Appendix D

Addendum to the Natural Resource Report

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

Prepared for

Plains All American Pipeline, L.P.

Prepared by

SWCA Environmental Consultants

April 2012

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

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SWCA Project No. 20655

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1.0 INTRODUCTION

SWCA Environmental Consultants (SWCA) conducted natural resources field surveys in order to identify exclusion and avoidance areas as specified in North Dakota Administrative Code (NDAC) 69-06-08-02 on the behalf of Plains All American Pipeline, L.P. (PAA). SWCA surveyed approximately 425.37 additional acres (addendum survey area) to accommodate reroutes and provide PAA with a wider surveyed corridor in the event the pipeline alignment is adjusted due to unforeseen circumstances.

SWCA conducted natural resources field surveys of the addendum survey area between March 9 and 19, 2012, to determine the potential presence and extent of wetlands and waterbodies. This includes jurisdictional waters of the U.S., commonly referred to as wetland and ordinary high water mark (OHWM) determinations. 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.

This report is an addendum to the *Natural Resources and Wetland Determination Report for the PAA Nelson Takeoff to Ross Pipeline, Mountrail County, North Dakota* (Bivens and Christensen, 2012) and outlines the methodology used by SWCA's ecologists to complete the aforementioned surveys. Additionally, this report presents the results of the completed field surveys.

1.1 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 addendum survey areas are 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 moraine landscape, with hills and depressions and high concentrations of wetlands. Further, the addendum survey areas are located in the Glaciated Dark Brown Prairie (level IV) ecoregion. 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).

The addendum survey areas are located on gently rolling plains and active agricultural fields. The inventoried areas are located in Sections 16, 22, 35, and 36, Township (T) 156 North (N), Range (R) 93 West (W); Sections 31, 32, 33, 34, 35, and 36, T156N, R92W; and Sections 31 and 32, T156N, R91W.

2.0 METHODS

2.1 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.

2.1.1 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.

2.1.2 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.

2.1.3 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.

2.2 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 U.S. Geological Survey 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.

2.3 TREE, SAPLING, AND SHRUB COUNT

SWCA ecologists determined the total number of trees, saplings, and shrubs present within the addendum survey area by employing several different techniques depending on the type of woody vegetation habitat (i.e., forested upland, shrubland, or shelterbelt) encountered and the overall extent of each habitat within the right-of-way. The boundary of all forested upland, shrubland, and shelterbelt habitat was geographically referenced using a Trimble GeoXT series handheld global positioning system (GPS) unit. In forested upland and shrubland habitat, SWCA counted or estimated the number of all woody stemmed vegetation with a DBH of ≥1 inch. In shelterbelt areas, all woody stemmed vegetation, regardless of DBH, was inventoried via direct count. Ecologists taxonomically identified all recorded individuals to the species level within each habitat type.

2.4 WILDLIFE INCLUDING THREATENED AND ENDANGERED SPECIES

Information regarding the presence of threatened or endangered species, which may occur within the addendum 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 suitable habitat potentially impacted by construction activities within addendum survey area. A line-of-sight survey for raptor species 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 MAPPING

The boundaries of each wetland, waterbody, woody vegetation habitat, and noxious weed assemblage, if present, 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

SWCA ecologists identified four general types of vegetative communities within the addendum 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 or submergent aquatic macrophytes.

Vegetation communities met the hydrophytic vegetation criterion for wetlands if greater than 50% of documented 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.

