



# **Green Network Refinement Stage 1: Natural Areas Screening (Desktop)**

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## Statement of Qualifications and Limitations

The attached Report (the "Report") has been prepared by the City of Saskatoon ("the Consultants") for the sole benefit of the Saskatoon North Partnership for Growth ("P4G") in accordance with the P4G Green Network Pilot Project - Project Charter ("Project Charter"), and the scope of work detailed therein.

The information, data, recommendations and conclusions contained in the Report (collectively, the "Information"):

- is subject to the scope, schedule, and other constraints and limitations in the Project Charter and the qualifications contained in the Report (the "Limitations");
- may be based on information provided to the Consultants which has not been independently verified;
- has not been updated since the date of issuance of the Report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued;
- must be read as a whole and sections thereof should not be read out of such context; and
- in the case of environmental conditions, may be based on limited information and on the assumption that such conditions may be variable either geographically or over time.

The Consultants shall be entitled to rely upon the accuracy and completeness of information that was provided to it and has no obligation to update such information. The Consultant accepts no responsibility for any events or circumstances that may have occurred since the date on which the Report was prepared and, in the case of environmental conditions, is not responsible for any variability in such conditions, geographically or over time.

The Consultants agree that the Report represents their professional judgement in accordance with generally acceptable environmental practices and in light of the Limitations and industry standards for the preparation of similar reports. The Information has been prepared for the specific purpose and use described in the Report and the Project Charter and the results of the Report may change if any development takes place in the study area.

The Report is prepared in accordance with generally acceptable environmental practice and reflects the best judgment of the Consultants. Any use a third party makes of this Report, or any reliance on or decision to be made based on it, are the responsibility of such third party. The Consultants accept no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this Report.

This Statement of Qualifications and Limitations is attached to and forms part of the Report and any use of the Report is subject to the terms hereof.

## Introduction

The Saskatoon North Partnership for Growth (P4G) was established in 2014 and includes the Cities of Saskatoon, Martensville, and Warman, the Town of Osler, and the Rural Municipality (RM) of Corman Park. The goal of the P4G is to ensure each of the five partnering municipalities can benefit from growth opportunities, increase efficiencies, and reduce costs by working together. The partners engaged O2 Planning+Design Inc. to create a long-term regional vision for land use and servicing (O2 Planning+Design Inc. 2015). In September 2017, the P4G Regional Plan was endorsed by the Councils of the five partnering municipalities, along with a Governance and Implementation Strategy and Servicing Strategy (Saskatoon North Partnership for Growth 2017).

The P4G Regional Plan recognizes that the P4G area contains significant natural and heritage resources and strategies were needed to identify, protect and enhance these resources. Policies within the P4G Regional Plan outlined the need to identify significant natural and heritage resources and the necessity to develop an inventory in the P4G area and surrounding region. As development is proposed within the P4G area, the partners need to be aware of the natural areas on the landscape including wetlands, species of concern (wildlife and plants), environmentally significant and managed areas, soil capability, and important heritage resources. Knowledge of where natural areas and heritage sites reside on the landscape will help avoid or minimize impacts, create new policies and guide development in the P4G area and surrounding region.

## Project Purpose

The Green Network Refinement: Stage 1, builds on the results of the Green Network Pilot Project (Flood Mapping) that was completed in 2018. This phase of the refinement will comprise of conducting a Natural Areas Screening (NAS).

When combined, all this work will allow the P4G partners to make informed decisions about the location and design of development proposals within and adjacent to the Green Network. It will also enable the boundary of the Green Network to be confirmed or refined in the NAS Study Area.

## Project Scope

To complete a natural area screening including wetlands, environmentally significant and managed lands, land cover, agricultural soil capability, heritage sites, and species of concern within the NAS Study Area to guide and coordinate future policies and development.

## Study Area

The NAS Study Area (study area) is bound by Highway No. 16 to the west, the South Saskatchewan River (the River) valley to the east and north of Saskatoon's city boundary, inclusive of the study area related to the North Concept Plan, which includes a small section of land south of Highway No. 16. The north boundary of the study area is delineated by Township Road 394. The study area includes the City of Martensville, City of Warman, portions of the City of Saskatoon, Town of Osler, and the Town of Dalmeny (Figure 1).

## Regulatory Context

The environmental components within the study area may trigger a number of federal, provincial, municipal and/or other Acts and Regulations in relation to projects and development. A high-level summary of the Acts and Regulations that are relevant and may apply to development in the study area are highlighted in the table below. This summary may be used as a guide; however, it is not intended to act as a complete list of Acts or Regulations that may apply.

Table 1. Acts and Regulations That May Apply to Development within the NAS Study Area

Agency	Act/Regulation	Environmental Component(s)	Relevancy
<b>Federal</b>			
Environment and Climate Change Canada, Health Canada	Canadian Environmental Protection Act	Pollution, water, land, air	Pollution prevention and protection of environment and human health.
Environment and Climate Change Canada	Migratory Birds Convention Act (MBCA)	Migratory birds, nests, eggs and young	Protection of migratory birds, nests, eggs and young and their habitat.
	Species at Risk Act	Species at Risk and Habitat	Protection of Species at risk and their habitat.
Impact Assessment Agency of Canada	Impact Assessment Act	Environmental assessment of projects	Minimize or avoid adverse environmental effects from projects
<b>Provincial</b>			
Ministry of Agriculture	Weed Control Act	Designated Weed Species	Designated weed species must be contained, controlled or eradicated according to the Act.
Ministry of Agriculture, Ministry of Environment	Provincial Lands Act	Impacts to all components of the environment on Provincial Crown land	Protection and regulations regarding activities on provincial crown land.
Ministry of Environment	Environmental Assessment Act	Impacts to all components of the environment	Describes process of the environmental impact assessment required when new developments are proposed.

	Environmental Management and Protection Act	Water, land, air, waste management	Permits, notices, and/or Environmental Protection Permits may be required.
	Wildlife Act and Regulations	Wildlife	Protection of wildlife and species at risk.
	Wildlife Habitat Protection Act	Wildlife habitat	Protection of wildlife habitat
Ministry of Government Relations	Planning and Development Act	Planning and development of land	Describes how land designations, including Environmental Reserve, can be used.
Ministry of Parks, Culture and Sport	Heritage Property Act	Preservation of heritage property (e.g. archaeological and paleontological objects, heritage property and sites).	Protection of heritage property. Heritage sensitive land may require further review by the Heritage Conservation Board.
	Homesteads Act	Preservation of homestead land and property	Protection of homestead property which may require review
Water Security Agency	Water Security Agency Act	Water, watersheds, and related land resources, drainage	Permits and approvals (e.g. Aquatic Habitat Protection Permit) may be required prior to construction.
	Wetland Policy	Wetlands	Policy on the protection of wetlands
<b>Municipal</b>			
Saskatoon North Partnership for Growth (P4G)	Regional Plan	Sustainable approach to planning including environmental	Natural resources and environmental processes will be maintained and conserved
Corman Park – Saskatoon Planning District	Official Community Plan	Planning and development of land near natural areas	Maintain the natural features of the District
	Zoning Bylaw	Planning and development of land near natural areas	Protection of significant natural areas

R.M. of Corman Park	Official Community Plan	Planning and development of land near natural areas	Maintain the natural features of the Municipality
	Zoning Bylaw	Planning and development of land near natural areas	Protection of significant natural areas
City of Saskatoon	Official Community Plan	Planning and development of land near natural areas	Protection of significant natural areas
	Zoning Bylaw	Planning and development of land near natural areas	Protection of significant natural areas
	Wetland Policy No. C09-041	Wetlands	Protection of wetlands and mitigation
	Civic Heritage Policy No. C10-020	Heritage sites	Protection of heritage sites
	Park Development Guidelines Policy No. A10-017	Planning and development of natural areas in parks	Protection of natural areas within parks
City of Martensville	Official Community Plan	Planning and development of land	Protecting or conserving natural features including the area around Opimihaw Creek
	Zoning Bylaw	Planning and development of land	Protection of natural and environmentally significant areas
City of Warman	Official Community Plan	Planning and development of land	Protection of natural areas
<b>Other Relevant Agencies</b>			
Meewasin Valley Authority	Meewasin Valley Authority Act	Land and all environmental components within their Conservation zone	Meewasin has a review process for development within their Conservation Zone.
Saskatoon Airport Authority	Saskatoon Airport Zoning Regulations	Land use, open water storage, and waste/garbage facilities.	Land use and building restrictions in the vicinity of the airport.
Wanuskewin Heritage Park (WHP) Authority	The Wanuskewin Heritage Park Act	Heritage sites and artifacts, WHP land	Protection of WHP and the heritage sites

## Environmental Setting

The study area is located within two ecoregions in the Prairie Ecozone; the Moist Mixed Grassland Ecoregion in the southern two-thirds and the Aspen Parkland Ecoregion in the northern third of the study area (Acton et al. 1998). Within the Moist Mixed Grassland Ecoregion, the study area overlaps the Saskatoon Plain landscape area and, within the Aspen Parkland Ecoregion, the study area is part of the Waldheim Plain landscape area (See Appendix 1 for photos of area).

The Saskatoon Plain landscape area is a nearly level glacial till plain with limited surface drainage associated with the South Saskatchewan River (the River; Acton et al. 1998). The landscape is comprised of a gently undulating glaciolacustrine landscape within the southern portion and thinner deposits on an eroded, stony, and gravelly glacial till surface towards the north. At the northern margin of the Saskatoon Plain landscape area, the eroded till plain contains a large amount of gravel and is covered with a very thin, sandy deposit (Acton et al. 1998). Dark Brown sandy soils are prominent in the area with Dark Brown Chernozemic soil being the most common (Acton et al. 1998). Thin Regosolic soils occur on the eroded slopes of the River valley.

The Waldheim Plain landscape area is a level glaciolacustrine plain that extends from Borden to Alvena, SK on either side of the River. Other than Fish Creek which drains to the River, surface drainage in this landscape area is associated with the North Saskatchewan River and numerous lakes and wetlands (Acton et al. 1998). The dominant Black loamy and sandy soils in the area were developed in shallow sandy and silty glaciolacustrine deposits and formed in sediments of the former Glacial Lake Saskatchewan. These deposits cover the underlying glacial till in lower elevations, but not at higher elevations or near the River, where they have eroded away, leaving boulders, sand and gravel exposed (Acton et al. 1998).

The native vegetation that remains in the study area, occurs in the River valley, and in other areas where topography, and/or sandy, stony or gravelly soils discourage cultivation and crop production. Common native vegetation communities include mixed grasses and short shrubs in drier upland areas, trembling aspen (*Populus tremuloides*) and understory species as remnant trees stands in lower lying mesic sites, and the trees and shrubs that compose the riparian forest along the River valley (Acton et al. 1998). Several valleys and coulee complexes occur within the study area and support native/natural vegetation communities, including the valleys associated with the River and Opimihaw Creek. Common wildlife in the study area includes grassland birds such as western meadowlark (*Sturnella neglecta*), horned lark (*Eremophila alpestris*), clay coloured sparrow (*Spizella pallida*), chipping sparrow (*Spizella passerina*), Swainson's hawk (*Buteo swainsoni*) and many species of waterbirds and waterfowl. Coyote (*Canis latrans*), red fox (*Vulpes vulpes*), white-tailed deer (*Odocoileus virginianus*), thirteen lined (*Spermophilus tridecemlineatus*) and Richardson's (*Urocitellus richardsonii*) ground squirrels, and white-tailed jackrabbit (*Lepus townsendii*) are also abundant.

Agricultural crop production is the primary land use with over 80% of the ecoregion having been cultivated (Acton et al. 1998). Nearly all of the Waldheim Plain, the northern third of the study area, has been cultivated for crop production. The gentle topography of the area has permitted mass conversion of land to agricultural crop production. Land with stony and gravelly soils in the area is used as pasture for livestock production. The Waldheim and Saskatoon Plain landscape areas contain remnant native dominant grasslands, 12% and 14%, respectively (Hammermeister et al. 2001). The study area also contains extensive urban and residential development within the R.M. of Corman Park. Proximity to the largest city in Saskatchewan, Saskatoon, and

two other small cities, Martensville and Warman, and two towns, Osler and Dalmeny has encouraged urban, industrial, residential and acreage development within the study area.

