BRANDON - PORTAGE LA PRAIRIE TRANSMISSION LINES

REPLACEMENT PROJECT

VEGETATION TECHNICAL REPORT

Prepared for:

Manitoba Hydro

Prepared by:

Szwaluk Environmental Consulting Ltd.

December, 2020

SUMMARY

The proposed project occurs within the Lake Manitoba Plain Ecoregion, overlying both the Portage and MacGregor Ecodistricts. The area is highly developed with urban, industrial, and commercial developments. Agriculture represents the dominant land cover. Small areas of native vegetation include deciduous forest, wetland and herbaceous cover.

Twenty-four sites were visited along the proposed routes and project area, with a total of 117 plant taxa recorded. Seven species of conservation concern were observed during surveys, with one species ranked imperilled (Hairy sweet cicely, S2?) and the remaining six ranked vulnerable (S3 to S3S5). Thirty-nine species are considered non-native or invasive, with 15 of these species considered noxious weeds (Tier 3). Invasive species are abundant and widespread in the project area.

Table of Contents

LIST OF TABLES

LIST OF MAPS

LIST OF PHOTOGRAPHS

1.0 INTRODUCTION

1.1 Background

The purpose of this study was to assess the vegetation for the Brandon - Portage la Prairie Transmission Lines Replacement Project (BP6/BP7). In October 2019, a storm caused extensive damage to Manitoba Hydro's system of a section of two transmission lines between Brandon and Portage a Prairie, in the Portage a Prairie area. As a result, both lines need to be repaired, rebuilt and modernized with a permanent replacement that meets safety requirements for rights-of-way. A temporary wood pole transmission line along the Trans-Canada Highway was installed to temporarily maintain reliability. The original transmission lines were built between 1949 to 1964 and since then required right-of-way widths have expanded for safety reasons and development has grown beside the existing lines. As part of the project, Manitoba Hydro is considering different routes for the rebuilt section. The project is a Class 2 development under The Environment Act and requires regulatory approval. The project in-service date is anticipated to be 2022.

The objective of this study is to provide information on vegetation that will be used to develop the existing environment portion of the environmental assessment for the project. The specific tasks established for this study were as follows:

- Compile existing ecological, vegetation and botanical information for the study area;
- Visit various sites in the field to describe the terrestrial vegetation communities along the proposed routes and study area;
- Survey for potential rare plants;
- Document invasive and noxious plant species observed during site visits; and
- Develop a technical report that addresses existing environment information on vegetation.

1.2 Study Area

The study area overlaps with the city of Portage la Prairie and surrounding area, in the Central Plains Region, shown in Map 1-2. The northern extent of the study area approximately follows the BP6/BP7 storm damaged route, through Island Park and Crescent Lake, and is generally bound by the Assiniboine River to the south. The east and west boundaries of the study area approximately occur at the city limits, near where Provincial Trunk Highway 1A merges with the Trans-Canada Highway.

2.0 METHODS

2.1 Data Sources

Existing biophysical information was used to describe the environment, regionally for the transmission project (e.g., Rowe 1959; Smith et al. 1998). Rowe (1959) provides a geographic description of regions that includes distinctive patterning of vegetation and information on major species. The existing ecological land classification was identified and described from Smith et al. (1998). Here, ecological regions are delineated that are relatively homogeneous in overlapping patterns of climate, as expressed in vegetation, and geology, physiography, and soil development.

Botanical and vegetation information was described from available data sources including Smith et al. (1998) who describes vegetation at all levels of classification (ecozone to ecodistrict). The Manitoba Conservation Data Centre (Manitoba Government 2020a) provides information on species of conservation concern.

2.2 Field Site Selection

Manitoba Hydro's Environmental Protection Information Management System (EPIMS) Map Viewer was used to view the study area and project footprint imagery (digital ortho-rectified imagery). EPIMS Map Viewer provides information on land use and vegetation cover from the Manitoba Land Cover Classification. EPIMS Map Viewer was used to select potential sites to survey in the field. Suitable sites were selected based on a stratification of vegetation types (e.g., deciduous forest, grassland and wetland), importance of vegetation types (greater potential to support species of conservation concern), accessibility, and disturbance. Twenty-four sites were considered suitable for surveys. All fieldwork was conducted roadside, along existing Manitoba Hydro RoW's, or on Crown lands. A high-level routing and study area map generated by Manitoba Hydro and a Google Earth satellite imagery map were used in the field. Field visits were conducted August 11 and 12, 2020.

2.3 Vegetation Survey

The vegetation survey consisted of recording species composition and structure. Qualitative surveys were used to characterize vegetation communities along the potential transmission line routes and study area. All vascular plant species observed, including noxious weeds, were recorded.

To characterize the local vegetation, community type descriptions are presented where surveys occurred. Naming of vegetation community types was based on their structure and species dominance by stratum. Species separated by a slash (/) indicates a change in

stratum, while co-dominant species are separated by a dash (-) indicating similar abundance within the stratum.

Where surveys occurred in the forest community, descriptions further included tree height (measured at 20 m) and diameter at breast height (dbh). Canopy cover is defined as closed (>60%), open (>25-60%) and sparse (10-25%). GPS coordinates and photographs were taken at each site visited.

2.4 Rare Plant Survey

Species of conservation concern are imperilled and vulnerable plants tracked by the Manitoba Conservation Data Centre (Manitoba Government 2020a), including those plants listed under *The Endangered Species and Ecosystems Act* of Manitoba (Manitoba Government 2020b), the federal *Species at Risk Act* (Government of Canada 2020), or listed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2020).

The standardized ranking of species used by Conservation Data Centres and Natural Heritage Programs throughout North America includes a series of ranks on a five-point scale from critically imperilled to secure. Listed below are definitions for interpreting conservation status ranks at the subnational or provincial (S) level. Ranks may also be intermediary between levels.

CRITICALLY IMPERILLED (S1): At very high risk of extirpation in the jurisdiction due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.

IMPERILLED (S2): At high risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.

VULNERABLE (S3): At moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.

APPARENTLY SECURE (S4): At a fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.

SECURE (S5): At very low or no risk of extirpation in the jurisdiction due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats.

Under ESEA, SARA and COSEWIC, species are designated into the following categories: Endangered, Threatened, Extirpated, and Special Concern (see Appendix I).

Searches for species of conservation concern began with the review of provincially tracked species previously known to occur in the assessment area (provincial database). Biological information on species flowering times and preferred habitat was also reviewed.

In the field, rare plant searches occurred in selected habitats, where access was permitted, and follow methods outlined by the Alberta Native Plant Council (2012). Rare plant locations were recorded using GPS, individuals counted, phenology recorded and population extent estimated. Photographs were captured in the field.

2.5 Collection Guidelines and Plant Identification

All vascular plants were recorded and those unidentifiable in the field were collected, as voucher specimens, where the population size permits. Identification of vascular plants followed published volumes of Flora of North America (1993+). Plant nomenclature followed the Manitoba Conservation Data Centre provincial species list.

3.0 RESULTS

3.1 Ecological Land Classification

The proposed project lies within the Aspen-Oak Section of the Boreal Forest Region (Rowe 1959). This is a transition zone between forest and prairie vegetation of west-central Canada. The deciduous element of the boreal forest forms grove land where elements of prairie are intermixed.

Within the Prairies Ecozone of the ecological landscape stratification lies the Lake Manitoba Plain Ecoregion, extending northwestward from the International Boundary to Lake Dauphin, with the Manitoba escarpment marking its western boundary (Smith et al. 1998). The proposed project occurs almost entirely within the Portage Ecodistrict, in the central portion of the ecoregion. The western edge of the study area occurs in the MacGregor Ecodistrict.

The regional landscape is characterized by level to rolling or gently undulating terrain. Soils are dominantly Black Chernozemic soils developed on till, glaciolacustrine and alluvial materials. Humic Vertisolic and Gleysolic soils also are developed on glaciolacustrine sediments.

The Lake Manitoba Plain Ecoregion historically was comprised of prairie grasslands and stands of trembling aspen (*Populus tremuloides*) and bur oak (*Quercus macrocarpa*); however domestic crops and pastureland have now replaced much of the natural vegetation. Some groves remain along with deciduous forest remnants of trembling aspen, balsam poplar (*Populus balsamifera*), elm (*Ulmus americana*), green ash (*Fraxinus pennsylvanica*), and Manitoba maple (*Acer negundo*) on moist sites. Bur oak and grassland communities dominate drier sites. Stands of trees could also be intermixed with shrub species such as willows (*Salix* spp.), Saskatoon (*Amelanchier alnifolia*), red-osier dogwood (*Cornus sericea*) and snowberry (*Symphoricarpos occidentalis*), and various herbs in the understory. Grasses in the region include fescue (*Festuca* spp.), wheat grass (*Elymus* spp.), June grass (*Koeleria macrantha*) and Kentucky bluegrass (*Poa pratensis*). Poorly drained areas support slough grasses (*Beckmannia syzigachne*), marsh reed grass (*Calamagrostis canadensis*), sedges (*Carex* spp.), cattails (*Typha* spp.) and willows.

