

## **Appendix D**

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### Natural Resource Report

**Natural Resources and Wetland  
Determination Report for the PAA  
Nelson Takeoff to Ross Pipeline,  
Mountrail County, North Dakota**

Prepared for

**Plains All-American Pipeline Company, L.P.**

Prepared by

**SWCA Environmental Consultants**

December 28, 2011

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Nelson Takeoff to Ross Pipeline, Mountrail County, North Dakota**

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## **1.0 INTRODUCTION**

Plains All-American Pipeline, L.P. (PAA), is proposing to construct an approximately 16.89-mile-long crude oil pipeline named the PAA Nelson Takeoff to Ross Pipeline (pipeline) in Mountrail County, North Dakota. The proposed pipeline will be constructed within a 70-foot-wide temporary construction right-of-way (ROW), and a permanent 30-foot-wide ROW will be maintained after construction is complete.

The North Dakota Public Service Commission (ND PSC) has claimed jurisdiction over the survey area and is requiring a certificate of corridor compatibility and route permit be obtained prior to the commencement of construction activities. PAA selected SWCA Environmental Consultants (SWCA) to complete natural and cultural resource field surveys in order to identify exclusion and avoidance areas as specified in North Dakota Administrative Code (NDAC) 69-06-08-02.

SWCA conducted field surveys on September 27–29, October 21–22, and November 14 and 28, 2011, to determine the potential presence and extent of waters of the U.S., commonly referred to as a wetland determination, within the proposed survey area. Concurrently with the wetland determination, SWCA also conducted a cursory threatened and endangered species survey and habitat assessment; a tree, sapling, and shrub enumeration survey; and a noxious weed survey.

This report outlines the methodology used by SWCA’s ecologists to complete each of the aforementioned surveys.

## **2.0 METHODS**

### **2.1 SURVEY AREA**

SWCA surveyed a corridor ranging in width between 100 and 400 feet that trends west to east entirely within Mountrail County, North Dakota, beginning at a point northwest of Stanley in Section 15, Township (T) 156 North (N), Range (R) 93 West (W) of the 5th Prime meridian. Moving north to south, the survey area traverses Section 22, T156N, R93W; Section 23, T156N, R93W; and Section 26, T156N, R93W, then turns east. It continues east through Sections 35 and 36, T156N, R93W; Sections 31–36, T156N, R92W; and Sections 31–34, T156N, R91W. The survey area then turns north at Section 35, T156N, R91W and ends at a point in Section 26, T156N, R91W, southeast of Stanley.

The study area is located in the Great Plains (Level I), West-Central Semi-Arid Prairies (Level II), Northwestern Glaciated Plains (Level III), and the Missouri Couteau Slope (Level IV) ecoregions (U.S. Geological Survey [USGS] 2006). The Glaciated Dark Brown Prairie ecoregion is characterized by an average precipitation amount of 14 to 16 inches and mean July temperatures ranging from 54 degrees Fahrenheit (°F) to 82°F (USGS 2006).

### **2.2 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 Delineation Manual: Great Plains Region Version 2.0* (Supplement) (U.S. Army Corps of Engineers [USACE] 2010). According to the Manual and Supplement, 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 hydrophytic vegetation, wetland hydrology, and hydric soils. All wetlands and waterbodies geographically referenced within the survey area during the field survey are depicted on the site layout maps in Appendix A.

#### **2.2.1 Vegetation**

SWCA taxonomically identified all plant species within each recorded wetland area. All species were recorded according to their respective vegetative stratum. 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 ecologists noted each plant species' respective U.S. Fish and Wildlife Service (USFWS) indicator status (i.e., upland [UPL], facultative upland [FACU], facultative [FAC], facultative wetland [FACW], and obligate [OBL]).

SWCA also noted all populations of North Dakota state or county listed noxious weeds identified within the survey area.

### **2.2.2 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, a high water table, soil saturation, water marks on trees or other objects, sediment deposits, water-stained leaves, and oxidized rhizospheres on living roots.

### **2.2.3 Soil**

SWCA assumed hydric soils were present within each area that exhibited greater than 50% hydrophytic vegetation and a positive indication of wetland hydrology. Additionally, the assumption of the presence of hydric soil was predicated on the geomorphic position of each wetland area.

## **2.3 WATERBODIES**

Waterbodies (e.g., creeks, streams, rivers) were identified by the presence of an ordinary high water mark (OHWM). Common identifiable indicators of an OHWM include 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.

## **2.4 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 2010a). 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).

## **2.5 TREE, SAPLING, AND SHRUB COUNT**

SWCA ecologists determined the total number of trees, saplings, and shrubs present within the 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 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 Version 10.0 (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

SWCA ecologists identified four general types of vegetative communities within the survey area. These vegetative communities were classified as herbaceous upland, shrubland, cropland, and palustrine emergent (PEM) wetland. PEM wetlands are characterized by the presence of herbaceous hydrophytic 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 two assessed wetland criteria. Refer to Appendix B for photographs that depict representative vegetation at wetlands surveyed. Examples of common dominant species identified within each vegetative community are listed below.

SWCA ecologists also observed and recorded the presence of Canada thistle (*Cirsium arvense*) at 11 locations within the survey area. Canada thistle is listed as a noxious weed in the state of North Dakota and Mountrail County (North Dakota Century Code 4.1-47-02).

#### 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. Common species found within these communities and confirmed during the field surveys include crested wheatgrass (*Agropyron cristatum*), smooth brome (*Bromus inermis*), slender wheatgrass (*Agropyron trachycaulum*), prairie junegrass (*Koeleria macrantha*), blue grama (*Bouteloua gracilis*), sideoats grama (*B. curtipendula*), needle and thread (*Hesperostipa comata*), sweetclover (*Melilotus officinalis*), prairie sagewort (*Artemisia frigida*), field sagewort (*A. campestris*), and purple coneflower (*Echinacea angustifolia*).