## Environmentally Significant Areas

At a coarse scale, environmentally significant lands within the study area include the River and River valley, Wanuskewin Heritage Park (WHP), and land within the Meewasin Valley Authority's Conservation Zone. All of these Environmentally Significant Lands are natural and heritage areas associated with the South Saskatchewan River.

The River valley supports permanent vegetation cover and a variety of vegetation communities including native dominant grassland, wetlands and a riparian forest. These land types provide habitat for many fish and terrestrial wildlife species in a landscape where continuous habitat and cover has been largely removed by development and agricultural production. The River valley remains a relatively continuous corridor for wildlife movement and habitat with thermal and escape cover, water and forage, and lower levels of human disturbance. The riparian area along the River valley also serves as a buffer and filters pollutants, prevents sediment flow, stabilizes the bank, reduces erosion, protects water quality, and decreases the frequency and intensity of flooding.

The South Saskatchewan River is also an important provincial fishery and contains 26 species of fish including the endangered Lake Sturgeon (*Acipenser fulvescens*) (South Saskatchewan River Watershed Stewards Inc. 2007). The protection of tributaries and coulees that flow into the river from industrial pollution, agricultural runoff, and siltation will be important in maintaining fish habitat and spawning areas.

The Wanuskewin Heritage Park (WHP), designated a national Historic Site of Canada in 1986, contains archaeological features that represent most of the known elements that characterize Northern Plains pre-history (P4G Regional Plan 2017). The park is located within the Corman Park – Saskatoon Planning District (an area jointly managed by the two municipalities) and is recognized as a regionally significant heritage and cultural resource providing opportunities for education, interpretation and preservation of Indigenous culture, tourism, and recreation while maintaining the value of its heritage and ecological resources. WHP is located along Opimihaw Creek where it connects to the River and where the northern border of Saskatoon meets the R.M. of Corman Park. Opimihaw Creek and the surrounding riparian areas act as a corridor to other remnant patches of natural areas within the study area and Saskatoon (CanNorth 2017).

The headwaters of Opimihaw Creek begin near Martensville and flow to the River. The headwaters are a series of wetlands that are then diverted into a drainage ditch where the creek meanders to the northeast going under Highway 11. The creek then moves south and discharges into the River at WHP (City of Martensville 2016). The Future Growth Plan for Martensville (2016) identifies the importance of protecting Opimihaw Creek as a sensitive environmental and flood hazard area and the City of Martensville Official Community Plan (OCP) recognizes the creek bed as an area to be dedicated as either Municipal Reserve or Environmental Reserve. Outside of Martensville, the creek is also significant for carrying flood waters to the River and for the ecological and heritage sensitivities along its banks and riparian areas.

The Meewasin Valley Authority (Meewasin) was created in 1979 by an Act of the Province of Saskatchewan, *The Meewasin Valley Authority Act*. Meewasin is the conservation agency that manages and conserves the cultural and natural resources of the South Saskatchewan River Valley within the Meewasin Conservation Zone jurisdiction. The agency is the means by which the three participating parties, the City of Saskatoon, Government of Saskatchewan, and University of Saskatchewan, have chosen to best manage the Meewasin Conservation Zone within the South Saskatchewan River Basin (Meewasin 2019). According to *The Meewasin Valley Authority Act*, Meewasin has the authority to co-ordinate or control the use, development, conservation, maintenance and improvement of public land within their jurisdiction in accordance with the development plan. Within the study area, the Meewasin Conservation Zone in the City of Saskatoon limits includes the River channel and some of the riparian areas and adjacent habitat that surrounds the River. Outside the City of Saskatoon limits, the Meewasin Conservation Zone is limited to the River channel and several pieces of Crown Land along the River that Meewasin helps manage.

Environmentally significant areas outside the River and River valley but within the study area includes native dominant grasslands and wetlands. Native dominant grasslands are disappearing across Saskatchewan and it is estimated that only 20% remains in the province. The remaining native dominant grasslands are still under threat from road building, cultivation, residential development, suppression of fire, and invasive species. In Canada, wetlands are also declining as estimates suggest 80 to 98% of wetlands have been lost that were within or adjacent to urban centres and over 50% of the prairie pothole wetlands have been lost (Government of Canada 1991). Thousands of wetlands are scattered across the study area which provide valuable services such as habitat for plants and wildlife including species of concern, recharging groundwater, enhance biodiversity, store water to help control flooding, carbon storage, trap sediment and nutrients, provide water for livestock, and recreational activities. Both wetlands and native dominant grasslands are some of the most ecologically diverse and productive ecosystems in the world and should be considered as environmentally significant areas.

## Methods

### Heritage

A heritage screening was conducted on quarter sections within the study area using the Developers Online Heritage Screening Tool (Saskatchewan Government 2019a). Quarter sections were identified that have heritage sensitivities and may require a Heritage Resource Impact Assessment (HRIA). The Saskatchewan Homestead Index was also used to obtain information on known homesteads within the study area. Homestead information included legal land location, family name, remarks/comments and a Saskatchewan Archives file number for further information. Municipal, provincial, and national heritage properties within the study area were identified through a review of the City of Saskatoon's Heritage Register (2019), the Saskatchewan Register of Heritage Property (Government of Saskatchewan 2019b), and the Canadian Register of Historic Places (Parks Canada 2019). The provincial and federal registries also contained municipal heritage properties. The North/Northwest Natural Area Screening Study that covered a portion of the study area was also reviewed for heritage information (Stantec 2012).

## First Nation Lands

First Nations lands were identified using the R.M. of Corman Park land ownership map (RM of Corman Park 2019), the Indian Reserve (NRCan) data layer in HABISask (Government of Saskatchewan 2019), the City of Saskatoon First Nations Land Holdings and Reserves Map (City of Saskatoon 2019) and the Government of Canada Geoviewer for Aboriginal Peoples and Lands (Government of Canada 2019). The types of First Nations lands identified included land holdings, and rural and urban reserves.

## Environmentally Significant Areas and Managed Lands

The River and its associated riparian areas were identified using aerial photos and satellite imagery. The Official Community Plan (OCP) for the City of Saskatoon describes the riverbank as: “land within the corporate limits of the City of Saskatoon being within ninety-two (92) metres of the shoreline of the South Saskatchewan River or on any part of the slope leading down to said shoreline where a gradient is in excess of twenty (20) percent plus 10 metres, whichever extends the greatest distance measured horizontally from the shoreline”. The RM of Corman Park Zoning Bylaw and the Corman Park – Saskatoon Planning District Zoning Bylaw both recommend any riverbank subdivision or development proposed on or within 30 m of the crest of a slope greater than 20% shall require supporting evidence of slope stability from a professional engineer suggesting the importance of having a buffer large enough to prevent erosion and loss of land into the River. A riparian buffer > 50 metres is considered beneficial in maintaining the physical, chemical, esthetic, and ecological components of streams and rivers (Government of Alberta 2012). Establishing an undisturbed vegetated buffer zone is also a recommended practice to protect fish and fish habitat under the *Federal Fisheries Act, 1985*. In general, the wider the buffer the more environmental benefits derived. To highlight the importance of protecting the River’s riparian areas, a 92 metre buffer (setback) was delineated.

Agricultural Crown, Meewasin Conservation Zone, and WHP lands were identified using the R.M. of Corman Park land ownership map (RM of Corman Park 2019), the Agricultural Crown Land Map Viewer (Government of Saskatchewan 2019), and the Crown Land data layer in the Hunting, Angling and Biodiversity Information of Saskatchewan (HABISask) database (Government of Saskatchewan 2019). The Meewasin Conservation Zone included the river channel and a few managed Agricultural Crown Land areas along the river including WHP. A 1.8 km buffer was also established around WHP as a significant area that will require further study to ensure the types of development around this area would be consistent with the natural and historic qualities of WHP (City of Saskatoon 2015). The P4G Regional Plan identified WHP as a “special policy area” establishing a framework to work in cooperation with the Wanuskewin Heritage Park Authority, to protect the natural, historic, and cultural resources of the park. As a component of the Regional Plan, a viewshed analysis was also completed to protect important viewing areas (viewsheds) and maintain their quality. These lands were also identified as environmentally significant areas during the development of the Regional Plan (O2 Planning and Design 2015, Saskatoon Partnership for Growth 2017).

A 4 km buffer was delineated around the Saskatoon Airport as a sensitive area where any future open water projects within the buffer needs to comply with Transport Canada airport zoning regulations (Government of Canada 2014). A second buffer of 8 km was also drawn around the Saskatoon airport where waste/garbage dumps are not recommended (Government of Canada 2004).

Opimihaw Creek is located both within WHP and north and is connected to the Hudson Bay Swale (sometimes called the North Swale). The Hudson Bay Swale has been identified as having high ecological value and should be protected (Stantec 2012) and is also contained within the Green Infrastructure Network for the City of Saskatoon (Saskatoon's Green Infrastructure Strategy 2020). The areas within and around the Hudson Bay Swale and Opimihaw Creek were delineated as an ecological and heritage significant area.

### Agricultural Soil Capability

The Canada Land Inventory (CLI), Land Capability for Agriculture map was used to determine soil capability within the study area (Agriculture and Agri-Food Canada 1998). Soils were assigned to one of seven classes based on the degree of limitations to agricultural production (Table 2).

Table 2. Soil Capability Classes <sup>a</sup>

Class	Description
1	No significant limitations to use for crops
2	Moderate limitations that restrict the range of crops or require moderate conservation practices
3	Moderately severe limitations that restrict the range of crops or require special conservation practices
4	Severe limitations that restrict the range of crops or require special conservation practices, or both
5	Very severe limitations that restrict their capability to producing perennial forage crops, but improvement practices are feasible
6	Capable of producing perennial crops only, and improvement practices are not feasible
7	No capability for crop use or permanent pasture

<sup>a</sup> Agriculture and Agri-Food Canada. 1998.

### Species of Concern

The HABISask database was reviewed on December 17, 2019 for the presence of species of concern, including a 1 km buffer around the perimeter of the study area (Government of Saskatchewan 2019). Data within HABISask is linked to the Saskatchewan Conservation Data Centre (SKCDC) which maintains and updates the species at risk list, federal status for each species, locations, and global and provincial rankings. Both wildlife and vascular plant species of concern were noted including the location. Anecdotal observations of species of concern during field reconnaissance (2019) were also recorded.

Additional bird species of concern were added to the list using eBird data. Managed by the Cornell Lab of Ornithology, eBird collects bird observation data from thousands of regional experts and stores the information on a database accessible to the public. Committee on the Status of Endangered Wildlife in Canada (COSEWIC) reports were also reviewed for species of concern and possible sightings/locations within the study area. The North/Northwest Natural Area Screening study was also reviewed for species of concern and their locations (Stantec 2012).

## Land Cover

The Southern Digital Land Cover (SDLC) was used to map land cover (SDLC 1994). Although this data is 25 years old, it provided a seamless interpretation of land cover over the entire study area. Updates to the SDLC were completed using satellite imagery and aerial photos from 2008 to 2011 (FlySask) and ESRI world imagery (2014 and 2018) to reflect changes in developed lands and agricultural use. Land cover types included in the map comprised Cropland, Yard Site/Developed, Trees/Shrubs, Grassland/Hayland (non-native), Native/Natural Grasslands, and Wetlands/Creeks/Riparian.

