Appendix D

Natural Resource Report

Natural Resources and Wetland Determination Report for the Stateline NGL Pipeline Project, Williams County, North Dakota

Prepared for

E3 Environmental, LLC

Prepared by

SWCA Environmental Consultants

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Natural Resources and Wetland Determination Report for the Stateline NGL Pipeline Project, Williams County, North Dakota

Prepared for:

E3 Environmental, LLC
St Paul, MN

Prepared by:

Pete Christensen, Environmental Specialist
and Kyle McLean, Environmental Specialist

Reviewed by:

Michael Cook, Natural Resources Lead

SWCA Environmental Consultants
116 N. 4th Street, Suite 200
Bismarck, ND 58501
(701) 258-6622, Fax (701) 258-5957

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1.0 INTRODUCTION

1.1 BACKGROUND

SWCA Environmental Consultants (SWCA) conducted natural resources field surveys in order to identify potential exclusion and avoidance areas as specified in North Dakota Administrative Code (NDAC) 69-06-08-02 on the behalf of E3 Environmental, LLC (E3) for the proposed ONEOK Rockies Midstream, L.L.C. Stateline Natural Gas Liquids Pipeline (Stateline) Project. ONEOK Rockies Midstream, L.L.C. (ONEOK) proposes to construct a 10-inch-diameter natural gas liquids (NGL) pipeline originating at the ONEOK Stateline Gas Plants near Williston, North Dakota, and terminating at the Riverview Terminal, located southwest of Sidney, Montana.

Approximately 13.03 miles of the Stateline pipeline would cross private and state lands in Williams County, North Dakota, and the remaining approximately 40 miles would cross private and state lands in Richland and Roosevelt Counties in Montana (see Appendix A). The portion of the pipeline proposed for construction in North Dakota falls under the jurisdiction of the North Dakota Public Service Commission (NDPSC). E3 is assisting ONEOK with their application to the NDPSC for a certificate of corridor compatibility and route permit for the project.

The proposed 10-inch pipeline would be constructed within a 100-foot-wide temporary construction right-of-way (ROW), with the workspace typically centered on either side of the pipeline.

SWCA conducted field surveys, including re-routes, of a 250-foot-wide corridor between September 26–28 and November 8, 11, 14, 2011, to determine the potential presence and extent of wetlands and waterbodies, including jurisdictional waters of the U.S., commonly referred to as wetland and ordinary high water mark (OHWM) determinations, within the proposed survey area. Concurrently with the wetland determination, SWCA conducted a cursory threatened and endangered species survey and habitat assessment; a tree, sapling, and shrub enumeration survey; and a noxious weed survey. Site layout maps of the survey area and natural resource features identified during the field surveys are provided in Appendix A. A desktop and intuitive survey was conducted on a small segment (segment) of the pipeline located in the NE ¼ NE ¼ of Section 2, Township 153 North, Range 94 West. This area was not walked but surveyed at a distance with binoculars, and a desktop delineation was done on one potential wetland. SWCA recommends completing a pedestrian survey of the area to determine the presence of woody stemmed vegetation and noxious weeds when conditions allow prior to construction.

This report outlines the methodology used by SWCA's ecologists to complete each of the aforementioned surveys, and the results of the surveys.

2.0 METHODS

2.1 SURVEY AREA

Overall, northwest North Dakota is characterized by a moderate to cool climate, with cold, dry winters and mild to warm summers. Mean annual precipitation for the area is 14 to 16 inches (Bryce et al. 1998).

The North Dakota portion of the proposed project is located in the Northwestern Glaciated Plains, which marks the westernmost extent of glacial activity (Bryce et al. 1998). The Northwestern Glaciated Plains have significant surface irregularity characteristic of a youthful morainal landscape, with hills and depressions and high concentrations of wetlands (Figure 1). Further, the North Dakota portion of the proposed project is located in the Glaciated Dark Brown Prairie (level IV ecoregion) region. This ecoregion has a well-defined drainage system and fewer wetlands compared to the more recently glaciated ecoregions to the east (Bryce et al. 1998).

Figure 1. Project area overview depicting general topography towards northern end of pipeline corridor, facing north.

The North Dakota portion of the proposed project is located on gently rolling plains (Figure 2) and active agricultural fields (Figure 3). The elevation ranges from approximately 1,950 to 3,000 feet above sea level, with the highest elevations in the northern portion of the project area, and the lowest elevations in the southern portion of the project area.

Figure 2. Project area overview depicting general topography near the middle section of the pipeline corridor, facing south.

Figure 3. General topography and adjacent agricultural disturbance within the project area.

The inventoried area for the North Dakota portion of the project area discussed herein is situated on the U.S. Geological Survey (USGS) Trenton NW (1977) and Baineville SE (1971), North Dakota quadrangles, as shown in Appendix A. The inventoried area includes parcels in Sections 21, 28, 33, and 32, Township (T) 155 North (N), Range (R) 103 West (W); Sections 5, 6, 7, 18, and 19, T154N, R103W; Sections 24, 25, 26, and 35, T154N, R104W; and Sections 2, 11, and 10, T153N, R104W (see Appendix A).

2.2 PRE-FIELD REVIEW

Prior to conducting field surveys, SWCA reviewed the applicable U.S. Fish and Wildlife Service (USFWS) threatened and endangered species list for Williams County, North Dakota (USFWS 2011). Additionally, SWCA reviewed applicable National Wetland Inventory (NWI) data as well as preliminary National Weather Service climatic data.

2.3 WETLANDS

SWCA ecologists conducted wetland determinations, within the survey area, based on the principles and guidelines provided in the *1987 Corps of Engineers Wetlands Delineation Manual* (Manual) (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetlands Determination Manual: Great Plains Region Version 2.0* (Supplement) (U.S. Army Corps of Engineers [USACE] 2010). According to the Manual, an area is a wetland if three mandatory wetland indicators are present in a given area, with special exceptions. These criteria include the presence of a plant community dominated (i.e, >50%) by hydrophytic vegetation, one primary or two secondary indicators of wetland hydrology, and a primary indicator of hydric soils. All wetlands and waterbodies geographically referenced within the survey area during field survey are depicted on the site layout maps in Appendix A. SWCA conducted a desktop wetland determination using high resolution aerial imagery depicting the segment.

2.3.1 Hydrophytic Vegetation

Ecologists recorded all plants within the vegetative community based on the respective stratum each species occupied. A tree is defined by the Supplement to be a woody-stemmed plant with a trunk diameter at breast height (DBH) of equal to or greater than 3 inches, regardless of height. The sapling and shrub stratum is defined by the Supplement to be composed of woody-stemmed plants with a trunk DBH of less than 3 inches, regardless of height. The herbaceous stratum includes all non-woody-stemmed plants regardless of height. Finally, the woody vine stratum includes all woody-stemmed vines, regardless of diameter.

SWCA recorded the binomial scientific name and percent cover of all plants within a 30-foot radius for the tree stratum, a 15-foot radius for the sapling/shrub stratum, a 5-foot radius for the herbaceous stratum, and a 30-foot radius for the woody vine stratum. SWCA ecologists noted each plant species' respective USFWS indicator status (i.e., upland [UPL], facultative upland [FACU], facultative [FAC], facultative wetland [FACW], and obligate [OBL]). In some

instances the size and shape of the vegetative sampling plot was manipulated to better encompass each wetland or upland area, though the overall area assessed remained unchanged. SWCA also noted and geospatially referenced all populations of North Dakota state- or county-listed noxious weeds identified within the survey area.

2.3.2 Wetland Hydrology

A wetland was determined to contain wetland hydrology if at least one primary indicator or at least two secondary indicators of wetland hydrology were present, as defined by the Manual and Supplement. Common hydrologic indicators include the presence of surface water, high water table, soil saturation, water marks on trees or other objects, sediment deposits, water-stained leaves, and oxidized rhizospheres on living roots.

2.3.3 Hydric Soil

SWCA assumed, based on the presence of the other two criteria and geomorphic position, that hydric soils were present within each wetland area. Subsequently, due to the lack of at least one of the remaining criteria, SWCA assumed that soil contained within upland areas did not display a primary indication of hydric soils.

2.4 WATERBODIES

Waterbodies (i.e., ponds, creeks, streams, rivers) were identified by the presence of an OHWM. Common identifiable indicators of an OHWM include open water or evidence of a clear, natural line visible on the bank; shelving; changes in soil characteristics; the destruction of terrestrial vegetation; the presence of litter and debris; and watermarks on structures that are inundated during normal high water conditions. The OHWM typically represents the potential limits of the USACE jurisdiction. Please note that the USACE has full discretion in determining the jurisdictional status of referenced wetlands and waterbodies.

SWCA classified streams as perennial, intermittent, or ephemeral based on field observations. During a typical year, a perennial stream contains flowing water year-round and the water table is located above the stream bed. Groundwater is the primary water source for stream flow while precipitation runoff is supplemental. Ecologists classified streams that showed significant flow during the field survey or were named or designated as solid blue lines on the USGS topographic maps as perennial.

An intermittent stream has flowing water for only portions of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

2.5 TREE, SAPLING, AND SHRUB COUNT

SWCA ecologists determined the total number of trees, saplings, and shrubs present within the 250-foot-wide survey area by employing several different techniques depending on the type of woody vegetation habitat (i.e., naturally occurring or planted) encountered and the overall extent of each habitat within the ROW. The boundary of all woody vegetation habitat, including naturally occurring and planted areas, was geographically referenced using a Trimble GeoXT series handheld global positioning system (GPS) unit. In naturally occurring woody vegetation areas, SWCA counted or estimated the number of all woody stemmed vegetation exhibiting a DBH of greater than 1 inch. In planted woody vegetation areas, SWCA inventoried all individuals via direct count, regardless of DBH and height. Ecologists taxonomically identified all recorded individuals to the species level within each habitat type.

