

# MANITOBA-MINNESOTA TRANSMISSION PROJECT

## Socio-Economic Technical Data Reports

### 2.2 Socio-Economic and Land Use



**Manitoba-Minnesota  
Transmission Project  
Socio-economic and Land  
Use Environment – Technical  
Data Report**

FINAL REPORT



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## Sign-off Sheet

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MANITOBA-MINNESOTA TRANSMISSION PROJECT  
SOCIO-ECONOMIC AND LAND USE ENVIRONMENT – TECHNICAL DATA REPORT

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### Abbreviations

AAC	Annual Allowable Cut
AANDC	Aboriginal Affairs and Northern Development Canada
AAFC	Agriculture and Agri-Food Canada
AC	Alternating Current
ASI	Area of Special Interest
ATV	All-Terrain Vehicle
BRHC	Bethesda Regional Health Centre
CCHS	Canadian Community Health Survey
CDEM	Western Economic Diversification Canada
CEC	Clean Environment Commission
CHRS	Canadian Heritage Rivers System
CN	Canadian National Railway
CPR	Canadian Pacific Railway
CRWC	Cartier Regional Water Cooperative
CTA	Community Tripartite Agreement
dam <sup>3</sup>	cubic decameter
DUC	Ducks Unlimited Canada
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMS	Emergency Medical Services
EPRI-GTC	Electric Power Research Institute – Georgia Transmission Corporation

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## SOCIO-ECONOMIC AND LAND USE ENVIRONMENT – TECHNICAL DATA REPORT

FMU	Forest Management Unit
FNIHB	First Nations and Inuit Health Branch
FNFNES	First Nations Food, Nutrition and Environment Study
FRI	Forest Resource Inventory
GBHZ	Game Bird Hunting Zone
GHA	Game Hunting Area
GI	Gastrointestinal
GNR	Global Non-response Rate
GPM	Gallons Per Minute
GWWD	Greater Winnipeg Water District
ha	hectare
IRA	Indian Registry Administrator
km	Kilometre
KPI	Key Person Interview
LAA	Local Assessment Area
LCC	Landscape Character Classes
m	metre
MB AAA	Manitoba Aerial Applicators Association
MAFRD	Manitoba Agriculture Food and Rural Development
MASC	Manitoba Agriculture Services Corporation
MCR	Manitoba Capital Region
MCWS	Manitoba Conservation Water Stewardship
MIT	Manitoba Infrastructure and Transportation



# MANITOBA-MINNESOTA TRANSMISSION PROJECT

## SOCIO-ECONOMIC AND LAND USE ENVIRONMENT – TECHNICAL DATA REPORT

MLI	Manitoba Land Initiative
MMTP	Manitoba-Minnesota Transmission Project
MTS	Manitoba Telecom System Inc.
NCC	Nature Conservancy of Canada
NEB	National Energy Board
NHS	National Household Survey
NPA	<i>Navigation Protection Act</i>
OTA	Open Trapping Areas
PAI	Protected Areas Initiative
PDA	Project Development Area
PEP	Public Engagement Process
PMR	Premature Mortality Rate
PR	Provincial Road
PTH	Provincial Trunk Highway
PVWC	Pembina Valley Water Cooperative
RAA	Regional Assessment Area
RHA	Regional Health Authority
RHS	Regional Health Survey
RM	Rural Municipality
ROW	Right-of-Way
RVTC	Riel to Vivian Transmission Corridor
SLTC	Southern Loop Transmission Corridor
sq. km.	square kilometer

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## SOCIO-ECONOMIC AND LAND USE ENVIRONMENT – TECHNICAL DATA REPORT

SRGMP	Southeast Regional Groundwater Management Plan
STARS	Shock Trauma Air Rescue Society
STI	Sexually Transmitted Infection
TCPL	TransCanada Pipelines
TCT	TransCanada Trail
TDR	Technical Data Report
US	United States
UV	ultraviolet
VSC	Visual Sensitivity Class
WMA	Wildlife Management Area

# MANITOBA-MINNESOTA TRANSMISSION PROJECT

## SOCIO-ECONOMIC AND LAND USE ENVIRONMENT – TECHNICAL DATA REPORT

Introduction  
September 2015

### 1.0 Introduction

#### 1.1 PURPOSE

The purpose of the Socio-economic and Land Use Technical Data Report (TDR) is to describe the existing socio-economic and land use conditions in the vicinity of the Project. This TDR describes how information was gathered through desktop research, key person interviews (KPIs) and field studies (where applicable). Results are reported and summarized to provide an overview of existing conditions for the socio-economic and land use environment and to support the EIS.

In this report, socio-economic and land use consists of: infrastructure and services; employment and economy; agriculture; land and resource use; visual quality; and community health and well-being. Separate technical reports have been prepared for traditional land and resource use and heritage resources components.

The report is organized as follows:

- Introduction – provides a general overview of the background on the Project, purpose and scope of the report and overview of the study area.
- Overview of Environmental Assessment – provides a summary of socio-economic topics (Section 2.1); describes the valued components selected for socio-economic and land use (Section 2.2); and identifies the spatial boundaries used to collect and analyze data for the Project (Section 2.3).
- Methodology – describes the data sources (Section 3.1.1), field studies undertaken (3.1.2), general literature review (Section 3.1.3), including effects of transmission line development on property value, data limitations (Section 3.1.4); describes primary research (*i.e.*, KPIs, data requests) to supplement desktop research (Section 3.2); and describes analysis undertaken, including analytical methods, for the selected socio-economic valued components (Section 3.3).
- Baseline conditions – describes baseline conditions for the Project regional assessment area (RAA)(Section 4.1) for population (Section 4.2); infrastructure and services (Section 4.3); employment and economy (Section 4.4); agricultural land use (Section 4.5); land and resource use (Section 4.6); and community health and well-being (Section 4.7), including visual quality (Section 4.7.2).
- Environmentally Sensitive Sites – identifies the environmentally sensitive sites identified for the Project for socio-economic valued components (Section 5.0 and Appendix G).
- Summary – provides a summary overview of the technical data report sections.

# MANITOBA-MINNESOTA TRANSMISSION PROJECT

## SOCIO-ECONOMIC AND LAND USE ENVIRONMENT – TECHNICAL DATA REPORT

Introduction  
September 2015

### 1.2 BACKGROUND

#### 1.2.1 Project Overview

Manitoba Hydro is proposing construction of the Manitoba-Minnesota Transmission Project (MMTP) which includes construction of a 500 kV AC transmission line in southeastern Manitoba. The proposed Project would originate at the Dorsey Converter Station northwest of Winnipeg, then travel south around Winnipeg within planned utility corridors including the Southern Loop Transmission Corridor (SLTC) and the Riel to Vivian Transmission Corridor (RVTC) to just east of Provincial Trunk Highway (PTH) 12. The line then continues southward across the rural municipalities of Springfield, Tache, Ste. Anne, La Broquerie, Stuartburn and Piney to the Manitoba-Minnesota border crossing located south of the community of Piney. The project also includes the construction of terminal equipment at the Dorsey Converter Station, and electrical upgrades within the Dorsey and Riel converter stations, and modifications at the Glenboro South Station requiring re-alignment of transmission lines entering the station.

#### 1.2.2 Project Region

The Project region is defined by Rural Municipalities (RMs) that are traversed by the Project (transmission line right-of-way [ROW]) or otherwise affected by development within a station footprint. The region is located in the southeastern part of southern Manitoba (Map 1-1 Socio-economic Assessment Area).

The final preferred route originates at Dorsey near Rosser, MB and skirts the west and south sides of Winnipeg within the Existing Corridor to Riel near Deacon's Reservoir (see Map 1-1).

The route crosses the southern portion of Winnipeg (including census tracts 6020100.02 and 6020110.07) and the following RMs:

- RM of Headingley
- RM of La Broquerie
- RM of Macdonald
- RM of Piney
- RM of Ritchot
- RM of Rosser
- RM of South Cypress
- RM of Springfield
- RM of Ste. Anne
- RM of Stuartburn
- RM of Tache

The Project consists of three components: the existing transmission corridor, New ROW and stations. The existing transmission corridor consists of two corridors; the Southern Loop Corridor which traverses from Dorsey to southeast Winnipeg and the Riel-Vivian Corridor which traverses

# **MANITOBA-MINNESOTA TRANSMISSION PROJECT**

## **SOCIO-ECONOMIC AND LAND USE ENVIRONMENT – TECHNICAL DATA REPORT**

Introduction  
September 2015

from Riel eastward to south of Anola, MB. The New ROW will proceed southeast from south of Anola to the Manitoba-Minnesota border. The stations component includes modifications and expansion of the fenced station west of Dorsey, electrical upgrades within the Dorsey and Riel converter stations, re-alignment of transmission lines entering Glenboro South Station and expansion of the current switch yard at Glenboro South. The spatial boundaries for the Project are identified in Section 2.3.

# MANITOBA-MINNESOTA TRANSMISSION PROJECT

## SOCIO-ECONOMIC AND LAND USE ENVIRONMENT – TECHNICAL DATA REPORT

Overview of Environmental Assessment  
September 2015

## 2.0 Overview of Environmental Assessment

### 2.1 SOCIO-ECONOMIC TOPICS

Baseline information on the following socio-economic topics and why they are important to include are described:

- **Demographics** – population characteristics, population change and population density are important to establish and understand baseline conditions for the Project.
  - Includes: municipal population totals, trends in growth, population density and Aboriginal population and identity.
  - Importance –an understanding of demographics and trends in the Project area provide context for the assessment of infrastructure and services.
- **Employment and economy** – economy, business opportunities and employment are important to the livelihood of local residents and business owners.
  - Includes: local resident employment, short and long-term employment opportunities, labour force characteristics, including education and training; business opportunities, economic profiles, economic impacts; and income, education characteristics.
  - Importance – potential effects on employment and economy may result from project related expenditures and project demands. The potential to affect the availability of employable resources such as construction personnel and the potential to create business opportunities via demands for goods and services can result in changes to livelihood of local residents and business owners.
- **Infrastructure and services** –communities, governments, private organizations and residents, through their ownership, administration, or utilization provide the supporting structure for projects such as MMTP.
  - Includes: accommodations, emergency services (e.g., police and fire services), municipal services (e.g., water, wastewater and solid waste), roads, transportation (e.g., aviation) and utility infrastructure.
  - Importance – project-related demands may reduce available capacity or affect the ability of existing infrastructure and service providers to meet the baseline needs of the project region.
- **Agricultural land use** – important to operators and residents as part of their livelihood and way of life, in addition to the agricultural sector's importance to the local and provincial economies.
  - Includes: agricultural land cover type data; spatial distribution of crops grown; crop production values and location data for livestock operations including hog, dairy, chicken and broiler breeder, egg, turkey, cattle, bees and fish producing farms;
  - Importance – the project area includes a large proportion of agricultural land use and the project will occupy a portion of existing farmland. The presence of the project is anticipated to affect some agricultural operations as a result of limitations created by the project infrastructure and potentially create an economic effect for local producers.

# MANITOBA-MINNESOTA TRANSMISSION PROJECT

## SOCIO-ECONOMIC AND LAND USE ENVIRONMENT – TECHNICAL DATA REPORT

Overview of Environmental Assessment  
September 2015

- **Land and resource use** – numerous groups including property developers, municipal jurisdictions, the general public, recreational users, commercial operators, hunters, and trappers exercise various uses of land in the project region for a variety of commercial, industrial and cultural pursuits.
  - Land use and development controls include existing and proposed rural residential development, proximity to Project development; land use development plan and zoning by-law controls in place for affected municipal jurisdictions. It also includes perceived/actual property value changes as it relates to Project development.
  - Protected areas and potential protected areas includes areas valued by the general public and stakeholder groups as features that should be set aside to preserve portions of unique and/or sensitive habitat areas in their natural state.
  - Recreation and resource use includes information on trails, resorts and campgrounds, boating and fishing, tourism, trapping and hunting, mining and aggregates, peat, surface water and groundwater, productive forestland and high value forest sites.
  - Importance – baseline information on land use planning, property ownership, designated lands and protected areas, recreational land use and resource use is required to identify areas potentially directly affected by the project.
- **Community Health and Well-being** – human health, including physical, emotional and mental health, which contributes to well-being, is valued by individuals and communities. Similarly, public safety and aesthetics/visual quality are valued by the general public, including communities, residents and temporary users of an area as it relates to their well-being and sense of community and landscape enjoyment.
  - Community Health and Well-Being includes: human health stress, disease incidence, noise effects (*i.e.*, relative to sensitive receptors), electric and magnetic field effects, tingle and stray voltage effects, herbicide use and effects (*i.e.*, bio-accumulation), temporary worker – resident interactions, vandalism, worker safety, traffic and road safety and contingency events (*e.g.*, wildfires).
  - Importance – an understanding of the baseline capacity in healthcare infrastructure, and community health indicators is required to assess the relative effect of the project on community health and well-being.
- **Aesthetics/visual landscape** – includes: community identity, sense of place, landscape character changes, the recreation and tourism setting, affected sight lines, permanent changes to the landscape/pristine areas and proximity and viewshed effects.
  - Importance – an understanding of the baseline visual quality is required to assess the effect of the project on aesthetics and visual quality.

## 2.2 VALUED COMPONENTS

Based on issues identified during public engagement, past experience and professional judgment five socio-economic VCs were determined for inclusion in the environmental assessment (EA) for the Project. Table 2-1 presents the selected VCs, the corresponding NEB filing requirement element and topics to be addressed.

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**Table 2-1: Valued Component Selected for Socio-economics and Land Use**

Valued Component	NEB Filing Requirement	Topics to be Addressed
Infrastructure and Services	Infrastructure and Services	Transportation infrastructure (road, rail, oil and gas pipeline), road traffic volumes, aerodromes/airstrips, communication towers, solid waste landfills, lagoons, sewage/water treatment facilities, water supply lines, community services (fire, police)
Employment and Economy	Employment and Economy	Employment and economy (industry, employment, labour force, Gross Domestic Product (GDP), goods and services)
Agriculture	Human Occupancy and Resource Use	Cropping, pastures, livestock operations (beef, dairy, hog, etc.), manure spreading and injection, irrigation, aerial spraying, organic and artisanal farming, shelterbelts, soil capability for agriculture, Global Positioning System (GPS)/ technology usage in operations
Land and Resource Use	Human Occupancy and Resource Use	<p><i>Property and Development</i> – land tenure and ownership, Crown land/lessees, residential development, existing and proposed rural residential development, subdivisions (development plans, zoning by-laws), development potential of lands, property value</p> <p><i>Designated lands and protected areas</i> – parks, protected areas, proposed protected areas, wildlife management areas (WMAs), ERs, Provincial Forest Reserves)</p> <p><i>Recreation and Tourism</i> – recreational facilities (campgrounds, golf courses), recreational trails (multi-use, all-terrain vehicle (ATV), snowmobile), boating and navigation, lodges/ outfitters (hunting), tourism</p> <p><i>Forestry</i> – forest management, productive forest land, high value forest sites, private woodlots and shelterbelts</p> <p><i>Mining</i> – mining areas, quarry leases/ permits, aggregate deposits, peat operations</p> <p><i>Local resource use</i> – surface water/ groundwater use, hunting, trapping, fishing (commercial/recreational)</p>



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**Table 2-1: Valued Component Selected for Socio-economics and Land Use**

Valued Component	NEB Filing Requirement	Topics to be Addressed
Community Health and Well-being	Social and Cultural Well-being	Community health infrastructure and services (ambulance, hospitals), key health indicators, including stress and anxiety, health care services and capacity, Aboriginal health; visual resources, sensitive viewpoints, visual quality
<p>NOTE:</p> <p>Heritage resources as a valued component is dealt with separately within its own technical data report (Stantec); Human and ecological health (human health risk) as a valued component is addressed in technical data reports on air and noise (Stantec), and electric and magnetic fields (Exponent).</p>		

### 2.2.1 Infrastructure and Services

Infrastructure and services consists of potential effects on existing capacity and potential for Project-related interference. Infrastructure and services was selected as a VC because of the importance to community functioning. Some infrastructure components (e.g., highways) are protected legislatively (e.g., highways and roads are protected under the *Highways Protection Act*). Issues related to infrastructure and services were identified during Rounds 1 to 3 of the Public Engagement Process (PEP). Issues included minimizing the crossing of transmission lines, the long-term effects on municipal roads, and concerns about noise, dust and disruption of traffic.

### 2.2.2 Employment and Economy

Employment and economy consists of potential change in local employment, goods and services and economic activity. Employment and economy was selected as a VC because of the importance of employment and economic opportunities (e.g., jobs and business opportunities related to construction, operation and maintenance) to residents and business owners (e.g., through the purchase of goods and services) and contribution to the economy (i.e., gross domestic product, government revenue through tax generation) and regulatory guidance for the Project (i.e., the NEB electricity filing manual requirements).

### 2.2.3 Agriculture

Agriculture consists of potential effects to change in agricultural land use and agricultural-related activities. Agriculture was selected as a VC because of the importance of agriculture to local communities and the local/regional/provincial economy. Agricultural activity is protected by provincial land use planning legislation (e.g., *The Farm Practices Protection Act*), local development planning and zoning by-laws. Agriculture issues identified during public engagement included the loss of high-quality farmland and potential effects on:

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- aerial applicator airstrips
- farm equipment operation
- manure application
- aerial spraying applications
- livestock (tingle voltage on dairy cattle)
- animal health (e.g., anthrax)
- potential for noxious weed growth
- potential bio-security issues for both crops and livestock

### 2.2.4 Land and Resource Use

Land and resource use consists of potential effects to land and resource use related activities and potential for Project-related interference. Land and resource use was selected as a VC because of the importance of land and resource use to recreational and economic activities in the RAA and the potential of the transmission line to affect these activities. Manitoba Conservation and Water Stewardship (MCWS) and the NEB require land and resource use to be assessed. Components of land and resource use are regulated or protected under legislation (e.g., *The Provincial Parks Act*, *The Forestry Act* and *The Mines and Minerals Act*).

Land and resource use comprises the following:

- Land tenure, property ownership, residential development, proposed residential development and property value
- Designated lands and protected areas, areas of special interest (ASIs), ecological reserves, provincial parks, provincial forests, Wildlife Management Areas (WMAs), heritage rivers, community pastures, non-governmental conservation lands
- Recreation and tourism areas including trails (hiking, snowmobile, ATV), campgrounds, golf courses, recreational facilities, lodges, canoeing/navigation, attractions/museums, adventure/tourism sites
- Productive forest land, high value forest sites, private woodlots and shelterbelts
- Mining quarry sites/leases, aggregate sites/leases and peat sites/leases
- Groundwater and surface water use
- Trapping and hunting

Land and resource use issues identified during the engagement process included:

- Rural residential development and agro-industrial development
- Residences, farmsteads, school and daycare sites
- Property values
- Designated lands and protected areas
- Recreational areas, resource use areas, forestry and trapping

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### 2.2.5 Community Health and Well-being

Community health and well-being consists of health infrastructure and services (*i.e.*, hospital, ambulance); social economic health indicators; stress and anxiety; worker interactions, public safety and accidents; and Aboriginal health. Community health and well-being was selected as a VC because of the importance of physical, emotional and mental health to individuals and communities. Health is protected and managed through various legislations in Manitoba (*e.g.*, the *Public Health Act* and the *Workplace Safety and Health Act*). Visual quality is included within community health and well-being as it relates to the management of visual resources to support recreation and tourism experiences and the contribution to local residents' quality of life.

### 2.3 SPATIAL BOUNDARIES

Three spatial boundaries were established for the socio-economic valued components. The spatial scales selected to collect and analyze data for the Project consisted of the following:

- **Project Development Area (PDA):**
  - area of physical disturbance from Project activities, including the ROW (80-100 m) and station footprints.
- **Local Assessment Area (LAA):**
  - For population, infrastructure and services, economy, land and resource use and community health and well-being, the LAA includes the PDA and boundaries of all RMs traversed by the PDA (except for agricultural land use and visual quality assessment) which corresponds to an area where attributes of the land base and affected communities are prevalent. From north to south, the following RMs are included in the LAA: Rosser, Headingley, Macdonald, Ritchot, Springfield, Tache, Ste. Anne, La Broquerie, Stuartburn, Piney and South Cypress (for the Glenboro South Station component only). Communities within or outside the RMs with a reasonable likelihood of being used by the Project for their infrastructure and services are also considered.
  - For agricultural land use, the LAA consists of a 1 km buffer for the transmission line and 1 km buffer around all station footprints and includes all components of the PDA. The LAA for each of the transmission line and station components covers an area that generally will encompass the basic field management unit most commonly used within the Project region – the quarter section, or an area of land 800 m x 800 m
  - For the visual quality assessment, the LAA corresponds to lands with a potential foreground or midground view of the transmission line<sup>1</sup> within a 16 km corridor (8 km on either side of the Final Preferred Route). Construction and operation of the Project is expected to be most apparent at this distance (BC MOFR 1997, 2001).
- **Regional Assessment Area (RAA):**

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<sup>1</sup> For Visual Quality, the Dorsey and Riel Converter Stations and the Glenboro South Station were not assessed as the stations already exist and upgrades are anticipated to be minor enough to not further impact the aesthetics from surrounding viewpoints.

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- For population, infrastructure and services, economy, land and resource use and community health and well-being, the RAA is the same as the LAA.
- For agricultural land use, the RAA is the boundaries of all RMs traversed by the PDA. From north to south, the following RMs are included in the RAA: Rosser, Headingley, Macdonald, Ritchot, Springfield, Tache, Ste. Anne, La Broquerie, Stuartburn, Piney and South Cypress (for the Glenboro South Station component only).
- For the visual quality assessment, the RAA corresponds to the LAA plus the areas beyond with a potential view of the line, to a maximum extent of 15 km on either side of the Final Preferred Route. Spatial boundaries relative to visual quality are shown on Map 2-1 – Visual Quality Assessment Areas.

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### 3.0 Methods

This section covers data, sources, limitations and analysis for the following VCs:

- Infrastructure and services
- Economy
- Agriculture
- Land and resource use
- Community health and well-being (including visual quality)

#### 3.1 DATA AND SOURCES

Information on baseline conditions in the RAA was obtained from a variety of primary and secondary sources. Primary data collection included records of public engagement activities undertaken as part of the PEP for the Project (*i.e.*, open houses, stakeholder meetings) KPIs with identified stakeholders and data requests from government/groups/organizations as required (Section 3.2). Secondary sources included:

- Published reports.
- Statistical information (e.g., Manitoba Infrastructure and Transportation (MIT) traffic count data and traffic collision data).
- Published literature.
- Provincial government, local municipal and community websites.
- Local and community planning documents.
- Community profiles from community websites and Statistics Canada community profiles.
- Statistical data (e.g., Manitoba Bureau of Statistics, Statistics Canada Census 2006 and Census 2011, the National Household Survey (NHS) 2011, Statistics Canada Aboriginal Profiles Census 2006, Census 2011 and NHS 2011).
- Community health reports and data from regional health authorities.

##### 3.1.1 Information Sources by Socio-economic VC

Information sources are described within the following sub-sections by socio-economic VC.

###### 3.1.1.1 Infrastructure and Services

Sources of information used to characterize the baseline conditions for Infrastructure and Services in the RAA included the following:

- Statistics Canada census information and other statistical reports. This is the most comprehensive and reliable publicly-available source for population and demographic information. It also provides comparative statistics on other infrastructure and services indicators such as police strength.

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- Websites for infrastructure and service providers including temporary accommodations, fire, police, recreation, and utility providers. These sources provided overview information about the services available for each region.
- MIT highway traffic count data. This is the most comprehensive source for traffic volume data on Manitoba's provincial road network.
- Provincial government databases of transportation and utility infrastructure. These databases provide geographical information about the location and identification of various transportation and utility infrastructures including roads, railways, pipelines, transmission lines, aerodromes, and other infrastructures.
- Data requests were sent to RMs and to individual water, wastewater, and solid waste infrastructure providers to obtain information about the infrastructures available for each region, their capacity and usage details, and plans for future expansion.
- Data requests were also sent to temporary accommodations providers, Economic Development Offices, and Chambers of Commerce to obtain information about temporary accommodations including the number of units available, vacancy rates or busy seasons, and key capacity issues.

In addition, the following information sources were used to characterize the baseline population conditions in the RAA:

- Demographic information from:
  - Statistics Canada 2006
  - Statistics Canada 2011
  - NHS 2011
  - Statistics Canada Aboriginal Population Profile 2006
  - Statistics Canada Aboriginal Population Profile 2011
  - NHS Aboriginal Population Profile 2011
  - Aboriginal Affairs and Northern Development Canada (AANDC)

### 3.1.1.2 Economy

Source of information used to characterize the baseline conditions for Economy in the RAA included:

- Statistics Canada census information and other statistical reports. This is the most comprehensive and reliable publicly-available source for educational, labour force statistics and income and earnings. It also provides comparative statistics between census years.
- Websites including provincial, regional and community profiles. These sources provided overview information on the provincial, regional and local economy, GDP and key industry sectors present in the RAA.
- Provincial and RM government databases provided insight on employment and economic trends. This included RM finances, GDP and key industry sectors in the RAA.

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- Data requests were sent out and KPIs were conducted to obtain information not available from the previous sources mentioned.

In addition, the following information sources were used to characterize the baseline employment and economic conditions in the RAA:

- Statistics Canada 2006 and 2011
- NHS 2011
- Statistics Canada Aboriginal Population Profile 2006 and 2011
- NHS Aboriginal Population Profile 2011
- Government and local municipal and community websites
- Province of Manitoba Economic Highlights, Economy and Unemployment rates
- Western Economic Diversification Canada (CDEM)
- Manitoba Capital Region (MCR) Regional and Community Profiles
- RM and community websites
- Personal communications and KPIs

### 3.1.1.3 Agriculture

Sources of information used to characterize the baseline conditions for Agriculture included:

- Desktop data compiled using publicly available information:
  - Existing soil resource information was obtained from the Manitoba Agricultural Interpretation Database (SoilAID) (Manitoba Land Initiative [MLI] 2014), which is a digital repository for provincial soil survey data in Manitoba. The portion of the database used to provide soil resource information for the Project area is based on information contained in multiple soil survey reports which cover the Project area.
  - Land cover classification database (EOSD-NRCAN 2001).
  - Crop variety yield data for 2009 to 2014 (Manitoba Agricultural Services Corporation 2015).
  - Agriculture and Agri-Food Canada (AAFC) crop inventory for 2009 to 2014 (Government of Canada 2015).
  - Agriculture land use statistics by RM from Census of Agriculture data for Manitoba (Statistics Canada 2011).
- Livestock operations location data obtained from agricultural representative groups and provincial government departments:
  - Manitoba Pork Council hog operations location data (Thorlacius 2015, pers. comm.).
  - Dairy Farmers of Manitoba dairy farm operations location data (Achtemichuk 2015, pers. comm.).
  - Manitoba Chicken Producers chicken and broiler-breeder operations location data (Armstrong 2015, pers. comm.).
    - o Egg and pullet operations data (Ryback 2015, pers. comm.).

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- o Manitoba Food and Rural Development (MAFRD) information about apiaries in RMs traversed by the Project (Lafrenière 2015, pers. comm.).
- Licensed irrigation projects (location data for points of diversion) within the Project RAA provided by MCWS (2015).
- Buildings inventory based on existing buildings data (Manitoba Hydro 2014a) combined with windshield surveys conducted by Manitoba Hydro, and visual analysis of 2014 Google Earth imagery.
- Aerial photo review (MLI 2009, 2010, 2011).
- Personal communications and KPIs.

Statistics Canada's agricultural statistics data provided the context for agriculture's importance in the RAA relative to the province.

The MLI (2014) soils database provided soil and landscape information, including the Canada Land Inventory (1969) agricultural capability classifications for the RAA. Agricultural capability classification is an indicator of the inherent capability of the soil-landscape to support agricultural production. Together with the federal land cover classification database, Manitoba Agriculture Services Corporation (MASC) crop values and federal spatial distribution of crops database, it was used to determine areas of high-value crop production versus more marginal lands, and provided the areal basis for calculations of crop production values within the assessment areas. The compaction risk data generated by the study team using soil texture and drainage ratings showed the extent of identified areas that might be at a high risk of compaction during Project construction and operation and maintenance. The compaction risk data can form part of the basis for compensation to landowner/producer where the rehabilitation work for soil compaction requires farm machinery and the expertise of the landowner (construction damage compensation (Manitoba Hydro n.d.)).

Location data (*i.e.*, GPS coordinates or legal land location) was provided for hog, dairy and broiler chicken and broiler-breeder operations by the respective industry associations. Industry associations representing beef, egg and turkey producers did not provide livestock operation location data, citing member confidentiality reasons. Manitoba Egg Farmers and Manitoba Turkey Producers provided number of operations by RM or town while MAFRD provided number of beekeeping operations by RM. Other livestock operations (*e.g.*, cattle farms, cattle feedlots and equine operations) were identified, to the extent possible, based on a review the building inventory layer (Manitoba Hydro 2014a) and aerial photos (MLI 2009, 2010, 2011). Information from the PEP and KPIs was used to further strengthen the confidence in the livestock operation location database. Following their review of the Final Preferred Route, Manitoba Beef Producers broadly indicated that the New ROW might traverse or be close to some cattle producers' operations (Cousins 2015, pers. comm.). The occurrence of cattle operations in the Project LAA was confirmed through the above-mentioned building inventory layer and aerial photo reviews.



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### 3.1.1.4 Land and Resource Use

Sources of information used to characterize the baseline conditions for land and resource use are identified below:

- Property ownership and development:
  - Development plans and zoning by-laws.
  - Crown land information (*i.e.*, encumbrances and operational land use codes).
  - Municipal development policies and land development potential (*i.e.*, intensification).
  - ReproMap Property Ownership Maps for information on property ownership patterns, Crown land, Crown-leased land, communities, linear infrastructure features, land area designations (*i.e.*, ecological reserves, WMAs, provincial forests).
- Designated Lands and Protected Areas:
  - Government department websites (*i.e.*, Manitoba Protected Areas Initiative (PAI), Parks and Natural Areas Branch).
  - GIS database and spatial attribute data on provincial forests, WMAs, wildlife refuges, provincial parks/national parks, provincial Crown lands, private conservation lands (*e.g.*, Ducks Unlimited [DUC] and Nature Conservancy of Canada [NCC]), ecological reserves (including proposed areas), protected area lands (including proposed areas) and ASI.
- Recreation and Tourism:
  - Recreational non-governmental organization websites (*e.g.*, Trails Manitoba, SnoMan, campgrounds, AtvMB, etc.).
  - MCWS, Wildlife and Ecosystem Protection Branch.
  - Travel Manitoba website.
  - GIS database, spatial attribute data and spreadsheet data compiled on high value use areas (campgrounds and resorts), recreational areas, wildlife viewing, hiking trails, ATV trails and snowmobile trails and shelters.
  - Personal communications and KPIs.
- Forestry:
  - Manitoba Conservation Forestry Branch for information on productive forestland, private forest land, Annual Allowable Cut (AAC), standing timber, high value forest site data, enhanced silviculture sites, research and monitoring sites.
  - Forest resource inventory (FRI) for forest management planning and data on yield curves by forest strata.
  - GIS database and spatial attribute data on forest fire, timber harvest depletion and plantations, data on timber sales and timber permits, wood supply analysis reports, research and monitoring sites, woodlots and tree planting points.
  - Photo interpretation for private land shelterbelts.
- Mining/Aggregates:
  - Mining Resource Branch for mineral dispositions, mineral leases, quarry leases, quarry permits, quarry withdrawal areas, mining areas, peat and aggregate resources.
  - GIS database and spatial attributes data.
- Surface Water and Groundwater Use:

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- MCWS for surface water and groundwater licenses, groundwater well locations, purpose/type of use (*i.e.*, industrial, agricultural, domestic, other).
  - GIS database and spatial attributes data for information on locations, source, type of use and quantity.
- Hunting, Trapping and Fishing:
  - Manitoba Conservation Wildlife Branch.
  - Travel Manitoba website.
  - Manitoba Conservation Regional Offices and MCWS.
  - Provincial government and municipal government and organization websites (*e.g.*, MCWS Wildlife Branch).
  - Provincial trapping, hunting and angling guides.
  - Game hunting license records.
  - GIS database and spatial attribute data (*i.e.*, open trapping areas (OTAs), game hunting areas (GHAs).

### 3.1.1.5 Community Health and Well-Being

Sources of information used to characterize the baseline conditions for community health and well-being consisted of the following:

- Community Health Services and Infrastructure:
  - Regional Health Authority and Manitoba Health websites for health care infrastructure (hospitals and health clinics, mental health and wellness services, public health services, environmental health services, emergency medical response services [ambulance]) and general health conditions of the population (infectious diseases, stress and anxiety, injury, food security, diet and nutrition and Aboriginal health);
  - Federal census data from Statistics Canada;
  - Aboriginal population data from AANDC;
  - Data from the Canadian Community Health Survey (CCHS), Statistics Canada;
  - Health care information from the Regional Health Authority websites;
  - Issue-specific studies and reports produced by the Government of Manitoba, the Manitoba Centre for Health Policy, the Assembly of Manitoba Chiefs and the Manitoba Metis Federation;
  - Peer-reviewed research literature;
  - KPI information.
- Visual Quality:
  - Existing public engagement activities undertaken by Manitoba Hydro (*i.e.*, records of Rounds 1, 2 and 3 open houses, stakeholder meetings);
  - Previous Manitoba Hydro EAs related to transmission lines ;
  - Hardcopy maps.

This information was reviewed to identify concerns related to visual quality and to identify viewpoints of potential concern to community members, stakeholders and Aboriginal

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groups. A review of relevant visual quality and visual preference literature was undertaken to review existing legislation, regulations, land use management and policy direction related to visual quality.

### 3.1.2 Field Studies

Field studies conducted for the Project included:

- Driving field survey to confirm residences and building types and facilities.
- A helicopter survey was undertaken in January 2015 along the alternative routes to further characterize the forestry component given the absence of private forest land value data in the RAA.
- Field investigation of visual quality receptor sites was undertaken in November 2014 (see Section 3.3.6.1).

### 3.1.3 General Literature Review

Previous EA studies and literature on transmission line projects were reviewed to gather socio-economic and land use-related information to ensure potential effects associated with transmission line infrastructure development were considered. The following EAs were reviewed:

- St. Vital Transmission Complex EA.
- Bipole III Reliability Improvement Project EIS.
- Glenboro-Rugby-Harvey 230 kV International Transmission Project EIS.

During the PEP, members of the general public expressed concern regarding the effects that transmission lines may have on property values. Therefore a literature review was undertaken in regards to potential effects of transmission lines on property values. Results of the review are provided in Appendix A.

#### 3.1.3.1 Effects of Transmission Line Development on Property Value

Literature was reviewed on the effects of transmission line development on property value. The reviewed literature focused on published studies and peer reviewed journal sources. Summary conclusions of the literature review on property value and transmission line development are presented in Section 4.6.3.3. The studies reviewed from the literature are presented and discussed further in Appendix A.

### 3.1.4 Data Limitations

Limitations to administrative boundardies are as follows:

- The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypress

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Limitations to the use of Census data are as follows

- The long form for reporting was voluntary for the 2011 census and NHS survey, which affected the global non-response rates<sup>2</sup> (GNR). Data were suppressed if the GNR was higher than 50% for data quality and confidentiality reasons.
  - This also affected Aboriginal NHS data and in some cases (e.g., population) it was not possible to complete analyses (e.g., population pyramids).
- City of Winnipeg census tract boundaries changed between the 2006 and 2011 census, which can affect trend analysis comparisons between the two census years.
- Census data limitations affected data analysis and trend analysis when a complete dataset was not available.
- 2011 Census is not necessarily reflective of conditions when this EIS is submitted because the census is several years old.
- Due to data suppression and rounding, some totals (percentage) may not add up to 100.
- Some communities with a 0% unemployment rate may be due to lack of data in the 2011 NHS profiles.
- Given the small population bases within the RAA, ranging from 645 people in the Village of Glenboro to 14,069 in the RM of Springfield in 2011, there is a general limitation to percentage-based comparisons.

Limitations to the Manitoba Health population data include:

- Populations in small areas (e.g., rural town) can be biased because mailing address may be reported as the place of residence. An individual residing outside of town with a mailing address in town may be counted as living within the town and not the RM.
  - As the catchment area increases, bias in population figures decreases thus regional estimates are not significantly affected by the classification bias.
- Residency is not required to be updated when a person moves, therefore people may move in and out of an area without their residency being updated or properly recorded by Manitoba Health. They would then be counted where their address is listed and not their current address.
- If a person's Manitoba Health card expires for some reason but are still living within Manitoba, they would not be counted as a resident of any area according to Manitoba Health population data.

Limitations to AANDC data (AANDC 2013):

- On-reserve numbers should not be taken to represent the true on-reserve population for the following reasons:

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<sup>2</sup> GNR is used as an indicator of data quality combining complete non-response (household) and partial non-response (question) into a single rate. A smaller GNR indicates a lower risk of non-response bias and as a result, lower risk of inaccuracy. The threshold used for estimates' suppression is a GNR of 50% or more.

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- They contain no information on any Non-Registered individuals who may be living on reserve.
  - They contain no information on any individuals registered with bands from outside the region who may be living on reserve.
- Data is usually updated on the reporting of a life event to the First Nations Indian Registry Administrator (IRA).
  - Indian Register data involves late reporting of life events (e.g., birth and death). For example, nearly 70% of births reported in any particular year actually occurred in a prior year. It is common practice for children to be registered between the ages of 1-5 years old.
  - Individuals can remain on the Indian Register for some time after they are deceased. A certificate of death or confirmation of presumed death is required to remove their name from the system.
- Residency codes tend to be updated by the IRA when a life event is reported.
  - This makes it possible for an individual to move back and forth from on/off reserve and never have their information updated if a life event was not reported.
  - Residency field is optional when the IRA updates their system.

Limitations to hunting and trapping resource use data include:

- Species trapping data are not available for OTAs in the province.
- Game bird hunting data are only available by provincial Game Bird Hunting Zones, corresponding to a much larger geographical area (*i.e.*, all of southern Manitoba) compared to the Project RAA.
- Hunting license by type and harvest data are limited to a few individual species (e.g., big game [white-tailed deer, black bear and moose] and game bird [wild turkey]) (Baldwin 2015, pers. comm. and Dettman 2015, pers. comm.)
- No individual outfitter allocation area designations are available from MCWS by region.

### 3.2 PRIMARY RESEARCH AND ANALYSIS

#### 3.2.1 Key Person Interviews

KPIs were conducted with representatives identified from various organizations, agencies and stakeholders involved in agriculture, environment, recreation, business and industry, resource use, health and emergency services to supplement secondary baseline information. Interview guides were developed to gather information from each of these organizations/groups (see Appendix B).

#### 3.2.2 Data Requests

Data requests were submitted as required with representatives from groups/organizations to gather information not available from desktop research (Table 3-1).

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**Table 3-1: Personal Communication Contacts**

<b>Government Agencies/ Municipalities/Organization</b>	<b>Data Type (i.e., map, location/ site data, report)</b>	<b>Data Obtained</b>
Temporary accommodations providers	Organization data	Information about the number of accommodations units available, busy seasons, and to identify any key capacity issues
RCMP	Organization data	Confirmation of RCMP detachments serving the RAA and then for each detachment gathering data on police strength, officer caseloads, number of calls (if available) and total number of Criminal Code offences and breakdown.
RM and City Fire Departments	Organization data	Staff, areas served, number of calls per year and capacity for more calls
City of Winnipeg Water and Waste Recycling and Garbage Services	Organization data	Confirmation of solid waste infrastructure and capacity, tipping fees, materials accepted and catchment areas
Dairy Farmers of Manitoba	Location	Location of dairy operations within RMs traversed by the Project
Manitoba Chicken Producers	Location	Location of chickens and broiler-breeder operations within RMs traversed by the Project
MCWS	Location	Locations of approved licensed irrigation and tile drainage projects within RMs traversed by the Project
Manitoba Egg Farmers	Location	Location of egg operations within RMs traversed by the Project
Manitoba Agriculture, Food and Rural Development	Location	Location of bee-keeping operations within RMs traversed by the Project
Manitoba Pork Council	Location	Location of hog operations within RMs traversed by the Project
MCWS – Environmental Compliance and Enforcement	Location/site data	Waste Management Facility location, activity status, life span and capacity
MCWS – Wildlife and Ecosystem Protection Branch	Location/site data	Provincial hunting license types and species harvest data by GHAs for big game and game bird species
MCWS – Water Stewardship Division	Location/site data	Provincial groundwater and surface water data, usage

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### 3.3 DATA ANALYSIS

#### 3.3.1 Population

Statistics Canada and NHS data were used to provide a trend analysis of population growth/decline over time (1996 to 2011) for RMs and communities within the RAA. A population pyramid was created using the 2011 NHS data for the RAA population combined. Population density and private dwelling information was organized into tables to provide a trend analysis between the 2006 and 2011 census periods and to make comparisons between RMs and communities within the RAA. Manitoba Health Population Statistics were used to provide a secondary source of population statistics for each year from 2006 to 2013 with calculations to determine a population trend analysis between 2006 to 2013 and 2006 to 2011 to be comparable with the Statistics Canada and NHS data.