The regional climate consists of long, cold winters and short, warm summers. The mean annual temperatures vary from 1.8^{o}C to 3.1^{o}C. The mean annual precipitation ranges from 485 to 540 mm.

3.2 Land Cover Classification

The Manitoba Land Cover Classification (EPIMS Map Viewer) identifies seven vegetation classes within the study area, including deciduous forest, open deciduous forest, treed wetland, marsh wetland, range and grassland, agriculture, and agriculture – forage field. The water class includes lakes and rivers, while the cultural feature class includes residential area. Agriculture represents the dominant land cover. Map 3-2 illustrates the distribution of the land cover classes for the study area.

3.3 Route Descriptions

Both proposed transmission line routes were driven where accessible by road. The routes both occur primarily through or adjacent to agricultural land use. The Storm Damaged route begins at Provincial Trunk Highway 1A and passes through the southern portion of Portage la Prairie, crossing cultivated land and Crescent Lake, westwards. The existing RoW of the Storm Damaged route also occurs along stands of deciduous forest before again crossing agricultural land in the west part of the study area. The Temporary route also begins at Provincial Trunk Highway 1A and travels along the RoW of Angle Road heading south. The line turns west and follows the Trans-Canada Hwy (Portage la Prairie Bypass) to where the project terminates. The Temporary route occurs adjacent to a tree plantation and a minor amount of deciduous forest.

3.4 Vegetation and Botanical Resources

3.4.1 Vegetation Community Types

Twenty-four sites were surveyed along the routes and study area. Map 3-4 shows the distribution of sites within the study area. The vegetation can be grouped into three broad types including deciduous forest, wetland and herbaceous. To characterize the local vegetation, stands were classed into seven vegetation community types based on field data collected at each site, including vegetation composition and structure. Vegetation communities are summarized in Table 3-4a. Descriptions are presented for all strata present (i.e., tree canopy, tall shrub layer, and herb and low shrub understory). A single description is presented for each community type, although they occur in more than one location in the study area. For all species recorded in field surveys, refer to the flora list in Appendix III and IV.

Table 3-4a. Vegetation community types surveyed in the study area.

Vegetation Community	Site	Number of Sites	Total Species	Mean Species
Deciduous				
Bur Oak-Green Ash/ Tall Shrub	5, 6, 8, 9	4	45	21.3
Cottonwood-Deciduous Forest/ Tall Shrub	19, 20, 21, 10, 22, 31	6	46	16.2
Deciduous Open/Grassland	1, 2, 3, 7, 18	5	39	13.6
Wetland				
Marsh Wetland	25, 27, 30	3	11	5.3
Shoreline	4, 26	2	18	10.5
Herbaceous				
Grassland	13, 14	2	40	23.5
Disturbed Ground	16, 23	2	24	13

Bur Oak-Green Ash/ Tall Shrub

This community type was a tall (14 to 19.5 m) open-canopied deciduous forest (Photograph 3-4a). The canopy was composed of bur oak (*Quercus macrocarpa*) and green ash (*Fraxinus pennsylvanica*), with a presence of American elm (*Ulmus americana*), basswood (*Tilia americana*) and balsam poplar (*Populus balsamifera*). Diameter at breast height (DBH) averaged 46.8 cm for bur oak while a measured tree of green ash was 23.8 cm. A well-developed tall shrub stratum (1 to 3 m in height) was composed of several species including beaked hazel (*Corylus cornuta*), highbush-cranberry (*Viburnum opulus*) and downy arrow-wood (*Viburnum rafinesquianum*), that had high constancy (occurred in 75% of sites). Twelve other tall shrubs were recorded in this community type. The herb and low shrub stratum (typically >1 m tall) consisted of 30 species, dominated by forbs.

Photograph 3-4a. Bur Oak-Green Ash/ Tall Shrub community type.

Widespread species (found in all sites) included Virginia creeper (*Parthenocissus quinquefolia*) and poison-ivy (*Toxicodendron rydbergii*). Wild sarsaparilla (*Aralia nudicaulis*) and two graminoid species, smooth brome (*Bromus inermis*) and Kentucky bluegrass (*Poa pratensis*) were also commonly observed among sites. One imperilled species was recorded in this community type, hairy sweet cicely (*Osmorhiza claytonia*, S2?), and four vulnerable species: alternate-leaved dogwood (*Cornus alternifolia*, S3), basswood (S3S4), common milkweed (*Asclepias syriaca*, S3S4) and riverbank grape (*Vitis riparia*, S3S4).

Cottonwood-Deciduous Forest/ Tall Shrub

The Cottonwood-Deciduous Forest/ Tall Shrub community type had an open-canopy of tall cottonwood (*Populus deltoides*), 20.5 m height, and other deciduous trees including green ash (13.5 m), American elm (10 m), Manitoba maple (*Acer negundo*, 9.5 m), basswood and willow (*Salix* sp.). Although one site had an old growth cottonwood measuring 153.8 cm DBH, average DBH of cottonwood was 41.5 cm. Other mature trees measured were Manitoba maple (25 cm), American elm (19.5 cm) and green ash (18 cm). Fourteen species were recorded in the tall shrub stratum, but species inconsistently occurred among sites. Thirty-two species were recorded in the herb and low shrub stratum, including four grasses, 19 forbs and nine low shrubs. Species with high constancy (>67%) were Canada goldenrod (*Solidago canadensis*), Virginia creeper, smooth brome, wild sarsaparilla and veiny meadow-rue (*Thalictrum venulosum*). Abundant leaf litter accounts for the ground layer. Five vulnerable species were recorded in or along this vegetation type: cottonwood

(S3S5), basswood (S3S4), common milkweed (S3S4), riverbank grape (S3S4), and tall coneflower (*Rudbeckia laciniata*, S3S4). This plant community was found in areas that were associated with existing waterways or adjacent to channels that previously supported water, such as oxbows. Photograph 3-4b shows the Cottonwood-Deciduous Forest/ Tall Shrub community type.

Photograph 3-4b. Cottonwood-Deciduous Forest/ Tall Shrub community type.

Deciduous Open/Grassland

The Deciduous Open/Grassland community type is a mixed stand of primarily open-canopied hardwoods dominated by trembling aspen (*Populus tremuloides*), 18.5 m tall, and Manitoba maple (13.3 m). Other tree species recorded in the canopy may include American elm, basswood, cottonwood, green ash, willow, silver maple (*Acer saccharinum*) and white spruce (*Picea glauca*). Aspen DBH averaged 35.5 cm while measured Manitoba maple averaged 41.8 cm. The tall shrub stratum was poorly developed and only seven species were sporadically encountered. Graminoids were the most abundant species in the low shrub and herb stratum, dominated by Kentucky bluegrass and smooth brome. Two vulnerable species were recorded in this vegetation type: basswood (S3S4) and cottonwood (S3S5). This community type occurred mostly as park-like settings with mowed lawn, which included Yellow Quill Provincial Park (Photograph 3-4c).

Photograph 3-4c. Deciduous Open/Grassland community type.

Marsh Wetland

This community type was a low to intermediate height (approximately 1 m), closed-canopied (>60% cover) marsh wetland dominated by common cat-tail (*Typha latifolia*). Sandbar willow (*Salix exigua*) was the only tall shrub observed which occurred sporadically. Characteristic graminoid species were reed canarygrass (*Phalaris arundinacea*), prairie cordgrass (*Sporobolus michauxianus*), American sloughgrass (*Beckmannia syzigachne*), common reedgrass (*Phragmites australis*) and water sedge (*Carex aquatilis*). Forbs were a minor component of the total vegetation composition. Common milkweed (S3S4) was a vulnerable species recorded roadside. This vegetation was associated with depressional sites. Photograph 3-4d shows the Marsh Wetland community type.

Shoreline

Trees were absent from the two sites that make up this community type. Only willows with infrequent occurrence were present in the tall shrub stratum. Seventeen species were recorded in the herb and low shrub understory. Widespread species are water smartweed (*Polygonum amphibium*), silverweed (*Potentilla anserina*), spotted touch-me-not (*Impatiens capensis*) and Canada thistle (*Cirsium arvense*). A notable non-native species was purple loosestrife (*Lythrum salicaria*). This community type was located at Crescent Lake. The shoreline water regime is permanently flooded to intermittently exposed. Photograph 3-4e shows the Shoreline community type.

Photograph 3-4d. Marsh Wetland community type.

Photograph 3-4e. Shoreline community type.