2.6 WILDLIFE INCLUDING THREATENED AND ENDANGERED SPECIES

Information regarding the presence of threatened or endangered species, which may occur within the survey area, was obtained from the USFWS list of threatened and endangered species by North Dakota county (USFWS 2011). This document does not represent a comprehensive survey, but rather acknowledges the past and/or current presence of listed species. The lack of discovery of threatened or endangered species does not signify their non-existence within the area, but only that no primary or secondary indications of these species were recorded.

SWCA completed a cursory survey for all listed species and suitable habitat potentially impacted by construction activities within survey area. A line-of-sight survey for raptor individuals and nests was also conducted for a distance of approximately 0.5 mile with the aid of binoculars. Unique wildlife habitats were closely inspected on foot. Additionally, SWCA characterized suitable threatened and endangered species habitat encountered during the field survey.

SWCA ecologists noted all wildlife observed during the field survey. Wildlife sightings can involve primary observations (i.e., actual sighting of an animal) or secondary observations (i.e., observation of scat, tracks, or fur deposits).

2.7 MAPPING

The boundaries of each wetland, waterbody, woody vegetation habitat, and noxious weed assemblage were geographically recorded using a Trimble GeoXT GPS unit. The aforementioned GPS unit is capable of recording geographic data with sub-meter accuracy. SWCA used Universal Transverse Mercator Zone 13 North as the projected coordinate system and North American Datum 1983 as the datum. ArcGIS v10.0 (ESRI Redlands, California) was used to analyze collected features, calculate areas, and generate the maps provided in Appendix A. Please note that all data collected using the GPS unit, and displayed on the attached maps, are for review purposes only and do not represent a professional civil survey.

3.0 RESULTS

3.1 VEGETATION

During the field survey, SWCA ecologists identified four general types of vegetative communities within the survey area. These vegetative communities were classified as herbaceous upland, shrubland and upland woody vegetation, cropland, and palustrine emergent (PEM) wetland. PEM wetlands are characterized by the presence of herbaceous hydrophytic and/or submergent aquatic macrophytes.

Vegetation communities met the hydrophytic vegetation criterion for wetlands if greater than 50% of dominant species had an indicator status of FAC, FACW, or OBL. The upland communities failed to meet at least one of the three assessed wetland criteria.

3.1.1 Herbaceous Upland

Herbaceous upland communities occurring throughout the survey area consisted of non-wetland areas dominated by non-woody vegetation such as grasses and forbs. The largest natural vegetation community within the construction corridor is Northwestern Great Plains Mixedgrass Prairie.

Species common to the Northwestern Great Plains Mixedgrass Prairie and confirmed during field surveys included needle and thread (*Hesperostipa comata*), intermediate wheatgrass (*Thinoyrum intermedium*), crested wheatgrass (*Agropyron cristatum*), prairie junegrass (*Koeleria macrantha*), big bluestem (*Andropogon gerardii*), green sagewort (*Artemisia campestris*), cudweed sagewort (*Artemisia ludoviciana*), sideoats grama (*Bouteloua curtipendula*), blue grama (*Bouteloua gracilis*), smooth bromegrass (*Bromus inermis*), purple coneflower (*Echinacea angustifolia*), curlycup gumweed (*Grindelia squarrosa*), gayfeather (*Liatris puncata*), yellow sweetclover (*Melilotus officinalis*), Kentucky bluegrass (*Poa pratensis*), prairie coneflower (*Ratibida columnifera*), prairie rose (*Rosa arkansana*), and little bluestem (*Schizachyrium scoparium*).

3.1.2 Shrubland and Woody Vegetation

SWCA found shrubland communities occurring throughout the survey area consisted of upland areas dominated by woody-stemmed vegetation including chokecherry (*Prunus virginiana*), silver buffaloberry (*Shepherdia argentea*), and western snowberry (*Symphoricarpos occidentalis*).

Forested upland and planted windrow vegetation recorded during field surveys include green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), quaking aspen (*Populus tremuloides*), ponderosa pine (*Pinus ponderosa*), chokecherry, and western snowberry. Photographs of the woody draw community type are provided in Appendix B.

3.1.3 Cropland

Field surveys confirmed several types of agricultural occupation within the proposed ROW. LANDFIRE (2006) was used to calculate broad scale land cover in the project are. Cropland accounted for approximately 105 acres (27%) of the survey area. The cropland cover types recorded included canola (*Brassica napus*) and hard red spring wheat (*Triticum aestivum*). The second largest land cover component in the project area is Developed-Roads which encompasses 16.5 acres (4%). The Developed-Roads category includes developed open space such as roads and section lines.

3.1.4 PEM Wetland

PEM wetlands recorded during field surveys were found to consist of herbaceous, non-woody vegetation such as sedges, spike-rushes, grasses, and forbs, although some woody vegetation was present but not dominant. Common species found within these communities include big bluestem, smooth brome, fringed brome (*Bromus ciliatus*), wooly sedge (*Carex lanuginosa*), creeping spikerush (*Eleocharis palustris*), foxtail barley (*Hordeum jubatum*), mountain rush (*Juncus arcticus*), wild mint (*Mentha arvensis*), Kentucky bluegrass, smartweed (*Polygonum* sp.), dock (*Rumex* sp.), bulrush (*Schoenoplectus* sp.), prairie cordgrass (*Spartina pectinata*), western snowberry, and cattail (*Typha* sp.).

3.1.5 Noxious Weeds

"Noxious weeds" is a general term used to describe plant species that are not native to a given area, spread rapidly, and have adverse ecological and economic impacts. These species may have high reproduction rates and are usually adapted to occupy a diverse range of habitats otherwise occupied by native species. These species may subsequently out-compete native plant species for resources, causing a reduction in native plant populations.

During field surveys, one noxious weed colony of Canada thistle was observed and recorded. NRNX1, totaling 0.887acre, consisted of approximately 30% Canada thistle. North Dakota Law (NDCC § 4.1-47-02) requires every person to do all things necessary and proper to control the spread of noxious weeds.

3.2 HYDROLOGY

Wetland communities observed during the determination effort displayed at least one primary or two secondary indicators of wetland hydrology, as defined by the Manual and Supplement. Upland communities either failed to display hydrologic indicators or failed to meet the hydrophytic vegetation criterion, as defined by the Manual and Supplement. Common indicators of wetland hydrology observed during field surveys include Surface Water (A1), Saturation (A3), Algal Mat or Crust (B4), and Inundation Visible on Aerial Imagery (B7).

According to National Weather Service preliminary climatological data for Williston, North Dakota, 2.31 inches of precipitation were recorded from September 1 to November 11, 2011 (Table 1). This amount is 0.85 inch below normal for this time period (Table 1).

Table 1. Monthly Recorded Rainfall at National Weather Service Station in Williston, North Dakota.

Month	2011 Recorded Precipitation (inches)	Normal Precipitation (inches)	Difference (inches)
September 2011	0.96	1.59	-0.63
October 2011	1.35	1.25	0.10
November 1–11, 2011	0.00	0.32	-0.32
Total	**2.31**	**3.16**	**-0.85**

Source: National Oceanic and Atmospheric Administration 2011

3.3 WETLANDS

SWCA recorded four PEM wetlands within the 250-foot survey area, totaling approximately 0.991 acre. In total, approximately 0.271 acre of PEM wetland is proposed to be temporarily impacted in the 100-foot-wide construction ROW (Table 2). Although only the USACE has the final authority to determine the jurisdictional status of the PEM wetlands, the field survey indicates that the wetlands proposed to be temporarily impacted may be considered jurisdictional, based on the presence of a significant nexus to waters of the U.S. See Appendix B for representative photographs of wetlands. One wetland (Assumed WET 1) was delineated during the desktop analysis of the segment totaling approximately 0.455 acre.

Table 2. PEM Wetland Acreage within the Survey Area.

Feature ID	Mile Post	USACE Jurisdiction*	Temporarily Impacted Area within 100-foot-wide ROW (acres)	Total PEM Size (acres)	Length of Required Crossing (feet)
NRDWET1	9.0	Jurisdictional	0.062	0.063	41.163
NRWET2	11.1	Jurisdictional	0.071	0.174	31.424
NRAWET3	4.8	Non-Jurisdictional	0	0.299	0
Assumed WET 1	10.5	Jurisdictional	0.138	0.455	96.02

* The USACE has the final authority on the jurisdictional status of a waterbody.

3.4 WATERBODIES

No waterbodies were identified during the North Dakota field surveys.

3.5 SOILS

Eighteen soil types are present in the project construction corridor, based on U.S. Department of Agriculture - Natural Resources Conservation Service (NRCS) mapping (NRCS 2011). The project area analyzed for soils covers the 100-foot-wide construction corridor.

Table 3 lists all soil units within the project area. The following soil component descriptions represent the most prevalent soil series found within the survey area (NRCS 2011).

Table 3. NRCS Derived Soil Series Present within the ROW.

Soil Types	Slopes (%)	Acres within 100-foot-wide ROW	Percent within Map Unit
Williams-Bowbells loams	3–6	49.891	31.293
Williams-Zahl loams	6–9	34.052	21.358
Zahl-Williams loams	9–15	15.732	9.868
Williams-Bowbells loams	0–3	9.058	5.681
Amor-Zahl-Cabba loams	9-25	8.077	5.066
Livona fine sandy loam	0–6	5.468	3.430
Livona-Zahl complex	6–9	5.189	3.255
Williams-Zahl loams	3–6	5.127	3.216
Vebar-Flasher-Zahl complex	9–25	4.946	3.102
Zahl-Williams loams	15–60	4.892	3.068
Arnegard-Shambo loams	2–6	3.398	2.131
Amor-Williams-Zahl loams	3–9	2.593	1.626
Korchea-Divide loams, channeled	0–2	1.812	1.137
Farland silt loams	0–6	1.474	0.925
Daglum-Rhoades loams	0–6	1.364	0.856
Amor-Williams-Zahl loams	3–9	2.593	1.626
Vebar-Flasher-Tally fine sandy loams	3–9	1.235	0.775
Shambo loam	0–2	0.957	0.600
Arnegard loam	0–2	0.441	0.277
Wabek sandy loam	6–25	0.429	0.269
Dooley fine sandy loam	0–6	0.371	0.233
Appam sandy loam	0–6	0.332	0.208

Source: NRCS 2011.