SWCA ecologists did not observe any state of North Dakota- or Mountrail County-listed noxious weeds in the reroute survey areas (NDCC 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. Species common to the Northwestern Great Plains Mixedgrass Prairie and confirmed during field surveys included western wheatgrass (*Agropyron smithii*), green needlegrass (*Nassella viridula*), needle and thread (*Hesperostipa comata*), prairie junegrass (*Koeleria macrantha*), and various fescue (*Festuca* spp.) species. Other common species found within these herbaceous upland communities include big bluestem (*Andropogon gerardii*), green sagewort (*Artemisia campestris*), cudweed sagewort (*Artemisia ludoviciana*), sideoats grama (*Bouteloua curtipendula*), blue grama (*Bouteloua gracilis*), smooth brome (*Bromus inermis*), purple coneflower (*Echinacea angustifolia*), squirreltail (*Elymus elymoides*), American licorice (*Glycyrrhiza lepidota*), curlycup gumweed (*Grindelia squarrosa*), gayfeather (*Liatris puncata*), yellow sweetclover (*Melilotus officinalis*), bluegrass (*Poa pratensis*), prairie coneflower (*Ratibida columnifera*), prairie rose (*Rosa arkansana*), and little bluestem (*Schizachyrium scoparium*).

3.1.2 Shrubland and Woody Vegetation

The inventory of the addendum survey area found naturally occurring shrubland communities in upland areas dominated by species including chokecherry (*Prunus virginiana*) and western snowberry (*Symphoricarpos occidentalis*). Woody vegetation communities observed during the field surveys consisted of planted tree rows and naturally occurring woody draws dominated by green ash (*Fraxinus pennsylvanica*), eastern cottonwood (*Populus deltoides*), and Russian olive (*Elaeagnus angustifolia*).

3.1.3 Cropland

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

3.1.4 PEM Wetland

SWCA determined that PEM wetlands consisted of herbaceous, non-woody vegetation such as sedges, spike-rushes, grasses, and forbs. Common species found within these communities and confirmed during field surveys include big bluestem, smooth brome, Kentucky bluegrass (*Poa pratensis*), prairie cordgrass (*Spartina pectinata*), smartweed (*Polygonum amphibium*), sedge species (*Carex* spp.), creeping spikerush (*Eleocharis palustris*), foxtail barley (*Hordeum jubatum*), bulrush (*Scirpus* spp.), dock species (*Rumex* spp.), western snowberry, and cattail (*Typha* sp.).

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 (NWS) preliminary climatological data for Williston, North Dakota, 0.58 inch of precipitation was recorded from February 1 to March 19, 2012 (Table 1). This amount is 0.41 inch lower than what is normal for this time period.

Table 1. Monthly Recorded Rainfall at NWS Williston, North Dakota.

Month	2011 Recorded Precipitation (inches)	Normal Precipitation (inches)	Difference (inches)
February 2012	0.48	0.51	-0.03
March 1-19, 2012	0.10	0.48	-0.38
Total	**0.58**	**0.99**	**-0.41**

Source: National Oceanic and Atmospheric Administration 2011

3.3 WETLANDS

SWCA recorded 33 PEM wetlands within the addendum survey area, totaling approximately 51.071 acres or 12% of the survey area (Table 2). In total, approximately 1.777 acres of PEM wetland would be temporarily impacted by construction activities occurring within the addendum survey area. Based on the lack of a hydrologic connection that may influence the chemical, biological, and physical properties of waters of the U.S., SWCA believes that all of the 33 recorded wetlands may be considered isolated and therefore non-jurisdictional. However, the USACE, in coordination with the Environmental Protection Agency (EPA), has sole discretion in determining the jurisdictional status of potential “waters of the U.S.”.

Table 2. PEM Wetlands within the Addendum Survey Area.