Grassland

The Grassland vegetation was a low-growing graminoid community type dominated by a mixture of smooth brome, Kentucky bluegrass, reed canarygrass, reed grass (*Calamagrostis* sp.), creeping bent grass (*Agrostis stolonifera*), big bluestem (*Andropogon gerardii*) and quackgrass (*Elymus repens*). In total, 36 species were recorded in the low shrub and herb stratum. Among the species that occurred were prickly rose (*Rosa acicularis*), many-flowered aster (*Symphyotrichum ericoides*), narrow-leaved sunflower (*Helianthus maximiliani*) and curly-cup gumweed (*Grindelia squarrosa*). The tall shrub stratum has infrequently occurring willows (*Salix bebbiana, S. exigua*). White spruce at the tree level was only present along the periphery of the community type. Common milkweed (S3S4) was a vulnerable species recorded roadside. The grasslands surveyed had moist to dry soil conditions. The Grassland community type is shown in Photograph 3-4f.

Photograph 3-4f. Grassland community type.

Disturbed Ground

Two Disturbed Ground sites consisted of low to intermediate height (approximately 1 m) herbaceous vegetation dominated by non-native species (Photograph 3-4g). Twenty-four species were recorded with seven graminoids including smooth brome, Kentucky bluegrass, reed canarygrass, wild barley (*Hordeum jubatum*), green foxtail (*Setaria viridis*), cultivated oats (*Avena sativa*) and Canada wildrye (*Elymus canadensis*). Widespread forbs (species occurring in both surveys) were prostrate knotweed (*Polygonum aviculare*) and marsh-elder (*Cyclachaena xanthiifolia*). Fifteen other forbs were recorded in this vegetation

type. Disturbed ground was surveyed roadside adjacent to agricultural land use and in an area of previously stock-piled soil material.

Photograph 3-4g. Disturbed ground.

3.4.2 Botanical Resources

Vegetation composition was recorded at 24 sites along the routes and study area (see Map 3-2). A total of 117 plant taxa were recorded with 112 plants identified to the species level (Appendix III). All plants were grouped by primitive vasculars (e.g., ferns and horsetails), gymnosperms (conifers) and angiosperms (flowering plants), with angiosperms being the largest (Table 3-4b). There were 114 angiosperms (20 monocotyledons and 94 dicotyledons), two primitive vasculars and one gymnosperm.

Table 3-4b. Botanical resources in the study area.

Plant Group	Number of Species	Percent
Primitive Vasculars	2	2
Gymnosperms	1	1
Angiosperms		
Monocots	20	17
Dicots	94	80
Total	117	

Vascular plants were distributed among 38 families, with the angiosperms representing 35 of these. The Aster family (Asteraceae) was the largest with 20 plant taxa, followed by the Grass (Poaceae), and Pea (Fabaceae) families, with 15 and 12 taxa, respectively. Four or more species were observed in each of the Rose (Rosaceae), Honeysuckle (Caprifoliaceae),

Willow (Salicaceae), Mustard (Caprifoliaceae) and Smartweed (Polygonaceae) families. The primitive vasculars are distributed among two families, the Horestail (Equisetaceae) and Wood Fern (Dryopteridaceae). The Pine family (Pinaceae) was the only gymnosperm.

3.4.3 Species of Conservation Concern

According to provincial sources, there are 105 plant species of conservation concern that can be expected to range within the Lake Manitoba Plain Ecoregion (Manitoba Government 2020a). Currently, there are 10 species listed at risk in the ecoregion, with either the federal *Species at Risk Act* (SARA), the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), or *The Endangered Species and Ecosytems Act* of Manitoba (ESEA), see Table 3-4c. The potential for any of these species to occur along the storm damaged or temporary routes is low as a result of the current routing locations and field surveys completed.

Table 3-4c. Plant species listed at risk in the Lake Manitoba Plain Ecoregion.

Scientific Name	Common Name	SARA	COSEWIC	ESEA
Agalinis aspera	Rough Agalinis	Endangered	Endangered	Endangered
Agalinis gattingeri	Gattinger's Agalinis	Endangered	Endangered	Endangered
Celtis occidentalis	Hackberry	-	-	Threatened
Cypripedium candidum	Small White Lady's-slipper	Threatened	Threatened	Endangered
Dalea villosa	Hairy Prairie-clover	Special Concern	Special Concern	Threatened
Fraxinus nigra	Black Ash	-	Threatened	-
Solidago riddellii	Riddell's Goldenrod	Special Concern	Special Concern	Threatened
Symphyotrichum sericeum	Western Silvery Aster	Threatened	Threatened	Threatened
Vernonia fasciculata	Western Ironweed	Endangered	Endangered	Endangered
Veronicastrum virginicum	Culver's-root	-	-	Threatened

Based on provincial records (Manitoba Conservation Data Centre database search), two species of conservation concern potentially occur in the study area. One occurrence of alternative-leaved dogwood (*Cornus alternifolia*) and one occurrence of quill sedge (*Carex echinodes*) were reported in the study area around Crescent Lake, Portage la Prairie. Alternative-leaved dogwood is ranked vulnerable (S3) while, quill sedge is unranked or conservation status not yet assessed (SNR).

Seven species of conservation concern were observed during surveys, summarized in Table 3-4d. Among these, one is ranked Imperilled (S2?), hairy sweet cicely (*Osmorhiza claytonii*).

Table 3-4d. Species of conservation concern recorded in the study area.				
Scientific Name	**Common Name**	**Rank**	**Site**	**Vegetation Type**
Imperilled Species (S2?)				
Osmorhiza claytonii	Hairy Sweet Cicely	S2?	5	Deciduous
Vulnerable Species (S3 to S3S5)				
Asclepia syriaca	Common Milkweed	S3S4	5, 20, 31	Deciduous
Asclepia syriaca	Common Milkweed	S3S4	13	Herbaceous
Asclepia syriaca	Common Milkweed	S3S4	25, 27	Wetland
Cornus alternifolia	Alternate-leaved Dogwood	S3	9	Deciduous
Populus deltoides	Cottonwood	S3S5	3, 10, 18, 19, 20, 21, 22, 31	Deciduous
Rudbeckia laciniata	Tall Coneflower	S3S4	31	Deciduous
Tilia americana	Basswood	S3S4	1, 2, 3, 5, 8, 31	Deciduous
Vitis riparia	Riverbank Grape	S3S4	8, 10, 19, 22, 31	Deciduous

Note: A question mark (?) following a numeric rank denotes inexact or uncertain ranking (Manitoba Government 2020a).

Hairy sweet cicely was recorded at one location (five plants) in native forest vegetation (Photograph 3-4h). The stand consisted of open-canopied bur oak (*Quercus macrocarpa*) and green ash (*Fraxinus pennsylvanica*). Here eight species were recorded in the tall shrub layer (1 to 3 m tall), with a diverse herbaceous and low shrub stratum. Elsewhere in the study area, the vulnerable species (S3) were predominantly observed in forest vegetation. These species include common milkweed (*Asclepia syriaca*), alternate-leaved dogwood, cottonwood (*Populus deltoides*), tall coneflower (*Rudbeckia laciniata*), basswood (*Tilia americana*) and riverbank grape (*Vitis riparia*).

Photograph 3-4h. Hairy sweet cicely recorded during survey.

3.4.4 Invasive Species

Across all surveys, 39 species are considered non-native or invasive (see Table 3-4e). Thirty-three species are ranked SNA, conservation status rank not applicable, and one species ranked SU, currently unrankable (Manitoba Government 2020a). Of these species, 15 are considered Tier 3 Noxious weeds (Manitoba Government 2020c). In Manitoba, the Noxious Weeds Regulation lists approximately 90 plant species as noxious under the Noxious Weeds Act, with Tier I noxious weeds as the most threatening species. Sixteen species are considered invasive plants with the Canadian Food Inspection Agency (2008), while the Invasive Species Council of Manitoba (2020) lists five species as invasive.

Most prominently represented families of noxious, invasive and non-native species together are Asteraceae and Fabaceae (nine species each), Poaceae (seven species), and Brassicaeae (four species). Most non-native or invasive species were recorded on disturbed lands or incidental to surveys sites (i.e., roadside).

Table 3-4e. Non-native and invasive species observed during surveys.