3.5.1 Williams

The Williams series consists of very deep, well-drained, moderately slow or slowly permeable soils formed in calcareous glacial till. These soils are on glacial till plains and moraines and have slopes of 0 to 35 percent. Mean annual air temperature is about 40 degrees Fahrenheit (°F), and mean annual precipitation is about 14 inches. Cultivated areas are used for growing small grains, flax, corn, hay, or pasture. Native vegetation species common to this soil type include western wheatgrass (*Agropyron smithii*), needle and thread, blue grama, green needlegrass (*Nasella viridula*), and prairie junegrass (NRCS 2011).

3.5.2 Bowbells

The Bowbells series consists of very deep, well- and moderately well-drained soils formed in glacial till and alluvium from glacial till on glacial till plains and moraines. These soils have moderate permeability in the upper part and moderately slow or slow in the substratum. Slopes range from 0 to 9 percent. Mean annual precipitation is about 14 inches, and mean annual air temperature is about 42°F. Cultivated areas of these soils are cropped to small grains, and some areas are used for hay and pasture. Native vegetation species common to this soil type include green needlegrass, western wheatgrass, porcupinegrass (*Heterostipa spartea*), and big bluestem (NRCS 2011).

3.5.3 Zahl

The Zahl series consists of very deep, well-drained, moderately slow or slowly permeable soils that formed in calcareous glacial till. These soils are on glacial till plains, moraines, and valley side slopes and have slopes of 1 to 60 percent. Mean annual air temperature is 40°F, and mean annual precipitation is 14 inches. The native vegetation species most common to this soil type are little bluestem, western wheatgrass, and needle and thread (NRCS 2011).

3.6 TREE, SAPLING, AND SHRUB COUNT

During SWCA's field survey, eight forested upland and shrubland areas were geographically referenced within the survey area. Table 4 indicates the number of individuals estimated to be impacted by the project as currently proposed. SWCA estimates approximately 130 individuals would need to be replanted in order to fulfill the 2:1 mitigation requirement.

Table 4. Tree, Sapling, and Shrub Count.

Woody Vegetation (WV) ID	Mile Post	Species	Type	Number of Individuals		Estimated Mitigation Commitment
				250-foot-wide Survey Corridor	50-foot-wide Construction ROW Centered on Pipeline	
NRWV1	3.75	Quaking aspen (*Populus tremuloides*)	Tree	1	0	0
NRWV2	3.7	Green ash (*Fraxinus pennsylvanica*)	Tree	12	0	0
NRWV3	3.6	Ponderosa pine (*Pinus ponderosa*)	Tree	5	0	0
NRWV4	3.25	Silver buffaloberry (*Shepherdia argentea*)	Shrub	34	0	0
NRWV5	5.6	American elm (*Ulmus Americana*)	Tree	13	0	0

Woody Vegetation (WV) ID	Mile Post	Species	Type	Number of Individuals		Estimated Mitigation Commitment
				250-foot-wide Survey Corridor	50-foot-wide Construction ROW Centered on Pipeline	
NRWV6	12.6	American elm Willows (*Salix* sp.)	Tree Tree	78 151	0	0
NRWV7	12.2	Silver buffaloberry Chokecherry (*Prunus virginiana*)	Shrub Shrub	12 12	0	0
NRWV8	12.2	Silver buffaloberry Chokecherry	Shrub Shrub	142 12	0	0
NRWV9	12.2	Silver buffaloberry	Shrub	29	0	0
NRWV10	12.2	Silver buffaloberry	Shrub	75	0	0
NRWV11	11.1	Silver buffaloberry Green ash American elm Chokecherry	Shrub Tree Tree Shrub	103 1 1 12	57 0.5 0.5 7	114 1 1 14
NRWV12	11.1	Silver buffaloberry	Shrub	75	0	0
NRAWV1	3.7	Green ash	Tree	21	0	0
NRAWV2	3.6	Ponderosa pine	Tree	28	0	0
			TOTALS	**817**	**65**	**130**

3.7 WILDLIFE

SWCA conducted a cursory threatened and endangered species survey concurrently with the wetland determination. Ecologists did not observe any primary (i.e., actual sighting) or secondary (tracks, scat, fur) indication of the presence of threatened or endangered species. The survey area does contain suitable foraging and stopover habitat for the whooping crane (*Grus americana*).

The proposed project would have no effect on black-footed ferret (*Mustela nigripes*), gray wolf (*Canis lupus*), or designated critical habitat for piping plover (*Charadrius melodus*). Interior least tern (*Sterna antillarum*), whooping crane, and piping plover have the potential to occur within the project area as migrants. These species are not likely to be adversely affected by the proposed project. Additionally, due to the proximity of portions of the proposed project to suitable pallid sturgeon (*Scaphirhynchus albus*) habitat, the project may affect, but is not likely to adversely affect this species. Suitable habitat for Sprague's pipit (*Anthus spragueii*) was located within the project area; therefore, this species may be, but is not likely to be, adversely affected by the proposed project.

3.7.1 Endangered Species Act

3.7.1.1 Black-footed Ferret

Federal Status: Endangered
Affects Determination: No Effect

Black-footed ferrets are nocturnal, solitary carnivores of the weasel family that have been largely extirpated from the wild primarily due to range-wide decimation of the prairie dog (*Cynomys* sp.) ecosystem (Kotliar et al. 1999). They have been listed by the USFWS as endangered since 1967, and have been the object of extensive re-introduction programs (USFWS 2010a). Ferrets inhabit extensive prairie dog complexes of the Great Plains, typically composed of several smaller colonies in proximity to one another that provide a sustainable prey base. The *Black-footed Ferret Survey Guidelines for Compliance with the Endangered Species Act* (USFWS 1989) states that ferrets require black-tailed prairie dog (*Cynomys ludovicianus*) towns or complexes greater than 80 acres in size, and towns of this dimension may be important for ferret recovery efforts (USFWS 1988a). Prairie dog towns of this size were not observed during the field survey. In addition, this species has not been observed in the wild for more than 20 years. Therefore, the proposed project would have **no effect** on this species.

3.7.1.2 Gray Wolf

Federal Status: Endangered
Affects Determination: No Effect

The gray wolf, listed as endangered in the United States in 1978, was believed extirpated from North Dakota in the 1920s and 1930s, with only sporadic reports from the 1930s to present (Licht and Huffman 1996; USFWS 1978). The presence of wolves in most of North Dakota consists of occasional dispersing animals from Minnesota and Manitoba (Licht and Fritts 1994; Licht and Huffman 1996). Most documented gray wolf sightings within western North Dakota are believed to be young males seeking to establish territory (Hagen et al. 2005). The Turtle Mountain region of north-central North Dakota provides marginal habitat that may be able to support a very small population of wolves. The closest known pack of wolves is the Minnesota population located approximately 17 miles (28 kilometers [km]) from the northeast corner of North Dakota.

The gray wolf uses a variety of habitats that support a large prey base, including montane and low-elevation forests, grasslands, and desert scrub (USFWS 2010b). Due to a lack of forested habitat and distance from Minnesota and Manitoba populations, as well as the troubled relationship between humans and wolves and their vulnerability to being shot in open habitats (Licht and Huffman 1996), the re-establishment of gray wolf populations in North Dakota is unlikely. Additionally, habitat fragmentation may further act as a barrier against wolf recolonization in western North Dakota. Therefore, the proposed project would have **no effect** on the gray wolf.

3.7.1.3 Whooping Crane

Federal Status: Endangered

Affect Determination: May Affect, Is Not Likely to Adversely Affect

The whooping crane was listed as endangered in 1970 in the United States by the USFWS and in 1978 in Canada. Historically, population declines were caused by shooting and destruction of nesting habitat in the prairies from agricultural development. Current threats to the species include habitat destruction, especially suitable wetland habitats that support breeding and nesting, as well as feeding and roosting during their fall and spring migration (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007).

The July 2010 total wild population was estimated at 383 (USFWS 2010c). There is only one self-sustaining wild population, the Aransas-Wood Buffalo National Park population, which nests in Wood Buffalo National Park and adjacent areas in Canada, where approximately 83% of the wild nesting sites occur (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007; USFWS 2010c). Williams County, including the project area, is within the primary migratory flyway of whooping cranes.

Whooping cranes probe the soil subsurface with their bills for foods on the soil or vegetation substrate (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007). Whooping cranes are omnivores and foods typically include agricultural grains, as well as insects, frogs, rodents, small birds, minnows, berries, and plant tubers. The largest amount of time during migration is spent feeding in harvested grain fields (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007). Studies indicate that whooping cranes use a variety of habitats during migration, in addition to cultivated croplands, and generally roost in small palustrine (marshy) wetlands within 0.6 mile (1 km) of suitable feeding areas (Howe 1987, 1989). Whooping cranes have been recorded in riverine habitats during their migration, with eight sightings along the Missouri River in North Dakota (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007:18). In these cases, they roost on submerged sandbars in wide, unobstructed channels that are isolated from human disturbance (Armbruster 1990).

Suitable whooping crane foraging habitat (i.e., cultivated cropland) was observed within the survey area. Therefore, the proposed project **may affect, but is not likely to adversely affect** the endangered whooping crane.

3.7.1.4 Piping Plover

Federal Status: Threatened

Affect Determination: May Affect, Is Not Likely to Adversely Affect

The piping plover is a small shorebird which breeds only in three geographic regions of North America: the Atlantic Coast, the Northern Great Plains, and the Great Lakes. Piping plover populations were federally listed as threatened and endangered in 1985, with the Northern Great Plains and Atlantic Coast populations listed as threatened, and the Great Lakes population listed as endangered (USFWS 1985a).