#### 3.1.2 Shrubland

Shrubland communities occurring throughout the survey area consisted of upland areas dominated by woody-stemmed vegetation, including downy hawthorn (*Crataegus mollis*), Russian olive (*Elaeagnus angustifolia*), silverberry (*E. commutata*), chokecherry (*Prunus virginiana*), silver buffaloberry (*Shepherdia argentea*), and western snowberry (*Symphoricarpos occidentalis*).

#### 3.1.3 Cropland

Cropland vegetation included canola (*Brassica napus*) and hard red spring wheat (*Triticum aestivum*).

#### 3.1.4 PEM Wetland

PEM wetlands found within the survey area consisted of herbaceous vegetation such as sedges, spike-rushes, grasses, and forbs, although some woody vegetation was present but not dominant. Common species found within these communities and confirmed during the survey

include big bluestem (*Andropogon gerardii*), smooth brome, upland sedge (*Carex* sp.), redosier dogwood (*Cornus sericea*), creeping spikerush (*Eleocharis palustris*), Canada wildrye (*Elymus canadensis*), foxtail barley (*Hordeum jubatum*), reed canarygrass (*Phalaris arundinacea*), Kentucky bluegrass (*Poa pratensis*), smartweed (*Polygonum* sp.), sorrels (*Rumex* sp.), bulrush (*Schoenoplectus* sp.), prairie cordgrass (*Spartina pectinata*), cattail (*Typha angustifolia*), and stinging nettle (*Urtica dioica*).

### 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 requirement, as defined by the Manual and Supplement.

According to National Weather Service (NWS) preliminary climatological data for Minot, North Dakota, 5.41 inches of precipitation was recorded from August 1 through November 30, 2011 (Table 1). This amount is normal for this time period.

**Table 1. Monthly Recorded Rainfall at NWS Minot, North Dakota.**

Month	Recorded Precipitation (inches)	Average Precipitation (inches)	Difference (inches)
August 2011	2.18	2.04	0.14
September 2011	1.52	1.46	0.06
October 2011	1.48	1.16	0.32
November 2011	0.23	0.75	-0.52
<b>Total</b>	<b>5.41</b>	<b>5.41</b>	<b>0.00</b>

Source: National Oceanic and Atmospheric Administration (2011).

### 3.3 SOILS

Twenty-one soil types are present in the proposed project construction corridor, based on U.S. Department of Agriculture-Natural Resource Conservation Service (NRCS) mapping (NRCS 2011). Table 2 lists all soil units that occur within the project area. The following soil component descriptions represent the most prevalent soil series found within the survey area (NRCS 2011).

**Table 2. NRCS Derived Soil Series Present within the ROW.**

Soil Type	Acres within Construction ROW	Percent within Map Unit
Williams-Zahl loams, 3% to 6% slopes	55.603	34.09%
Zahl-Williams-Bowbells loams, 3% to 9% slopes	49.223	30.18%
Zahl-Williams loams, 9% to 25% slopes	29.041	17.81%
Williams loam, 0% to 3% slopes	5.805	3.56%
Mondamin silty clay, 0% to 2% slopes	3.357	2.06%

Soil Type	Acres within Construction ROW	Percent within Map Unit
Zahl-Max loams, 25% to 60% slopes	2.920	1.79%
Parnell silt loam	2.605	1.60%
Hamerly-Tonka complex, 0% to 3% slopes	2.429	1.49%
Lehr loam, 2% to 6% slopes	1.958	1.20%
Tonka silt loam	1.712	1.05%
Vallers loam, saline	1.381	0.85%
Farnuf-Sakakawea loams, 2% to 6% slopes	1.301	0.80%
Hamerly and Divide loams, saline, 0% to 3% slopes	1.038	0.64%
Noonan-Williams loams, 0% to 6% slopes	1.015	0.62%
Livona fine sandy loam, 0% to 6% slopes	0.832	0.51%
Bowbells-Tonka complex, 0% to 3% slopes	0.770	0.47%
Southam silty clay loam	0.767	0.47%
Parshall sandy loam, 0% to 6% slopes	0.689	0.42%
Wabek loam, 1% to 35% slopes	0.321	0.20%
Harriet loam, 0% to 2% slopes	0.222	0.14%
Bowbells loam, 0% to 3% slopes	0.101	0.06%

Source: NRCS 2011

### **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%. Mean annual air temperature is about 40°F, and mean annual precipitation is about 14 inches. Cultivated areas are used for growing small grains, flax, corn, hay, or pasture. Native vegetation is western wheatgrass (*Agropyron smithii*), needle and thread, blue grama, green needlegrass (*Nassella viridula*), and prairie junegrass (NRCS 2011).

### **Zahl**

The Zahl series consists of very deep, slowly permeable, well-drained soils found on glacial till plains, moraines, and valley side slopes at approximately 1% to 60%. The mean annual precipitation found throughout the spatial extent of this soil type is approximately 14 inches, and mean annual air temperature is approximately 40°F. This soil type is largely used for rangeland foraging. Native vegetation species common to this soil type include western wheatgrass, little bluestem (*Schizachyrium scoparium*), and needle and thread (NRCS 2011).

### **Bowbells**

The Bowbells series consists of very deep, well-drained or moderately well-drained soils found on glacial till plains and moraines. Permeability is moderate in the upper portions and moderately slow to slow in the substratum. Slopes range from approximately 0% to 9%. The mean annual precipitation found throughout the spatial extent of this soil type is approximately 14 inches, and mean annual air temperature is approximately 42°F. This soil type is used for cultivation of small grains. Native vegetation species historically common to this soil type include western wheatgrass, green needlegrass, and big bluestem (NRCS 2011).

