



MEMO

Date:

July 1, 2019

To:

ONEOK Bakken Pipeline, L.L.C.

From:

Merjent, Inc.

Subject:

Environmental survey results for new PSC Corridor and Route adjustment (MP 0.1)

Environmental surveys have been completed in full for a new North Dakota Public Service Commission (NDPSC) Corridor adjustment along the ONEOK Bakken Pipeline, L.L.C. Little Missouri Lateral Pipeline project. The Corridor adjustment is located at the eastern end of the route at milepost 0.1. Environmental surveys conducted include:

- Cultural resource field investigations (Class III inventory)
- Natural resource field surveys:
 - o Wetlands
 - o Waterbodies
 - o Grassland Habitat
 - o Threatened and endangered species habitat
 - o Eagle and raptor nests
 - o Noxious Weeds
 - o Tree and shrub inventories

A cultural resource survey for the expanded Corridor occurred in 2019 and was reported to North Dakota State Historic Preservation Office (NDSHPO) in the report: "Addendum to Little Missouri Lateral Pipeline: A Class III Cultural Resource Survey in McKenzie County, North Dakota". No cultural resources were identified during the survey, and NDSHPO concurred with the report and findings in a letter dated May 30, 2019 (see Attachment A).

A natural resource survey for the expanded Corridor occurred in 2019. The results of the 2019 surveys extended the delineation at a wetland and waterbody previously identified during 2018 surveys. No threatened or endangered species habitat or noxious weeds were identified during the 2019 surveys. The results are detailed in the attached Natural Resource Survey Report (see Attachment B).

Attachment A



**STATE
HISTORICAL
SOCIETY
OF NORTH DAKOTA**

RECEIVED

Doug Burgum
Governor of North Dakota

May 30, 2019

JUN - 4 2019

North Dakota
State Historical Board

Mr. Edwin Zedaker
Environmental Engineer
ONEOK, Inc.
100 West Fifth Street
Tulsa, OK 74103

ONEOK
ENVIRONMENTAL

Terrance Rockstad
Bismarck - President

H. Patrick Weir
Medora - Vice President

Steve C. Martens
Fargo - Secretary

ND SHPO Ref: 19-0195 PSC "Addendum to Little Missouri Lateral Pipeline: A Class III Cultural Resource Survey in McKenzie County, North Dakota"

Albert I. Berger
Grand Forks

Dear Mr. Zedaker,

Daniel Stenberg
Watford City

We reviewed ND SHPO Ref: 19-0195 PSC "Addendum to Little Missouri Lateral Pipeline: A Class III Cultural Resource Survey in McKenzie County, North Dakota," and find it acceptable. We concur with a "No Significant Sites Affected" determination for project, provided the project remains as mapped and described in the Metcalf Archaeological Consultants, Inc. report.

Calvin Grinnell
Bismarck

Allan Demaray
New Town

Thank you for the opportunity to review this project. Please include the ND SHPO reference number listed above in any further correspondence for this specific project. If you have any questions, please contact Paul Picha at (701)-328-3574 or Susan Quinnell at (701) 328-3576 or squinnell@nd.gov.

Sara Otte Coleman
Director
Tourism Division

Sincerely,

Kelly Schmidt
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Department

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Representative
Department of
Transportation

C: Maddy Krumwiede, Mergent

Claudia J. Berg
Director

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Attachment B

NATURAL RESOURCES REPORT – MAY 2019 ADDENDUM

Little Missouri Lateral Pipeline Project
McKenzie County, North Dakota
Carlson McCain Project #7559

Prepared for:

Merjent, Inc.
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June 4, 2019



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ENVIRONMENTAL • ENGINEERING • LAND SURVEYING

Little Missouri Lateral Project

TABLE OF CONTENTS

TABLE OF CONTENTS.....	i
1.0 SCOPE OF WORK.....	1
2.0 PROCEDURES.....	2
2.1 Wetland/Waterbody Field Delineation.....	2
2.2 Federally Listed Wildlife Species Survey.....	3
2.3 Noxious and Invasive Weed Survey.....	4
2.4 Raptor Nest Survey and Migratory Bird Nesting Habitat Survey.....	4
3.0 RESULTS.....	5
3.1 Wetlands.....	5
3.2 Waterbodies.....	5
3.3 Federally Listed Threatened and Endangered Species.....	6
3.3.1 Northern long-eared bat (<i>Myotis septentrionalis</i>): Threatened.....	6
3.3.2 Whooping crane (<i>Grus americana</i>): Endangered.....	6
3.3.3 Gray wolf (<i>Canis lupus</i>): Endangered.....	6
3.3.4 Pallid sturgeon (<i>Scaphirhynchus albus</i>): Endangered.....	7
3.3.5 Least tern (<i>Sterna antillarum</i>) and Critical Habitat: Endangered.....	7
3.3.6 Dakota skipper (<i>Hesperia dacotae</i>) and Critical Habitat: Threatened.....	7
3.3.7 Piping plover (<i>Charadrius melodus</i>) and Critical Habitat: Threatened.....	8
3.3.8 Red knot (<i>Calidris canutus rufa</i>): Threatened.....	8
3.4 Noxious and Invasive Weeds.....	9
3.5 Raptor Nests and Migratory Bird Nesting Habitat.....	9

TABLES

Table 1. Location of the Environmental Survey Corridor for the May 2019 Addendum.....	1
Table 2. Pre-survey Rainfall Levels.....	3
Table 3. Federally Listed Threatened and Endangered Species within the Survey Corridor.....	3
Table 4. North Dakota State and McKenzie County Listed Noxious and Invasive Weeds.....	4
Table 5. Delineated Wetlands.....	5
Table 6. Delineated Waterbodies.....	5

APPENDICES

- Appendix A. Figures
 - Figure 1. General Location
 - Figure 2. Field Survey Data
 - Figure 3. Threatened and Endangered Species
- Appendix B. 2018 Biological Field Survey Protocols
- Appendix C. Project Photographs
- Appendix D. USACE Wetland Determination Forms
- Appendix E. Waterbody Data Forms

1.0 SCOPE OF WORK

Carlson McCain, Inc. (Carlson McCain) was contracted in 2018 to locate and map noxious weeds, delineate wetlands and waterbodies, document raptor nests, and assess habitat for threatened and endangered species within the boundaries of ONEOK Bakken Pipeline, LLC’s Little Missouri Lateral Pipeline Project (Project) located in McKenzie County, North Dakota. The Project is approximately 11 miles in length and has a variable width corridor (Survey Corridor) that is most commonly 300-feet wide. Natural resources surveys covered approximately 856.9 acres in 2018.

Project Corridor changes occurred and additional natural resource surveys were needed in 2019. Approximately, 8.06 additional acres were added to the Survey Corridor. Table 1 summarizes the locations of the additional areas surveyed for this May 2019 Addendum. Figure 1 of Appendix A depicts the locations of the areas surveyed for the Project.

Table 1. Locations of the Environmental Survey Corridor for the May 2019 Addendum.

Section	Township (T), Range (R)	Acres
12	T149N, R100W	0.06
17	T149N, R99W	0.68
30	T149N, R98W	7.32

An assessment of land use was conducted for the additional Project acreage (2019 Survey Corridor) using 2018 aerial photography. Approximately 79% (6.38 acres) of the additional Survey Corridor is rangeland dominated by non-native grass species. Fourteen percent (1.15 acres) of the Survey Corridor is within existing road rights-of-way or developed for commercial use. The remaining 7 percent (0.53 acres) of the Survey Corridor is used for row crop agriculture.

2.0 PROCEDURES

Natural resource surveys were conducted concurrently as access to tracts within the Survey Corridor became available. Carlson McCain biologists Chad Tucker and Mike Fettes conducted field surveys on May 8th, 2019 and Chad Tucker conducted field surveys on May 10th, 2019.

Field surveys and feature nomenclature were documented in accordance with Merjent's 2018 Biological Field Survey Protocols for the Little Missouri Lateral Pipeline Project (Merjent 2018), which is included as Appendix B. Geospatial field data was collected using Sony Xperia Android Tablets paired with an EOS ARROW Lite global positioning system.

2.1 Wetland/Waterbody Field Delineation

Wetland delineations were conducted in accordance with the U.S. Army Corps of Engineers (USACE) *1987 Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)* (Manual).

Prior to field work, existing resource information was used to aid in identifying and delineating wetlands and drainage features within the Project Area. These resources included: McKenzie County National Agriculture Imagery Program (NAIP) aerial photographs; U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (USFWS 2019a); digital web soil survey of McKenzie County; and the U.S. Geological Survey National Hydrography Dataset (NHD) (USGS 2007).

A description of the wetland type and documentation of the vegetation, hydrology, and hydric soils were recorded on the associated USACE Wetland Determination Data Forms of the Great Plains Manual. Delineated wetlands were given Cowardin classification descriptions. Wetlands were documented with paired upland and wetland observation points.

Existing vegetation was classified using hydrophytic criteria as outlined in the Manual and the *National Wetland Plant List* (Lichvar et al. 2016). Hydric soil indicators were determined using the *Field Indicators of Hydric Soils in the United States; Guide for Identifying and Delineating Hydric Soils, Version 7.0* (USDA-NRCS, 2010). Hydrology was determined on-site by observation of hydrologic indicators.

Hydrological indicators used for wetland identification were determined on-site based on soils, topographic position, and presence of hydric vegetation. Waterbodies were defined using USACE Ordinary High Water Mark (OHWM) criteria and definitions provided by the U.S. Environmental Protection Agency (EPA) in *Draft Guidance on Identifying Waters Protected by the Clean Water Act*. Wetlands and waterbodies were field classified in accordance with guidelines set forth in the *Classification of Wetlands and Deepwater Habitats of the United States* by the Federal Geographic Data Committee (FGDC).

Rainfall data from the North Dakota Agricultural Weather Network (NDAWN) was reviewed from April 1st to May 7th, prior to the field survey, to determine moisture conditions against historic monthly averages. Table 2 shows monthly (2019) rainfall data and monthly historic rainfall averages from the NDAWN Station located approximately 2 miles east of Watford City, North Dakota. The selected NDAWN Station is located in close proximity to the Project to give representative data. Rainfall levels were an average of 0.75" below average for the April 1st to May 8th period prior to the start of the field surveys.

Table 2. Pre-survey Rainfall Levels¹

NDAWN Station	April Rainfall		May 1 st – 8 th Rainfall		Change from Average
	Actual	Average	Actual	Average	
Watford City 2E (Watford City, North Dakota)	0.49	0.85	0.03	0.42	-0.75

¹ North Dakota Agricultural Weather Network (NDAWN) 2019 Data

2.2 Federally Listed Wildlife Species Survey

Assessments for federally listed threatened and endangered species were conducted by evaluating historic and present occurrences and by determining if potential habitat exists within the Survey Corridor. Background data was collected for preliminary review and to aid in the field inventory of the biological resources. Data included the USFWS list of federally listed species for North Dakota, USFWS Designated Critical Habitat for Threatened and Endangered Species Geospatial Data, the North Dakota Parks and Recreation Department’s (NDPRD) species of concern list, and North Dakota Game and Fish Department (NDGF) Geospatial Data along with known range and habitat requirements for each species.

Table 3. Federally Listed Threatened and Endangered Species within the Survey Corridor

Federally Listed Threatened and Endangered Species		
Common Name	Scientific Name	Status
Northern long-eared bat	<i>Myotis septentrionalis</i>	Threatened
Gray wolf	<i>Canis lupus</i>	Endangered
Whooping crane	<i>Grus americana</i>	Endangered
Pallid sturgeon	<i>Scaphirhynchus albus</i>	Endangered
Least tern	<i>Sterna antillarum</i>	Endangered, Critical Habitat Designated
Dakota skipper	<i>Hesperia dacotae</i>	Threatened, Critical Habitat Designated
Piping plover	<i>Charadrius melodus</i>	Threatened, Critical Habitat Designated
Red knot	<i>Calidris canutus rufa</i>	Threatened

(USFWS 2019b)

2.3 Noxious and Invasive Weed Survey

North Dakota has 13 state-listed noxious weeds (NDDA 2019). The McKenzie County Weed Control District lists five additional species as invasive (NDDA 2019). Table 4 provides a list of noxious and/or invasive weed species listed in McKenzie County.

Table 4. North Dakota State and McKenzie County Listed Noxious and Invasive Weeds.