## Wetlands and Water Bodies

Wetlands were defined as lands having water at, near or above the land surface or land that is saturated with water long enough to promote wetland or aquatic processes as indicated by poorly drained soils, aquatic vegetation and various kinds of biological activity which are adapted to a wet environment (National Wetlands Working Group 1988, City of Saskatoon 2013). Wetlands can hold water temporarily or permanently, with water levels fluctuating over the course of a single year and over many years with climatic cycles (City of Saskatoon 2013). Wetlands were spread throughout the study area and were classified according to Stewart and Kantrud (1971). This wetland classification system was chosen because it is used in the City of Saskatoon Wetland Policy (2013) and has been widely used in the glaciated prairies of Canada, however this was a desktop study and field work is needed to verify the final classification. The Stewart and Kantrud (1971) system classifies wetlands according to vegetation zones where the zones are closely related to differences in water permanence (Table 3).

Table 3. Wetland Classification, Form and Water Permanence Based on Stewart and Kantrud <sup>a</sup>

<b>Class</b>	<b>Form</b>	<b>Water Permanence</b>
I	Goldenrod, Kentucky Bluegrass and other low prairie species	Ephemeral; Temporary
II	Wet Meadow; Fine stemmed grasses, sedges, and forbs	Temporary
III	Shallow marsh; Emergent grasses, sedges, and rushes	Seasonal
IV	Deep marsh; Emergent and submergent plants such as cattails, bulrush, and pondweeds	Semi-permanent
V	Central open water zone; Widgeon Grass, Bulrush, Cattails	Permanent
<sup>a</sup> Stewart and Kantrud 1971		

Some wetlands were observed within areas containing trees. Stewart and Kantrud (1971) is designed for prairie pothole wetlands and not treed wetlands, so temporary or seasonal wetlands within treed areas were assigned a Class II or III designation similar to the Alberta Wetland Classification System (2015) for a swamp.

Wetlands were identified and classified using orthophotos and satellite imagery from 2002 - 2016 and the perimeter of each wetland was digitized using ArcMap 10.3.1. Spring images in wet years were used if available as wetlands would be full of water and easier to identify. A SPOT 2.5 m image from 2011 was used to assist in delineating wetlands as this was one of the wettest years on record in Saskatchewan (Wheaton et al. 2013). Light Detecting and Ranging (LiDAR) data collected in October 2012 and May 2013 was also used to identify low lying areas that were often associated with wetlands. Previous studies completed on parts of the study area were also reviewed for wetland classification information (Stantec 2012).

Water bodies such as dugouts, dugouts within Class III wetlands, creeks/drainage, lagoons, and storm water ponds were also delineated. All of these features were included in the analysis.

## Results

### Heritage

The heritage screening tool identified 234 quarter sections with heritage sensitivities (Figure 2). An HRIA screening would need to be requested by a professional archaeologist to determine the type and location of the archaeological site on the quarter section. The Heritage Conservation Branch would then advise the archaeologist on how to proceed prior to any development.

The Saskatchewan Homestead Index located 515 homestead files including special grants such as Métis scrip, South African scrip, and loans from the Temperance Colonization Society Limited – Toronto (Figure 2). There were some quarters with multiple files which may be the result of entries on a pre-emption, cancelled entries, purchased homestead, or a transfer of scrip. Each homestead file should be reviewed before development occurs. Provisions under the *Homesteads Act 1989* may also need to be consulted before proceeding with development.

During the desktop review, one Municipal Heritage Property (MHPs), one Provincial Heritage Property (PHP) and one National Historic Site of Canada were identified within the study area (Figure 2; Government of Saskatchewan 2019; Parks Canada 2019). WHP is a 58 hectare area located along Opimihaw Creek where it meets the River and is a National Historic Site. WHP is an active archaeological dig site containing a medicine wheel, tipi rings, pottery fragments, projectile points and animal bones. The site represents over 6,000 years of Northern Plains First Nations people pre-contact history (Parks Canada 2019).

In the R.M. of Corman Park, the Opimihaw or Tipperary Creek Archaeological Site is a PHP that is located within the boundary of WHP. The site contains at least 14 pre-contact archaeological sites, including a medicine wheel, tipi rings, rock cairns, campsites and bison kills. The site was listed as a PHP in 1984 (Parks

Canada 2019). The North/Northwest Natural Area Screening Study (2012) also identified at least two archaeological sites along Opimihaw Creek outside of WHP.

At 422 Peters Street in the City of Warman, the Warman Senior Drop-In Centre was designated as an MHP in 2004 (Figure 2). The building is a one-and-a-half storey, stucco-clad, wood-frame train station built between 1905 and 1907 (Parks Canada 2019). The station was used by CNR until 1942 when it was moved from its original location near the intersection of the two rail lines to its current location. The Warman Senior Drop-In Centre is now used as a leisure centre (Government of Saskatchewan 2019).

The area around Clark's Crossing east of Warman, SK and along the River is of historic importance (Figure 2). Early pioneer, John F. Clark, established a ferry crossing across the South Saskatchewan River which was used during the North-West Rebellion of 1885. A Dominion Telegraph Station was established nearby in 1884 and also one of Saskatchewan's earliest northwest schools named Saskatchewan School No. 99 is north of the ferry crossing.

The Caswell Homestead site is located within SW 28-37-5-W3M where the site contains the foundations of the old homestead and several more modern buildings and is included in the Archaeological Inventory for the Province of Saskatchewan. This site is within Saskatoon City limits and has been identified in the Riel Industrial Sector Plan as an area that requires more information before any develop may proceed.

### First Nations Lands

There are a number of First Nations with land interests in the study area, including rural reserves, an urban reserve and several land holdings. These First Nations include Little Pine First Nation, Moosomin First Nation, Red Pheasant Cree Nation, Saulteaux First Nation, Yellow Quill First Nation, Muskoday First Nation, Lac La Ronge Indian Band, and Mistawasis First Nation (Figure 3). In this area, First Nation land may include properties being used for agricultural purposes or are lands being considered for future development.

### Environmentally Significant Areas and Managed Lands

Nineteen (19) whole or partial quarter sections, totaling 945 acres, were identified as Agricultural Crown Lands (Figure 4). Agricultural Crown Lands are typically agricultural land owned by the province but leased to an individual agricultural producer, however, some of the lands were classified as vacant non-agricultural/water. Two Crown Land quarter sections were identified as being part of WHP (Figure 4).

The Hudson Bay Swale has been identified as an important wetland complex and environmentally significant area (City of Saskatoon 2015) which eventually connects to Opimihaw Creek and flows into the River in the southeastern part of the study area. The entire complex including the Hudson Bay Swale, Opimihaw Creek and the connecting wetlands and riparian areas contains remnant native prairie, archaeological sites, ecologically important wetlands, and is important for migrating birds (City of Saskatoon 2015) (Figure 4). The area around the Hudson Bay Swale is also a potential flood hazard area (Corman Park-Saskatoon Planning District Official Community Plan 2019).

A 1.8 km visual buffer around WHP within the Saskatoon City Limits and the WHP viewshed areas outside the Saskatoon City Limits were also included as being environmentally significant (Figure 4) (O2 Planning and Design 2015). Both of these areas should be managed such that land use is consistent with the natural and historic qualities of WHP.

A four kilometre buffer was drawn around the Saskatoon Airport as all proposed open water facilities will need to be reviewed within the buffer because they can potentially cause concentrations of migratory birds which may have the potential to cause aircraft and bird hazard conflicts (Figure 4). An eight kilometre buffer was also drawn around the Saskatoon Airport as all proposed waste/garbage facilities can also serve as an attractant to migratory birds, in particular different species of gulls, and potentially cause aircraft and bird hazard conflicts. Both of these buffers should be reviewed prior to any proposed development (Figure 4).

The 92 metre buffer around river shoreline encompassed approximately 263 hectares (Figure 4) and the Meewasin Conservation Zone includes the River channel and five (5) partial or whole quarter sections along the River. All five Meewasin quarter sections are associated with WHP.

### Agricultural Soil Capability

Four soil capability types were identified with Class 3 and 4 being the most common through the central portion of the study area (Figure 5). Two areas of Class 2 soils were noted in the northeast and northwest, and Class 6 soils were present around and within the Hudson Bay Swale and along portions of the River. Class 3 and 4 soils have moderately severe to severe limitations that restrict the range of crops, while Class 2 soils have only moderate limitations to the range of crops that can be grown. Class 6 soils were noted around the Hudson Bay Swale and along the River and are only capable of producing perennial forage crops and improvement to the soil is impractical (Government of Canada 1998).

### Species of Concern

Thirty-one vertebrate and twenty vascular plant species of concern have been observed within the study area, including a 1 km buffer around the study area (Tables 4 and 5, Figures 6 and 7). Most of the vertebrate species of concern were migratory birds but included a sharp-tailed grouse lek, a migratory bird concentration site, two amphibians, one bat, and one fish. Federally endangered vertebrate species included Lake Sturgeon (*Acipenser fulvescens*), Whooping Crane (*Grus americana*), Red Knot (*Calidris canutus rufa*), Piping Plover (*Charadrius melodus circumcinctus*) and Little Brown Myotis (Bat) (*Myotis lucifugus*), and provincially ranked vascular plants that were extremely rare (S1) or very rare (S2) included Pale Moonwort (*Botrychium pallidum*), Smooth Hawk's Beard (*Crepis runcinata ssp. hispidulosa*), Prairie Dunewort (*Botrychium campestre*), and Sandhills Cinquefoil (*Potentilla lasiodonta*).

Table 4: Provincially and Federally Tracked Vertebrate Species of Concern within the NAS Study Area

Scientific Name	Common Name	Global Rank <sup>a</sup>	COSEWIC <sup>b</sup>	Species at Risk Act Status	Provincial Rank <sup>c</sup>
<i>Acipenser fulvescens</i>	Lake Sturgeon	G3G4	Endangered	No Status	S2
<i>Ambystoma mavortium</i>	Barred Tiger Salamander	G5	Special Concern	Special Concern	S4
<i>Anthus spragueii</i>	Sprague's Pipit	G3G4	Threatened	Threatened	S3B,S3M
<i>Asio flammeus</i>	Short-eared Owl	G5	Special Concern	Special Concern	S3B,S2N,S3M
<i>Buteo regalis</i>	Ferruginous Hawk	G4	Threatened	Threatened	S2B,S2M
<i>Calidris canutus rufa</i>	Red Knot	G4T2	Endangered	Endangered	S2M
<i>Calidris subruficollis</i>	Buff-breasted Sandpiper	G4	Special Concern	Special Concern	S4M
<i>Cardellina canadensis</i>	Canada Warbler	G5	Threatened	Threatened	S4B,S3M
<i>Cathartes aura</i>	Turkey Vulture	G5			S3B,S3M
<i>Centronyx bairdii</i>	Baird's Sparrow	G4	Special Concern	Special Concern	S4B
<i>Charadrius melodus circumcinctus</i>	Piping Plover	G3T3	Endangered	Endangered	S3B
<i>Chordeiles minor</i>	Common Nighthawk	G5	Special Concern	Threatened	S4B,S4M
<i>Contopus cooperi</i>	Olive-sided Flycatcher	G4	Special Concern	Threatened	S4B,S4M
<i>Coturnicops noveboracensis</i>	Yellow Rail	G4	Special Concern	Special Concern	S3B,S3M
<i>Dolichonyx oryzivorus</i>	Bobolink	G5	Threatened	Threatened	S4B,S4M
<i>Euphagus carolinus</i>	Rusty Blackbird	G4	Special Concern	Special Concern	S3B,SUN,S3M
<i>Falco peregrinus anatum</i>	Peregrine Falcon	G4T4	No Status	Special Concern	S1B,SNRM
<i>Grus americana</i>	Whooping Crane	G1	Endangered	Endangered	SXB,S1M
<i>Hirundo rustica</i>	Barn Swallow	G5	Threatened	Threatened	S5B,S5M
<i>Lanius ludovicianus excubitorides</i>	Loggerhead Shrike	G4T4	Threatened	Threatened	S2B,S2M
<i>Limosa haemastica</i>	Hudsonian Godwit	G4	Threatened	No Status	S4M
<i>Lithobates pipiens</i>	Northern Leopard Frog	G5	Special Concern	Special Concern	S3

