakota Game and Fish Department (NDGFD) were specifically targeted for survey monitoring; however, surveyors also searched for new or previously undocumented (i.e., previously unknown) leks within the survey area. Surveyors recorded lek status and activity, including bird species and counts, at all lek locations throughout the survey area. This data will be used for Project routing, construction planning, and permitting, in compliance with applicable regulations in North Dakota.

This report was written specifically for the North Dakota Public Service Commission and only includes survey results pertinent to the Project route discussed in North Plain’s *Consolidated Application For A Certificate Of Corridor Compatibility And Transmission Facility Route Permit*. Section 3.0 includes a description of the survey area along this Project route. The original survey report provided to relevant state and federal resource agencies included additional technical survey details not included in this summary.

## 2.0 REGULATORY SETTING

### 2.1. Federal Regulations

Neither GRSG nor STGR are federally listed under the Endangered Species Act<sup>1</sup> or federally protected under the Migratory Bird Treaty Act of 1918.

### 2.2. North Dakota State Regulations

Neither STGR nor GRSG are legally protected in North Dakota. The GRSG range in North Dakota is limited to the southwestern corner of the state, particularly within the Bureau of Land

---

<sup>1</sup> In 2010, the U.S. Fish and Wildlife Service found GRSG warranted listing under the Endangered Species Act, but that listing was precluded due to higher priorities. GRSG was designated a candidate species until 2015, when the U.S. Fish and Wildlife Service determined listing was no longer warranted due, in part, to the successful implementation of local, state, and federal wildlife conservation partnerships through the Sage Grouse Initiative.

Management (BLM) /NDGFD Priority Conservation Area in Golden Valley, Slope, and Bowman counties. Discussions with NDGFD in early 2022 suggested aerial GRSG surveys by the Project were not needed, as annual lek monitoring is conducted by the state and no active leks are known to occur within the survey area in North Dakota.

STGR are closely monitored by the NDGFD and are a state Species of Conservation Priority in North Dakota (NDGFD, 2015). Therefore, STGR was the primary focus of Project lek surveys in North Dakota, per NDGFD request.

### **3.0 SURVEY AREA**

The proposed Project route crosses approximately 242 miles in Golden Valley, Slope, Hettinger, Grant, Morton, and Oliver counties in North Dakota (Figure 1). The Project route is located within the Northwestern Great Plains Level III Ecoregion, which encompasses portions of eastern Montana, western North Dakota and South Dakota, northeastern Wyoming, and northern Nebraska (U.S. Environmental Protection Agency [USEPA], 2013). This ecoregion is semiarid and characterized by rolling plains, sporadic buttes, and badlands. Much of the region was originally dominated by native grasslands, which are now fragmented but persist in rangeland patches. Agricultural uses, including rangeland and crop production, occur throughout, but can be limited due to inconsistent precipitation and access to irrigation (USEPA, 2013).

The survey area encompassed a 2-mile buffer on either side of the May 2022 Project route (i.e., a 4-mile-wide corridor; Figure 2). The May 2022 survey areas do not fully align with the proposed Project route due to post-survey reroutes. All leks identified within the May 2022 survey areas have been included to provide a complete view of surveyed leks and lek density near the Project; as such, some of the included leks are located over 2 miles from the proposed Project route.