Species	Common Name	MBCDC Rank[1]	Authority[2]
Agrostis stolonifera	Creeping Bent Grass	SNA	MBCDC
Amaranthus retroflexus	Redroot Pigweed	SNA	CFIA
Ambrosia artemisiifolia	Common Ragweed	S5	NWA
Ambrosia trifida	Giant Ragweed	S4	NWA
Arctium minus	Common Burdock	SNA	NWA, ISCM
Artemisia absinthium	Wormwood	SNA	NWA, CFIA
Asclepias syriaca	Common Milkweed	S3S4	NWA
Bromus inermis	Smooth Brome	SNA	CFIA
Capsella bursa-pastoris	Shepherd's Purse	SNA	CFIA
Caragana arborescens	Common Caragana	SNA	MBCDC
Chenopodium album	Lamb's-quarters	SNA	NWA, CFIA
Cirsium arvense	Canada Thistle	SNA	NWA, CFIA, ISCM
Cirsium vulgare	Bull Thistle	SNA	NWA, ISCM
Cyclachaena xanthiifolia	Marsh-elder	SNA	NWA
Descurainia sophia	Flixweed	SNA	NWA, CFIA
Elymus repens	Quackgrass	SNA	CFIA
Erucastrum gallicum	Dog-mustard	SNA	MBCDC
Hordeum jubatum	Wild Barley	S5	NWA
Kochia scoparia	Kochia	SNA	NWA
Lemna minor	Lesser Duckweed	SNA	MBCDC
Lonicera tatarica	Tartarian Honeysuckle	SNA	MBCDC
Lotus corniculatus	Bird's-foot Trefoil	SNA	MBCDC
Lythrum salicaria	Purple Loosestrife	SNA	ISCM

Medicago lupulina	Black Medic	SNA	MBCDC
Medicago sativa	Alfalfa	SNA	CFIA
Melilotus albus	White Sweet Clover	SNA	CFIA
Melilotus officinalis	Yellow Sweet Clover	SNA	CFIA
Parthenocissus quinquefolia	Virginia Creeper	SNA	MBCDC
Phalaris arundinacea	Reed Canary Grass	S5	CFIA
Plantago major	Common Plantain	SNA	MBCDC
Polygonum aviculare	Prostrate Knotweed	SU	MBCDC
Rumex crispus	Curled Dock	SNA	MBCDC
Setaria viridis	Green Foxtail	SNA	CFIA
Sonchus arvensis	Field Sow-thistle	SNA	NWA, CFIA, ISCM
Taraxacum officinale	Common Dandelion	SNA	NWA
Thlaspi arvense	Field Pennycress	SNA	NWA, CFIA
Trifolium hybridum	Alsike Clover	SNA	MBCDC
Trifolium pratense	Red Clover	SNA	CFIA
Trifolium repens	White Clover	SNA	MBCDC

1 (Rank): S3 – Vulnerable; S4 – Apparently Secure; S5 – Secure; SNA – Rank Not Applicable; SU – Unrankable.
2 (Authority): Manitoba Conservation Data Centre (MBCDC), Canadian Food Inspection Agency (CFIA), Noxious Weeds Act (NWA), Invasive Species Council of Manitoba (ISCM).

4.0 REFERENCES

Alberta Native Plant Council. 2012. ANPC Guidelines for Rare Vascular Plant Surveys in Alberta – 2012 Update. Alberta Native Plant Council, Edmonton, AB.

Canadian Food Inspection Agency. 2008. Invasive Alien Plants in Canada. Ottawa, ON. 72pp.

Cauboue, M., Strong, W.L., Archambault, L. and Sims, R.A. 1996. Terminology of Ecological Land Classification in Canada. Natural Resources Canada, Canadian Forest Service – Quebec. Sainte-Foy, Quebec. Information Report LAU-X-114E.

Committee on the Status of Endangered Wildlife in Canada. 2020. http://www.cosewic.ca/index.php/en-ca/

Flora of North America Editorial Committee, eds. 1993+. Flora of North America North of Mexico. 16+ vols. New York and Oxford.

Government of Canada. 2020. Species at Risk Act. https://laws-lois.justice.gc.ca/eng/acts/s-15.3/

Invasive Species Council of Manitoba. 2020. http://invasivespeciesmanitoba.com/site

Johnson, D., Kershaw, L., MacKinnon, A. and Pojar, J. 1995. Plants of the Western Boreal Forest and Aspen Parkland. Natural Resources Canada, Canadian Forest Service. Lone Pine, Edmonton, Alberta

Manitoba Government. 2020a. Manitoba Conservation Data Centre. https://www.gov.mb.ca/sd/environment_and_biodiversity/cdc/index.html

Manitoba Government. 2020b. The Endangered Species and Ecosystems Act. https://web2.gov.mb.ca/laws/statutes/ccsm/e111e.php

Manitoba Government. 2020c. The Noxious Weeds Act. http://web2.gov.mb.ca/laws/statutes/ccsm/n110e.php

Raven, P.H, Ray, F.E. and Eichhorn, S.E. 1992. Biology of Plants. Fifth Edition. Worth Publishers Inc. New York, New York.

Rowe, J.S. 1959. Forest Regions of Canada. Department of Northern Affairs and National Resources, Forestry Branch. Ottawa, ON. Bulletin 123.

Smith, R.E., H. Veldhuis, G.F. Mills, R.G. Eilers, W.R. Fraser, and G.W. Lelyk. 1998. Terrestrial Ecozones, Ecoregions and Ecodistricts of Manitoba. An Ecological Stratification of

Manitoba's Landscapes. Land Resource Unit. Brandon Research Centre, Research Branch. Agriculture and Agri-Food Canada. Technical Bulletin 1998-9E.

Usher, G. 1996. The Wordsworth Dictionary of Botany. Wordsworth Editions Ltd. Hertfordshire, England.

APPENDIX I. Definitions of selected technical terms.

Abundance-Dominance – This term expresses the number of individuals of a plant species and their coverage in a phytosociological survey; it is based on the coverage of individuals for classes with a coverage higher than 5% and on the abundance for classes with a lower percentage (Cauboue et al. 1996).

Angiosperm – A seed borne in a vessel (carpel); thus one of a group of plants whose seeds are borne within a mature ovary or fruit (Raven et al. 1992).

Boreal – Pertaining to the north; a climatic and ecological zone that occurs south of the subarctic, but north of the temperate hardwood forests of eastern North America, the parkland of the Great Plains region, and the montane forests of the Canadian cordillera (Cauboue et al. 1996).

Canopy – The more or less continuous cover of branches and foliage formed by the crowns of trees (Cauboue et al. 1996).

Canopy Closure – The degree of canopy cover relative to openings (Cauboue et al. 1996).

Classification – The systematic grouping and organization of objects, usually in a hierarchical manner (Cauboue et al. 1996).

Community-Type – A group of vegetation stands that share common characteristics, an abstract plant community (Cauboue et al. 1996).

Cover – The area of ground covered with plants of one or more species, usually expressed as a percentage (Cauboue et al. 1996).

Deciduous – Refers to perennial plants from which the leaves abscise and fall off at the end of the growing season (Cauboue et al. 1996).

Dicotyledon – One of the two divisions of the Angiosperms; the embryo has two cotyledons, the leaves are usually net-veined, the stems have open bundles, and the flower parts are usually in fours or fives (Usher 1996).

Ecoregion – An area characterized by a distinctive regional climate as expressed by vegetation (Cauboue et al. 1996).

Endangered Species - A species that is facing imminent extirpation or extinction (Government of Canada 2020).

Extirpated Species - A species that no longer exists in the wild in Canada, but exists elsewhere in the wild (Government of Canada 2020).

Flora – A list of the plant species present in an area (Cauboue et al. 1996).

Forb – A broad-leaved, non-woody plant that dies back to the ground after each growing season (Johnson et al. 1995).

Forest – A relatively large assemblage of tree-dominated stands (Cauboue et al. 1996).

Graminoid – A narrow-leaved plant that is grass-like; the term refers to grasses and plants that look like grasses (Cauboue et al. 1996).

Grassland – Vegetation consisting primarily of grass species occurring on sites that are arid or at least well drained (Cauboue et al. 1996).

Gymnosperm – A seed plant with seeds not enclosed in the ovary; the conifers are the most familiar group (Raven et al. 1992).

Habitat – The place in which an animal or plant lives; the sum of environmental circumstances in the place inhabited by an organism, population or community (Cauboue et al. 1996).

Herb (Herbaceous) – A plant without woody above-ground parts, the stems dying back to the ground each year (Johnson et al. 1995).

Invasive – Invasive species are plants that are growing outside of their country or region of origin and are out-competing or even replacing native plants (Invasive Species Council of Manitoba 2020).

Monocotyledon – A class of the Angiosperms; the seeds have a single cotyledon, the floral parts are in three or multiples of three, and the leaves have parallel veins (Usher 1996).

Noxious Weed – A plant that is designated as a tier 1, tier 2 or tier 3 noxious weed in the regulations and includes the seed of a noxious weed, whether it is still attached to the noxious weed or is separate from it (Manitoba Government 2020).

Pteridophyte – A division of the plant kingdom including ferns and their allies (horsetails and clubmosses).

Rare Species – Any indigenous species of flora that, because of its biological characteristics, or because it occurs at the fringe of its range, or for some other reasons, exists in low

numbers or in very restricted areas of Canada but is not a threatened species (Cauboue et al. 1996).