Feature ID	USACE Jurisdictional Status*	Acres Within Survey Area	Potentially Impacted Area (Acres)	Crossing Distance (feet)
NRCWET22	Isolated	25.37	0.151	105.2
NRCWET23	Isolated	0.262	-	-
NRCWET20	Isolated	0.424	0.253	191.1
NRCWET21	Isolated	1.277	-	-
NRCWET19	Isolated	3.826	0.862	702.44
NRCWET18	Isolated	1.696	-	-
NRCWET24	Isolated	1.024	0.511	384.02
NRCWET25	Isolated	0.080	-	-
NRCWET26	Isolated	0.576	-	-
NRCWET9	Isolated	0.389	-	-
NRCWET10	Isolated	0.402	-	-
NRCWET11	Isolated	1.474	-	-
NRCWET12	Isolated	0.442	-	-
NRCWET13	Isolated	0.469	-	-
NRCWET14	Isolated	0.867	-	-
NRCWET15	Isolated	0.315	-	-
NRCWET16	Isolated	0.137	-	-
NRCWET17	Isolated	1.007	-	-
NRCWET28	Isolated	0.256	-	-
NRCWET29	Isolated	0.548	-	-
NRCWET30	Isolated	0.388	-	-
NRCWET31	Isolated	0.899	-	-
NRCWET32	Isolated	0.455	-	-
NRCWET33	Isolated	0.566	-	-
NRCWET3	Isolated	0.225	-	-
NRCWET1	Isolated	0.913	-	-
NRCWET2	Isolated	0.308	-	-
NRCWET34	Isolated	0.283	-	-
NRCWET35	Isolated	25.274	-	-
NRCWET5	Isolated	0.130	-	-
NRCWET6	Isolated	2.926	-	-
NRCWET7	Isolated	2.399	-	-
NRCWET8	Isolated	0.427	-	-

* The USACE, in coordination with the EPA, has the final authority on the jurisdictional status of a waterbody.

3.4 WATERBODIES

SWCA observed four waterbodies within the addendum survey area including; 3 intermittent streams, and 1 perennial stream (Little Knife River). Acreages within the addendum survey area are given in Table 3. As proposed, none of the waterbodies present within the addendum survey area are anticipated to be impacted by construction activities.

Table 3: Waterbodies within the Addendum Survey Area.

Feature ID	Waterbody Name	Waterbody Type	Acres within Addendum Survey Area
NRCSTR1	Unnamed	Intermittent Stream	0.324
NRCSTR2	Unnamed	Intermittent Stream	0.382
NRCSTR3	Little Knife River	Perennial Stream	3.26
NRCSTR4	Unnamed	Intermittent Stream	0.558

3.5 TREE, SAPLING, AND SHRUB COUNT

Nine additional areas of woody stemmed vegetation, including approximately 232 individuals, were recorded within the addendum survey area (Table 4). As proposed, pipeline construction would not impact any of the newly recorded woody stemmed vegetation. Therefore, SWCA's estimates regarding mitigation requirements do not differ from those proposed in the original report (Bivens and Christensen, 2012).

Table 4. Woody Vegetation Count and Acreage within the Addendum Survey Area.

Feature Name	Species	Tree or Shrub	Number of Individuals	Acres Within Addendum Survey Area
NRCWV1	Chokecherry (*Prunus virginiana*)	Shrub	20	0.014
NRCWV2	Eastern cottonwood (*Populus deltoids*)	Tree	3	0.065
NRCWV3	Russian olive (*Eleagnus angustifolia*)	Tree	15	0.120
NRCWV4	Russian olive	Tree	30	0.213
NRCWV5	Russian olive	Tree	34	0.228
NRCWV6	Chokecherry	Shrub	10	0.026
NRCWV7	Chokecherry	Shrub	75	0.157
NRCWV8	Green ash (*Fraxinus pennsylvanica*)	Tree	42	0.372
NRCWV9	Green ash	Tree	3	0.009

3.6 WILDLIFE

SWCA conducted a cursory threatened and endangered species 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. The survey area does contain suitable foraging and stopover habitat for the whooping crane (*Grus americana*). Affects determinations do not differ from those proposed in the original report (Bivens and Christensen, 2012).

4.0 CONCLUSIONS AND RECOMMENDATIONS

1. SWCA ecologists recorded approximately 51.071 acres of wetlands within the reroute survey area.
2. SWCA estimates that construction activities would impact approximately 1.777 acres of newly recorded PEM wetland within the addendum survey area. In total, SWCA estimates the entire project, as proposed, would temporarily impact approximately 9.79 acres of PEM wetland.
3. SWCA ecologists recorded four streams within the addendum survey area, totaling approximately 4.52 acres. SWCA does not anticipate any impact to the newly recorded streams as a result of construction activities
4. SWCA recorded 9 areas of woody vegetation within the addendum survey area comprised of approximately 232 individuals. However, as proposed, none of the newly recorded woody vegetation areas would be impacted by construction activities.
5. Habitat observed within the addendum survey area does not differ significantly from that addressed in the original report (Bivens and Christensen, 2012). Therefore, no threatened and/or endangered species are anticipated to be detrimentally impacted by construction activities.