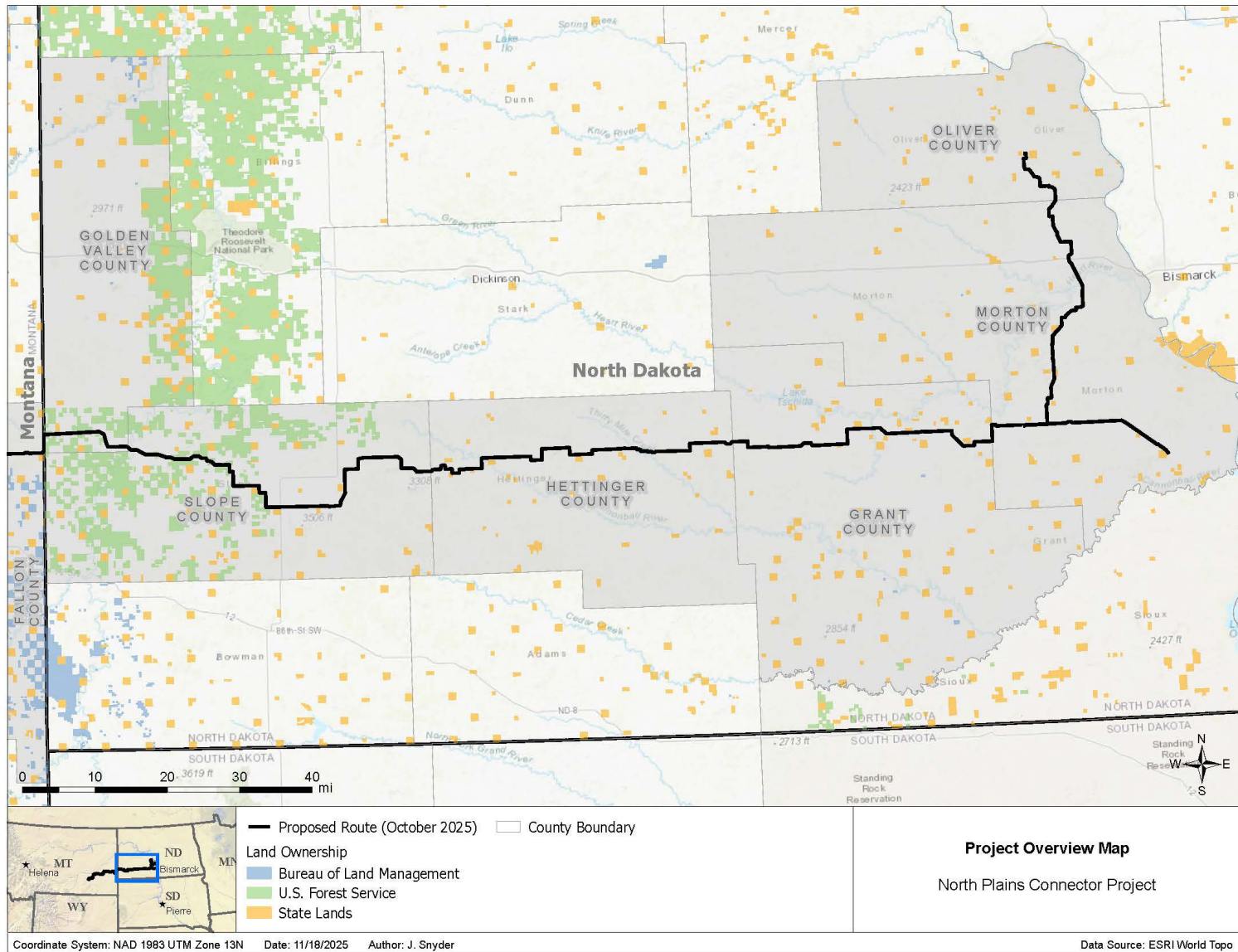


Figure 1. Overview of the proposed North Plains Connector Project location in North Dakota.

**North Plains Connector Project  
2022 Lek Survey Report**



**Figure 2. 2022 lek survey area along the North Plains Connector Project in North Dakota**

## 4.0 METHODS

Given the similarities between species biology and survey methodologies, one aerial survey protocol was developed to cover both GRSG and STGR lek surveys. Survey methods were designed to align with the BLM Miles City Field Office (BLM, 2022) and Montana Fish, Wildlife, and Parks (MFWP) GRSG survey protocols (Montana Sage Grouse Work Group, 2005), which were applied in North Dakota. Survey methods also followed general guidance provided by the BLM, U.S. Forest Service, and NDGFD during agency meetings in early 2022.

The Project's *Biological Survey Plan*, which included aerial lek surveys, was initially submitted to the agencies on March 7, 2022. A revised survey plan incorporating agency feedback provided in March and April was submitted on May 20, 2022; methodology revisions were confirmed with NDGFD prior to survey.