**Mondamin**

The Mondamin series consists of very deep, well-drained or moderately well drained soils formed in glacio-lacustrine sediments on uplands. Permeability is moderately slow or slow. Slopes range from 0% to 9%. Mean annual precipitation is about 19 inches, and mean annual temperature is about 43 degrees F. Most areas are cropped to small grain, corn, and alfalfa. Native vegetation includes western wheatgrass, green needlegrass, and blue grama (NRCS 2011).

**Max**

The Max series consists of very deep, well-drained, moderately or moderately slowly permeable soils that formed in till. These soils are on till plains and have slopes ranging from 0% to 45%. Mean annual air temperature is 40°F, and mean annual precipitation is 14 inches. Soils are cropped to small grains and also used for hay, pasture, and range. Native vegetation is green needlegrass, western wheatgrass, needle and thread, blue grama, upland sedges, and a variety of forbs (NRCS 2011).

**Parnell**

The Parnell series consists of very deep, very poorly drained and poorly drained soils that formed in water-sorted sediments from glacial drift in depressions, swales, and drainageways on glacial moraines. These soils have slow permeability. Slopes range from 0% to 3%. Mean annual precipitation is about 20 inches, and mean annual air temperature is about 41°F. Most undrained areas are in native vegetation with some used for pasture or hayland. Drained areas are typically used to grow corn, soybeans, and small grain. Native vegetation is mostly marsh grasses, reeds, and sedges (NRCS 2011).

**3.4 WETLANDS**

SWCA recorded 43 PEM wetlands within the survey area, totaling approximately 35.97 acres (Table 3). Approximately 10.26 acres of PEM wetland are anticipated to be temporarily impacted by construction activities.

**Table 3. PEM Wetland Acreage within the Survey Area.**

<b>Wetland ID</b>	<b>Total Wetland Area (acres)</b>	<b>Temporarily Impacted Wetland Area within 70-foot ROW (acres)</b>	<b>Crossing Distance (feet)</b>	<b>USACE Jurisdictional Status</b>
NRBWET1	0.121	0.000	0.000	Isolated
NRBWET10	0.092	0.000	0.000	Isolated
NRBWET11*	0.748	0.284	222.750	Isolated
NRBWET12*	0.463	0.053	41.400	Isolated
NRBWET13*	1.056	0.195	171.330	Isolated
NRBWET14*	0.368	0.252	183.480	Isolated
NRBWET15	0.621	0.000	0.000	Isolated
NRBWET16	1.144	0.000	0.000	Isolated
NRWET16A*	0.132	0.042	97.926	Isolated

*Natural Resources and Wetland Determination Report for the PAA Nelson Takeoff to Ross Pipeline,  
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<b>Wetland ID</b>	<b>Total Wetland Area (acres)</b>	<b>Temporarily Impacted Wetland Area within 70-foot ROW (acres)</b>	<b>Crossing Distance (feet)</b>	<b>USACE Jurisdictional Status</b>
NRWET16B*	4.023	2.79	1,798.322	Isolated
NRBWET17	0.371	0.000	0.000	Isolated
NRBWET20	0.501	0.000	0.000	Isolated
NRBWET21*	0.438	0.084	121.750	Isolated
NRBWET22*	1.055	0.051	206.260	Isolated
NRBWET23	0.184	0.000	0.000	Isolated
NRBWET24*	0.578	0.260	173.880	Isolated
NRBWET25*	0.109	0.031	37.550	Jurisdictional
NRBWET4*	1.080	0.093	112.120	Isolated
NRBWET5	0.990	0.000	0.000	Isolated
NRBWET6*	0.389	0.239	163.000	Isolated
NRBWET9	2.302	0.000	0.000	Isolated
NRWET10*	0.484	0.091	98.370	Isolated
NRWET11*	0.841	0.431	319.320	Isolated
NRWET12*	0.459	0.192	130.120	Isolated
NRWET13*	0.112	0.112	133.170	Isolated
NRWET14*	0.039	0.039	87.860	Isolated
NRWET15*	0.487	0.177	132.330	Isolated
NRWET16*	0.838	0.560	406.930	Jurisdictional
NRWET17*	0.147	0.046	68.030	Isolated
NRWET18*	0.361	0.321	234.970	Isolated
NRWET19*	0.340	0.216	162.420	Isolated
NRWET1	0.245	0.000	0.000	Isolated
NRWET2*	0.107	0.071	105.520	Isolated
NRWET20	0.148	0.000	0.000	Isolated
NRWET21*	2.075	0.500	418.220	Isolated
NRWET22*	1.753	0.662	442.800	Isolated
NRWET3*	1.142	0.392	256.160	Isolated
NRWET4*	3.612	0.461	340.800	Isolated
NRWET5*	3.085	0.980	570.000	Isolated
NRWET6*	0.514	0.239	166.410	Isolated
NRWET7*	2.315	0.284	201.970	Isolated
NRWET8*	0.032	0.032	32.920	Isolated
NRWET9*	0.076	0.076	65.890	Isolated

<sup>1</sup> The USACE has the final authority on the jurisdictional status of a wetland.

\*Temporarily impacted by the proposed pipeline.

### 3.5 WATERBODIES

SWCA identified one intermittent stream encompassing approximately 0.032 acre of the survey area and one perennial stream encompassing approximately 1.989 acres of the survey area. The perennial waterbody (Little Knife River) will be crossed once via horizontal directional drill. The single unnamed intermittent waterbody will also be crossed once, using open cut methods.

### 3.6 WILDLIFE

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

#### 3.6.1 Endangered Species Act

##### 3.6.1.1 Black-footed Ferret (*Mustela nigripes*)

**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 2010b). 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.

##### 3.6.1.2 Gray Wolf (*Canis lupus*)

**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 that have occurred 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 from the northeast corner of North Dakota.

The gray wolf uses a variety of habitats that support a large prey base, including mountain and low-elevation forests, grasslands, and desert scrub (USFWS 2010c). 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.