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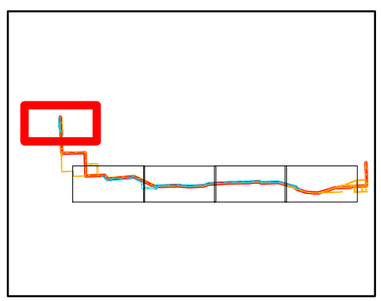
APPENDIX A

Vicinity Maps and Revised Alignment Layout Maps

Nelson Takeoff to Ross Pipeline Addendum

- Upland Data Point
- Noxious Weed
- Woody Vegetation
- Nelson Takeoff to Ross Centerline
- Addendum Survey Area
- Previously Surveyed Area (Bivens and Christensen 2012)
- Wetland
- Woody Vegetation
- Stream
- Previously Recorded Noxious Weed
- Previously Recorded Stream
- Previously Recorded Wetland
- Previously Recorded Woody Vegetation



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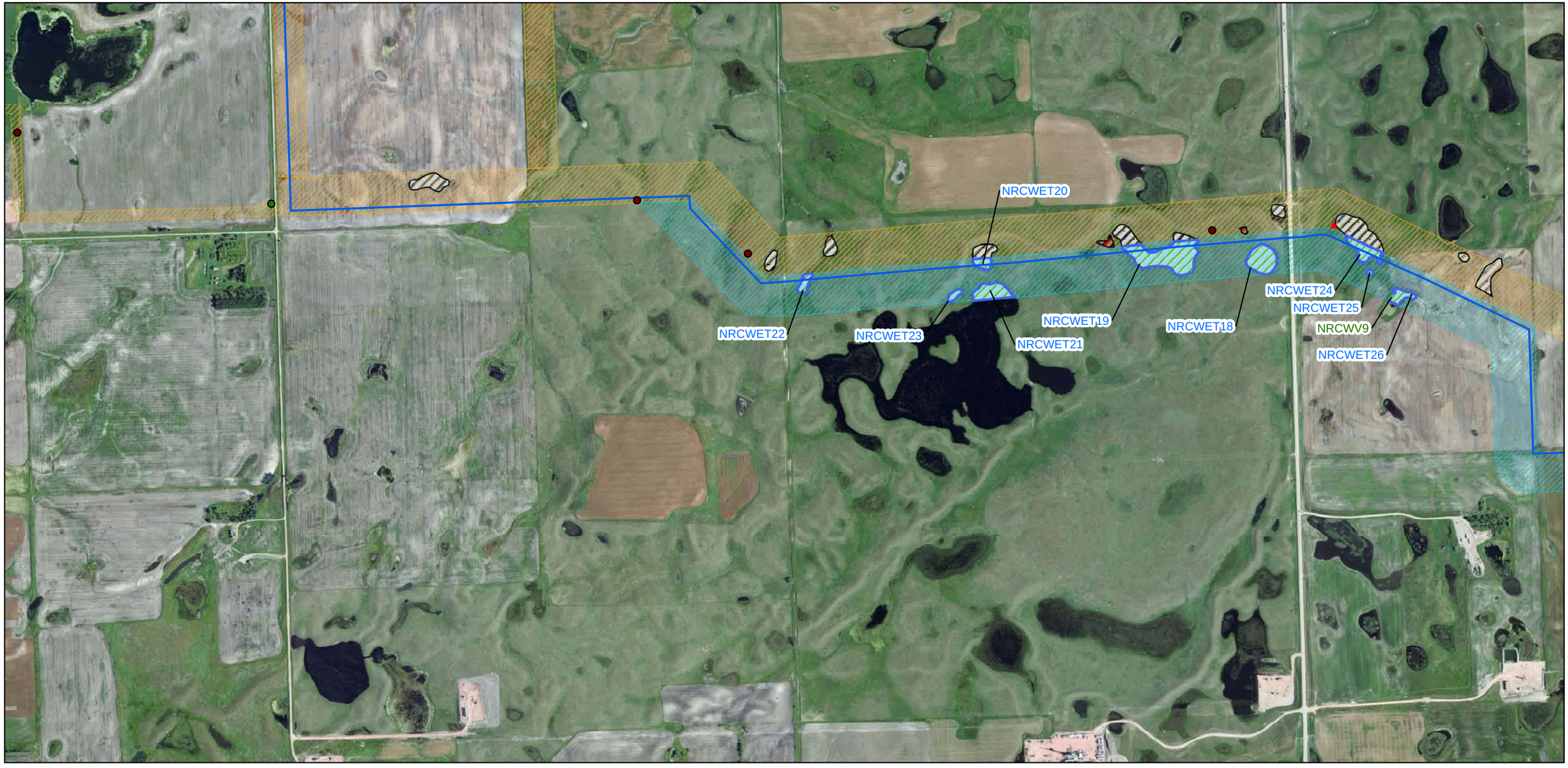
Kilometers
0 0.45 0.9