North Dakota State Listed Noxious Weeds		McKenzie County, ND Invasive Weeds	
Common Name	Scientific Name	Common Name	Scientific Name
Absinth wormwrod	<i>Aremisia absinthium</i>	Baby’s breath	<i>Gypsophila paniculata</i>
Canada thistle	<i>Cirsium arvense</i>	Black henbane	<i>Hyoscyamus niger</i>
Dalmatian toadflax	<i>Linaria genistifolia</i>	Common burdock	<i>Arctium minus</i>
Diffuse knapweed	<i>Centaurea diffusa</i>	Halogeton	<i>Halogeton glomeratus</i>
Houndstongue	<i>Cynoglossum officinale</i>		
Leafy spurge	<i>Euphorbia esula</i>		
Musk thistle	<i>Carduus nutans</i>		
Palmer amaranth	<i>Amaranthus palmeri</i>		
Purple loosestrife	<i>Lythrum salicaria</i>		
Russian knapweed	<i>Acroptilon repens</i>		
Saltcedar	<i>Tamarix chinensis</i>		
Spotted knapweed	<i>Centaurea maculosa</i>		
Yellow toadflax	<i>Linaria vulgaris</i>		

2.4 Raptor Nest Survey and Migratory Bird Nesting Habitat Survey

A pedestrian survey for raptor nests located within ½-mile line-of-sight of the Survey Corridor was conducted. A direct survey for migratory bird nests was not conducted; however, habitat types were documented.

3.0 RESULTS

3.1 Wetlands

Carlson McCain documented one wetland within the 2019 Survey Corridor. The wetland is an extension of Wetland (W_A-012) that was previously delineated within the 2018 Survey Corridor. An additional 0.18 acres of Wetland W_A-012 were delineated within the 2019 Survey Corridor. Table 5 summarizes the wetland location and its field classification. Wetland locations are depicted in Appendix A, Figure 2. Photographs are included in Appendix C and the USACE Wetland Determination Data Form is included in Appendix D.

Table 5. Delineated Wetlands.

Wetland ID	Cowardin Classification	Hydro Connection	Location	Longitude	Latitude	Acres
W_A-012	PEM	Yes	Section 30, T149N, R98W	-103.270463	47.692901	0.18 ¹

¹Represents the additional wetland acres delineated for W_A-012 within the 2019 Survey Corridor.

3.2 Waterbodies.

The field survey delineated one waterbody within the 2019 Survey Corridor. The waterbody (Waterbody S_A-06) was previously identified during the 2018 field surveys. Waterbody S_A-06 crossed into the 2019 Survey Corridor in three locations, totaling 0.43 acres. The data collected for the waterbody is summarized in Table 6 and depicted in Appendix A, Figure 2. Field photographs of representative waterbodies are included in Appendix C and an updated Waterbody Data Form are included in Appendix E.

Table 6. Delineated Waterbodies.

Waterbody ID	Cowardin Classification	Waterbody Name ¹	Flow Regime	Longitude	Latitude	Acres	OHWM Crossing Width (ft)	Top of Bank Crossing Width (ft)
S_A-006	R4SB5	Spring Creek	Intermittent	-103.265802	47.692097	0.43 ²	16	32

¹ USGS NHD dataset

²Represents the additional waterbody acres delineated for S-A-006 within the 2019 Survey Corridor.

3.3 Federally Listed Threatened and Endangered Species

Threatened and endangered species that have been documented and/or have the potential to occur within the Survey Corridor are listed in Table 3 along with designated critical habitat (USFWS 2018b). A review of USFWS and NDGF GIS species information datasets along with habitat data gathered from the on-site field surveys was conducted for the proposed Project. Threatened and endangered species information gathered from the review is documented below in the species discussions.

During the May 2019 field surveys, no state or federally listed species were observed and no potential habitat for state or federally listed species was observed.

3.3.1 Northern long-eared bat (*Myotis septentrionalis*): Threatened

The northern long-eared bat is a forest dwelling bat. The home range of the northern long-eared bat is approximately 150 acres (60.7 ha) including a summer and winter habitat. In the summer, northern long-eared bats roost under bark or in crevices of trees, preferring to roost in tall trees and under the exfoliating bark of dead or dying trees. In the winter, northern long-eared bats hibernate in caves and mines. The northern long-eared bat prefers foraging in edge habitats and forests comprised of trees with a diversity of life stages. The primary threats to the northern long-eared bat are white-nose syndrome (WNS), alteration/loss of habitat, and wind energy (USFWS 2014a). The northern long-eared bat is federally listed statewide in North Dakota.

The USFWS announced that starting May 4, 2015, the northern long-eared bat will be listed as threatened. WNS is the predominant threat to the northern long-eared bat at this time; however, in areas not yet affected by WNS, incidental takes are not prohibited. McKenzie County is not included in the current extent of WNS.

The field surveys did not identify any locations within the 2019 Survey Corridor that held potential habitat for the northern long-eared bat. Direct surveys for bats were not conducted.

3.3.2 Whooping crane (*Grus americana*): Endangered

The primary nesting area for the whooping crane is in Canada's Wood Buffalo National Park. Aransas National Wildlife Refuge in Texas is the primary wintering area for whooping cranes. In the spring and fall, the cranes migrate primarily along the Central Flyway. During the migration, cranes make numerous stops, roosting in large shallow marshes and feeding and loafing in harvested grain fields. The primary threats to whooping cranes are power lines, illegal hunting, and habitat loss (Texas Parks and Wildlife 2006).

The whooping crane is federally listed in all counties of North Dakota. The USFWS Database (USFWS 2018) shows McKenzie County has had eight verified whooping crane sightings. The closest confirmed sighting to the Project was of a single adult whooping crane in 2006, approximately five miles west of the Project in Section 24, T149N, R101W. The sighting locations are depicted in Appendix A, Figure 3.

3.3.3 Gray wolf (*Canis lupus*): Endangered

Rural areas throughout the State of North Dakota function as dispersal corridors for wolves representing the Western Great Lakes (east of the Missouri River and US Highway 83) and Wyoming portion of the Northern Rocky Mountain distinct population segments (DPS). Wolves representing the Western Great Lakes DPS were relisted under the Endangered Species Act as threatened, effective December 19, 2014. Wolves representing the Wyoming portion of the Northern Rocky Mountain DPS (west of the Missouri River and US 83) were delisted in 2011. However, gray wolves representing a formerly listed DPS could disperse through North Dakota at any time of the year. Wolf habitat within North Dakota occurs statewide and is considered dispersal

habitat. Dispersal habitat may be important for maintaining gene flow between DPSs but is not thought to be a limiting factor for the recovery of the species.

To reflect this possibility, the USFWS has classified wolves dispersing through North Dakota as endangered in all counties. The nearest verified sighting to the Project occurred in 2012, approximately 17 miles southwest of the Pipeline Corridor in Section 25, T147N, R102W (NDGF 2019) (Appendix A, Figure 3). There are three sightings recorded in the database for McKenzie County.

3.3.4 Pallid sturgeon (*Scaphirhynchus albus*): Endangered

Pallid sturgeon are found in the Mississippi, Missouri, and Yellowstone River systems and are adapted for living close to the bottom of large, shallow rivers with sand and gravel bars. Pallid sturgeon populations in North Dakota have decreased since the 1960s (Grondahl and Martin, no date). Weighing up to 85 pounds, pallid sturgeons are long-lived with individuals possibly reaching 50 years of age.

A known pallid sturgeon population occurs from the Missouri River below Fort Peck Dam to the headwaters of Lake Sakakawea and the Lower Yellowstone River up the confluence of the Tongue River, Montana (USFWS 2007). Factors leading to the decline of the pallid sturgeon and a listing as an endangered species by the USFWS in 1990 include the alteration of habitat through river channelization; creation of impoundments; and alteration of water flow regimes (USFWS 1990). The effect from these alterations within the Missouri River have reduced food sources by lowering productivity, destroying spawning habitat, altered flow conditions which can delay spawning cues, and blocked movements to spawning, feeding, and rearing areas (USFWS 2007).

The Project is approximately 15 miles from the Lake Sakakawea/Missouri River System. Due to the nature of the Project, no impacts to Lake Sakakawea are anticipated during construction and/or operation.

3.3.5 Least tern (*Sterna antillarum*) and Critical Habitat: Endangered

The interior least tern, a shorebird, is known to nest on midstream sandbars along the Yellowstone and Missouri River systems in North Dakota. The species constructs bowl-shaped depression nests on sparsely vegetated sandbars and sandy beaches during the nesting period, which occurs between mid-May and mid-August. Nesting adults have been documented to travel 7.5 miles or more from their nest sites to forage in wetlands or riverine habitat (Thompson et al. 1997). Habitat loss due to man-made changes to watersheds and river systems along with low nesting success from predation and human disturbance has caused a decline in least tern populations.

No individuals were observed in the area during the field surveys. Suitable shoreline habitat for breeding and nesting terns does not occur within the Survey Corridor. The Project is located approximately 15 miles from the Lake Sakakawea/Missouri River System. Migrating and foraging least terns could visit wetlands near the Project ROW; however, due to the lack of suitable nesting habitat and the presence of heavy grass and shrub cover, the interior least tern would likely not utilize such conditions.

3.3.6 Dakota skipper (*Hesperia dacotae*) and Critical Habitat: Threatened

The Dakota skipper, a prairie obligate species, requires nectar producing native flowers and native grasses. Historically, Dakota skippers have been associated with low, wet, prairie dominated high quality tall grass prairie habitat. Researchers have found that Dakota skippers also use upland mixed grass prairie that is relatively dry and includes ridges and hillsides. These often have small inclusions of areas with species more commonly typified with tall grass prairie. Royer and others (Royer et al. 2008) classified these into Type A and Type B habitats. Type B habitat i.e. upland mixed prairie is the most common type in western North Dakota.

Larvae require grass components of mixed-grass prairie that include bluestem grasses and needlegrasses, while adults require nectar sources; therefore, suitable prairie must include nectar-producing forbs. These may include purple coneflower, blue bells, or also called harebell (*Campanula rotundifolia*), blanket flower (*Gaillardia aristata*), wood lily (*Lilium philadelphicum*), or other species that are in bloom during the adult life cycle of the Dakota skipper. McKenzie County has two parcels that the USFWS has classified as critical habitat. The closest parcel is approximately 30 miles northwest of the Survey Corridor.

Potential habitat for the Dakota skipper was not observed within the 2019 Survey Corridor. Grassland habitat was found to be dominated by non-native species including smooth brome (*Bromus inermis*) and Kentucky bluegrass (*Poa pratensis*). The nearest designated critical habitat for the Dakota skipper is approximately 30 miles northeast of the Project. Direct surveys for the Dakota skipper were not conducted.

3.3.7 Piping plover (*Charadrius melodus*) and Critical Habitat: Threatened

The piping plover is a migratory shorebird that breeds in North Dakota. Suitable nesting habitat for piping plovers in the Missouri River system is characterized as sparsely vegetated channel sandbars, sand and gravel beaches on islands, temporary pools on sandbars and islands, and island margins that interface with the river channel. The piping plover feeds on worms, insects, and mollusks. Degradation of habitat related to the channelization river systems, nest predation, and human disturbance has led to the decline of piping plover populations.

The Survey Corridor is predominantly cropland, and contains wetlands and waterbodies that are well vegetated and do not provide bare ground suitable for nesting habitat.

Critical habitat for the Northern Great Plains piping plover has been designated on alkali lakes and wetlands, the Yellowstone River, and Missouri River in North Dakota. The physical and biological features that are essential to the conservation of the species, referred to as the primary constituent elements, require special consideration for protection. In riverine habitat, these include sparsely vegetated channel sandbars, sand and gravel beaches on islands, temporary pools on sandbars and islands, and island margins that interface with the river channel, all protected from disturbance. This Project is located approximately 15 miles south of the nearest critical habitat, which is the Lake Sakakawea/Missouri River System. (Appendix A, Figure 3) (USFWS 2015b). There is no suitable or critical piping plover habitat within the Survey Corridor.

3.3.8 Red knot (*Calidris canutus rufa*): Threatened

The red knot is a shorebird that breeds in the central Canadian Arctic, with primary breeding grounds in Nunavut Territory, but some potential breeding habitat extending into the Northwest Territories (FR 2013a). The rufa red knot winters along the Atlantic coasts of Argentina and Chile (particularly the island of Tierra del Fuego), the north coast of Brazil, and further north into Mexico and the southeast United States (USFWS 2014b). During migration, the rufa red knot primarily follows the Atlantic coastline to and from breeding and wintering grounds. However, geolocator results from red knots wintering in Texas showed that some birds migrate using a central flyway across the Midwestern U.S. and may have a northern Great Plains stopover (FR 2013). Rufa red knots spend 2 to 3 months at breeding sites in northern Canada.

Red knots are specialized molluscivores, feeding primarily on hard-shelled mollusks in soft wet sand/sediment (USFWS 2014b). In addition to mollusks, red knots may feed upon shrimp, crabs, marine worms, and horseshoe crab eggs and other similar invertebrates. On the breeding ground, rufa red knots feed mostly on terrestrial invertebrates and grass shoots/seeds (FR 2013).

The shoreline of the Missouri River provides stopover habitat for the red knot. Although some individuals may stopover in North Dakota during annual migrations, the species is rare and is not reported in North Dakota in every year. Reported historical sightings since 1900 (Igl 2015), are primarily one or a few birds; however, larger flocks have been reported. The majority of these sightings have been made in the prairie pothole region during the spring migration in late April through May. An increase in future sightings may result from an increase in public awareness.