Plovers in the Great Plains make their nests on open, sparsely vegetated sand or gravel beaches adjacent to alkali wetlands, and on beaches, sand bars, and dredged material islands of major river systems (USFWS 2002, 2010d). The shorelines of lakes of the Missouri River constitute significant nesting areas for the bird. Piping plovers nest on the ground, making shallow scrapes in the sand, which they line with small pebbles or rocks (USFWS 1988b). Anthropogenic alterations of the landscape along rivers and lakes where piping plover nest have increased the number and type of predators, subsequently decreasing nest success and chick survival (USFWS 2002, 2010d). The birds fly south by mid to late August to areas along the Texas coast and Mexico (USFWS 2002). The Northern Great Plains population has continued to decline despite federal listing, with population estimates of 1,500 breeding pairs in 1985 reduced to fewer than 1,100 in 1990. Low survival of adult birds has been identified as a factor (Root et al. 1992). Current conservation strategies include identification and preservation of known nesting sites, public education, and limiting or preventing shoreline disturbances near nests and hatched chicks (USFWS 1988b, 2010d).

Suitable shoreline habitat for breeding and nesting plovers does not occur within the project area. In North Dakota, the closest suitable habitat would be associated with the Missouri River is a minimum of 4.077 miles (6.561 km) away from the proposed survey area. Additionally, in Montana the Yellowstone River, which is approximately 7.720 river miles (12.42 km) away from the project area, may also provide suitable shoreline habitat. It is possible that migrating plovers may traverse the project area during their migration. Therefore, the proposed project **may affect, but is not likely to adversely affect** piping plovers.

3.7.1.5 Designated Critical Habitat of Piping Plover

Affect Determination: May Affect, Is Not Likely to Adversely Affect

The USFWS has designated critical habitat for the Great Lakes and Northern Great Plains populations of piping plover (USFWS 2002). Designated critical habitat for the piping plover includes 183,422 acres and 1,207.5 river miles of habitat along the shoreline of Lake Sakakawea in Williams County, North Dakota (USFWS 2002).

The proposed pipeline crosses an unnamed tributary to Horse Tied Creek, which drains into Little Muddy Creek approximately 5.284 river miles from the westernmost portion of the North Dakota alignment. Little Muddy Creek drains into the Missouri River approximately 15.121 river miles southwest of the westernmost extent of the North Dakota project area. Since the proposed project would most likely not modify, alter, disturb, or affect the shoreline of Lake Sakakawea or the Missouri River, the proposed project **may affect, but is not likely to adversely affect** designated critical habitat of the piping plover.

3.7.1.6 Interior Least Tern

Federal Status: Endangered

Affect Determination: May Affect, Is Not Likely to Adversely Affect

The interior population of the least tern is listed as endangered by the USFWS (1985b). This bird is the smallest member of the gull and tern family, measuring approximately 9 inches in

length. Terns remain near flowing water, where they feed by hovering over and diving into standing or flowing water to catch small fish (USFWS 2010e).

The interior population of least terns breeds in isolated areas along the Missouri, Mississippi, Ohio, Red, and Rio Grande river systems, where they nest in small colonies. From late April to August, terns nest in a shallow hole scraped in an open sandy area, gravel patch, or exposed flat and bare sandbars along rivers, sand and gravel pits, or lake and reservoir shorelines. The adults continue to care for chicks after they hatch. Least terns in North Dakota will often be found sharing sandbars with the piping plover, a threatened species (USFWS 2010e).

Census data indicate over 8,000 least terns in the interior population. In North Dakota, the least tern is found mainly on the Missouri River from Garrison Dam south to Lake Oahe, and on the Missouri and Yellowstone rivers upstream of Lake Sakakawea (USFWS 1990a, 2010e). Approximately 100 pairs breed in North Dakota (USFWS 2010e). Details of their migration are not known, but their winter range is reported to include the Gulf of Mexico and Caribbean Islands (USFWS 1990a, 2010e).

Loss of suitable breeding and nesting habitat for terns has resulted from dam construction and river channelization on major rivers throughout the Mississippi, Missouri, and Rio Grande river systems. River and reservoir changes have led to reduced sandbar formation and other shoreline habitats for breeding, resulting in population declines. In addition, other human shoreline disturbances affect the species (USFWS 1990a). Critical habitat has not been designated for the species (USFWS 2010e). Current conservation strategies include identification and avoidance of known nesting areas, public education, and limiting or preventing shoreline disturbances near nests and hatched chicks (USFWS 2010e).

Suitable shoreline habitat for breeding and nesting terns does not occur in the project area, and the Missouri River is a minimum of 4.077 miles (6.561 km) away from the survey area. It is unlikely that terns would visit the upland or wetland habitats present in the survey area. Therefore, the proposed project **may affect, but is not likely to adversely affect** endangered least terns.

3.7.1.7 Pallid Sturgeon

Federal Status: Endangered
Affect Determination: May Affect, Is Not Likely to Adversely Affect

The pallid sturgeon was listed as endangered in 1990 in the United States by the USFWS (1990b). The primary factor leading to the decline of this species is the alteration of habitat through river channelization, creation of impoundments, and alteration of flow regimes (USFWS 1990b). These alterations within the Missouri River have blocked movements to spawning, feeding, and rearing areas; destroyed spawning habitat; altered flow conditions which can delay spawning cues; and reduced food sources by lowering productivity (USFWS 2007). The fundamental elements of pallid sturgeon habitat are defined as the bottom of swift waters of large, turbid, free-flowing rivers with braided channels, dynamic flow

patterns, flooding of terrestrial habitats, and extensive microhabitat diversity (USFWS 1990b).

The pallid sturgeon populations occur in 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). This population consists of approximately 136 wild adult pallid sturgeon (USFWS 2007). Hatchery-reared sturgeon have also been stocked since 1998. The pallid sturgeon has been found to utilize the 15.5 miles (25 km) of riverine habitat that would be inundated by Lake Sakakawea at full pool (Bramblett 1996 per USFWS 2007). Larval pallid sturgeons have also been found to drift into Lake Sakakawea. While the majority of pallid sturgeons are found in the headwaters of Lake Sakakawea, North Dakota Game and Fish have caught and released pallid sturgeon in nets set in 80 to 90 feet of water between the New Town and Van Hook area. Based on this information, pallid sturgeon could be found throughout Lake Sakakawea (personal communication, email from Steve Krentz, Pallid Sturgeon Project Lead, U.S. Fish and Wildlife Service, to Mike Cook, Aquatic Ecologist, SWCA Environmental Consultants, September 3, 2010).

Suitable habitat for pallid sturgeon is not present in the survey area in North Dakota, and the Missouri River is a minimum of 4.077 miles (6.561 km) away from the project area. Pallid sturgeon are known to occur within the Yellowstone River, which is approximately 7.720 river miles away from the North Dakota project area. However, tributaries to the Missouri River are found within the project area. Potential pollution occurring as a result of construction activities, hydrostatic testing, and pipeline operations are concerns for downstream populations of endangered pallid sturgeon. Activities associated with the proposed project are not anticipated to adversely affect water quality and subsequently the pallid sturgeon. Therefore, the proposed project **may effect, but is not likely to adversely affect** pallid sturgeon.

3.7.1.8 Sprague's Pipit

Federal Status: Candidate

Affect Determination: May Affect, Is Not Likely to Adversely Affect

The Sprague's pipit is a small passerine, 10 to 15 centimeters in length, endemic to the Northern Great Plains (USFWS 2010f). The Sprague's pipit requires large tracts of unplowed native prairie habitat throughout their life cycle. Because native grasslands are disturbance-dependent, Sprague's pipit prefers grassland habitats that are regularly disturbed. The frequency of disturbance required for habitat maintenance depends on how quickly grasses grow to an intermediate height (4 to 12 inches) following a disturbance event.

In North Dakota, Sprague's pipit has been found in areas of moderate grazing. Sprague's pipits are sensitive to patch size and avoid edges between grasslands and other habitat features (USFWS 2010f). They may avoid non-grassland features including roads, trails, oil wells, croplands, woody vegetation, and wetlands. The Sprague's pipit is reported to stay up to 350 meters away from anthropogenic features such as roads, oil wells, and wind turbines (USFWS 2010f). The USFWS has estimated that each new oil well and associated road in

North Dakota results in potential impacts to approximately 51 acres of pipit habitat due to avoidance and habitat fragmentation (USFWS 2010f). Because of increasing habitat fragmentation, especially by energy development, throughout the Sprague's pipit range, and the loss of native prairie habitat, the Sprague's pipit was listed as a Candidate Species under the Endangered Species Act (ESA) in 2010 (USFWS 2010f).

In North Dakota, Sprague's pipit breeds throughout the state except for the easternmost counties. During the breeding season they prefer large patches of well drained, open native grassland with a minimum size of 358.3 acres (range = 170 to 776 acres). They have not been observed in areas smaller than 71.6 acres on their breeding grounds (USFWS 2010f).

Native prairie habitat with grasses of intermediate height does occur within the project area. However, the habitat within and surrounding the project area has been previously disturbed by agriculture, roads, and oil and gas development. The proposed project is unlikely to directly affect habitat due to lack of adequate patch sizes required by the Sprague's pipit for breeding grounds in the immediate project area, but may indirectly contribute to reduced use of any nearby suitable grassland habitat patches within 350 meters of the proposed project. Therefore, the proposed project **may affect, but is not likely to adversely affect** Sprague's pipit.

3.7.2 Migratory Bird Treaty Act / Bald and Golden Eagle Protection Act

3.7.2.1 Bald Eagle

Federal Status: Delisted in 2007; protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act

Effects of Project: No adverse effects anticipated

The bald eagle (*Haliaeetus leucocephalus*) feeds on fish and carrion and typically roosts in large trees near a water source. Bald eagle nesting habitat is typically any mature stands of conifer or cottonwood trees in association with rivers, streams, reservoirs, lakes, or any significant body of water. Bald eagles are uncommon in North Dakota and are usually observed along the Missouri River (Gomes n.d.) and Yellowstone River. Bald eagles frequently migrate through the grassland habitats; however, no bald eagles or nests were observed during the field surveys. Suitable nesting and roosting habitat is not available within the project area in North Dakota. The proposed project would have **no impact** on this species at this time.