Miles
0 0.2 0.4

Base Map: Bing Aerial Maps
Source: esri ArcGIS service
Quadrangle: Manitou, (1981)
Ross, (1981)
Township/Range: T156N R93W
Mountrail County, North Dakota

N

NAD 1983 UTM Zone 13N



Nelson Takeoff to Ross Pipeline Addendum

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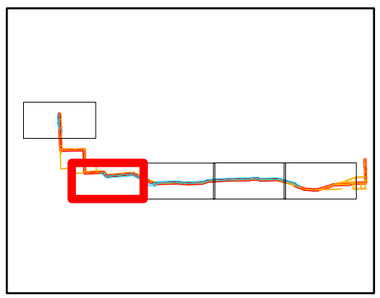
- Woody Vegetation
- Stream
- Previously Recorded Noxious Weed
- Previously Recorded Stream
- Previously Recorded Wetland
- Previously Recorded Woody Vegetation



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Kilometers
0 0.45 0.9

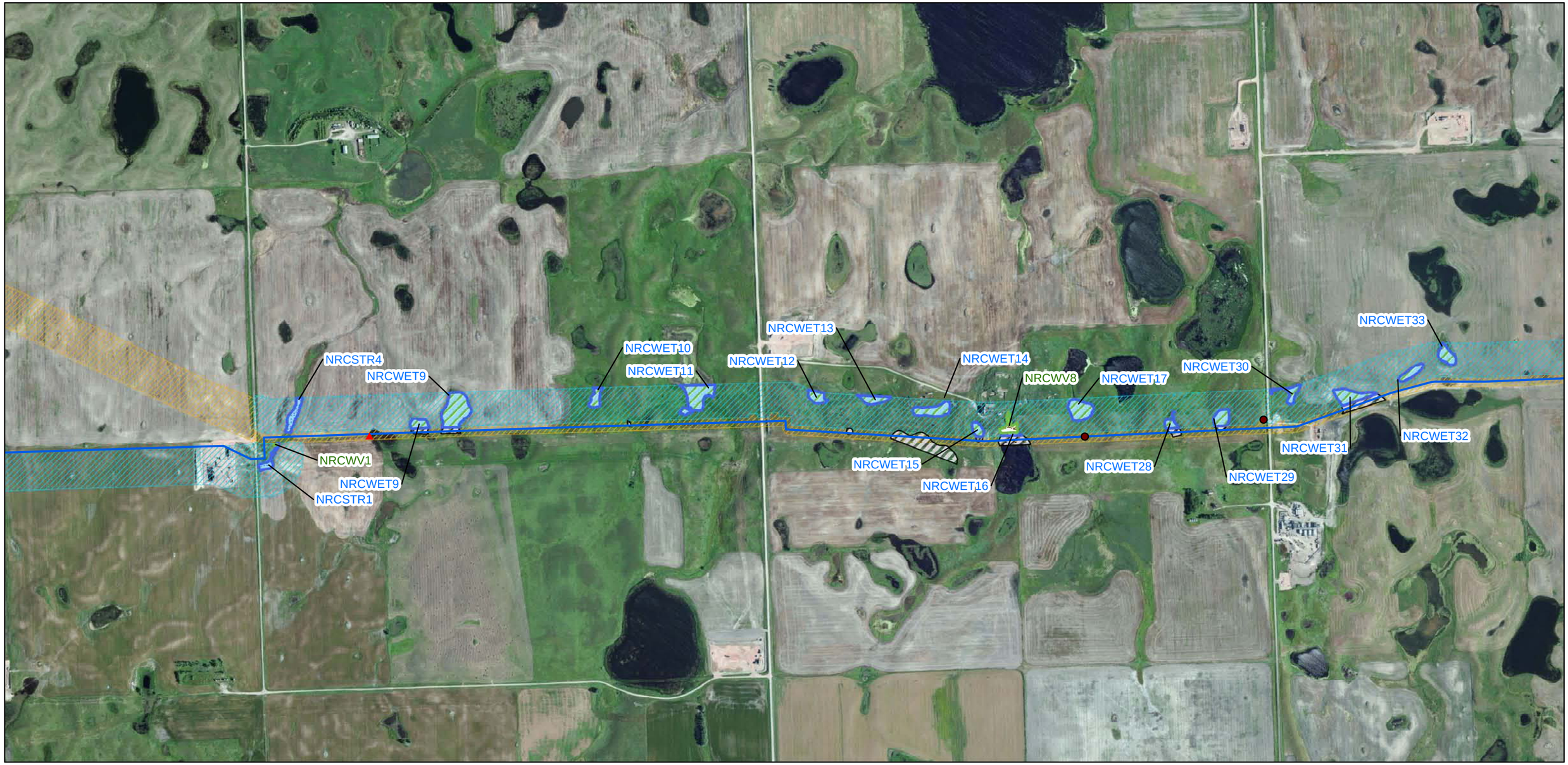
Miles
0 0.2 0.4

Base Map: Bing Aerial Maps
Source: esri ArcGIS service
Quadrangle: Ross, (1981)

Township/Range: T156N R93W and T156N R92W
Mountrail County, North Dakota

N

NAD 1983 UTM Zone 13N



Nelson Takeoff to Ross Pipeline Addendum