The red knot migrates annually from its breeding grounds in the Arctic to wintering habitat in southern climates. It does not nest in North Dakota but may use areas along the Missouri River as stopover habitat. The Project is located approximately 15 miles south of the Lake Sakakawea/Missouri River System and the Survey Corridor does not have suitable shoreline stopover habitat for the red knot.

3.4 Noxious and Invasive Weeds

During the field surveys of the 2019 Survey Corridor, no locations of noxious or invasive weeds were identified.

3.5 Raptor Nests and Migratory Bird Nesting Habitat

No raptor nests were observed within ½-mile line-of-sight of the 2019 Survey Corridor. Approximately 79% (6.38 acres) of the 2019 Survey Corridor is rangeland dominated by non-native grass species, which may provide nesting habitat for grassland birds. Fourteen percent (1.15 acres) of the Survey Corridor is within existing road rights-of-way or developed for commercial use. The remaining 7 percent (0.53 acres) of the Survey Corridor is used for row crop agriculture. These developed areas provide low-quality habitat for nesting migratory birds.

REFERENCES

- Cowardin, L.M., V. Carter, F.C. Golet, E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. Jamestown, ND: Northern Prairie Wildlife Research Center Online.
<http://www.npwrc.usgs.gov/resource/wetlands/classwet/index.htm>
(Version 04DEC1998) Accessed June 2018.
- Environmental Laboratory. 1987. *Corp of Engineers Wetlands Delineation Manual*. Wetlands Research Program. Technical Report Y-87-1. Department of the Army, Waterways Experiment Station, US Army Corp of Engineers, Vicksburg, Mississippi, USA.
- Environmental Laboratory. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)*. U.S. Army Corps of Engineers, U.S. Army Engineer Research and Development Center, Vicksburg, Mississippi, USA.
- EPA (Environmental Protection Agency). April 2011. *Draft Guidance on Identifying Waters Protected by the Clean Water Act*. 76 FR 24479. Environmental Protection Agency and U.S. Army Corp of Engineers.
http://water.epa.gov/lawsregs/guidance/wetlands/upload/wous_guidance_4-2011.pdf.
- FR (Federal Register). 2015. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Dakota Skipper and Poweshiek Skipperling; Final Rule. Federal Register / Vol. 80, No. 190 / Thursday, October 1, 2015 / Rules and Regulations. U.S. Fish and Wildlife Service. Department of the Interior.
- FR (Federal Register). 2014. Endangered and Threatened Wildlife and Plants; Threatened Species Status for Dakota Skipper and Endangered Species Status for Poweshiek Skipperling. Federal Register/ Vol. 79, No. 206 / Friday, October 24, 2014 / Rules and Regulations. U.S. Fish and Wildlife Service. Department of the Interior.
- FR (Federal Register). 2013. Endangered and Threatened Wildlife and Plants: Proposed Threatened Status for the Rufa Red Knot (*Calidris canutus rufa*). Proposed Rule. 78(189): 60024-60098.
- FGDC. 2013. Federal Geographic Data Committee. Classification of Wetlands and Deepwater Habitats of the United States. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data committee and U.S. Fish and Wildlife Service, Washington, DC. Igl, L. 2015. Observations of Red Knots in North Dakota, List of records of Red Knots in North Dakota since the early 1900's. U.S. Geological Survey Northern Prairie Research Center. Jamestown, North Dakota. 3 pages.
- Grondahl, Chris and Kathy Martin. No Date. North Dakota's endangered and threatened species. North Dakota State Game and Fish Department's Nongame Program, Bismarck, ND. Jamestown, ND: Northern Prairie Wildlife Research Center Online.
<http://www.npwrc.usgs.gov/resource/wildlife/endanger/index.htm>(Version 16JUL97).
- Lichvar, R.W., D.L. Bandks, W.N. Kirchner, and N.C. Melvin. 2016. *The National Wetland Plant List. 2016 wetland ratings*. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X.
- Merjent. 2018. 2018 Biological Field Survey Protocol. Little Missouri Lateral Pipeline Project – ONEOK Bakken Pipeline, L.L.C. Merjent, Inc. June 2018.5

- NDAWN. 2019. North Dakota Agricultural Weather Network. Weather Data.
<https://ndawn.ndsu.nodak.edu/>.
- NDDA (North Dakota Department of Agriculture). 2019. Noxious Weeds. <https://www.nd.gov/ndda/plant-industries/noxious-weeds>.
- NDGF. 2019. Verified Wolf Sighting in North Dakota, through Spring of 2019. North Dakota Game and Fish Department, Bismarck, North Dakota.
- NDGOV. 2018. North Dakota Geographic Information Systems. 2018 Statewide Orthoimagery.
<https://www.nd.gov/itd/statewide-alliances/gis/maps-and-data>.
- Royer, R. A., R. A. McKenney, and W. E. Newton. 2008. A characterization of non-biotic environmental features of prairies hosting the Dakota skipper (*Hesperia dacotae*, Hesperidae) across its remaining U.S. range. *Journal of the Lepidopterists Society* 62:1-17.
- USDA, NRCS. 2019. Web Soil Survey of McKenzie County, North Dakota.
<http://websoilsurvey.nrcs.usda.gov/app>.
- USDA, NRCS. 2014 GeoSpatial Data Gateway. <https://gdg.sc.egov.usda.gov/> .
- USDA, NRCS. 2010. *Field Indicators of Hydric Soils in the United States*, Version 7.0. L.M. Vasilas, G.W. Hurt, and C.V. Noble (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.
- USFWS. 2019a. United States Fish and Wildlife Service. United States Fish & Wildlife Service National Wetlands Inventory Wetlands Mapper.
<https://www.fws.gov/wetlands/data/mapper.html>
- USFWS. 2019b. IPac: Information for Planning and Consultation. ND ESFO>U.S> Fish and Wildlife Service Department of the Interior. <https://ecos.fws.gov/ipac/>.
- USFWS. 2018. Confirmed Whooping Crane Sightings Through Spring 2018, Geospatial Information System Data. U.S. Fish and Wildlife Service, Wood River, Nebraska Field Office, Mountain-Prairie Region.
- USFWS. 2015b. County occurrence of Endangered, Threatened and Candidate Species and Designated Critical Habitat in North Dakota. Department of the Interior, U.S. Fish and Wildlife Service. Washington, DC 20240. USFWS. 2015b. Critical Habitat for Threatened & Endangered Species. U.S. Department of the Interior, Fish and Wildlife Service. Critical Habitat Portal metadata.
<http://ecos.fws.gov/crithab/>.
- USFWS. 2014a. Northern Long-Eared Bat Interim Conference and Planning Guidance.
website:<http://www.fws.gov/northeast/virginiafield/pdf/NLEBinterimGuidance6Jan2014.pdf>.
- USFWS. 2014b. Rufa Red Knot (*Calidris canutus rufa*) Fact Sheet.
http://www.fws.gov/northeast/redknot/pdf/Redknot_BWfactsheet092013.pdf.

USFWS. 2014c. Endangered and Threatened Wildlife and Plants; Threatened Species Status for Dakota Skipper and Endangered Species Status for Poweshiek Skippering; Final Rule 79 FR 63671. U.S. Department of the Interior. Fish and Wildlife Service. Federal Register / Vol. 79, No. 206 / Friday, October 24, 2014 / Rules and Regulations. Pp. 63672-63748.

USFWS. 2013. Endangered and Threatened Wildlife and Plants; Threatened Status for Dakota Skipper and Endangered Status for Poweshiek Skipperling. Proposed Rule. Federal Register 78(206): 63574-63625.

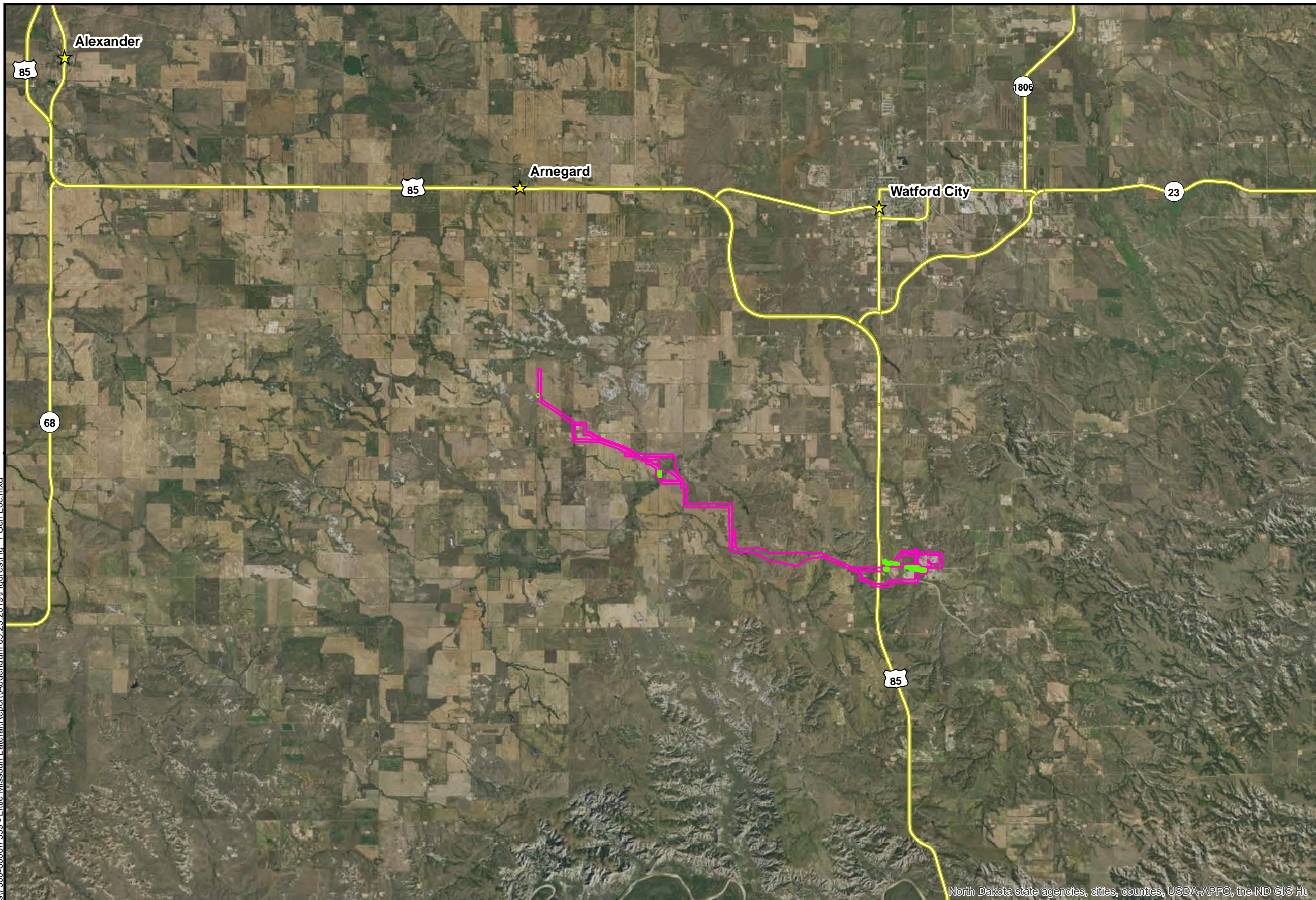
USGS. 2007. National Hydrography Dataset available on the World Wide Web (<http://nhd.usgs.gov>).