#### 3.3.2 Infrastructure and Services

Existing conditions regarding the supply and demand of temporary accommodations, emergency and protection services, water and wastewater infrastructure and services and solid waste facilities and services are provided in summary tables from which reported capacities were compared with usage information. This comparison allowed for the determination of available capacity, or where applicable exceedances for each infrastructure and service.

Geographical information about transportation and utility infrastructure were compared with the alignment of the Final Preferred Route to determine the extent of potential effects due to proximity, crossings, or paralleling.

#### 3.3.3 Economy

Statistics Canada 2006 and NHS 2011 data were used to calculate labour force characteristics, labour force activity by industry and occupation and educational attainment levels and provide trend analysis in the RAA and the Aboriginal population in the RAA. Summary tables with income and earnings were provided for the general and Aboriginal populations in the Province, RMs, Town of Ste. Anne, Village of Glenboro, and the City of Winnipeg Census Tracts crossed by the RAA to compare and contrast between locations.

The Manitoba Bureau of Statistics' Input-Output model was used to provide estimates of direct, indirect and induced impacts of MMTP on the economy of Manitoba and Canada based on the flow of goods and services in Manitoba's economy.

#### 3.3.4 Agriculture

Analyses pertaining to agricultural capability and risk for soil compaction are presented in the Soil and Terrain TDR.

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### 3.3.4.1 Permanent Land Loss Estimation

Permanent land loss refers to the area that will be occupied by Project structures or permanently disturbed footprints (e.g., station footprints) and that will be unavailable for continued agricultural land use through the operation and maintenance phase of the Project. Permanent land loss was estimated by determining the sum of the area under Project structures and permanently disturbed footprints as given in the Project Description (Chapter 2). For transmission tower structures, the estimated number of towers within each transmission line component was determined based on average tower intervals and component length. Reasonable buffer areas around structures and other footprints were included in the estimates for permanent land loss. The buffer areas were determined based on a review of recent similar projects (Serecon Valuations Inc. 2010; J. and V. Nielsen and Associates Ltd. 2011) and Manitoba Hydro's compensation program.

### 3.3.4.2 Crop and Production Value Estimation

The analysis of agricultural production value for the MMTP project involved 2 major components:

1. Determining the value per acre for crop types grown within each rural municipality
2. Determining the acreage of each crop type within the various project assessment boundaries (RAA, LAA and PDA)

The value per acre for all crop types grown within RMs was calculated based on data from MASC (MASC 2015). Using the Variety Yield Data Browser, data for all crop types (and varieties) within the RMs in the RAA was extracted for the 2009 to 2014 period (represents two crop rotation cycles, assuming a typical 3-year rotation). This data is organized by year and RM and consists of crop type, number of farms, acreage under production and yield per acre. This data was summarized to provide a list of crop types grown in each RM from 2009 to 2014, the total acreage in the RM for each crop type, and the average yield for each crop type. MASC also provides an annual crop price for all the crop types reported (see Table 3-2). An average crop price was calculated based on data from 2011 to 2015 (all years available). An average crop value per acre was then calculated by multiplying the average yield by the price. Sample calculations are provided in Table 3-3. Crop values used for the analysis are provided by rural municipality in Table 3-4.

**Table 3-2: Manitoba Agricultural Services Corporation Crop Prices 2011-2015**

Crop Type	Crop Prices (\$)					
	2011	2012	2013	2014	2015	Average 2011-2015
Alfalfa	103	105	110	122	134	115
Alfalfa/Grass Mix	86	87	91	101	110	95
Canola	450	490	555	455	420	474
Barley	150	185	190	155	155	167



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**Table 3-2: Manitoba Agricultural Services Corporation Crop Prices 2011-2015**

Crop Type	Crop Prices (\$)					
	2011	2012	2013	2014	2015	Average 2011-2015
Black Beans	600	875	660	725	595	691
Canary Seed	505	550	590	540	535	544
Feed Wheat	155	185	235	175	165	183
Flax	505	505	520	500	470	500
Grain Corn	165	215	230	170	150	186
Grasses	74	75	78	86	94	81
Greenfeed	70	79	82	77	80	78
Hard White Wheat	221	220	275	220	230	233
Non-Oil Sunflowers	620	530	620	645	585	600
Oats	185	190	180	200	210	193
Oil Sunflowers	455	660	580	505	465	533
Pinto Beans	550	850	770	740	575	697
Red Spring Wheat	221	220	275	220	230	233
Silage Corn	36	49	54	41	36	43
Soybeans	370	400	405	390	370	387
Winter Wheat	166	185	240	190	175	191
Fall Rye	160	200	220	230	230	208
Field Peas	185	238	280	245	230	236
Processing Potatoes - Irrigated	212	236	251	251	245	239

**Table 3-3: Sample Crop Value Calculations**

Rural Municipality	Crop Type	Average Yield 2009-2014 (tonnes/ha)	Average Price 2011-2015 (\$/tonnes)	Average Crop Value (\$/ha)
		<b>A</b>	<b>B</b>	<b>=A*B</b>
Headingly	Canola	1.68	\$420	\$705
Headingly	Soybeans	1.95	\$370	\$720
MacDonald	Canola	1.84	\$420	\$772
MacDonald	Soybeans	2.21	\$370	\$816
Springfield	Canola	1.42	\$420	\$595
Springfield	Soybeans	2.12	\$370	\$785

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**Table 3-4: Crop Values by Rural Municipality**

Rural Municipality	Crop Type	Average Value (\$/acre)	Average Value (\$/hectare)
Headingly	Cereals <sup>2</sup>	\$316	\$781
	Canola	\$285	\$705
	Soybeans	\$291	\$720
	Grasses <sup>1</sup>	\$73	\$180
	Forage <sup>1</sup>	\$198	\$489
	Sunflowers <sup>1</sup>	\$408	\$1,007
	Fallow/Unseeded	\$-	\$-
LaBroquerie	Grasses	\$41	\$101
	Forage <sup>2</sup>	\$188	\$464
	Cereals <sup>2</sup>	\$212	\$524
	Soybeans <sup>1</sup>	\$316	\$781
	Canola	\$267	\$659
	Corn	\$376	\$929
MacDonald	Cereals <sup>2</sup>	\$324	\$801
	Canola	\$312	\$772
	Soybeans	\$330	\$816
	Forage	\$347	\$857
	Corn	\$425	\$1,050
	Flaxseed	\$244	\$604
	Grasses <sup>1</sup>	\$73	\$180
Piney	Grasses	\$77	\$189
	Forage <sup>2</sup>	\$214	\$530
	Cereals	\$222	\$548
	Canola	\$316	\$780
	Soybeans	\$332	\$820
	Flaxseed <sup>1</sup>	\$244	\$604
	Corn <sup>1</sup>	\$395	\$977
Ritchot	Cereals <sup>2</sup>	\$313	\$773
	Soybeans	\$331	\$817
	Canola	\$314	\$776
	Grasses <sup>1</sup>	\$73	\$180
	Forage <sup>1</sup>	\$198	\$489
	Corn	\$418	\$1,032

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**Table 3-4: Crop Values by Rural Municipality**

Rural Municipality	Crop Type	Average Value (\$/acre)	Average Value (\$/hectare)
Rosser	Cereals <sup>2</sup>	\$243	\$600
	Canola	\$294	\$726
	Soybeans	\$338	\$836
	Forage	\$244	\$603
	Grasses <sup>1</sup>	\$73	\$180
	Corn	\$323	\$799
	Fallow/Unseeded	\$-	\$-
	Sunflowers <sup>2</sup>	\$416	\$1,028
South Cypress	Grasses <sup>1</sup>	\$73	\$180
	Cereals <sup>2</sup>	\$314	\$776
	Canola	\$399	\$985
	Forage <sup>2</sup>	\$221	\$547
	Fallow/Unseeded	\$-	\$-
	Corn	\$426	\$1,054
	Soybeans	\$327	\$808
	Potatoes	\$3,461	\$8,553
Springfield	Grasses	\$49	\$121
	Cereals <sup>2</sup>	\$271	\$670
	Soybeans	\$318	\$785
	Canola	\$241	\$595
	Forage <sup>2</sup>	\$169	\$419
	Sunflowers <sup>2</sup>	\$357	\$882
	Corn	\$317	\$783
	Fallow/Unseeded	\$-	\$-
Ste Anne	Grasses	\$49	\$121
	Soybeans <sup>1</sup>	\$316	\$781
	Cereals <sup>2</sup>	\$301	\$744
	Canola	\$276	\$681
	Forage <sup>2</sup>	\$172	\$426
	Corn <sup>2</sup>	\$376	\$930
Stuartburn	Grasses	\$81	\$199
	Forage <sup>2</sup>	\$95	\$235
	Cereals <sup>2</sup>	\$149	\$368

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**Table 3-4: Crop Values by Rural Municipality**

Rural Municipality	Crop Type	Average Value (\$/acre)	Average Value (\$/hectare)
Tache	Canola <sup>1</sup>	\$305	\$753
	Soybeans <sup>1</sup>	\$316	\$781
	Cereals <sup>2</sup>	\$304	\$750
	Soybeans	\$309	\$764
	Canola	\$288	\$711
	Grasses	\$108	\$267
	Forage <sup>2</sup>	\$144	\$355
	Corn <sup>2</sup>	\$421	\$1,039
NOTES:			
<sup>1</sup> Crop data not reported in MASC data. Crop value calculated as average of all other RMs with the crop type reported in MASC.			
<sup>2</sup> Reported values are based on a weighted average of more than one crop type (e.g., corn is reported as grain corn and silage corn in MASC).			

To determine the acreage of crop types, AAFC's Annual Crop Inventory data (AAFC 2009-2014) was acquired. The data is generated by AAFC through decision tree analysis of multi-temporal optical and radar satellite images acquired over a single growing season. To ensure the accuracy of the AAFC data, a data validation analysis was completed for all the rural municipalities intersected by the project. Total acreage under agricultural production as a percentage of total RM acreage (see Table 3-5) was compared using three data sets: AAFC Annual Crop Inventory, Land Use / Land Cover Landsat TM data (MLI 2015), and the Variety Yield Data Browser (MASC 2015). MASC data is collected on a voluntary reporting basis from producers; the data clearly shows this data is incomplete in terms of total agricultural area. In contrast to the MASC data, the AAFC and MLI data are generated through interpretation of satellite imagery. The AAFC and MLI data show excellent correlation with an average difference of 4%, confirming the validity of the AAFC crop type data for use in this analysis.

**Table 3-5: Crop Inventory Data Validation**

RM	RM Area (ac)	MASC Agricultural Area		AAFC Agricultural Area		Land Use Land Cover Landsat TM Agricultural Area	
		acres	%	acres	%	acres	%
HEADINGLY	27,167	8,803	32	22,610	83	23,937	88
LA BROQUERIE	143,290	5,001	3	68,016	47	72,215	50
MACDONALD	286,289	223,761	78	261,210	91	267,631	93
PINEY	608,559	4,308	1	70,835	12	76,682	13

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**Table 3-5: Crop Inventory Data Validation**

RM	RM Area (ac)	MASC Agricultural Area		AAFC Agricultural Area		Land Use Land Cover Landsat TM Agricultural Area	
		acres	%	acres	%	acres	%
RITCHOT	85,126	42,390	50	72,673	85	73,918	87
ROSSER	109,358	58,134	53	97,878	90	101,350	93
SOUTH CYPRESS	274,692	38,776	14	173,736	63	185,136	67
SPRINGFIELD	266,959	80,402	30	175,022	66	183,868	69
STE. ANNE	119,553	19,301	16	57,632	48	57,955	48
STUARTBURN	288,312	6,023	2	108,919	38	123,842	43
TACHE	143,858	50,971	35	128,941	90	103,790	72

Using the ArcGIS application, crop acreages for specific project footprints were extracted from the AAFC database for further analysis. For each footprint, data for the 2009-2014 growing seasons were extracted. Cumulative crop production for the six years was calculated by summing the crop type areas. Annual average crop production was calculated by dividing all values by 6 to account for the 6-yr period.

To calculate the crop production values, crop acreage was then multiplied by the crop value specific to each RM. In some instances, crop types present in the AAFC data within an RM were not found in the MASC data for that same RM (e.g., sunflowers in the RM of Headingley), a result of MASC being a voluntary reporting system. In these situations, the average crop value from all other RMs with the crop type were used to calculate an average crop value.

### 3.3.4.3 Locations of Agricultural Operations

Specific location data on livestock operations (GPS coordinates or legal land location) were provided by industry associations representing hog, dairy, and chicken and broiler-breeder producers. A review and interpretation of the buildings inventory layer (Manitoba Hydro 2014a) and aerial photos (MLI 2009, 2010, 2011) was conducted to identify livestock operations for which location data were not available (e.g., cattle feedlots, and cattle and equine operations, and other agricultural buildings/structures). Industry associations for beef (Manitoba Beef Producers), egg (Manitoba Egg Farmers) and turkey producers (Manitoba Turkey Producers) did not provide livestock operation location data for confidentiality reasons. The latter two associations along with MAFRD provided the number of egg and turkey farms, and beekeeping operations by RM or nearest community, respectively.

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Information drawn from KPIs and other forms of PEP (e.g., information received during public open houses) was used to supplement the available livestock operations data, and identify and confirm potential for conflict between the Project and agricultural operations and activities.

### 3.3.5 Other Land and Resource Use

Geospatial data were plotted using GIS software to determine the spatial distribution, nature, and intensity of overlapping land-uses along alternative routes and stations. Metrics generated by the route selection process informed the ranking of preferred routes, from the built-environment perspective. By using GIS overlay mapping, the following effects of the Project on other land and resource uses could be quantified based on the number of interactions, conflicts and/or interferences with:

- Provincial forests, WMAs, wildlife refuges, provincial parks/national parks, provincial Crown lands, private conservation lands (e.g., DUC and NCC), tall grass prairie lands, ecological reserves (including proposed areas), protected area lands (including proposed areas) and ASIs in the RAA.
- High value use areas (e.g., campgrounds and resorts), recreational areas, canoeing areas, hiking trails, ATV trails and snowmobile trails in the RAA.
- Productive forestland (i.e., AAC, standing timber), high value forest site data including, enhanced silviculture sites, research and monitoring sites, and private forestland (i.e., woodlots, shelterbelts) in the RAA.
- Mineral dispositions (i.e., mineral leases, quarry leases, quarry permits, quarry withdrawal areas, mining areas, aggregate resources) in the RAA.
- Surface water and groundwater license allocations and registered groundwater wells in the RAA.
- Provincial OTAs and GHAs in the RAA.

### 3.3.6 Community Health and Well-being

Information summary tables were prepared for health care services and infrastructure (i.e., hospital and health centres, health care utilization, emergency medical services, environmental and mental health services). Summary tables were also prepared to report on: general health conditions, chronic conditions and personal health behaviours; infectious diseases; stress and anxiety; injury; food security, diet, and nutrition within the RAA. First Nation and Metis health is also described, in terms of the meaning of health for Aboriginal peoples, the overall health status of First Nation and Metis communities, diet and nutritional outcomes, food security, and Aboriginal health care service provision. The relative degree of health resilience of the communities in the RAA was also identified based on the development of a health resiliency index. These were all used to describe the existing conditions for community health and well-being and determine the capacity and resiliency of the various aspects to accommodate potential changes brought about by the Project.

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### 3.3.6.1 Visual Quality Assessment

The Visual Quality Assessment began with a review of research studies related to visual preference. Applicable land and resource use plans and policy were reviewed to determine policy direction within the RAA regarding the management of visual resources to support recreation and tourism experiences and the contribution to local residents' quality of life. Candidate viewpoints in the LAA and RAA were identified through a review of Project engagement records, traditional knowledge studies, and available literature from municipal and stakeholder websites, online and hardcopy maps, commercial guidebooks, websites and local tourism promotional materials.

#### Visual Quality Field Study Methods

A field program was conducted in October and November 2014 to collect spatial and visual primary data at priority viewpoints to photo-document and assess the existing visual condition, in accordance with established beneficial practices (BC MOFR 1997, 2001). Photographs were taken from each viewpoint while photo numbers and corresponding compass bearings were documented, and a geographic location for each photo was recorded. To the extent possible, photos were taken under optimal conditions; however, local weather conditions varied during field research, and optimal conditions were not always possible.

#### Visual Quality Analysis

Candidate viewpoints were identified through a combination of reviewing engagement records, literature review, and professional judgment. They were mapped, numbered and linked to a database of information on the viewpoints. Initially, viewpoints were identified along all of the alternative routes from Round 2; however as the route was refined into the final preferred route, a number of viewpoints were removed from further consideration as they were not anticipated to have views of the Project. Remaining candidate viewpoints were spatially evaluated for inclusion or exclusion in the field assessment, using the following criteria:

- Candidate viewpoint must be located within the viewshed of the Project.
- Candidate viewpoint must be within 8 km from the Project (as foreground and mid-ground views would result in more prominent views of the project).
- Candidate viewpoint must not be duplicated by other viewpoints. In cases where viewpoints duplicated the view to the Project, the viewpoint with the potential for the most prominent view was identified as the priority viewpoint and was used to provide a conservative representative view.

Viewpoints that remained after the three criteria were applied were deemed priority viewpoints. A substantial number of viewpoints remained at this point, and had to be further refined to determine which could reasonably be field assessed to document baseline conditions. Therefore the list of priority viewpoints was classified into first or second tier priority viewpoints, with the first tier slated to receive field assessment and verification.

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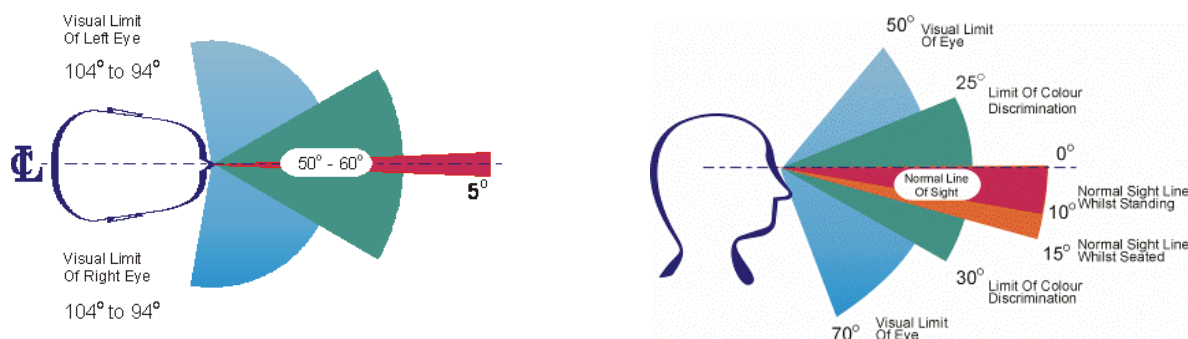
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The fourteen first tier priority viewpoints were assigned an importance rating based on GIS analysis and the knowledge gained about each viewpoint through background review (Table 3-6). Viewpoint importance ratings were based on three factors (BC MOFR 1997): access, type of activity and frequency of visitation, as well as viewing distance (in this case, to the nearest tower). Where data underlying these factors were unavailable, the viewpoint importance ratings were assigned using professional judgment, in consideration of the information obtained during the background review and engagement records. Viewpoints not identified as high or moderate importance were deemed low importance and removed from the assessment.

### *Central Field of View Determination*

Due to the linear nature of the project and the extended range of visibility from most viewpoints, panorama photographs were taken from each viewpoint. Two side-by-side frames/shots equaling approximately a 60-degree central field of vision were chosen to represent the area of greatest visual sensitivity expected from each viewpoint (looking toward the proposed line that runs closest to the viewpoint).

A 60-degree view is consistent with most people's central field of vision. At this angle, both eyes perceive an object simultaneously which allows for image sharpness, depth perception, colour discrimination and, ultimately, the most in-focus view of an object (3). The 60-degree central field of vision does include some peripheral vision, most notably within the near peripheral range, which is adjacent to the center of gaze (Panero and Zelnik 1979; Urbis 2013).



SOURCE: Panero and Zelnik 1979

**Figure 3-1: Central Field of Vision—Horizontal and Vertical**

While the 60-degree central field of vision was used to assess baseline and post-development conditions, several more photos on either side of the central view were stitched together into a wider view panorama using Adobe Photoshop in order to provide more context for the view from each viewpoint.



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### *Visual Sensitivity, Landscape Character and Prominence*

The impact of the Project on visual quality is assessed through consideration of the following elements:

- Visual sensitivity – a relative expression of how sensitive a view is to alteration and the likelihood that the public and stakeholders would be concerned if it were altered (Sheppard 2004).
- Landscape character – based on landscape characteristics and the visibility and degree of built interventions (roadways, buildings and infrastructure).
- Prominence – measures the degree to which an object occupies a person's central field of vision, and is affected by viewing distance, as viewers can detect landscape alterations to varying degrees whether they are in the foreground (0 to 1 km), midground (1 to 8 km), or background (greater than 8 km).

The central field of view from each priority viewpoint was classified according to its visual sensitivity and landscape character in accordance with established visual landscape inventory procedures and the definitions in Table 3-6 and Table 3-7. Considered together, the views from each viewpoint are used to describe the nature of the LAA in general. Visual sensitivity, landscape character and prominence are determined based on the central field of view experienced by an observer when looking toward the proposed transmission line where it runs closest to the viewpoint.

#### VISUAL SENSITIVITY

Established visual landscape inventory procedures (BC MOFR 1997) were used as a guide when determining the visual sensitivity of the view from each viewpoint (ranging from very high to very low sensitivity) (Table 3-6).

**Table 3-6: Visual Sensitivity Class Definitions**

VSC	Description
1	<b>Very high</b> sensitivity to visual alteration. The area is extremely important to viewers. There is a very high probability that the public would be concerned if the view was altered in any way or to any scale.
2	<b>High</b> sensitivity to visual alteration. The area is very important to viewers. There is a high probability that the public would be concerned if the view was altered.
3	<b>Moderate</b> sensitivity to visual alteration. The area is important to viewers. There is a probability that the public would be concerned if the view was altered.
4	<b>Low</b> sensitivity to visual alteration. The area is moderately important to viewers. There is a risk that the public would be concerned if the was altered.
5	<b>Very low</b> sensitivity to visual alteration. The area may be somewhat important to viewers. There is a small risk that the public would be concerned if the was altered.

SOURCE: BC MOFR 1997

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Determining the visual sensitivity of the views was based on:

- an evaluation of biophysical elements of the viewshed including slope, aspect, topographic variety, vegetation variety, visibility of water and the influence of adjacent scenery (**biophysical rating**)
- degree of existing visible interventions within the viewshed
- viewing distance, duration of the view, frequency of viewing and angle of the view (viewing condition)
- relative number of viewers and viewer expectations (**viewer rating**)
- ability of the landscape to absorb visual alterations and still maintain its visual integrity, given its slope, aspect and topographic variety (visual absorption capability)

Using the following equation, the aforementioned factors and parameters were then used to estimate the **visual sensitivity class** of the view from each viewpoint:

$$\text{Visual Sensitivity Class} = (\text{Biophysical Rating} + \text{Viewing Condition} + \text{Viewer Rating}) - \text{Visual Absorption Capability}$$

### LANDSCAPE CHARACTER

Landscape character from each viewpoint was described based on land use class, how easily the built form of the environment can be seen, and prominence of existing visual disturbances<sup>3</sup> (Table 3-7).

**Table 3-7: Landscape Character Class Definitions**

Class	Description
Rural/Pastoral	The central field of view toward the project has a rural/pastoral character. Built interventions, when assessed from viewpoint, are (i) not visible or (ii) very small in scale and not easily distinguished from the pre-development conditions.
Rural/Pastoral with minimal development	The central field of view toward the project has a rural/pastoral character. Built interventions, when assessed from a viewpoint, are (i) difficult to see and (ii) low in prominence.
Rural/pastoral with distinguishable development	The central field of view toward the project has a rural/pastoral character. Built interventions, when assessed from a viewpoint, areas (i) easy to see and (ii) low to moderate in prominence.
Semi-urban/industrial	The central field of view toward the project is dominated by a semi-urban and / or industrial character. Built interventions, when assessed from a viewpoint, are (i) easy to see and (ii) high prominence.
Urban/industrial	The central field of view toward the project has an urban and / or industrial

<sup>3</sup> Prominence is the degree to which an object occupies a person's central field of vision. Prominence is affected by viewing distance to varying degrees if they are in the foreground (0 to 1 km), midground (1 to 8 km) or background (greater than 8 km).

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**Table 3-7: Landscape Character Class Definitions**

Class	Description
	character. Built interventions when assessed from a viewpoint, begin to dominate the view as they are (i) very easy to see and (ii) very high prominence.

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### 4.0 Baseline Conditions

#### 4.1 PROJECT REGIONAL ASSESSMENT AREA

For the discussion of population, economy, infrastructure and services, agricultural land use, land and resource use and human health and well-being, the Project area is defined as the RAA (Map 4-1 – Assessment Area and Project Components). Visual quality has a slightly different RAA as shown in Map 2-1 Visual Quality and Regional Assessment Area [RAA]. The City of Winnipeg Census Tracts along the Southern Loop Transmission Corridor segment are shown on Map 4-2 – City of Winnipeg Census Tract Boundaries. The RAA for Glenboro Station South is illustrated in Map 4-3 – Glenboro South Station Assessment Area.

#### 4.2 POPULATION

This section provides information on general and Aboriginal populations in the RAA.

##### 4.2.1 RAA Population using Statistics Canada Data

Population and population change in the RAA are presented in Table 4-1. The RAA had a total population of 65,344 in 2011. The RM of Springfield had the largest population (14,069) followed by the RM of Tache (10,284) while the Village of Glenboro had the smallest population (645) followed by the RM of South Cypress (838).

Between 2006 and 2011, the population in the RAA increased by 10.4%. The largest increase was 42.1% in the RM of La Broquerie. The RMs of Headingley, Tache and Macdonald also had considerable increases in population (17.9%, 13.2% and 11.1% respectively). Decreases in population occurred in the RMs of Piney, Rosser and Stuartburn. In the Glenboro RAA, the populations in South Cypress and the Village of Glenboro increased marginally between 2006 and 2011 (Table 4-1).

A time series comparison of Statistics Canada data from 1996 to 2011 indicates population growth in most of the RMs in the RAA. The RMs of Headingley and La Broquerie experienced the largest population increase during this period. The RM of La Broquerie has continued to be the fastest growing RM in Manitoba (RM of La Broquerie 2014). Between 1996 and 2011, populations have fluctuated in the RM of South Cypress and the Village of Glenboro. The RAA as a whole has had a higher population growth rate than the Province.

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**Table 4-1: Population Totals in the RAA between 1996-2011**

	1996 Population	2001 Population	1996 to 2001 Population Change (%)	2006 Population	2006 to 2011 Population Change (%)	2011 Population	2006 to 2011 Population Change (%)	1996 to 2011 Population change (%)
Manitoba	1,113,898	1,119,583	0.5	1,148,401	2.6	1,208,268	5.2	8.5
<b>RAA</b>								
RM of Headingley	1,587	1,907	20.2	2,726	42.9	3,215	17.9	103
RM of La Broquerie	2,493	2,894	16.1	3,659	26.4	5,198	42.1	109
RM of Macdonald	4,900	5,320	8.6	5,653	6.3	6,280	11.1	28
RM of Piney	1,604	1,688	5.2	1,755	4.0	1,720	-2.0	7
RM of Ritchot	5,248 <sup>1</sup>	4,958	-5.5	5,051	1.9	5,478	8.5	4
RM of Rosser	1,349	1,412	4.7	1,364	-3.4	1,352	-0.9	0
RM of South Cypress <sup>3</sup>	862	821	-4.8	834	1.6	838	0.5	-3
RM of Springfield	12,162	12,602	3.6	12,990	3.1	14,069	8.3	16
RM of Ste. Anne	4,213	4,427	5.1	4,509	1.9	4,686	3.9	11
RM of Stuartburn	1,563	1,603	2.6	1,629	1.6	1,535	-5.8	-2
RM of Tache	8,273	8,578	3.7	9,083	5.9	10,284	13.2	24
Town of Ste. Anne	1,511	1,513	0.1	1,534	1.4	1,626	6.0	8
Village of Glenboro <sup>3</sup>	663	656	-1.1	633	-3.5	645	1.9	-3
COW CT 6020100.02	-	1,436	-	1,644	14.5	1,794	9.1	-
COW CT 6020110.07	-	-	-	2,895 <sup>2</sup>	-	6,624	128.8	-
<b>RAA</b>								
Total RAA	46,428	49,815	7.3	55,959	12.3	65,344	16.8	41
NOTES: “-” information not available 1 Counts have been adjusted to reflect 2001 Census boundaries 2 Counts have been adjusted as needed to take into account boundary changes between the 2006 and 2011 censuses 3 The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypress								
SOURCES: Statistics Canada No date(a-n), 2007a, 2007b, 2007c, 2007d, 2007e, 2007f, 2007g, 2007h, 2007i, 2007j, 2007k, 2007l, 2007m, 2007n, 2012a, 2012b, 2012c, 2012d, 2012e, 2012f, 2012g, 2012h, 2012i, 2012j, 2012k, 2012l, 2012m, 2012n, 2012o, 2012p								

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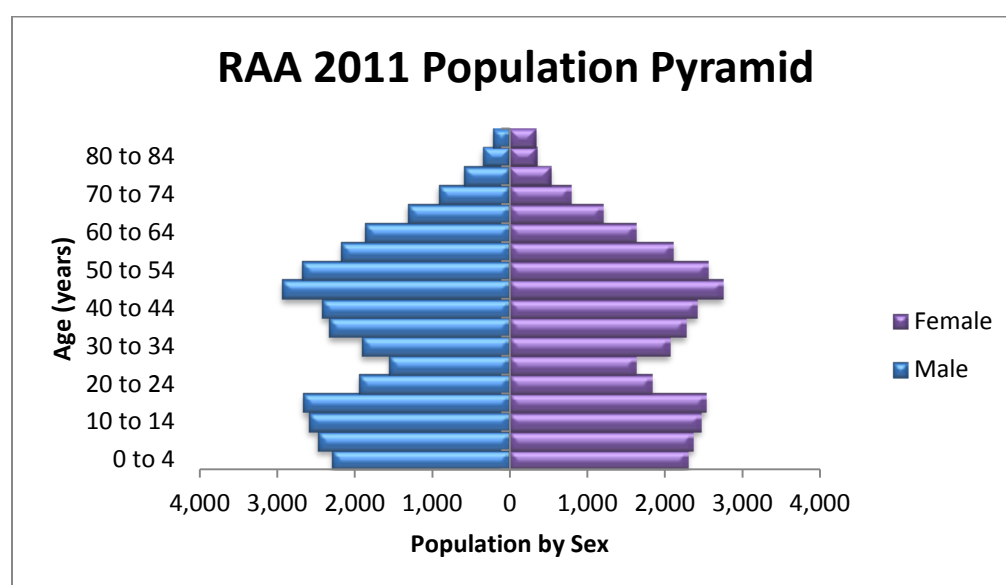
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### 4.2.1.1 RAA Population Pyramid

The population pyramid includes populations from the RMs, Town of Ste. Anne, Village of Glenboro and the two City of Winnipeg Census Tracts.

Figure 4-1 shows the distribution of population by age and sex for the RAA. The pyramid is characterized by a bulge due to the baby-boom generation (approximate ages of 44 to 64). The post-baby boom generations are smaller. The lower number of people within the age 20-35 cohort could also be associated with out-migration. As is typical, the population pyramid is characterized by more females than males in the 80 and over age groups.



SOURCE: Statistics Canada 2012a, 2012b, 2012c, 2012d, 2012e, 2012f, 2012g, 2012h, 2012i, 2012j, 2012k, 2012l, 2012m, 2012n, 2012o, 2012p

Figure 4-1: 2011 Population Pyramid for the RAA

### 4.2.1.2 Population Density

Population density (persons per square kilometer) and private dwellings information for the RAA is provided in Table 4-2. The RM of Stuartburn was the only RM to have experienced a decrease in population density between 2006 and 2011. The RMs of Piney, Rosser and South Cypress did not have any change in population density. The City of Winnipeg Census Tract 6020110.07 had the highest population density in 2011 followed by the Town of Ste. Anne. The RM of Piney had the lowest population density followed by the RM of South Cypress. The RM of Stuartburn had the lowest population density in the RAA.

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**Table 4-2: Population Density in RAA for 2006 and 2011**

	Population Density (persons per sq. km)		% Population Density Change
	2006	2011	2006-2011
Manitoba	2.1	2.2	4.8
RM of Headingley	25.5	30.1	18.0
RM of La Broquerie	6.3	9.0	42.9
RM of Macdonald	4.9	5.4	10.2
RM of Piney	0.7	0.7	0.0
RM of Ritchot	15.1	16.4	8.6
RM of Rosser	3.1	3.1	0.0
RM of South Cypress <sup>1</sup>	0.8	0.8	0.0
RM of Springfield	11.8	12.8	8.5
RM of Ste. Anne	9.4	9.8	4.3
RM of Stuartburn	1.4	1.3	-7.1
RM of Tache	15.6	17.7	13.5
Town of Ste. Anne	365.8	387.7	6.0
Village of Glenboro <sup>1</sup>	236.4	240.9	1.9
City of Winnipeg CT 6020100.02	50.8	55.4	9.1
City of Winnipeg CT 6020110.07	-	688.5	-
NOTES:			
" - " information not available			
Population density – the number of people living per square kilometer (sq. km.)			
<sup>1</sup> The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypress			
SOURCE: Statistics Canada 2007a, 2007b, 2007c, 2007d, 2007e, 2007f, 2007g, 2007h, 2007i, 2007j, 2007k, 2007l, 2007m, 2007n, 2012a, 2012b, 2012c, 2012d, 2012e, 2012f, 2012g, 2012h, 2012i, 2012j, 2012k, 2012l, 2012m, 2012n, 2012o, 2012p			

### 4.2.1.3 Private Dwellings

The majority of the RAA saw growth in the total number of private dwellings and increases in the number of owned dwellings, with the exception of the RM of South Cypress and Village of Glenboro that had fewer dwellings in 2011 than 2006. The RM of South Cypress also had fewer owned dwellings while the Village of Glenboro had an increase in the number of owned dwellings and decrease in the number of rented dwellings. As expected with the significant population increases in the RM of La Broquerie and RM of Headingley (42.1% and 17.9% respectively), these two RM's also had the highest percentage increase in dwellings between 2006 and 2011 (32.2% and 27.7% respectively). The RM of Springfield had the largest increase in the total number of dwellings (460) followed by the RM of La Broquerie (389) and RM of Tache

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(386). The average number of rooms remained relatively the same between 2006 and 2011 for each location in the RAA (Table 4-3).

The average value of owned dwellings increased throughout the RAA and the province of Manitoba between 2006 and 2011 (Table 4-3). The RM of South Cypress and Village of Glenboro had the highest percentage increase in values (98.9% and 94.8% respectively), although housing values were still below the provincial average. The average value of owned dwellings in the Village of Glenboro was still far below the provincial average and the rest of the RAA. The City of Winnipeg Census Tract 6020100.02 had the largest dollar value increase of \$233,537. Although the RM of La Broquerie had significant population and density increases between 2006 and 2011, the average value increase of owned dwellings was lower than that of the province overall and was the third lowest increase in the RAA.

**Table 4-3: Private Dwelling Characteristics within the RAA in 2006 and 2011**

Municipality	Total Private Dwellings		% Dwelling Change	Total Private Households by Ownership				Average Number of Rooms		Average Value of Owned Dwellings (\$)	
				2006		2011		2006	2011	2006	2011
	2006	2011	2006-2011	Owned	Rented	Owned	Rented				
Manitoba	491,724	512,689	4.3	309,303	127,900	326,435	127,215	6.3	6.2	153,307	238,861
<b>RAA</b>											
RM of Headingley	733	936	27.7	685	40	865	0	8.1	8.4	343,217	472,213
RM of La Broquerie	1,208	1,597	32.2	960	175	1,305	210	7.1	6.9	160,330	232,621
RM of Macdonald	1,878	2,105	12.1	1,690	125	1,870	175	7.9	7.8	227,274	358,571
RM of Piney	947	1,112	17.4	660	70	-	-	6.1	-	106,820	-
RM of Ritchot	1,745	1,909	9.4	1,555	150	1,750	105	7.3	7.2	180,575	278,739
RM of Rosser	472	476	0.8	365	85	405	20	7.1	7.5	228,027	295,391
RM of South Cypress <sup>1</sup>	247	229	-7.3	205	20	165	0	7.4	7.9	111,962	222,707
RM of Springfield	4,601	5,061	10.0	4,215	270	4,715	190	7.3	7.4	208,494	328,267
RM of Ste. Anne	1,644	1,734	5.5	1,375	185	-	-	6.7	-	136,402	-
RM of Stuartburn	720	799	11.0	560	85	-	-	5.9	-	93,513	-
RM of Tache	2,972	3,358	13.0	2,700	205	3,065	220	7.4	7.3	188,461	267,861



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**Table 4-3: Private Dwelling Characteristics within the RAA in 2006 and 2011**

Municipality	Total Private Dwellings		% Dwelling Change	Total Private Households by Ownership				Average Number of Rooms		Average Value of Owned Dwellings (\$)	
				2006		2011		2006	2011	2006	2011
	2006	2011	2006-2011	Owned	Rented	Owned	Rented				
Town of Ste. Anne	501	570	13.8	415	80	475	100	6.8	6.5	133,355	212,921
Village of Glenboro <sup>1</sup>	316	312	-1.3	230	60	265	50	6.4	6.5	74,830	145,763
COW CT 6020100.02	558	600	7.5	525	15	580	0	7.9	8.3	265,386	498,923
COW CT 6020110.07	-	2,367	-	-	-	1,975	70	-	7.4	-	413,153
<p>NOTES:</p> <p>* Indicates data for Census Tracts within the RAA</p> <p>Total private dwellings – A separate set of living quarters designed for or converted for human habitation in which a person or group of persons reside or could reside. In addition, a private dwelling must have a source of heat or power and must be an enclosed space that provides shelter from the elements, as evidenced by complete and enclosed walls, roof, doors and windows that provide protection from wind, rain and snow.</p> <p><sup>1</sup> The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypress</p>											
SOURCE: Statistics Canada 2007a, 2007b, 2007c, 2007d, 2007e, 2007f, 2007g, 2007h, 2007i, 2007j, 2007k, 2007l, 2007m, 2007n, 2013a, 2013b, 2013c, 2013d, 2013e, 2013f, 2013g, 2013h, 2013i, 2013j, 2013k, 2013l											

### 4.2.2 RAA Population using Manitoba Health Population Data

Manitoba Health provides population numbers on a yearly basis based on records of residents registered with Manitoba health as of June 1 of that year. Information is provided for cities, towns, villages, RMs, local government districts and unorganized territories. Table 4-4 provides population numbers and percent change in population for the RAA between 2008 and 2013.

Manitoba Health data show that the RAA is growing at a faster rate than Manitoba overall. The RM of La Broquerie had the largest increase in population percentage-wise over the 2006 to 2013 period (54.2% or 1,087 people). The RM of La Broquerie had the largest increase between 2006 and 2011 in the Manitoba Health population data. This is consistent with Statistics Canada data, 32.7% or 655 people using Manitoba Health population data and 42.1% or 1,539 people using Statistics Canada data. The RM of Springfield had the largest number increase in population between 2006 and 2013 (1,637 people) followed by the RM of Tache (1,447 people).

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**Table 4-4: Manitoba Health Population Numbers for the RAA in 2006 and 2013**

	2006	2007	2008	2009	2010	2011	2012	2013	2014	Population Change 2006-2011 (%)	Population Change 2006-2014 (%)
Manitoba	1,178,457	1,186,386	1,198,981	1,214,403	1,230,270	1,250,484	1,271,388	1,289,268	1,306,309	6.1	10.8
<b>RAA</b>											
RM of Headingley	2,335	2,387	2,420	2,522	2,632	2,676	2,732	2,872	3,016	14.6	29.2
RM of La Broquerie	2,005	2,104	2,241	2,406	2,493	2,660	2,871	3,092	4,064	32.7	102.7
RM of Macdonald	5,948	6,016	6,161	6,326	6,405	6,607	6,777	6,991	7,136	11.1	20.0
RM of Piney	1,733	1,722	1,743	1,723	1,747	1,751	1,725	1,755	1,728	1.0	-0.3
RM of Ritchot	5,680	5,869	5,973	6,068	6,203	6,299	6,468	6,695	7,049	10.9	24.1
RM of Rosser	1,394	1,367	1,354	1,329	1,313	1,312	1,286	1,290	1,279	-5.9	-8.2
RM of South Cypress <sup>3</sup>	493	483	472	462	443	431	417	389	383	-12.6	-22.3
RM of Springfield	12,171	12,473	12,614	12,764	12,940	13,294	13,581	13,808	14,066	9.2	15.6
RM of Ste. Anne	4,347	4,444	4,576	4,612	4,614	4,645	4,747	4,856	4,924	6.9	13.3
RM of Stuartburn	1,679	1,697	1,701	1,665	1,653	1,643	1,668	1,718	1,737	-2.1	3.5
RM of Tache	7,746	7,958	8,064	8,261	8,452	8,690	9,003	9,193	9,263	12.2	19.6
Town of Ste. Anne	2,401	2,366	2,339	2,332	2,366	2,431	2,492	2,515	2,554	1.2	6.4
Village of Glenboro <sup>3</sup>	796	805	826	840	847	883	904	919	953	10.9	19.7
City of Winnipeg	667,038	670,845	678,488	688,533	698,195	710,789	723,491	734,187	745,603	6.6	11.8
<b>Total RAA</b>											
RAA (excluding Winnipeg)	48,728	49,691	50,484	51,310	52,108	53,322	54,671	56,093	58,152	9.4	19.3
RAA (including Winnipeg)	715,766	720,536	728,972	739,843	750,303	764,111	778,162	781,096	803,755	6.8	12.3
<b>NOTES:</b> <sup>1</sup> Census Tract Information was not available in the Manitoba Health Population Reports for the City of Winnipeg; therefore the entire population of Winnipeg was used. <sup>2</sup> Regional Health Authority Regions changed in 2012 (data from 2008 and newer). Boundaries for 2006 and 2007 data for the City of Winnipeg may not be accurate <sup>3</sup> The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypress											
<b>SOURCES:</b> Province of Manitoba 2010; Province of Manitoba 2012a; Province of Manitoba 2013; Province of Manitoba 2014a											

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### 4.2.3 Aboriginal Population

The Aboriginal population in the province and RAA increased by 30.6% (45,855) and 87.6% (2,395) respectively between 2001 and 2011, based on communities where data were available in the RAA (Table 4-5). The RM of La Broquerie had the largest increase by percentage between the 2006 and 2011 census periods, at 142.9% increase, or 500 people followed by the RM of Tache with 55.6% or 570 people. The RMs of La Broquerie, Tache and Ritchot had over 100% increases in Aboriginal population between 2001 and 2011.