#### 3.6.1.3 Whooping Crane (*Grus americana*)

**Federal Status:** Endangered

**Affect Determination:** No Effect

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 USFWS 2007).

The July 2010 total wild population was estimated at 383 (USFWS 2010d). 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 USFWS 2007; USFWS 2010d). Mountrail County, including the survey 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 USFWS 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 USFWS 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 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 USFWS 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. However, based on the temporary disturbance associated with this project and because PAA would cease all construction activities if a whooping crane is sighted within 1-mile off the project area, the proposed project would have **no effect** on the endangered whooping crane.

#### 3.6.1.4 Piping Plover (*Charadrius melodus*)

**Federal Status:** Threatened

**Affect Determination:** No Effect

The piping plover is a small shorebird that 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, 2010e). 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, 2010e). 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, 2010e).

A suitable shoreline habitat for breeding and nesting plovers does not occur within the survey area, and Lake Sakakawea is a minimum of 40 river miles away from the proposed survey area. It is unlikely that migrating plovers would visit the survey area during their migration. Therefore, the proposed project would have **no effect** on piping plovers.

#### 3.6.1.5 Designated Critical Habitat of Piping Plover

**Affect Determination:** No Effect

The USFWS has designated critical habitat for the Great Lakes and Northern Great Plains populations of piping plover (USFWS 2002).

Since the proposed project will not modify, alter, disturb, or affect the shoreline of Lake Sakakawea or any of its tributary streams in any way, the project would have **no effect** on designated critical habitat of the piping plover.

#### 3.6.1.6 Interior Least Tern (*Sterna antillarum*)

**Federal Status:** Endangered

**Affect Determination:** No Effect

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 2010f).

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 2010f).

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, 2010f). Approximately 100 pairs breed in North Dakota (USFWS 2010f). Details of their migration are not known, but their winter range is reported to include the Gulf of Mexico and Caribbean Islands (USFWS 1990a, 2010f).

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 2010f).

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 2010f).

A suitable shoreline habitat for breeding and nesting terns does not occur in the survey area, and Lake Sakakawea is a minimum of 40 river miles 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 would have **no effect** on endangered least terns.

#### 3.6.1.7 Pallid Sturgeon (*Scaphirhynchus albus*)

**Federal Status:** Endangered

**Affect Determination:** No Effect

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 that can delay spawning cues; and reduced food sources by lowering productivity (USFWS 2007a). 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 population that may be found approximately 40 river miles from the survey area 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 2007a). This population consists of approximately 136 wild adult pallid sturgeon (USFWS 2007a). Hatchery-reared sturgeon have also been stocked since 1998. The pallid sturgeon has been found to utilize the 15.5 miles of riverine habitat that would be inundated by Lake Sakakawea at full pool (Bramblett 1996 per USFWS 2007a). 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, the North Dakota Game and Fish Department has 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, USFWS, to Mike Cook, Aquatic Ecologist, SWCA, September 3, 2010).

A suitable habitat for pallid sturgeon does not occur in the survey area, and Lake Sakakawea is a minimum of 40 river miles away from the proposed survey area. However, the Little Knife River, which crosses a portion of the survey area, is a perennial tributary to the Missouri River and Lake Sakakawea. Potential pollution occurring as a result of construction activities and pipeline operations are concerns for downstream populations of endangered pallid sturgeon. Activities associated with the construction, reclamation, and operation of the proposed project are not anticipated to adversely affect water quality and subsequently the pallid sturgeon. Therefore, the project would have **no effect** on pallid sturgeon.

#### 3.6.1.8 Dakota Skipper (*Hesperia dacotae*)

**Federal Status:** Candidate

**Affect Determination:** No Effect

The Dakota skipper is a small butterfly with a 1-inch wingspan and is found primarily in undisturbed native tall grass and upland dry mixed grass prairie areas with a high diversity of wildflowers and grasses (Committee on the Status of Endangered Wildlife in Canada 2003). The Dakota skipper appears to require a range of precipitation-evaporation ratios between 60 and 105 and a soil pH between 7.2 and 7.9 (McCabe 1981). Larvae feed on grasses, favoring little bluestem. Adults commonly feed on nectar of flowering native forbs such as harebell (*Campanula rotundifolia*), wood lily (*Lilium philadelphicum*), and purple coneflower. The species is threatened by conversion of native prairie to cultivated agriculture or shrublands, over-grazing, invasive species, gravel mining, and inbreeding (USFWS 2005). Dakota skippers are not known to occur within the survey area; however, suitable habitat does occur. The proposed project would have **no effect** on this species. The use of best management practices and conservation guidelines (USFWS 2007b) during construction and operation and immediate reclamation of short-term disturbance should decrease direct, indirect, and cumulative impacts to this species.

#### 3.6.1.9 Sprague's Pipit (*Anthus spragueii*)

**Federal Status:** Candidate

**Affect Determination:** No Effect

Sprague's pipit is a small passerine bird that is native to the North American grasslands. It is a ground nester that breeds and winters on open grasslands and feeds mostly on insects and spiders and some seeds. Sprague's pipit is closely tied with native prairie habitat and breeds in the north-central United States in Minnesota, Montana, North Dakota, and South Dakota, as well as south-central Canada (USFWS 2010g). Wintering occurs in the southern states of

Arizona, Texas, Oklahoma, Arkansas, Mississippi, Louisiana, and New Mexico. Within the survey area, suitable habitat does occur. Therefore, the project would have no effect on Sprague's pipit.

### **3.6.2 Migratory Bird Treaty Act / Bald and Golden Eagle Protection Act**

#### **3.6.2.1 Bald Eagle (*Haliaeetus leucocephalus*)**

**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

Suitable nesting or foraging habitat for bald eagles includes old growth trees relatively close (usually less than 1.24 miles [Hagen et al. 2005]) to perennial waterbodies. Though the survey area does contain old growth trees, they are almost exclusively in upland areas. The Little Knife River does occupy a portion of the survey area; however, this portion is vegetated primarily with bulrush and cattail species, with little to no tree cover. The survey area is at least 14 straight line miles from Lake Sakakawea. Therefore, no adverse effects are anticipated. However, the possibility of transient, flying bald eagle individuals traversing the survey area does exist.