Texas Parks and Wildlife Department. 2006. Whooping Crane (*Grus americana*).
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Appendix A

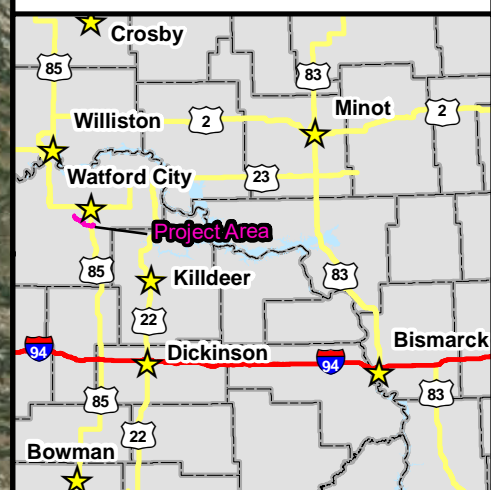
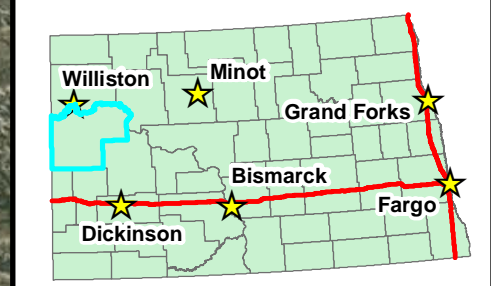
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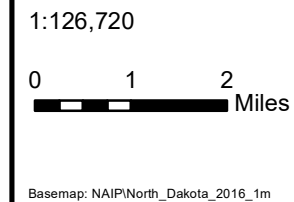


Legend

- 2019 Survey Corridor
- 2018 Survey Corridor
- Highway
- City



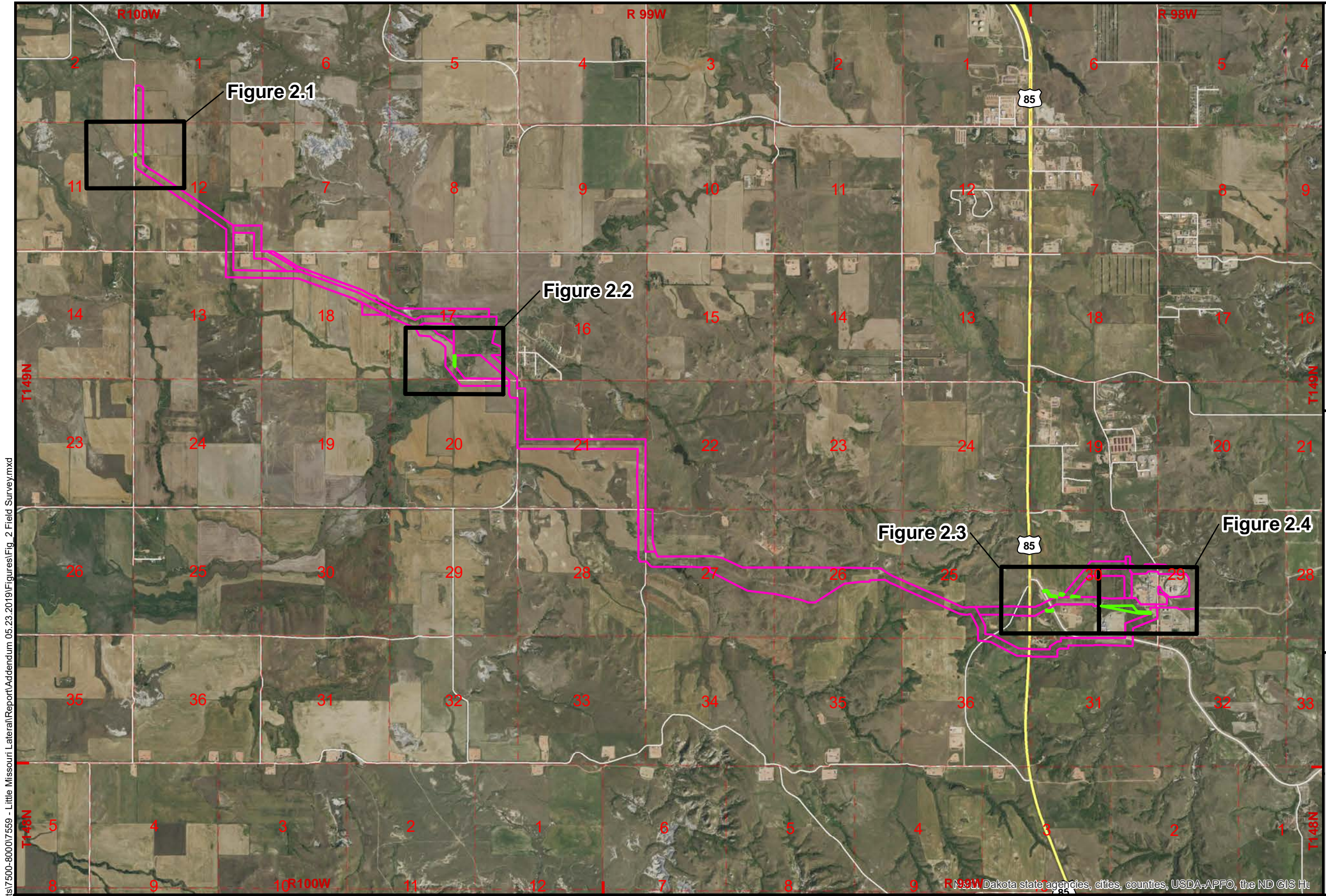
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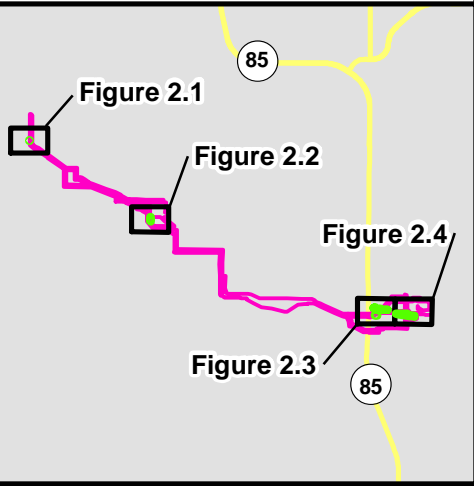
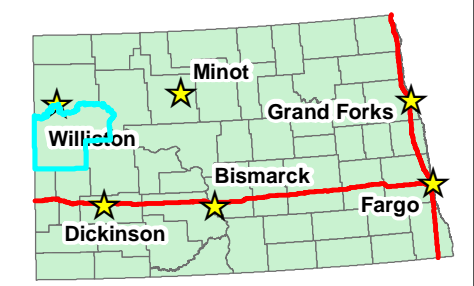
Little Missouri Lateral Pipeline Project - May 2019 Addendum
McKenzie County, North Dakota

Figure 1
General Location



Legend

- 2019 Survey Corridor
- 2018 Survey Corridor
- PLSS Section



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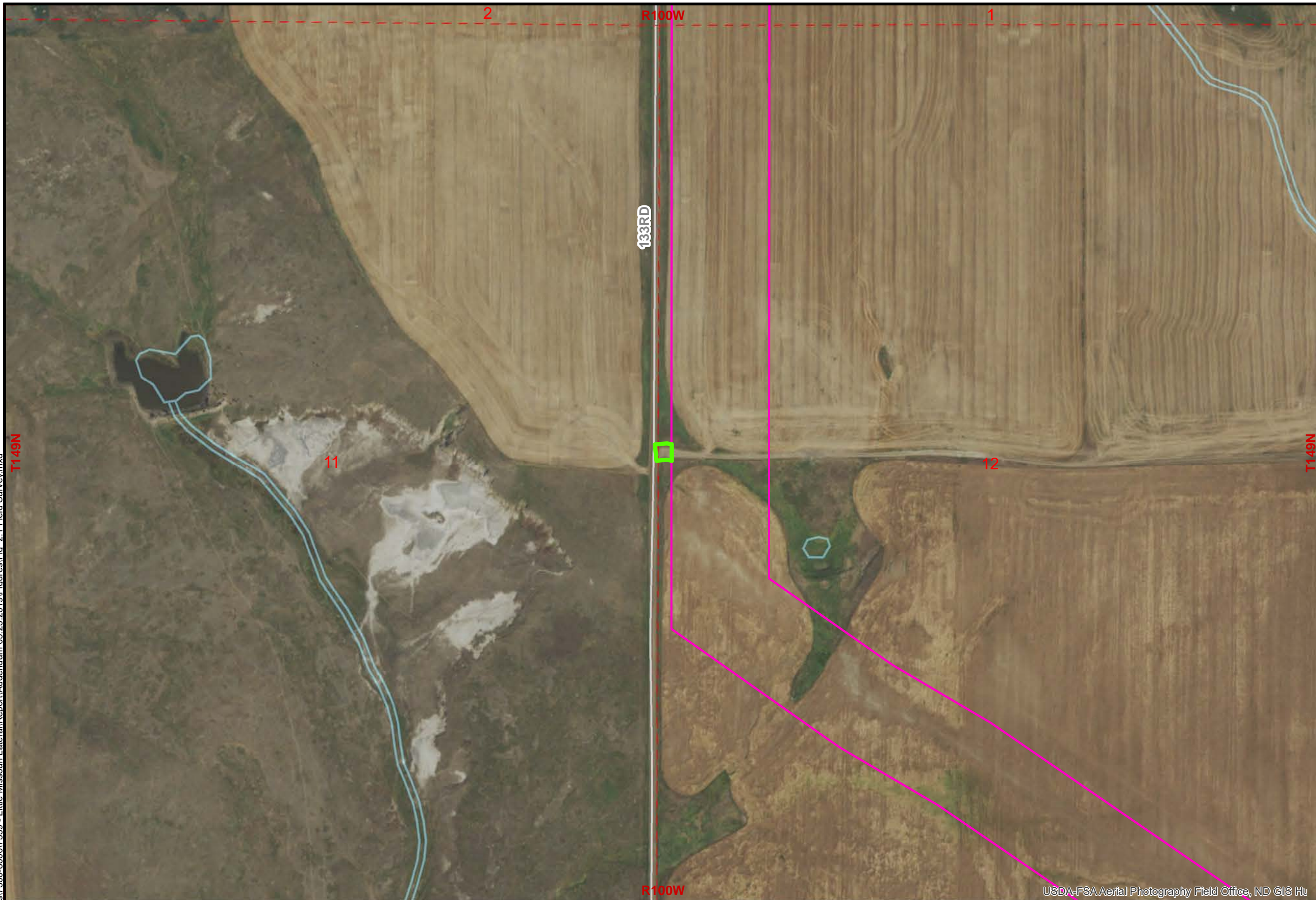
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McKenzie County, North Dakota

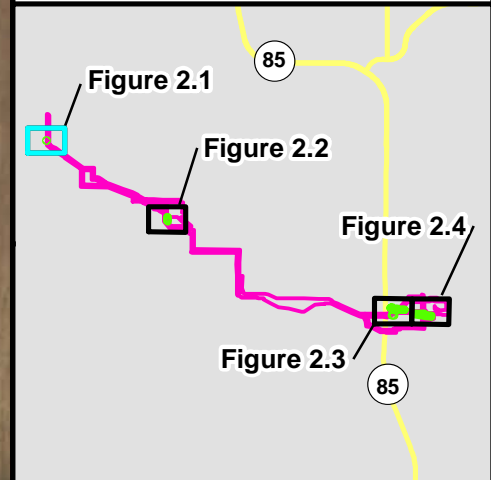
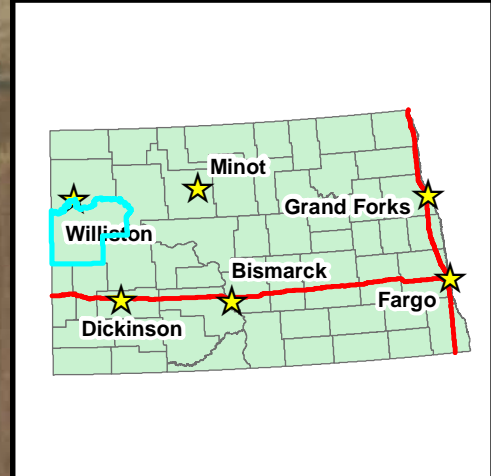
**Figure 2
Field Survey Data**

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Legend

- 2019 Survey Corridor
- 2018 Survey Corridor
- National Wetland Inventory
- PLSS Section



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Basemap: NAIPNorth_Dakota_2018