**Table 4-5: Aboriginal Identity Total Population in the RAA between 1996-2011**

	1996 Population	2001 Population	1996 to 2001 Population Change (%)	2006 Population	2001 to 2006 Population Change (5)	2011 Population	2006 to 2011 Population Change (%)	2001 to 2011 Population Change (%)	1996 to 2011 Population Change (%)
Manitoba	-	150,040	-	175,395	16.9	195,895	11.7	30.6	-
<b>RAA</b>									
RM of Headingley	-	-	-	-	-	-	-	-	-
RM of La Broquerie	-	315	-	350	11.1	850	142.9	169.8	-
RM of Macdonald	-	-	-	290	-	485	67.2	-	-
RM of Piney	-	-	-	350	-	-	-	-	-
RM of Ritchot	-	440	-	595	35.2	980	64.7	122.7	-
RM of Rosser	-	-	-	-	-	-	-	-	-
RM of South Cypress <sup>1</sup>	-	-	-	-	-	-	-	-	-
RM of Springfield	-	600	-	740	23.3	890	20.3	48.3	-
RM of Ste. Anne	-	430	-	575	33.7	-	-	-	-
RM of Stuartburn	-	-	-	-	-	-	-	-	-
RM of Tache	-	680	-	1,025	50.7	1,595	55.6	134.6	-
Town of Ste. Anne	-	270	-	-	-	330	-	22.2	-
Village of Glenboro <sup>1</sup>	-	-	-	-	-	-	-	-	-
COW CT 6020100.02	-	-	-	-	-	-	-	-	-
COW CT 6020110.07	-	-	-	-	-	-	-	-	-

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**Table 4-5: Aboriginal Identity Total Population in the RAA between 1996-2011**

	1996 Population	2001 Population	1996 to 2001 Population Change (%)	2006 Population	2001 to 2006 Population Change (%)	2011 Population	2006 to 2011 Population Change (%)	2001 to 2011 Population Change (%)	1996 to 2011 Population Change (%)
<b>RAA Total</b>									
Total RAA	-	2,735	-	3,925	43.5	5,130	30.7	87.6	-
<p>NOTE:</p> <p>"-" information not available</p> <p>Dataset is not complete. Only data available through the Statistics Canada Aboriginal Community Profiles was used when available. Populations, percent change and totals may vary.</p> <p><sup>1</sup> The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypress</p>									
<p>SOURCES: Statistics Canada 2007o, 2007p, 2007q, 2007r, 2007s, 2007t, 2007u, 2007v, 2007w, 2007x, 2007y, 2007z, 2007aa, 2007ab, 2007 ac, 2013m, 2013n, 2013o, 2013p, 2013q, 2013r, 2013s</p>									

### 4.2.3.1 First Nation On/Off Reserve Populations

No First Nation Reserves are located within the RAA. The following First Nations, however, have identified an interest in the project:

- Black River First Nation
- Brokenhead Ojibway Nation
- Buffalo Point First Nation
- Dakota Plains First Nation
- Dakota Tipi First Nation
- Long Plain First Nation
- Peguis First Nation
- Roseau River Anishinabe First Nation
- Sagkeeng First Nation
- Sandy Bay Ojibway First Nation
- Swan Lake First Nation

First Nation on and off-reserve population information is found in Table 4-6. In total, more First Nations live off reserve than on reserve with more males likely to be found living on reserve than females and more females living off reserve than males. Variation in gender distribution can be noticed in some First Nations groups. Some have equal gender distribution on and off reserve

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while others have more males living on reserve compared females and more females living on other reserves or off reserve compared to males.

**Table 4-6: First Nation On/Off Reserve Populations, May 2015**

First Nation	On Reserve			On Other Reserves			Off Reserve <sup>1</sup>			Total
	Total	Male	Female	Total	Male	Female	Total	Male	Female	
Black River First Nation	912	454	458	11	5	6	354	195	159	1,277
Brokenhead Ojibway Nation	672	346	326	3	2	1	1,260	607	653	1,935
Buffalo Point First Nation	33	17	16	5	4	1	90	40	50	128
Dakota Plains First Nation	168	84	84	11	4	7	89	41	48	268
Dakota Tipi First Nation	195	119	76	2	0	2	198	110	88	395
Long Plain First Nation	2,195	1,137	1,058	49	24	25	2,022	959	1,063	4,266
Peguis First Nation	3,575	1,825	1,750	132	61	71	6,145	2,955	3,190	9,852
Roseau River Anishinabe First Nation	1,157	612	545	28	13	15	1,394	658	736	2,579
Sagkeeng First Nation	3,354	1,729	1,625	25	12	13	4,272	2,053	2,219	7,651
Sandy Bay Ojibway First Nation	3,951	2,076	1,875	38	16	22	2,437	1,157	1,280	6,426
Swan Lake First Nation	582	272	310	17	6	11	786	362	424	1,385
<b>TOTAL</b>	<b>16,794</b>	<b>8,671</b>	<b>8,123</b>	<b>321</b>	<b>147</b>	<b>174</b>	<b>19,047</b>	<b>9,137</b>	<b>9,910</b>	<b>36,162</b>
NOTE:										
<sup>1</sup> Off Reserve includes on Own Crown Land, on other Band Crown Land, on No Band Crown Land and Off Reserve Populations										
SOURCES: AANDC 2015a, 2015b, 2015c, 2015d, 2015e, 2015f, 2015g, 2015g, 2015h, 2015i, 2015j, 2015k										

### 4.2.3.2 Aboriginal Population Pyramid in the RAA

Insufficient information was available for the Aboriginal population in the RAA to complete a population pyramid.

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### 4.2.3.3 Aboriginal Identity 2011

Within the RAA, 5,980 people self-identified as being of Aboriginal descent, approximately 9.3% of the total RAA population (Table 4-7). The majority of people in the RAA that self-identified as being of Aboriginal descent identified themselves as Metis (92% or 5,470 people) (Table 4-7). Seven percent identified themselves as First Nations and less than one percent identified as having multiple Aboriginal Identities. Within the RAA, most Metis (68%) resided in the RMs of Tache, Ritchot, Springfield and La Broquerie for a total of 4,020 people. The RM of Tache had the highest population identifying themselves as Metis with 1,465 people or 25% of the 5,980 people in the RAA that identified with an Aboriginal Identity followed by the RM of Ritchot (16%), Springfield (14%) and La Broquerie (13%).

**Table 4-7: 2011 Aboriginal Population and Identity**

Location		Total Population in private households by Aboriginal Identity	Non-Aboriginal Identity	Aboriginal Identity	Aboriginal Identity <sup>1</sup>				
					First Nations	Metis	Inuk (Inuit)	Multiple Aboriginal Identities <sup>2</sup>	Aboriginal Identities Not Included Elsewhere <sup>3</sup>
Manitoba	#	1,174,350	978,445	195,895	114,225	78,830	580	1,200	1,055
	%		83	17	58	40	0	1	1
<b>RAA</b>									
RM of Headingley	#	2,550	2,415	140	0	140	0	0	0
	%		95	5	0	100	0	0	0
RM of La Broquerie	#	5,200	4,350	850	55	790	0	0	0
	%		84	16	7	93	0	0	0
RM of Macdonald	#	6,190	5,710	485	95	385	0	0	0
	%		92	8	20	80	0	0	0
RM of Piney <sup>4</sup>	#	-	-	-	-	-	-	-	-
	%	-	-	-	-	-	-	-	-
RM of Ritchot	#	5,460	4,480	980	20	955	0	0	0
	%		82	18	2	98	0	0	0
RM of Rosser	#	1,145	1,085	55	0	45	0	0	0
	%		95	5	0	100	0	0	0
RM of South Cypress <sup>5</sup>	#	495	490	0	0	0	0	0	0
	%		99	0	0	0	0	0	0
RM of Springfield	#	13,715	12,820	890	70	810	0	0	0

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**Table 4-7: 2011 Aboriginal Population and Identity**

Location		Total Population in private households by Aboriginal Identity	Non-Aboriginal Identity	Aboriginal Identity	Aboriginal Identity <sup>1</sup>				
					First Nations	Metis	Inuk (Inuit)	Multiple Aboriginal Identities <sup>2</sup>	Aboriginal Identities Not Included Elsewhere <sup>3</sup>
	%		93	6	8	92	0	0	0
RM of Ste. Anne <sup>4</sup>	#	-	-	-	-	-	-	-	-
	%		-	-	-	-	-	-	-
RM of Stuartburn <sup>4</sup>	#	-	-	-	-	-	-	-	-
	%		-	-	-	-	-	-	-
RM of Tache	#	10,250	8,660	1,590	110	1,465	0	15	0
	%		84	16	7	92	0	1	0
Town of Ste. Anne	#	1,525	1,195	330	40	280	0	0	0
	%		78	22	13	88	0	0	0
Village of Glenboro <sup>5</sup>	#	625	580	45	0	35	0	0	0
	%		93	7	0	100	0	0	0
COW Census Tract 6020100.02	#	1,795	1,740	55	0	55	0	0	0
	%		97	3	0	100	0	0	0
COW Census Tract 6020110.07	#	6,620	6,060	560	40	510	0	0	0
	%		92	8	7	93	0	0	0
<b>TOTAL (RAA)</b>	#	<b>55,570</b>	<b>49,585</b>	<b>5,980</b>	<b>430</b>	<b>5,470</b>	<b>0</b>	<b>15</b>	<b>0</b>
	%		<b>89</b>	<b>11</b>	<b>7</b>	<b>92</b>	<b>0</b>	<b>0</b>	<b>0</b>

NOTES:

"-" information not available

<sup>1</sup> 'Aboriginal Identity' includes persons who reported being an Aboriginal person, that is, First Nations (North American Indian), Metis or Inuk (Inuit) and/or those who reported Registered or Treaty Indian status, that is registered under the *Indian Act* of Canada and/or those who reported membership in a First Nation or Indian band. Aboriginal peoples of Canada are defined in the *Constitution Act*, 1982, section 35 (2) as including the Indian, Inuit and Metis peoples of Canada.

<sup>2</sup> Multiple Aboriginal Identities includes persons who reported being any two or all three of the following: First Nations, Metis or Inuk (Inuit).

<sup>3</sup> includes persons who did not report being First Nations, Metis or Inuk (Inuit) but who did report Registered or Treaty Indian status and/or membership in a First Nation or Indian Band

<sup>4</sup> Data for this area has been suppressed for data quality or confidentiality reasons.

<sup>5</sup> The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypress

SOURCES: Statistics Canada 2013a, 2013b, 2013c, 2013d, 2013e, 2013f, 2013g, 2014h, 2013i, 2013j, 2013k, 2013l

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### 4.2.3.4 Aboriginal Population Density

Population density information from Statistics Canada was not available for the Aboriginal population in the Aboriginal Statistics Census data.

### 4.2.3.5 Aboriginal Dwellings

Where Aboriginal dwelling information was available, the RAA saw positive growth in the total number of occupied private dwellings by Aboriginal household (Table 4-8). The number of owned dwellings increased between 2006 and 2011. The average number of rooms remained relatively the same between 2006 and 2011 for each location in the RAA. Information on the average value of owned dwellings was not available for 2006 but is expected to have increased following trends in the RAA and province during the same period.

**Table 4-8: Aboriginal Dwelling Information for the RAA in 2006 and 2011**

Municipality	Occupied Private Dwellings by Aboriginal Household		% Dwelling Change	Total Private Households by Ownership				Average Number of Rooms		Average Value of Owned Dwellings (\$)	
				2006		2011		2006	2011	2006	2011
	2006	2011	2006-2011	Owned	Rented	Owned	Rented				
Manitoba	67,130	75,625	12.7	29,485	26,150	37,465	26,060	5.8	5.9	-	211,272
RAA											
RM of Headingley	-	-	-	-	-	-	-	-	-	-	-
RM of La Broquerie	155	320	106.5	110	45	275	40	6.9	7.1	-	229,206
RM of Macdonald	135	200	48.1	110	25	195	0	7.3	8.4	-	378,683
RM of Piney	155	-	-	140	10	-	-	6.5	-	-	-
RM of Ritchot	280	450	60.7	275	10	445	0	7.1	6.9	-	282,185
RM of Rosser	-	-	-	-	-	-	-	-	-	-	-
RM of South Cypress <sup>1</sup>	-	-	-	-	-	-	-	-	-	-	-
RM of Springfield	350	410	17.1	335	15	405	0	7.5	7.3	-	293,575
RM of Ste. Anne	300	-	-	270	25	-	-	6.0	-	-	-



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**Table 4-8: Aboriginal Dwelling Information for the RAA in 2006 and 2011**

Municipality	Occupied Private Dwellings by Aboriginal Household		% Dwelling Change	Total Private Households by Ownership				Average Number of Rooms		Average Value of Owned Dwellings (\$)	
				2006		2011		2006	2011	2006	2011
	2006	2011	2006-2011	Owned	Rented	Owned	Rented				
RM of Stuartburn	-	-	-	-	-	-	-	-	-	-	-
RM of Tache	455	580	27.5	430	25	555	25	7.3	7.2	-	279,460
Town of Ste. Anne	-	185	-	-	-	165	20	n/a	6.4	-	207,441
Village of Glenboro <sup>1</sup>	-	-	-	-	-	-	-	-	-	-	-
COW CT 6020100.02	-	-	-	-	-	-	-	-	-	-	-
COW CT 6020110.07	-	-	-	-	-	-	-	-	-	-	-
NOTES:											
“-” indicates data is not available											
Occupied private dwellings by Aboriginal Household:											
Private dwelling - A separate set of living quarters designed for or converted for human habitation in which a person of group of persons reside or could reside. In addition, a private dwelling must have a source of heat or power and must be an enclosed space that provides shelter from the elements, as evidenced by complete and enclosed walls, roof, doors and windows that provide protection from wind, rain and snow.											
Aboriginal household – either a non-family household in which at least 50% of household members self-identified as Aboriginal people, or a family household that meets at least one of two criteria. 1) at least one married spouse, common-law partner, or lone parent self-identified as an Aboriginal person or 2) at least 50% of household members self-identified as Aboriginal people. An Aboriginal person is anybody identifying as an Aboriginal person, a member of an Indian Band housing/First Nation, or a Treaty Indian or Registered Indian.											
<sup>1</sup> The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypress											
SOURCE: Statistics Canada 2007o, 2007p, 2007q, 2007r, 2007s, 2007t, 2007u, 2007v, 2013m, 2013n, 2013o, 2013p, 2013q, 2013r, 2013s											

### 4.3 INFRASTRUCTURE AND SERVICES

This section provides information on:

- Temporary accommodations
- Emergency and protection services:

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- Police/RCMP
  - Fire
- Municipal services:
  - Water and wastewater
  - Solid waste
- Transportation and utility infrastructure:
  - Linear infrastructure (transmission lines, pipelines, railways, roads and highways, aqueducts)
  - Licensed airstrips/aerodromes, floodways, lagoons and landfills
- Communications and radio signals

### 4.3.1 Temporary Accommodations

Temporary accommodations in the RAA include hotel/motels, resorts, campgrounds and bed and breakfasts (Table 4-9). Larger communities outside of the RAA that can provide temporary accommodation to workers include Brandon, Winnipeg and Steinbach.

Brandon has 1,413 rooms available in 20 hotels, motels and inns that can be used by workers when working on the Glenboro station upgrades. There are also four campgrounds and one cottage/cabin rental available in or in close proximity to Brandon (Tourism Brandon 2015). Hotels are at a premium during winter weekends and large events, including the Manitoba Ag days that sell out all the rooms within Brandon each January. Other large events occurring in Brandon include the Dakota Ojibway Winterfest, Tournament of Champions Brandon, Brandon Jazz Festival, Royal Manitoba Winter Fair, Source for Sports AAA Hockey Challenge, Manitoba Summer Fair, Western Canadian Ball Hockey Championship (2015), Canadian National Arabian & Half-Arabian Championship Horse Show, Association of Manitoba Municipalities Conference (every 2<sup>nd</sup> November), Municipal Officials Seminar (every second year), Wheat City Stampede, Milk Provincial High School Track & Field Championships (2016) and the Women's CIS Volleyball Championship (2016) (Moir 2015, pers. comm.).

Winnipeg has a variety of accommodations that can be used by workers within commuting distance of the city. Approximately 6,450 rooms are available for short term use. Peak tourism in the city happens in the summer (end of June through to September). Winnipeg hosts major events, which place heavy demands on the temporary accommodation capacity. Major events include the FIFA Women's World Cup, 2015 Grey Cup and the 2017 Canada Summer Games (Howdle 2015, pers. comm.).

The City of Steinbach has a total of 99 rooms available. Peak demands for temporary accommodations are December (over the Christmas break), March (annual hockey tournaments) and June, July and August. If no accommodations are available in Steinbach, visitors are directed to the La Broquerie Hotel located 10 minutes east of Steinbach (Doerksen 2015, pers. comm.).

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Vacancy rates in the RAA are typically low in June to September, with several places fully booked in this period. Winters and weekdays typically had higher vacancy rates. Some of the hotels in communities closer to the City of Winnipeg did not have a busy season unless an event (e.g., wedding) was going on in the community.

**Table 4-9: Hotels, Motels, B&Bs and Campgrounds in the RAA (not including Winnipeg)**

Hotel/Motel/B&B/Campground Name	Capacity (rooms, unless otherwise indicated)
<b>Carberry</b>	
Carberry Motor Inn	16
<b>Cypress River</b>	
Cypress Motor Inn	11
<b>Glenboro</b>	
Spirit Sands Lodging RV Park	2 cottages, 12 RV sites
Spruce Woods Inn	13 (owners are currently living there so only 10 are available)
Kiche Manitou Campground/Spruce Woods Yurts in Spruce Woods Provincial Park	83
Glenboro Hotel	13
<b>Headingley</b>	
Headingley Motor Inn	12
Motel 6 Headingley	70
<b>Ile des Chenes</b>	
Arrowhead RV Park	54 full service sites total
Ile Des Chenes Motor Hotel	4
<b>La Broquerie</b>	
Hotel La Broquerie	12
<b>Marchand</b>	
Marchand Inn	n/a
<b>Richer</b>	
Rock Garden Campground	n/a
Wild Oaks Campground	n/a
Richer Motor Hotel	8
<b>Ste. Anne</b>	
Lilac Resort, RV, Lodging and Water Park	3 lodges and 250 campsites
Raylene's Spa plus B & B	n/a
Ste. Anne Hotel	6

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**Table 4-9: Hotels, Motels, B&Bs and Campgrounds in the RAA (not including Winnipeg)**

Hotel/Motel/B&B/Campground Name	Capacity (rooms, unless otherwise indicated)
<b>Steinbach</b>	
Calder House Bed & Breakfast	2, can convert spa into third bedroom if needed
Chickadee Lane Bed & Breakfast	n/a
Days Inn Steinbach	49
Frantz Motor Inn	19
Ridgewood South Golf Course & Campground	83 sites
NOTES: " - " indicates data are not available	
SOURCE: Travel Manitoba 2014; RSGCC 2014; Jensen 2015 Calder House n.d., Tetreault 2015; Manaigre 2015; McDougall 2015; Boyko 2015; Okell 2015; Koltusay 2015; Vanasse 2015; Hotel La Broquerie 2015	

### 4.3.2 Emergency Services

Emergency services in the RAA include police and fire services. Emergency medical services (ambulance) are discussed in Section 4.7.1.

#### 4.3.2.1 Police

##### Police Detachments in the RAA

RCMP detachments in the RAA serve between 1,140 and 2,080 population per officer, and have caseloads ranging from 44 to 63 criminal code incidents per police officer. The local police detachments in Brandon and Winnipeg have much higher police strengths with 469 and 513 population per officer, which is common in urban areas. These communities have some of the highest police strengths (*i.e.*, lowest population per officer) in Canada, and exceed the national average of 518 population per officer.

The RCMP is the primary provider of police service in the RMs, while the Town of Ste. Anne and the cities of Winnipeg and Brandon are served by local police (Table 4-10).

**Table 4-10: RCMP and Local Police in the RAA**

Detachment/Location	Staff	Areas Served	Population per Police Officer	Criminal Code Incidents per Police Officer
<b>RCMP Detachments</b>				
Headingley RCMP Detachment	1 Sergeant 1 Corporal	Five RM's to the south and west of the City of	1,657	63.0

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**Table 4-10: RCMP and Local Police in the RAA**

Detachment/Location	Staff	Areas Served	Population per Police Officer	Criminal Code Incidents per Police Officer
	7 Constables 2 Public Service Employees	Winnipeg including the: <ul style="list-style-type: none"> <li>• RM of Macdonald</li> <li>• RM of Rosser south of the Canadian Pacific Railway (CPR) tracks</li> </ul> Communities: <ul style="list-style-type: none"> <li>• La Salle</li> <li>• Oak Bluff</li> <li>• Sanford</li> <li>• Headingley</li> <li>• St. Francois-Xavier</li> <li>• Starbuck</li> <li>• St. Eustache</li> </ul> (population ~15,000)		
Headingley Highway Patrol	17 members	Patrols the highway system in and around the Headingley Region  Police service provided to the RM of Macdonald	-	-
Morris RCMP Detachment	Morris detachment: <ul style="list-style-type: none"> <li>• 1 Sergeant</li> <li>• 3 Constables</li> <li>• 1 Public Service Employee</li> <li>• 2 Auxiliary Constables</li> </ul> Emerson detachment <ul style="list-style-type: none"> <li>• 1 Corporal</li> <li>• 4 Constables</li> <li>• 1 Public Service Employee</li> <li>• 2 Auxiliary Constables</li> </ul>	Morris, Emerson and includes the: <ul style="list-style-type: none"> <li>• RM of Stuartburn</li> </ul>	1,139	45.1
Oakbank RCMP Detachment	Oakbank Office: <ul style="list-style-type: none"> <li>• 1 Staff Sergeant</li> <li>• 1 Corporal</li> <li>• 9 Constables</li> <li>• 2 Detachment Service Assistants</li> <li>• 1 Municipal</li> </ul>	RM of Springfield Oakbank Town of Beausejour RM of Brokenhead Birds Hill Provincial Park (population ~25,000)	1,312	57.8

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**Table 4-10: RCMP and Local Police in the RAA**

Detachment/Location	Staff	Areas Served	Population per Police Officer	Criminal Code Incidents per Police Officer
	<p>Employee</p> <ul style="list-style-type: none"> <li>• 2 Auxiliary Constables</li> </ul> <p>Beausejour Office:</p> <ul style="list-style-type: none"> <li>• 1 Sergeant</li> <li>• 5 Constables</li> <li>• 1 Detachment Service Assistant</li> <li>• 1 Municipal Employee</li> <li>• 2 Auxiliary Constables</li> </ul> <p>Fleet includes:</p> <ul style="list-style-type: none"> <li>• 7 cars</li> <li>• 2 trucks</li> <li>• 2 snow machines</li> <li>• 2 ATV's</li> </ul>			
<p>Sprague RCMP Police Detachment (RM of Piney)</p> <ul style="list-style-type: none"> <li>• Falls under the Steinbach RCMP Detachment</li> </ul>	3 Rural Constables in Sprague and 1 in Buffalo Point	Sprague Buffalo Point RM of Piney	-	-
Steinbach RCMP Detachment	<p>Steinbach detachment:</p> <ul style="list-style-type: none"> <li>• 1 Staff Sargent</li> <li>• 1 Sergeant</li> <li>• 3 Corporals</li> <li>• 17 Constables</li> <li>• 1 Constable who acts as the Community Liaison Officer</li> </ul> <p>The Sprague Office (within this jurisdiction) has:</p> <ul style="list-style-type: none"> <li>• 1 Corporal</li> <li>• 3 Constables with 1 Constable assigned to the Buffalo Point First Nation Community Tripartite Agreement (CTA).</li> </ul> <p>The Traffic Unit posted in</p>	<p>City of Steinbach</p> <p>RMs of:</p> <ul style="list-style-type: none"> <li>• La Broquerie</li> <li>• Ste. Anne</li> <li>• Hanover</li> <li>• Reynolds</li> <li>• Piney</li> </ul> <p>Buffalo Point First Nation (population ~36,000)</p>	2,050	54.8

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**Table 4-10: RCMP and Local Police in the RAA**

Detachment/Location	Staff	Areas Served	Population per Police Officer	Criminal Code Incidents per Police Officer
	Steinbach (under the Division Traffic Services located in Headingley) consists of: <ul style="list-style-type: none"> <li>1 Corporal</li> <li>3 Constables</li> </ul>			
Stonewall RCMP Detachment <sup>1</sup>	1 Sergeant 1 Corporal 7 Constables	RM of Rosser north of the CPR tracks	1,168	48.9
St. Pierre-Jolys RCMP Detachment <ul style="list-style-type: none"> <li>Has two Satellite offices, one in Lorette and one in Niverville</li> </ul>	14 RCMP Officers 3 Public Service Employees 2 Municipal Support Staff 4 Auxiliary Officers Numerous Volunteers	St. Pierre-Jolys RM of Ritchot RM of Tache (population ~40,000)	2,077	58.6
Blue Hills RCMP Detachment (Glenboro South RAA)	1 Area Commander (located in Brandon) The Brandon Detachment includes: <ul style="list-style-type: none"> <li>1 Corporal</li> <li>4 Rural Constables</li> <li>2 Public Service Employees (1 full-time, 1 part-time)</li> <li>3 police cars and 1 4x4 truck</li> </ul> The Carberry Detachment includes: <ul style="list-style-type: none"> <li>1 Corporal</li> <li>3 Rural Constables</li> <li>1 Public Service Employee</li> <li>2 police cars, 1 two-rider utility vehicle and 1 4x4 truck</li> </ul> The Souris Detachment includes: <ul style="list-style-type: none"> <li>1 Corporal</li> <li>2 Municipal Constables</li> <li>1 Rural Constable</li> </ul>	Brandon, Souris and Carberry Detachments include 9 RM's and 18 communities including the Village of Glenboro and RM of South Cypress (population ~17,000)	1,357	44.0

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**Table 4-10: RCMP and Local Police in the RAA**

Detachment/Location	Staff	Areas Served	Population per Police Officer	Criminal Code Incidents per Police Officer
	<ul style="list-style-type: none"> <li>1 Public Service Employee</li> <li>Two police cars and 1 4x4 Truck</li> </ul>			
<b>Local Police</b>				
Winnipeg Police Service	1 Chief of Police 2 Deputy Chiefs 5 Superintendents 22 Inspectors 105 Sergeants/Staff Sergeants 202 Patrol/Detective Sergeants 1,116 Constables 525 Other members	City of Winnipeg (population ~700,000)	469	-
Sainte-Anne Police Department	1 Police Chief 2 Sergeants 2 Constables 1 Casual Officer Volunteer Auxiliary Officers (20)	Town of Ste. Anne	325	30.7
Brandon Police Service	89 Members 38 Civilian members 2 Police service dogs	City of Brandon (population ~46,000)	513	-
NOTES: 1 East Interlake Area (Defunct) includes Gimli Area (Gimli, Arborg) and Stonewall (Stonewall, Teulon)				
SOURCES: RCMP 2011a, 2011b, 2011c, 2012, 2013a, 2013b, 2014; RM of Headingley 2011a; Town of Ste. Anne 2013a; RM of Macdonald 2014; Van Osch 2014, pers. comm.; RM of Macdonald 2014; RM of Rosser 2014, pers. comm.; Town of Stonewall 2012; RM of Tache 2014, pers. comm.; WPS 2013; WPS 2014; Brandon Police Service 2015; Ashton 2015, pers. comm.; Statistics Canada 2014; Ste. Anne Police Department 2015.				

### Criminal Code Offences in Manitoba

There were a total of 89,000 Criminal Code offences in Manitoba in 2013, a 7% increase from 83,061 in 2012 (Table 4-11) (RCMP 2014).



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**Table 4-11: RCMP in Manitoba Criminal Code Offences 2012-2013**

Offence	2012	2013	% Change
Crimes against Property <sup>1</sup>	31,296	29,762	-5%
Crimes against the Person <sup>2</sup>	20,613	19,564	-5%
Drug Enforcement <sup>3</sup>	3,037	3,327	10%
Other Criminal Code Offences <sup>4</sup>	22,922	31,462	37%
Traffic Offences <sup>5</sup>	5,193	4,885	-6%
TOTAL	83,061	89,000	7%
NOTES: 2014 information was not available <sup>1</sup> includes arson, break and enter, fraud, mischief, possession of stolen goods, theft over \$5,000 and theft under \$5,000 <sup>2</sup> includes assaults, sexual offences, kidnapping/hostage/abduction, offences related to death and robbery/extortion/harassment/threats <sup>3</sup> includes drug enforcement (other), import/export, possession, production and trafficking <sup>4</sup> includes corruption, off. for/participation in criminal organization, offences against morals, offensive weapons, other criminal code and public order offences <sup>5</sup> includes dangerous operation of motor vehicle/vessel/aircraft and impaired operation related offences			
SOURCE: RCMP 2014b			

### Criminal Code Offences in the RAA

RCMP Criminal Code Violations in the RCMP detachments within the RAA are presented in Table 4-12. Total violations have decreased in Manitoba and all RAA police detachments with the exception of the Headingley RCMP detachment, which had a 6% increase in all Criminal Code Violations between 2012 and 2013. The RAA has had a decrease in total Criminal Code Violations and a decrease in all Criminal Code Categories with the exception of a 3% increase in total Federal Statutes.

**Table 4-12: RCMP Criminal Code Offences 2012-2013 by RAA**

Offence	Year	TOTAL (All Violations) (0000)	Violent Criminal Code Violations <sup>3</sup> (0100)	Property Crime <sup>4</sup> (0200)	Total Other Criminal Code violations <sup>5</sup> (0300)	Total Criminal Code Traffic Violations <sup>6</sup> (0900)	Total Federal Statutes <sup>7</sup> (0400)
Manitoba <sup>1</sup> (46)	2012	121,815	25,876	62,040	24,250	4,690	4,959
	2013	110,370	23,230	54,371	23,188	4,415	5,166
	% Change	-9	-10	-12	-4	-6	4

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**Table 4-12: RCMP Criminal Code Offences 2012-2013 by RAA**

Offence	Year	TOTAL (All Violations) (0000)	Violent Criminal Code Violations <sup>3</sup> (0100)	Property Crime <sup>4</sup> (0200)	Total Other Criminal Code violations <sup>5</sup> (0300)	Total Criminal Code Traffic Violations <sup>6</sup> (0900)	Total Federal Statutes <sup>7</sup> (0400)
Headingley RCMP Detachment (46794)	2012	557	93	319	63	67	15
	2013	597	92	316	71	88	30
	% Change	7	-1	-1	13	31	100
Morris RCMP Detachment (46013)	2012	575	101	214	102	56	102
	2013	478	70	200	88	48	72
	% Change	-17	-31	-7	-14	-14	-29
Oakbank RCMP Detachment (46799)	2012	1,033	133	680	91	78	51
	2013	910	111	606	79	71	43
	% Change	-12	-17	-11	-13	-9	-16
Steinbach RCMP Detachment (46808)	2012	770	170	410	81	77	32
	2013	697	172	349	91	46	39
	% Change	-9	1	-15	12	-40	22
Stonewall RCMP Detachment <sup>2</sup> (46806)	2012	368	57	236	36	11	28
	2013	279	52	177	23	16	11
	% Change	-24	-9	-25	-36	45	-61
East Interlake RCMP Detachment <sup>2</sup> (46020)	2012	1,246	240	673	128	116	89
	2013	1,148	268	603	120	84	76
	% Change	-8	12	-10	-6	-28	-15
St. Pierre Jolys RCMP Detachment (46803)	2012	948	219	517	113	58	41
	2013	864	230	438	92	61	43
	% Change	-9	5	-15	-19	5	5
Blue Hills RCMP Detachment (46027)	2012	668	107	319	76	122	44
	2013	567	74	298	64	92	39
	% Change	-15	-31	-7	-16	-25	-11
RAA RCMP Total	2012	127,980	26,996	65,408	24,940	5,275	5,361
	2013	115,910	24,299	57,358	23,816	4,921	5,519
	% Change	-9	-10	-12	-5	-7	3
<p>NOTES:</p> <p>() numbers in brackets relate to CANSIM table reference codes</p> <p><sup>1</sup> Manitoba RCMP stats may be different than previous section because different data sources were used (RCMP data</p>							

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**Table 4-12: RCMP Criminal Code Offences 2012-2013 by RAA**

Offence	Year	TOTAL (All Violations) (0000)	Violent Criminal Code Violations <sup>3</sup> (0100)	Property Crime <sup>4</sup> (0200)	Total Other Criminal Code violations <sup>5</sup> (0300)	Total Criminal Code Traffic Violations <sup>6</sup> (0900)	Total Federal Statutes <sup>7</sup> (0400)
<p>vs Statistics Canada data)</p> <p><sup>2</sup> East Interlake Area (Defunct) includes Gimli Area (Gimli, Arborg) and Stonewall (Stonewall, Teulon)</p> <p><sup>3</sup> homicide, criminal negligence causing death, attempted murder, sexual assault, assault, firearms (discharge of firearm with intent, in commission of offence and/or pointing a firearm), robbery, forcible confinement/kidnapping, abduction, extortion, criminal harassment, uttering threats, indecent or harassing phone calls, other violent violations</p> <p><sup>4</sup> breaking and entering, possession of stolen property, trafficking stolen property, theft of motor vehicle, theft over \$5,000, theft under \$5,000, fraud, identity theft, mischief, arson and altering, removing or destroying Vehicle Identification Number (VIN)</p> <p><sup>5</sup> counterfeiting, weapons violations, child pornography, prostitution, disturb the peace, justice violations (e.g., failure to comply with order, escape or help escape from lawful custody, prisoner unlawfully at large, fail to appear, breach of probation, other violations against administration of law and justice)</p> <p><sup>6</sup> impaired driving and other Criminal Code Traffic violations(e.g., dangerous operation causing death, bodily harm, street racing, failure to stop/remain)</p> <p><sup>7</sup> drug violations, precursor or equipment (crystal meth, ecstasy), Youth Criminal Justice Act, Other Federal Statutes (e.g., Bankruptcy Act, Income Tax Act, Canada Shipping Act, Customs Act, Competition Act, Excise Act, Total Immigration and Refugee Protection Act, Firearms Act, National Defense Act, other federal statutes)</p>							
SOURCE: Statistics Canada 2014							

### Winnipeg Police Calls and Criminal Code Offences

The Winnipeg Police Service has a ratio of 469 residents to every police officer. Total calls for service was 185,837 in the City of Winnipeg for 2013 with a total of 40,718 Criminal Code Offences (WPS 2014). Total calls per district in the City of Winnipeg were as follows:

- District #1 (central) – 62,357
- District #2 (west) – 40,996
- District #3 (north)– 46,180
- District #4 (east)– 36,304

MMTP crosses the Census Tracts that are located within the southern portions of Districts 2 and 4, which have the two lowest numbers of calls to the police. Data for Criminal Code Offences for the city police districts were not available for 2012, although 2013 data were available along with the percent change between 2012 and 2013 (Table 4-13). Both Districts 2 and 4 had a -15% decrease in crime between 2012 and 2013.

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**Table 4-13: Winnipeg Criminal Code Offences 2012-2013**

Offence	Winnipeg			District 2 (west)			District 4 (east)		
	2012	2013	% change	2012	2013	% change	2012	2013	% change
Violent Crimes <sup>1</sup>	9,189	7,968	-13	-	1,488	-15	-	1,437	-14
Property Crimes <sup>2</sup>	31,219	25,981	-17	-	7,332	-16	-	6,685	-16
Other Crimes <sup>3</sup>	5,312	5,011	-6	-	786	-9	-	779	-14
Traffic Offences <sup>4</sup>	611	625	2	-	141	-20	-	182	-2
CDSA <sup>5,6</sup>	811	840	4	-	138	-7	-	174	10
YCJA <sup>7,8</sup>	296	293	-1	-	39	-9	-	47	-24
Other Federal Statutes <sup>6</sup>	0	0	0	-	0	0	-	0	0
<b>TOTAL</b>	<b>47,438</b>	<b>40,718</b>	<b>-14</b>	<b>-</b>	<b>9,924</b>	<b>-15</b>	<b>-</b>	<b>9,304</b>	<b>-15</b>
<p>NOTES:</p> <p>"-" not available</p> <p><sup>1</sup> homicide, criminal negligence causing death, attempted murder, sexual assault (aggravated, with a weapon, level one and other sexual offences), assault (aggravated, with a weapon or causing bodily harm, level 1, against a Peace Officer and all other assaults), firearms offences, all robberies, kidnapping/forcible confinement, all abductions, extortion, criminal harassment, uttering threats, threatening/harassing phone calls and other violent crimes</p> <p><sup>2</sup> break and enter, possess stolen property, motor vehicle thefts, theft (over \$5,000), theft (under \$5,000), fraud, mischief and arson</p> <p><sup>3</sup> counterfeiting, weapons violations, child pornography, prostitution, disturb the peace, administration of justice violations and other Criminal Code Violations</p> <p><sup>4</sup> impaired driving/drive over 0.08mg and other Criminal Code traffic violations</p> <p><sup>5</sup> possession (cannabis, cocaine, other), trafficking/production/distribution (cannabis, cocaine, other)</p> <p><sup>6</sup> includes attempted and actual</p> <p><sup>7</sup> Youth Criminal Justice Act</p> <p><sup>8</sup> YCJA has an available option that diverts youths away from the court process through extrajudicial measures (such as formal diversionary programs).</p>									
SOURCE: WPS 2014									

### Brandon Police Calls and Criminal Code Offences

The Brandon Police Service received a total of 33,591 calls for service in 2014 with a total of 4,764 total Criminal Code Violations (4,523) and Federal Statute Offences (241) (Table 4-14). In 2014, the Brandon Police had 1,500 more calls and 500 more reported criminal offences in comparison to 2013 ending a five-year trend in declining reported crimes (Brandon Police Service 2015).

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**Table 4-14: City of Brandon Police Criminal Code Offences 2014**

Offence	2014
Controlled Drug & Substance Act <sup>1</sup>	58
Other Federal Statutes	183
<b>TOTAL Federal Statute Offences</b>	<b>241</b>
Crimes against person <sup>2</sup>	774
Crimes against property <sup>3</sup>	2,596
Other Crimes <sup>4</sup>	1,153
<b>Total Criminal Code Offences</b>	<b>4,523</b>
<b>TOTAL CRIMINAL CODE AND FEDERAL STATUTES</b>	<b>4,764</b>
NOTES:	
<sup>1</sup> possession, trafficking, production	
<sup>2</sup> homicide, sexual offences, assaults, forcible confinement/abduction, robbery, criminal harassment, uttering threats, threatening/harassing calls and other violent crimes	
<sup>3</sup> arson, break and enters, theft of vehicles, theft over \$5,000, theft under \$5,000, possession of stolen property, fraud and property damage	
<sup>4</sup> weapons offences, impaired driving and various other crimes	
SOURCE: Brandon Police Service 2015	

### 4.3.2.2 Fire

Firefighting services in the RAA are provided by a combination of professional and volunteer firefighters based out of various fire departments. Fire departments serving RMs typically have 20-30 members, and take between 25 and 100 calls per year. The 25-member Headingley Fire Hall serving the RM of Headingley, and the 60-member Springfield Fire and Rescue Service serving the RM of Springfield are the two busiest RMs in the RAA, taking 300 and 500 calls per year, respectively. KPIs with fire department representatives, including Headingley and Springfield representatives, indicate that the services available are sufficient to meet the current demand, and that they have capacity available to respond to more calls. The most common concern was that road works or road closures could affect response times (RM of Headingley 2011b; GCDC 2012; RM Macdonald 2014b; Town of Ste. Anne 2013b; Nadeau 2014, pers. comm.; Thomson-Ruttie 2014, pers. comm.; Ash 2014, pers. comm.; Van Osch 2014, pers. comm.; RM of Piney 2014; Palmer 2014, pers. comm.; MOFC 2014; Dayment 2014, pers. comm.).