### 4.1. Aerial Survey Methodology

Aerial surveys were conducted to locate GRSG and STGR leks within the survey area. Pre-flight planning included a desktop review of aerial imagery and land cover data to identify potential lekking habitat for each species; historic lek locations were also reviewed and incorporated into the survey design. Historic GRSG leks were provided by NDGFD, but no historic STGR data were available. Potential lekking habitat for GRSG included clearings or areas of sparse vegetation surrounded by denser, taller sagebrush cover (i.e., potential nesting habitat). Potential STGR lek habitat included grasslands and prairies with some scattered shrubs and trees. Though potential habitat for GRSG was not likely within the survey area in North Dakota, potential STGR habitat was scattered and common throughout the survey area; thus, surveys for both species were planned along the full route and were not limited to specific areas of suitable habitat.

WEST biologists conducted aerial lek surveys from both fixed-wing aircraft (Aviat Husky and American Champion Scout) and helicopters (Robinson R-44 Raven II), depending on pilot and aircraft availability. To capture the optimal lekking period, surveys targeted the April 1 to May 7 timeframe recommended by the BLM and MFWP survey protocols. Flights were scheduled with approximately 7–10 days between each survey round in a given area but were modified as needed due to weather. Two rounds of aerial survey were conducted in North Dakota.

Surveys began 30 minutes before sunrise and ended two hours after sunrise. During each survey, biologists searched for previously unknown and historic lek locations along transects spaced approximately 0.5-mile apart. Transects were flown at approximately 100–300 feet above ground level at an air speed of approximately 90 miles per hour, depending on the terrain and wind conditions. Modifications to the flight path occurred where necessary, to provide additional attention to specific lek locations or suitable habitats. In an effort to reduce impacts to landowners in the survey area, transects and/or flight elevations were adjusted as needed to allow a 500-foot buffer (hereafter, avoidance area) around known structures (e.g., barns or residences) and known sensitive livestock areas (e.g., calving areas). Areas near transmission lines, towers, and other

sensitive infrastructure were avoided if they resulted in an increased safety risk to the surveyors and pilot.

#### 4.2. Data Collection Methodology

Surveyors used pre-programmed global positioning system- (GPS-) enabled tablets and Locus Pro software to record lek locations and survey flight paths during aerial surveys. General survey information, including sunrise time, survey start and end times, survey direction, weather conditions, and surveyor information were documented on a datasheet.<sup>2</sup> The following attributes were documented for each lek, per the survey protocols<sup>3</sup>:

- Time
- Species observed
- Total number of birds observed, if present
- Count of males and females observed, if possible
- Habitat type (e.g., sagebrush, grassland)
- Habitat disturbance, if any (e.g., burning, flooding)
- Bird disturbance, if any (e.g., flushing due to aircraft presence)

These lek attributes were recorded at historic leks regardless of bird presence to track survey visits during each survey round.<sup>4</sup> After a previously unknown lek was recorded, subsequent survey rounds also monitored that location, when possible. After each round of surveys was complete, each lek that had not previously been surveyed by WEST was assigned a unique survey identification number (e.g., ND-001).

For the Project surveys, active lek status was defined as having two or more grouse present during at least one round of survey. If a single grouse or no grouse were observed at a historic lek, the historic lek was considered inactive. If a single grouse was observed at a previously unknown lek location, it was recorded as an incidental observation and not considered an active lek.

## 5.0 RESULTS

Two survey rounds were completed between April 8 and 11 and May 10 and 16, 2022, and a total of 33 active (i.e., with two or more grouse present during at least one visit) leks were aerially

---

<sup>2</sup> Date, time, and weather data for each survey observation are not included in the report tables or appendices, but were submitted in the survey observation shapefile.

<sup>3</sup> Some aspects of the recommended survey protocols were not applicable to aerial surveys (e.g., recording predator sign, disturbance ratings), and were not collected.