#### **3.6.2.2 Golden Eagle (*Aquila chrysaetos*)**

**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

No golden eagles were observed during the field surveys; however, golden eagles may occur within or near the survey area. The golden eagle prefers habitat characterized by open prairie, plains, and forested areas. Usually, golden eagles can be found in proximity to badland cliffs which provide suitable nesting habitat. However, no primary or secondary indication of golden eagle presence, including nests, was observed within or near the survey area during the field survey. Therefore, the proposed project is unlikely to cause any adverse effects to golden eagles.

### **3.6.3 Wildlife Observed**

During the field survey, SWCA ecologists observed different species of wildlife that utilize wetlands and other habitat within the survey area. Species observed include mourning dove (*Zenaid macroura*), northern flicker (*Colaptes auratus*), northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), red-winged blackbird (*Agelaius phoeniceus*), ring-billed gull (*Larus delawarensis*), song sparrow (*Melospiza melodia*), western meadowlark (*Sturnella neglecta*), and various waterfowl species.

### **3.7 TREE, SAPLING, AND SHRUB COUNT**

During SWCA's field survey, approximately 13 planted windbreaks and 10 naturally occurring forested upland and shrubland areas were geographically referenced within the survey area. Table 4 indicates the number of trees estimated to be impacted by the project as currently proposed. The ND PSC typically requires the project proponent to reduce the construction ROW to a width of 50 feet through delineated woody vegetation areas. Additionally, the ND PSC typically requires a 2:1 post- to pre-construction mitigation for all

trees impacted during the construction of the proposed pipeline. Therefore, SWCA estimates approximately 90 individuals will need to be replanted in order to fulfill the 2:1 mitigation requirement.

**Table 4. Tree, Sapling, and Shrub Count.**

Woody Vegetation (WV) ID	Species	Type	Number of Trees		Estimated Mitigation Commitment
			Total in Survey Area	50-foot Construction ROW (estimated)	
NRWV1	Peachleaf willow ( <i>Salix amygdaloides</i> )	Natural	1	1	2
	Redosier dogwood	Natural	17	17	34
NRWV3	Chokecherry ( <i>Prunus virginiana</i> )	Natural	4	4	8
NRWV2	Peachleaf willow	Natural	5	5	10
NRWV4	Siberian elm ( <i>Ulmus pumila</i> )	Planted	1	0	0
NRWV5	Eastern cottonwood ( <i>Populus deltoides</i> )	Natural	2	0	0
NRWV6	Eastern cottonwood	Natural	1	0	0
NRWV7	Eastern cottonwood	Natural	1	0	0
NRWV8	Siberian elm	Planted	1	1	2
NRWV9	Chokecherry	Planted	9	9	18
NRWV10	Chokecherry	Planted	6	6	12
NRWV11	Green ash ( <i>Fraxinus pennsylvanica</i> )	Planted	2	2	4
NRWV12	Eastern white cedar ( <i>Thuja occidentalis</i> )	Natural	1	0	0
NRWV13	Eastern cottonwood	Natural	1	0	0
NRWV14	Siberian elm	Natural	1	0	0
NRWV15	Eastern cottonwood	Natural	7	0	0
NRBWW2	Siberian elm, green ash	Planted	16	0	0
NRBWW3	Siberian elm, green ash	Planted	5	0	0
NRBWW5	Peachleaf willow	Planted	100	0	0
NRBWW6	Siberian elm, green ash	Planted	10	0	0
NRBWW7	Green ash	Planted	113	0	0
NRBWW8	Green ash	Planted	39	0	0
NRBWW9	Peachleaf willow, green ash	Planted	40	0	0
NRBWW10	Peachleaf willow	Planted	5	0	0

#### **4.0 CONCLUSIONS AND RECCOMENDATIONS**

1. SWCA ecologists recorded approximately 35.97 acres of wetlands within the survey area.
2. In total, 10.26 acres of PEM wetland *may* be temporarily impacted by construction activities.
3. SWCA ecologists recorded two waterbodies within the survey area. One unnamed intermittent stream and the Little Knife River, a perennial stream. Approximately 0.032 acre of stream may be impacted by construction activities.
4. SWCA estimates 45 trees, saplings, and shrubs may be impacted by construction. Therefore, approximately 90 two-year-old saplings may need to be replanted to fulfill the anticipated 2:1 mitigation requirement.
5. According to the recommendations of the North Dakota Forest Service, 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, North Dakota Forest Service, and Michael Cook, Ecologist, SWCA, December 7, 2009).
6. According to the recommendations of the North Dakota Forest Service, 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, North Dakota Forest Service, and Michael Cook, Ecologist, SWCA, December 7, 2009).
7. No threatened or endangered species were observed during the field survey. The proposed project is not anticipated to affect threatened and endangered species known to currently or historically occur in Mountrail County, North Dakota.