The fire services in Winnipeg and Brandon take on a substantially higher call volume than the smaller fire departments serving the RMs, characteristic of the larger populations they serve. No issues with respect to service capacity were identified during personal communications with these communities' representatives (BFES 2015, pers. comm.; Bruce-Smith 2015, pers. comm.).

Fire departments, staff, areas served, equipment and the number of calls per year are presented in Table 4-15.

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### 4.3.3 Municipal Services

#### 4.3.3.1 Water

A number of centres and rural areas in the RAA are served by public drinking water systems and regional water supply systems (Table 4-16). Sources of water vary throughout the region and include Shoal Lake, Assiniboine River, La Salle River and groundwater sources. Water is typically processed to remove sludge and impurities. Capacity and usage information was not available for all RMs and communities in the RAA. RMs and communities with capacity and usage information available had capacity to meet current average demand.

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**Table 4-15: Fire Departments, Staff and Equipment in the RAA**

Fire Department	Staff	Areas Served	Equipment	# Calls Per Year
Headingley Fire Hall	25 member volunteer Fire Department	Part of the Boyne River Mutual Aid Fire District <ul style="list-style-type: none"> <li>provides support services and backup as required.</li> </ul>	<ul style="list-style-type: none"> <li>1999 International 1,050 gallons per minute (gpm) pumper</li> <li>1989 Ford F800 840 gpm pumper.</li> <li>First responders vehicle has a defibrillator and equipment to handle medical emergencies</li> <li>Jaws of Life vehicle and extraction equipment</li> </ul>	~ 300
La Broquerie Fire Department	25 Members	RM of La Broquerie, part of the RM of Ste. Anne (the three miles north of La Broquerie) and part of the RM of Reynolds (a few miles on the east side) <ul style="list-style-type: none"> <li>Part of the Eastman Mutual Aid District</li> </ul>	1 Pumper Truck 1 Tanker 1 Rescue Unit 1 4x4	~80-100
MacDonald Fire Department (located in Sanford)	23 Fire Fighters	RM of Macdonald including communities of Brunkild, Domain, La Salle, Oak Bluff, Osborne, Starbuck and Sanford.  This department is also part of the Boyne River Mutual Aid District which includes 12 other fire departments located in the Red River Valley	<ul style="list-style-type: none"> <li>Engine 401 has a 1992 Spartan Diamond Chassis and is equipped with a Darley pump capable of pumping 1,050 gpm and a water capacity of 1,000 gallons.</li> <li>Engine 403 has a 2003 Spartan Advantage FF Chassis and is equipped with a Hale pump capable of pumping 1,050 gpm with a capacity of 1,000 gallons and 30 gallons of class A foam.</li> <li>Engine 402 is a 2007 Ford F55 4x4 equipped with a Darley PTO pump capable of pumping 350 gpm with a capacity of 350 gallons on board.</li> </ul>	NA

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**Table 4-15: Fire Departments, Staff and Equipment in the RAA**

Fire Department	Staff	Areas Served	Equipment	# Calls Per Year
RM of Piney Fire Department 1. Station #1 is located in Piney 2. Station #2 is located in Sprague 3. Station #3 is located in Woodreach	40 members	The RM of Piney Part of the Eastman Mutual Aid District	<ul style="list-style-type: none"> <li>1983 Western Star Fire Truck with a pumping capacity of 1,750 gpm and a water tank size of 400 gallons</li> <li>1998 Ford F550 Darley KDM Pump with a pumping capacity of 650 gpm and a water tank size of 250 gallons.</li> <li>3,000 gallon Tanker</li> <li>2 – 1,500 gallon pump tankers with a pumping capacity of 500 gpm</li> <li>3 – 2,500 gallon storage tanks. 1 located in Vassar, 1 located in Woodridge and 1 located in Piney</li> <li>5 – 1,500 Gallon Portable dump trucks</li> </ul>	Variable, Approx. 60/yr.
RM of Ritchot has two fire Departments. 1. St. Adolphe Fire Hall #1 2. Ile des Chenes Fire Hall #2	28 members total, 14 at each Station	The RM of Ritchot <ul style="list-style-type: none"> <li>Part of the Eastman Mutual Aid District</li> </ul>	2 Pumper Trucks 1 Tanker Truck 1 Rescue Truck 1 Water Rescue Truck	Approx. 110
RM of Rosser Fire Department	26	RM of Rosser <ul style="list-style-type: none"> <li>Part of the South Interlake Mutual Aid District</li> </ul>	1 Pumper 1 Mini-Pumper 1 Rescue Unit 2 Tankers ¾ Grass Fire Unit	Average 90 – 100



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**Table 4-15: Fire Departments, Staff and Equipment in the RAA**

Fire Department	Staff	Areas Served	Equipment	# Calls Per Year
Springfield Fire and Rescue Service 1. Oakbank Fire department off Highway #206 2. Anola Fire Department 3. Redonda St. Fire Department in Transcona	60	RM of Springfield <ul style="list-style-type: none"> <li>Part of the North East Mutual Aid District</li> </ul>	12 Apparatus 3 Fire Engines Rescue Equipment at each Fire Hall, including the Jaws of Life 3 Tankers: 1 - 3,000 gallon tanker 2 - 900 gallon tankers	~500
RM of Stuartburn	-	<ul style="list-style-type: none"> <li>Part of the Eastman Mutual Aid District</li> </ul>	-	-
Town of Ste. Anne Fire Department	1 Fire Chief 1 Assistant Chief 3 Deputy Chiefs 21 Fire Fighters	Town of Ste. Anne and the RM of Ste. Anne <ul style="list-style-type: none"> <li>Part of the Eastman Mutual Aid District</li> </ul>	2 Pumpers 1 Rescue Unit 1 Quad with a water tank for grass fires	Approx. 110
Glenboro	Average between 21 to 25 Volunteers	Village of Glenboro and the RM of South Cypress <ul style="list-style-type: none"> <li>Part of the Turtle Mountain Mutual Aid District</li> </ul>	2 Pumpers 1 Tanker 1 Rescue Unit 1 Bush Truck (Pumper #3)	Varies from year to year. Last year had 1 structure fire and approximately 25 wild land/ agriculture fires

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**Table 4-15: Fire Departments, Staff and Equipment in the RAA**

Fire Department	Staff	Areas Served	Equipment	# Calls Per Year
Winnipeg	1,428 <ul style="list-style-type: none"> <li>• 916 Fire Fighters</li> <li>• 333 Paramedics</li> <li>• 70 Communications</li> <li>• 22 Fire prevention/ education</li> <li>• 87 Administrative/ support staff</li> </ul>	City of Winnipeg <ul style="list-style-type: none"> <li>• 34 stations are located within the City of Winnipeg including 31 Fire/EMS Stations, 1 Training Academy, 1 Communications Centre and 1 Headquarters</li> </ul>	Total vehicles – 270: <ul style="list-style-type: none"> <li>• 40 ambulances</li> <li>• 1 Multi Incident Response Unit (Bus)</li> <li>• 109 Fire Apparatuses (45 Pumps, 14 Rescues, 10 Quints, 1 Aerial Ladder, 6 Squads, 1 Rehab Unit (Bus), 1 Fuel Tanker, 2 Water Tankers, 2 Hazmat Trailers &amp; Tow Vehicles, 5 Utility Dump Trucks, 16 Trailers, 3 Boats, 4 Front-end Loaders)</li> <li>• 120 Support Vehicles (includes Rapid Response Vehicles such as SUVs, Pick-up Trucks, Vans, etc.).</li> </ul>	2014 calls TOTAL – 100,394 <ul style="list-style-type: none"> <li>• 100,394 Medical calls</li> <li>• 17,901 Fire</li> <li>• Other 8,015 (includes Standby's, cancelled enroute, etc.)</li> </ul>

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**Table 4-15: Fire Departments, Staff and Equipment in the RAA**

Fire Department	Staff	Areas Served	Equipment	# Calls Per Year
Brandon Fire and Emergency Services (BFES)	72 Staff total <ul style="list-style-type: none"> <li>• Fire Chief</li> <li>• 2 Deputy Chiefs</li> <li>• 2 Training Officers</li> <li>• 4 Fire Inspectors</li> <li>• 2.5 Admin staff</li> <li>• 60 Firefighters / paramedics</li> </ul>	City of Brandon Cornwallis Elton Oakland Whitehead <ul style="list-style-type: none"> <li>• Part of the Grand Valley Mutual Aid District</li> </ul>	1 quint 2 pumpers 1 water rescue trailer 1 Tech rescue/confined space trailer 1 Zodiac 1 Cougar (brush truck) 1 Command (Quad cab ¾ ton) 1 ¾ ton utility truck 1 Rescue unit 4 vans – fire prevention 1 chiefs vehicle 4x4 Laredo 5 ambulances	<b>TOTAL calls – 4,975 (2014)</b> Breakdown: 3,951 - ambulance 411 – alarms 330 – rescue MVC 83 – Investigation 68 – Fire (Other) 44 – Other 29 – Fires (Fire pit) 24 – Fires (In a structure) 20 – Fire (Structure) 8 – Rescue (Technical) 7 – HazMat Responses
NOTES: “-” information is not available				
SOURCE: RM Macdonald Fire Department 2008; RM of Headingley 2011b; GCDC 2012; Town of Ste. Anne 2013b; Nadeau 2014, pers. comm.; Thomson Ruttle 2014, pers. comm.; Ash 2014, pers. comm.; Martin Van Osch 2014, pers. comm.; RM of Piney 2014; Palmer 2014, pers. comm.; MOFC 2014; Dayment 2014, pers. comm.; BFES 2013; City of Brandon 2015; WFPS 2015; Dyck 2015, pers. comm.; Bruce-Smith 2015, pers. comm.				

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**Table 4-16: Water Utilities in the RAA**

RM / Urban Centre	Water Source	Water Facilities	Usage (million litres/day)	Capacity (million litres/day)
RM of Headingley	Cartier Regional Water Cooperative (CRWC) <ul style="list-style-type: none"> <li>• Headingley Raw Storage Reservoir (capacity 2.4 million litres; expandable)</li> <li>• Production – 60 L/second expandable to 120 L/second</li> <li>• Water main supplying the RM of Headingley – 200 mm diameter</li> </ul> Additional water treatment plant to be built in the RM of Headingley – peak distribution of 120 L/second	Municipal System <ul style="list-style-type: none"> <li>• Reservoir (expandable)</li> <li>• 3 distribution pumps (30 L/second)</li> <li>• 1 fire pump (1,200 L/second)</li> <li>• Distribution water mains (250 mm in diameter)</li> </ul>	Avg: 0.95 Max: 1.0	2.2
RM of La Broquerie	Private wells	NA <sup>1</sup>	NA <sup>1</sup>	NA <sup>1</sup>
RM of Macdonald	La Salle River <ul style="list-style-type: none"> <li>• Gravity fed pumping station</li> <li>• Retention ponds (272 million litre capacity)</li> </ul>	Water treatment facility (located in Sanford, Manitoba); pumping station, retention ponds, reservoirs (Sanford 1,912,000 L, Domain 150,000 L, La Salle 1,265,000, Oak Bluff 670,000 L, Starbuck 280,000 L, Brunkild 200,000)	Avg: 1.70 Max: 2.40	
RM of Piney	Private wells	NA <sup>1</sup>	NA <sup>1</sup>	NA <sup>1</sup>
RM of Ritchot	Groundwater, water treatment	Wells, pump houses, water treatment plant	1.1 – 1.2	2.74

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**Table 4-16: Water Utilities in the RAA**

RM / Urban Centre	Water Source	Water Facilities	Usage (million litres/day)	Capacity (million litres/day)
RM of Rosser	<ul style="list-style-type: none"> <li>CRWC</li> <li>Community of Grosse Isle Water and Sewer System (contracted services from the RM of Rockwood)</li> </ul>	Rosser Rural Regional Water System <ul style="list-style-type: none"> <li>Serviced customers: approx. 175 customers; rural customers (8) not metered.</li> <li>23 fire hydrants</li> </ul> Infrastructure upgrades completed to the Headingly CRWC system forecasted by 2017	-	-
	Other RM residents <ul style="list-style-type: none"> <li>Private wells</li> </ul>	NA <sup>1</sup>	NA <sup>1</sup>	NA <sup>1</sup>
RM of South Cypress and Village of Glenboro	Village of Glenboro <ul style="list-style-type: none"> <li>Private Wells, sandpits</li> </ul>	NA <sup>1</sup>	NA <sup>1</sup>	NA <sup>1</sup>
	Other RM residents <ul style="list-style-type: none"> <li>Private wells, sandpits</li> </ul>	NA <sup>1</sup>	NA <sup>1</sup>	NA <sup>1</sup>
RM of Springfield	Groundwater	<ul style="list-style-type: none"> <li>Anola treatment plant</li> <li>Oakbank/Dugald treatment plant</li> </ul>	Anola treatment plant 0.03 Oakbank/Dugald treatment plant 0.45	Anola treatment plant 0.107 Oakbank/Dugald treatment plant 0.80
RM of Ste. Anne and Town of Ste. Anne	Town of Ste. Anne <ul style="list-style-type: none"> <li>Private wells</li> </ul>	NA <sup>1</sup>	NA <sup>1</sup>	NA <sup>1</sup>
	Other RM residents <ul style="list-style-type: none"> <li>Private wells</li> </ul>	NA <sup>1</sup>	NA <sup>1</sup>	NA <sup>1</sup>
RM of Stuartburn	Private wells	NA <sup>1</sup>	NA <sup>1</sup>	NA <sup>1</sup>

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**Table 4-16: Water Utilities in the RAA**

RM / Urban Centre	Water Source	Water Facilities	Usage (million litres/day)	Capacity (million litres/day)
RM of Tache, Town of Landmark and Town of Lorette	Town of Landmark <ul style="list-style-type: none"> <li>Served by two wells completed to the carbonate aquifer.</li> </ul>	Town of Landmark <ul style="list-style-type: none"> <li>1,282 residents serviced (96% of the total population)</li> <li>Well 1 – 10" well drilled in 1990 to a depth of 260.8'; well 2 – 8" well drilled in 1995 to a depth of 96.9'</li> <li>Water treatment – Class 1 water treatment facility – as of 2014 chlorine disinfection</li> <li>2 pump houses – total of six 40 gpm submersible pumps</li> <li>Distribution water main diameter – 4" and 6"</li> <li>Service connections – 423 residential, 12 commercial, 6 industrial</li> </ul>	Avg: 0.41 Max: 1.03	0.38
	Town of Lorette <ul style="list-style-type: none"> <li>Served by two wells. One well completed to the carbonate aquifer and one well completed to the sandstone aquifer.</li> </ul>	Town of Lorette <ul style="list-style-type: none"> <li>2,860 residents serviced (95% of the total population)</li> <li>Reservoir</li> <li>Well 1 – 10" well drilled to a depth of 130' into the carbonate aquifer; well 2 – 10" well drilled to a depth of 370' into the sandstone aquifer</li> <li>Water treatment – Class 1 water treatment facility –chlorine disinfection followed by ultraviolet (UV) radiation</li> <li>Pumps: 1 Grundfos 15hp pump (662 L/minute), 1 Grundfos 7.5hp pump (340 L/minute)</li> </ul>	Avg: .066 Max: 1.48	0.81

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**Table 4-16: Water Utilities in the RAA**

RM / Urban Centre	Water Source	Water Facilities	Usage (million litres/day)	Capacity (million litres/day)
		<ul style="list-style-type: none"> <li>Distribution – 3 variable speed 15hp duty pumps (each delivery 897 L/minute), 1 5hp jockey pump (196 L/minute)</li> <li>Distribution water main length – approx. 5.6 km</li> </ul> Service connections – 1,041 residential, 25 commercial, 11 industrial		
City of Winnipeg	Shoal Lake	Aqueduct, water reservoirs, pumping stations	Avg: 173.4	225
City of Steinbach	Groundwater	Wells; iron removal plant; reservoir	Avg: 3.64 Max: 7.27	5.46
City of Brandon	Assiniboine River; groundwater as emergency backup	2 groundwater wells; water treatment facility; 4 booster stations; 18 Mega litre reservoir	Avg: 23.15	54
NOTES: " - " information is not available NA <sup>1</sup> = Private wells not metered				
SOURCES: Blatz 2015a, pers. comm.; City of Brandon 2014; Darker 2015, pers. comm.; Elson 2015, pers. comm.; Maynard 2015, pers. comm.; McIntosh 2015, pers. comm.; MCR 2012a, 2012b, 2012c, 2012d, 2012e, 2012f; Muller 2015, pers. comm.; Penn-Co Construction n.d.; Poersch 2015, pers. comm.; Remillard 2015, pers. comm.; RM of Headingley 2011c; RM of Macdonald 2014a; RM of Macdonald 2014b; RM of Springfield 2011; Wells 2015, pers. comm.				

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### 4.3.3.2 Wastewater

RMs and urban communities in the RAA use a variety of wastewater facilities, including treatment plants, lagoons, low pressure sewage systems or septic tanks (Table 4-17). Usage and capacity information was not available for all RMs and communities. RMs and communities with capacity and usage information had capacity to meet average demand. The Town of Ste. Anne has recently experienced growth with an additional 92 people (See Table 4-1 in Section 4.2.1) and 69 dwellings (See Table 4-3 in Section 4.2.1.3) between the 2006 and 2011 census periods. An additional hundred single family dwellings are planned to be constructed over the 2015/2016 period. As such, the town has been expanding the lagoon and will be running new sewage lines out to the developments (Verrier 2015, pers. comm.).

**Table 4-17: Wastewater Utilities in the RAA**

RM / Urban Centre	Wastewater Facilities	Usage (million litres/day)	Capacity (million litres/day)
RM of Headingley	Low pressure sewage system, septic tanks; solids from septic tanks are trucked to the Winnipeg wastewater treatment facility.	0.83	-
RM of La Broquerie	Sewage lagoons <i>Proposed expansion of sewage lagoons (in service end of 2016)</i> ~27,871 m <sup>3</sup>	0.73	<ul style="list-style-type: none"> <li>Current Lagoon (cells 2 and 4) = 64,842 m<sup>3</sup></li> <li>New lagoon: 55,742 m<sup>3</sup></li> </ul>
RM of Macdonald	Low pressure sewage system, septic tanks	-	-
RM of Piney	-	-	-
RM of Ritchot	Wastewater stabilization pond	1.15	-
RM of Rosser	Rosser-Rockwood Wastewater Treatment Lagoon <ul style="list-style-type: none"> <li>2 cells</li> </ul>	Forecasted: 0.20 m <sup>3</sup> /day	71, 659 m <sup>3</sup>
	Wastewater haulers, holding tanks, septic tanks and fields	NA <sup>1</sup>	NA <sup>1</sup>
RM of South Cypress and Village of Glenboro	Village of Glenboro <ul style="list-style-type: none"> <li>Low pressure sewage system with 2 cell lagoon</li> </ul>	0.17	0.38
	Other RM residents <ul style="list-style-type: none"> <li>Holding tanks, septic tanks and fields</li> </ul>	NA <sup>1</sup>	NA <sup>1</sup>
RM of Springfield	Sewage treatment facility, Springfield Lagoon	1.4	3.0



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**Table 4-17: Wastewater Utilities in the RAA**

RM / Urban Centre	Wastewater Facilities	Usage (million litres/day)	Capacity (million litres/day)
RM of Ste. Anne and Town of Ste. Anne	Town of Ste. Anne <ul style="list-style-type: none"> <li>Lagoon, force main (79.2 litres/second)</li> </ul>	NA	<ul style="list-style-type: none"> <li>Lagoon: 51,100 m<sup>3</sup></li> <li>Flow rate: 295 litres/capita/day</li> </ul>
	Other RM residents <ul style="list-style-type: none"> <li>Lagoon, no forced line</li> </ul>	-	-
RM of Stuartburn and Town of Vita	Town of Vita <ul style="list-style-type: none"> <li>Low pressure sewer system with 3 cell lagoon</li> <li>Service connections – 174 single unit, 13 multiple units</li> </ul>	-	39,600 m <sup>3</sup> /day
	Other RM residents <ul style="list-style-type: none"> <li>Holding tanks, septic tanks and fields</li> </ul>	NA <sup>1</sup>	NA <sup>1</sup>
RM of Tache, Town of Landmark and Town of Lorette	Town of Landmark <ul style="list-style-type: none"> <li>Lagoon</li> </ul>	0.91	1.51
	Town of Lorette <ul style="list-style-type: none"> <li>Lagoon</li> </ul>		
	Other RM residents <ul style="list-style-type: none"> <li>Septic fields, holding tanks, sewage ejector</li> </ul>		
City of Winnipeg	Wastewater treatment plant, sewer lines	245	-
City of Steinbach	Lagoon	5.46	29.5
City of Brandon	-	-	-
NOTES: “-” information is not available NA <sup>1</sup> = Private systems not metered			
SOURCES: Blatz 2015a, pers. comm.; Darker 2015, pers. comm.; Elson 2015, pers. comm.; Maynard 2015, pers. comm.; McIntosh 2015, pers. comm.; MCR 2012a, 2012b, 2012c, 2012d, 2012e, 2012f, Penn-Co Construction n.d.; Muller 2015, pers. comm.; Remillard 2015, pers. comm.; RM of Headingley 2011c; RM of Macdonald 2014a; RM of Macdonald 2014b; RM of Springfield 2011; Wells 2015, pers. comm.			

### 4.3.3.3 Solid Waste

Solid waste disposal sites and transfer stations operating in the RAA are illustrated in Map 4-4 - Infrastructure and Services. Household hazardous waste collection eco-depots have been established for a variety of wastes throughout the RAA under Green Manitoba's Manitoba Recycling Programs initiative, including for the collection of: tires, pesticide containers, oil and antifreeze, paint, lead-acid batteries, rechargeable batteries and multi product collection

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(Green Manitoba 2015). Commercial hazardous waste is transported and processed at the Miller Environmental facility, located in the southern portion of the province (Kalyata 2015, pers. comm.).

Disposal sites, landfills, and eco-depots operate throughout the region, collecting household, yard, industrial, and hazardous wastes. Many landfills in the region have ample capacity to accept more waste, including the Brady Road Resource Management Facility in Winnipeg which has approximately 100 years of available capacity. South of Winnipeg, the Steinbach Landfill and the De Salaberry Landfill also have 20 and 40+ years of capacity.

**Table 4-18: Waste Disposal Facilities in the RAA**

RM / Urban Centre	Facility	Accepts	Current Usage (tonnes/year)	Capacity Notes
RM of Macdonald	<ul style="list-style-type: none"> <li>Sanford</li> <li>Starbuck</li> </ul>	Household garbage, CRD waste, industrial non-hazardous waste	NA	NA
RM of Piney	De Salaberry Landfill	Household garbage, CRD waste, industrial non-hazardous waste	NA	40+ years
RM of Ritchot	RM of Ritchot Disposal Site	Household garbage, CRD waste, industrial non-hazardous waste	70,000	20+ years
RM of Rosser	Rosser Transfer Station	NA	NA	NA
RM of South Cypress Village of Glenboro	Glenboro Waste Disposal Ground	Household garbage, CRD waste, industrial non-hazardous waste	NA	Large site; no plans for expansion; indicates available capacity
RM of Springfield	<ul style="list-style-type: none"> <li>Hillside Transfer Station</li> <li>Oakwood Transfer Station</li> </ul>	Household waste	NA	Nothing planned
RM of Stuartburn	RM of Stuartburn Transfer Station (transferred to Steinbach or Ile des Chenes)	Household waste	NA	NA
RM of Tache	Monominto Lorette	NA	NA	NA

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**Table 4-18: Waste Disposal Facilities in the RAA**

RM / Urban Centre	Facility	Accepts	Current Usage (tonnes/year)	Capacity Notes
City of Winnipeg RM of Headingley	Brady Road Resource Management Facility	Household garbage, CRD waste, industrial non-hazardous waste	400,000	Capacity for 100+ years
City of Steinbach RM of La Broquerie RM of Ste. Anne Town of Ste. Anne	Steinbach Landfill	Household garbage, CRD waste, industrial non-hazardous waste	37,775	Capacity for 20+ years
NOTES: NA = Not Available				
SOURCES: Emterra Group 2015; Green Manitoba 2015; MCR 2012d; MCR 2012e; MCR 2012f; RM of Ste. Anne 2014; MCWR 2014; MCWR 2015; Forrester 2014; Steinbach 2013; RM of Headingley 2011c; Nault 2015, pers. comm.; Kalyata 2015, pers. comm.; Muller 2015, pers. comm.; McKay 2015, pers. comm.; Tanasichuk 2015, pers. comm.; Maynard 2015, pers. comm.				

### 4.3.4 Transportation and Utility Infrastructure

The RAA contains numerous transportation and utility infrastructure networks, including linear rights-of-way for provincial and municipal roadways, railways, hydro transmission lines, pipelines and other linear infrastructure. The RAA also contains non-linear infrastructure including aerodromes, lagoons and landfills. Map 4-4 – Infrastructure and Services shows the transportation and utility infrastructure crossed by, paralleled by, or in proximity to the Project corridor and are also listed in Table 4-19.

**Table 4-19: Linear Infrastructure Crossed or Paralleled by the Project Corridor**

Infrastructure	Crossings (number)	Length Paralleled (km)	Average Distance (m)
<b>Transmission Lines:</b>			
D12P (Dorsey to Portage South)	1	None	N/A
D14S (Dorsey to St. Leon)	1	21.3	120
D55Y (Dorsey to La Verendrye)	2	26.1	120
D15Y (Dorsey to La Verendrye)	2	26.1	95
D11Y (Dorsey to La Verendrye)	2	26.1	95
Y51L (La Verendrye to Letellier)	1	6.2	85
R49R (Ridgeway to Richer South)	1	15.1	930
	2	4.2	50
	0	7.9	80

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**Table 4-19: Linear Infrastructure Crossed or Paralleled by the Project Corridor**

Infrastructure	Crossings (number)	Length Paralleled (km)	Average Distance (m)
M602F (Riel to Forbes) <sup>1</sup>	0	23.6	50
<b>Railways:</b>			
Canadian National (CN) – Sprague	1	None	N/A
Greater Winnipeg Water District (GWWD)	2	13.2	950
Canadian Pacific (CP) – Emerson	1	None	N/A
CN – Letellier	1	None	N/A
CPR – La Riviere	1	None	N/A
Central Manitoba Railways Inc. Carman	1	None	N/A
CPR – Glenboro	1	None	N/A
CN – Rivers	1	None	N/A
CPR – Carberry	1	None	N/A
<b>Provincial Roads and Highways:</b>			
Major <sup>2</sup> PTHs (1, 12, 59, 75)	5 <sup>4</sup>	None	N/A
Minor <sup>3</sup> PTHs (2, 3, 89)	3	None	N/A
PRs (200, 201, 206, 207, 210, 221, 241, 300, 302, 330, 334, 427, 501)	13	None	N/A
<b>Pipelines:</b>			
Enbridge	2	None	N/A
TransCanada	3	None	N/A
<b>Aqueducts:</b>			
Winnipeg Water Aqueduct	2	13.0	900
<b>Floodway:</b>			
Red River Floodway	1	17.7	150
<b>Aerodromes:</b>			
Winnipeg/Lyncrest Airport	None	N/A	1,800
Unnamed clearing (E-671271, N-5526000)	None	N/A	420
Unnamed clearing (E-683444, N-5495630)	None	N/A	800
Unnamed clearing (E-683780, N-5484608)	None	N/A	1,100
Zhoda Airport	None	N/A	5,100
Piney Pinecreek Border Airport	None	N/A	4,000
<b>Lagoons:</b>			

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**Table 4-19: Linear Infrastructure Crossed or Paralleled by the Project Corridor**

Infrastructure	Crossings (number)	Length Paralleled (km)	Average Distance (m)
Oak Bluff Wastewater Treatment Lagoon	None	N/A	290
RM of La Broquerie Wastewater Lagoon	None	N/A	900
<b>Landfills:</b>			
Brady Landfill	None	N/A	2,400
<p>NOTES:</p> <p><sup>1</sup> M602F is currently being realigned to the north of its current position. Paralleling distance is estimated.</p> <p><sup>2</sup> In this context, Major PTHs are those that have more than 2 lanes and/or have volumes that may exceed 10,000 vehicles per day.</p> <p><sup>3</sup> In this context, Minor PTHs are those that have 2 lanes and volumes less than 10,000 vehicles per day.</p> <p><sup>4</sup> PTH12 is crossed twice.</p> <p>CN- Canadian National Railway CPR- Canadian Pacific Railway PTH - Provincial Trunk Highway</p>			
SOURCE: Province of Manitoba 2014			

### 4.3.4.1 Roads

The road network in the RAA includes provincial and municipal roads owned and maintained by MIT and municipal governments. Baseline information about roads and road traffic can be found in the Project Traffic Impact Study.

### 4.3.4.2 Pipelines and Aqueduct

Numerous pipeline networks are located in the Project region, including natural gas pipelines, oil and gas pipelines, water pipelines and an aqueduct described below.

Manitoba Hydro (formerly Centra Gas) maintains an underground natural gas pipeline between the Landmark Gate Station at Landmark to the Selkirk Generating Station at East Selkirk. Other Manitoba Hydro/Centra Gas natural gas pipelines include facilities between Ste. Anne, Steinbach and La Broquerie, and between Landmark and Lorette.

TransCanada Pipelines Ltd. (TCPL) mainline crosses south of Winnipeg to Ile des Chenes, linked to a series of compressor stations, and continues easterly to Spruce and Falcon Lake stations in eastern Manitoba. TCPL maintains natural gas compressor and gate stations at Ile des Chenes and Landmark, Manitoba. Other pipelines that cross through the region are owned by Spectra Energy Natural Gas Liquids (between Rapid City and Winnipeg) and Enbridge Pipelines (between Cromer and Gretna, Manitoba).

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The RM of Headingley is supplied by the Cartier Regional Water Co-op and includes a reservoir located in the community. In the RM of Macdonald, a regional water treatment plant is located at Sanford with water supplied from the La Salle River. Reservoirs are located in Starbuck, Brunkild, Domain, La Salle and Oak Bluff. The regional water distribution system in the RM of Ritchot utilizes groundwater sources from an aquifer in the RM of Hanover near New Bothwell. In addition, an extensive network of rural water pipelines has been developed to serve the RM of Ritchot. The RM of Rosser is also supplied by the Cartier Regional Water Co-op, as is the community of Grosse Isle (MCWS Water Stewardship Division 2014a).

The GWWD underground water aqueduct crosses east through southeastern Manitoba between Winnipeg and Shoal Lake at the Manitoba-Ontario border, running alongside the existing railway line.

### 4.3.4.3 Transmission Lines and Associated Facilities

There are 14 transmission lines in the vicinity of the Project primarily outside of the City of Winnipeg (i.e., Southern Loop Corridor, Riel Vivian Corridor and south to the US border):

- **Dorsey to Portage South (D12P):** a 230 kV transmission line emanating from Dorsey Station, in the RM of Rosser, west to Portage South in the RM of Portage la Prairie.
- **Dorsey to La Verendrye (D11Y/D15Y):** a double circuit 230 kV transmission line between Dorsey Station, in the RM of Rosser, and La Verendrye Station in the RM of Macdonald.
- **Dorsey to St. Leon (D14S):** a 230 kV transmission line emanating from Dorsey Station and proceeding southwest to St. Leon in the RM of Lorne.
- **La Verendrye to Letellier (Y51L):** a 230 kV transmission line emanating from La Verendrye Station, in the RM of Macdonald, and proceeding south to Letellier in the RM of Montcalm.
- **La Verendrye to Morden (YM31) and Rosenfeld (YF11):** two 115 kV transmission lines between La Verendrye Station south to Morden and Rosenfeld, in the RMs of Rhineland and Stanley respectively.
- **Riel to Ridgeway (M33R/M32R):** a double circuit 230 kV transmission line emanating from Riel Converter Station proceeding north to Ridgeway Station in the RM of Springfield.
- **Riel to St. Vital (M87V):** a 230 kV transmission line emanating from Riel Converter Station proceeding west to St. Vital Station in Winnipeg.
- **Dorsey to Forbes (M602F):** a 500 kV direct current (DC) transmission line starting at Dorsey Converter Station, in the RM of Rosser, and proceeding east then south to the US border.
- **Ridgeway to Richer (R49R); Richer to Moranville (R50M):** a 230 kV transmission line emanating from Ridgeway Station northeast of Winnipeg and crossing east then south through the Richer South Station to the US border.
- **Slave Falls to Scotland (S1/S2):** a 138 kV transmission line commences at Slave Falls Station in Whiteshell Provincial Park to Scotland Station in Winnipeg.
- **St. Vital to Ile des Chenes (VT63):** a 115 kV transmission line commences at St. Vital Station in Winnipeg and cross east to Ile des Chenes (TCPL Compressor Station).

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- **St. Vital to Hanover (VJ50):** a 115 kV transmission lines commences at St. Vital Station in Winnipeg and crosses southeast to Randolph and Hanover Stations in the Linden and Steinbach areas, respectively.

The Dorsey Converter Station is located in the RM of Rosser, northwest of Winnipeg. The Riel Converter Station is located in the RM of Springfield just east of Winnipeg. Other transformer stations within the Project region include Richer South, Randolph and Hanover.

### 4.3.4.4 Other Infrastructure

The Red River Floodway is located along the south and east sides of the City of Winnipeg. Sections of the Southern Loop Corridor are located along the south and east banks of the floodway (*i.e.*, approximately 19 km). The flood control system includes: a floodway inlet in the City of Winnipeg; the floodway channel itself extending through the city and RM of Springfield; a floodway outlet at the community of Lockport to the north; and a west dike through the RM of Macdonald. The west dike extends from the City of Winnipeg floodway inlet to the south and west for approximately 45 km. The dike provides flood protection to the city by preventing Red River floodwaters from flowing into the La Salle River and then flowing into Winnipeg.

Part of the Project region is located within the Red River Valley Designated Floodway Area. There are community ring dikes in the Red River Valley portion of this area designed to provide flood protection up to 1997 flood levels. The communities with ring dikes in the region include Grande Pointe, St. Adolphe and Ste. Agathe, all in the RM of Ritchot (Province of Manitoba n.d.).

### 4.3.5 Communications

Approximately 265 communication, cell and broadcast towers are located throughout the RAA (Map 4-4 – Infrastructure and Services), concentrated in the RMs of Springfield, Tache, Ste. Anne and Piney. These are maintained by communication companies, broadcast companies and radio stations. Cellular coverage in the region is widespread through service providers (*e.g.*, Manitoba Telecom System [MTS], Rogers and Telus) with the exception of spotty coverage south of Marchand, in the southeastern part of the RM of La Broquerie and the southwestern portion of the RM of Piney, between the communities of Woodridge and Piney to the US border. Information about radio noise and radio signals can be found in the Exponent study (Exponent 2015).

## 4.4 EMPLOYMENT AND ECONOMY

This section provides information on local and regional economies within the RAA including:

- Local and regional economy
  - Manitoba economy
  - Municipal government finances
  - Major industries and employers

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- Educational attainment and Aboriginal educational attainment;
- Labour force by activity and Aboriginal labour force by activity;
  - participation rate
  - employment rate
  - unemployment rate
- Labour force by industry and Aboriginal labour force by industry;
- Labour force by occupation and Aboriginal labour force by occupation;
- Construction labour force; and
- Labour income and earnings and Aboriginal labour income and earnings.

### 4.4.1 Provincial Economy

Manitoba has a diversified \$55 billion economy (2012). Manufacturing was the largest sector accounting for 10% of the province's GDP, closely followed by primary industries (e.g., agriculture and resourced-based industries such as mining and forestry), accounting for 9%. Manitoba's manufacturing sector grew by 32% from 2002 to 2012 led by shipments by food processing, primary metals and transportation equipment. Manufacturing shipments for Manitoba in 2012 totaled \$15.6 billion (Province of Manitoba 2014b).

Between 2006 and 2011, there was a decline in dependence on agricultural and resource based industries in Manitoba. The number of farms in Manitoba decreased by 16.7% for a total of 15,877 farms compared to a national decrease of 10.3%. The number of farm operators in Manitoba decreased by 16.2% to 22,315. Although total farm area in the Province decreased by 5.5% between 2006 and 2011, the average farm size increased 13.4% to 1,135 acres from 1,001 in 2006. In comparison, Canada had a 6.9% increase in average farm size, from 728 acres to 778 acres (Statistics Canada 2015a; Statistics Canada 2015b). Within the RAA, there are 1,456 farms for a total of 9% of Manitoba's farms (Statistics Canada 2011).

The major industries and major manufactured goods exports in Manitoba include aerospace equipment, processed foods, electronics, chemicals and transportation equipment (urban and intercity buses) (Province of Manitoba 2014).

### 4.4.2 Local and Regional Economy

#### 4.4.2.1 Industrial Sectors and Employers in the RAA

Industrial sectors and employers in the RAA are presented in Table 4-20. As noted in the table, agriculture and agriculture-related business are an important part of the economy in the RAA.



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**Table 4-20: Industrial Sectors and Employers in the RAA**

Rural Municipality	Sectors	Major Employers
RM of Glenboro - South Cypress <sup>1</sup>	Agriculture (wheat, barley, oats, flax, canola, potatoes); livestock (beef, dairy, sheep) Sales and service businesses (farm machinery), local government, commercial business, financial services, tourism	Glenboro Building Centre, Cypress Planning District, Glenboro Golf and Country Club, Crop Production Services, MASC Crop Insurance, Royal Bank of Canada, Westoba Credit Union, Spirit Sands and Kiche Manitou campground and beach (Spruce Woods Provincial Park)
RM of Headingley	Landscaping centres, market gardens, service industries, tourism	Shelmerdine Nurseries, Tailleu Construction, The Gates on Roblin, T & T Seeds, Flying J Husky, Breezy Bend Country Club, John Blumberg Golf Course and Softball complex
RM of La Broquerie	Agriculture (pork production, beef, poultry and dairy farms); commercial business, finance; transportation, tourism	Hyllife, JV Hog Farms, Deer Meadow Tree Farm, La Broquerie Lumber RONA, La Verendrye Golf, Meadowland Research Farm (Porcherie Gauthier Ltee), Tetrault Transport
RM of Macdonald	Agriculture, farm equipment, wood processing, building supply products, transport	Enns Brothers (farm equipment); McMunn and Yates Distribution Centre, Perimeter Lumber, Sawyer Wood Products, Wildwood Forest Products, Superior Trusses (forest products); Kleyson Transport, Starbuck Co-op, Brandt Tractor, J&D Tractor
RM of Piney	Agriculture and forestry, commercial business, finance, tourism	Caisse Financial Group, D & P Backhoe & Excavating Service, Piney Fine Natural Spring Water, Prevost Forest Products, Raw Forest Products, FPM Peat Moss CO. Ltd., Silver Birch Resort Outfitting Limited
RM of Ritchot	Cereal and oilseed operations, pork and dairy farms	TCPL, Brooder Frères, the Municipality Office in St. Adolphe, the University of Manitoba Research Facility at Glenlea
RM of Rosser	Agriculture (dairy, grains, cattle), agri-business, farm equipment supply, transportation, waste management, tourism	CentrePort Industries, Dorsey Converter Station, BFI Prairie Green Landfill, Maxim Transport, Manitoba Hydro, Bel Acres Golf and Country Club, Players Golf Course, Trans X, Quick X, Pro Line Trailers, EBD Enterprises, Peterbilt Truck Sales
RM of Springfield	Agriculture, livestock production, banking and insurance, real estate, land developers, aggregate extraction and commercial	Oak Bank, Sunova Credit Unions, Borland Construction, Border Chemical Company, Birkitt Trucking, Inland Aggregates Ltd., Loveday Mushroom Farms, Springfield Fertilizer
RM of Ste. Anne	Agriculture (dairy, beef, hog, poultry); commercial businesses; aggregate extraction; tourism	Self-employed farmers, Richer Inn, Barnell's Food Plus, Timberline Restaurant, Premier Peat Moss, Diamond Construction, Nelson River Construction, Lilac Resort, Quarry Oaks Golf & Country Club, Cottonwood Golf and Country Club, Oakwood Golf and Country Club, Country Charm Resort, Rock Garden Campground

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**Table 4-20: Industrial Sectors and Employers in the RAA**

Rural Municipality	Sectors	Major Employers
RM of Stuartburn	Agriculture and related, health services, commercial business, finance, tourism	Angus Pine Farm (breeding stock), L/B Bison Ranch, MAFRI GO Office, Access Credit Union, Vita & District Health Centre, KC's Outfitting
RM of Tache	Agriculture (livestock and dairy production, forage), aggregate extraction, peat, soil; finance, commercial business; tourism	Caisse Financial Group, Dave's Aggregates, Dawson Trail Construction, DHD Geothermal & Mechanical, Gauthier Soils, T & T Soils, Lorette Golf Course
Town of Ste. Anne	Health services, education, tourism	Sainte-Anne Hospital, Seine River Medical Clinic, Seine River Dental Service, Seine Pharmacy, Ste. Anne Physiotherapy & Sports Injury Clinic and Ste. Anne Chiropractic Clinic; Seine River School Division
City of Winnipeg	Manufacturing, aerospace, agri-business, energy and environment, finance, information/communication technologies, life sciences, tourism, transportation and distribution	New Flyer Industries, WinPak Ltd., Boeing Canada, Standard Aero, Granny's Poultry Cooperative, James Richardson & Sons Limited, Manitoba Hydro, National Leasing, Aboriginal Peoples Television Network, MTS, Allstream, Canad Inns Corporation, Bison Transport
NOTE: n/a – not available <sup>1</sup> The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypress		
SOURCES: CDEM 2015a; CDEM 2015b; Howdle 2015, pers. comm.; Glenboro 2012; MCR 2012a; MCR 2012d; MCR 2012e; MCR 2012f; RM of La Broquerie 2015; RM of Macdonald 2015; RM of Piney 2013; RM of Rosser 2013; RM of Springfield 2010; RM of Ste. Anne 2014; RM of Stuartburn 2013; RM of Tache 2015; Statistics Canada 2007f-h 2007k; Statistics Canada 2013e-g 2013k; Town of Ste. Anne 2013c.		