<sup>4</sup> Five historic GRSG lek locations in North Dakota were provided; had birds been observed in these locations, they would have been included in the report. Because no birds were observed and because NDGFD did not request GRSG surveys, these locations were omitted (see Section 2.2 above).

surveyed within the May 2022 survey area in North Dakota. All 33 active lek locations were previously unknown, as no historic STGR data was available for North Dakota.

In April 2022, snowstorms, high winds, and other weather-related safety concerns grounded survey flights from April 12 to 18, April 22 to 25, and April 28 to 30, resulting in long gaps between the survey rounds due to no-fly periods. This delayed the completion of the second round of surveys in North Dakota and was coordinated with NDGFD prior to schedule adjustment.

### **5.1. Greater Sage-grouse**

No GRSG leks were documented in North Dakota during the 2022 surveys.

### **5.2. Sharp-tailed-grouse**

Thirty-three active STGR leks were documented within the May 2022 survey area in North Dakota (Table 1, Figure 3). Leks were located within five of the six counties where surveys occurred, including Golden Valley, Slope, Hettinger, Grant, and Morton counties; no active leks were documented in Oliver County. Of the 33 active STGR leks, 28 active leks are located within 2 miles of the proposed Project route<sup>3</sup>. The number of birds per lek and maximum lek size observed during surveys in North Dakota are presented in Table 1.

All lek observations, including counts of males and females where possible, are presented in Appendix A; leks located over 2 miles from the proposed Project route are also noted. Representative lek photos are provided in Appendix B. Disturbance was noted if grouse flushed during survey.

North Plains Connector Project  
2022 Lek Survey Report

**Table 1. Active sharp-tailed grouse leks found during aerial lek surveys conducted along the North Plains Connector Project in North Dakota.**

<b>Lek ID <sup>1</sup></b>	<b>Round 1 Total Birds</b>	<b>Round 2 Total Birds</b>	<b>Maximum Lek Size Observed</b>
ND-116	13	-	13
ND-117	NA	21	21
ND-118	NA	9	9
ND-119	7	-	7
ND-120	10	-	10
ND-121	NA	11	11
ND-122 *	18	-	18
ND-123	NA	30	30
ND-124	NA	20	20
ND-125	NA	10	10
ND-126	NA	40	40
ND-127 *	NA	12	12
ND-128 *	NA	15	15
ND-129 *	NA	6	6
ND-130 *	5	22	22
ND-131	NA	23	23
ND-132	NA	19	19
ND-133	2	-	2
ND-134	NA	20	20
ND-135	NA	5	5
ND-136	NA	25	25
ND-137	17	38	38
ND-138	NA	21	21
ND-139	NA	40	40
ND-140	11	20	20
ND-141	25	0	25
ND-142	NA	20	20
ND-143	3	-	3
ND-145	NA	12	12
ND-146	6	-	6
ND-147	14	10	14
ND-148	NA	8	8
ND-149	NA	9	9

NA = Count not applicable because previously unknown leks were found during the second round of surveys.

- = No survey occurred during the indicated round.

\* Lek is not currently within 2 miles of the proposed Project route.

<sup>1</sup> No historic STGR leks were available for North Dakota; all observations recorded in North Dakota were of previously unknown, active leks.



Figure 3. Active sharp-tailed grouse leks documented during aerial surveys along the North Plains Connector Project in North Dakota.

## 6.0 DISCUSSION

In April 2022, historic blizzards and the resulting schedule adjustments caused a long gap between the two survey rounds in North Dakota, and generally delayed the second round of surveys beyond the original planned survey window. This change was discussed NDGFD prior to the schedule adjustment.

During the 2022 aerial lek surveys, a total of 33 active previously unknown STGR leks were documented in North Dakota, including 28 leks within 2 miles of the proposed Project route. Leks were located within five of the six counties where surveys occurred, including Golden Valley, Slope, Hettinger, Grant, and Morton counties; no active leks were documented in Oliver County.