3.7.2.2 Golden Eagle

Federal Status: Unlisted; protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act

Effects of Project: No adverse effects anticipated

Golden eagles (*Aquila chrysaetos*) nest on steep cliff faces and in large cottonwood trees along intermittent creeks. Golden eagles have been documented near the project area year-round; however, the majority of golden eagles migrate. The breeding season for golden eagles is from mid-March through late July. No nesting golden eagles were observed during

the field surveys but suitable habitat was present. Therefore, no **adverse effects** are anticipated.

4.0 CONCLUSIONS AND RECOMMENDATIONS

1. SWCA ecologists recorded approximately 0.991 acre of PEM wetlands within the survey area.
2. In total, approximately 0.271 acre of PEM wetlands *may* be temporarily impacted by construction activities.
3. SWCA estimates 65 trees, saplings, and shrubs may be impacted. Therefore, approximately 130 may need to be replanted to fulfill the 2:1 mitigation requirement.
4. According to the recommendations of the North Dakota Forest Service (NDFS), tree species selection for replacement should be accomplished through collaboration with a reputable area nursery. This will allow for species to be selected based on various factors including species hardiness and area soil type (personal communication, telephone conversation between Tom Claeys, Forestry and Fire Management Team Leader, NDFS, and Michael Cook, Ecologist, SWCA, December 7, 2009).
5. According to the recommendations of the U.S. Forest Service North Dakota Office, non-native species are permitted and to an extent recommended for planting as they may be more resistant to known tree pathogens in the area (personal communication, telephone conversation between Tom Claeys, Forestry and Fire Management Team Leader, NDFS, and Michael Cook, Ecologist, SWCA, December 7, 2009).
6. No threatened or endangered species were observed during the field survey. The known species that occur in Williams County are not likely to be detrimentally impacted by construction activities.

5.0 LITERATURE CITED

Armbruster, M.J. 1990. Characterization of habitat used by whooping cranes during migration. *Biological Report* 90(4):1–16.

Bramblett, R.G. 1996. Habitats and movements of pallid and shovelnose sturgeon in the Yellowstone and Missouri Rivers, Montana and North Dakota. Ph.D. dissertation, Montana State University, Bozeman.

Bryce, S., J.M. Omernik, D.E. Pater, M. Ulmer, J. Schaar, J. Freeouf, R. Johnson, P. Kuck, and S.H. Azevedo. 1998. Ecoregions of North Dakota and South Dakota. Northern Prairie Wildlife Research Center Online. Available at: http://www.npwrc.usgs.gov/resource/habitat/ndsdeco/index.htm (Version 30NOV1998). Accessed June 22, 2011.

Canadian Wildlife Service and U.S. Fish and Wildlife Service. 2007. International Recovery Plan for the Whooping Crane. Ottawa: Recovery of Nationally Endangered Wildlife (RENEW), and Albuquerque: U.S. Fish and Wildlife Service.

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

Gomes, S. n.d. Hawks, eagles, and falcons of North Dakota. North Dakota Game and Fish Department, Bismarck. Northern Prairie Wildlife Research Center Online. Available at: http://www.npwrc.usgs.gov/resource/birds/hawks/index.htm. Accessed July 16, 2009.

Hagen, S.K., P.T. Isakson, and S.R. Dyke. 2005. North Dakota Comprehensive Wildlife Conservation Strategy. Bismarck: North Dakota Game and Fish Department.

Howe, M.A. 1987. Habitat use by migrating whooping cranes in the Aransas-Wood Buffalo corridor. In Proceedings of the 1985 Crane Workshop, edited by C. Lewis and J.W. Ziewitz, pp. 303–311. Grand Island, Nebraska: Platte River Whooping Crane Habitat Maintenance Trust and USFWS.

———. 1989. Migration of Radio-Marked Whooping Cranes from the Aransas-Wood Buffalo Population: Patterns of Habitat Use, Behavior, and Survival. USFWS Technical Report.

Kotliar, N.B., B.W. Baker, A.D. Whicker, and G. Plumb. 1999. A critical review of assumptions about the prairie dog as a keystone species. Environmental Management 24(2):177–192.

LANDFIRE. 2006. LANDFIRE National Existing Vegetation Type layer. U.S. Department of Interior, Geological Survey. Available at: http://www.landfire.gov/index.php. Accessed June 7, 2010.

Licht, D.S., and S.H. Fritts. 1994. Gray wolf *(Canis lupus)* occurrences in the Dakotas. American Midland Naturalist 132:74–81.

Licht, D.S., and L.E. Huffman. 1996. Gray wolf status in North Dakota. The Prairie Naturalist 28(4):169–174.

National Oceanic and Atmospheric Administration. 2011. Williston, North Dakota, Preliminary Monthly Climate Data Reports. Available at: http://www.weather.gov/climate/index.php?wfo=bis. Accessed June 21, 2011.

Natural Resources Conservation Service (NRCS). 2011. Web Soil Survey – Williams County, ND. Available at: http://websoilsurvey.nrcs.usda.gov. Accessed June 26, 2011.

Root, B.G., M.R. Ryan, and P.M. Mayer. 1992. Piping plover survival in the Great Plains. Journal of Field Ornithology 63(1):10–15.

U.S. Army Corps of Engineers (USACE). 2010. Regional Supplement to the Corps of Engineers Wetland Determination Manual: Great Plains Region Version 2.0. Edited by J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-12. Vicksburg, Mississippi: U.S. Army Engineer Research and Development Center.

U.S. Fish and Wildlife Service (USFWS). 1978. Reclassification of the gray wolf in the United States and Mexico, with determination of critical habitat in Michigan and Minnesota. Federal Register 43(47):9607–9615.

———. 1985a. Endangered and threatened wildlife and plants: determination of endangered and threatened status for the piping plover. Federal Register 50(238):50726–50734.

———. 1985b. Interior population of the least tern. Federal Register 50 FR 21784–21792. May 28, 1985.

———. 1988a. Black-footed Ferret Recovery Plan. Denver: U.S. Fish and Wildlife Service.

———. 1988b. Great Lakes and Northern Great Plains Piping Plover Recovery Plan. Twin Cities, Minnesota: U.S. Fish and Wildlife Service.

———. 1989. Black-footed Ferret Survey Guidelines for Compliance with the Endangered Species Act. Denver and Albuquerque: U.S. Fish and Wildlife Service.

———. 1990a. Interior Population of the Least Tern Recovery Plan. Twin Cities, Minnesota: U.S. Fish and Wildlife Service.

———. 1990b. Endangered and threatened wildlife and plants; Determination of endangered status for the pallid sturgeon. Federal Register 55(173):36641–36647.

———. 2002. Designation of critical habitat for the northern Great Plains breeding population of the piping plover; final rule. Federal Register 67(176):57637–57717.

———. 2007. Pallid sturgeon (*Scaphirhynchus albus)* 5-year review summary and evaluation. Billings, Montana: U.S. Fish and Wildlife Service, Pallid Sturgeon Recovery Coordinator.

———. 2010a. Black-footed ferret. Available at: http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A004. Accessed September 7, 2010.

———. 2010b. Gray wolf. Available at: http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A00D. Accessed September 7, 2010.

———. 2010c. Whooping crane. Available at: http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B003. Accessed September 2, 2010.

———. 2010d. Piping plover. Available at: http://www.fws.gov/mountain-prairie/species/birds/pipingplover. Accessed September 7, 2010.

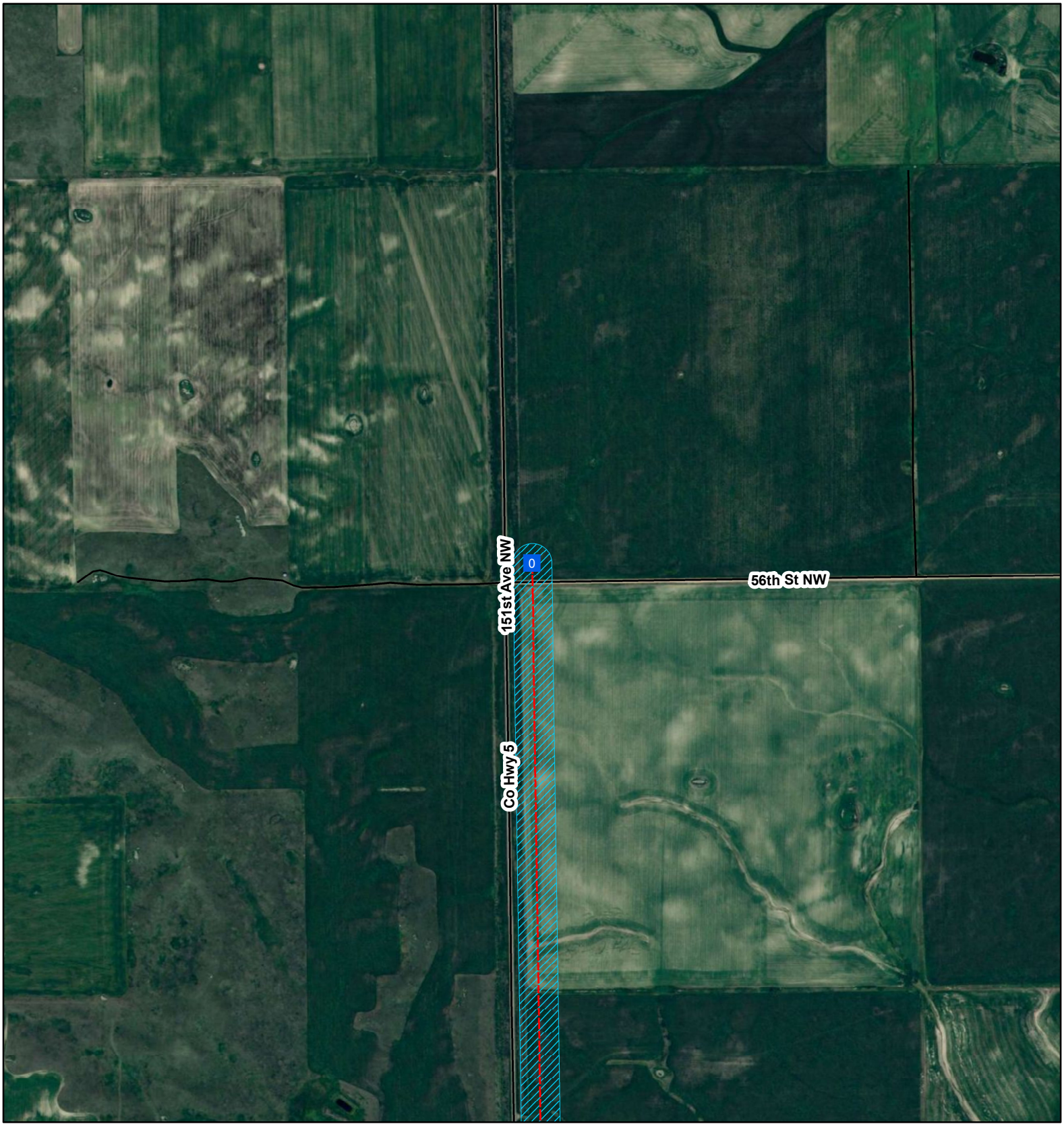
———. 2010e. Least tern (interior population). Available at: http://www.fws.gov/southwest/es/oklahoma/lestern.htm. Accessed September 7, 2010.