### 4.4.3 Educational Attainment and Field of Study

The level of educational attainment in 2011 for the population of the RAA aged 25 to 64 years is shown in Table 4-21. Between 2006 and 2011, the proportion of the population in the RAA with a trades, college or university certificate, diploma or degree increased (62% in 2011 compared to 52% in 2006), following a trend similar to the province (54% in 2006 and 58% in 2011). In 2011, the population of the RAA had similar educational attainment levels to that of the Province, though the population of the RAA had a slightly higher proportion of people with apprenticeship or trades certificate, college certificates and diploma

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**Table 4-21: Highest Level of Educational Attainment in the RAA (%), Population Aged 25-64**

Location	Year	Total Population aged 25 to 64 years	No Certificate, Diploma or Degree	High School Diploma or equivalent	Apprenticeship or trades certificate or diploma	College, CEGEP or other non-university certificate or diploma	University certificate below bachelor level	University certificate, diploma or degree at bachelor level or above
Manitoba	2011	623,940	17	26	11	19	5	23
	2006	595,935	20	25	11	19	5	19
<b>RAA</b>								
RM of Headingley	2011	1,400	11	17	10	22	6	34
	2006	1,190	11	26	13	18	4	27
RM of La Broquerie	2011	2,405	28	28	12	21	6	6
	2006	1,840	24	36	13	17	4	7
RM of Macdonald	2011	3,400	9	28	12	20	7	24
	2006	3,020	12	23	11	26	9	20
RM of Piney	2011	-	-	-	-	-	-	-
	2006	865	37	23	12	17	-	10
RM of Ritchot	2011	3,105	11	32	14	25	4	14
	2006	2,840	18	27	15	20	4	16
RM of Rosser	2011	670	24	20	21	13	8	14
	2006	745	27	26	9	16	9	13
RM of South Cypress <sup>3</sup>	2011	275	16	18	22	16	13	15
	2006	445	39	32	7	11	2	9
RM of Springfield	2011	7,655	11	27	14	23	5	19
	2006	7,300	18	28	13	21	4	17
RM of Ste. Anne	2011	-	-	-	-	-	-	-
	2006	2,195	35	24	18	14	2	8
RM of Stuartburn	2011	-	-	-	-	-	-	-
	2006	795	43	25	8	15	1	8
RM of Tache	2011	5,520	14	25	16	24	4	18
	2006	4,990	18	29	17	19	3	13
Town of Ste.	2011	815	23	19	18	20	2	18

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**Table 4-21: Highest Level of Educational Attainment in the RAA (%), Population Aged 25-64**

Location	Year	Total Population aged 25 to 64 years	No Certificate, Diploma or Degree	High School Diploma or equivalent	Apprenticeship or trades certificate or diploma	College, CEGEP or other non-university certificate or diploma	University certificate below bachelor level	University certificate, diploma or degree at bachelor level or above
Anne	2006	715	24	27	17	20	3	10
Village of Glenboro <sup>3</sup>	2011	255	12	29	20	18	0	22
	2006	300	17	34	7	14	10	19
COW CT 6020100.02	2011	930	9	22	6	22	10	32
	2006	890	10	24	13	23	6	24
COW CT 6020110.07 <sup>1</sup>	2011	3,765	4	17	6	20	7	47
	2006	-	-	-	-	-	-	-
RAA <sup>2</sup>	2011	30,195	12	25	13	22	5	22
	2006	28,130	21	27	14	19	4	15
NOTES: " - " indicates data are not available <sup>1</sup> Census Tract Boundaries Changed between 2006 and 2011. 2006 data not available <sup>2</sup> Due to data not available during 2006 and 2011 Census years, total RAA population fluctuates with available data <sup>3</sup> The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypress								
SOURCES: Statistics Canada 2007a, 2007b, 2007c, 2007d, 2007e, 2007f, 2007g, 2007h, 2007i, 2007j, 2007k, 2007l, 2007m, 2007n, 2013a, 2013b, 2013c, 2013d, 2013e, 2013f, 2013g, 2013h, 2013i, 2013j, 2013k, 2013l								

The most common field of study in the RAA in 2006 and 2011 for those with a trades, college or university certificate, diploma or degree was architecture, engineering and related technologies (26% and 25% respectively) with business, management and public administration closely following (18% and 20% respectively). These are also the most common fields of study provincially.

City of Winnipeg Census Tract 6020100.02 had the highest proportion of people in the business, management and public administration field, closely followed by the RM of Ritchot. All the RM's, Town of Ste. Anne and City of Winnipeg Census Tract 6020100.02 had the same proportion or more people with architecture, engineering and related technologies backgrounds than the overall Province (Table 4-22).

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**Table 4-22: Field of Study in the RAA (%)**

Location	Year	Total Population aged 25 to 64 years	Education	Visual and Performing Arts and Communications Technologies	Humanities	Social and Behavioural Sciences and Law	Business, Management and Public Administration	Physical and Life Sciences and technologies	Mathematics, Computer and Information Sciences	Architecture, Engineering and Related Technologies	Agriculture, Natural Resources and Conservation	Health and Related Fields	Personal, Protective and Transportation Services	Other Fields of Study
Manitoba	2011	623,940	10	3	5	9	20	3	4	20	3	18	6	0
	2006	595,935	10	3	5	9	20	3	4	21	3	17	6	0
<b>RAA</b>														
RM of Headingley	2011	1,400	12	2	4	9	21	4	1	20	2	20	4	0
	2006	1,190	7	1	9	11	21	3	4	24	0	18	2	0
RM of La Broquerie	2011	2,405	8	0	4	5	19	0	7	28	2	19	8	0
	2006	1,840	13	1	2	3	14	1	3	27	9	20	7	0
RM of Macdonald	2011	3,400	7	2	4	8	18	4	3	25	9	15	5	0
	2006	3,020	7	4	5	6	18	1	5	22	9	18	4	0
RM of Piney	2011	-	-	-	-	-	-	-	-	-	-	-	-	-
	2006	865	9	0	3	3	18	2	2	20	14	17	10	0
RM of Ritchot	2011	3,105	7	3	6	5	25	4	3	27	3	12	4	0
	2006	2,840	10	4	4	6	17	3	4	27	4	14	7	0
RM of Rosser	2011	670	12	0	0	0	15	0	0	28	17	15	13	0
	2006	745	10	4	2	9	16	0	4	20	12	19	5	0
RM of South Cypress <sup>1</sup>	2011	275	20	0	0	0	17	0	0	23	0	40	0	0
	2006	445	11	0	0	6	17	6	0	20	17	14	9	0
RM of Springfield	2011	7,655	8	3	3	7	19	3	2	30	4	15	7	0
	2006	7,300	10	1	3	7	19	2	4	29	4	16	6	0
RM of Ste. Anne	2011	-	-	-	-	-	-	-	-	-	-	-	-	-
	2006	2,195	6	2	5	4	16	2	4	33	6	16	7	0
RM of Stuartburn	2011	-	-	-	-	-	-	-	-	-	-	-	-	-
	2006	795	13	0	11	5	11	3	6	16	10	16	8	0
RM of Tache	2011	5,520	11	3	5	6	16	3	4	26	3	17	7	0
	2006	4,990	11	2	4	5	18	3	3	29	4	15	6	0

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**Table 4-22: Field of Study in the RAA (%)**

Location	Year	Total Population aged 25 to 64 years	Education	Visual and Performing Arts and Communications Technologies	Humanities	Social and Behavioural Sciences and Law	Business, Management and Public Administration	Physical and Life Sciences and technologies	Mathematics, Computer and Information Sciences	Architecture, Engineering and Related Technologies	Agriculture, Natural Resources and Conservation	Health and Related Fields	Personal, Protective and Transportation Services	Other Fields of Study
Town of Ste. Anne	2011	815	11	0	8	9	13	0	0	35	0	20	4	0
	2006	715	10	0	4	6	25	0	5	15	0	28	7	0
Village of Glenboro <sup>1</sup>	2011	255	29	0	0	0	17	0	0	23	0	31	0	0
	2006	300	28	0	5	0	18	0	0	8	15	18	8	0
COW CT 6020100.02	2011	930	6	2	7	6	26	2	8	21	4	18	0	0
	2006	890	9	1	3	8	17	7	7	23	5	14	7	0
COW CT 6020110.07	2011	3,765	9	2	7	9	23	6	5	15	2	18	3	0
	2006	-	-	-	-	-	-	-	-	-	-	-	-	-
Total RAA (%)	2011	30,195	9	2	5	7	20	3	3	25	4	16	6	0
	2006	28,130	10	2	4	6	18	2	4	26	6	16	6	0
NOTES:														
"-" indicates data are not available														
<sup>1</sup> The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypress														
SOURCES: Statistics Canada 2007a, 2007b, 2007c, 2007d, 2007e, 2007f, 2007g, 2007h, 2007i, 2007j, 2007k, 2007l, 2007m, 2007n, 2013a, 2013b, 2013c, 2013d, 2013e, 2013f, 2013g, 2013h, 2013i, 2013j, 2013k, 2013l														

### 4.4.4 Aboriginal Educational Attainment and Field of Study

Aboriginal educational attainment was higher in the RAA compared to Aboriginal educational attainment in Manitoba. The proportion of the Aboriginal population in the RAA with a trades, college or university certificate, diploma or degree was 57% in 2011, an increase from 48% in 2006 (Table 4-23). Aboriginal educational attainment in the RAA is similar to the general population in the RAA.

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**Table 4-23: Aboriginal Highest Level of Educational Attainment in the RAA (%), Population Aged 25-64**

Location	Year	Total Population aged 25 to 64 years	No Certificate, Diploma or Degree	High School Diploma or equivalent	Apprenticeship or trades certificate or diploma	College, CEGEP or other non-university certificate or diploma	University certificate below bachelor level	University certificate, diploma or degree at bachelor level or above
Manitoba	2011	86,635	37	23	11	17	3	9
	2006	77,705	41	21	12	16	4	8
<b>RAA</b>								
RM of Headingley	2011	-	-	-	-	-	-	-
	2006	-	-	-	-	-	-	-
RM of La Broquerie	2011	350	16	36	0	38	11	0
	2006	145	23	33	23	13	0	7
RM of Macdonald	2011	215	7	56	12	10	-	15
	2006	130	24	8	0	44	0	24
RM of Piney	2011	-	-	-	-	-	-	-
	2006	140	50	29	0	21	0	0
RM of Ritchot	2011	510	19	27	18	24	3	10
	2006	325	20	18	15	27	6	14
RM of Rosser	2011	-	-	-	-	-	-	-
	2006	-	-	-	-	-	-	-
RM of South Cypress <sup>3</sup>	2011	-	-	-	-	-	-	-
	2006	-	-	-	-	-	-	-
RM of Springfield	2011	380	20	16	17	24	3	21
	2006	360	18	35	15	21	3	7
RM of Ste. Anne	2011	-	-	-	-	-	-	-
	2006	325	38	18	23	14	0	8
RM of Stuartburn	2011	-	-	-	-	-	-	-
	2006	-	-	-	-	-	-	-
RM of Tache	2011	650	13	21	24	27	4	11
	2006	510	13	41	27	11	0	7
Town of Ste. Anne	2011	200	16	21	26	24	-	13
	2006	-	-	-	-	-	-	-

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**Table 4-23: Aboriginal Highest Level of Educational Attainment in the RAA (%), Population Aged 25-64**

Location	Year	Total Population aged 25 to 64 years	No Certificate, Diploma or Degree	High School Diploma or equivalent	Apprenticeship or trades certificate or diploma	College, CEGEP or other non-university certificate or diploma	University certificate below bachelor level	University certificate, diploma or degree at bachelor level or above
Village of Glenboro <sup>3</sup>	2011	-	-	-	-	-	-	-
	2006	-	-	-	-	-	-	-
COW CT 6020100.02	2011	-	-	-	-	-	-	-
	2006	-	-	-	-	-	-	-
COW CT 6020110.07 <sup>1</sup>	2011	-	-	-	-	-	-	-
	2006	-	-	-	-	-	-	-
Total RAA	2011	2,305	15	27	17	25	4	11
	2006	1,935	23	28	18	19	2	9
<p>NOTES:</p> <p>"-" indicates data are not available</p> <p><sup>1</sup> Census Tract Boundaries Changed between 2006 and 2011. 2006 data not available</p> <p><sup>2</sup> Due to data not available during 2006 and 2011 Census years, total RAA population fluctuates with available data</p> <p><sup>3</sup> The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypress</p>								
<p>SOURCES: Statistics Canada 2007o, 2007p, 2007q, 2007r, 2007s, 2007t, 2007u, 2007v, 2007w, 2007x, 2007y, 2007z, 2007aa, 2007ab, 2013m, 2013n, 2013o, 2013p, 2013q, 2013r, 2013s</p>								

The most common field of study for Aboriginal people in the RAA was architecture, engineering and related technologies (34% in compared to 21% for Manitoba in 2011) followed closely by business, management and public administration (24% in 2011) (Table 4-24). These are the most common fields of study in the RAA and Province, although the Aboriginal population has a higher percentage of population with an architecture, engineering and related technologies background compared to the general population in the RAA and Province.



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**Table 4-24: Aboriginal Field of Study in the RAA (%)**

Location	Year	Total Population aged 25 to 64 years	Education	Visual and Performing Arts and Communications Technologies	Humanities	Social and Behavioral Sciences and Law	Business, Management and Public Administration	Physical and Life Sciences and technologies	Mathematics, Computer and Information Sciences	Architecture, Engineering and Related Technologies	Agriculture, Natural Resources and Conservation	Health and Related Fields	Personal, Protective and Transportation Services	Other Fields of Study
Manitoba	2011	86,635	10	2	4	10	20	1	3	21	2	18	9	0
	2006	77,705	9	2	4	9	22	1	4	22	2	18	9	0
<b>RAA</b>														
RM of Headingley <sup>1</sup>	2011	-	-	-	-	-	-	-	-	-	-	-	-	-
	2006	-	-	-	-	-	-	-	-	-	-	-	-	-
RM of La Broquerie	2011	350	0	0	0	0	56	0	0	0	0	0	44	0
	2006	145	33	0	0	11	0	0	0	33	0	11	11	0
RM of Macdonald	2011	215	0	0	0	0	0	0	0	100	0	0	0	0
	2006	130	17	0	8	8	25	0	8	17	0	8	8	0
RM of Piney <sup>1</sup>	2011	-	-	-	-	-	-	-	-	-	-	-	-	-
	2006	140	0	0	0	0	25	0	0	25	25	25	0	0
RM of Ritchot	2011	510	8	0	0	8	31	0	0	41	0	12	0	0
	2006	325	4	0	0	13	9	6	4	34	0	23	6	0
RM of Rosser <sup>1</sup>	2011	-	-	-	-	-	-	-	-	-	-	-	-	-
	2006	-	-	-	-	-	-	-	-	-	-	-	-	-
RM of South Cypress <sup>1,2</sup>	2011	-	-	-	-	-	-	-	-	-	-	-	-	-
	2006	-	-	-	-	-	-	-	-	-	-	-	-	-
RM of Springfield	2011	380	0	0	0	15	24	0	0	29	0	9	24	0
	2006	360	6	0	0	0	19	0	0	41	0	34	0	0
RM of Ste. Anne <sup>1</sup>	2011	-	-	-	-	-	-	-	-	-	-	-	-	-
	2006	325	6	0	0	0	13	0	0	45	10	6	19	0
RM of Stuartburn <sup>1</sup>	2011	-	-	-	-	-	-	-	-	-	-	-	-	-
	2006	-	-	-	-	-	-	-	-	-	-	-	-	-
RM of Tache	2011	650	11	0	0	5	17	0	7	34	0	23	3	0
	2006	510	0	4	0	4	27	0	4	41	5	9	7	0
Town of Ste. Anne	2011	200	14	0	0	0	10	0	0	52	0	24	0	0
	2006	-	-	-	-	-	-	-	-	-	-	-	-	-

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**Table 4-24: Aboriginal Field of Study in the RAA (%)**

Location	Year	Total Population aged 25 to 64 years	Education	Visual and Performing Arts and Communications Technologies	Humanities	Social and Behavioral Sciences and Law	Business, Management and Public Administration	Physical and Life Sciences and technologies	Mathematics, Computer and Information Sciences	Architecture, Engineering and Related Technologies	Agriculture, Natural Resources and Conservation	Health and Related Fields	Personal, Protective and Transportation Services	Other Fields of Study
Village of Glenboro <sup>1,2</sup>	2011	-	-	-	-	-	-	-	-	-	-	-	-	-
	2006	-	-	-	-	-	-	-	-	-	-	-	-	-
COW CT 6020100.02 <sup>1</sup>	2011	-	-	-	-	-	-	-	-	-	-	-	-	-
	2006	-	-	-	-	-	-	-	-	-	-	-	-	-
COW CT 6020110.07 <sup>1</sup>	2011	-	-	-	-	-	-	-	-	-	-	-	-	-
	2006	-	-	-	-	-	-	-	-	-	-	-	-	-
Total RAA (%)	2011	2,305	7	0	0	6	24	0	2	34	0	15	11	0
	2006	1,935	7	1	1	6	17	1	3	36	4	16	8	0
NOTES: "- " indicates data are not available <sup>1</sup> 2011 Aboriginal population profile not available for this area <sup>2</sup> The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypres														
SOURCES: Statistics Canada 2007o, 2007p, 2007q, 2007r, 2007s, 2007t, 2007u, 2007v, 2007w, 2007x, 2007y, 2007z, 2007aa, 2007ab, 2013m, 2013n, 2013o, 2013p, 2013q, 2013r, 2013s														

### 4.4.5 Labour Force Activity

In recent years, Manitoba has enjoyed a lower rate of unemployment than Canada overall. In the period from 2007 to 2012 Manitoba's ranged from a low of 4.2% in 2008 to a high of 5.4% in 2010 and 2011. During the 2007 to 2012 period, Canada's unemployment rate ranged from a low of 6.0% in 2007 to a high of 8.3% in 2009 (Province of Manitoba 2014c). The 2014 provincial unemployment was 5.4%, similar to the 2011 Census unemployment rate.

In 2011, participation and employment rates were higher the unemployment rate was lower in the RAA compared to the Province. Within the RAA, participation, employment and unemployment rates varied between RMs and communities (Table 4-25). Participation rates in 2011 ranged from a low of 62.5% in the Village of Glenboro to a high of 80.3% in City of Winnipeg Census Tract 6020110.07. Employment rates ranged in 2011 from a low of 57.7% in the Village of Glenboro to a high of 77.6% in City of Winnipeg Census Tract 6020110.07 and unemployment

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rates ranged from a low of 2.5% in the Town of Ste. Anne to a high of 7.7% in the Village of Glenboro (Table 4-25).

Unemployment rates increased between 2006 and 2011 in the province and RAA, although the unemployment rates in the RAA was lower than the province. Several RMs and the Village of Glenboro had unemployment rates that increased by double between 2006 and 2011. It is not known to what extent this apparent increase in unemployment rates is due to the high non-response rates in the 2011 NHS.

**Table 4-25: Labour Force Activity in the RAA in 2006 and 2011**

Location	Census Year	Total Population aged 15 + (by labour force status)	Participation Rate (%)	Employment Rate (%)	Unemployment Rate (%) <sup>3</sup>
Manitoba	2011	946,945	67.3	63.1	6.2
	2006	908,450	67.3	63.6	5.5
<b>RAA</b>					
RM of Headingley	2011	2,070	73.4	70.0	4.3
	2006	1,705	78.0	76.8	1.5
RM of La Broquerie	2011	3,590	72.7	68.8	5.4
	2006	2,675	73.1	71.2	2.6
RM of Macdonald	2011	4,860	74.9	72.5	3.3
	2006	4,315	78.3	75.7	3.4
RM of Piney <sup>2</sup>	2011	-	-	-	-
	2006	1,415	60.1	56.9	5.3
RM of Ritchot	2011	4,300	76.4	73.4	4.0
	2006	3,935	79.5	77.4	2.9
RM of Rosser	2011	935	74.9	74.3	0.0
	2006	1,100	77.7	75.9	2.9
RM of South Cypress <sup>4</sup>	2011	375	74.7	72.0	0
	2006	645	63.6	62.8	0.0
RM of Springfield	2011	11,180	71.3	68.1	4.6
	2006	10,380	73.9	71.3	3.5
RM of Ste. Anne <sup>2</sup>	2011	-	-	-	-
	2006	3,435	63.3	61.7	2.8
RM of Stuartburn <sup>2</sup>	2011	-	-	-	-
	2006	1,270	63.0	61.0	3.1
RM of Tache	2011	7,660	77.5	73.4	5.4

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**Table 4-25: Labour Force Activity in the RAA in 2006 and 2011**

Location	Census Year	Total Population aged 15 + (by labour force status)	Participation Rate (%)	Employment Rate (%)	Unemployment Rate (%) <sup>3</sup>
	2006	6,860	78.1	76.0	2.5
Town of Ste. Anne	2011	1,140	70.2	68.0	2.5
	2006	1,115	66.4	64.1	4.1
Village of Glenboro <sup>4</sup>	2011	520	62.5	57.7	7.7
	2006	495	54.5	51.5	3.7
COW Census Tract 6020100.02	2011	1,445	65.4	64.0	2.6
	2006	1,310	81.3	79.8	1.4
COW Census Tract 6020110.07	2011	4,835	80.3	77.6	3.3
	2006	-	-	-	-
<b>RAA Total</b>					
RAA TOTAL	2011	42,910	73	70	4
	2006	40,655	71	69	3
NOTES: Due to data suppression all totals (percentage) may not add to 100. " - " indicates data are not available <sup>1</sup> Census Tract 6020110.07 changed boundaries between 2006 and 2011. <sup>2</sup> Data for this area has been suppressed for data quality of confidentiality reasons. <sup>3</sup> Unemployment rates of 0.0% may have been due to possible data errors with the Statistics Canada data. <sup>4</sup> The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypress					
SOURCE: Statistics Canada 2007a, 2007b, 2007c, 2007d, 2007e, 2007f, 2007g, 2007h, 2007i, 2007j, 2007k, 2007l, 2007m, 2007n, 2013a, 2013b, 2013c, 2013d, 2013e, 2013f, 2013g, 2013h, 2013i, 2013j, 2013k, 2013l					

### 4.4.6 Aboriginal Labour Force

Aboriginal labour force information for 2006 and 2011 is presented in Table 4-26. The total Aboriginal labour force in the RAA was 3,530 in 2011, a 27.9% increase from 2006. From 2006 to 2011 both the Aboriginal participation and employment rates within the RAA increased, while the unemployment rate decreased. Aboriginal participation, employment and unemployment rates in the RAA were similar compared to the general population in the RAA.

Variations in participation, employment and unemployment rates could be seen between the RMs, Town of Ste. Anne, Village of Glenboro and census tracts in the RAA. Participation rates in 2011 Aboriginal labour force ranged from 70.9% in the RM of Springfield to 82.4% in the RM of Tache, while 2011 employment rates ranged from 63.1% in the RM of Springfield to 80.9% in the RM of Springfield. The Aboriginal unemployment rate was similar to that in the RAA as a whole

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and was much lower than the Aboriginal provincial unemployment rate of 13.8% in 2011. The highest Aboriginal unemployment rate in 2011 was in the RM of Tache at 11.3%, closely followed by the RM of Springfield with 11.0%.

**Table 4-26: Aboriginal Labour Force Activity in the RAA in 2006 and 2011**

Location	Census Year	Total Population aged 15 + (by labour force status)	Participation Rate (%)	Employment Rate (%)	Unemployment Rate (%) <sup>3</sup>
Manitoba	2011	133,165	58.1	50.0	13.8
	2006	117,200	59.2	50.1	15.4
<b>RAA</b>					
RM of Headingley	2011	-	-	-	-
	2006	-	-	-	-
RM of La Broquerie	2011	550	75.5	74.5	0.0
	2006	230	84.8	80.4	0.0
RM of Macdonald	2011	315	74.6	66.7	0.0
	2006	175	80.0	77.1	0.0
RM of Piney <sup>2</sup>	2011	-	-	-	-
	2006	225	64.4	55.6	17.2
RM of Ritchot	2011	760	77.6	77.0	0.0
	2006	470	84.0	81.9	2.5
RM of Rosser	2011	-	-	-	-
	2006	-	-	-	-
RM of South Cypress <sup>4</sup>	2011	-	-	-	-
	2006	-	-	-	-
RM of Springfield	2011	705	70.9	63.1	11.0
	2006	510	77.5	70.6	8.9
RM of Ste. Anne <sup>2</sup>	2011	-	-	-	-
	2006	425	64.7	64.7	0
RM of Stuartburn <sup>2</sup>	2011	-	-	-	-
	2006	-	-	-	-
RM of Tache	2011	965	82.4	73.1	11.3
	2006	725	83.4	78.6	5.8
Town of Ste. Anne	2011	235	80.9	80.9	0.0
	2006	-	-	-	-
Village of Glenboro <sup>4</sup>	2011	-	-	-	-

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**Table 4-26: Aboriginal Labour Force Activity in the RAA in 2006 and 2011**

Location	Census Year	Total Population aged 15 + (by labour force status)	Participation Rate (%)	Employment Rate (%)	Unemployment Rate (%) <sup>3</sup>
	2006	-	-	-	-
COW Census Tract 6020100.02	2011	-	-	-	-
	2006	-	-	-	-
COW Census Tract 6020110.07	2011	-	-	-	-
	2006	-	-	-	-
<b>RAA TOTAL</b>					
RAA TOTAL	2011	3,530	77	73	4
	2006	2,760	65	62	4
<p>NOTES:</p> <p>"-" indicates data are not available</p> <p>Communities with a 0% unemployment rate may be due to lack of data in the 2011 NHS profiles.</p> <p><sup>1</sup> Census Tract 6020110.07 changed boundaries between 2006 and 2011.</p> <p><sup>2</sup> Data for this area has been suppressed for data quality of confidentiality reasons.</p> <p><sup>3</sup> Data taken from Statistics Canada. Calculations may vary due to rounding, data suppression or data limitations.</p> <p><sup>4</sup> The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypress</p>					
SOURCE: Statistics Canada 2007o, 2007p, 2007q, 2007r, 2007s, 2007t, 2007u, 2007v, 2007w, 2007x, 2007y, 2007z, 2007aa, 2007ab, 2013m, 2013n, 2013o, 2013p, 2013q, 2013r, 2013s					

### 4.4.7 Labour Force by Industry

Labour force activity data for the RAA municipalities for 2006 and 2011 are presented in Table 4-27. Between 2006 and 2011 there was a slight shift from non-basic industry employment (51% to 49%) to basic industry employment (49% to 51%) in the RAA.

Within the RAA, the manufacturing labour force decreased by 3%, while construction, health and social service employment and educational services each increased by 2%. The labour force employed in business services decreased by 3% and those employed in finance and real estate increased by 2%.

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**Table 4-27: Percent Labour Force by Industry in the RAA**

Location	Total Experience Labour Force		2006		2011	
	2006	2011	Basic Industries <sup>1</sup>	Non-Basic Industries <sup>2</sup>	Basic Industries <sup>1</sup>	Non-Basic Industries <sup>2</sup>
Manitoba	602,150	625,805	44	56	43	55
<b>RAA</b>						
RM of Headingley	1,325	1,515	34	65	38	60
RM of La Broquerie	1,955	2,585	65	35	61	40
RM of Macdonald	3,360	3,625	47	53	46	55
RM of Piney	845	-	66	34	-	-
RM of Ritchot	3,130	3,245	48	52	45	55
RM of Rosser	850	700	52	47	60	40
RM of South Cypress <sup>3</sup>	410	280	71	29	69	32
RM of Springfield	7,590	7,950	43	57	42	57
RM of Ste. Anne	2,170	-	56	43	-	-
RM of Stuartburn	785	-	73	26	-	-
RM of Tache	5,335	5,870	51	50	50	51
Town of Ste. Anne	740	790	63	37	57	43
Village of Glenboro <sup>3</sup>	270	330	49	52	61	40
COW CT 6020100.02	1,050	935	38	63	40	59
COW CT 6020110.07	-	3,860	-	-	39	61
<b>Total RAA</b>						
RAA Total	29,815	31,685	49	51	51	49
NOTES: "-." indicates data not available or that data for this area has been suppressed for data quality of confidentiality reasons. Numbers may not add up due to rounding with Statistics Canada data <sup>1</sup> Basic Industries include Agriculture, Construction, Manufacturing, Health Care and Social Services and Educational Services <sup>2</sup> Non-Basic Industries include Wholesale Trade, Retail Trade, Finance & Real Estate, Business Services and "Other" (which include Management of Companies and Enterprises; Arts, Entertainment and Recreation; Other services						

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**Table 4-27: Percent Labour Force by Industry in the RAA**

Location	Total Experience Labour Force		2006		2011	
	2006	2011	Basic Industries <sup>1</sup>	Non-Basic Industries <sup>2</sup>	Basic Industries <sup>1</sup>	Non-Basic Industries <sup>2</sup>
(except Public Administration); and Public Administration						
<sup>3</sup> The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypress						
SOURCES: Statistics Canada 2007a, 2007b, 2007c, 2007d, 2007e, 2007f, 2007g, 2007h, 2007i, 2007j, 2007k, 2007l, 2007m, 2007n; Statistics Canada 2013a, 2013b, 2013c, 2013d, 2013e, 2013f, 2013g, 2013h, 2013i, 2013j, 2013k, 2013l						

### 4.4.8 Aboriginal Labour Force by Industry

The Aboriginal labour force in the RAA had slightly higher basic industry employment compared to the Aboriginal labour force in the Province in 2011, similar to the general population in the RAA (Table 4-28). Basic and non-basic industry employment varied within the Aboriginal labour force in the RAA. The Aboriginal labour force within the Town of Ste. Anne and the RM of La Broquerie were much more likely to be employed within basic sectors (83% and 78% respectively in 2011) relative to non-basic sectors.

In 2011, the construction and manufacturing sectors each accounted for 29% of the Aboriginal labour force within the Town of Ste. Anne. Within the RM of La Broquerie, the agriculture and resource sector and health care and social services sector were both the largest employers of Aboriginal workers, accounting for 38% and 26% of the Aboriginal labour force respectively. The Aboriginal labour force in the RAA had a total of 26% of the population employed in trades, transportation and equipment operators for a total of 675 persons.

**Table 4-28: Aboriginal Percent Labour Force by Industry in the RAA**

Location	Total Experience Labour Force		2006		2011	
	2006	2011	Basic Industries <sup>1</sup>	Non-Basic Industries <sup>2</sup>	Basic Industries <sup>1</sup>	Non-Basic Industries <sup>2</sup>
Manitoba	65,520	77,350	46	53	44	55
RM of Headingley	-	-	-	-	-	-
RM of La Broquerie	195	415	70	31	78	22
RM of Macdonald	140	220	50	50	48	52
RM of Piney	145	-	61	41	-	-
RM of Ritchot	400	595	53	46	56	44
RM of Rosser	-	-	-	-	-	-
RM of South Cypress <sup>3</sup>	-	-	-	-	-	-



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**Table 4-28: Aboriginal Percent Labour Force by Industry in the RAA**

RM of Springfield	390	500	39	60	47	54
RM of Ste. Anne <sup>3</sup>	275	-	67	35	-	-
RM of Stuartburn	-	-	-	-	-	-
RM of Tache	605	795	42	58	46	55
Town of Ste. Anne	-	190	-	-	83	18
Village of Glenboro <sup>3</sup>	-	-	-	-	-	-
COW CT 6020100.02	-	-	-	-	-	-
COW CT 6020110.07	-	-	-	-	-	-
RAA Total	2,170	2,715	50	50	53	46
<p>NOTES:</p> <p>"-" indicates data not available or that Data for this area has been suppressed for data quality of confidentiality reasons. Numbers may not add up due to rounding with Statistics Canada data</p> <p><sup>1</sup> Basic Industries include Agriculture, Construction, Manufacturing, Health Care and Social Services and Educational Services</p> <p><sup>2</sup> Non-Basic Industries include Wholesale Trade, Retail Trade, Finance &amp; Real Estate, Business Services and "Other" (which include Management of Companies and Enterprises; Arts, Entertainment and Recreation; Other services (except Public Administration); and Public Administration</p> <p><sup>3</sup> The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypress</p>						
<p>SOURCES: Statistics Canada 2007o, 2007p, 2007q, 2007r, 2007s, 2007t, 2007u, 2007v, 2007w, 2007x, 2007y, 2007z, 2007aa, 2007ab</p>						

### 4.4.9 Labour Force by Occupation

Employment by occupation type is shown in Table 4-29. The RAA had a higher percentage of workers in trade, transport and equipment operation in 2006 and 2011 (20% and 18% respectively) than the province (15% in both 2006 and 2011). During this period, management occupations increased by 5% and education/social/government increased by 4% while manufacturing decreased by 2% and natural resources and agriculture occupations decreased by 7%.

The number of workers employed in sales and service, as well as business, gives an indication of the ability of the RAA to provide accommodations and services to the construction force. There were 5,625 persons employed in sales and service, or approximately 18% of the labour force. Approximately 17% of the labour force (or 5,310 person) were employed in business, finance and administration.

The least common occupations in the RAA in 2011 were art, culture, recreation and sport (2% or 475 persons ) followed by manufacturing and utilities (3% or 925 persons) and natural resources, agriculture and related production (3% or 1,050 persons).

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**Table 4-29: Percent Labour Force by Occupation**

Location	Year	All Occupations (Total)	Management	Business, Finance and Administration	Natural and Applied Sciences and Related Occupations	Health Occupations	Education, law and social, community and government services	Art, Culture, Recreation and Sport	Sales and Service	Trades, Transport and Equipment Operators	Natural Resources, Agriculture and Related Production	Manufacturing and Utilities
Manitoba	2011	625,810	11	16	5	7	13	2	23	15	3	5
	2006	602,150	9	17	5	7	9	2	25	15	6	5
<b>RAA</b>												
RM of Headingley	2011	1,515	15	15	5	10	17	2	20	12	1	2
	2006	1,325	13	23	5	10	5	3	21	14	5	2
RM of La Broquerie	2011	2,585	9	11	1	6	8	0	19	31	10	6
	2006	1,950	6	14	3	6	4	1	19	24	17	7
RM of Macdonald	2011	3,625	17	15	8	9	10	2	19	16	4	1
	2006	3,360	10	21	6	7	7	1	17	17	12	2
RM of Piney <sup>1</sup>	2011	-	-	-	-	-	-	-	-	-	-	-
	2006	845	6	17	5	6	3	1	13	18	20	11
RM of Ritchot	2011	3,250	14	21	5	5	9	1	19	21	2	2
	2006	3,125	10	21	6	5	7	2	17	21	7	4
RM of Rosser	2011	700	33	16	0	7	8	3	9	18	6	0
	2006	855	8	13	6	3	7	-	16	17	23	5
RM of South Cypress <sup>4</sup>	2011	275	46	21	0	6	6	0	10	12	0	0
	2006	410	3	6	-	3	3	-	24	9	51	3
RM of Springfield	2011	7,955	14	17	6	6	11	2	19	19	3	3
	2006	7,595	10	19	5	5	7	2	22	20	5	4
RM of Ste. Anne <sup>1</sup>	2011	-	-	-	-	-	-	-	-	-	-	-
	2006	2,170	4	15	4	6	6	1	19	27	14	4
RM of Stuartburn <sup>1</sup>	2011	-	-	-	-	-	-	-	-	-	-	-
	2006	785	3	6	4	4	6	1	20	11	37	8
RM of	2011	5,875	12	18	7	6	15	1	14	22	2	3

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**Table 4-29: Percent Labour Force by Occupation**

Location	Year	All Occupations (Total)	Management	Business, Finance and Administration	Natural and Applied Sciences and Related Occupations	Health Occupations	Education, law and social, community and government services	Art, Culture, Recreation and Sport	Sales and Service	Trades, Transport and Equipment Operators	Natural Resources, Agriculture and Related Production	Manufacturing and Utilities
Tache	2006	5,335	8	16	4	5	8	2	22	24	5	6
Town of Ste. Anne	2011	795	5	20	4	5	18	0	15	29	0	4
	2006	740	11	15	2	9	9	-	19	20	6	9
Village of Glenboro <sup>4</sup>	2011	325	10	8	0	6	19	0	27	24	0	6
	2006	270	11	12	4	11	18	4	18	16	5	4
COW CT 6020100.02	2011	940	15	19	11	10	8	2	13	11	10	0
	2006	1,050	11	21	8	6	9	2	20	12	9	2
COW CT 6020110.07	2011	3,860	16	17	10	12	11	2	20	7	1	3
	2006	-	-	-	-	-	-	-	-	-	-	-
RAA Total (%)	2011	31,700 <sup>3</sup>	14	17	6	7	11	2	18	18	3	3
	2006	29,815 <sup>3</sup>	9	18	5	6	7	1	20	20	10	5
NOTES: "- " indicates data are not available 1 Data for this area has been suppressed for data quality of confidentiality reasons. 2 Numbers may not add up due to rounding with Statistics Canada data 3 Totals differ due to data availability. Some communities did not have information available in 2006 and/or 2011 which affects the total 4 The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypress												
SOURCES: Statistics Canada 2007a, 2007b, 2007c, 2007d, 2007e, 2007f, 2007g, 2007h, 2007i, 2007j, 2007k, 2007l, 2007m, 2007n, 2013a, 2013b, 2013c, 2013d, 2013e, 2013f, 2013g, 2013h, 2013i, 2013j, 2013k, 2013l												

### 4.4.10 Aboriginal Labour Force by Occupation

The Aboriginal labour force by occupation grew from 7% to 16% in education, law and social, community and government service grew between the 2006 and 2011 census.

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The RAA had a higher percentage of the Aboriginal labour force working in trades, transport and equipment operators (26% or 675 persons in 2011) compared to the provincial Aboriginal labour force (19% in 2011) and the general population in the RAA. Sales and service closely followed, with 22% of the Aboriginal workforce in the RAA (or 570 persons) in 2011, compared to 25% of Manitoba's Aboriginal workforce (Table 4-30). Similar to the general population in the RAA, business, finance and administrative occupations closely followed with 16% of the population (or 405 persons).

The least common occupation in the Aboriginal labour force in the RAA (same as the general population RAA) was in arts, culture, recreation and sport (0% or 0 persons employed) followed by natural and applied sciences and relation occupations (3% or 65 persons) and manufacturing and utilities (3% or 80 persons). Occupations in natural resources, agriculture and related production went from 6% (130 persons) in 2006 to 3% (90 persons) in 2011.