Shrub – A perennial plant usually with a woody stem, shorter than a tree, often with a multi-stemmed base (Cauboue et al. 1996).

Site – The place or category of places, considered from an environmental perspective, that determines the type and quality of plants that can grow there (Cauboue et al. 1996).

Species – A group of organisms having a common ancestry that are able to reproduce only among themselves; a general definition that does not account for hybridization (Cauboue et al. 1996).

Species of Special Concern – A species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats (Government of Canada 2020).

Stand – A collection of plants having a relatively uniform composition and structure, and age in the case of forests (Cauboue et al. 1996).

Stratum – A distinct layer within a plant community, a component of structure (Cauboue et al. 1996).

Terrestrial – Pertaining to land as opposed to water (Cauboue et al. 1996).

Threatened Species - A species that is likely to become an endangered species if nothing is done to reverse the factors leading to its extirpation or extinction (Government of Canada 2020).

Understory – Vegetation growing beneath taller plants such as trees or tall shrubs (Cauboue et al. 1996).

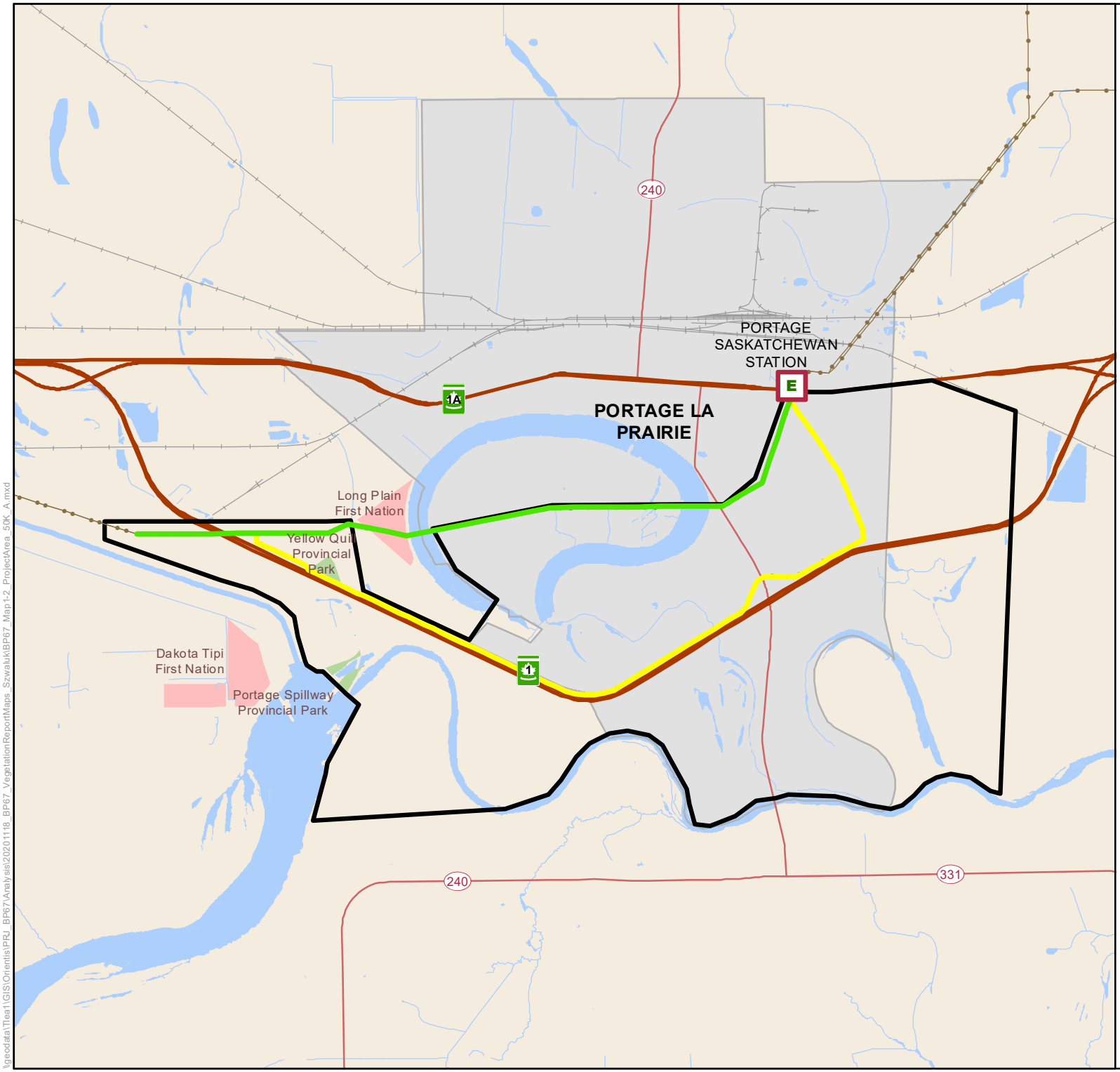
Vascular Plant – A plant having a vascular system (Usher 1996).

Vegetation – The general cover of plants growing on a landscape (Cauboue et al. 1996).

Vegetation Type – In phytosociology, the lowest possible level to be described (Cauboue et al. 1996).

Wetland – Land that is saturated with water long enough to promote hydric soils or aquatic processes as indicated by poorly drained soils, hydrophytic vegetation, and various kinds of biological activity that are adapted to wet environments (Cauboue et al. 1996).

APPENDIX II. Report maps.



Manitoba Hydro

Brandon–Portage la Prairie (BP6/BP7)
Transmission Line Replacement Project

Project Infrastructure
- Storm Damaged BP6/BP7
- Temporary BP6/BP7 Route
- Route Planning Area

Infrastructure
- Transmission Line

Landbase
- Trans-Canada
- Provincial Road
- Railway
- First Nation
- City
- Provincial Park

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: November 19, 2020

N

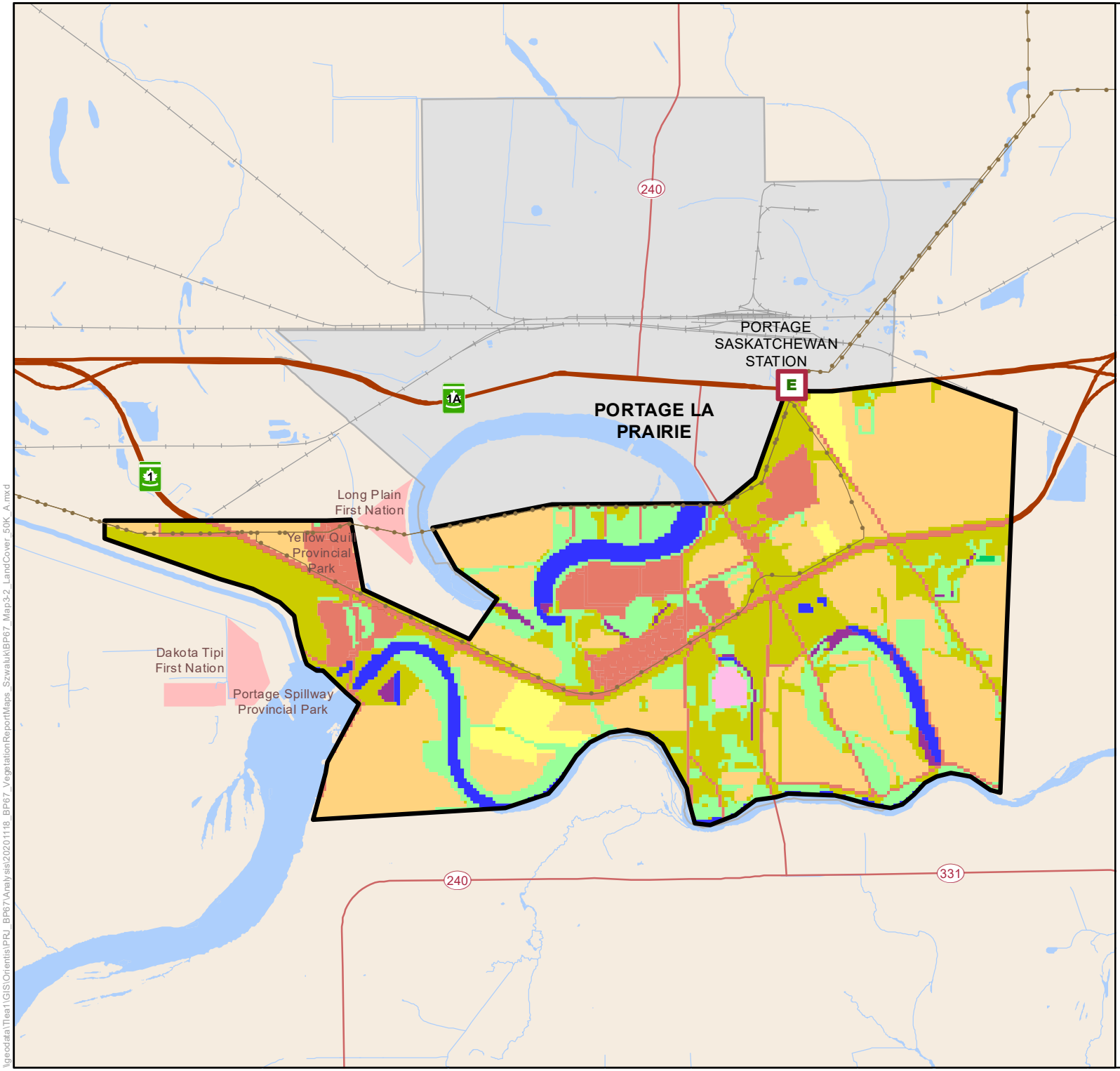
0 0.5 Kilometres
0 0.25 0.5 Miles

1:50,000

Project Area

Map 1-2

\\geodata\Tlea1\GIS\Orientis\PRJ_BP67\Analysis\20201118_BP67_VegetationReportMaps_Szwaluk\BP67_Map1-2_ProjectArea_50K_A.mxd