<i>Myadestes townsendi</i>	Townsend's Solitaire	G5			S3N,S3M
<i>Myotis lucifugus</i>	Little Brown Myotis	G3	Endangered	Endangered	S4B,S4N
<i>Oporornis agilis</i>	Connecticut Warbler	G4G5			S2B,S2M
<i>Pandion haliaetus</i>	Osprey	G5			S2B,S2M
<i>Phalaropus lobatus</i>	Red-necked Phalarope	G4G5	Special Concern	Special Concern	S4B,S3M
<i>Pinicola enucleator</i>	Pine Grosbeak	G5			S2B,S4N
<i>Podiceps auritus</i>	Horned Grebe	G5	Special Concern	Special Concern	S5B,S5M
<i>Riparia riparia</i>	Bank Swallow	G5	Threatened	Threatened	S4B,S5M
<i>Tympanuchus phasianellus</i>	Sharp-tailed Grouse (Lek Site)	G5			S5
<i>Zonotrichia querula</i>	Harris's Sparrow	G5	Special Concern	No Status	SUB,S5M
<i>Migratory Bird Concentration Site</i>	Migratory Bird Concentration Site	G3			S3
<sup>a</sup> Global Rank <sup>b</sup> Committee on the Status of Endangered Wildlife in Canada Status <sup>c</sup> Provincial Rank					

Table 5: Globally and Provincially Tracked Vascular Plant Species of Concern within the NAS Study Area

Scientific Name	Common Name	Global Rank	Provincial Rank
<i>Alisma gramineum</i>	Narrow-leaved Water Plantain	G5	S3
<i>Almutaster pauciflorus</i>	Few-flowered Aster	G4	S3
<i>Anagallis minima</i>	Chaffweed	G5	S3
<i>Antennaria corymbosa</i>	Flat-topped Pussytoes	G5	S1
<i>Astragalus purshii</i> var. <i>purshii</i>	Pursh's Milk-vetch	G5T5	S3
<i>Blysmopsis rufa</i>	Red Bulrush	G5	S3
<i>Botrychium campestre</i>	Prairie Dunewort	G3G4	S2
<i>Botrychium pallidum</i>	Pale Moonwort	G3	S1
<i>Carex crawei</i>	Crawe's Sedge	G5	S3
<i>Carex eburnea</i>	Bristle-leaved Sedge	G5	S3
<i>Carex saximontana</i>	Rocky Mountain Sedge	G5	S3

<i>Crepis runcinata ssp. hispidulosa</i>	Smooth Hawk's-beard	G5T4	S1
<i>Cyperus squarrosus</i>	Awed Cyperus	G5	S3
<i>Eleocharis engelmannii</i>	Engelmann's Spike-rush	G4G5	S3
<i>Festuca hallii</i>	Plains Rough Fescue	G5	S3
<i>Gentianopsis virgata</i>	Lesser Fringed Gentian	G5	S3
<i>Lilium philadelphicum</i>	Wood Lily	G5	S4
<i>Potentilla lasiodonta</i>	Sandhills Cinquefoil	G3	S2
<i>Potentilla rubricaulis</i>	Red-stemmed Cinquefoil	G4G5	S3
<i>Silene menziesii</i>	Menzies' Catchfly	G5	S3
<i>Sisyrinchium septentrionale</i>	Northern Blue-eyed-grass	G4	S3

## Land Cover

Land across the study area was characterized into six different land cover types: cropland, yard site/developed, trees/shrubs, grassland/hayland (non-native), native/natural grasslands, and wetlands/creeks/riparian (Table 6). Cropland predominated the eastern and western parts of the study area and grassland/hayland and native/natural grasslands occupied the central area (Figure 8). Native/Natural Grasslands was the second highest land cover type in the study area (Table 6). Several areas of development are located between Saskatoon and Martensville and many yard sites are scattered over the study area.

Table 6. Types of Land Cover and Hectares within the NAS Study Area

Landcover Type	Hectares
Cropland	15,084
Yard Site/Developed	3,489
Trees/Shrubs	418
Grassland/Hayland (non-native)	4,943
Native/Natural Grasslands	9,617
Wetlands/Creeks/Riparian	6,543
<b>Total</b>	<b>40,092</b>

## Wetlands and Water Bodies

A total of 7,330 wetlands and water bodies were identified and delineated (Table 7, Figure 9). There were 6,465 Class I to V wetlands, 724 dugouts or dugouts excavated on the edge of a Class III wetland (III / Dugout), 90 lagoons and storm water ponds, and 51 creek and drainage areas. Individual wetlands and water bodies ranged in size from < 1 to 114 hectares (Table 7). Glacial scarring across the north half of the study area has left a number of large Class IV and V wetlands interspersed amongst a number of Class III wetlands. Numerous Class III, IV, and V wetlands are located around Martensville, Warman, and Dalmeny. There are at least nine creeks/drainages that flow to the River in the northeast part of the study area. The southern half of

the study area appears to have a number of small Class III wetlands, several creeks/drainages, and some large Class IV wetlands south of Martensville. The Hudson Bay Swale lies along the southern tip of the study area.

Table 7. Wetland and Water Body Number and Size (Hectares) in the NAS Study Area

Wetland Class/Water Body	Number	Minimum (Ha)	Maximum (Ha)	Average (Ha)
I	167	0.02	3.68	0.28
II	993	0.02	11.96	0.54
III	4,985	0.01	34.69	0.61
III / Dugout	127	0.03	23.48	2.21
IV	271	0.01	69.79	5.58
Creek/Drainage	51	0.02	54.81	6.31
V	49	0.22	114.18	14.06
Dugout	597	0.01	3.21	2.97
Lagoon	39	0.07	45.7	4.45
Storm Water Pond	51	0.03	3.43	0.92
TOTAL	7,330			

## Summary and Conclusions

Natural areas were identified within the NAS study area showing over 7,000 wetlands and water bodies, 51 plant and animal species of concern, environmentally significant and managed lands including the South Saskatchewan River corridor, crown lands, First Nations lands, and the Meewasin Conservation Zone, the Hudson Bay Swale, native/natural grasslands, and heritage sites such as Wanuskewin Heritage Park, Clark's Crossing, and the archaeological sites along Opimihaw Creek. Knowing where the natural areas are on the landscape will help to protect and enhance them as development is proposed in the NAS study area. Also, understanding the linkages between the presence of natural areas such as wetlands and how they can reduce the impacts of flooding, provide habitat for species of concern, filter and improve water quality, and provide recreational opportunities will be important to understand and weigh as planning and policy decisions are made and development is proposed within the NAS study area. This inventory of natural areas will help to guide planning decisions and policy development as growth expands into the P4G area and surrounding region.

## Considerations and Recommendations

1. When a development is proposed, review the natural areas within the project footprint and surrounding area (ex. natural areas that may be connected across the study area boundary) and develop a plan to avoid or minimize impacts to natural areas (see Appendix 2 for example Natural Area Screening Process).
2. The natural area boundary and classification for each feature such as a wetland or water body should be used as a general guide, as field work at the appropriate time of year is needed to better define the boundaries and function. For example, if the approach used in the Saskatoon *Wetland Policy* were to be applied then field work would be required to help classify each wetland and wetland function would

be evaluated using the Minnesota Routine Assessment Method (MnRAM). Wetland function and values matters for identifying what plant and animal species may or may not be present including species of concern, topography, inlets and outlets, water quality, health of plant communities, and biodiversity. Engage a qualified consultant to accurately define wetland borders and function, natural areas, and heritage boundaries and features.

3. The corridor along the River serves as a wildlife travel route, has numerous heritage sites along it, protects the River against erosion, and helps to protect fish and fish habitat and this area should be considered for further protection.
4. Opimihaw Creek (creek channel and associated wetlands) and the surrounding creek riparian areas from Martensville to the River should be considered for protection for flood control, wildlife, and the integrity of heritage sites.
5. The Hudson Bay Swale is a unique natural area on the landscape and should be considered for protection.
6. Wetlands classified as Class III or higher should be protected for flood mitigation, water filtration, reducing the effects of drought, and biodiversity.
7. The natural area inventory should be updated periodically as the landscape changes, species status changes, and new natural areas and species are documented.

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## Figures

Figure 1 – Study Area

Figure 2 – Heritage Lands

Figure 3 – First Nations Lands

Figure 4 – Environmentally Significant and Managed Lands

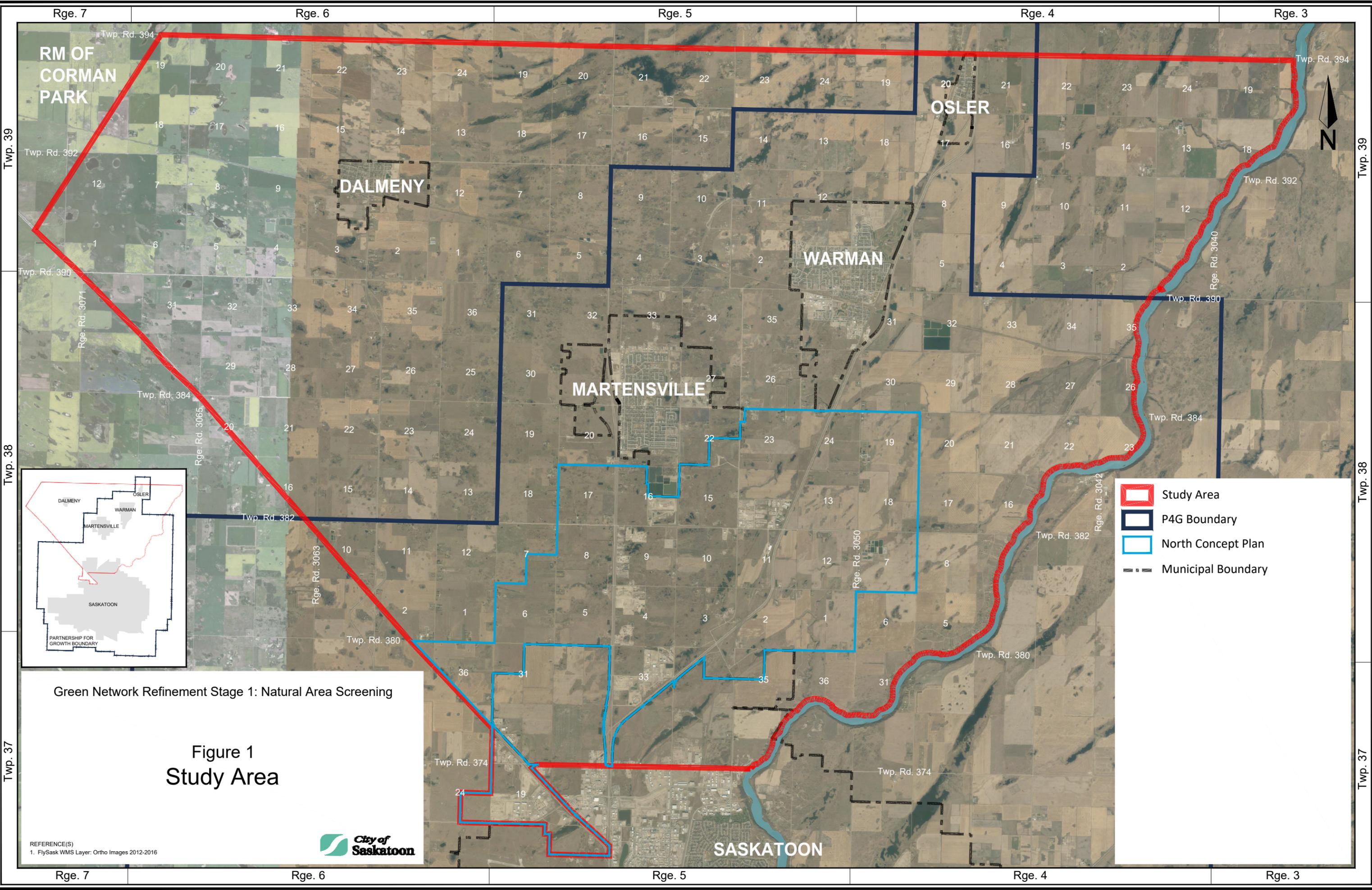
Figure 5 – Agricultural Soil Capability

Figure 6 – Species of Concern - Vertebrates

Figure 7 – Species of Concern – Vascular Plants

Figure 8 – Landcover

Figure 9 – Wetlands and Water Bodies



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CORMAN  
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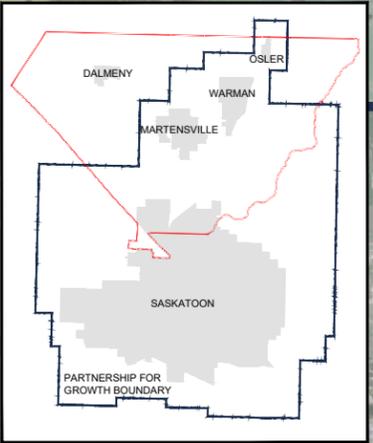
DALMENY