**Table 4-30: Aboriginal Percent Labour Force by Occupation**

Location	Year	All Occupations (Total)	Management	Business, Finance and Administration	Natural and Applied Sciences and Related Occupations	Health Occupations	Education, law and social, community and government services	Art, Culture, Recreation and Sport	Sales and Service	Trades, Transport and Equipment Operators	Natural Resources, Agriculture and Related Production	Manufacturing and Utilities
Manitoba	2011	73,325	7	14	3	6	17	1	25	19	4	4
	2006	65,525	6	16	3	6	11	2	29	18	6	5
<b>RAA</b>												
RM of Headingley	2011	-	-	-	-	-	-	-	-	-	-	-
	2006	-	-	-	-	-	-	-	-	-	-	-
RM of La Broquerie	2011	415	18	13	0	0	8	0	22	18	23	0
	2006	190	13	5	0	0	11	0	32	29	5	5
RM of Macdonald	2011	225	0	23	0	0	20	0	20	38	0	0
	2006	145	0	19	0	0	19	7	26	22	7	0
RM of Piney <sup>1</sup>	2011	-	-	-	-	-	-	-	-	-	-	-
	2006	145	0	0	0	8	8	0	16	16	36	16
RM of Ritchot	2011	590	11	22	4	0	13	0	23	18	0	9

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**Table 4-30: Aboriginal Percent Labour Force by Occupation**

Location	Year	All Occupations (Total)	Management	Business, Finance and Administration	Natural and Applied Sciences and Related Occupations	Health Occupations	Education, law and social, community and government services	Art, Culture, Recreation and Sport	Sales and Service	Trades, Transport and Equipment Operators	Natural Resources, Agriculture and Related Production	Manufacturing and Utilities
	2006	395	6	27	2	9	9	0	15	27	2	2
RM of Rosser	2011	-	-	-	-	-	-	-	-	-	-	-
	2006	-	-	-	-	-	-	-	-	-	-	-
RM of South Cypress <sup>3</sup>	2011	-	-	-	-	-	-	-	-	-	-	-
	2006	-	-	-	-	-	-	-	-	-	-	-
RM of Springfield	2011	500	4	18	0	4	15	0	28	27	0	4
	2006	390	3	19	4	4	7	0	34	27	3	0
RM of Ste. Anne <sup>1</sup>	2011	-	-	-	-	-	-	-	-	-	-	-
	2006	280	0	15	4	0	0	0	23	44	13	0
RM of Stuartburn <sup>1</sup>	2011	-	-	-	-	-	-	-	-	-	-	-
	2006	-	-	-	-	-	-	-	-	-	-	-
RM of Tache	2011	795	5	10	3	10	22	0	23	26	0	1
	2006	605	6	24	6	2	7	0	26	22	2	7
Town of Ste. Anne	2011	195	0	11	11	11	11	0	0	54	0	0
	2006	-	-	-	-	-	-	-	-	-	-	-
Village of Glenboro <sup>3</sup>	2011	-	-	-	-	-	-	-	-	-	-	-
	2006	-	-	-	-	-	-	-	-	-	-	-
COW CT 6020100.02	2011	-	-	-	-	-	-	-	-	-	-	-
	2006	-	-	-	-	-	-	-	-	-	-	-
COW CT 6020110.07	2011	-	-	-	-	-	-	-	-	-	-	-
	2006	-	-	-	-	-	-	-	-	-	-	-
RAA Total (%)	2011	2,720	7	16	3	4	16	0	22	26	3	3
	2006	2,150	5	19	3	3	7	0	25	27	6	4

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**Table 4-30: Aboriginal Percent Labour Force by Occupation**

Location	Year	All Occupations (Total)	Management	Business, Finance and Administration	Natural and Applied Sciences and Related Occupations	Health Occupations	Education, law and social, community and government services	Art, Culture, Recreation and Sport	Sales and Service	Trades, Transport and Equipment Operators	Natural Resources, Agriculture and Related Production	Manufacturing and Utilities
<p>NOTES:</p> <p>"-" indicates data are not available</p> <p><sup>1</sup> Data for this area has been suppressed for data quality of confidentiality reasons.</p> <p><sup>2</sup> Numbers may not add up due to rounding with Statistics Canada data</p> <p><sup>3</sup> The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypress</p> <p>SOURCES: Statistics Canada 2007o, 2007p, 2007q, 2007r, 2007s, 2007t, 2007u, 2007v, 2007w, 2007x, 2007y, 2007z, 2007aa, 2007ab, 2013m, 2013n, 2013o, 2013p, 2013q, 2013r, 2013s</p>												

### 4.4.11 Construction Labour Force

The construction labour force forecast for Manitoba for the period 2015 to 2014 by BuildForce Canada was reviewed to identify future provincial labour market conditions. The forecasting system tracks measures for 34 trades and occupations on a provincial basis. Since BuildForce data is not region-specific within the province, Statistics Canada data was used to supplement the estimated construction labour force availability for RMs and RAA specific to the Project.

#### 4.4.11.1 Manitoba

Within Manitoba, construction labour force unemployment levels are at a record low, with few unemployed construction workers available to recruit for projects (MHCA 2014; BuildForce Canada 2015). For a forecast period 2015 and 2024, it is estimated that Manitoba's construction labour force will grow by 3,200. During this same period, 8,600 retirements (equivalent to 22% of the current labour force) are expected across the 33 trades and occupations tracked by BuildForce. It was projected that Manitoba will need 11,800 new construction workers over the next ten years and that out-of-province workers will be required from 2015 to 2019 to meet demands of major engineering projects. Engineering construction employment is expected to peak at 3,600 jobs in 2016 and as major projects wind down will decline by 3,200 returning to

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current levels. Residential construction is expected to add 460 jobs between 2015 to 2024, with residential construction employment levels peaking in 2019 (BuildForce Canada 2015).

The transmission projects in northern Manitoba will require a large number of trades workers between 2016 and 2021. Employers in Manitoba will also be competing with other provinces (*i.e.*, Newfoundland and Labrador, Alberta and British Columbia) for skilled labour in both residential and non-residential projects and in resource projects, in both recruiting new workers and replacing retiring tradespeople (MHCA 2014). Most out of province mobility will be required between 2015 and 2019 (BuildForce Canada 2015).

### 4.4.11.2 Estimated Labour Availability in the RAA

The number of workers employed in occupations related to trade, transport and equipment operation gives an indication of local and regional supply of workers with appropriate skills for construction employment. The RAA had a higher percentage of workers in trade, transport and equipment operation in 2006 and 2011 (20% and 18% respectively) than the province (15% in 2006 and 2011).

Using 2011 census figures, the RM of Tache and RM of Springfield have the largest trades, transport and equipment operators' labour force, with 1,285 and 1,485 workers respectively. When applying the unemployment rate for each RM (Table 4-25 in Section 4.4.5), the RMs of Tache and Springfield had the largest estimated available labour force (69 persons and 68 persons respectively). The RM of La Broquerie had a total labour force of 790 persons and an estimated available labour force 43 persons (Table 4-31).

**Table 4-31: Trades, Transport and Equipment Labour Availability in the RAA in 2011**

Location	Trades, Transport and Equipment Operators	Unemployment Rate (%)	Available Labour Force
Manitoba	95,085	6.2	5,895
<b>RAA</b>			
RM of Headingley	185	4.3	8
RM of La Broquerie	790	5.4	43
RM of Macdonald	585	3.3	19
RM of Piney	-	-	-
RM of Ritchot	680	4.0	27
RM of Rosser	120	0.0	0
RM of South Cypress <sup>1</sup>	30	0.0	0
RM of Springfield	1,485	4.6	68
RM of Ste. Anne	-	-	-
RM of Stuartburn	-	-	-

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**Table 4-31: Trades, Transport and Equipment Labour Availability in the RAA in 2011**

Location	Trades, Transport and Equipment Operators	Unemployment Rate (%)	Available Labour Force
RM of Tache	1,285	5.4	69
Town of Ste. Anne	230	2.5	6
Village of Glenboro <sup>1</sup>	75	7.7	6
COW CT 6020100.02	105	2.6	3
COW CT 6020110.07	280	3.3	9
<b>RAA</b>			
<b>RAA Total</b>	<b>5,850</b>	<b>-</b>	<b>258</b>
NOTES:			
"-" indicates data are not available			
<sup>1</sup> The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypress			
SOURCE: Statistics Canada 2013a, 2013b, 2013c, 2013d, 2013e, 2013f, 2013g, 2013h, 2013i, 2013j, 2013k, 2013l			

Based on these 2011 census data, the participating workforce in trades, transport and equipment operators in the RAA were approximately 5,850 persons (Table 4-31), of which 675 were Aboriginal (Table 4-32). Using the 2011 unemployment rates for each community and number of trades, transport and equipment operators yields an available workforce of approximately 258 persons, of which approximately 37 are Aboriginal. Provincially, there are 95,085 trades, transport and equipment operators, 14,025 Aboriginal. With an unemployment rate of 6.2% (and 13.8% for the Aboriginal labour force), there is an available workforce of 5,895 persons in Manitoba, of which 1,935 are Aboriginal.

**Table 4-32: Aboriginal Labour Availability in Trades, Transport and Equipment in the RAA**

Location	Trades, Transport and Equipment Operators	Unemployment Rate (%)	Available Labour Force
Manitoba	14,025	13.8	1,935
<b>RAA</b>			
RM of Headingley	-	-	-
RM of La Broquerie	70	0	0
RM of Macdonald	75	0	0
RM of Piney	-	-	-
RM of Ritchot	100	0	0
RM of Rosser	-	-	-
RM of South Cypress <sup>1</sup>	-	-	-



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**Table 4-32: Aboriginal Labour Availability in Trades, Transport and Equipment in the RAA**

Location	Trades, Transport and Equipment Operators	Unemployment Rate (%)	Available Labour Force
RM of Springfield	130	11	14
RM of Ste. Anne	-	-	-
RM of Stuartburn	-	-	-
RM of Tache	205	11.3	23
Town of Ste. Anne	95	0	0
Village of Glenboro <sup>1</sup>	-	-	-
COW CT 6020100.02	-	-	-
COW CT 6020110.07	-	-	-
<b>RAA</b>			
<b>RAA Total</b>	<b>675</b>	<b>-</b>	<b>37</b>
NOTES:			
" - " indicates data are not available			
<sup>1</sup> The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypress			
SOURCE: Statistics Canada 2013a, 2013b, 2013c, 2013d, 2013e, 2013f, 2013g, 2013h, 2013i, 2013j, 2013k, 2013l			

### 4.4.12 Labour Income and Earnings

The majority of communities in the RAA had higher median and average incomes compared to the province. The 2010 provincial median income for the population aged 15 and over who worked full-time was \$43,621 and the median income within the RAA was \$51,037 (Table 4-33). The RM of Headingley had the highest median and average incomes for full-time workers (\$66,256 and \$79,610 respectively) in the RAA closely followed by City of Winnipeg Census Tract 6020110.07 (\$67,224 and \$75,123 respectively). The RM of Macdonald and City of Winnipeg Census Tract 6020100.02 had high median and average incomes compared to the rest of the RAA (Table 4-33). These four communities (RMs of Headingley and Macdonald and Census Tracts 6020110.07 and 6020100.02) had the highest education levels and the highest median and average incomes in the RAA. The trend was the same with the communities with lower educational levels, in which both the median and average income levels were also lower.

The RM of La Broquerie had the lowest income levels and had the second highest dependence on government transfers in the RAA. The Village of Glenboro had the second lowest income levels, lowest composition of income by wages and salary and self-employment and the highest level of dependence on government transfers for composition of income. The majority of the RAA has a higher reliance on self-employment income when compared to the province (with

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the exception of the RM of Springfield and the Village of Glenboro). The RM of South Cypress had the highest composition of income from self-employment with 15.1%.

The average labour income for the construction sector is not available at the census subdivision level. On average, construction workers in Manitoba have weekly earnings of \$1,114 (Statistics Canada 2014). Assuming a 50-week work year, the estimated annual wage for construction workers in Manitoba was approximately \$55,700.

**Table 4-33: Incomes and Earnings 2010 aged 15 and over in RAA**

Location	Total Income of population aged 15 and over		Population aged 15 and over who worked the full year, full-time		Composition of total Income			
	Median Income (\$)	Average Income (\$)	Median Income (\$)	Average Income (\$)	Wages & Salaries (%)	Self-Employment (%)	Other Income <sup>1</sup> (%)	Government Transfers <sup>2</sup> (%)
Manitoba	29,029	36,696	43,621	51,037	71.0	4.4	12.2	12.5
RM of Headingley	45,043	56,640	66,256	79,610	68.4	10.0	15.7	6.1
RM of La Broquerie	25,974	30,866	34,747	43,623	74.4	5.1	6.7	13.9
RM of Macdonald	38,875	44,845	56,969	61,216	76.5	4.7	12.4	6.3
RM of Piney <sup>3</sup>	-	-	-	-	-	-	-	-
RM of Ritchot	37,391	41,839	50,402	54,253	78.4	6.0	7.7	7.8
RM of Rosser	33,962	37,106	47,897	51,207	68.2	11.9	7.6	12.3
RM of South Cypress <sup>4</sup>	32,261	37,241	34,229	44,450	68.5	15.1	6.8	10.0
RM of Springfield	35,466	43,017	51,125	57,380	76.8	3.2	11.6	8.4
RM of Ste. Anne <sup>3</sup>	-	-	-	-	-	-	-	-
RM of Stuartburn <sup>3</sup>	-	-	-	-	-	-	-	-
RM of Tache	35,922	40,750	47,347	51,998	79.0	5.8	7.3	7.9
Town of Ste. Anne	31,192	38,816	53,721	55,044	73.2	5.2	8.8	12.7
Village of Glenboro <sup>4</sup>	27,348	33,818	46,017	46,249	64.8	1.6	13.8	20.7
COW CT 6020100.02	38,350	48,141	51,884	61,211	67.1	6.7	17.9	8.1
COW CT 6020110.07	45,890	55,988	67,224	75,123	79.9	5.7	9.7	4.8
RAA	35,640	42,422	50,652	56,780	72.9	6.8	10.5	9.9

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**Table 4-33: Incomes and Earnings 2010 aged 15 and over in RAA**

Location	Total Income of population aged 15 and over		Population aged 15 and over who worked the full year, full-time		Composition of total Income			
	Median Income (\$)	Average Income (\$)	Median Income (\$)	Average Income (\$)	Wages & Salaries (%)	Self-Employment (%)	Other Income <sup>1</sup> (%)	Government Transfers <sup>2</sup> (%)
<p>NOTES:</p> <p>"-" indicates data are not available</p> <p><sup>1</sup> Other Income includes Investment Income; Retirement Pensions, Superannuation and Annuities; and Other Income.</p> <p><sup>2</sup> Government transfer payments include Canada/Quebec Pension Plan; Old Age Security pensions and Guaranteed Income Supplement; Employment Insurance Benefits; Child Benefits; and Other income from government sources</p> <p><sup>3</sup> Data for this area has been suppressed for data quality of confidentiality reasons.</p> <p><sup>4</sup> The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypress</p>								
SOURCES: Statistics Canada 2013a, 2013b, 2013c, 2013d, 2013e, 2013f, 2013g, 2013h, 2013i, 2013j, 2013k, 2013l								

### 4.4.13 Aboriginal Income and Earnings

Aboriginal residents of the RAA tend to have higher median and average incomes compared to Aboriginal residents in the province (Table 4-34). With several exceptions (RM of La Broquerie, Ste. Anne), Aboriginals within the RAA have lower average and median employment earnings than the population overall. Median Aboriginal income ranged from \$37,208 in the RM of Ritchot to \$72,301 in the Town of Ste. Anne, while the average income ranged from \$43,371 in the RM of Macdonald to \$69,011 in the Town of Ste. Anne. This compares to the median income of \$38,208 and the average income of \$42,759, for the Aboriginal residents in Manitoba. Similar to pattern for the population overall, there was a positive relationship between education rate and income for Aboriginal workers. Aboriginal workers in the RM of Ste. Anne had the highest education rate and the highest average and median earnings of Aboriginal individuals reporting in the RAA. Aboriginal individuals in the RMs of Springfield and Tache also had high levels of education compared to the rest of the RAA, although incomes in the RM of Tache were much higher than in the RM of Springfield.

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**Table 4-34: Aboriginal Incomes and Earnings 2010 aged 15 and over in the RAA**

Location	Total Income of population aged 15 and over		Population aged 15 and over who worked the full year, full-time		Composition of total Income			
	Median Income (\$)	Average Income (\$)	Median Income (\$)	Average Income (\$)	Wages & Salaries (%)	Self-Employment (%)	Other Income <sup>1</sup> (%)	Government Transfers <sup>2</sup> (%)
Manitoba	17,690	25,074	38,208	42,759	72.2	2.3	4.7	20.8
RM of Headingley	-	-	-	-	-	-	-	-
RM of La Broquerie	31,225	37,709	39,341	48,931	76.3	1.2	11.3	11.2
RM of Macdonald	35,945	36,237	38,106	43,371	90.7	0.0	1.3	6.5
RM of Piney <sup>3</sup>	-	-	-	-	-	-	-	-
RM of Ritchot	27,219	34,396	37,208	45,428	81.7	3.2	5.1	10.3
RM of Rosser	-	-	-	-	-	-	-	-
RM of South Cypress <sup>4</sup>	-	-	-	-	-	-	-	-
RM of Springfield	29,969	31,034	38,132	43,633	69.4	4.3	14.1	12.0
RM of Ste. Anne <sup>3</sup>	-	-	-	-	-	-	-	-
RM of Stuartburn <sup>3</sup>	-	-	-	-	-	-	-	-
RM of Tache	35,068	34,930	43,893	48,749	85.3	3.2	2.8	8.3
Town of Ste. Anne	43,924	42,802	72,301	69,011	80.7	8.7	3.8	7.8
Village of Glenboro <sup>4</sup>	-	-	-	-	-	-	-	-
COW CT 6020100.02	-	-	-	-	-	-	-	-
COW CT 6020110.07	-	-	-	-	-	-	-	-
RAA	31,577	34,597	43,884	48,840	79	3	6	11
<p>NOTES:</p> <p>"-" indicates data are not available</p> <p><sup>1</sup> Other Income includes Investment Income; Retirement Pensions, Superannuation and Annuities; and Other Income.</p> <p><sup>2</sup> Government transfer payments include Canada/Quebec Pension Plan; Old Age Security pensions and Guaranteed Income Supplement; Employment Insurance Benefits; Child Benefits; and Other income from government sources</p> <p><sup>3</sup> Data for this area has been suppressed for data quality of confidentiality reasons.</p> <p><sup>4</sup> The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypress</p>								
SOURCES: Statistics Canada 2013m, 2013n, 2013o, 2013p, 2013q, 2013r, 2013s								

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### 4.4.14 Municipal Government Finances

Rural Municipal government revenues and expenditures have been averaged for a three-year period 2010 to 2012 (Tables Table 4-35 and Table 4-36). Property taxes accounted for the largest percentage of total revenue in each RM, ranging from 29% in the RM of Headingley (3-year average of \$2,696,067) to 61% in the RM of Ste. Anne and 60% in the RM of La Broquerie (3-year average of \$1,793,394 and \$5,191,350 respectively). Transportation services accounted for the largest percentage of expenditures in each the RMs, with the exception of the RM of Headingley which spent 35% or an average of \$1,749,579 on water and sewer (Province of Manitoba 2010, 2011 and 2012). The new water treatment plant in Headingley was put into service July 2011, which could potentially account for the increased spending on water and sewer during this period (RM of Headingley 2011c). The percentage range spent on transportation services for the rest of the RMs ranged from 26% in the RM of Ritchot (\$1,651,482) to 51% in the RM of Ste. Anne (\$1,220,453).

The RM of Springfield had the largest revenue-base and expenditures in the RAA, but also had the largest population base which can explain larger revenues and expenditures. The RM of Stuartburn had the lowest surplus in the RAA (\$213,374) and was the only RM in the RAA to have deficits during the 2010-2012 period (\$-21,961 in 2010 and \$-22,178 in 2012).

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**Table 4-35: Rural Municipality Government Revenues based on a 3-Year Average 2010- 2012 (\$)**

Location	Property Taxes	Grants in Lieu of Taxation	User Fees	Permits, Licences and Fines	Investment Income	Other Revenue	Water and Sewer	Grants Province of Manitoba	Grants Other	Total Revenue
RM of Headingley	2,696,067	245,915	206,444	143,330	91,478	935,629	3,725,364	231,190	987,461	9,262,878
RM of La Broquerie	3,014,441	84,607	262,278	116,219	21,853	598,366	199,324	537,751	203,704	5,038,543
RM of Macdonald	5,191,350	64,264	909,768	98,854	148,257	1,706,718	4,167,616	704,194	328,578	13,319,598
RM of Piney	735,922	60,916	178,373	1,396	42,456	133,202	-	257,601	112,313	1,522,179
RM of Ritchot	3,150,078	53,294	1,838,757	62,247	82,686	310,880	723,534	1,275,954	1,295,292	8,792,722
RM of Rosser	1,751,733	146,831	500,552	235,801	66,765	14,908	1,089,715	116,688	209,213	4,132,206
RM of South Cypress <sup>1</sup>	747,533	174,409	111,131	18,499	8,043	53,221	-	148,366	99,278	1,360,661
RM of Springfield	9,248,298	263,644	2,301,256	1,002,936	117,061	843,544	1,626,912	1,878,217	1,164,576	18,446,444
RM of Ste. Anne	1,793,394	19,743	221,252	65,098	40,670	299,670	-	277,392	246,097	2,953,316
RM of Stuartburn	618,417	29,180	60,336	349	24,254	4,040	7,823	253,273	108,798	1,106,469
RM of Tache	5,239,064	62,615	943,920	116,317	91,944	387,984	845,485	1,013,398	577,870	9,278,598
<b>RAA</b>	<b>34,186,295</b>	<b>1,205,420</b>	<b>7,534,068</b>	<b>1,861,046</b>	<b>735,467</b>	<b>5,288,161</b>	<b>12,385,772</b>	<b>6,694,024</b>	<b>5,333,181</b>	<b>75,213,615</b>
NOTES:										
<sup>1</sup> The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypress										
SOURCE: Province of Manitoba 2010, 2011 and 2012										

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**Table 4-36: Rural Municipality Government Expenditures based on a 3-Year Average 2010- 2012 (\$)**

Location	General Government Services	Protective Services	Transportation Services	Environmental Health Services	Public Health and Welfare Services	Regional Planning and Development	Resource Conservation and Industrial Development	Recreation and Cultural Services	Water and Sewer	Total Expenses	Surplus (Deficit)
RM of Headingley	675,285	261,224	1,357,542	133,912	78	147,492	267,424	434,145	1,749,579	5,026,681	4,236,197
RM of La Broquerie	1,021,374	602,864	1,735,677	153,163	11,083	40,267	26,532	326,681	137,286	4,054,928	983,615
RM of Macdonald	1,046,919	539,488	2,767,864	188,883	11,539	117,418	1,041,681	764,834	1,619,941	8,098,567	5,221,031
RM of Piney	324,738	113,015	475,670	132,618	14,916	33,167	58,419	64,453	-	1,216,996	305,183
RM of Ritchot	898,462	857,869	1,651,482	1,489,534	10,727	9,707	203,113	391,660	790,531	6,303,086	2,489,636
RM of Rosser	544,318	253,070	1,202,580	52,130	5,030	67,719	171,215	183,641	504,400	2,984,103	1,148,102
RM of South Cypress <sup>1</sup>	331,874	80,107	600,660	49,187	13,286	29,634	118,006	112,172	-	1,334,926	25,735
RM of Springfield	2,095,853	1,468,213	6,677,392	1,094,383	82,914	376,620	933,392	851,282	915,752	14,495,798	3,950,646
RM of Ste. Anne	636,968	348,403	1,220,453	116,502	19,825	5,927	33,219	12,098	-	2,393,394	559,922
RM of Stuartburn	282,817	166,616	312,078	117,064	17,350	22,013	50,147	25,805	41,455	1,035,344	71,125
RM of Tache	1,181,886	577,239	2,364,983	906,072	50,079	103,629	111,459	805,301	935,309	7,035,958	2,242,641
<b>RAA</b>	<b>9,040,494</b>	<b>5,268,108</b>	<b>20,366,380</b>	<b>4,433,448</b>	<b>236,828</b>	<b>953,593</b>	<b>3,014,609</b>	<b>3,972,073</b>	<b>6,694,253</b>	<b>53,979,782</b>	<b>21,233,832</b>
NOTES:											
<sup>1</sup> The RM of South Cypress and Village of Glenboro amalgamated January 1, 2015 to form the Municipality of Glenboro – South Cypress											
SOURCE: Province of Manitoba 2010, 2011 and 2012											

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### 4.5 AGRICULTURAL LAND USE

This section provides information on agricultural land use within the RAA including:

- Agricultural land cover (*i.e.*, cropping activity, pasture lands);
- Farm types;
- Annual and perennial cropping;
- Livestock operations;
- Specialty agricultural land uses:
  - Irrigation and tile drainage
  - Beekeeping operations (Apiaries)
  - Organic operations
  - Other specialty operations

Agricultural capability and soil comparison data for the RAA are presented in the Soil and Terrain TDR.

#### 4.5.1 Agricultural Land Use

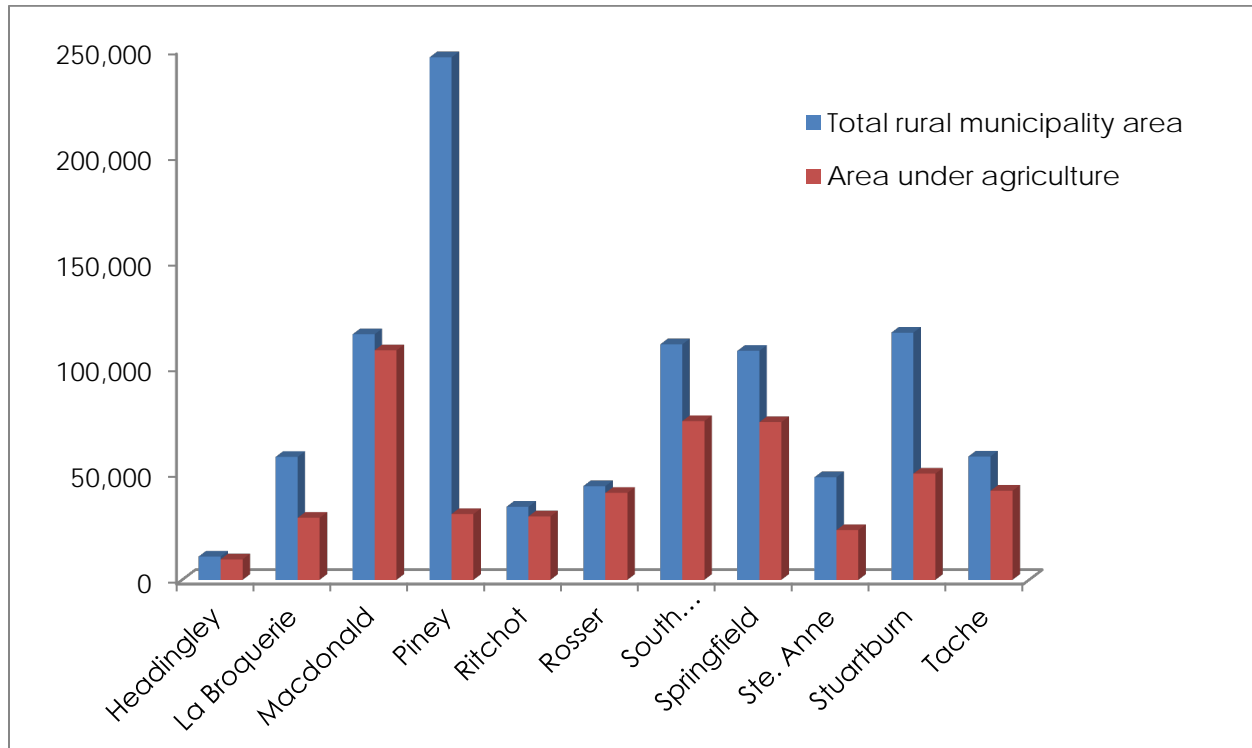
Agriculture is a key land use in the RAA, accounting for at least 40% of total area in all RMs traversed by the Project except for the RM of Piney which has agricultural land use making up 13% of the total RM area (Figure 4-2). The RMs of Headingley, Macdonald, Ritchot and Rosser have more than 85% of their total areas classified as under agriculture.



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SOURCE: EOSD-NRCAN 2001

**Figure 4-2: Areas under Agricultural Land Use in the RAA**

According to Statistics Canada (2011), there are 1,456 farms within the RMs traversed by the Project (9% of all Manitoba farms). The most common farm types are oilseed and grain farms (36%) and cattle farms (22%) (Table 4-37). Many of the oilseed and grain farms in the final preferred route RAA are in the northwestern RMs of Macdonald, Springfield, Tache, Rosser, and Ritchot which contain 86% of the 482 oilseed and grain farms. Of the 587 livestock farms in the Existing Transmission Corridor and New ROW, 40% are in the central and southern RMs of Stuartburn, La Broquerie and Piney.

The RM of South Cypress contains 109 farms: 44 oilseed and grain farms, 35 cattle farms and smaller numbers of hog and pig farms, sheep and goat farms and other animal production farms (Table 4-37).

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**Table 4-37: Farms within the RAA**

Rural Municipality	Cattle ranching and farming	Hog and pig farming	Poultry and egg production	Sheep and goat farming	Other animal production	Oilseed and grain farming	Vegetable and melon farming	Fruit and tree nut farming	Greenhouse, nursery and floriculture production	Other crop farming	Total
<b>Canada</b>	49,613	3,470	4,484	3,924	24,124	61,692	4,822	8,253	7,946	37,402	<b>205,730</b>
<b>Manitoba</b>	4,485	318	253	196	1,387	6,618	189	94	259	2,078	<b>15,877</b>
<b>Final Preferred Route RAA<sup>1</sup></b>											
Headingley	1	0	0	0	5	10	1	0	8	0	<b>25</b>
La Broquerie	50	13	8	7	16	13	1	0	7	10	<b>125</b>
Macdonald	10	4	3	1	13	157	4	6	5	11	<b>214</b>
Piney	15	0	0	1	2	7	0	0	3	22	<b>50</b>
Ritchot	5	5	9	0	12	49	6	2	7	11	<b>106</b>
Rosser	7	0	0	1	16	54	1	0	1	7	<b>87</b>
Springfield	45	1	5	2	55	96	2	2	10	46	<b>264</b>
Ste. Anne	22	13	23	2	12	30	1	1	4	14	<b>122</b>
Stuartburn	95	5	2	6	12	8	1	1	1	48	<b>179</b>
Tache	30	11	10	6	26	58	1	5	6	22	<b>175</b>
<b>Sum of Preferred Route RAA Farms</b>	<b>280</b>	<b>52</b>	<b>60</b>	<b>26</b>	<b>169</b>	<b>482</b>	<b>18</b>	<b>17</b>	<b>52</b>	<b>191</b>	<b>1,347</b>
<b>Glenboro South Station</b>											
<b>South Cypress</b>	35	2	0	2	13	44	2	1	1	9	<b>109</b>
NOTES:											
<sup>1</sup> Includes Existing Transmission Corridor, Dorsey and Riel Converter Stations and New ROW.											
SOURCE - Statistics Canada 2011 Census of Agriculture, Farm and Farm Operator Data, catalogue no. 95-640-XWE.											

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### 4.5.2 Crop Production

#### 4.5.2.1 Crop Types and Distribution

This section discusses broad crop types grown in the RAA, specific crops by RM and detailed crop inventory data for the RAA.

#### Broad Crop Types Grown in the RAA

The land cover classification database (EOSD-NRCAN 2001) provided broad agricultural land cover types for the RAA. Within the Existing Transmission Corridor and New ROW portions of the RAA, 53% of the land cover type is agricultural (Table 4-38).

Within the Existing Transmission Corridor LAA, land is primarily under annual cropland cover class (67%) with smaller portions under range and grassland (20%), and perennial cropland and pasture (2%) (Table 4-38). Within the New ROW LAA, a larger portion of land is under range and grassland (26%) than annual cropland (9%) and perennial cropland and pasture (2%). The RMs of Rosser, Headingley, Macdonald and Ritchot are predominantly under annual cropland (Map 4-5 – Annual and Perennial Cropping). While the central RMs of Springfield, Tache, and Ste. Anne are also predominately under annual cropland, these RMs have higher portions of land under range and grassland and perennial cropland. The remaining south central and southern eastern RMs of La Broquerie, Stuartburn and Piney have larger portions of land under range and grassland and perennial cropland and pasture and smaller portions under annual cropland compared to the other RMs. The highly-productive areas in the RMs of Rosser, Headingley, Macdonald, Ritchot, Tache, Springfield and Ste. Anne largely contain clayey agricultural capability Class 2 and Class 3 Humic Vertisols. These soils have structural and permeability limitations for agricultural capability (Soil and Terrain TDR) and are likely to be aerially sprayed with crop protection products. The central and southeastern RMs of RM of La Broquerie, Stuartburn and Piney are characterized by scattered, smaller portions of land under annual cropping interspersed with perennial cropping (mainly for livestock feed) and pasture. This corresponds well with the dominantly coarse-textured, marginal soils (Class 4 and Class 5) found in these areas (Soil and Terrain TDR).

For the RM of South Cypress, which constitutes the RAA for Glenboro South Station 63% of the land cover type is agricultural with more land under range and grassland (42%) than annual cropland (20%) (Table 4-38). Within the Glenboro South Station LAA, land is primarily under agricultural cover classes with 55% and 30% of the land under annual cropland, and range and grassland, respectively (Table 4-38).

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**Table 4-38: Agricultural Crop Types and Distribution**

RAA (Existing Corridor and New ROW)		
Agricultural Cover Class	Area (ha)	% of Total RAA Area <sup>1</sup>
Annual Cropland	287,626	34
Perennial Cropland and Pasture	21,379	3
Range and Grassland	136,244	16
<b>Total Agricultural Land Cover Area<sup>2</sup></b>	<b>445,249</b>	<b>53</b>
RAA (Glenboro South Station)		
Agricultural Cover Class	Area (ha)	% of RAA Area <sup>3</sup>
Annual Cropland	22,716	20
Perennial Cropland and Pasture	0	0
Range and Grassland	47,129	42
<b>Total Agricultural Land Cover Area<sup>2</sup></b>	<b>69,845</b>	<b>63</b>
Existing Corridor LAA		
Agricultural Cover Class	Area (ha)	% of LAA Area <sup>4</sup>
Annual Cropland	14,371	67
Perennial Cropland and Pasture	424	2
Range and Grassland	4,214	20
<b>Total Agricultural Land Cover Area<sup>2</sup></b>	<b>19,010</b>	<b>89</b>
New ROW LAA		
Agricultural Cover Class	Area (ha)	% of LAA Area <sup>5</sup>
Annual Cropland	2204	9
Perennial Cropland and Pasture	514	2
Range and Grassland	6466	26
<b>Total Agricultural Land Cover Area<sup>2</sup></b>	<b>9,185</b>	<b>36</b>
Glenboro South Station LAA		
Agricultural Cover Class	Area (ha)	% of LAA Area <sup>6</sup>
Annual Cropland	202	55
Perennial Cropland and Pasture	0	0
Range and Grassland	109	30
<b>Total Agricultural Land Cover Area<sup>2</sup></b>	<b>311</b>	<b>85</b>

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**Table 4-38: Agricultural Crop Types and Distribution**

**NOTES:**

- <sup>1</sup> Total area in the Existing Transmission Corridor and New ROW portions of the RAA is 847,188 hectares. This area includes Dorsey and Riel Converter Stations footprints.
- <sup>2</sup> Numbers may not add up due to rounding.
- <sup>3</sup> Total area in the RM of South Cypress (Glenboro South Station RAA) is 111,134 hectares.
- <sup>4</sup> Total area within Existing Transmission Corridor LAA is 25,329 hectares.
- <sup>5</sup> Total area within New ROW LAA is 25,329 hectares.
- <sup>6</sup> Total area within Glenboro South Station LAA is 367 hectares.

### Detailed Crop Inventory Data for the RAA

The federal crop inventory database (Government of Canada 2014) provided recent spatial cropping data for the RAA. These cropping data have better resolution than the land cover classification data (EOSD-NRCAN 2001) and were used to estimate areas under different crop types in the RMs traversed by the Project (Table 4-39).

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**Table 4-39: Crops Grown in the RAA**

Crop Type		Rural Municipality										
		Headingly	La Broquerie	MacDonald	Piney	Ritchot	Rosser	Springfield	Ste Anne	Stuartburn	Tache	South Cypress
		hectares										
Row Crop	Corn	234	7,132	14,744	2,510	9,828	7,263	17,414	16,122	1,902	10,490	6,662
	Potatoes	N/A	15	N/A	0	N/A	N/A	18	0	20	N/A	4,142
	Soybeans	9,041	15,551	136,799	5,557	48,699	39,601	75,384	25,754	7,329	84,139	4,624
	Sunflower	774	429	2,372	1,356	1,037	5,645	18,532	443	64	1,166	3,647
Cereal/ Oilseeds	Buckwheat	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Canary Seed	N/A	N/A	590	0	N/A	N/A	13	27	N/A	N/A	43
	Canola	14,184	13,884	192,391	11,104	43,015	59,667	48,358	22,641	15,289	65,523	53,982
	Cereals	22,587	23,928	255,942	20,987	49,599	86,010	97,849	24,509	33,323	101,489	77,254
	Fallow	550	640	3,548	650	509	5,944	16,667	362	1,000	1,061	15,220
	Flaxseed	528	41	10,166	2,611	357	1,607	1,754	125	345	2,557	1,077
	Millet	N/A	N/A	83	N/A	N/A	N/A	N/A	N/A	N/A	83	N/A
	Peas	1	469	652	62	131	852	230	210	N/A	133	3,011
Seeded hayland	Forage Crops	3,451	47,727	15,663	24,860	11,803	21,707	40,262	19,273	53,480	20,800	44,498
	Greenfeed	279	152	1,948	93	570	1,783	1,587	277	54	1,355	800
Natural Hayland	Grassland	4,313	56,933	8,473	104,370	13,517	11,827	110,502	31,615	155,052	30,566	215,478

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**Table 4-39: Crops Grown in the RAA**

Crop Type		Rural Municipality										
		Headingley	La Broquerie	MacDonald	Piney	Ritchot	Rosser	Springfield	Ste Anne	Stuartburn	Tache	South Cypress
		hectares										
Other Crop Types	Beans	2	224	378	47	47	209	472	168	228	198	584
	Hemp	N/A	N/A	N/A	N/A	N/A	15	N/A	N/A	N/A	N/A	92
	Lentils	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	154
	Mustard	N/A	N/A	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Other Crops	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	13	N/A	N/A
	Safflower	N/A	7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	23
	Vegetables	N/A	N/A	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	922

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### 4.5.2.2 Crop Production Values

The MASC database provided historical crop yields and crop prices for individual crops grown within the RAA by RM (MASC 2015).

Crop production values within the RAA and LAA (Table 4-40) were calculated using typical crop yields and dollar values (MASC 2014) and crop types from the federal crop inventory (Government of Canada 2014).

**Table 4-40: Production Values for Crops Grown in the RAA**

Crop Type	Crop Types				
	Row Crops	Cereals/Oilseed Crops	Seeded Hayland	Natural Hayland	Total
	\$ CDN				
Headingley	\$1,253,021	\$4,642,176	\$288,337	\$129,338	\$6,312,871
La Broquerie	\$3,222,413	\$3,671,710	\$3,694,260	\$955,806	\$11,544,189
MacDonald	\$21,659,802	\$60,077,490	\$2,283,594	\$254,070	\$84,274,955
Piney	\$1,396,164	\$3,631,521	\$2,198,292	\$3,292,943	\$10,518,920
Ritchot	\$8,496,777	\$11,997,812	\$976,409	\$405,327	\$21,876,324
Rosser	\$7,453,093	\$16,142,751	\$2,214,376	\$354,628	\$26,164,847
Springfield	\$14,885,556	\$15,872,274	\$2,816,784	\$2,227,312	\$35,801,926
St. Anne	\$6,024,670	\$5,646,207	\$1,375,252	\$640,086	\$13,686,215
StuartBurn	\$1,302,176	\$3,998,280	\$2,097,312	\$5,141,311	\$12,539,080
Tache	\$12,724,855	\$20,675,585	\$1,315,796	\$1,360,756	\$36,076,992
South Cypress	\$8,373,309	\$19,439,788	\$4,079,383	\$6,461,225	\$38,353,705

### 4.5.2.3 Irrigation and Tile Drainage

Multiple surface water and groundwater licences in the RAA have been issued for agricultural purposes including livestock and sod production. Forty groundwater wells in the RAA are also used for livestock production (MCWS, Water Stewardship Division 2015). One surface water withdrawal licence is associated with a sod operation which is located south of the City of Winnipeg, near PTH 75 but outside the LAA. According to MCWS (2015), no licences have been issued for irrigated crop production in the RAA. However, based on an irrigation survey completed for the province of Manitoba by Gaia Consulting Limited (2007), in 2006 there were 35 ha (87 acres) and 805 ha (1990 acres) of land under irrigation in the RMs of Macdonald and South Cypress, respectively. The irrigated area is primarily under potato production with a smaller portion under cereal production (Gaia 2007).



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There are five groundwater well licences issued for agricultural purposes in the LAA. In the Existing Transmission Corridor, there is one licenced groundwater withdrawal for livestock production at Sturgeon Creek Hutterite colony within the SLTC LAA in the RM of Rosser. In the new ROW LAA, there are four operations in the RM of La Broquerie licenced for use of groundwater in livestock production. There is one licenced surface water withdrawal in the SLTC LAA, south of the City of Winnipeg, near PTH 75. While usage category for this surface withdrawal licence is irrigation, the usage does not appear to be agricultural based on aerial imagery review. There are no known licences issued for crop irrigation within the LAA. A review of imagery for the Existing Transmission Corridor, New ROW and Station LAAs did not indicate the presence of irrigation pivot footprints, which are typically associated with irrigated potato and cereal production. However, during the PEP, four landowners indicated that they irrigated their lands for production of corn, hay, soybean, canola, barley and pasture, at the La Broquerie and Ste. Anne public engagement meetings. Locations of these operations or other details (e.g., type of irrigation, land area irrigated) were not provided through PEP. It is assumed these irrigation operations are relatively small and crops are not irrigated using centre-pivot or lateral-move systems, that would be most affected by the presence of the Project.

There is no publicly-available information about tile drainage project locations within the RAA. Information for permitted tile drainage projects was requested from MCWS's Drainage and Water Control Licensing but no feedback was received from the requests made (Reimer 2015, pers. comm.). During the PEP at a meeting in Ste. Anne, one landowner indicated that in addition to irrigating their land for pasture production, their land was also tile-drained.