Manitoba Hydro

Brandon–Portage la Prairie (BP6/BP7)
Transmission Line Replacement Project

Project Infrastructure
- Route Planning Area

Infrastructure
- Transmission Line

Land Cover[1]
- Agricultural Cropland
- Cultural Features
- Decidious Forest
- Forage Crops
- Marsh and Fens
- Open Decidious Forest
- Range and Grassland
- Treed and Open Bogs
- Water

Landbase
- Trans-Canada
- Provincial Road
- Railway
- First Nation
- City
- Provincial Park

Source:
1. Land Cover Classification (2006), Manitoba Conservation and Water Stewardship

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: November 19, 2020

N

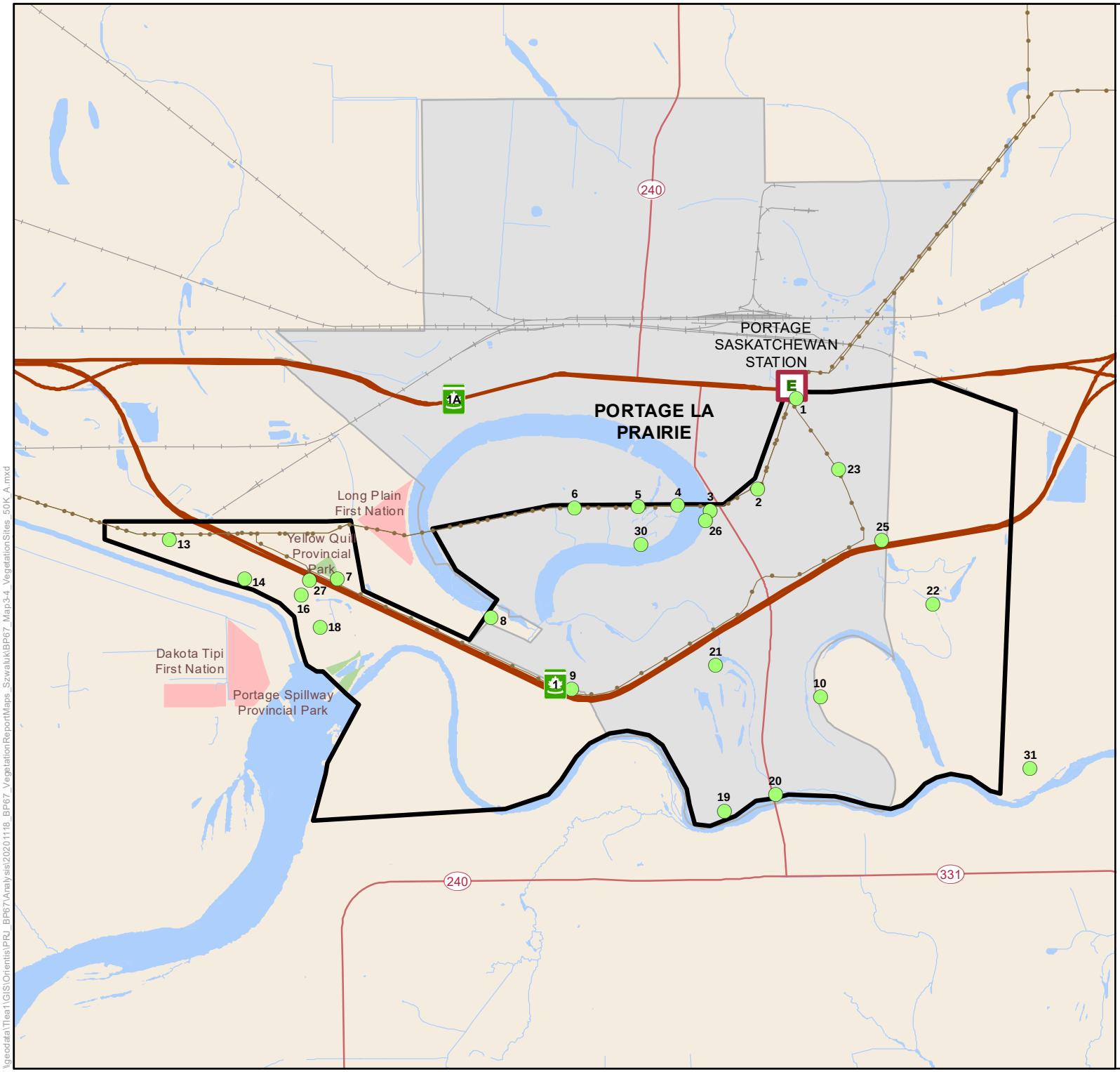
0 0.55 Kilometres
0 0.25 0.5 Miles

1:50,000

Land Cover Classification

Map 3-2

\\geodata\Tlea1\GIS\Orientis\PRJ_BP67\Analysis\20201118_BP67_VegetationReportMaps_Szwaluk\BP67_Map3-2_LandCover_50K_A.mxd



Manitoba Hydro

Brandon–Portage la Prairie (BP6/BP7)
Transmission Line Replacement Project

Project Infrastructure
- Route Planning Area

Infrastructure
- Transmission Line

Vegetation Sites
- Field Site Visited

Landbase
- Trans-Canada
- Provincial Road
- Railway
- First Nation
- City
- Provincial Park

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: November 19, 2020

N

0 0.5 Kilometres
0 0.25 0.5 Miles

1:50,000

Vegetation Sites

Map 3-4

\\geodata\Tlea1\GIS\Orientis\PRJ_BP67\Analysis\20201118_BP67_VegetationReportMaps_Szwaluk\BP67_Map3-4_VegetationSites_50K_A.mxd

APPENDIX III. List of flora recorded from surveys.

Family/Species	Common Name	MB Rank
VASCULAR SPECIES		
Pteridophytes – Ferns and Allies		
EQUISETACEAE	HORSETAIL FAMILY	
Equisetum hyemale	Common Scouring-rush	S5
DRYOPTERIDACEAE	WOOD FERN FAMILY	
Matteuccia struthiopteris	Ostrich Fern	S5
Gymnosperms		
PINACEAE	PINE FAMILY	
Picea glauca	White Spruce	S5
Angiosperms - Monocotyledons		
CYPERACEAE	SEDGE FAMILY	
Carex aquatilis	Water Sedge	S5
LEMNACEAE	DUCKWEED FAMILY	
Lemna minor	Lesser Duckweed	SNA
LILIACEAE	LILY FAMILY	
Maianthemum canadense	Two-leaved Solomon's-seal	S5
NYMPHAEACEAE	WATER LILY FAMILY	
Nuphar variegata	Yellow Pond-lily	S5
POACEAE	GRASS FAMILY	
Agrostis stolonifera	Creeping Bent Grass	SNA
Andropogon gerardii	Big Bluestem	S5
Avena sativa	Cultivated Oats	SNA
Beckmannia syzigachne	American Sloughgrass	S5
Bromus inermis	Smooth Brome	SNA
Calamagrostis sp.	Reed Grass	
Elymus canadensis	Canada Wildrye	S4S5
Elymus repens	Quackgrass	SNA
Grass sp.	Grass	
Hordeum jubatum	Wild Barley	S5
Phalaris arundinacea	Reed Canarygrass	S5
Phragmites australis	Common Reedgrass	S5
Poa pratensis	Kentucky Bluegrass	S5