## 7.0 REFERENCES

- Bureau of Land Management. 2022. Wildlife Survey Protocol for the Miles City Field Office Bureau of Land Management (BLM). U.S. Department of the Interior, Bureau of Land Management, Miles City Field Office, Montana.
- Montana Sage Grouse Work Group. 2005. Management Plan and Conservation Strategies for Sage Grouse in Montana – Final. Revision 2-1-2005. Available online: <https://fwp.mt.gov/binaries/content/assets/fwp/conservation/wildlife-reports/sage-grouse/sqfinalplan.pdf>.
- North Dakota Game and Fish Department. 2015. 2015 North Dakota State Wildlife Action Plan. North Dakota Game and Fish Department, Bismarck, North Dakota. July 1, 2015. Available online: [https://gf.nd.gov/sites/default/files/publications/swap-2015\\_0.pdf](https://gf.nd.gov/sites/default/files/publications/swap-2015_0.pdf).
- U.S. Environmental Protection Agency. 2013. Level III ecoregions of the continental United States: Corvallis, Oregon, U.S. EPA – National Health and Environmental Effects Research Laboratory, map scale 1:7,500,000. Available online: <https://www.epa.gov/eco-research/level-iii-and-iv-ecoregions-continental-united-states>.

**Appendix A.**  
**Previously Unknown Sharp-tailed Grouse Leks**

**Appendix A. Previously unknown sharp-tailed grouse leks located along the North Plains Connector Project North Dakota.**

Lek ID	Round 1			Round 2		
	Males <sup>1</sup>	Females	Total Birds	Males <sup>1</sup>	Females	Total Birds
ND-116	9	4	13	-	-	-
ND-117	NA	NA	NA	13	8	21
ND-118	NA	NA	NA	0	0	9
ND-119	5	2	7	-	-	-
ND-120	5	5	10	-	-	-
ND-121	NA	NA	NA	0	0	11
ND-122 *	9	9	18	-	-	-
ND-123	NA	NA	NA	0	0	30
ND-124	NA	NA	NA	0	0	20
ND-125	NA	NA	NA	0	0	10
ND-126	NA	NA	NA	0	0	40
ND-127 *	NA	NA	NA	0	0	12
ND-128 *	NA	NA	NA	0	0	15
ND-129 *	NA	NA	NA	0	0	6
ND-130 *	5	0	5	10	11	22
ND-131	NA	NA	NA	13	10	23
ND-132	NA	NA	NA	0	0	19
ND-133	2	0	2	-	-	-
ND-134	NA	NA	NA	0	0	20
ND-135	NA	NA	NA	0	0	5
ND-136	NA	NA	NA	0	0	25 <sup>2</sup>
ND-137	0	0	17 <sup>2</sup>	18	0	38
ND-138	NA	NA	NA	0	0	21
ND-139	NA	NA	NA	0	0	40 <sup>2</sup>
ND-140	8	3	11 <sup>2</sup>	0	0	20 <sup>2</sup>
ND-141	0	0	25 <sup>2</sup>	0	0	0
ND-142	NA	NA	NA	0	0	20 <sup>2</sup>
ND-143	3	0	3	-	-	-
ND-145	NA	NA	NA	0	0	12
ND-146	6	0	6 <sup>2</sup>	-	-	-
ND-147	6	8	14 <sup>2</sup>	0	0	10 <sup>2</sup>
ND-148	NA	NA	NA	0	0	8
ND-149	NA	NA	NA	3	6	9 <sup>2</sup>

NA = Count not applicable because previously unknown leks were found during the second round of surveys.

\* Lek is not currently within 2 miles of the proposed Project route.

<sup>1</sup> Males were only counted if they were displaying; this count may be an underestimate of the number of males present.

<sup>2</sup> Indicates disturbance was observed (i.e., grouse flushed).

**Appendix B.**  
**Representative Lek Photos**



**Appendix B1.** Representative photo of a sharp-tailed grouse lek, as seen from an aircraft during 2022 surveys along the North Plains Connector Project.



**Appendix B2.** Representative photo of a sharp-tailed grouse lek, as seen from an aircraft during 2022 surveys along the North Plains Connector Project.