Multiple surface water and groundwater licences in the RAA have been issued for agricultural purposes (Section 4.6.7.3). Forty groundwater wells in the RAA are also used for livestock production (MCWS 2015e). There are no licences for irrigated crop production in the current MCWS (2015e) list. However, based on an irrigation survey completed for the province of Manitoba by Gaia Consulting Limited (2007), in 2006 there were 35 ha (87 acres) and 805 ha (1990 acres) of land under irrigation in the RMs of Macdonald and South Cypress, respectively. The irrigated area is primarily under potato production with a smaller portion under cereal production (Gaia 2007).

### 4.5.3 Livestock Operations

The RAA contains operations that raise several types of livestock, including hog, dairy, beef, poultry, sheep, goats, llama, alpaca, bison and bees. Requests for livestock operations location data were made to groups representing hog, dairy, beef, turkey, chicken and broiler-breeder, egg, bison and bee operations with the objective of identifying their location and reducing the potential for Project effects on the operations, as far as possible. However, specific location information was provided only for hog, dairy and chicken and broiler-breeder operations by the respective producer representative groups (Map Series 4-100 – Known Livestock Operations).

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The greatest concentration of intensive hog operations is in the RM of La Broquerie. Large numbers of intensive hog operations are also found in the RMs of Springfield (near Dugald and Anola), Tache (near Linden and Landmark), Ste. Anne (near Ste. Anne and Giroux), and Stuartburn (north and south of Vita).

Dairy cattle operation locations within the RAA are concentrated in southwestern part of the RM of Tache, southern part of RM of Ste. Anne and northern part of RM of La Broquerie, with fewer operations in the RMs of Springfield and Stuartburn (Map Series 4-100 – Known Livestock Operations).

Chicken and broiler-breeder operations are concentrated in the southern part of the RM of Tache and the western part of the RM of Ste. Anne, with fewer operations in the RM of La Broquerie (Map Series 4-100 – Known Livestock Operations).

Manitoba Egg Farmers provided numbers of member operations within the RMs traversed by the Project but did not provide specific operation locations within RMs (Table 4-41).

**Table 4-41: Egg and Pullet Operations in the RAA**

Rural Municipality	No. of Land Parcels with Egg and Pullet <sup>1</sup> Operations
Headingley	0
La Broquerie	4
Macdonald	3
Piney	0
Ritchot	8
Rosser	1
Springfield	1
Ste. Anne	17
Stuartburn	0
Rosser	1
South Cypress (East of the village of Glenboro)	1
NOTES:	
<sup>1</sup> Pullet is a young female chicken that will grow into a hen.	
SOURCE: Manitoba Egg Farmers 2014	

According to Manitoba Turkey Producers, there is one turkey operation within the RAA, near Gardenton in the RM of Stuartburn (Manitoba Turkey Producers 2013). Manitoba Beef Producers did not provide location information for their member operations but broadly indicated that the new ROW will traverse some cattle producers' operations (Cousins 2015, pers. comm.). During Public Engagement Process at meetings in Dugald, Winnipeg, Oak Bluff, La Broquerie, Zhoda,

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Ste. Anne, Richer, and Lorette, Manitoba, additional locations of livestock operations (including cattle, hogs, goats, dairy and trout operations) were provided.

There are bee-keeping operations in most of the RMs making up the RAA (Table 4-42); however, their specific locations are unknown. The Manitoba Bee Keepers Association does not have members in the RAA. For a honey producer to become a member of the association, they should have, within any given calendar year, 50 or more honey bee colonies for production of honey, queens, hive splits and/or nuclear colonies (Manitoba Bee Keepers Association 2015). Honey producers within the RAA likely have fewer than 50 honey bee colonies.

During their KPI, the Manitoba Bee Keepers' Association indicated that no negative effects have been noted for bee hives located beneath transmission power line in the Dauphin, Manitoba area. This finding is consistent with literature which generally reports that there appears to be no evidence of transmission lines adversely affecting bees. An exception to this is the potential for bees to receive micro shocks if a bee hive is very close to a transmission line (Greenberg *et al.* 1981). However, this effect can be eliminated by screening the hive (EMFs.info 2015).

**Table 4-42: Bee-Keeping Operations in the RAA**

Rural Municipality	No. of Bee-Keeping Operations
Headingley <sup>1</sup>	<5
La Broquerie	6
Macdonald <sup>1</sup>	<5
Piney <sup>1</sup>	<5
Ritchot	5
Rosser	6
Springfield	8
Ste. Anne	5
Stuartburn <sup>1</sup>	<5
Rosser	6
South Cypress	9
NOTE:	
<sup>1</sup> None or less than five bee keeping operations are reported as <5 to avoid isolating any operations.	
SOURCE: Manitoba Agriculture, Food and Rural Development (Lafrenière 2014, pers. comm.)	

### 4.5.4 Specialty Agricultural Operations

#### 4.5.4.1 Organic Operations

There are no known organic operations within the RAA. While the Organic Producers Association of Manitoba does not have registered organic producers within the RAA, there might be

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operations in the RAA who are producing organically. During PEP, there were no lands identified as actively under organic production by landowners. However, at meetings in La Broquerie one landowner indicated organic orchid development as a potential land use, while another landowner expressed a desire to render their land organic (Chapter 3).

### 4.5.4.2 Other Specialty Operations

Other specialty operations in the RAA include: a mushroom farm in the RM of Springfield; three fruit farms in the RM of Macdonald and two in the RM of South Cypress; two sod farms, one just south of the City of Winnipeg near PTH 75 and the one in RM of Headingley; and one aquafarm found east of PTH 12 in the RM of Springfield. While the major portion of this aquafarm lies outside the New ROW LAA, the eastern portion of the operation, which appears to include three ponds, occurs within the LAA, west of the ROW. One operation in the RM of Ste. Anne, located within the LAA and west of the PDA, was identified during the PEP as producing trout (aquafarm) and fruit and vegetables (Chapter 3). Another fruit farm producing berries was identified during PEP as being located 100 to 400 m away from an alternative route segment within the RM of La Broquerie (Chapter 3), however the specific location is unknown. There are no other known specialty operations within the LAA.

## 4.6 LAND AND RESOURCE USE

The physical landscape of the RAA and the resultant soils are largely attributable to the glacial action of Lake Agassiz and correlate with present-day land uses including cultivation, woodlots, forestry and conservation. Due to improved drainage, generally flat topography and high soil fertility, land use in the western lowland and central portion of the RAA has been altered from historical tall grass prairie and fen to cultivation. More extensive cultivation in the eastern portion of the region is hindered by the presence of mineral soils, peatland and upland mixed forests. Alteration of natural drainage patterns does not appear to have occurred in the eastern portion of the RAA. The physical landscape in the eastern part of the RAA has largely retained its natural characteristics, which also provides opportunities for forestry, recreation and conservation lands. Agricultural cropland is the dominant land use cover in the northwestern part of the RAA, with more contiguous forest cover encompassing a large portion of the easterly two thirds of the remaining RAA, including the Agassiz and Sandilands provincial forests.

This section provides an overview of land and resource use within the RAA including:

- Land use planning (government organization and responsibilities);
- Land use development controls;
- Land use and property ownership patterns;
- Effect of transmission line development on property value;
- Agricultural and industrial development;
- Designated lands and protected areas;
- Recreational land use
  - Trails (e.g., snowmobile, cross country skiing, walking trails)

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- Resorts and camping
- Tourism
- Resource Use
  - Trapping and hunting
  - Mining/aggregates
  - Surface water and groundwater usage
  - Productive forestland
  - High-value forest sites

### 4.6.1 Land Use Planning

In Manitoba, *The Planning Act* establishes the mandate for municipalities to adopt development plans to guide land use decisions within their boundaries. Provincial Planning Regulation, M.R. 81/2011 of *The Planning Act* reflects the provincial government's interest in land and resource use and sustainable development and provides policy direction to land use planning. It also serves as a guide to planning authorities in preparing, reviewing and amending development plans. Within the regulation, Provincial land use policies express provincial interest in areas of community development, agriculture, natural lands, renewable resources, heritage and recreation, transportation and infrastructure, mineral resources and the Capital Region (*i.e.*, Winnipeg and surrounding municipalities).

Municipal government jurisdiction in southern Manitoba is divided primarily between RMs and urban centres (incorporated cities, towns and villages). Rural areas may be organized as planning districts, while many smaller urban settlements and communities have no independent municipal status. Development planning for these smaller settlements and communities is undertaken at the rural municipal level in the form of development plans and zoning by-laws. Municipal jurisdictions in the RAA are shown on Map 4-6 – Municipal Jurisdictions.

Each municipal jurisdiction is governed by a Reeve or Mayor and an elected council and is responsible for a broad range of infrastructure, services and land use planning within their boundaries. The municipalities derive their authority from the provincial government which retains direct control over certain higher order regional services (*e.g.*, PTHs and PRs).

The incorporated RMs and urban centres located within the RAA are the RMs of Headingley, La Broquerie, Piney, Ritchot, Rosser, Macdonald, Springfield, Stuartburn, Tache, Ste. Anne, Town of Ste. Anne, Village of Glenboro and City of Winnipeg.

Unincorporated communities located within the RAA are listed in Table 4-43.

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**Table 4-43: Unincorporated Communities within the RAA**

Rural Municipality	Unincorporated Community
RM of Macdonald	Brunkild, Sanford, Starbuck
RM of Springfield	Dugald, Anola
RM of Ritchot	Ile des Chenes, St. Adolphe
RM of Tache	Landmark, Lorette
RM of Ste. Anne	Richer
RM of La Broquerie	La Broquerie, Marchand, Zhoda
RM of Stuartburn	Caliento, Sundown, Vita
RM of Piney	Piney, South Junction, Sprague, Vassar

Land use planning responsibility at the rural municipal level extends to land use control and development policy, which in some cases is shared to a degree with regional authorities such as Planning and Conservation Districts. Two or more adjoining municipalities may join to form a Planning District by regulation under *The Planning Act* (Manitoba). The Planning District is responsible for: the adoption, administration and enforcement of the development plan for the entire district and member municipal by-laws, or a district-wide zoning by-law and any secondary plans; and building by-laws of member municipalities (Manitoba Municipal Government 2015). There are three planning districts within the RAA (in part), as follows:

- South Interlake Planning District, including the member municipality of Rosser.
- Macdonald-Ritchot Planning District, including member municipalities of Macdonald and Ritchot.
- Cypress River Planning District, including member municipalities of North and South Cypress, including Village of Glenboro.

Conservation Districts are managed under the Watershed Planning and Programs section of the Water Stewardship Division as defined by *The Conservation Districts Act*. Conservation Districts are formed as a partnership between the province and local municipalities to protect, restore and manage land and water resources on a watershed basis. Conservation Districts can also be designated as water planning authorities for integrated watershed management planning in Manitoba (MCWS 2014c). There are four Conservation Districts within the RAA as follows:

- East Interlake Conservation District, including a small portion of the RM of Rosser.
- La Salle-Redboine Conservation District, including the RMs of Macdonald and part of the RM of Ritchot among others outside the RAA.
- Seine-Rat River Conservation District, including the RMs or portions thereof, of Springfield, Tache, Ste. Anne, La Broquerie, Stuartburn, Reynolds and Piney.
- Cooks Creek Conservation District, including a significant portion of the RM of Springfield and smaller portions of the RMs of Tache, Ste. Anne and Brokenhead (outside of the RAA).

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### 4.6.2 Land use Development Controls

Municipal jurisdictions may adopt development plans<sup>4</sup> and zoning by-laws<sup>5</sup> to guide land use decisions within their respective boundaries (Table 4-44). Land use development controls based on applicable development plans and zoning by-laws and associated mapping for affected RMs in the RAA are further described in Appendix C.

**Table 4-44: Municipal Development Controls in the RAA**

Municipality	Development Plan	Zoning By-law
City of Winnipeg	Our Winnipeg Plan By-law No. 67/2010	City of Winnipeg Zoning By-law No. 200/06
RM of Headingley	RM of Headingley Development Plan By-law No. 12-2006	RM of Headingley Zoning By-law No. 3-2011
RM of La Broquerie	RM of La Broquerie Development Plan By-law No. 20-2011	RM of La Broquerie Zoning By-law No. 10-2013
RM of Macdonald	Macdonald-Ritchot Planning District Development Plan By-law No. 2/10	RM of Macdonald Zoning By-law No. 15/95
RM of Piney	RM of Piney Development Plan By-law No. 53-09	RM of Piney Zoning By-law No. 80/2012
RM of Ritchot	Macdonald-Ritchot Planning District Development Plan By-law No. 2/10	RM of Ritchot Zoning By-law No. 18-2002
RM of Rosser	South Interlake Planning District Development Plan By-law No. 3/10	RM of Rosser Zoning By-law No. 4-85
RM of Ste. Anne	RM of Ste. Anne Development Plan By-law No. 13-2007	RM of Ste. Anne Zoning By-law No. 10-2010
RM of Springfield	RM of Springfield Development Plan By-law No. 98-22	RM of Springfield Zoning By-law No. 08-01
RM of South Cypress	Cypress Planning District Development Plan By-law No. 49-2009	RM of South Cypress Zoning By-law No. 1485
RM of Stuartburn	RM of Stuartburn Development Plan By-law No. 081-2008	RM of Stuartburn Zoning By-law No. 098/2011
RM of Tache	RM of Tache Development Plan By-law No. 4-2000	RM of Tache Zoning By-law No. 12-2009

<sup>4</sup> A development plan is a by-law outlining the long term vision and goals of a community. It is used to guide development within a municipality or planning district.

<sup>5</sup> A zoning by-law is used to implement development plan policies and must conform to the development plan. Zoning works by regulating the use of land and location of buildings and structures (Manitoba Municipal Government 2015).

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Outside of urban centres or settlement areas, most of the land within the RAA is designated as "Agricultural", "Agricultural Limited" or "Rural Areas" under individual municipal development plans. Areas of Crown land are typically designated as "Natural Resource Area", "Natural Environment Area", "Rural Natural Area", or as designated Crown land (e.g., provincial forests and WMAs) in the development plans. Lands outside built-up areas are primarily zoned for agriculture and rural uses - "AC – Agriculture Conservation", "AI – Agriculture Intensive", "AR – Agriculture Restricted", "AL – Limited Agriculture", "AML – Agriculture (Moderately Limited) District", "AG-5 – Rural Agriculture", "DR – Development Reserve", "RU – Rural General", "Rural Mixed", "Limited Rural Zone" and "Rural Zone 1, 2, 3". Specific municipal or planning district development plan policies note that essential activities of government and public and private utilities should be permitted in any land use designation subject to the requirements in a municipal zoning by-law and should be developed in a manner so as to minimize any incompatibility with neighbouring land uses.

As a Crown Corporation, Manitoba Hydro is not subject to the jurisdiction of local planning authorities pertaining to matters related to zoning and or the subdivision process. This position is based on certain provisions of *The Manitoba Hydro Act* governing: the Corporation's standing as an agent of Her Majesty (the Province of Manitoba); the Corporation's sole and exclusive jurisdiction to all matters under the Act notwithstanding provisions of any other Act or regulation, rule or by-law; and the preference given to the Act over conflicting provisions of any other Act (Manitoba Hydro 1998).

### 4.6.3 Land Use and Property Ownership Patterns

Most of land within the RAA is privately owned. Property ownership patterns are influenced by the pattern of historical land use survey, which in the RAA is primarily the section-township-range system. The exceptions to this pattern occur surrounding the Town of Ste. Anne, the community of Lorette and the Oak Island Settlement, southeast of Ile des Chenes, where the long lot river land use survey system is evident.

#### 4.6.3.1 Crown and Municipal Lands

Crown and public lands include several publicly-owned parcels set aside as an ecological reserve, WMAs and provincial forests. The RMs of Springfield, Tache, Ste. Anne, La Broquerie, Stuartburn and Piney have portions of the land base that are Crown-owned or Crown-leased (Map 4-7 – Land Tenure and Ownership). Crown-owned or Crown leased lands also encompass the Red River Floodway which is also traversed by the Southern Loop Corridor, through southeast Winnipeg, the RM of Ritchot and the RM of Springfield to Riel Converter Station. The Southern Loop Corridor, stretching from Dorsey Station to Riel Station, is a mixture of land either owned by Manitoba Hydro (as a Crown Corporation) or under easement. Manitoba Hydro also owns land that encompasses the Riel to Vivian Corridor east of the City of Winnipeg through the RM of Springfield. Municipal-owned land in the RAA occurs within most, if not all of the RMs. The City of Winnipeg also owns lands in the RM of Ritchot.



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Provincial Crown lands in the southern, settled and agricultural part of the RAA in southeastern Manitoba are coded according to operational limits that set out land use, permissible level of development and requirements for multiple uses (MCWS 2015c). Land uses must conform to the Operational codes. Designated lands in Orders-in-Council areas (e.g., Provincial Parks, Provincial Forests and WMAs) are administered under the applicable statutory authority (e.g., *The Forest Act* for Provincial Forests). Crown land operational land use classifications for Provincial Crown land by RM in the RAA are outlined in Table 4-45.

**Table 4-45: Crown Land Operational Land Use Classifications**

Municipal Jurisdiction	Crown Land Use Codes	Crown Land Designations/Uses
Rosser	n/a	n/a
Headingley	PP	Provincial Park
Macdonald	n/a	n/a
City of Winnipeg	PA; PP; UT/C/8j; UT/C/1g; 1n	Protected Area; Provincial Park; Utility Sites/Wildlife/Agriculture; Utility Sites/Wildlife/Hay; Grazing, Haying, Cultivation
Ritchot	UT/C/1g; UT/1n	Utility Sites/Wildlife/Agriculture; Utility Sites/Grazing, Haying, Cultivation
Springfield	8n; C/UT/1g; 1n; 8n; B/C; XM; UU; UT; 6a	Grazing, Haying Cultivation – ‘go-back’ fields; Wildlife/Utility Sites/Hay; Grazing, Haying, Cultivation – ‘go-back’ fields; Outdoor Recreation/Wildlife; Other; Urban Use; Hay and Grazing
Tache	D/1n	Mineral Extraction/Grazing, Haying and Cultivation
Ste. Anne	7a; XM; C2/D; C2; C2/H; D1; C/D/3a	No Haying and Grazing; Other; Wildlife-No Hay/ Mineral Extraction; Wildlife-No Hay; Wildlife-No Hay/Candidate Protected Area; Mineral Extraction-No Agriculture; Wildlife/Mineral Extraction/Haying and Grazing
La Broquerie	C1; 4a; WW/PA	Wildlife-No Agriculture; Haying and Grazing; WMA/ Protected Area
Stuartburn	C/M; A/D; A1; PF; A/C/6b; AH; M1; A/D/XM; A/C/7a; A/C/M/7j; A/C	Wildlife/Marsh; Forest Management/ Mineral Extraction; Forest Management-No Agriculture; Provincial Forest; Forest Management/Wildlife/ Haying and Grazing; Forest Management- Candidate Protected Area; Marsh-No Agriculture; Forest Management/Mineral Extraction/Other; Forest Management/ Wildlife/No Haying and Grazing; Forest Management/Wildlife/Marsh/No Hay; Forest Management/Wildlife
Piney	PF; A1; A/7a; A/D; A/M; PF/H	Provincial Forest; Forest Management-No Agriculture; Forest Management/No Haying and Grazing; Forest Management/ Mineral Extraction; Forest Management/ Marsh; Provincial Forest/Candidate Protected Area
SOURCE: MCWS 2015c		

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Crown and public lands in the RAA include several publicly-owned parcels set aside as an ecological reserve, WMAs, provincial forests and a community pasture. These include the:

- Pocock Lake Ecological Reserve
- Rat River WMA (parcel)
- Spur Wood WMA
- Watson P. Davidson WMA
- Cat Hills Provincial Forest
- Sandilands Provincial Forest
- Wampum Provincial Forest
- Gardenton-Pansy Community Pasture

Agricultural Crown lands, either owned or leased from the Crown, are prevalent in the eastern portions of the RMs of Springfield and Tache, in scattered pockets in the RM of La Broquerie, in the north, south and eastern sections of the RM of Stuartburn and in the north-central and southern portions of the RM of Piney.

Parcels of Crown land that are encumbered within the LAA are located in the RMs of Headingley, Springfield and the City of Winnipeg (*i.e.*, Red River Floodway) along the Existing Corridors, and the RMs of Tache, Ste. Anne, La Broquerie, Stuartburn and Piney along the New ROW. The encumbrances<sup>6</sup> are largely concentrated in the RMs of Ste. Anne, La Broquerie, Stuartburn and Piney (Crown Land and Property Agency 2015). Crown land encumbrance types<sup>7</sup> within the LAA consist of forage leases/agricultural rental (16), wildlife-DUC lands (5), community license of occupation (5), forest research plantation (4), fish and game association license of occupation (2), school land (2) and treaty land entitlement (TLE) notice (2). Crown land encumbrances also exist for protected areas, provincial forest, WMAs, quarry leases, and easements for Manitoba Hydro and MTS (Crown Land and Property Agency 2015).

### 4.6.3.2 Private Residential Development

Areas of large urban population, or urban and settlement centres, where residential development is present occurs within the communities of Headingley, Oak Bluff, La Salle, Grande Pointe, La Broquerie, Marchand and the Town of Ste. Anne. Pockets of rural residential development, or non-farm development, stem out from areas of dense urban residential areas in the RMs of Springfield, Tache, Ste. Anne and La Broquerie and to a lesser extent in the RMs of Stuartburn and Piney. Rural farm residential development is generally widespread throughout the RAA and is associated with agricultural operations including farm accessory buildings. In addition, the Oak Bluff West residential subdivision is located immediately adjacent to Oak Bluff and the Project LAA in the RM of Macdonald.

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<sup>6</sup> A lien or claim on property that affects transfer of ownership but does not prevent such a transfer.

<sup>7</sup> Number of parcels or quarter sections provided based on section-township-range.

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Private development rights within the RAA are described in terms of active and closed subdivision applications. There were 43 active subdivision applications within 1 km (on either side) of the existing transmission corridor and 15 within 1 km along the new ROW. In addition to active subdivision applications, there were 54 closed subdivision applications within 1 km of the existing transmission corridor and 48 within 1 km along the new ROW.

Occupied private dwellings are discussed in Section 4.2.1.3. The distribution of private dwellings in the RAA municipalities is shown in Table 4-3. The majority of the RAA experienced growth in terms of private dwellings and number of owned dwellings. The RM of Springfield had an increase of 460 dwellings, followed by the RMs of La Broquerie (389) and Tache (386). Percentage-wise, the largest dwelling increases occurred in the RMs of La Broquerie (32.2%), Headingley (27.7%) and Piney (17.4%). The number of dwellings in the RM of South Cypress and Village of Glenboro decreased between 2006 and 2011 while the number of dwellings in the rest of the RAA increased (Table 4-3).

### 4.6.3.3 Private Property Value

Summary conclusions drawn from the literature review on the effects of transmission line development on property value (see Appendix A) are as follows:

- Colwell (1990) concluded that proximity to a power line is associated with reduced selling prices, but the effect diminished with time and thought to be as a result of tree/vegetative growth surrounding the corridor. Properties situated in proximity to transmission towers experienced reduced values, which did not diminish over time.
- Cowger et al (1996) and Bottemiller (2000) showed that high voltage power lines do have an impact on property values; however the impact was minimal with Bottemiller (2000) indicating a decrease of around 0.04 % to 2.05 %. Short-term impacts were greater for the construction of a new transmission line, or a rebuild of a transmission line.
- Jackson and Pitts (2007) review of the research showed that: effects of HTVL on property value are varied and are determined by proximity to towers and lines, the view of towers and lines, the type and size of HTVL structures, the appearance of easement landscaping and surrounding topography. Many studies have indicated that the HTVLs have no significant effect on residential property values. An increasing number of studies have shown a small diminution in value attributable due to close proximity of lines, reporting an average discount of 1% and 10% of property value. The impacts diminished as the distance from the line increased and disappeared at a distance of 200 ft. (60 m) from the lines. Value diminution was temporary and usually decreased over time, disappearing in four to 10 years. Where views were completely unobstructed, negative impacts can extend up to a quarter mile.
- Grover, Elliott & Co. Ltd. (2008) concluded that rights-of-way can have moderate negative effects on the value of property that contains the ROW and on immediately adjacent properties. The value effect was much greater for small properties than for large properties and more for urban properties than those in unpopulated rural or remote locations. Negative

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effects on property values diminish with distance and vary in the extent to which the HVTL is visually seen.

- Chalmers and Voorvaart (2009) concluded that there was no statistical effect of transmission line proximity or visibility on property values in residential neighborhoods. However, a consistent negative effect was found when transmission line easements border private property. No data were found to support the hypothesis that property values are more vulnerable to transmission line effects in a down turn market or that higher valued properties are more vulnerable to effects from transmission lines.
- Headwaters Economics (2012) concluded that when property value impacts do occur they tend to be negative and the highest when the impact of the line on the property's use cannot be mitigated. Small-lot rural residential subdivisions face a high risk as a class of properties. The impact on larger properties depends on how the line would affect the use of the property. Chalmers (2011/2012) noted that adverse impacts to parcels in rural residential subdivisions had an average of 15% devaluation within 1000 ft. (304 m) of the line. Jackson and Pitts (2010) concluded that transmission lines have little to no effect on property values. Any negative effects ranged from -2% to -9%, and decreased with time and distance.
- Bottemiller *et al.* (2013) found that in the Portland and Seattle study areas there was a small, significant, negative HVTL price effect overall; however, there was a noted difference between typically-priced homes and higher-priced homes in Seattle-the higher priced homes had a more substantial and significant price effect as compared to typically-priced homes where there was a small, negative and insignificant price effect. The study found that there was very little difference in the percentage change in price from 2005 to 2007 in either area for HVTL-abutting homes and non-HTVL abutting homes. The study also found that the rate of change in home prices was not affected by proximity of the HTVL.

### 4.6.4 Hutterite Colonies, Agro-Industrial Developments and Business Parks

There are a number of agricultural and industrial developments in the LAA. They include Hutterite colonies, industrial areas and parks, and agro-industrial developments.

Hutterite colonies own large tracts of land within the LAA based on collective ownership whereby land, buildings, including housing units and other common buildings (*i.e.*, dining or fellowship hall) are owned by the colony, which is operated like a corporation. Colonies run industrial hog, dairy, turkey, chicken and egg production or manufacturing operations. Three Hutterite colonies are located within the LAA (Cedrontech Hutterite Contact Directory, n.d.) as follows:

- The Sturgeon Creek Colony (approx. 160 residents) in the RM of Rosser, south of Dorsey Station along the Southern Loop Corridor.
- The Ridgeland Colony (approx. 106 residents) in the RM of Springfield, south of Anola and east of PTH 12 along the new ROW segment.
- The Pineland Colony (approx. 112 residents) in the RM of Piney, south of Piney and east of PTH 89 along the new ROW segment.

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Agro-industrial developments are also located within the RAA. Richardson Limited maintains a 500-acre research farm and crop development centre, Kelburn Farm, at Howden, Manitoba just south of the City of Winnipeg along the Red River. Richardson Limited also operates Agriculture Business Centres in the cities of Winnipeg and Steinbach. Viterra operates a canola processing plant in Ste. Agathe, Manitoba and maintains grain-marketing facilities (*i.e.*, terminals) in Rosser, Ste. Agathe and Winnipeg. Paterson Grain operates terminals in La Salle and Winnipeg and maintains a crop input centre in Steinbach.

There are 12 industrial developments (*i.e.*, industrial areas and parks) located within and immediately adjacent the RAA (Table 4-46). Within the City of Winnipeg, there are approximately 30 industrial areas and parks. All of these areas are generally in close proximity to major transportation centres.

**Table 4-46: Industrial Park Areas in the RAA**

Municipality	Industrial Park Area	Owner/Developer	Total Area/Available Acres
City of Winnipeg*	Inkster Industrial Park Murray Industrial Park	City of Winnipeg City of Winnipeg	180 acres/none 600 acres/none
RM of Rosser	Brookside Business Park Brookside Industrial Park West	CentrePort Canada	150 acres/n/a 6 acres/6 acres
RM of Headingley	Headingley Business Park	RM of Headingley	32 lots
RM of Macdonald	Oak Bluff Business Park McGillivray Business Park	RM of Macdonald	n/a n/a
RM of Ritchot	Grande Pointe Enterprise Centre	RM of Ritchot	n/a
RM of Springfield	North Transcona Industrial District Smart Park Business District (future)	RM of Springfield	n/a 30 lots
City of Steinbach*	Hespeler Industrial Park Steinbach Industrial Park	City of Steinbach	138 acres/30 acres 395 acres/93 acres
NOTES: * Indicates centres with industrial areas adjacent to the RAA.			
SOURCE: Province of Manitoba 2015a; CentrePort Canada 2015; Partnership of the Manitoba Capital Region 2012			

### 4.6.5 Designated Lands and Protected Areas

Manitoba's protected areas network includes parts of provincial forests, provincial parks, heritage parks, ecological reserves, WMAs and private conservation lands (MCWS 2015). Under Manitoba's PAI, protected areas prohibit logging, mining (including aggregate extraction) and

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oil, petroleum, natural gas or hydro-electric development. However, activities such as hunting, trapping or fishing are allowed. As well, protected areas respect First Nation's rights and agreements. Manitoba's protected areas network has grown since 1990 (from 350,000 ha). Currently, over 7 million ha (or approximately 11%) of land in Manitoba is protected. The trend in establishing new protected areas has been generally stable with gradual increase since 2000 (Province of Manitoba, n.d.).

### 4.6.5.1 Ecological Reserves

Ecological reserves are established to preserve unique and rare natural (biological and geological) features of the province and examples of natural and modified ecosystems. These sites are set aside for ecosystem and biodiversity preservation, research, education and nature study. Three ecological reserves which have been given permanent protection are located in the RAA (Map 4-8 – Designated Lands and Candidate Protected Areas): the Lewis Bog, Pocock Lake and Wampum ecological reserves. There are six additional proposed Ecological Reserves which have not yet been given permanent protection status, located within the RAA: the expansion of the Lewis Bog and the newly proposed Cedar Bog, Balsam Willows, St. Labre, Woodridge and Piney ecological reserves (MCWS 2015).

### 4.6.5.2 Provincial Parks and Forests

The Sandilands Provincial Forest, Agassiz Provincial Forest, Cat Hills Provincial Forest, Marchand Provincial Wayside Park and Woodridge Provincial Park are located in the RAA (Map 4-8 – Designated Lands and Candidate Protected Areas). Established as reserves for timber, they are now used for a variety of activities, such as wildlife conservation, outdoor recreation, traditional harvesting and scientific research. Provincial Forests and Provincial Parks include facilities to accommodate horseback riding, hiking, cross-country, ATV and snowmobile trail users. Such lands are protected with special considerations for economy, habitat, traditional and social uses. Special permits are typically required for resource harvesting within Manitoba's Provincial Forests (MCWS 2015). Other parks that fall within the visual quality RAA include: Beaudry Provincial Park, Duff Roblin Provincial Park and St. Norbert Provincial Heritage Park. Marchand Provincial Recreation Park is located in the Sandilands Provincial Forest and offers cycling and horseback riding trails, snowmobile and cross country ski trails, camping and a picnicking and day use area.

### 4.6.5.3 Wildlife Management Areas and Conservation Lands

Wildlife management areas exist for the benefit of wildlife and for the enjoyment of people. They play an important role in biodiversity conservation and provide for a variety of wildlife-related forms of recreation, including birding and wildlife watching. Hunting and trapping are permitted in WMAs, but these activities may be prohibited or restricted in a few areas. The use of vehicles, off-road vehicles, watercraft, power boats, or airboats, may be restricted in some areas. The Watson P. Davidson WMA, located in the south central portion of the RAA in the RM of Piney, has been given permanent protection. The Spur Woods WMA has also been given permanent

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protection and is also located in the RM of Piney in the southeast portion of the RAA (Map 4-8 – Designated Lands and Candidate Protected Areas) (MCWS 2015).

There are several dozen private protected lands owned by the Nature Conservancy of Canada (NCC) within the southwest portion of the RAA in the RM of Stuarburn. Parts of an additional three areas owned by the NCC extend into the southwest area of the RAA. These areas have been given permanent protection and typically include tall grass prairie and/or wetland habitats.

### 4.6.5.4 Areas of Special Interest

Several additional large areas of land are being proposed by special interest groups as protected areas within an extensive portion of the RAA, including expansion of existing sites as well as formation of new protected areas (see Map 4-8 – Designated Lands and Candidate Protected Areas). For example, a Crown-owned red pine wildlife refuge, which provides habitat protection for furbearing animals, is located in the southeast portion of the RAA in the RM of Piney. ASIs are candidate protected areas selected under Manitoba's PAI to represent enduring features found within a natural region that still need to be captured in Manitoba's protected areas network (MCWS 2015).

ASIs within the region are:

- Spruce Siding ASI
- North Hugo Lake ASI
- Boutang ASI
- 55 Burn ASI
- St. Labre ASI
- Rat River East ASI
- Menisino Tower ASI
- Menisino Ridge ASI
- Somme ASI
- Great Grey Owl ASI
- Earls Block ASI
- Sandilands ASI
- Badger ASI
- Rat River West ASI
- Vassar ASI
- Lone Sand ASI
- Piney ASI

### 4.6.6 Recreational Land Use

Recreational facilities in the RAA include snowmobile trails and shelters, boat launches for recreational boating/canoeing, hiking/biking and horseback trails, ATV trails, cross-country ski trails, lodges, campgrounds, parks, lodges and resorts (see Map 4-9 – Recreational Land Use).

Intensive and extensive recreational uses are evident across the landscape in various locations, including the main waterways and areas of topographic and vegetative interest. In addition, the landscape includes several areas of interesting cultural patterns as evidenced by long river lot patterns along the Red, Assiniboine and Seine rivers; and distinctive architecture associated with farm buildings and churches of various ethnic groups of interest. Many plaques and



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monuments, such as the Dawson Trail monument at Ste. Anne and the Dominion Lands Survey System monument near Headingley, commemorate the history of the area and the province. Many other historical attractions are associated with larger population centres in the area (e.g., Mennonite Heritage Village – Steinbach).

The Southeast Section of the RAA provides varied upland topography, such as within the Sandilands region, offering good opportunities for extensive outdoor recreational activities (*i.e.*, wildlife viewing, hiking). The diverse cultural and historical setting of the area offers numerous outdoor recreation adventure opportunities as the main attractions. The flat upland landscape of the Red River Plain generally offers low to moderately low capability for outdoor recreation within the RAA. The recreational capability of the cultural landscape is low due to the low intensity of attraction and use. The Red and Assiniboine rivers have moderate capabilities for water-oriented outdoor recreation activities. The Rat River, which occupies a portion of the RAA in the southeast in the RMs of Stuartburn and Piney, provides moderately-low capability for outdoor recreation (*i.e.*, canoeing). Smaller rivers and creeks offer limited and lower quality recreational opportunities (Canada Land Inventory 1973; Ernst 2010).

### 4.6.6.1 Trails

#### Snowmobiling

SnoMan Inc. was incorporated November 7, 1975, to organize snowmobiling in the Province, develop and maintain a network of snowmobile trails and promote safety. In 1995, SnoMan Inc. and the Province entered into an agreement that enacted the Snopass, under the Crown Lands Act, Provincial Snowmobile Trail Regulation to provide clubs with revenue to maintain designated snowmobile trails (SnoMan Inc. 2011).

Manitoba has an extensive network (approximately 522 km) of designated snowmobile trails within the RAA (Map 4-9 – Recreational Land Use). This network connects users to communities in all areas within the RAA. Trail users have connectivity with designated trails between several communities including the City of Winnipeg, Ste. Anne, La Broquerie, Woodridge and Piney. These trails provide snowmobile access to destinations such as Sandilands Provincial Forest. Trail users are provided with shelters throughout the network within the RAA. Snowmobile clubs that cross the RAA include the Cross Country Snow Drifters, the Snow Raiders Snowmobile Club Inc. and the South East SnowRiders (SnoMan Inc. 2011; SESR 2012; SRSC 2013; CCSD 2015; and Rideout 2015, pers. comm.).

The Cross Country Snow Drifters Snowmobile Club maintains approximately 274 km of trails located in LaSalle, Oakbluff and Headingley (CCSD 2015). The Snow Raiders Snowmobile Club is a non-profit organization with approximately 169 km of groomed snowmobile trails. Its trail system starts near the center of Ste. Anne and runs to the Trans Canada #1 Highway and between Deacon's Corner and Richer, MB. An A-Frame shelter is located at Richer, MB. The trail then continues 15 km through the forest to Highway #15. The Snow Raiders Snowmobile Club is also responsible for the maintenance of trails to the Town of La Broquerie, Landmark, Anola and



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Steinbach (SRSC 2013). The South East SnoRiders Club area includes South Junction, Woodridge, Can-Am, Moose Lake, La Broquerie, Steinbach and Sandilands Provincial Forest (SESR 2012).

In addition to the trails listed above, snowmobiling occurs within Beaudry Provincial Park, along the Crow Wing Trail, part of the TransCanada Trail (TCT) and around Steinbach (Ernst 2010 and MCWS 2015d).

### Cross Country Skiing and Snowshoeing

Winter recreation has long been an important part of life in the province. Winter adventure areas for cross-country skiing and snowshoeing trails in the RAA and LAA include: Beaudry Provincial Park; Crow Wing Trail – part of the TCT; La Salle River; and Sandilands Ski Trails (Ernst 2010 and MCWS 2015d).

The Sandilands Ski Club maintains approximately 38 km of trails in the Sandilands Provincial Forest, approximately 10 km of trail added in the past two years and seven kilometers of trail have been closed due to a fire in spring 2008 (CCSAM 2015). There are eight trails, the longest being approximately 11.1 km and one connector trail. Within the trail system there are three parking areas, two shelters along the trails and the Marchand Wayside Park Picnic area. Access to the trails is found on PRs #210 and #404 east of the community of Marchand (SCCSC 2015).

### ATV Use

AtvMB was formed in 2009 with the goal of being recognized as the official liaison between the Manitoba Government and ATV users (AtvMB 2015). All-terrain vehicle trails and off-road vehicle use is common in Sandilands Provincial Forest. There are over 1,000 km of ATV trails in the Woodridge area, although many are impassible because of fallen trees and debris. No official maps are produced for ATV trails because of liability issues (e.g., if somebody gets hurt on a trail or ends up riding on a mapped trail then goes onto private land and upsets a land owner) (Hora 2015).

### Multi-Use Trails

There are several multi-use trails for recreational activities within the RAA, including a wildlife viewing trail for birding (see Section 4.6.6.4).

The Headingley Grand Trunk Trail is 10 km long and located along an abandoned CN railway bed between the City of Winnipeg Perimeter and Beaudry Provincial Park. The trail surface varies between crushed limestone and grass (Winnipeg Trails Association 2015).

Duff Roblin Parkway Trail is a 46 km trail commencing at Duff Roblin Provincial Heritage Park and proceeds along the west side of the Red River Floodway on the berm lands to the community of Lockport in the north (Manitoba Floodway Authority 2013).

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The Crow Wing Trail is the longest section of the TCT in Manitoba, at 191 km, connecting Winnipeg south of the Floodway to Emerson. The trail was initially established in the 1800s to transport goods from the Red River Settlement on the Red River to the Crow Wing Settlement on the Mississippi River. The Crow Wing Trail varies in difficulty from easy to difficult. Trail activities include hiking, walking, running, off-road biking, horseback riding and cross-country skiing. The trail surface includes gravel, dirt, grass and asphalt (Trails Manitoba 2013a and Canada Trails 2015).

The Winnipeg Trail, part of the TCT, is rated as easy and is approximately 81km long, entering and exiting the City of Winnipeg along the Red River ending at the St. Norbert Provincial Heritage Park. Trail surfaces include grass, gravel, dirt and pavement. Activities along the trail include hiking, walking, running, cycling, cross-country skiing and snowshoeing (Trails Manitoba 2013b).

The Glenboro South Cypress Trail, also part of the Trans Canada Trail, is approximately 45 km long extending from the boundary of the RM of North Cypress (approximately 8 km south of Carberry) to the southern boundary of the Spruce Woods Provincial Park (approximately 7 km north of the Cypress River). There is a 10 km gap between the south end of the Carberry trail section and the start of the Spruce Woods Provincial Park trail. Trail difficulty ranges from easy to difficult. Trail surfaces include grass, gravel, dirt and packed limestone. Activities on the trail include hiking, walking, running, cross-country skiing, snowshoeing and mountain biking (Trails Manitoba 2013c).

### 4.6.6.2 Resorts, Campgrounds and Wildlife Areas

There are several resorts and campgrounds within the RAA, including RV resorts, bed and breakfasts, and recreational facilities. Section 4.3.1 on temporary accommodations provides information on capacities for resorts and campgrounds in the RAA.