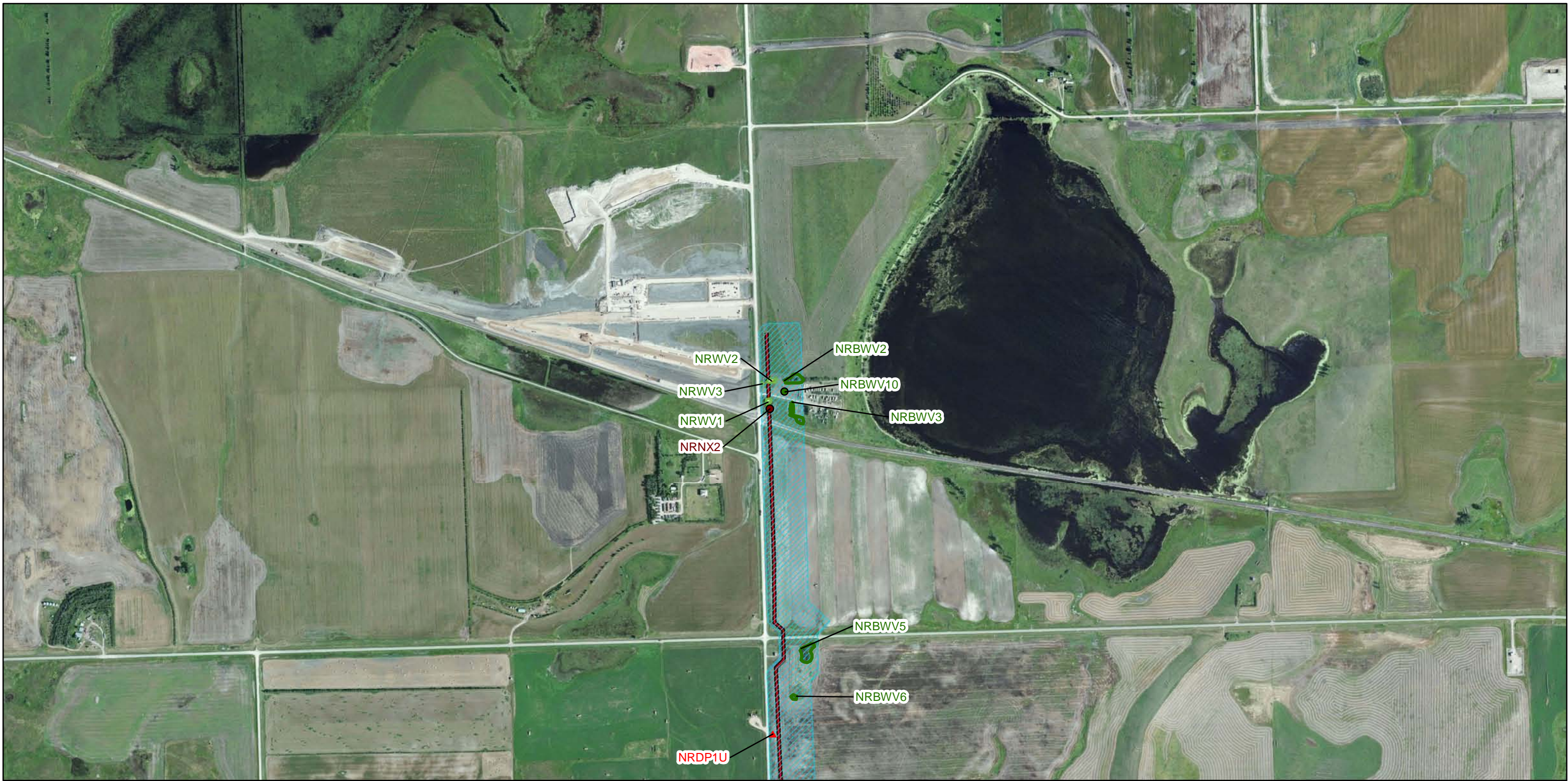
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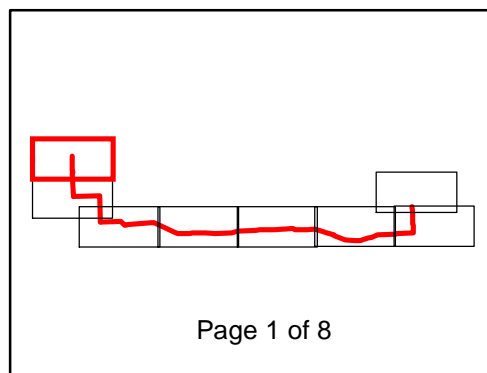
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**APPENDIX A**  
**Vicinity Maps and Site Layout Maps**



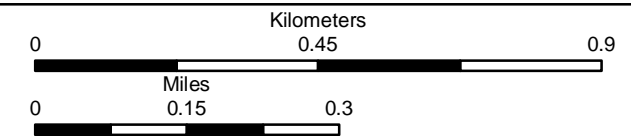
**Legend**

- Proposed PAA Nelson Takeoff to Ross Pipeline
- Woody Vegetation
- Survey Area
- ▲ Data Point
- Noxious Weeds
- Streams
- Noxious Weeds
- Wetland
- Wetland
- Woody Vegetation
- Woody Vegetation



116 North 4th Street  
Suite 200  
Bismarck, ND 58501

Phone: 701.258.6622  
Fax: 701.258.5957  
www.swca.com



Base Map: Bing Maps Aerial Imagery  
Source: ESRI Basemap service  
Quadrangle: Manitou, (1981)  
Ross, (1981)  
Township/Range: T156N R93W  
County: Mountrail