WARMAN

MARTENSVILLE

OSLER

SASKATOON



- Study Area
- P4G Boundary
- North Concept Plan
- Municipal Boundary

Green Network Refinement Stage 1: Natural Area Screening

Figure 1  
Study Area

REFERENCE(S)  
1. FlySask WMS Layer: Ortho Images 2012-2016



Rge. 7

Rge. 6

Rge. 5

Rge. 4

Rge. 3

Twp. 39

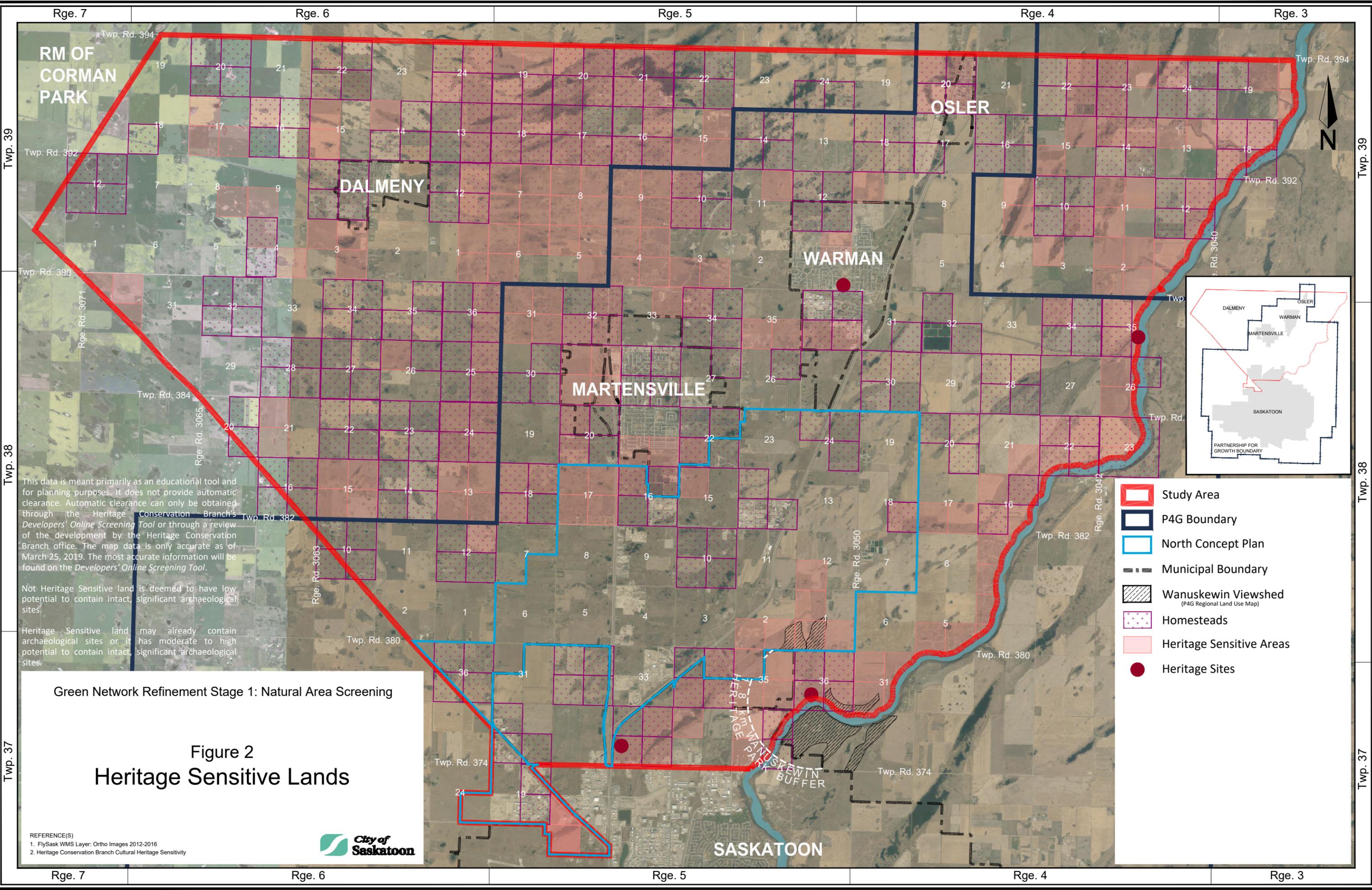
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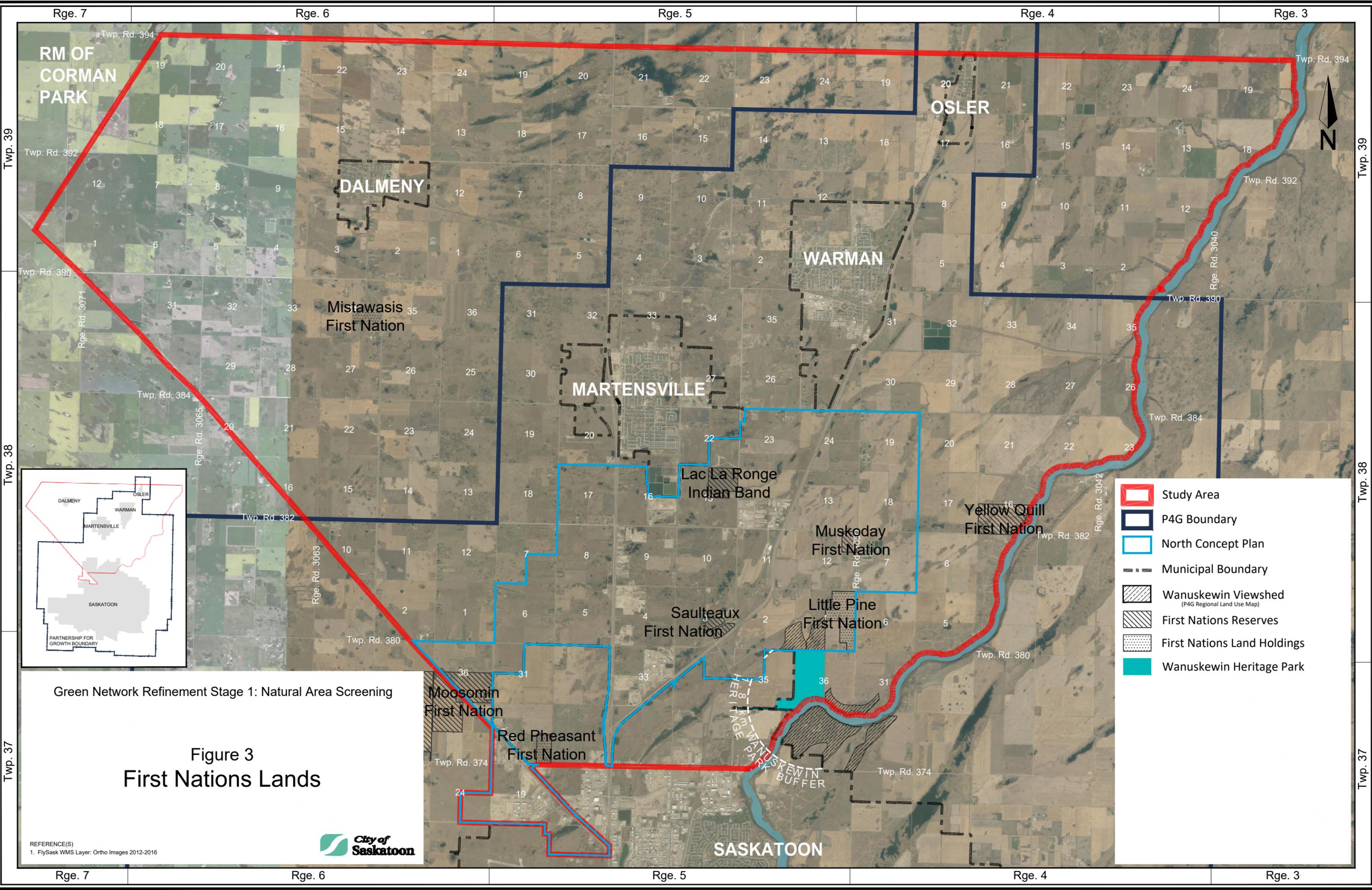
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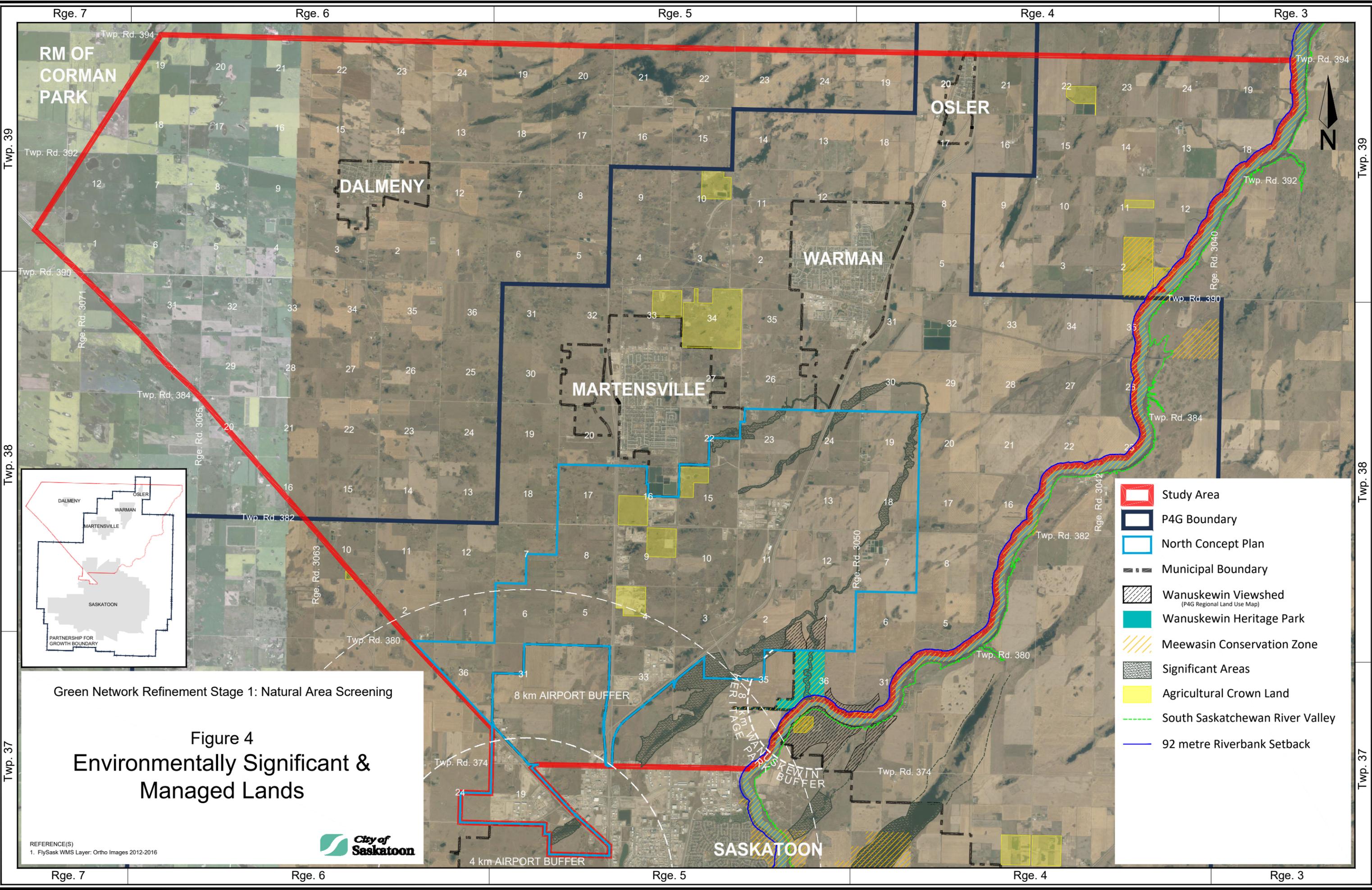
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Twp. 37