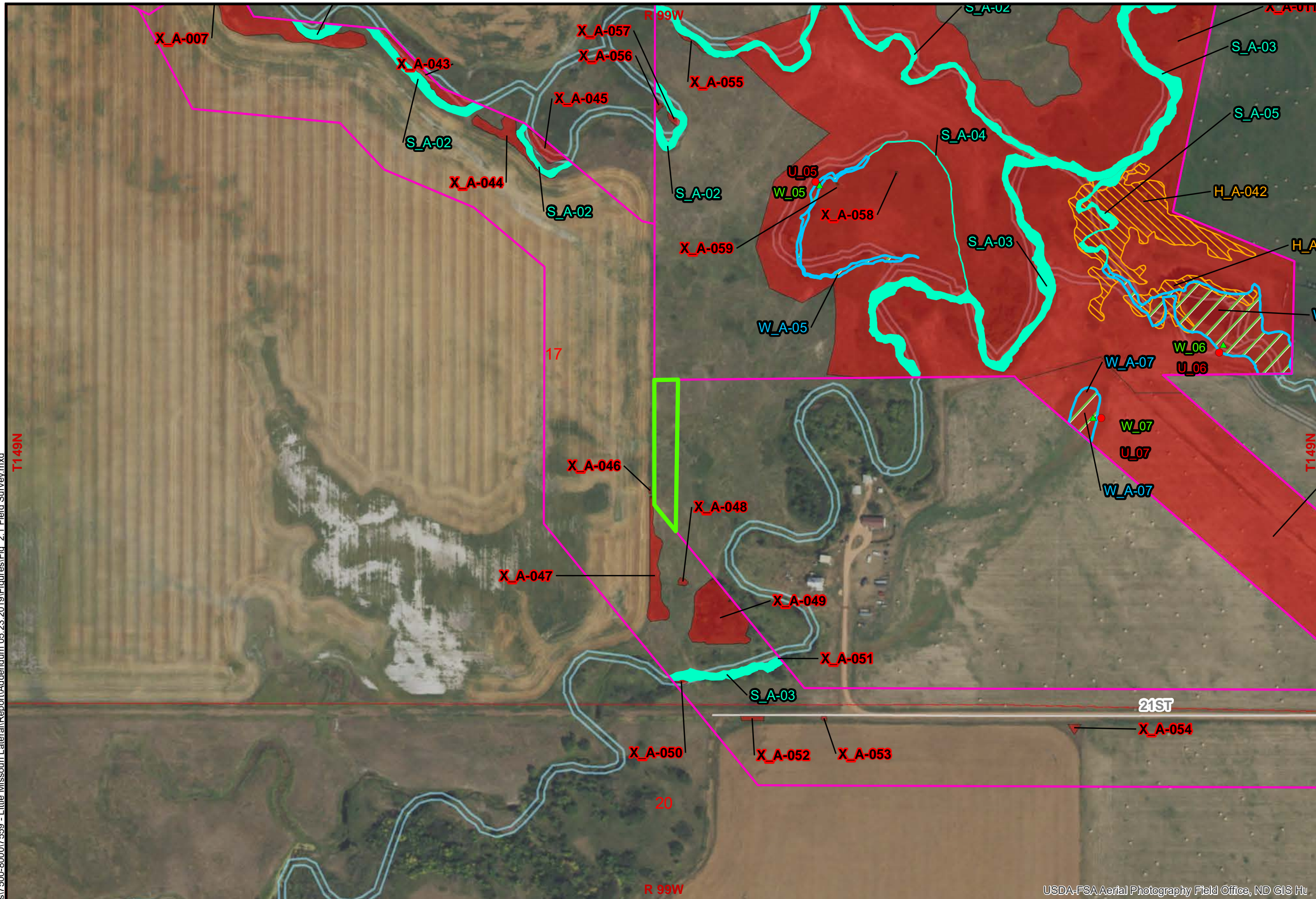


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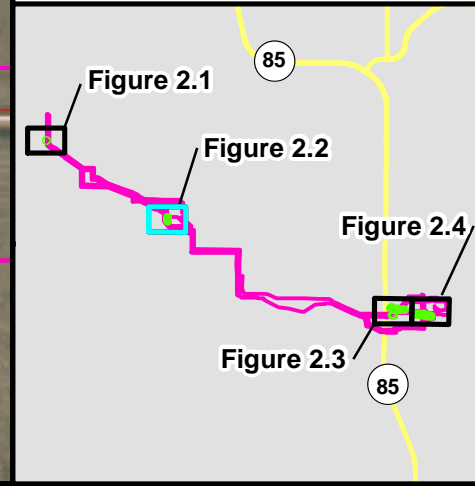
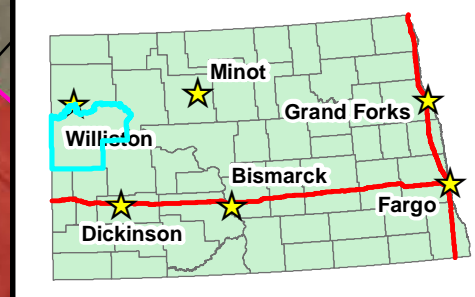
**Figure 2.1
Field Survey Data**

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Legend

- 2019 Survey Corridor
- 2018 Survey Corridor
- ▲ Wetland Observation Point
- Upland Observation Point
- Delineated Wetland
- Delineated Waterbody
- Noxious Weed Location
- National Wetland Inventory
- PLSS Section
- Potential T&E Species Habitat**
- Northern Long-eared Bat



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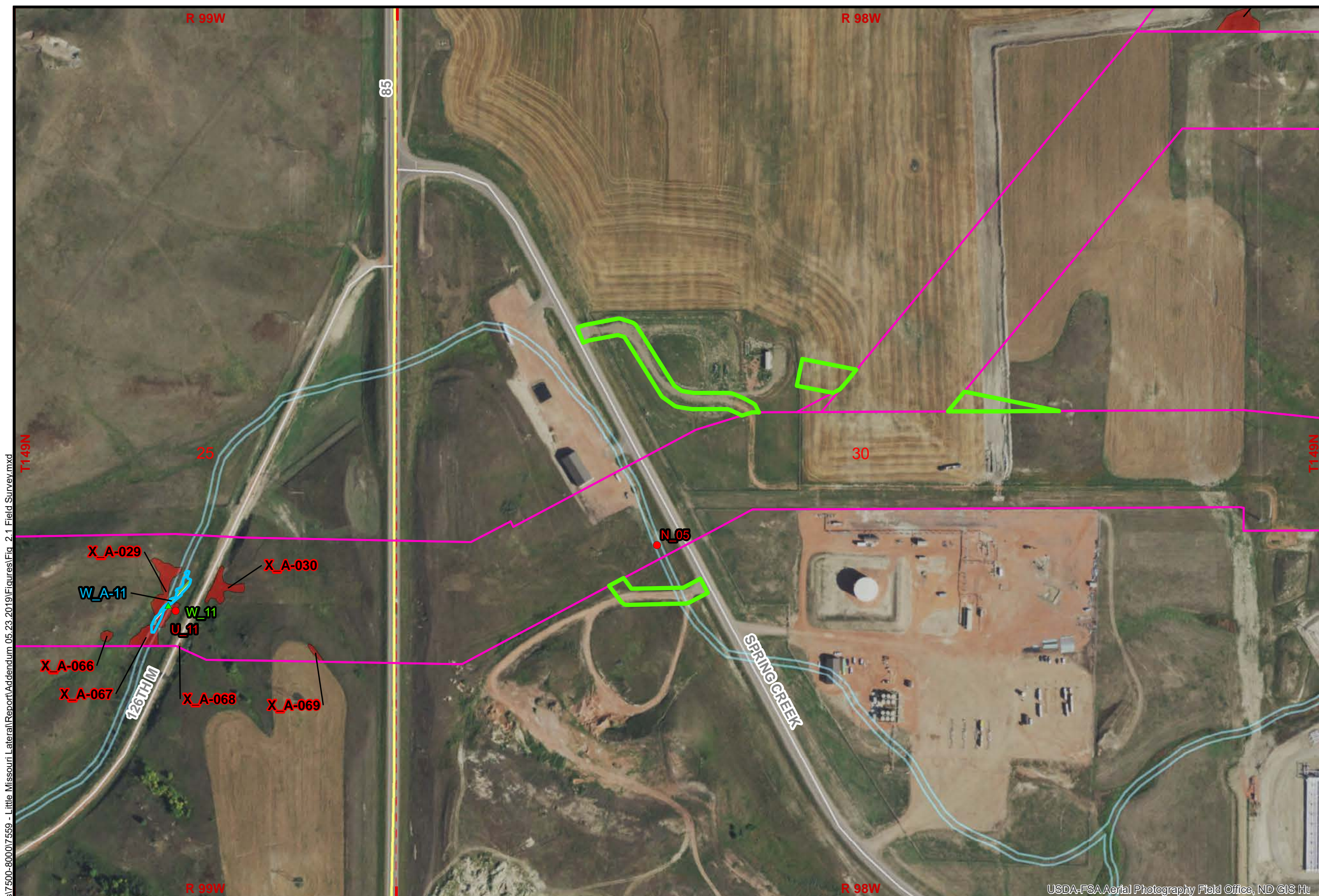
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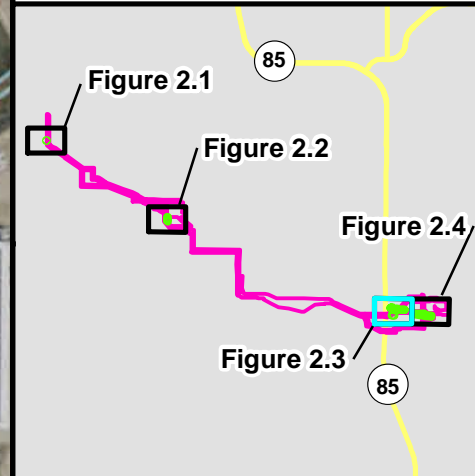
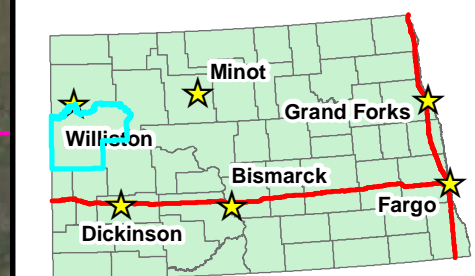
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McKenzie County, North Dakota

**Figure 2.2
Field Survey Data**

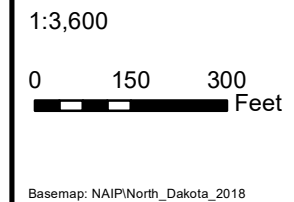


- Legend**
- 2019 Survey Corridor
 - 2018 Survey Corridor
 - ▲ Wetland Observation Point
 - Upland Observation Point
 - Delineated Wetland
 - Noxious Weed Location
 - National Wetland Inventory
 - PLSS Section



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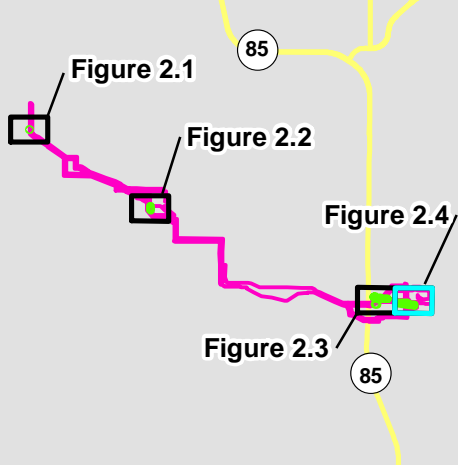
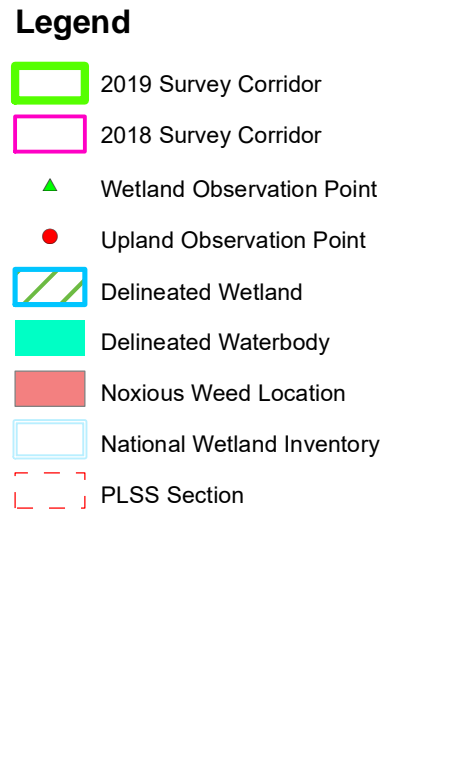
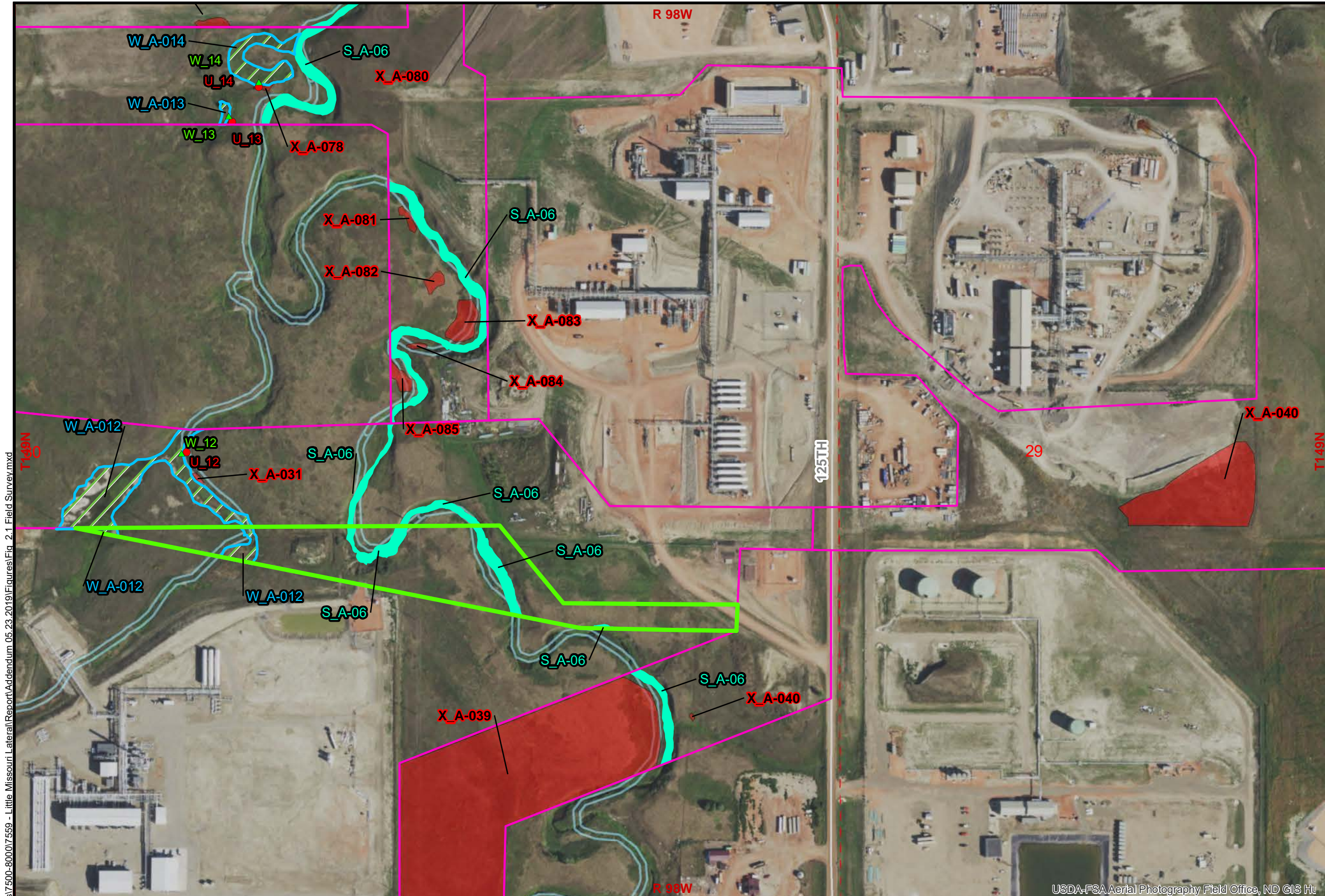
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Figure 2.3
Field Survey Data