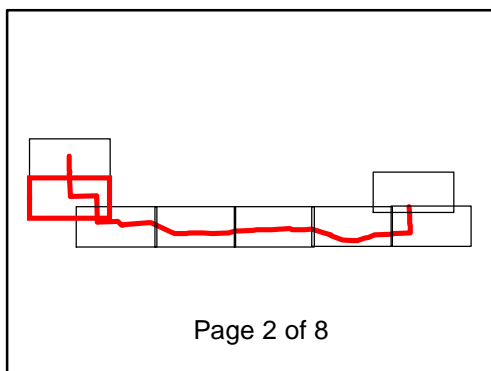


NAD 1983 UTM Zone 13N

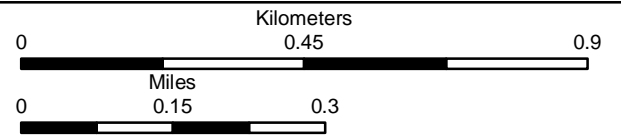


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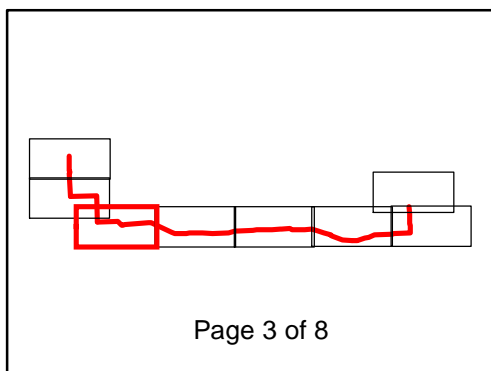
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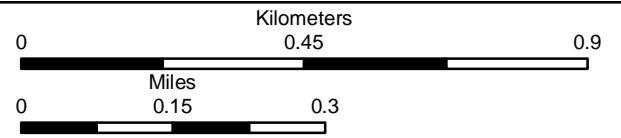
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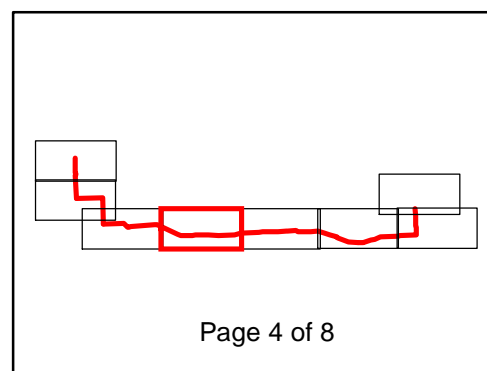


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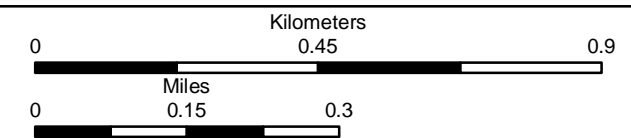
**Legend**

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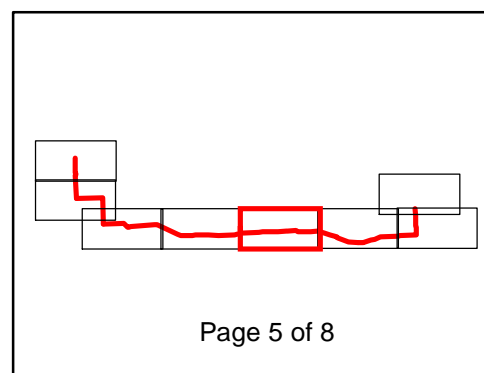


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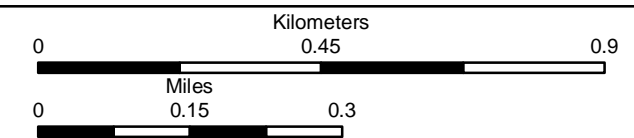
**Legend**

- Proposed PAA Nelson Takeoff to Ross Pipeline
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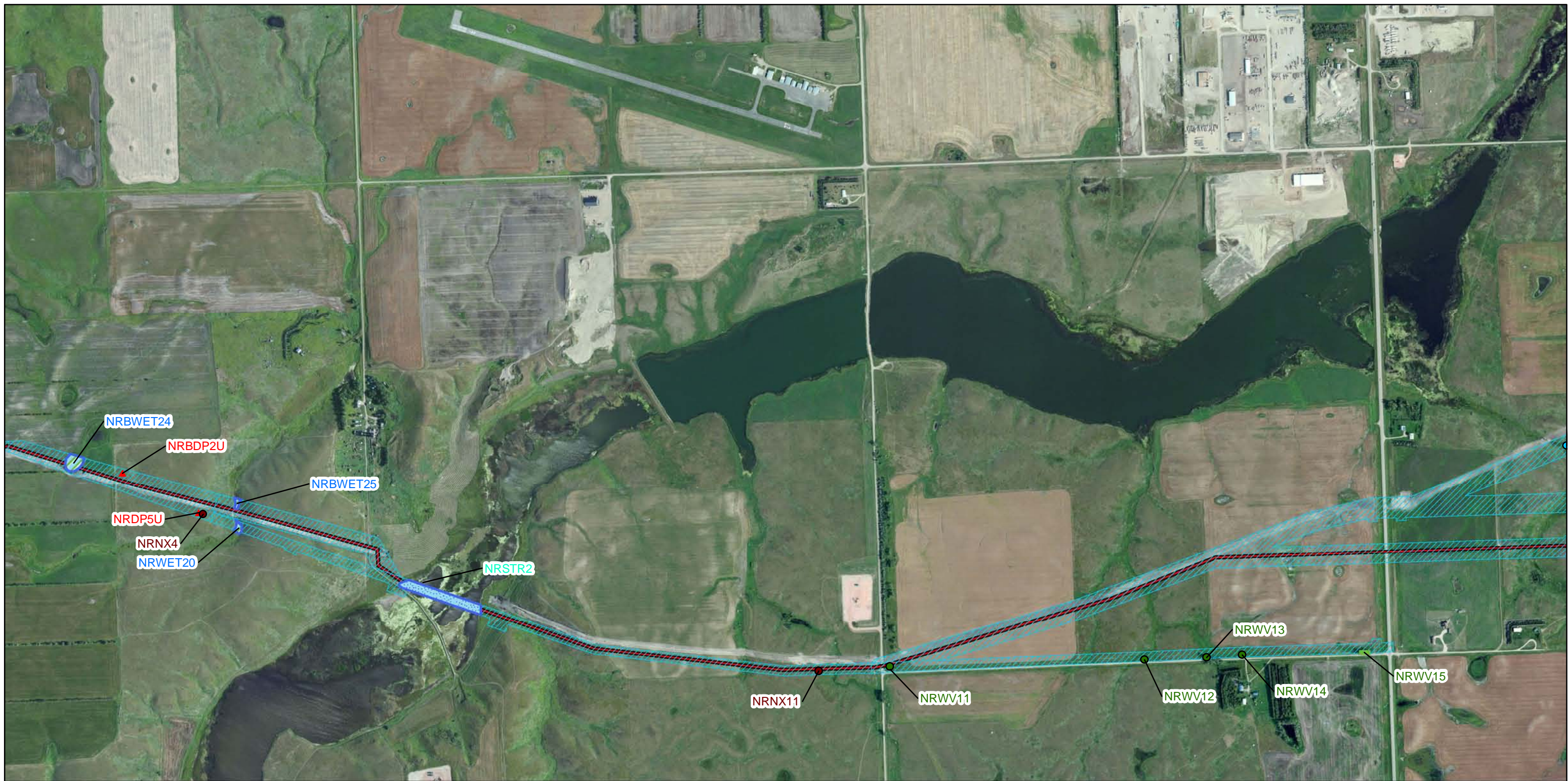