Setaria viridis	Green Foxtail	SNA
Sporobolus michauxianus	Prairie Cordgrass	S4S5
TYPHACEAE	CAT-TAIL FAMILY	
Typha latifolia	Common Cat-tail	S4S5
Angiosperms – Dicotyledons		
ACERACEAE	MAPLE FAMILY	
Acer negundo	Manitoba Maple	S5
Acer saccharinum	Silver Maple	
AMARANTHACEAE	AMARANTH FAMILY	
Amaranthus retroflexus	Redroot Pigweed	SNA
ANACARDIACEAE	SUMAC FAMILY	
Toxicodendron rydbergii	Poison-ivy	S5
APIACEAE	CARROT FAMILY	
Heracleum maximum	Cow-parsnip	S4S5
Osmorhiza claytonii	Hairy Sweet Cicely	S2?
APOCYNACEAE	DOGBANE FAMILY	
Apocynum androsaemifolium	Spreading Dogbane	S5
Asclepias syriaca	Common Milkweed	S3S4
ARALIACEAE	GINSENG FAMILY	
Aralia nudicaulis	Wild Sarsaparilla	S5
ASTERACEAE	ASTER FAMILY	
Ambrosia artemisiifolia	Common Ragweed	S5
Ambrosia trifida	Giant Ragweed	S4
Arctium minus	Common Burdock	SNA
Artemisia absinthium	Wormwood	SNA
Cirsium arvense	Canada Thistle	SNA
Cirsium vulgare	Bull Thistle	SNA
Cyclachaena xanthiifolia	Marsh-elder	SNA
Doellingeria umbellata	Flat-topped White Aster	S5
Euthamia graminifolia	Flat-topped Goldenrod	S5
Grindelia squarrosa	Curly-cup Gumweed	S5
Helianthus maximiliani	Narrow-leaved Sunflower	S5
Liatris ligulistylis	Meadow Blazingstar	S4
Rudbeckia laciniata	Tall Coneflower	S3S4
Solidago canadensis	Canada Goldenrod	S5

Solidago rigida	Stiff Goldenrod	S5
Sonchus arvensis	Field Sow-thistle	SNA
Symphyotrichum ciliolatum	Lindley's Aster	S5
Symphyotrichum ericoides	Many-flowered Aster	S4
Symphyotrichum laeve	Smooth Aster	S5
Taraxacum officinale	Common Dandelion	SNA
BALSAMINACEAE	TOUCH-ME-NOT FAMILY	
Impatiens capensis	Spotted Touch-me-not	S5
BETULACEAE	BIRCH FAMILY	
Betula papyrifera	White Birch	S5
Corylus cornuta	Beaked Hazelnut	S5
BRASSICACEAE	MUSTARD FAMILY	
Capsella bursa-pastoris	Shepherd's Purse	SNA
Descurainia sophia	Flixweed	SNA
Erucastrum gallicum	Dog-mustard	SNA
Thlaspi arvense	Field Pennycress	SNA
CAPRIFOLIACEAE	HONEYSUCKLE FAMILY	
Lonicera tatarica	Tartarian Honeysuckle	SNA
Symphoricarpos occidentalis	Western Snowberry	S5
Viburnum edule	Mooseberry	S5
Viburnum lentago	Nannyberry	S4
Viburnum opulus	Highbush-cranberry	S5
Viburnum rafinesquianum	Downy Arrow-wood	S4S5
CHENOPODIACEAE	GOOSEFOOT FAMILY	
Chenopodium album	Lamb's-quarters	SNA
Kochia scoparia	Kochia	SNA
Oxybasis glauca	Oak-leaved Goosefoot	S4S5
CORNACEAE	DOGWOOD FAMILY	
Cornus alternifolia	Alternate-leaved Dogwood	S3
Cornus sericea	Red-osier Dogwood	S5
FABACEAE	PEA FAMILY	
Caragana arborescens	Common Caragana	SNA
Glycyrrhiza lepidota	Wild Licorice	S4S5
Hedysarum alpinum	Alpine Hedysarum	S4S5
Lotus corniculatus	Bird's-foot Trefoil	SNA
Medicago lupulina	Black Medick	SNA

Medicago sativa	Alfalfa	SNA
Melilotus albus	White Sweet Clover	SNA
Melilotus officinalis	Yellow Sweet Clover	SNA
Trifolium hybridum	Alsike Clover	SNA
Trifolium pratense	Red Clover	SNA
Trifolium repens	White Clover	SNA
Vicia americana	American Purple Vetch	S5
FAGACEAE	BEECH FAMILY	
Quercus macrocarpa	Bur Oak	S5
GROSSULARIACEAE	CURRENT FAMILY	
Ribes glandulosum	Skunk Currant	S5
Ribes sp.	Currant	
LINACEAE	FLAX FAMILY	
Linum lewisii	Blue Flax	S4
LYTHRACEAE	LOOSESTRIFE FAMILY	
Lythrum salicaria	Purple Loosestrife	SNA
OLEACEAE	OLIVE FAMILY	
Fraxinus pennsylvanica	Green Ash	S4S5
Syringa sp.	Lilac	
PLANTAGINACEAE	PLANTAIN FAMILY	
Plantago major	Common Plantain	SNA
POLYGONACEAE	SMARTWEED FAMILY	
Persicaria lapathifolia	Pale Smartweed	S5
Polygonum amphibium	Water Smartweed	S5
Polygonum aviculare	Prostrate Knotweed	SU
Rumex crispus	Curled Dock	SNA
RANUNCULACEAE	CROWFOOT FAMILY	
Actaea rubra	Red Baneberry	S5
Anemone canadensis	Canada Anemone	S5
Thalictrum venulosum	Veiny Meadow-rue	S5
ROSACEAE	ROSE FAMILY	
Crataegus chrysocarpa	Round-leaved Hawthorn	S4S5
Amelanchier alnifolia	Saskatoon	S5
Potentilla anserina	Silverweed	S5

Prunus virginiana	Chokecherry	S5
Rosa acicularis	Prickly Rose	S5
Rubus idaeus	Wild Red Raspberry	S5
Sorbus decora	Showy Mountain-ash	S4
RUBIACEAE	MADDER FAMILY	
Galium boreale	Northern Bedstraw	S5
Galium triflorum	Sweet-scented Bedstraw	S5
SALICACEAE	WILLOW FAMILY	
Populus balsamifera	Balsam Poplar	S5
Populus deltoides	Cottonwood	S3S5
Populus tremuloides	Trembling Aspen	S5
Salix bebbiana	Bebb's or Beaked Willow	S5
Salix exigua	Sandbar Willow	S5
Salix spp.	Willow	
TILIACEAE	LINDEN FAMILY	
Tilia americana	Basswood	S3S4
ULMACEAE	ELM FAMILY	
Ulmus americana	American Elm	S4S5
URTICACEAE	NETTLE FAMILY	
Urtica dioica	Stinging Nettle	S5
VITACEAE	GRAPE FAMILY	
Parthenocissus quinquefolia	Virginia Creeper	SNA
Vitis riparia	Riverbank Grape	S3S4

APPENDIX IV. Plant species observed by site visited.

			Site																							
Form	**Species**	**Common Name**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**13**	**14**	**16**	**18**	**19**	**20**	**21**	**22**	**23**	**25**	**26**	**27**	**30**	**31**
Tree	*Acer negundo*	Manitoba Maple	x		x				x								x	x	x							x
Tree	*Acer saccharinum*	Silver Maple		x																						
Tree	*Fraxinus pennsylvanica*	Green Ash		x			x	x	x	x	x	x					x		x	x						x
Tree	*Picea glauca*	White Spruce	x										x													
Tree	*Populus balsamifera*	Balsam Poplar						x																		
Tree	*Populus deltoides*	Cottonwood			x							x				x	x	x	x	x						x
Tree	*Populus tremuloides*	Trembling Aspen		x					x							x										
Tree	*Quercus macrocarpa*	Bur Oak					x	x		x	x															
Tree	*Salix* spp.	Willow		x	x								x				x									
Tree	*Tilia americana*	Basswood	x				x			x																x
Tree	*Ulmus americana*	American Elm	x				x										x	x	x	x						
Shrub	*Acer negundo*	Manitoba Maple		x			x			x						x	x			x						x
Shrub	*Amelanchier alnifolia*	Saskatoon																	x							
Shrub	*Betula papyrifera*	White Birch																x								
Shrub	*Caragana arborescens*	Common Caragana					x	x																		
Shrub	*Cornus alternifolia*	Alternate-leaved Dogwood									x															
Shrub	*Cornus sericea*	Red-osier Dogwood					x	x									x	x		x						x
Shrub	*Corylus cornuta*	Beaked Hazel					x	x			x															
Shrub	*Crataegus chrysocarpa*	Round-leaved Hawthorn								x																
Shrub	*Fraxinus pennsylvanica*	Green Ash		x			x				x	x							x							x
Shrub	*Lonicera tatarica*	Tartarian Honeysuckle					x	x											x							
Shrub	*Populus tremuloides*	Trembling Aspen		x												x										
Shrub	*Prunus virginiana*	Chokecherry					x		x	x						x										x
Shrub	*Quercus macrocarpa*	Bur Oak																	x							
Shrub	*Rosa acicularis*	Prickly Rose															x			x						
Shrub	*Salix bebbiana*	Bebb's or Beaked Willow											x													
Shrub	*Salix exigua*	Sandbar Willow											x							x				x		
Shrub	*Salix* spp.	Willow				x														x						
Shrub	*Syringa* sp.	Lilac			x																					
Shrub	*Tilia americana*	Basswood		x	x					x																