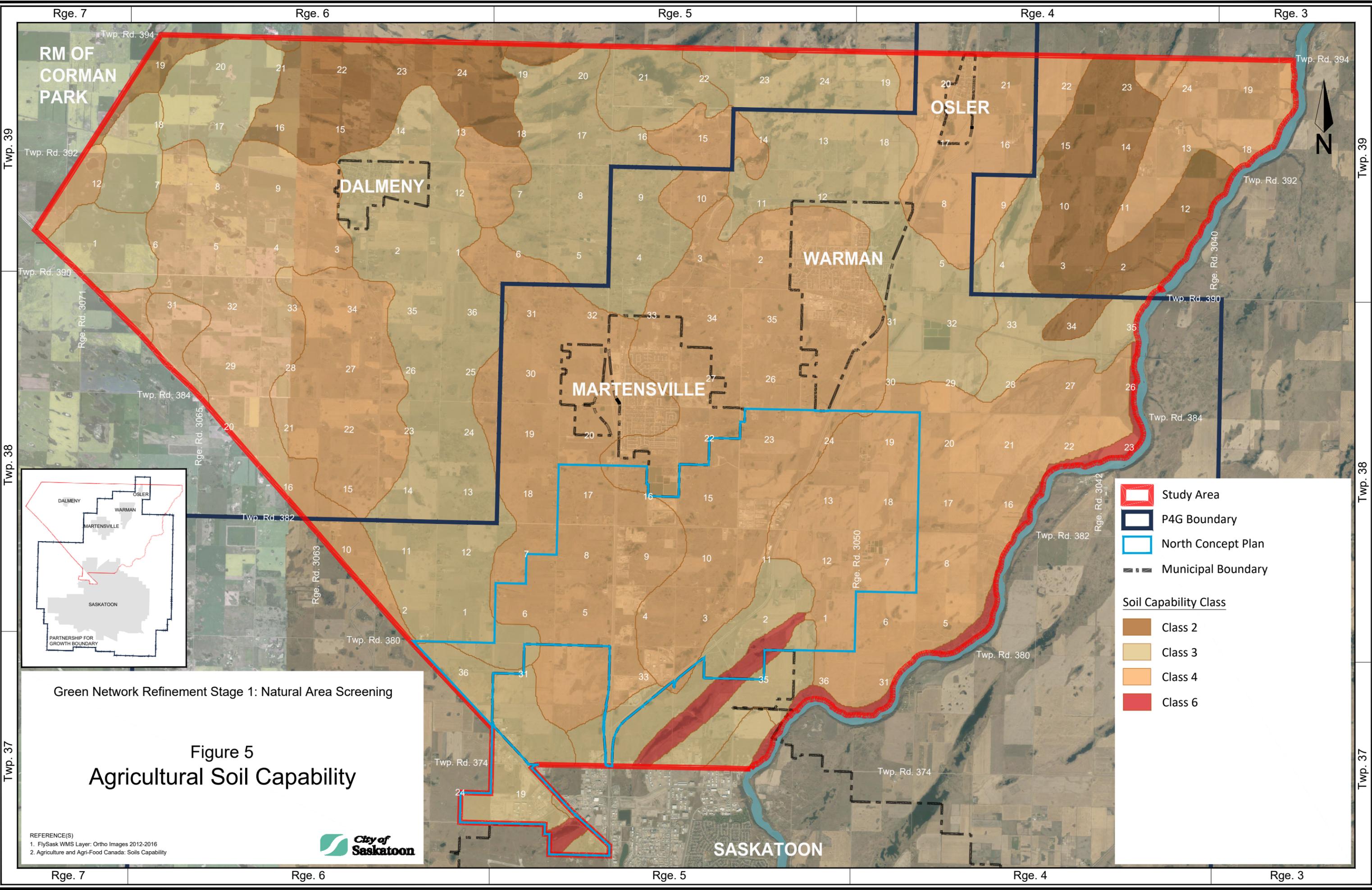


Green Network Refinement Stage 1: Natural Area Screening

**Figure 4**  
**Environmentally Significant & Managed Lands**



REFERENCE(S)  
 1. FlySask WMS Layer: Ortho Images 2012-2016



Rge. 7                      Rge. 6                      Rge. 5                      Rge. 4                      Rge. 3

Twp. 39

Twp. 39

Twp. 38

Twp. 38

Twp. 37

Twp. 37

RM OF  
CORMAN  
PARK

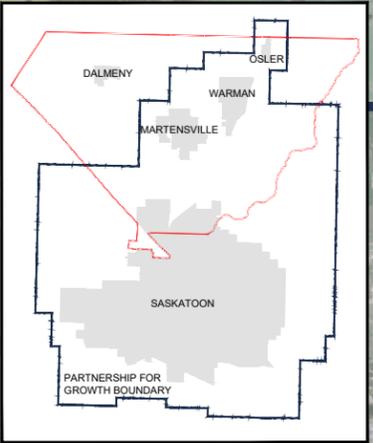
DALMENY

WARMAN

OSLER

MARTENSVILLE

SASKATOON



Green Network Refinement Stage 1: Natural Area Screening

Figure 5  
Agricultural Soil Capability

-  Study Area
-  P4G Boundary
-  North Concept Plan
-  Municipal Boundary

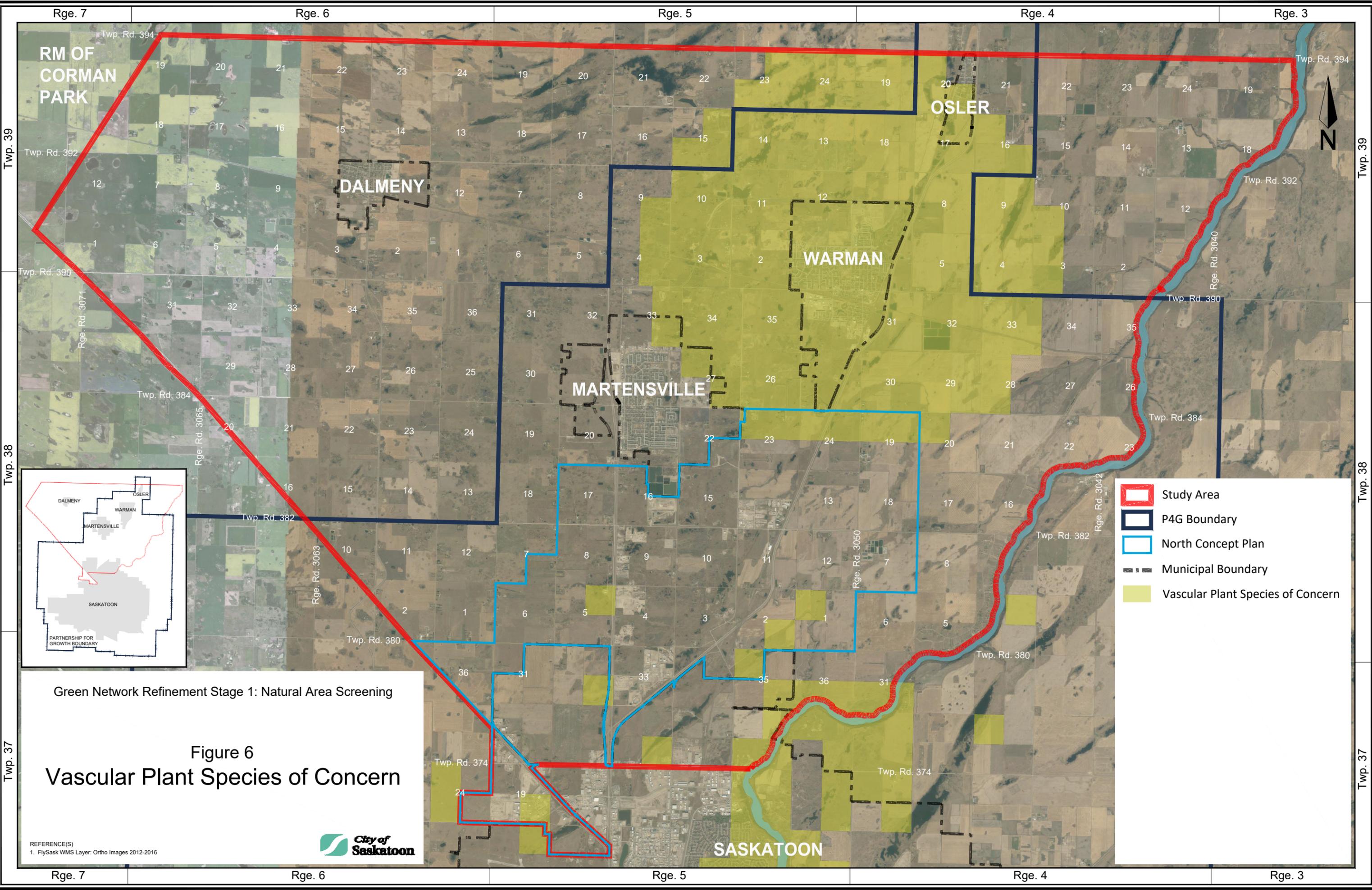
Soil Capability Class

-  Class 2
-  Class 3
-  Class 4
-  Class 6

REFERENCE(S)  
1. FlySask WMS Layer: Ortho Images 2012-2016  
2. Agriculture and Agri-Food Canada: Soils Capability



Rge. 7                      Rge. 6                      Rge. 5                      Rge. 4                      Rge. 3