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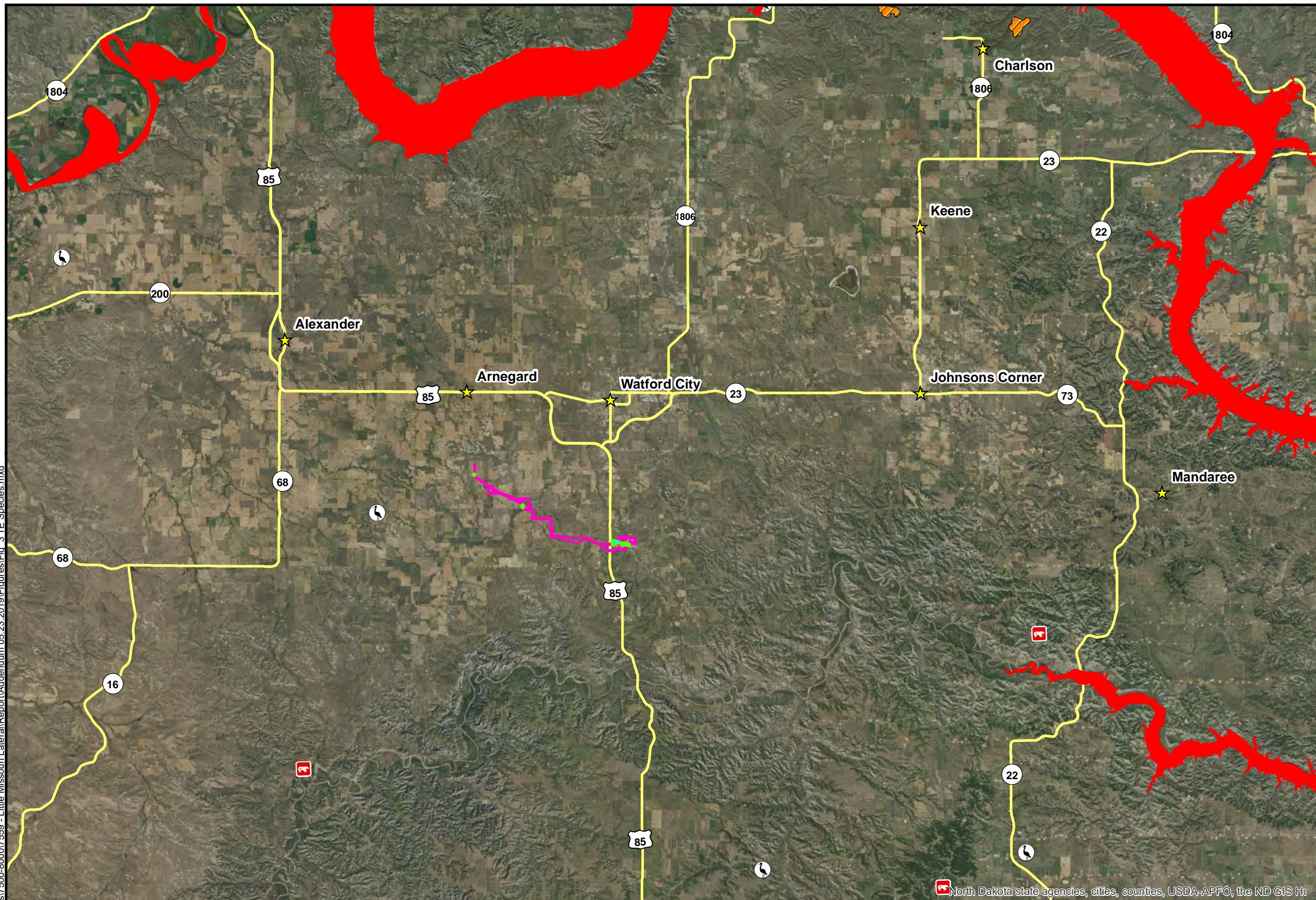
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Project - May 2019 Addendum**
McKenzie County, North Dakota

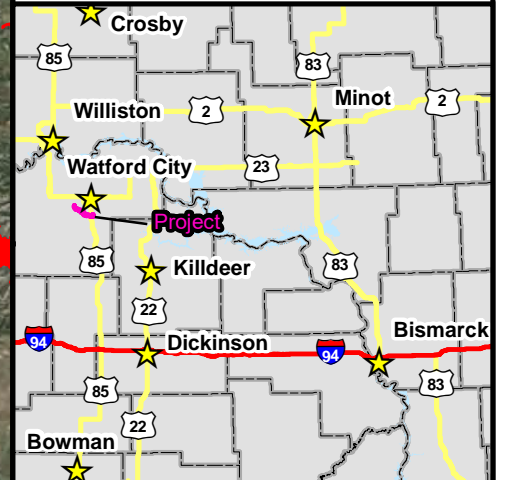
**Figure 2.4
Field Survey Data**

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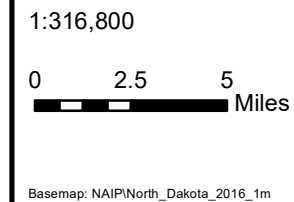


Legend

- 2019 Survey Corridor
- 2018 Survey Corridor
- Piping Plover Critical Habitat
- Dakota Skipper Critical Habitat
- Verified Gray Wolf Sightings (Thru Spring 2019)
- Whooping Crane Sightings (Thru Spring 2018)
- City
- Highway



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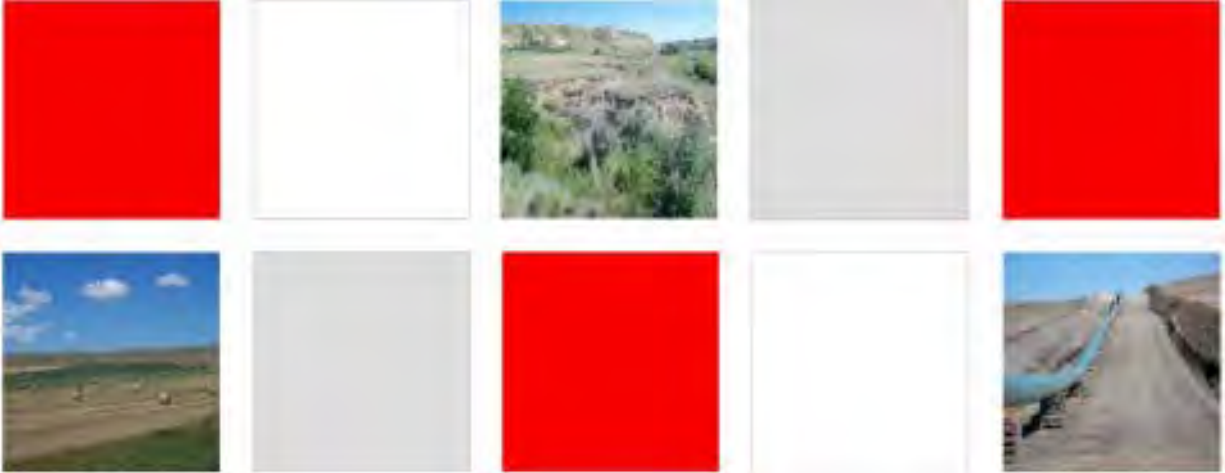
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Little Missouri Lateral Pipeline Project - May 2019 Addendum
McKenzie County, North Dakota

Figure 3
Threatened and Endangered Species

Appendix B

2018 Biological Field Survey Protocols



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Little Missouri Lateral Pipeline Project

Natural Resources Field Survey Protocols

June 19, 2018

TABLE OF CONTENTS

1.0 SCOPE..... 1

2.0 SAFETY 1

3.0 COMMUNICATION 1

4.0 SURVEY PROTOCOLS 1

 4.1 WETLANDS..... 1

 4.1.1 Vegetation..... 1

 4.1.1.1 Cowardin Classifications 2

 4.1.2 Hydrology 2

 4.1.3 Soils 2

 4.1.4 Wetland Complexes 2

 4.1.5 Upland Inclusions 2

 4.1.6 Upland Verification - National Wetland Inventory..... 2

 4.2 WATERBODIES 3

 4.2.1 Flow Regime and Cowardin Classifications 3

 4.2.2 Waterbodies within Wetland Complexes..... 3

 4.2.3 National Hydrography Dataset – Upland Verification 3

 4.3 HABITAT ASSESSMENTS 4

 4.3.1 Listed Species..... 4

 4.4 NOXIOUS WEED SURVEYS..... 4

 4.5 TREE AND SHRUB SURVEYS 5

5.0 FIELD DATA COLLECTION 5

 5.1 FEATURE ID NOMENCLATURE 5

 5.2 GPS DATA COLLECTION 6

 5.2.1 Start/Stop Points 6

 5.2.2 Data Dictionaries 6

 5.3 PHOTO DOCUMENTATION..... 6

6.0 REFERENCES..... 7

LIST OF TABLES

Table 3.3-1 USFWS Federally-listed Threatened and Endangered Species 4

Table 3.4-1 North Dakota Department of Agriculture and McKenzie County Listed Noxious Weeds 5

1.0 SCOPE

The objective of these protocols for wetland and waterbody, habitat assessment, noxious weed, and tree and shrub surveys is to ensure that Merjent, Inc. (Merjent) and its subcontractors, implement consistent field data collection procedures for the Little Missouri Lateral Project (Project). The Natural Resource Field Survey Protocols (Protocols) incorporate all applicable agency and client requirements to-date in order to facilitate timely and complete environmental permitting applications.

2.0 SAFETY

Safety is a priority for ONEOK, Inc. (ONEOK) and Merjent. Compliance with all Project-specific safety requirements is mandated by all parties. For specific information on safety requirements, please refer to the Health & Safety Plans therein.

3.0 COMMUNICATION

Please refer to the to the Communication Plan therein.

4.0 SURVEY PROTOCOLS

The entire 300-foot-wide environmental survey corridor and proposed compressor station site will be walked during field surveys to minimize the chance of missing any wetland communities, waterbody features, noxious weeds, woody vegetation, or potential suitable habitat areas that may affect permitting, constructability, or mitigation efforts.

4.1 WETLANDS

Crews will delineate all wetlands regardless of potential jurisdictional status and will collect data for wetland features encountered in the survey corridor. Wetland delineation methods will follow standard protocols set forth in the following publications:

- 1987 U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual (1987 Manual);
- 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0) (Regional Supplement; USACE 2010);
- Classification of Wetland and Deepwater Habitats of the United States (Cowardin et al. 1979); and
- The National Wetland Plant List (NWPL; Lichvar et al. 2016).

Data collection procedures include completing the USACE Wetland Determination Forms, collecting wetland boundaries via global positioning system (GPS) and data dictionary (see Section 5.2), collecting the spatial point data for wetland data points, and taking representative photos (see Section 5.3).

4.1.1 Vegetation

Vegetation sampling and documentation will follow procedures as described in the 1987 Manual, the Regional Supplement, community types as outlined in Cowardin et al. (1979), while using the wetland indicator statuses as prescribed by the National Wetland Plant List.

4.1.1.1 Cowardin Classifications

Cowardin classifications will be assigned to all delineated wetlands in North Dakota as either palustrine emergent (PEM), agricultural PEM (AG-PEM), palustrine unconsolidated bottom (PUB), palustrine scrub-shrub (PSS), and/or palustrine forested (PFO).