Base Map: Bing Maps Aerial Imagery  
Source: ESRI Basemap service  
Quadrangle: Stanley, (1981)

Township/Range: T156N R92W  
County: Mountrail

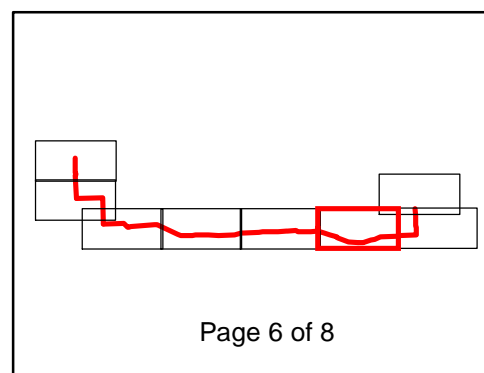


NAD 1983 UTM Zone 13N



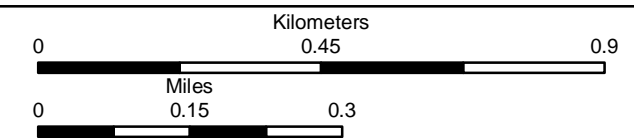
**Legend**

- Proposed PAA Nelson Takeoff to Ross Pipeline
- Survey Area
- ▲ Data Point
- Noxious Weeds
- Wetland
- Woody Vegetation
- Woody Vegetation
- Noxious Weeds
- Streams
- Wetland
- Woody Vegetation



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Base Map: Bing Maps Aerial Imagery  
Source: ESRI Basemap service  
Quadrangle: Stanley, (1981)  
Stanley SE, (1981)  
Township/Range: T156N R91W  
County: Mountrail

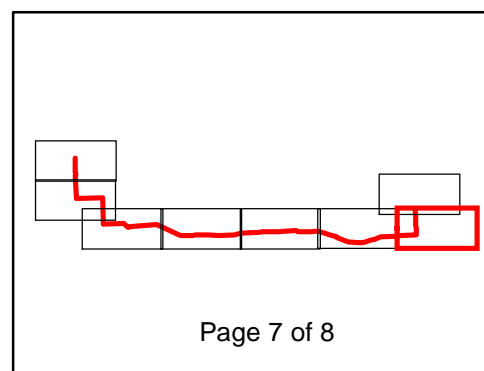


NAD 1983 UTM Zone 13N



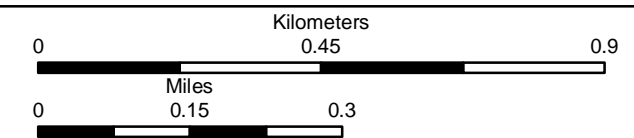
**Legend**

- Proposed PAA Nelson Takeoff to Ross Pipeline
- Survey Area
- ▲ Data Point
- Noxious Weeds
- Wetland
- Woody Vegetation
- Woody Vegetation
- Noxious Weeds
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Base Map: Bing Maps Aerial Imagery  
Source: ESRI Basemap service  
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Township/Range: T156N R91W  
County: Mountrail

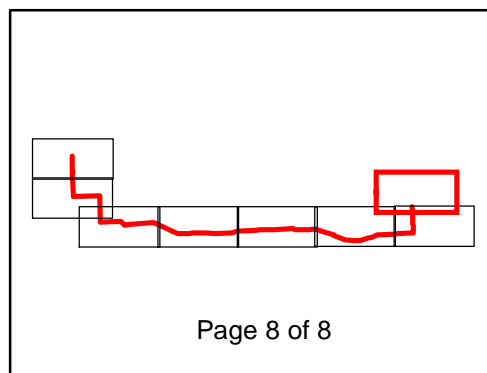


NAD 1983 UTM Zone 13N



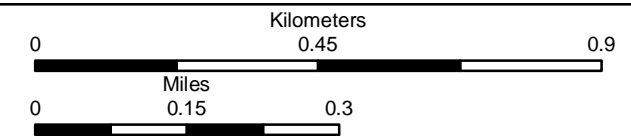
**Legend**

- Proposed PAA Nelson Takeoff to Ross Pipeline
- Woody Vegetation
- Survey Area
- Noxious Weeds
- Data Point
- Streams
- Noxious Weeds
- Wetland
- Wetland
- Woody Vegetation
- Woody Vegetation



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County: Mountrail



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**APPENDIX B**  
**Photographic Log**

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**Photograph 1. Overview of survey area facing northwest.**



**Photograph 2. View of NRWET1 facing northeast.**



**Photograph 3. View of NRSTR1 facing northeast.**



**Photograph 4. View of NRWV4 facing east northeast.**



**Photograph 5. View from NRDP3U facing south.**



**Photograph 6. Overview of NRWET3 facing north.**



**Photograph 7. Overview of NRWET7 facing northwest.**



**Photograph 8. View from NRDP1W facing south.**