RM OF  
CORMAN  
PARK

DALMENY

OSLER

WARMAN

MARTENSVILLE

SASKATOON

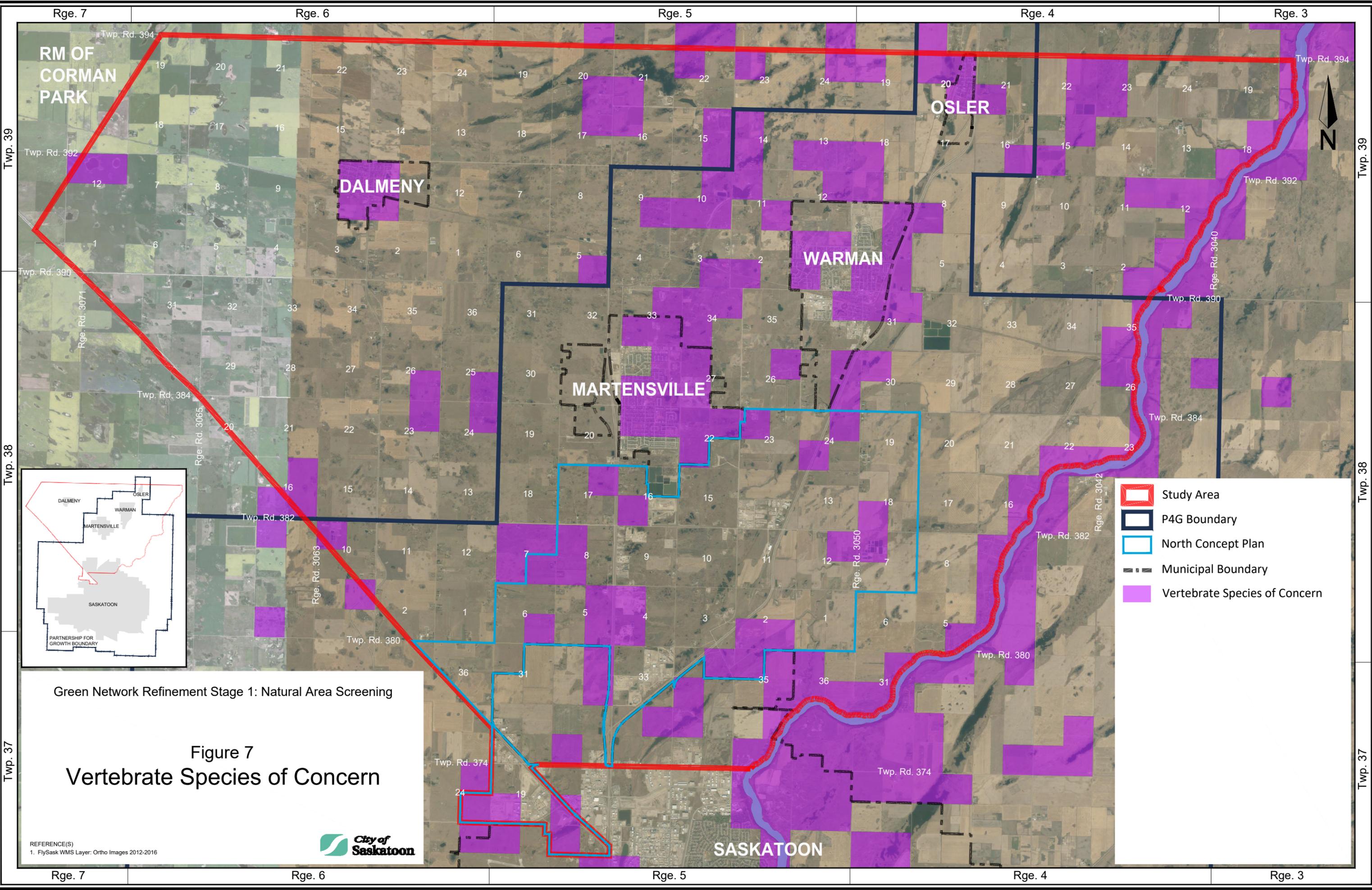
Green Network Refinement Stage 1: Natural Area Screening

Figure 6  
Vascular Plant Species of Concern



REFERENCE(S)  
1. FlySask WMS Layer: Ortho Images 2012-2016

-  Study Area
-  P4G Boundary
-  North Concept Plan
-  Municipal Boundary
-  Vascular Plant Species of Concern

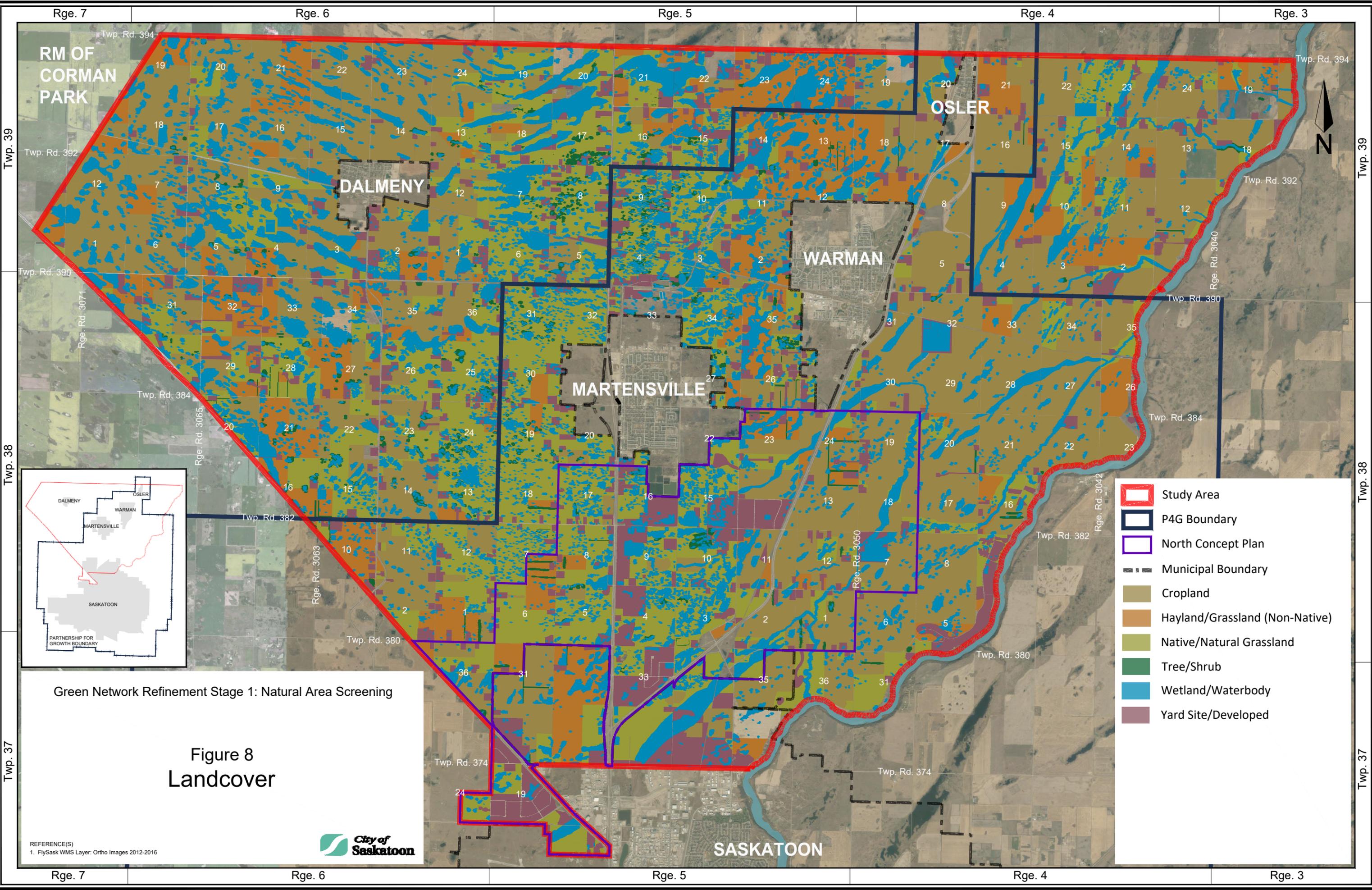


Green Network Refinement Stage 1: Natural Area Screening

Figure 7  
Vertebrate Species of Concern

REFERENCE(S)  
1. FlySask WMS Layer: Ortho Images 2012-2016





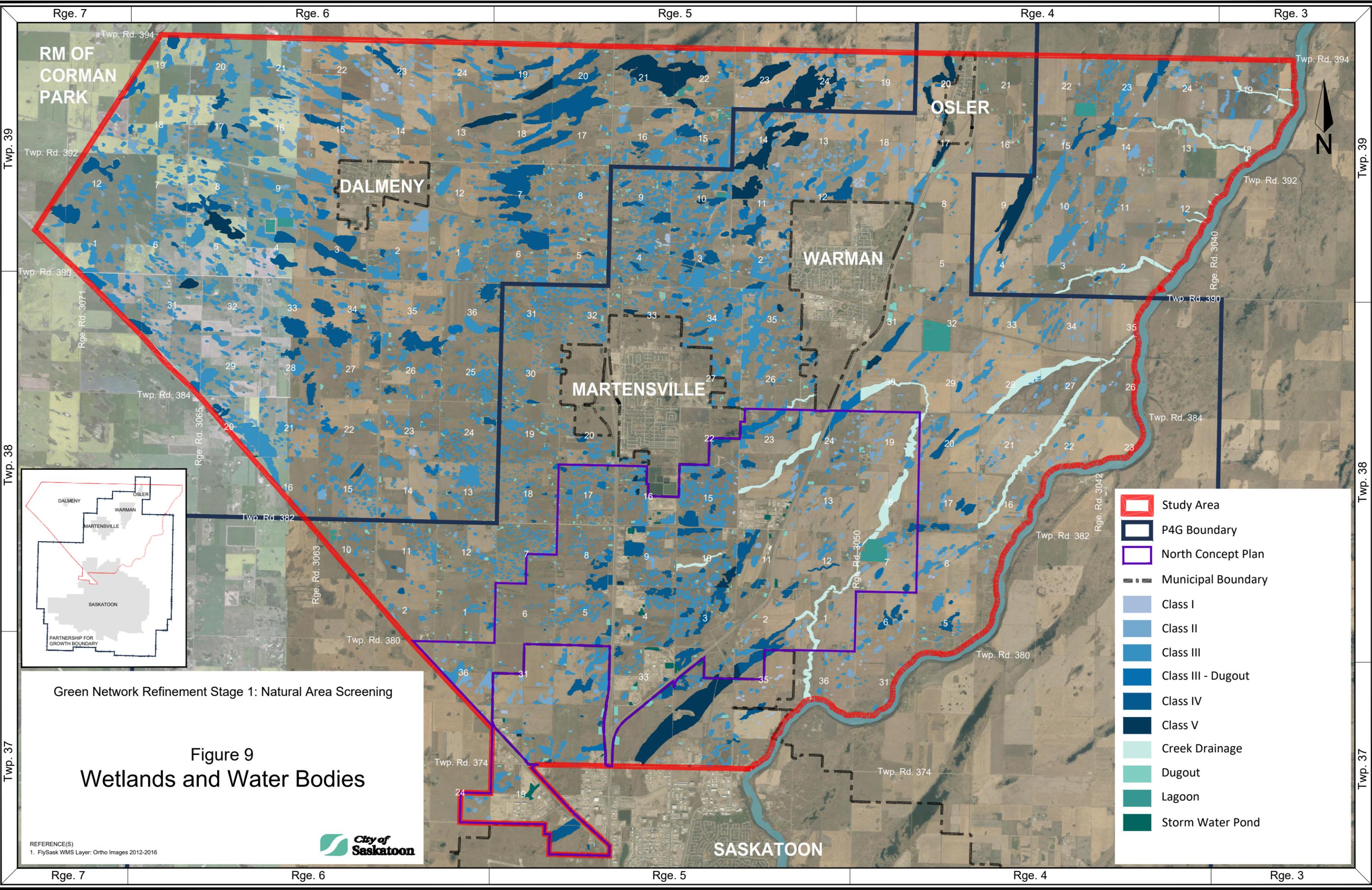
Green Network Refinement Stage 1: Natural Area Screening

Figure 8  
Landcover

REFERENCE(S)  
1. FlySask WMS Layer: Ortho Images 2012-2016



SASKATOON



Green Network Refinement Stage 1: Natural Area Screening

Figure 9  
Wetlands and Water Bodies



REFERENCE(S)  
1. FlySask WMS Layer: Ortho Images 2012-2016

- Study Area
- P4G Boundary
- North Concept Plan
- Municipal Boundary
- Class I
- Class II
- Class III
- Class III - Dugout
- Class IV
- Class V
- Creek Drainage
- Dugout
- Lagoon
- Storm Water Pond

## Appendix 1 - Photos

**May 10, 2019**



Photo 1: Looking east at a permanent Class V wetland in NW 27-37-05 W3M.



Photo 2: Looking southwest at a permanent Class V wetland in the E ½ of 28-37-05 W3M. A listed species, Horned Grebe, was observed at this location on May 10, 2019.



Photo 3: Looking south at a semi-permanent creek, Opimihaw Creek, from Penner Road, north of Wanuskewin Heritage Park in NW 36-37-04 W3M.