4.1.2 Hydrology

Hydrology sampling and documentation will follow procedures as described in the 1987 Manual and the Regional Supplement.

4.1.3 Soils

Soil sampling and documentation will follow procedures as described in the 1987 Manual and the Regional Supplement, which requires one soil profile to be collected at each data point.

Due to safety concerns, One Calls must be placed and marked before any ground disturbance can occur. **One calls are the responsibility of the individual performing soil excavations.**

Digging in roadside ditches is not prohibited, but is **not** recommended due to the likelihood of buried private utilities.

4.1.4 Wetland Complexes

For wetlands with multiple Cowardin classes, each discrete community will be identified when it comprises 10 percent or more of the wetland complex within the environmental survey corridor. Each discrete community within a wetland complex will require at least one representative USACE Wetland Determination Form, spatial data (boundaries and data points), and a photo.

4.1.5 Upland Inclusions

Upland inclusions within a wetland may be observed and will be delineated. In these cases, crews will collect the spatial wetland/upland boundary and a USACE upland data point to represent the upland inclusion.

4.1.6 Upland Verification - National Wetland Inventory

An area may be identified as a U.S. Fish & Wildlife Service (USFWS) National Wetland Inventory (NWI) wetland, but field indicators may conclude that the area doesn't meet the wetland parameters, thus is an upland. In these situations, field crews will:

- Collect a spatial data point location within the area indicated by NWI to be wetland;
- Collect detailed and defensible notes via data dictionary on vegetation, soil, and hydrology to document why the area is upland (note: completing a USACE Wetland Determination Form is not necessary); and
- Take a photograph of the NWI-indicated area to further characterize its upland nature.

In other instances, crews may locate an NWI that overlaps the observed wetland or is skewed from the observed wetland. In these cases, no additional documentation is needed for the upland fragment of the NWI area.

4.2 WATERBODIES

Waterbody surveys will be completed in conjunction with wetland surveys, and crews will delineate all waterbodies regardless of potential jurisdictional status. Waterbody delineation methods will follow the protocols set forth in the following publications:

- Regulatory Guidance Letter No. 05-05, Ordinary High Water Mark Identification (USACE 2005); and
- Classification of Wetland and Deepwater Habitats of the United States (Cowardin et al. 1979).

Waterbody data collection will consist of completing the Waterbody Community Data Form, collecting spatial data, and photos. Spatial data will be collected as follows:

- Waterbodies less than or equal to 10 feet between original high water mark (OHWM) will be delineated by capturing the centerline of the waterbody bed; and
- Waterbodies with an OHWM width greater than 10 feet will be delineated by capturing the OHWM along each bank.

4.2.1 Flow Regime and Cowardin Classifications

Flow regime will be defined as ephemeral, intermittent, or perennial. These will need to correspond to the appropriate Cowardin Class.

- Ephemeral Waterbodies – Defined as those features with an obvious bed and bank and are inundated following spring thaw and after periods of rainfall (otherwise these features are dry).
- Intermittent Waterbodies – Defined as those features with an obvious bed and bank, but likely have water present within the feature throughout the growing season. These features will additionally show evidence of sorting or stratification of materials (cobble, sand, organic matter).
- Perennial Waterbodies – Defined as those features with an obvious bed and bank and have standing water as well as evidence of aquatic fauna and flora consistently throughout the year.

4.2.2 Waterbodies within Wetland Complexes

There may be situations where a waterbody feature is contained within a larger wetland feature. Under these circumstances, the waterbody feature will be delineated separately from the wetland feature, as to differentiate the features for permitting and mitigation purposes.

4.2.3 National Hydrography Dataset – Upland Verification

An area may be identified as a U.S. Geological Survey National Hydrography Dataset (NHD) waterbody, but field indicators may conclude that the area does not contain a bed or bank (i.e., OHWM) and is entirely upland. In these situations, field crews will:

- Collect a spatial point location within the area indicated by NHD to be waterbody; and
- Take a photograph of the NHD-indicated area to further characterize its upland nature.

In other instances, crews may locate an NHD that overlaps the observed waterbody or is skewed from the observed feature. In those cases, no additional documentation is needed for the upland fragment of the NHD area.

4.3 HABITAT ASSESSMENTS

Habitat assessment surveys, including raptor nests, will be completed where crews will delineate all potentially suitable habitat for federal- and state-listed threatened and endangered species. Data collection for habitat assessments will be limited to GPS data collection via data dictionary and photo documentation. If a community, individual, or population is observed, polygon data will be collected.

Special attention should be paid to potential Dakota skipper (*Hesperia dacotae*; DASK) habitat during surveys. Robust notes should be taken along the Project route outlining areas of land use (pasture, rangeland, row crop, etc.), tilled/untilled land, nectar species, and the procedures outlined per the *Little Missouri Lateral 2018 Dakota Skipper Habitat Survey Protocol* provided by Merjent.

4.3.1 Listed Species

Eight federally listed threatened and endangered species may be present in the Project area in McKenzie County, North Dakota (see Table 4.3-1). Designated critical habitat is not present within the Project area.

Scientific Name	Common Name	Federal Status
<i>Canis lupus</i>	Gray wolf	Endangered
<i>Myotis septentrionalis</i>	Northern long-eared bat	Threatened
<i>Sterna antillarum</i>	Least tern	Endangered
<i>Charadrius melodus</i>	Piping plover	Threatened
<i>Calidris canutus rufa</i>	Red knot	Threatened
<i>Grus americana</i>	Whooping crane	Endangered
<i>Scaphirhynchus albus</i>	Pallid sturgeon	Endangered
<i>Hesperia dacotae</i>	Dakota skipper	Threatened

^a <https://ecos.fws.gov/ipac/> (accessed June 2018)

4.4 NOXIOUS WEED SURVEYS

Noxious weed surveys will be conducted where crews will delineate all occurrences of state- and county-listed noxious weeds in McKenzie County, North Dakota. Data collection for noxious weeds will be limited to GPS data collection via data dictionary and photo documentation.

The North Dakota Department of Agriculture lists 11 noxious weed species in the state and McKenzie County, North Dakota lists five additional species (see Table 4.4-1).

Table 4.4-1 North Dakota Department of Agriculture and McKenzie County Listed Noxious Weeds	
Species Scientific Name	Species Common Name
North Dakota Department of Agriculture ^a	
<i>Artemisia absinthium</i>	Absinth Wormwood
<i>Cirsium arvense</i>	Canada Thistle
<i>Linaria genistifolia</i>	Dalmation Toadflax
<i>Centaurea diffusa</i>	Diffuse Knapweed
<i>Euphorbia esula</i>	Leafy Spurge
<i>Carduus nutans</i>	Musk Thistle
<i>Lythrum salicaria</i>	Purple Loosestrife
<i>Acroptilon repens</i>	Russian Knapweed
<i>Tamarix chinensis, T. parviflora, T. ramosissima</i>	Saltcedar
<i>Centaurea maculosa</i>	Spotted Knapweed
<i>Linaria vulgaris</i>	Yellow Toadflax
McKenzie County ^b	
<i>Gypsophila paniculata</i>	Baby's Breath
<i>Hyoscyamus niger</i>	Black Henbane
<i>Arctium minus</i>	Common Burdock
<i>Halogeton glomeratus</i>	Halogeton
<i>Cynoglossum officinale</i>	Houndstongue
^a https://www.nd.gov/ndda/plant-industries/noxious-weeds (accessed June 2018)	
^b https://www.nd.gov/ndda/sites/default/files/resource/2018%20Feb%20-%20City%20County%20Noxious%20Weeds%20List.pdf (accessed June 2018)	

4.5 TREE AND SHRUB SURVEYS

Tree and shrub surveys will be conducted where crews will delineate all occurrences of woody vegetation that meets the USACE 1987 definitions of trees and shrubs in North Dakota and will be performed in accordance with the North Dakota Public Service Commission's Tree and Shrub Mitigation guidance. Data collection for trees and shrubs will be limited to GPS data collection via data dictionary and photo documentation.

5.0 FIELD DATA COLLECTION

The field data collection procedures as described in Section 4.1 through 4.5 are further explained in this below, including detailed descriptions of feature ID nomenclature, spatial data collection procedures, and photos.

5.1 FEATURE ID NOMENCLATURE

Feature ID nomenclature for wetlands, waterbodies, potential habitat, noxious weeds, and woody vegetation is Project specific and will be labeled in accordance with the methods outlined below. The first character of the Feature ID is meant to decipher the feature type (e.g., wetland, stream, woody vegetation, etc.), otherwise, the format is at the discretion of the subcontractor. The Feature IDs must remain consistent for the life of the Project.

The first character of each feature IDs are to be used as follows:

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Natural Resources Field Survey Protocols

- W = wetlands
 - W1 = wetland data point
 - U1 = upland data point
- S = waterbodies
- N = non-water upland verification points
- H = potential habitat
- D = potential DASK habitat
- X = noxious weeds
- T = trees, shrubs

5.2 GPS DATA COLLECTION

Sub-meter accurate GPS units will be used to locate wetland boundaries, USACE sample point locations, waterbody features, potential habitat, noxious weeds, and woody vegetation within the survey corridor. Data dictionaries will be used to supplement the spatial data collection for all disciplines.

The coordinate system to be used will be UTM Zone 14N in meters.

Polygons are required for wetlands, waterbodies, habitat, noxious weeds, and woody vegetation data. For wetlands, at least one wetland data point should be included for each wetland polygon, as well as a corresponding upland data point.

5.2.1 Start/Stop Points

Start and stop points will be used for survey tracking, coverage, and quality control purposes. Two start and stop points (one at each extent of the corridor) will be taken at the beginning of surveys and at the conclusion of surveys for each contiguous area surveyed.

For example, if four continuous tracts were surveyed, two start points will be taken at the beginning of Tract 1 and two stop points will be taken at the end of Tract 4. However, if intermittent tracts are being surveyed, each tract (or continuous area) will have its own start and stop points.

5.2.2 Data Dictionaries

Data dictionaries will be used as the main form of data collection for wetlands, waterbodies, habitat assessments, noxious weeds, and woody vegetation, and will also supplement the wetland and waterbody data. Data dictionaries must either be approved by Merjent, or will be provided to the Subcontractor by Merjent, in order to ensure full compliance with applicable regulations.

5.3 PHOTO DOCUMENTATION

Photo IDs will always match their Feature IDs. To take a photo of a wetland, waterbody, a specific Cowardin community within a complex, or a habitat area, it may be necessary to do so from outside the wetland or community. The name for the photo will match the wetland or community being photographed, not the location where it was taken. For example, a photo of a wetland taken from an upland area will be labelled with a “w”; not a “u” or other upland label.

The purpose of taking photos is to characterize the surveyed feature (wetland, waterbody, habitat, noxious weeds, tree and shrub, or upland verification points). At least one representative

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Natural Resources Field Survey Protocols

photograph will be taken of each feature, except for waterbodies. Two representative photographs will be taken of each waterbody; the first photograph will be perpendicular to the waterbody, and the second photograph will be parallel to the waterbody. If multiple plant communities are present in a given wetland (e.g., wetland complex; PEM/PSS/PFO), a representative photograph of each plant community will be taken.

- Photos will be taken in the landscape (horizontal) orientation;
- Photos will be a representative image of the feature; and
- Photos will not be taken looking into the sun as this will obscure the photo. When possible, the sun should be at the back of the photographer.

6.0 REFERENCES

Cowardin, L. M., V. Carter, F.C. Golet, and E.D. 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.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. *Phytoneuron* 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X

USACE. 2005. Regulatory Guidance Letter No. 05-05, Ordinary High Water Mark Identification. December 7, 2005.

USACE. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains (Version 2.0). ERDC/EL TR-10-1, U.S. Army Engineer Research and Development Center, Vicksburg, MS.

USFWS. 2018. 2018 Dakota Skipper (*Hesperia dacotae*) North Dakota Survey Protocol. USFWS North Dakota Field Office. Bismarck, North Dakota.

Appendix C

Project Photographs



Photograph 1. View of the 2019 Survey Corridor in Section 17, T149N, R99W. This area was found to be dominated by Kentucky bluegrass.



Photograph 2. View of Waterbody S_A-06 located in Section 30, T149N, R98W taken facing southwest.



Photograph 3. View of the eastern portion of Wetland W_A-012. Photo was taken facing northeast. This wetland is located in Section 30, T149N, R98W.



Photograph 4. View of the western portion of Wetland W_A-012. Photo taken facing west.