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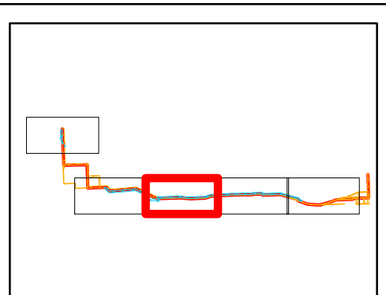
- Nelson Takeoff to Ross Centerline
- Addendum Survey Area
- Previously Surveyed Area (Bivens and Christensen 2012)
- Wetland
- Woody Vegetation
- Stream
- Previously Recorded Noxious Weed
- Previously Recorded Stream
- Previously Recorded Wetland
- Previously Recorded Woody Vegetation



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Kilometers
0 0.45 0.9

Miles
0 0.2 0.4

Base Map: Bing Aerial Maps
Source: esri ArcGIS service
Quadrangle: Ross, (1981)
Stanley, (1981)
Township/Range: T156N R92W
Mountrail County, North Dakota

N

NAD 1983 UTM Zone 13N

Nelson Takeoff to Ross Pipeline Addendum

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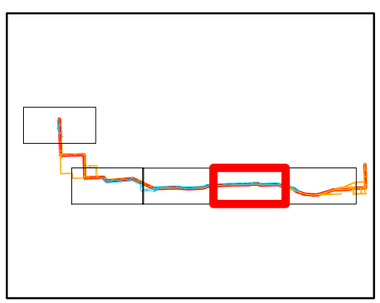

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