Shrub	*Ulmus americana*	American Elm	x															x								x
Shrub	*Viburnum lentago*	Nannyberry						x			x															
Shrub	*Viburnum opulus*	Highbush-cranberry					x	x			x	x														
Shrub	*Viburnum rafinesquianum*	Downy Arrow-wood						x		x	x															
Shrub	*Vitis riparia*	Riverbank Grape								x							x			x						x
Low Shrub	*Acer negundo*	Manitoba Maple		x				x															x			
Low Shrub	*Actaea rubra*	Red Baneberry						x			x					x										x
Low Shrub	*Apocynum androsaemifolium*	Spreading Dogbane					x						x			x										
Low Shrub	*Caragana arborescens*	Common Caragana								x																
Low Shrub	*Cornus sericea*	Red-osier Dogwood		x									x													
Low Shrub	*Lonicera tatarica*	Tartarian Honeysuckle		x																						
Low Shrub	*Parthenocissus quinquefolia*	Virginia Creeper		x			x	x		x	x	x					x	x	x							x
Low Shrub	*Populus deltoides*	Cottonwood														x										
Low Shrub	*Populus tremuloides*	Trembling Aspen														x										
Low Shrub	*Prunus virginiana*	Chokecherry		x																						
Low Shrub	*Quercus macrocarpa*	Bur Oak															x									
Low Shrub	*Ribes glandulosum*	Skunk Currant																x	x							
Low Shrub	*Ribes* sp.	Currant															x									
Low Shrub	*Rosa acicularis*	Prickly Rose								x			x	x					x							x
Low Shrub	*Rubus idaeus*	Wild Red Raspberry						x										x								x
Low Shrub	*Salix* spp.	Willow																					x			
Low Shrub	*Sorbus decora*	Showy Mountain-ash		x																						
Low Shrub	*Symphoricarpos occidentalis*	Western Snowberry					x	x					x													
Low Shrub	*Ulmus americana*	American Elm																					x			
Low Shrub	*Viburnum edule*	Mooseberry										x														
Low Shrub	*Vitis riparia*	Riverbank Grape										x														
Forb	*Amaranthus retroflexus*	Redroot Pigweed																			x					
Forb	*Ambrosia artemisiifolia*	Common Ragweed			x																					
Forb	*Ambrosia trifida*	Giant Ragweed											x													
Forb	*Anemone canadensis*	Canada Anemone										x														x
Forb	*Aralia nudicaulis*	Wild Sarsaparilla					x	x			x						x	x	x							x
Forb	*Arctium minus*	Common Burdock				x	x												x							
Forb	*Artemisia absinthium*	Wormwood													x			x								
Forb	*Asclepias syriaca*	Common Milkweed					x						x					x				x		x		x

Forb	*Capsella bursa-pastoris*	Shepherd's Purse																				x			
Forb	*Chenopodium album*	Lamb's-quarters											x	x											
Forb	*Cirsium arvense*	Canada Thistle	x	x	x	x				x			x	x							x		x			
Forb	*Cirsium vulgare*	Bull Thistle												x												
Forb	*Cyclachaena xanthiifolia*	Marsh-elder								x				x	x						x					
Forb	*Descurainia sophia*	Flixweed					x																			
Forb	*Doellingeria umbellata*	Flat-topped White Aster															x									
Forb	*Equisetum hyemale*	Common Scouring-rush					x																			
Forb	*Erucastrum gallicum*	Dog-mustard												x												
Forb	*Euthamia graminifolia*	Flat-topped Goldenrod												x												
Forb	*Galium boreale*	Northern Bedstraw									x															
Forb	*Galium triflorum*	Sweet-scented Bedstraw																								x
Forb	*Glycyrrhiza lepidota*	Wild Licorice											x													x
Forb	*Grindelia squarrosa*	Curly-cup Gumweed											x	x												
Forb	*Hedysarum alpinum*	Alpine Hedysarum															x									
Forb	*Helianthus maximiliani*	Narrow-leaved Sunflower											x	x												
Forb	*Heracleum maximum*	Cow-parsnip																								x
Forb	*Impatiens capensis*	Spotted Touch-me-not																					x		x	
Forb	*Kochia scoparia*	Kochia													x											
Forb	*Lemna minor*	Lesser Duckweed																		x						
Forb	*Liatris ligulistylis*	Meadow Blazingstar											x													
Forb	*Linum lewisii*	Blue Flax												x												
Forb	*Lotus corniculatus*	Bird's-foot Trefoil												x		x										
Forb	*Lythrum salicaria*	Purple Loosestrife				x																				
Forb	*Maianthemum canadense*	Two-leaved Solomon's-seal					x	x																		
Forb	*Matteuccia struthiopteris*	Ostrich Fern					x					x														
Forb	*Medicago lupulina*	Black Medick		x	x									x												
Forb	*Medicago sativa*	Alfalfa												x		x					x					
Forb	*Melilotus albus*	White Sweet Clover		x		x				x			x	x		x										
Forb	*Melilotus officinalis*	Yellow Sweet Clover				x																				
Forb	*Nuphar variegata*	Yellow Pond-lily				x																				
Forb	*Osmorhiza claytonii*	Hairy Sweet Cicely					x																			
Forb	*Oxybasis glauca*	Oak-leaved Goosefoot													x											
Forb	*Persicaria lapathifolia*	Pale Smartweed				x									x											

Forb	*Plantago major*	Common Plantain			x					x											x					
Forb	*Polygonum amphibium*	Water Smartweed				x																	x			
Forb	*Polygonum aviculare*	Prostrate Knotweed	x												x						x					
Forb	*Potentilla anserina*	Silverweed	x			x							x										x			
Forb	*Rudbeckia laciniata*	Tall Coneflower																								x
Forb	*Rumex crispus*	Curled Dock	x										x		x							x				
Forb	*Solidago canadensis*	Canada Goldenrod		x			x				x	x	x			x	x	x	x							x
Forb	*Solidago rigida*	Stiff Goldenrod												x												
Forb	*Sonchus arvensis*	Field Sow-thistle		x		x	x		x	x			x								x					
Forb	*Symphyotrichum ciliolatum*	Lindley's Aster					x				x															
Forb	*Symphyotrichum ericoides*	Many-flowered Aster											x	x												
Forb	*Symphyotrichum laeve*	Smooth Aster												x												
Forb	*Taraxacum officinale*	Common Dandelion		x	x				x	x				x		x					x					
Forb	*Thalictrum venulosum*	Veiny Meadow-rue						x			x	x					x		x							x
Forb	*Thlaspi arvense*	Field Pennycress																			x					
Forb	*Toxicodendron rydbergii*	Poison-ivy		x			x	x		x	x					x	x		x							
Forb	*Trifolium hybridum*	Alsike Clover																			x					
Forb	*Trifolium pratense*	Red Clover																			x					
Forb	*Trifolium repens*	White Clover					x																			
Forb	*Typha latifolia*	Common Cat-tail																		x		x		x	x	
Forb	*Urtica dioica*	Stinging Nettle																	x						x	
Forb	*Vicia americana*	American Purple Vetch																								x
Graminoid	*Agrostis stolonifera*	Creeping Bent Grass											x													
Graminoid	*Andropogon gerardii*	Big Bluestem											x													
Graminoid	*Avena sativa*	Cultivated Oats													x											
Graminoid	*Beckmannia syzigachne*	American Sloughgrass																				x				
Graminoid	*Bromus inermis*	Smooth Brome	x	x			x		x	x	x	x	x	x		x		x	x		x					x
Graminoid	*Calamagrostis* sp.	Reed Grass											x													
Graminoid	*Carex aquatilis*	Water Sedge																							x	
Graminoid	*Elymus canadensis*	Canada Wildrye													x											
Graminoid	*Elymus repens*	Quackgrass											x						x							
Graminoid	Grass sp.	Grass																					x			
Graminoid	*Hordeum jubatum*	Wild Barley	x																		x					
Graminoid	*Phalaris arundinacea*	Reed Canarygrass				x							x							x	x	x		x	x	

Graminoid	*Phragmites australis*	Common Reedgrass																						x
Graminoid	*Poa pratensis*	Kentucky Bluegrass	x	x	x		x	x	x		x		x								x			
Graminoid	*Setaria viridis*	Green Foxtail																					x			
Graminoid	*Sporobolus michauxianus*	Prairie Cordgrass																				x				x