Appendix D

USACE Wetland Determination Forms

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Little Missouri Lateral County: McKenzie Sampling Date: June 22, 2018
 Applicant/Owner: ONEOK Bakken Pipeline, LLC State: ND Sampling Point: W-012
 Investigator(s): M. Fettes and C. Tucker Section, Township, Range: Sec. 30, T149N, R99W
 Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR): LRRF Lat: -103.26991 Long: 47.69321 Datum: NAD94
 Soil Map Unit Name: E4139A: Korchea-Fluvaquents complex, channeled, 0-2% slopes, frequently flooded NWI Classification: PEMC
 Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (if no, explain in Remarks.)
 Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Hydric Soil Present? Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	

Remarks:
 This point was determined to be within a wetland due to the presence of all 3 wetland criteria.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft.</u>)	Absolute % cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>1</u> (A)
1. <u>None Observed</u>				
2. _____				
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
4. _____				
0 = Total Cover				Prevalence Index Worksheet:
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>) 1. <u>None Observed</u> 2. _____ 3. _____ 4. _____ 5. _____ 0 = Total Cover				
Herb Stratum (Plot size: <u>5 ft.</u>) 1. <u>Eleocharis palustris</u> 80 yes OBL 2. <u>Spartina pectinata</u> 20 no FACW 3. <u>Hordeum jubatum</u> 5 no FACW 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 105 = Total Cover				Total % Cover of: Multiply by: OBL species <u>80</u> x 1 = <u>80</u> FACW species <u>25</u> x 2 = <u>50</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>105</u> (A) <u>130</u> (B) Prevalence Index = B/A = <u>1.24</u>
Woody Vine Stratum (Plot size: <u>30 ft.</u>) 1. <u>None Observed</u> 2. _____ 0% = Total Cover				
% Bare Ground in Herb Stratum <u>0%</u>				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Explain) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.
Remarks: (if observed, list morphological adaptations below). A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC). A positive indication of hydrophytic vegetation was observed (Prevalence Index is ≤ 3.00).				Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)									
Depth (inches)	Matrix			Redox Features			Texture	Remarks	
	Color (moist)		%	Color (moist)	%	Type ¹			Loc ²
0-12	2.5Y 4/1		90	7.5YR 4/6	10	C	M	Silt Loam	
12-15	2.5Y 6/1		95	7.5YR 4/6	5	C	M	Silt Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

<p>Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)</p> <p><input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)</p> <p><input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Mucky Mineral (F1)</p> <p><input type="checkbox"/> Stratified Layers (A5) (LRR F) <input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H) <input checked="" type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8)</p> <p><input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) <input type="checkbox"/> High Plains Depressions (F16)</p> <p><input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 & 73 of LRR H)</p>	<p>Indicators for Problematic Hydric Soils³:</p> <p><input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)</p> <p><input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)</p> <p><input type="checkbox"/> Dark Surface (S7) (LRR G)</p> <p><input type="checkbox"/> High Plains Depressions (F16)</p> <p>(LRR H outside of MLRA 72 & 73)</p> <p><input type="checkbox"/> Reduced Vertic (F18)</p> <p><input type="checkbox"/> Red Parent Material (TF2)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (TF12)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> <p>³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</p>
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<p>Restrictive Layer (if observed):</p> <p>Type: <u> </u> N/A</p> <p>Depth (inches): <u> </u> N/A</p>	<p>Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
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Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

<p>Wetland hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <p><input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Salt Crust (B11)</p> <p><input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Invertebrates (B13)</p> <p><input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</p> <p><input type="checkbox"/> Drift Deposits (B3) (where not tilled)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9)</p>	<p><u>Secondary Indicators (minimum of two required)</u></p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p> <p><input checked="" type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</p> <p>(where tilled)</p> <p><input type="checkbox"/> Crayfish Burrows (C8)</p> <p><input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input checked="" type="checkbox"/> Geomorphic Position (D2)</p> <p><input checked="" type="checkbox"/> FAC-Neutral Test (D5)</p> <p><input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)</p>
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<p>Field Observations:</p> <p>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u> </u> N/A</p> <p>Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u> </u> 12-15</p> <p>Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u> </u> 0-15</p> <p>(includes capillary fringe)</p>	<p>Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

A positive indication of wetland hydrology was observed (at least two secondary indicators).

A positive indication of wetland hydrology was observed (at least one primary indicator).

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Little Missouri Lateral County: McKenzie Sampling Date: June 22, 2018
 Applicant/Owner: ONEOK Bakken Pipeline, LLC State: ND Sampling Point: U-012
 Investigator(s): M. Fettes and C. Tucker Section, Township, Range: Sec. 30, T149N, R99W
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 9-10%
 Subregion (LRR): LRRF Lat: -103.26984 Long: 47.69322 Datum: NAD83
 Soil Map Unit Name: E4139A: Korchea-Fluvaquents complex, channeled, 0-2% slopes, frequently flooded NWI Classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (if no, explain in Remarks.)
 Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u> Hydric Soil Present? Yes <u> </u> No <u>X</u> Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
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Remarks:
 This point was determined not to be within a wetland due to the lack of all three wetland criteria.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft.</u>)	Absolute % cover	Dominant Species?	Indicator Status																																	
1. <u>None Observed</u>				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)																																
2. _____																																				
3. _____																																				
4. _____																																				
<u>0</u> = Total Cover				Prevalence Index Worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td align="center" colspan="2">Total % Cover of:</td> <td align="center" colspan="2">Multiply by:</td> </tr> <tr> <td>OBL species</td> <td align="center"><u>0</u></td> <td align="center">x 1 =</td> <td align="center"><u>0</u></td> </tr> <tr> <td>FACW species</td> <td align="center"><u>0</u></td> <td align="center">x 2 =</td> <td align="center"><u>0</u></td> </tr> <tr> <td>FAC species</td> <td align="center"><u>0</u></td> <td align="center">x 3 =</td> <td align="center"><u>0</u></td> </tr> <tr> <td>FACU species</td> <td align="center"><u>30</u></td> <td align="center">x 4 =</td> <td align="center"><u>120</u></td> </tr> <tr> <td>UPL species</td> <td align="center"><u>70</u></td> <td align="center">x 5 =</td> <td align="center"><u>350</u></td> </tr> <tr> <td>Column Totals:</td> <td align="center"><u>100</u></td> <td align="center">(A)</td> <td align="center"><u>470</u></td> </tr> <tr> <td colspan="2">Prevalence Index = B/A =</td> <td></td> <td align="center"><u>4.70</u></td> </tr> </table>	Total % Cover of:		Multiply by:		OBL species	<u>0</u>	x 1 =	<u>0</u>	FACW species	<u>0</u>	x 2 =	<u>0</u>	FAC species	<u>0</u>	x 3 =	<u>0</u>	FACU species	<u>30</u>	x 4 =	<u>120</u>	UPL species	<u>70</u>	x 5 =	<u>350</u>	Column Totals:	<u>100</u>	(A)	<u>470</u>	Prevalence Index = B/A =			<u>4.70</u>
Total % Cover of:		Multiply by:																																		
OBL species	<u>0</u>	x 1 =	<u>0</u>																																	
FACW species	<u>0</u>	x 2 =	<u>0</u>																																	
FAC species	<u>0</u>	x 3 =	<u>0</u>																																	
FACU species	<u>30</u>	x 4 =	<u>120</u>																																	
UPL species	<u>70</u>	x 5 =	<u>350</u>																																	
Column Totals:	<u>100</u>	(A)	<u>470</u>																																	
Prevalence Index = B/A =			<u>4.70</u>																																	
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)																																				
1. <u>None Observed</u>																																				
2. _____																																				
3. _____																																				
4. _____																																				
5. _____																																				
<u>0</u> = Total Cover																																				
Herb Stratum (Plot size: <u>5 ft.</u>)																																				
1. <u>Bromus inermis</u>	<u>70</u>	<u>yes</u>	<u>UPL</u>																																	
2. <u>Glycyrrhiza lepidota</u>	<u>15</u>	<u>no</u>	<u>FACU</u>																																	
3. <u>Poa pratensis</u>	<u>15</u>	<u>no</u>	<u>FACU</u>																																	
4. _____																																				
5. _____																																				
6. _____																																				
7. _____																																				
8. _____																																				
9. _____																																				
10. _____																																				
<u>100</u> = Total Cover																																				
Woody Vine Stratum (Plot size: <u>30 ft.</u>)																																				
1. <u>None Observed</u>																																				
2. _____																																				
<u>100%</u> = Total Cover																																				
% Bare Ground in Herb Stratum <u>0%</u>																																				

Remarks: (if observed, list morphological adaptations below).
 No positive indication of hydrophytic vegetation was observed (≥50% of dominant species indexed as FAC- or drier).

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 3/1		100	NONE				Loam	
4-12	10YR 3/2		100	NONE				Sandy Loam	
12-16	7.5YR 5/3		100	NONE				Sandy Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

<p>Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)</p> <p><input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)</p> <p><input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Mucky Mineral (F1)</p> <p><input type="checkbox"/> Stratified Layers (A5) (LRR F) <input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H) <input type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8)</p> <p><input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) <input type="checkbox"/> High Plains Depressions (F16)</p> <p><input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 & 73 of LRR H)</p>	<p>Indicators for Problematic Hydric Soils³:</p> <p><input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)</p> <p><input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)</p> <p><input type="checkbox"/> Dark Surface (S7) (LRR G)</p> <p><input type="checkbox"/> High Plains Depressions (F16)</p> <p>(LRR H outside of MLRA 72 & 73)</p> <p><input type="checkbox"/> Reduced Vertic (F18)</p> <p><input type="checkbox"/> Red Parent Material (TF2)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (TF12)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> <p>³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</p>
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<p>Restrictive Layer (if observed):</p> <p>Type: _____ N/A</p> <p>Depth (inches): _____ N/A</p>	<p>Hydric Soil Present? Yes _____ No <u>X</u></p>
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Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

<p>Wetland hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <p><input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Salt Crust (B11)</p> <p><input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Invertebrates (B13)</p> <p><input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</p> <p><input type="checkbox"/> Drift Deposits (B3) (where not tilled)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9)</p>	<p><u>Secondary Indicators (minimum of two required)</u></p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</p> <p>(where tilled)</p> <p><input type="checkbox"/> Crayfish Burrows (C8)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input type="checkbox"/> Geomorphic Position (D2)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p> <p><input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)</p>
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<p>Field Observations:</p> <p>Surface Water Present? Yes _____ No <u>X</u> Depth (inches): <u>N/A</u></p> <p>Water Table Present? Yes _____ No <u>X</u> Depth (inches): <u>N/A</u></p> <p>Saturation Present? Yes _____ No <u>X</u> Depth (inches): <u>N/A</u></p> <p>(includes capillary fringe)</p>	<p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No positive indication of wetland hydrology was observed.

Appendix E

Waterbody Data Forms



Little Missouri Lateral Project Waterbody Form

Feature ID:	<u>S_A-06</u>	Inspection Date:	<u>5/10/2019</u>
Waterbody Name:	<u>Spring Creek</u>	State:	<u>ND</u>
Staff Initials:	<u>CT, MF</u>	County:	<u>McKenzie</u>
Latitude:	<u>47.692097</u>	Longitude:	<u>-103.2658</u>
Cowardin:	<u>R4SB</u>	Evidence of Mussels?	<u>No</u>
Associated wetland(s)?	<input type="checkbox"/> (check if yes)	% Riparian Vegetation:	<u>65</u>

Left Bank Height (ft):	<u>6</u>	Left Bank Slope (°):	<u>25-45</u>
Right Bank Height (ft):	<u>6</u>	Right Bank Slope (°):	<u>25-45</u>
OHWM Height (ft):	<u>2.25</u>	Top of Bank Width (ft):	<u>32</u>
OHWM Width (ft):	<u>16</u>	Water Clarity:	<u>Turbid</u>
OHWM Criteria:	<u>Clear, natural line impressed on bank</u>	Avg. Water Depth (ft):	<u>2</u>
Primary Substrate:	<u>Silt</u>	Flow Rate (ft/s):	<u>N/A</u>
		Flow Direction:	<u>N</u>

Unique Features (Check all that apply):

<input checked="" type="checkbox"/> Unstable Banks	<input checked="" type="checkbox"/> Headcutting	<input checked="" type="checkbox"/> Erosion	<input checked="" type="checkbox"/> Pools
<input type="checkbox"/> Rock Outcrop	<input type="checkbox"/> Gravel Bars/Islands	<input type="checkbox"/> Cutoff Channels	<input type="checkbox"/> Dam
<input checked="" type="checkbox"/> Riffles/Runs	<input type="checkbox"/> Riprap	<input type="checkbox"/> Buildings	<input type="checkbox"/> Seeps
<input type="checkbox"/> Bridge	<input type="checkbox"/> Diversion/Intake	<input checked="" type="checkbox"/> Steep Sideslopes	<input type="checkbox"/> Other (Explain): <u>Depressed vegetation</u>

Dominant Plant Species	Photos (List Photo ID):
1. <u>Spartina pectinata</u>	<u>502 S_A-06 Facing W</u>
2. <u>Eleocharis palustris</u>	<u>503 S_A-06 Facing E</u>
3. <u>Schoenoplectus tabernaemontani</u>	<u>504 S_A-06 Facing SW</u>
4. <u>Ceratophyllum demersum</u>	<u>505 S_A-06 Facing N</u>
5. <u>Typha latifolia</u>	

Notes:
 Three stream meanders in and out of the Project Area at multiple locations. Because they are a part of the same stream system, they are labeled the same feature name.