Photo 4: Looking north at a semi-permanent creek, Opimihaw Creek, from Penner Road, north of Wanuskewin in SW 01-38-04 W3M.



Photo 5: Looking south at a semi-permanent creek in the road ditch and a tilled wetland considered part of the Green Network in NW 07-38-04 W3M. Located north of a lagoon system in NW 07-38-04 W3M.



Photo 6: Looking west at a Class III wetland in SE 17-38-04 W3M.



Photo 7: Looking north at a creek/drainage in S ½ 27-38-04 W3M.



Photo 8: Looking northeast along a semi-permanent creek/drainage in a natural valley connected to the South Saskatchewan River in NW 26-38-04 W3M.



Photo 9: Looking southwest along a semi-permanent creek/drainage in NE 27-38-04 W3M.



Photo 10: Looking west-southwest along a semi-permanent creek/drainage in NE 27-38-04 W3M.



Photo 11: Looking northeast along a semi-permanent creek/drainage in a natural grassland valley connected to the South Saskatchewan River in NW 26-38-04 W3M.



Photo 12: Looking west at a dugout and creek/drainage in SE 03-39-04 W3M.



Photo 13: Looking east at a Class III wetland in NW 02-39-04 W3M.



Photo 14: Looking east at native/natural grassland with shrubs in NW 11-39-04 W3M.



Photo 15: Looking east at a large Class IV in SW 20-39-05 W3M.



Photo 16: Looking west at a newly constructed dugout in SE 19-39-05 W3M.



Photo 17: Looking east at a large Class IV wetland in NW 17-39-05 W3M.



Photo 18: Looking north at development expanding in hayland on the east side of the City of Martensville in SE 27-38-05 W3M.



Photo 19: Looking south at a dugout on the edge of a Class III wetland in NE 23-38-05 W3M.

**July 2, 2019**



Photo 20: Looking north at native/natural grassland used as pasture in SW 29-38-05 W3M, north of Mierau Road, west of Martensville.



Photo 21: Looking south at native/natural grassland and shrubland used as pasture in NW 20-38-05 W3M, south of Mierau Road, west of Martensville.



Photo 22: Looking east at native/natural grassland and shrubland used as pasture in NW 20-38-05 W3M, west of Martensville.



Photo 23: Looking southeast at native/natural grassland and shrubland used as pasture in NW 20-38-05 W3M, west of Martensville.



Photo 24: Looking east at native/natural grassland used as hayland in NW 08-38-05 W3M. A listed bird species, Sprague's pipit, was observed at this location on July 2, 2019.



Photo 25: Looking east at native/natural grassland used as pasture in NE 07-38-05 W3M. A listed bird species, Sprague's pipit, was observed at this location on July 2, 2019.



Photo 26: A listed species of concern, Loggerhead shrike, was observed near yard sites in SW 08 and SE 07-38-05 W3M on July 2, 2019.



Photo 27: Looking west at a patch of native/natural grassland and shrubs in NE 06-38-05 W3M surrounded by grassland used as hayland.



Photo 28: Looking west at native/natural grassland with shrubs used as pasture in NW 07-38-05 W3M.



Photo 29: Looking east at a Class III wetland west of Dalmeny in NW 10-39-06 W3M. The wetland is located in cropland, is partially tilled, and supports trees and shrubs.



Photo 30: Looking west at a large Class III wetland east of Fleming Road in SE 06-39-06 W3M. Wetland supports trees and shrubs, but was dry in July 2019.



Photo 31: Looking east at a large Class III, seasonal wetland with willows in hayland in SW 05-39-06 W3M.



Photo 32: Looking southeast at a large Class III wetland in the N ½ of 12-39-07 W3M.



Photo 33: Looking east at a large Class IV wetland in NW 15-39-06 W3M. The wetland was partially dry at the time of the survey.



Photo 34: Looking southeast at a large Class IV wetland in NW 23-39-06 W3M.



Photo 35: Looking south at a large Class IV wetland located east of Dalmeny in NE 11-39-06 W3M.



Photo 36: Looking southwest at a large Class III wetland in trees in NE 14-39-06 W3M.



Photo 37: Looking south at a large Class IV wetland in the N ½ of 07-39-05 W3M.

## Appendix 2 - Natural Area Screening Process Guide – City of Saskatoon

### What is a Natural Area Screening?

A Natural Area Screening (Screening) is a study that is used to develop a better understanding of the natural, cultural, and historical assets that are present within an area of land scheduled for development.

When is a Screening required? A Screening is required for all Sector Plans and Area Concept Plans. One may also be required for larger infill developments or other significant public space alterations that may not have, or require, an Area Concept Plan. For these cases, a Screening may be required if the site is:

- larger than one hectare and has a significant amount of site area consisting of greenspace, natural assets (grasses, flowering plants, trees, or other woody vegetation), wetlands; or natural characteristics that may house wildlife; or
- if it is contained on the City of Saskatoon's (City) Natural Areas Inventory.

If a Screening is required, it should be completed early in the process of planning for an area as it could provide significant direction regarding how and where development can occur.

If unsure if the project requires a Screening, contact the City's Development Review Section (Development Review) at 306-975-2645.

### What information needs to be included in a typical Screening?

A typical Screening will document and inventory the current environmental conditions of the area to be developed. In general, the study will look at the physical environment (soil, ground, and surface water), ecological conditions (including habitat), and current land uses.

A Screening will also document any items of cultural or historical significance within the area.

### What level of detail is required?

The anticipated time frame for construction and the type of plan being developed will determine what level of detail is required at various stages of development.

A **Desktop Screening** is a high-level overview of the area to be developed, typically completed via analysis of air photo or satellite imagery, which includes:

- general physical environment, including surface and subsurface soil and water types/conditions;
- identification and description of any unique natural assets in the study area;
- land use classifications (Southern Digital Land Cover, Agri-Food Canada Annual Crop Inventory are commonly used);
- land with legal designations (Agricultural Crown, Conservation Easements, etc.);
- vegetation characterizations, including habitat suitability for rare or protected species, and results of database searches that include: the Saskatchewan Conservation Data Centre's HABISask Database, iNaturalist, eBird, and iMapInvasives Saskatchewan;

- wildlife characterizations, including habitat suitability for rare or protected species that may inhabit or migrate through the area, and the results of database searches that include: the Saskatchewan Conservation Data Centre's HABISask Database, iNaturalist, eBird, and iMapInvasives Saskatchewan;
- Wetland Inventory using the Stewart and Kantrud Wetland Classification System;
- identification and description items of archeological or historical significance;
- environmental regulatory requirements linked to the findings of the screening;
- recommendations regarding any required future studies, buffers or other mitigation and conservation measures, and monitoring or other land management measures; and,
- additional information deemed to be of importance by the qualified professional that is hired to complete the study.

A Desktop Screening would typically be the required level of detail for a Sector Plan or other situation where development is not expected to occur in the immediate future.

A Field Screening is a more detailed assessment of the area, or a specific asset, that builds upon the findings of a Desktop Screening with fieldwork. The additional information to be collected includes:

- ground-truthing of land use classifications;
- field survey for protected vegetation and wildlife;
- field survey for migratory species;
- field survey for invasive species;
- a functional assessment of Stewart and Kantrud Class 3,4, and 5 wetlands using the Minnesota Routine Assessment Method for all high value wetlands identified in the desktop assessment;
- environmental regulatory requirements linked to the findings of the screening;
- recommendations regarding any required future studies, buffers or other mitigation and conservation measures, and monitoring or other land management measures; and
- additional information deemed to be of importance by the qualified professional that is hired to complete the study.

A Field Screening would typically be the required level of detail for an Area Concept Plan or for when a Screening is required for an infill proposal.

### **Important Notes:**

- If an asset of high value is known prior to the completion of a Desktop Screening, or is discovered during the completion of a Desktop Screening, the City may require more frequent monitoring of that asset throughout the development process.
- Field surveys may require more than one growing season to complete depending upon habitat types and time of year that the screening is initiated. Be sure to allow adequate time (one to two years) for completion of a thorough screening prior to the anticipated need for Concept Plan approval.
- If development is proceeding at a fast pace, developers may choose to conduct both the Desktop and Field Screening at the same time.
- Results of both the Desktop and Field Screening, along with any monitoring results, must be shared with the City.
- Monitoring results must be shared with the Saskatchewan Conservation Data Centre.

### **Who can complete a Screening?**

A Screening must be completed by a third party qualified environmental professional who specializes in terrestrial and aquatic biology, as well as heritage resources, and has experience in conducting a Screening.

### **What do I need to know before I hire someone to complete a Screening?**

Developers are encouraged to consult with the City to discuss the area to be developed, the anticipated development schedule, and any special assets that have already been identified prior to hiring someone to complete a Screening. The City can provide any background information already publicly available for the area and advise which type of Screening is needed.

Contact Development Review (306-975-2645) to initiate this process.

### **How long is a Screening valid?**

Habitats and land uses change over time, so the information captured by a Screening can lose value if there is a delay in development. In general, information captured by a Screening is considered valid for a period of five years.

If existing information is over five years old at any stage of development, the City may require an additional Screening or more frequent monitoring to supplement or replace existing information. The City will consider whether ongoing monitoring of the study area has been taking place to determine whether an additional Screening is required.

### **Does the City need to review the Screening before it is considered complete?**

Please submit the draft Screening to Development Review prior to finalization. Development Review will circulate the document to relevant City staff who will review and provide comments on the draft document. Once the draft Screening has been reviewed and all comments have been addressed, Development Review will provide written notification that the Screening has been accepted and can be considered complete.

The completed Screening is required to be submitted to the City as part of the development approval application.

### **Who provides notification that the Screening has been accepted?**

Notification that a Screening has been accepted will be provided to the proponent by Development Review.

### **What is the process for responding to inquiries and providing technical advice to developers?**

The City's Sustainability Division is considered the City's technical experts regarding the content of a Screening. Staff from the Sustainability Division can provide advice and/or respond to inquiries from a proponent, but these responses and discussions will occur in coordination with Development Review staff. Any official direction or approvals will be provided through Development Review.

**How long does it take for the City to review a Screening?**

The length of review can depend on the complexity of the report and size of the study area. Typically, it can be expected for an initial review to take three to four weeks.

**What happens if a land owner within a development area denies access?**

A Desktop Screening should be able to be completed without having access to all land within a development area. If a Field Screening is required, access to all land in a development area may be required. If access is not granted, it may impact the approval of the development proposal.

## Appendix 3 – Acknowledgments

Natural areas and heritage sites are important components of the landscape, as they represent the habitat, ecosystems, past history, and culture of the P4G and surrounding region. Knowledge of where natural areas and heritage sites reside on the landscape will allow the P4G partners to make informed decisions about the location and design of development within the P4G area and surrounding region. We would like to thank the following individuals for their feedback, expertise, and assistance throughout this project:

### Project Team

Michael Hill (Special Projects Manager – Natural Areas)  
 Amy Wheeler (Environmental Coordinator)  
 Moe Al-Mahdawe (Project Manager)  
 Twyla Yobb (Environmental Protection Manager)

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 Dana Kripki (Senior Planner II, Planning and Partnerships)  
 Tyson McShane (Acting Manager, Long Range Planning)  
 Jeanna South (Director, Sustainability)

### Project Support

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 Anna Cole (Design Engineer)  
 Ken Dahl (Assistant City Archivist)  
 Hossein Azinfar (Hydrotechnical Engineering Specialist)  
 Nisar Kahn (Planning and Design Engineer)  
 Melanie Laine (Sustainability Division Secretary)  
 Danae Taylor (Planning Technologist – Mapping and Research)

### P4G Partners – Planning and Administration Committee (PAC)

Neal Sarnecki (Director, Saskatoon North Partnership for Growth)  
 Sheila Crawford (Town of Osler)  
 Bonnie Gorelitz (City of Martensville)  
 Laura Hartney (City of Saskatoon)  
 Vicky Reaney (R.M. of Corman Park)  
 Rebecca Row (R.M. of Corman Park)  
 Brad Toth (City of Warman)