———. 2010f. Endangered and threatened wildlife and plants; 12-month finding on a petition to list Sprague's pipit as endangered or threatened throughout its range. Federal Register 75(178):56028–56050.

———. 2011. County occurrence of endangered, threatened, and candidate species and designated critical habitat in North Dakota. Available at: http://www.fws.gov/northdakotafieldoffice/county_list.htm. Accessed April 10, 2011.

APPENDIX A

Vicinity and Site Layout Maps



Legend

- Mile Post
- Woody Vegetation
- Noxious Weeds
- Woody Vegetation
- Noxious Weeds
- Wetland
- Woody Vegetation
- Stateline Pipeline Proposed Centerline
- Survey Area
- Survey Area (Desktop/Intuitive)
- Existing Roads

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Miles
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Base Map: NAIP 1-meter Aerial Imagery
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Township/Range: T155N R103W

County: Williams

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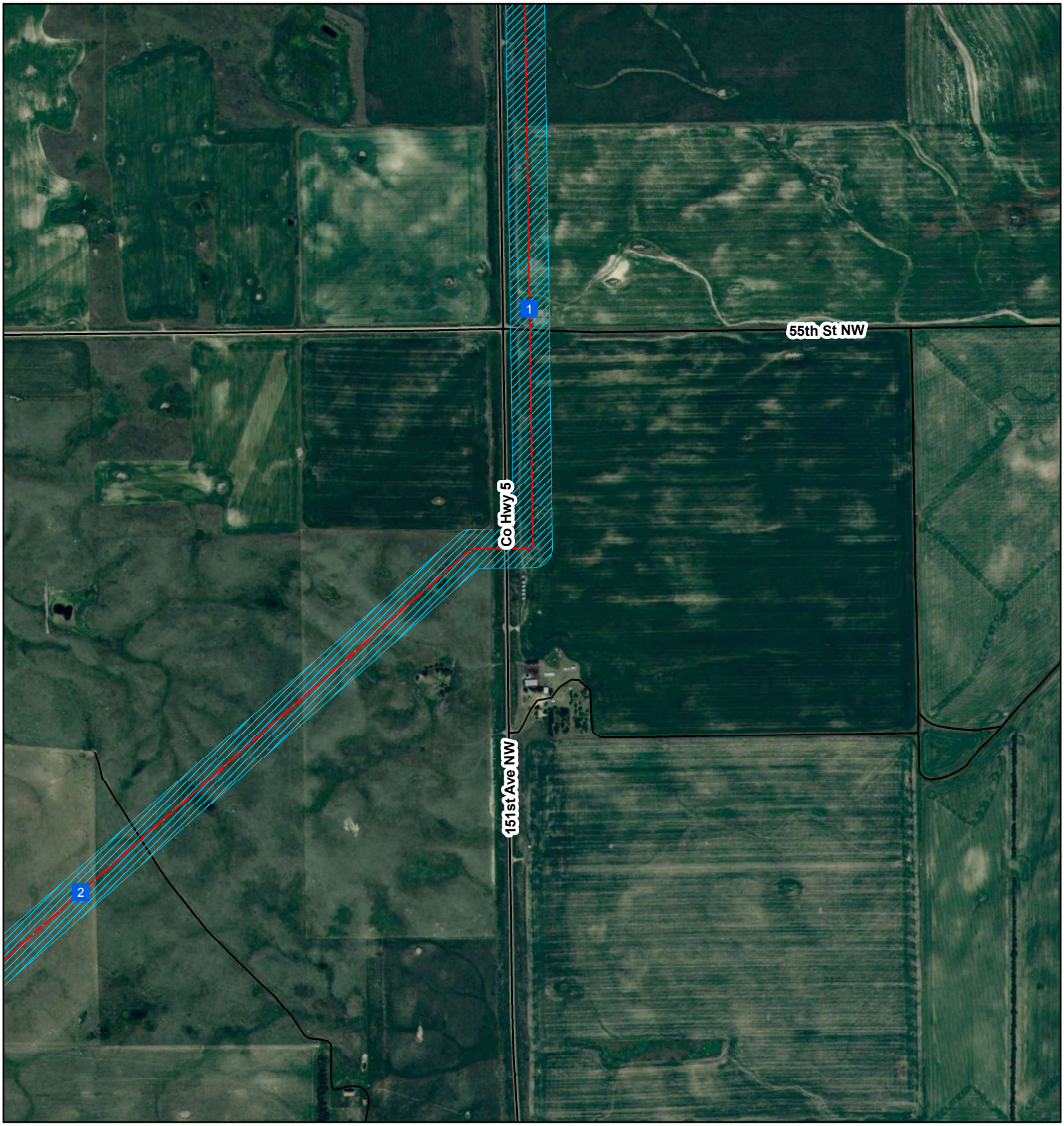

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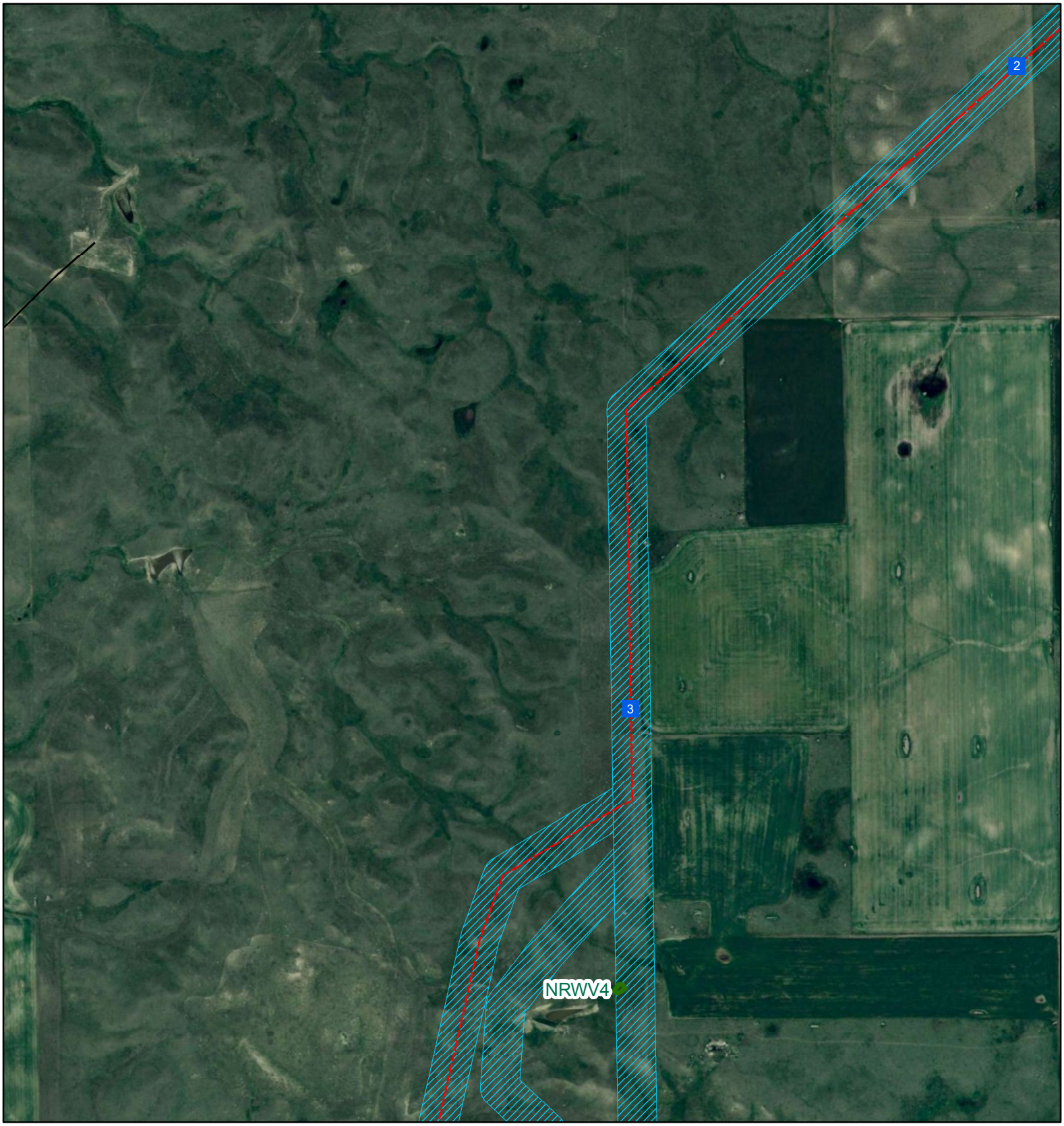

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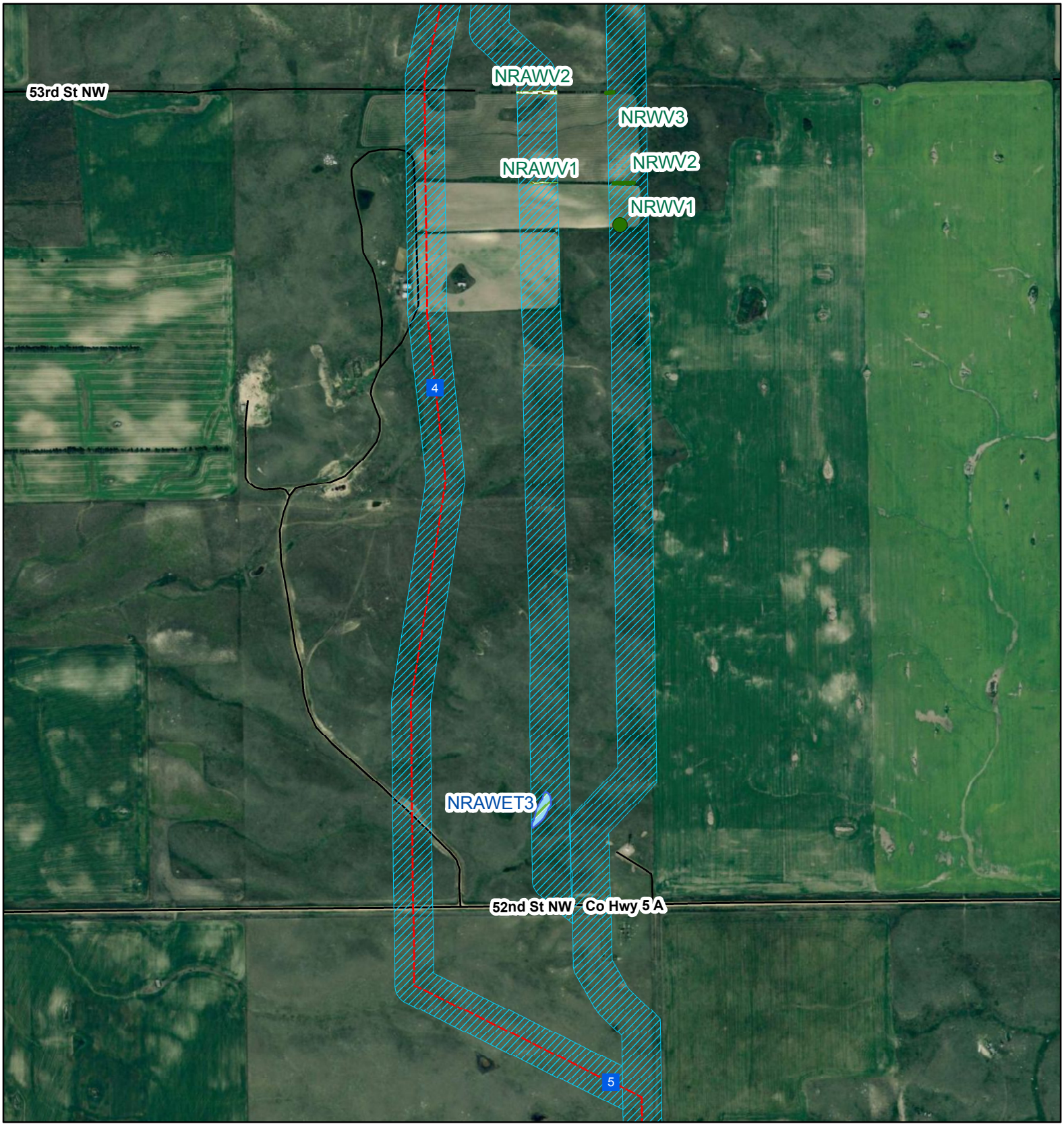

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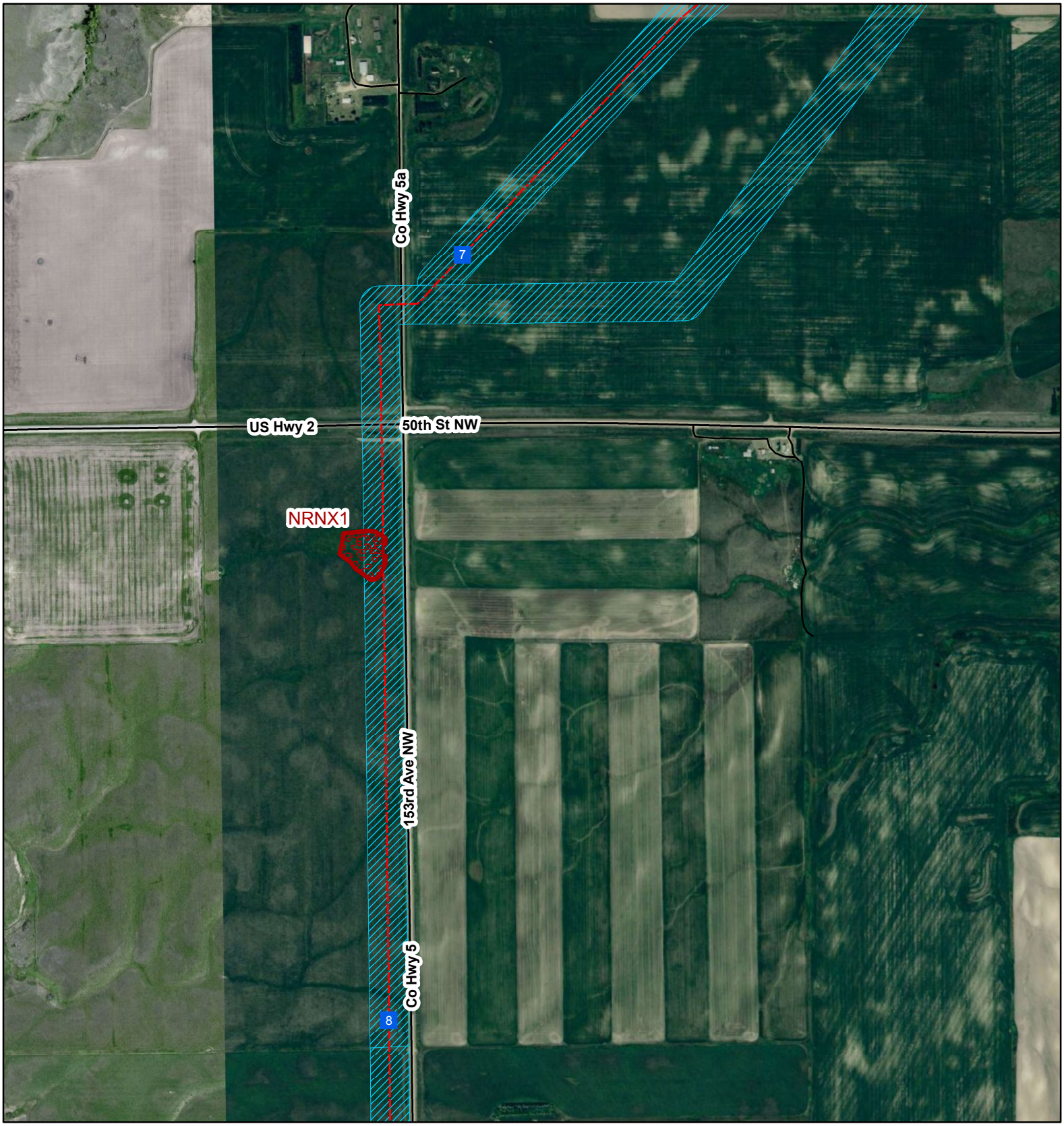

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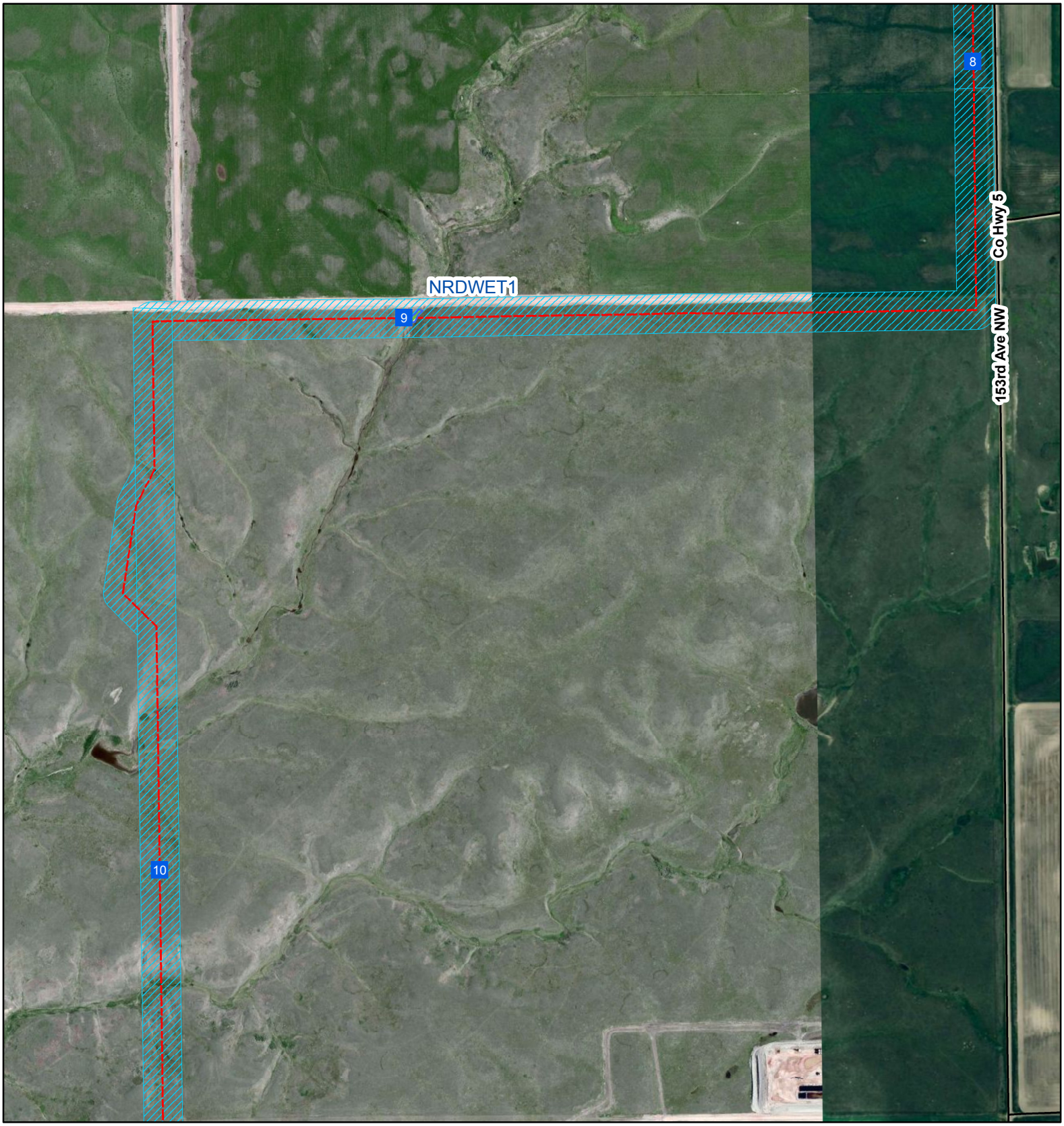

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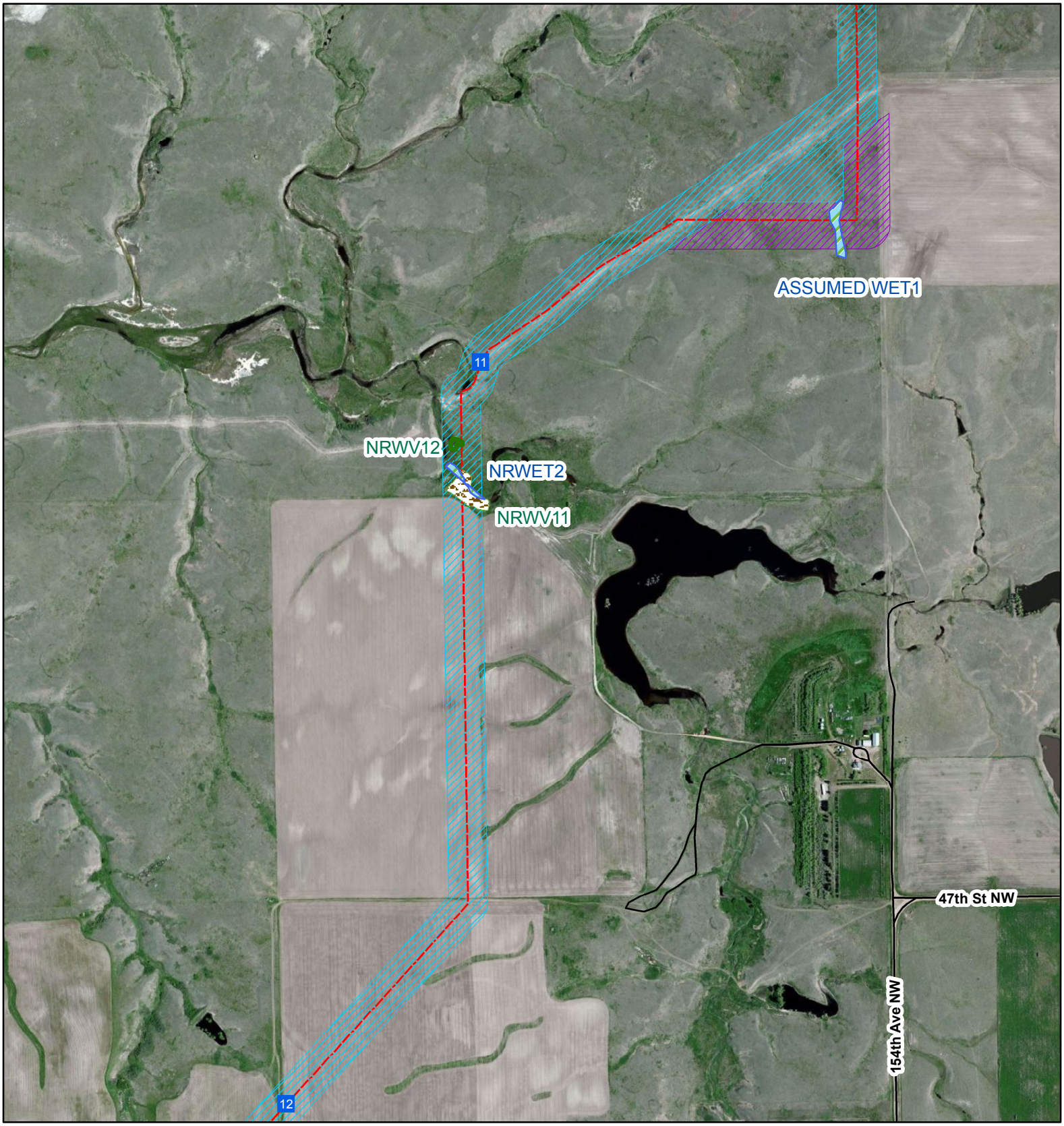

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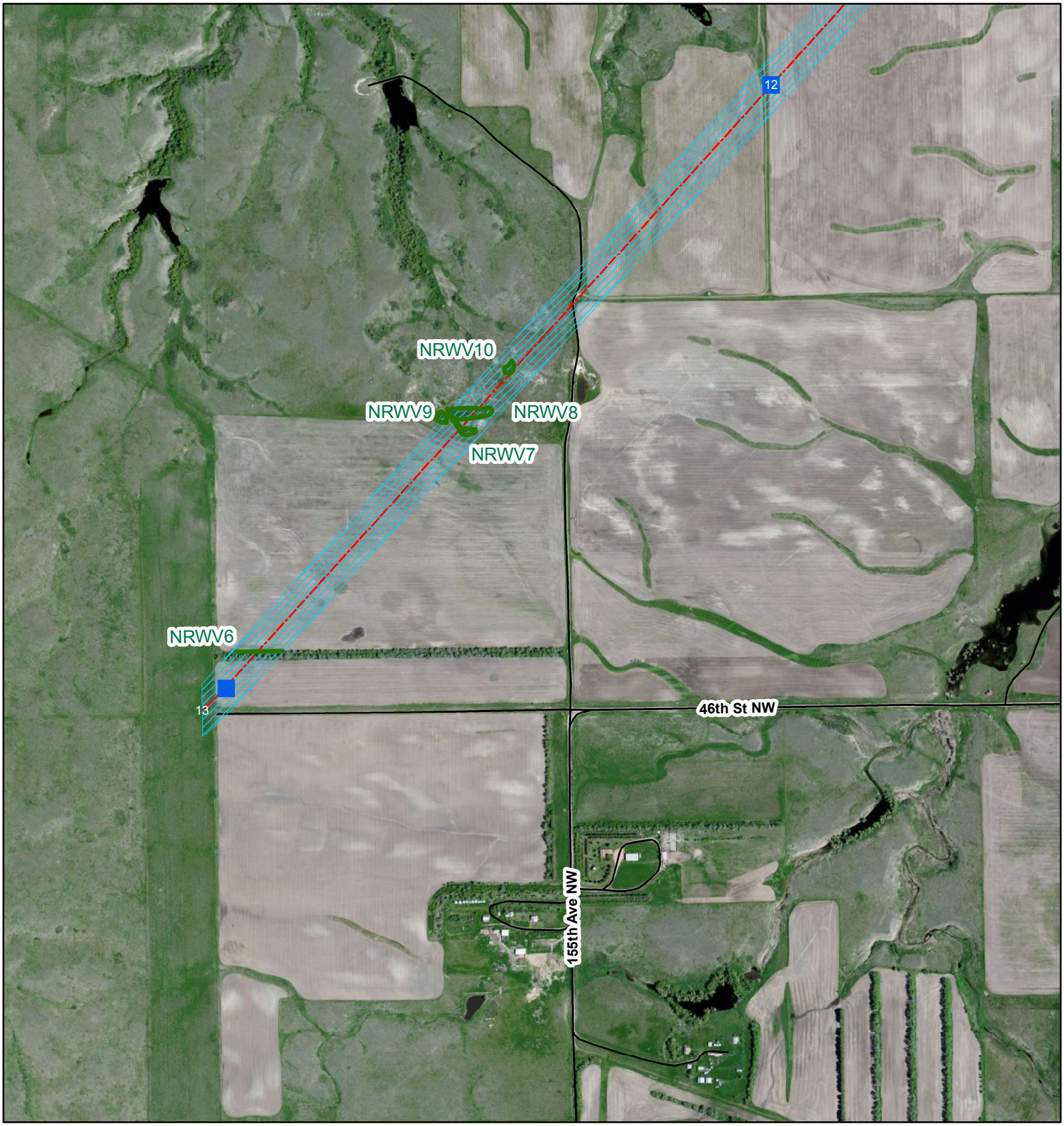

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Suite 200
Bismarck, ND 58501

Phone: 701.258.6622
Fax: 701.258.5957

www.swca.com

Kilometers
0 0.25 0.5

Miles
0 0.125 0.25

Base Map: NAIP 1-meter Aerial Imagery
Source: ND GIS Hub
Quadrangle: Bainville SE, (1971)

Township/Range: T153N R104W

County: Williams

N

Scale: 1:10,000 NAD 1983 UTM Zone 13N

APPENDIX B

Photographs of Project Area Corridor

Figure B.1. Overview of the project area near the Montana border, facing northeast.

Figure B.2. View of woody vegetation found within project area, facing southwest.

Figure B.3. View of NRWET1, facing north.

Figure B.4. View from DP3U, facing southwest.

Figure B.5. View of NRWV11, facing west.