- The Traveller's RV Resort, located in the RM of Springfield north PTH 100, is a privately-owned campground consisting of 264 pull through full service sites that offers overnight and seasonal camping.
- Lilac Resort and Campground area is located less than five kilometers from the town of Ste. Anne along PTH 1E. An unnamed resort is located in the south portion of the RAA, just off Sundown Road approximately 15 km north of the US border.
- The Ridgewood South Golf Course and Campground is located about 5 km northwest from the village of La Broquerie.
- The Oakwood Golf Course and Campground is located south of PTH 1E and west of Richer, MB, in the RM of Ste. Anne.
- The Rock Garden Campground is located north of Richer on PR #302 and offers customers full-service campsites.
- Camp Amisk along the La Salle River near La Barriere Park in the RM of Ritchot.
- The Calder House Bed & Breakfast, Spa and Retreat is located in La Broquerie at Lot 4, Shady Acres Lane (Calder House n.d.).

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- The Steinbach Aquatic Centre recreation facility has several amenities including a junior size Olympic pool, water slides, diving boards, leisure pool, lazy river, children's water play area, sauna, hot tub, multi-purpose room, outdoor pool and outdoor splash park (City of Steinbach 2008).
- The Waldenway Canine & Kitty Camp Inc. offers pet owners kennel services at their facility near Ste. Anne on PR 210 west (Waldenway Canine & Kitty Camp Inc. 2014).
- Kiche-Manitou Campground in Spruce Woods Provincial Park north of the Village of Glenboro in the RM of South Cypress.

There are two private wildlife areas within the RAA. The Seven Oaks Fish & Game Association owns a parcel located in the RM of La Broquerie in SW32-5-8E. Public engagement input received during Round 3 of the PEP indicated that the Fish & Game Association has developed this area with walking trails, a clubhouse, warm-up shelters and an open shooting area. It also leases adjacent Crown land in the west half of 29-5-8E. A second private wildlife area is also located in the RM of La Broquerie west of the Watson P. Davidson WMA, in sections 27/28-4-8E, and is used for hunting and wildlife viewing.

### Golf Courses

There are several golf courses within the RAA for the Project, including private clubs, and semi-private and public links.

- Southwood Golf and Country Club operates in the St. Norbert area along the La Salle River within the City of Winnipeg, west of PTH 75 (Pembina Highway).
- Quarry Oaks Golf and Country Club is located east of the City of Steinbach and west of PR 210.
- The 27-hole Cottonwood Golf Course is located north of PTH 1E in the RM of Ste. Anne.
- La Verendrye Golf Club is an 18-hole course in the village of La Broquerie. The Lorette Golf Course is an 18-hole course in the village of Lorette.
- Oakwood Golf Course and Campground is located between the communities of Richer and La Coulee in the RM of Ste. Anne.
- John Blumberg Golf Course north of the Assiniboine River in the RM of Headingley.
- Breezy Bend Country Club south of the Assiniboine River in the RM of Headingley.
- Kingswood Golf Course west of the community of La Salle in the RM of Macdonald.
- River Oaks Golf Course along the La Salle River in the RM of Ritchot.
- Glenboro Golf and Country Club located approximately 5 km north of Glenboro South Station in the RM of South Cypress.

#### 4.6.6.3 Boating and Fishing

There are several opportunities for recreational canoeing within the Project RAA, including a federal designated heritage river and two provincially designated canoe routes. These are:

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- The Red River Route - located on a designated heritage river under the Canadian Heritage Rivers System (CHRS). This route is important to the cultural heritage of Western Canada. It was the primary transportation corridor for First Nations and European settlers for exploration, the fur trade and settlement (CHRS 2011).

In addition to the Red River being a heritage river, it is used for recreational purposes. A representative of RiversWest Inc. indicated that boating and fishing occur along the Red River Corridor, stretching from Emerson, MB to Lake Winnipeg. RiversWest maintains an access point along the Red River north of St. Adolphe, MB (Turenne-Maynard 2015, pers. comm.).

- Riviere Aux Rats Canoe Route – starts near Carrick, MB in Sandilands Provincial Forest proceeding west to the Red River south of Ste. Adolphe. The Rat River is culturally important to the First Nations, who used the Rat River for fishing and fuelwood overwinters prior to European settlement (Berard 1971).
- Assiniboine River - north of the Village of Glenboro in the RM of South Cypress. The canoe route starts in Brandon, following the Assiniboine River to the Spruce Woods Provincial Forest/Canadian Forces Base Shilo and Spruce Woods Provincial Park east to PTH 34, north of Holland, Manitoba. This route passes through the RM of South Cypress, RM of Headingley and into the City of Winnipeg. There are many start and stop points for canoe routes along the Assiniboine River between Brandon and Winnipeg at the Forks (Burchill 2015).

The Project RAA includes the Assiniboine River and Red River in the RM of Headingley and in the City of Winnipeg at its southern limit. Both the Assiniboine and Red rivers are navigable and are “Scheduled Waters” under the provisions of the federal *Navigation Protection Act* (NPA). The purpose of the NPA is to regulate works and obstructions that risk interfering with the public right of navigation. Other large permanent waterbodies within the RAA that are likely navigable by canoe include reaches of Cooks Creek and the La Salle, Seine and Rat rivers.

Watercourses in the RAA support a recreational sport fishery. The RAA is located within the Southern Fishing Division of Manitoba’s Fishing Divisions (Province of Manitoba 2014b).

Watercourses where recreational fishing occurs includes the Assiniboine, Red, La Salle, Seine and Rat rivers and Sturgeon, Edie, Cooks, Fish and Pine creeks. Many sport fish species are present, including yellow perch, brown bullhead, channel catfish, rainbow trout, brook trout, brown trout, northern pike, walleye, sauger, goldeye, white sucker, freshwater drum, cisco and lake whitefish. The presence of white sucker, cisco and lake whitefish in rivers and creeks indicates that these waterbodies could also contribute to an Aboriginal fishery. Further details on aquatic resources are found in the Aquatics Technical Report and Chapter 8.0 of the EA.

#### 4.6.6.4 Tourism

Several nature-oriented tourism activities are available to visitors in the RAA. Some examples include hunting, fishing, camping, guided walks, bird and wildlife watching and canoeing.

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Southern Manitoba is a premier birding site for novice and experienced birders. Manitoba's Pine to Prairie International Birding Trail has been established in the RAA. It is the northern extension of the Pine to Prairie Birding Trail developed in northwestern Minnesota. The Manitoba trail includes an alternative route to the main route, which starts at Northwest Angle Provincial Forest, traverses west to Piney and along Spur Woods WMA along PR 201, to the tall-grass prairie preserve at Tolstoi and then north along PTH 59 to Winnipeg (MCWS 2015d; TCHSCP 2015; Travel Manitoba 2015a). The landscape offers other diverse wildlife viewing opportunities within the RAA (Ernst 2010), including:

- Beaudry Provincial Park (songbirds, white-tailed deer, raccoons and beaver);
- Spur Woods WMA (old growth red pine and eastern white cedar stands, breeding and migration area for great gray owl, northern saw-whet and boreal owls, white-tailed deer, moose, black bear, snowshoe hare, wolves, coyote, fisher and lynx); and
- Watson P. Davidson WMA (major breeding and migration corridor for great gray owls, northern saw-whet and boreal owls, migrant bird species, upland game birds, white-tailed deer and occasional moose).

Outfitters and lodge facilities located within the RAA include:

- K.C.'s Outfitting provides guiding services in over 3,200 km<sup>2</sup> in the RM of Stuartburn near the Village of Sundown (K.C.'s Outfitting, n.d.).
- Birch Point Outfitters provides guiding services which specialize in black bear, Canada goose and fishing pursuits. Its cabins are located in the RM of Piney near the village of Woodridge (Birch Point Outfitters, n.d.).
- East-Man Outfitting and Whitemouth Lake Outfitters (Travel Manitoba 2015b).

Other examples of tourist-oriented businesses or historic places to visit in the RAA are:

- The Philip's Magical Paradise Museum located in the village of Giroux offers tourists an opportunity to learn about magic (Philip's Magical Paradise, n.d.).
- The Mennonite Heritage Village, located in the city of Steinbach on PTH 12, is open year round. The 40-acre site is a representation of a turn-of-the century Russian Mennonite street village, which includes a restaurant, housebarn, Dutch windmill, gallery and gift shop. The museum aims to preserve and exhibit the story of Russian Mennonites and their contributions to Manitoba (Mennonite Heritage Village, n.d.).
- Trappist Monastery Ruins in St. Norbert in Winnipeg consisting of brick and stone remnants of a religious complex constructed in 1903-1905. The ruins and grounds of "Our Lady of the Prairies" are registered as a Provincial Heritage Site in Manitoba and it is also a provincial heritage park (MCWS 2014).
- The Red River Floodway is a National Historic Site of Canada, having been so designated in 2000, as an outstanding engineering achievement in terms of its function and impact (Manitoba Historical Society 2014).

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### 4.6.7 Resource Use

Resource uses occurring within the RAA include commercial trapping, hunting/outfitting, mining and forestry activities (Map 4-10 – Resource Use). Information on Aboriginal traditional resource use in the RAA is presented in the Traditional Land and Resource Use Appendix (EIS Appendix A).

#### 4.6.7.1 Trapping and Hunting

The RAA falls within the Zones 1, 3 and 4 OTAs (Map 4-10 – Resource Use). There are no traplines in these zones and harvesting of furbearing animals on crown and private lands is allowed with the appropriate MCWS license. No records are available on the number of furbearer species harvested in an OTA. Common species that are trapped in OTAs are beaver, mink, muskrat, river otter, badger, fisher, red fox, coyote, lynx, bobcat, marten, raccoon, red squirrel, wolf and weasel (MCWS 2014a). Areas which allow restricted hunting and trapping within the RAA include WMAs, Provincial Parks and Provincial Forests. Most furbearers (e.g., American marten) are considered important by resource users (see the Wildlife and Wildlife Habitat TDR, Stantec 2015).

Game Bird Hunting Zone (GBHZ) 4 is located within the RAA. GBHZ4 is located in the southern portion of Manitoba spanning from Saskatchewan to Ontario. Common game bird species include ducks, coots, snipes, woodcock, geese, snow geese, sandhill cranes, grouse and wild turkey (MCWS 2014b). Migratory game bird hunting licence records (e.g., geese, ducks and other waterbirds) are kept by the Environment Canada's Canadian Wildlife Service. Non-migratory game bird (e.g. ruffed, sharp-tailed and spruce grouse and Hungarian Partridge) seasons and licensing is under the jurisdiction of MCWS – Wildlife and Ecosystem Protection Branch.

The RAA intersects Manitoba GHAs 25B, 33, 34A, 35 and 35A (Map 4-10 – Resource Use). Glenboro South Station is located within GHA 31A. Common game species found in these GHAs of Manitoba include whitetail deer, black bear, ruffed grouse, wild turkey, wolf and coyote. Hunting opportunities are available on thousands of hectares of WMAs, provincial forests, some provincial parks and other designated Crown lands, including some leased Crown lands where there is no prohibition. Hunting on private land is allowed with permission from the owner or lawful occupant (MCWS 2015b). Some municipalities have by-law prohibitions or restrictions on the discharge of firearms or bows, particularly near urban areas (MCWS 2015b).

MCWS wildlife representatives consider populations for black bear as stable to increasing, declining for white-tailed deer (although some view populations as cyclic), and rare or low for moose populations in the region (see the Wildlife and Wildlife Habitat TDR, Stantec 2015). White-tailed deer is an important game species to resource users (see the Wildlife and Wildlife Habitat TDR, Stantec 2015). Prohibited hunting areas for white-tailed deer with a centrefire rifle include the RMs of Rosser and Headingley and sections of the RMs of Macdonald and Ritchot (MCWS 2014b). Hunting by other methods (e.g., archery) is still permitted. Black bear is also an important furbearer to resource users, First Nations and Metis. Outfitters offer black bear hunting in the southern parts of the RAA.

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The following sections contain information that was supplied by MCWS, Wildlife Branch. The information is presented as data tables with some explanation of the data. Data is presented for various wildlife species and contains information on hunting license sales and methods of hunting (where identified, e.g., for deer).

### Game Birds

Since the geographic span of GBHZ4 is so much larger than the RAA, data was not presented because it would not be representative of game birds harvested within the RAA.

Wild turkey hunting information was available from the province by GHA areas where wild turkey hunting occurred. The information is voluntary based on questionnaires completed by outfitters. The largest wild turkey harvest in 2012 occurred in GHA 31A, followed by GHA 35A. In 2013 the largest wild turkey harvest occurred in GHA 33, followed by GHA 31A (Table 4-47).

**Table 4-47: Estimated Wild Turkey Harvest in 2012 and 2013 by GHA**

Year	GHA 31A	GHA 33	GHA 35	GHA 35A
2012	34	22	0	32
2013	38	43	0	27
NOTE: Harvested numbers are based on a voluntary questionnaire				
SOURCE: MCWS 2015b, 2015f; Baldwin 2015, pers. comm.				

Other game birds which are harvested in the RAA include grouse and Hungarian partridge (upland game birds) as well as duck, geese and other waterbirds (migratory game birds).

### Whitetail Deer and Moose

GHAs 25B and 35 were the only areas where moose licenses had been issued from 2000-2007.

A summary of foreign and resident whitetail deer hunters, in GHA 25B, by licence type is provided in Table 4-48. GHA 25B contains a small portion of the RAA around Rosser Station. In this GHA the most common hunting method, as illustrated by license sales between 2000 and 2007, was general firearms followed by muzzleloader hunting. Six moose resident licenses were issued in GHA 25B from 2000-2007.



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**Table 4-48: Estimated Whitetail Deer and Moose Foreign Resident Hunters by Licence Type per Year in GHA 25B**

	AD	AND	GD	GM	MD	SD	SMD	YD
2000-2001	249	2	1,507	n/a	496	14	3	n/a
2001-2002	202	6	1,715	2	541	5	7	n/a
2002-2003	226	2	1,690	n/a	557	6	3	n/a
2003-2004	204	12	1,706	n/a	558	337	n/a	n/a
2004-2005	204	12	1,706	n/a	558	337	n/a	n/a
2005-2006	229	7	1,691	n/a	595	374	n/a	253
2006-2007	226	4	1,648	4	654	434	n/a	216
NOTES: AD – Archery Deer, Resident AND – Archery Deer, Non-resident (non-Canadian) GD – General Deer, Resident GM Moose, Resident MD – Deer, Muzzleloader, Resident SD – Deer, Second Tag, Resident SMD – Deer, Shotgun/muzzleloader, Resident YD – Deer, Youth, Resident								
SOURCE: MCWS 2015b, 2015f								

GHA 33 contains a small portion of the RAA around the South Loop. In this GHA, the most common hunting method, as illustrated by license sales between 2000 and 2007, was shotgun/muzzleloader hunting followed by archery hunting.

**Table 4-49: Estimated Whitetail Deer Hunters by Licence Type per Year in GHA 33**

	AD	AND	GD	MD	ND	SD	SMD	TD	YD
2000-2001	532	10	381	75	n/a	369	572	n/a	n/a
2001-2002	560	15	495	94	1	370	630	n/a	n/a
2002-2003	535	14	423	104	n/a	356	600	n/a	n/a
2003-2004	626	4	440	135	n/a	472	737	144	n/a
2004-2005	585	12	439	116	n/a	457	581	115	n/a
2005-2006	510	12	417	122	2	432	600	124	159
2006-2007	594	10	412	108	1	440	576	125	155
NOTES: AD – Archery Deer, Resident AND – Archery Deer, Non-resident (non-Canadian) GD – General Deer, Resident MD – Deer, Muzzleloader, Resident									



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**Table 4-49: Estimated Whitetail Deer Hunters by Licence Type per Year in GHA 33**

	AD	AND	GD	MD	ND	SD	SMD	TD	YD
ND – Deer, Non-resident (non-Canadian) SD – Deer, Second Tag, Resident SMD – Deer, Shotgun/muzzleloader, Resident TD – Deer, Third Tag, Resident YD – Deer, Youth, Resident									
SOURCE: MCWS 2015b, 2015f									

GHA 34A contains the RAA as it moves eastward from the City of Winnipeg. The most common hunting method in this GHA, as illustrated by license sales from 2000 to 2007, was archery hunting.

**Table 4-50: Estimated Whitetail Deer and Moose Hunters by Licence Type per Year in GHA 34A**

	AD	AND	GD	MD	SD	SMD	YD	TD	AM
2000-2001	227	1	95	12	57	3	n/a	n/a	n/a
2001-2002	212	1	183	43	48	n/a	n/a	n/a	n/a
2002-2003	287	3	207	35	76	n/a	n/a	n/a	n/a
2003-2004	297	n/a	139	37	71	n/a	n/a	n/a	n/a
2004-2005	230	n/a	273	36	80	n/a	n/a	n/a	n/a
2005-2006	311	n/a	126	75	137	n/a	30	n/a	1
2006-2007	251	4	234	72	107	n/a	22	21	n/a
NOTES: AD – Archery Deer, Resident AND – Archery Deer, Non-resident (non-Canadian) GD – General Deer, Resident GM Moose, Resident MD – Deer, Muzzleloader, Resident SD – Deer, Second Tag, Resident SMD – Deer, Shotgun/muzzleloader, Resident YD – Deer, Youth, Resident TD – Deer, Third Tag, Resident AM – Archery Moose									
SOURCE: MCWS 2015b, 2015f									

GHA 35 contains the southeastern extent of the RAA. The most common hunting method in this GHA, as illustrated by license sales from 2000 to 2007, was general firearms followed by muzzleloader. Seven moose resident licenses were issued in GHA 35 from 2000-2007.

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**Table 4-51: Estimated Whitetail Deer and Moose Hunters by Licence Type per Year in GHA 35**

	AD	AM	AND	GD	GM	MD	MND	ND	SD	SMD	TD	YD
2000-2001	123	4	n/a	1,975	n/a	490	2	37	3	3	n/a	n/a
2001-2002	163	n/a	n/a	2,416	n/a	723	7	30	5	14	n/a	n/a
2002-2003	184	n/a	n/a	2,242	n/a	888	8	37	n/a	9	n/a	n/a
2003-2004	184	2	3	2,769	3	961	17	30	11	3	n/a	n/a
2004-2005	230	n/a	n/a	2,749	n/a	1,030	19	42	950	n/a	n/a	n/a
2005-2006	259	2	3	2,493	4	1,100	18	43	919	6	n/a	223
2006-2007	267	n/a	2	2,921	n/a	1,293	33	38	1,061	n/a	3	283
NOTES: AD – Archery Deer, Resident AND – Archery Deer, Non-resident (non-Canadian) GD – General Deer, Resident GM – Resident Moose MD – Deer, Muzzleloader, Resident MND – Deer, Muzzleloader, Foreign Resident ND – Deer, Non-resident (non-Canadian) SD – Deer, Second Tag, Resident SMD – Deer, Shotgun/muzzleloader, Resident TD – Deer, Third Tag, Resident YD – Deer, Youth, Resident												
SOURCE: MCWS 2015b, 2015f												

GHA 35A contains a large portion of the RAA. The most common hunting method in this GHA, as illustrated by license sales from 2000 to 2007, was general firearms followed by muzzleloader.

**Table 4-52: Estimated Whitetail Deer Hunters by Licence Type per Year in GHA 35A**

	AD	AM	AND	GD	MD	SD	SMD	TD	YD
2000-2001	164	2	1	1,547	400	8	15	n/a	n/a
2001-2002	215	n/a	n/a	2,172	538	27	26	n/a	n/a
2002-2003	184	n/a	5	1,690	582	9	12	n/a	n/a
2003-2004	244	n/a	14	2,129	684	7	n/a	n/a	n/a
2004-2005	236	n/a	11	2,128	736	613	n/a	n/a	n/a
2005-2006	209	n/a	6	1,785	718	586	n/a	n/a	208
2006-2007	210	n/a	8	2,041	695	671	n/a	3	244
NOTES: AD – Archery Deer, Resident AM – Archery Moose									

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**Table 4-52: Estimated Whitetail Deer Hunters by Licence Type per Year in GHA 35A**

	AD	AM	AND	GD	MD	SD	SMD	TD	YD
AND – Archery Deer, Non-resident (non-Canadian) GD – General Deer, Resident MD – Deer, Muzzleloader, Resident SD – Deer, Second Tag, Resident SMD – Deer, Shotgun/muzzleloader, Resident TD – Deer, Third Tag, Resident YD – Deer, Youth, Resident									
SOURCE: MCWS 2015b, 2015f									

For all GHAs which overlap some portion of the RAA, the estimated resident white-tailed deer hunters were the greatest in GHAs 35 (southeastern extent of the transmission line) over the period 2000-2001 to 2010-2011. In GHA 35, the number of hunters was 2,637 in 2000-2001 up to 7,136 in 2010-2011, peaking at 7,972 in 2008-2009.

**Table 4-53: Estimated Whitetail Deer Hunters per Year and GHA within RAA for All License Types**

GHA <sup>2</sup>	Year									
	2000/2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2008-2009 <sup>1</sup>	2009-2010 <sup>1</sup>	2010-2011 <sup>1</sup>
25B	2,271	2,478	2,484	2,844	2,817	3,149	3,186	757	3,872	3,952
33	1,939	2,165	2,032	2,558	2,305	2,378	2,421	1,601	1,963	1,484
34A	395	487	608	544	619	680	711	399	419	345
35	2,637	3,358	3,368	3,983	5,020	5,070	5,901	7,972	7,508	7,136
35A	2,137	2,978	2,482	3,078	3,724	3,512	3,872	4,202	4,034	3,762
NOTES:										
<sup>1</sup> Data for all license types incomplete for the years 2008-2009 to 2010-2011										
<sup>2</sup> Data for GHA 31A not available at time of report preparation.										
SOURCE: MCWS 2015b, 2015f; Dettman 2015, pers. comm.										

For all GHAs which overlap some portion of the RAA, the estimated foreign-resident white-tailed deer harvest as measured by licences sold and actual harvest was the greatest in GHA 35 over the period 2011 to 2014. A foreign resident is a person who is not a Canadian citizen. The numbers of foreign resident hunters was very low, when compared to resident hunters.

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**Table 4-54 Estimated Foreign Resident<sup>1</sup> Whitetail Deer Licences Sold and Harvest per Year<sup>2</sup> and GHA within RAA**

GHA <sup>3</sup>		Year			
		2011	2012	2013	2014
25B	Licences Sold	1	0	2	0
	Harvest	0	0	0	0
33	Licences Sold	6	6	2	2
	Harvest	3	3	1	2
34A	Licences Sold	9	13	8	2
	Harvest	3	3	3	2
35A	Licences Sold	2	0	0	0
	Harvest	0	0	0	0
35	Licences Sold	35	47	50	45
	Harvest	20	30	23	21
NOTES					
<sup>1</sup> A person who is neither a Canadian citizen nor a resident of Manitoba					
<sup>2</sup> Based on Outfitter Declaration Data					
<sup>3</sup> Data on GHA 31A not available at time of report preparation.					
SOURCE: MCWS 2015b, 2015f; Dettman 2015, pers. comm.					

### Black Bear

GHA 35 had the most estimated resident black bear hunters over the period 2000/2001 to 2010/2011, compared to other GHAs which overlap the RAA and where a black bear hunting season occurs. In GHA 35, the number of hunters was 295 in 2000-2001 increasing to 307 in 2010-2011, but peaking at 345 in 2001-2002.

**Table 4-55: Estimated Resident<sup>1</sup> Black Bear Hunters per Year and GHA within RAA**

GHA <sup>2</sup>	Year										
	2000/2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011 <sup>3</sup>
25B	8	17	9	7	7	16	4	11	19	0	0
34	68	95	148	151	58	161	157	110	116	28	77
35	295	345	310	284	343	294	340	271	311	178	307
35A	104	98	101	91	110	145	70	72	75	56	38

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**Table 4-55: Estimated Resident<sup>1</sup> Black Bear Hunters per Year and GHA within RAA**

GHA <sup>2</sup>	Year										
	2000/2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011 <sup>3</sup>
NOTES: <sup>1</sup> A Canadian citizen who has his/her home and is ordinarily present in the province immediately preceding the time that he/she purchases a licence, or a person who is not a Canadian citizen but has his/her home and is ordinarily present in the province for a period of six months immediately preceding the time that he/she purchases a licence, but does not include a tourist, transient or visitor (MCWS, n.d.). <sup>2</sup> No black bear season in GHA 31A and GHA 33. <sup>3</sup> Resident black bear hunters have not been surveyed since 2010/2011.											
SOURCE: Hristienko 2015, pers. comm.											

Estimated foreign resident licensed (neither Manitoban nor Canadian residents) black bear hunters were the greatest in GHA 35 over the period 2000-2001 to 2013-2014 compared to the other GHAs in the RAA. In GHA 35, the number of hunters was 72 in 2000-2001, down to 64 in 2013-2014, and peaking at 93 in 2007-2008 (Table 4-56).

**Table 4-56: Estimated Foreign Resident<sup>1</sup> Black Bear Hunters per Year and GHA within RAA**

GHA <sup>2</sup>	Year													
	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
25B	0	0	0	0	0	0	0	0	1	5	5	7	4	5
34	26	31	20	23	29	31	37	34	33	32	26	16	24	42
35	72	62	70	76	79	92	92	93	93	71	71	90	91	64
35A	16	16	12	15	21	13	21	21	20	21	8	11	18	16
NOTES: <sup>1</sup> A person who is neither a Canadian citizen nor a resident of Manitoba. <sup>2</sup> No black bear season in GHA 31A and GHA 33.														
SOURCE: MCWS 2015b, 2015f; Hristienko 2015, pers. comm.														

Estimated black bears harvested by resident licenses were the greatest in GHA 35 over the period 2000-2001 to 2010-2011. In GHA 35, the number of black bears harvested was 104 in 2000-2001 dropping down to 77 in 2013-2014, but peaking at 134 in 2004-2005 (Table 4-57).

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**Table 4-57: Estimated Black Bears Harvested per Year and GHA within RAA for Resident<sup>1</sup> License Type**

GHA <sup>2</sup>	Year										
	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011 <sup>3</sup>
25B	0	3	3	4	7	0	4	11	19	0	0
34	25	36	43	56	44	60	66	39	39	19	38
35	104	101	93	95	134	77	91	66	58	84	77
35A	33	31	32	39	55	52	33	22	19	28	9
NOTES:											
<sup>1</sup> A Canadian citizen who has his/her home and is ordinarily present in the province immediately preceding the time that he/she purchases a licence, or a person who is not a Canadian citizen but has his/her home and is ordinarily present in the province for a period of six months immediately preceding the time that he/she purchases a licence, but does not include a tourist, transient or visitor. <sup>2</sup> No black bear season in GHA 31A and GHA 33. <sup>3</sup> Resident black bear hunters have not been surveyed since 2010/2011.											
SOURCE: MCWS 2015b, 2015f.; Hristienko 2015, pers. comm.											

Estimated black bears harvested by foreign resident (not a resident of Canada) licenses were the greatest in GHA 35 over the period 2000-2001 to 2013-2014. In GHA 35, the number of black bears harvested was 56 in 2000-2001, dropping to 47 in 2013-2014, but peaking at 71 in 2007-2008.

**Table 4-58: Estimated Black Bears Harvested per Year and GHA within RAA for Foreign Resident<sup>1</sup> License Type**

GHA <sup>2</sup>	Year													
	2000 - 2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010 - 2011	2011-2012	2012-2013	2013-2014
25B	0	0	0	0	0	0	0	0	1	2	5	6	2	1
34	24	27	16	19	23	29	33	25	28	28	14	11	19	35
35	56	42	45	69	50	70	71	65	57	43	42	42	49	47
35A	11	7	9	10	15	9	10	11	9	13	7	6	14	6
NOTES:														
<sup>1</sup> A person who is neither a Canadian citizen nor a resident of Manitoba (MCWS 2015b). <sup>2</sup> No black bear season in GHA 31A and GHA 33.														
SOURCE: Hristienko 2015, pers. comm.														

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### 4.6.7.2 Mining and Aggregates

Mining is Manitoba's second leading primary resource sector after agriculture. Aggregate (sand, gravel and crushed stone) is the largest mining sector in Manitoba, based on volume produced and land acreage used (Province of Manitoba 2014c). Surface rights and mineral rights in Canada and in Manitoba have been government-owned since the early 1900s. Most mineral rights in the RAA are owned by government and cannot be purchased, only leased by individuals or companies. In some instances, mineral rights can be privately owned and sold independently from surface rights where different owners can hold different rights on the same property (Natural Resources Canada 2015).

The Manitoba Mineral Resources Branch issues permits for extraction of mineral resources. The spatial distribution of casual quarry permits, private quarry permits, quarry leases, exploration permits and mining areas in the RAA is provided on Map 4-10 – Resource Use.

Private quarry permits refer to private aggregate or quarry operations in Manitoba. Seventy-seven private quarry permits have been issued within the RAA (Table 4-59). The total area of private quarry permits in the RAA is 116,387,574 m<sup>2</sup>. They are distributed throughout the RM's of Rosser, Springfield, Tache, Ste. Anne, La Broquerie, Stuartburn and Piney.

Casual quarry permits refers to annual permits that are issued for the production of a specified quantity of Crown quarry mineral (Quarry Minerals Regulation 1992). As of 2014, fifty-two casual quarry permits were issued, two permits were outstanding and two permits were pending. The total area of casual quarry permits in the RAA is 56,881,407 m<sup>2</sup>. They are distributed throughout the RM's of Springfield, Tache, Ste. Anne, La Broquerie, Stuartburn and Piney.

A quarry lease refers to a 10-year term lease granted by the Crown with the exclusive rights to excavate quarry minerals (e.g., sand, gravel, clay, shale, gypsum, peat, salt, rock or stone) from an open excavation (*The Mines and Minerals Act*). Fifty-two quarry leases were issued in 2014 for the RAA. The total area of quarry leases in the RAA is 87,957,428 m<sup>2</sup>. They are distributed throughout the RM's of Springfield, Tache, Ste. Anne, La Broquerie, Stuartburn and Piney.

Nine additional mining areas (sand and gravel or quarry) have been identified in the RAA. The total area of mining areas in the RAA is 18,969,894 m<sup>2</sup>. They are distributed throughout the RMs of Tache and Springfield.

**Table 4-59: Summary of Quarry Permit Type in the RAA**

Quarry Type	Number of permits	Area (m <sup>2</sup> )
Private	77	116,387,574
Casual	56	56,881,407
Leases	52	87,957,428

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**Table 4-59: Summary of Quarry Permit Type in the RAA**

Quarry Type	Number of permits	Area (m <sup>2</sup> )
Mining Area	9	18,969,894
SOURCE: Province of Manitoba, Mineral Resources Branch 2015b		

### Peat and Aggregate Resources

Within the RAA, peat harvesting and processing operations are located in the Giroux area in the RM of Ste. Anne. A peat harvesting plant operated by Premier Horticulture is located adjacent to the Giroux bog (Province of Manitoba, Mineral Resources Branch 2015b). The Manitoba government passed a two-year moratorium in June 2011 on the issuance of new peat quarry leases that was extended to run until June 2015 and another moratorium to prevent the issuance of licenses for existing peat leases (Province of Manitoba, Mineral Resources Branch 2015b). With respect to the moratoriums, the Province of Manitoba has developed The Peatlands Stewardship Strategy under the *Tomorrow Now Green Plan*.

Aggregate resources of varying quantity and quality are present within the RAA and are concentrated, along with associated sand and gravel pits, in the RMs of Rosser, Springfield, Tache, Ste. Anne, La Broquerie, Stuartburn and Piney. In Manitoba, aggregate deposits have been rated by development potential according to high, medium and low classifications.

Five aggregate resource areas in the RM of Rosser have been classified with moderate potential by the provincial Mineral Resources Branch in the RAA. The moderate designation notes a caution status on the deposit whose quality is not high but has been recognized as of value (Manitoba Local Government 2011). Several private sand and gravel pits and bedrock quarries have been developed on these deposits.

In the RM of Springfield, outside of the Birds Hill complex, sand and gravel resources from the Monominto deposit of medium high quality have been mined extensively. Other deposits in the Anola, Vivian and Ostenfeld areas in the RAA are of low to high quality, many of which have been depleted (Manitoba Department of Energy and Mines 1979). Those deposits with a high rating are valuable aggregate deposits and development for other uses is not appropriate. Areas with a medium rating may have quality resources that have not yet been fully defined and caution is to be exercised in considering other uses for these areas. Areas with a low rating have little, if any aggregate value (RM of Springfield 2013). Aside from one high quality deposit just north of PTH 15 (east of PR 207), the remaining high quality deposits are in the Birds Hill complex further north or in the eastern portion of the municipality.

Deposits in the RM of Tache are concentrated in the eastern part of the municipality in the RAA. One deposit located east of PTH 12 in Township 9, Range 7E is the centre of sand and gravel extraction within the municipality, including five active or recently active pits. The RM of Tache



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operates its own sand and gravel, quarry operation in section 28-9-7E located in the RM of Tache. Other deposits of medium quality beach gravel and eskers, including previously active pits are located further to the east at Ste. Genevieve (Manitoba Department of Energy and Mines 1979). The provincial Mineral Resources Branch had further assigned development status to aggregate deposits within the R.M. of Tache, based on “stop, caution, go” development criteria. The intent of the “stop” development designation is to protect the resource from conflicting surface land uses. The “caution” development status indicates deposits that are of a lower quality and have not been adequately proven for use. “Go” status implies a deposit that is of no recognized value as a aggregate resource where other land uses are not restricted. Forty-two deposits have been classified as “stop” or “caution” in the RAA (Manitoba Department of Energy and Mines 1979).

Sand and gravel resources in the RM of Ste. Anne consist of several deposits in the central and eastern parts of the municipality in the RAA, principally located on glaciofluvial eskers, outwash plains and lacustrine beach deposits. Almost all have been used for aggregate production in the past or currently. Five pits are active in glaciofluvial deposits as well as seven pits in beach deposits in the municipality. Most of the gravel pits are privately owned. Of the Crown-owned sites, two are under lease and another five are operated under quarry permits (Groom 2002).

Sand and gravel deposits in the RM of La Broquerie are widespread in the municipality. Of the high, medium and low potential aggregate resources, lands with medium development potential are predominant and are concentrated in the northern portion of the municipality in the RAA (Matile 1994a).

Deposits in the RM of Stuartburn are scattered throughout the municipality in the vicinity of Arbakka, Caliento, Gardenton and Vita and at the extreme southwest corner in the RAA. Most of the gravel pits associated with the sand and gravel deposits are under private ownership. There are very few Crown-owned sand and gravel pits in the RM (Manitoba Energy and Mines 1988b).

Sand and gravel resources in the RM of Piney in the RAA consist primarily of beach ridges associated with glacial Lake Agassiz. A couple of pits within these deposits have perennially been the most productive in the municipality. Mining activity is otherwise very limited. Several smaller pits produce aggregate on an intermittent basis for local consumption (Matile 1994b).

### 4.6.7.3 Surface Water and Groundwater Use

Surface and groundwater resources are managed under an Integrated Watershed Management Planning process in Manitoba. It is a joint partnership between the province and local municipalities to manage land and water resources on a watershed basis on a long-term basis. The Water Stewardship Division of MCWS designates Conservation Districts under the Conservation Districts Program as water planning authorities to undertake integrated watershed management planning in the province (MCWS 2014c, 2015e). Integrated watershed planning has been undertaken for the following areas:

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- La Salle River Watershed (La Salle-Redboine Conservation District) - portion of the RM of Macdonald.
- Seine River and Rat-River Marsh watersheds (Seine-Rat River Conservation District) - portions of the RMs of Ritchot, Springfield, Tache, Ste. Anne and La Broquerie.
- Netley-Grassmere Watershed (East Interlake Conservation District) - small portion of the RM of Rosser.
- Cooks-Devils Creek Watershed (Cooks Creek Conservation District) - portions of the RMs of Springfield, Tache and Ste. Anne (plan under development).

Long-term plans to manage land, water and related resources on a watershed basis have been prepared or are under development in each of the conservation districts (Map 4-11 – Surface and Groundwater Use).

Aquifer management plans have been developed in southwestern Manitoba to address issues of water supply development, protection and allocation. Similar concerns were apparent in the southeast area of Manitoba (SRGMP 2010). The Southeast Regional Groundwater Management Plan (SRGMP) was created partly as a result of the Clean Environment Commission's (CEC) Report on Public Hearing for the Pembina Valley Water Cooperative (PVWC), Supplemental Groundwater Supply System (SRGMP 2010). The CEC report recommended that groundwater development proposals, including the PVWC, not be allowed without management plans being in place. The SRGMP covered a land area east of the Red River to the western edge of Whiteshell Provincial Park and north from the US border to Lake Winnipeg and the Winnipeg River. The PVWC Project proposed to move groundwater 95 km by pipeline from the Sandilands Provincial Forest to Morris, Manitoba. The proposed groundwater source was a confined aquifer in the glaciofluvial sediments underneath the Agassiz Sandilands Uplands. The Sandilands region includes portions of the Rat, Seine, Whitemouth, Roseau and Brokenhead river watersheds. The Sandilands is one of two major sources of recharge to the bedrock aquifers that underlie southern Manitoba (MB CEC 2007).

Purposes which consume greater than 25,000 litres of water per day must obtain a license. Withdrawals of less than 25,000 L generally do not require licensing (MCWS 2014c, 2014d). Surface water and groundwater use is subject to licensed water allocation for the use or diversion of water or the construction and operation of related water control works. Licenses are issued for municipal, agricultural, industrial, irrigation and other uses (*i.e.*, for geothermal, aquaculture, fire protection, bottling, water slides, dust suppression). A summary of Water Rights Licenses in the RAA issued by MCWS based on use category, groundwater use and surface water use is provided in Table 4-60 and is illustrated on Map 4-11 – Surface and Groundwater Use.

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**Table 4-60: Water Rights Licenses in the RAA**

Use Category	Groundwater Use (# of permits)		Annual Withdrawal Dam <sup>3</sup>	Surface Water Use (# of permits)		Annual Withdrawal Dam <sup>3</sup>
	Approved	Pending		Approved	Pending	
Agricultural	54	28	2,066.6	6	1	282.4
Irrigation	17	26	6,383.9	21	20	4,389.1
Municipal	14	4	1,890.2	2	2	1,222.5
Domestic	1	-	7.4	-	-	-
Industrial	10	1	7,717.8	-	-	-
Other	16	4	7,052.0	-	-	-
NOTE: Dam <sup>3</sup> – cubic decametre						
SOURCE: McCombe (MCWS) 2014, pers. comm.						

### Agricultural Use

Groundwater and surface water are used for agricultural applications such as maintaining livestock, loading stations and aquaculture (growing fish). Groundwater withdrawals for agricultural purposes were taken from the Roberts Drain Tributary, Domain Drain Tributary, Strauss Drain Coulee, Parker Drain Tributary and Bolen Drain.

### Irrigation Use

Groundwater withdrawal for irrigation purposes was the highest in terms of annual withdrawal in the RAA (McCombe 2014, pers. comm.). Surface water withdrawals for irrigation were taken from the La Salle River, Red River, Seine River Diversion, Assiniboine River and an unnamed reservoir. Use of groundwater and surface water for irrigation purposes included a sod production, golf course watering and a market garden.

### Municipal Use

Groundwater withdrawal for municipal purposes was the second lowest in terms of annual withdrawal in the RAA (McCombe 2014, pers. comm.). Municipal surface water withdrawals were taken from the La Salle River and Assiniboine River. Use of groundwater and surface water for municipal purposes included distribution systems.

### Domestic Use

One permit for domestic use has been issued for withdrawal from groundwater resources in the RAA (McCombe 2014, pers. comm.).

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### Industrial Use

Groundwater withdrawal for industrial use was the highest in terms of annual withdrawal compared to other uses in the RAA (McCombe 2014, pers. comm.). Use of groundwater for industrial applications included production processes, heating and cooling systems, bottling, mining and sod production.

### Other Uses

Use of groundwater for other applications included distribution systems, heating and cooling systems, recreation, bottling, firefighting and mining. These uses accounted for the second highest annual withdrawal in the RAA (McCombe 2014, pers. comm.).

#### 4.6.7.4 Productive Forestland

Productive forestland is primarily concentrated in the central and eastern portions of the RAA (Map Series 4-200 – Productive Forestland), including the eastern parts of the RM of Springfield, Tache and Ste. Anne, scattered in pockets within the RMs of La Broquerie and the western half of Stuartburn. The forest cover in the eastern half of the RM of Stuartburn and western half of the RM of Piney more commonly consist of contiguous blocks of forest. Commercial timber harvesting in southeast Manitoba occurs predominately in the Agassiz and Sandilands provincial forests (MCWS 2015e). The southeast portion of the RAA overlays the southwest extent of the Sandilands Provincial Forest. Productive forestland is discussed in terms of commercial forest area, timber sales and timber permits, AAC and standing timber.

The Project PDA is located within Forest Management Unit (FMU) 1 of the Aspen Parkland Forest Section and FMU 24 of the Pineland Forest Section. Productive forestland for FMU 1 and FMU 24 totaled 171,460 ha (14%) and 585,075 ha (47%) of commercial forest area respectively (MCWS 2010 and Meng 2014, pers. comm.).

Productive forestlands and timber sale/permit areas, within the RAA and LAA, are illustrated in Map Series 4-200 – Productive Forestland. Table 4-61 presents the area classification, by FMU, for all land ownership types.

**Table 4-61: Forest Management Unit 1 and 24 Area Classification**

FMU	Classification	Area (ha)	Percent of Total (%)
1	Non-forested	1,021,718	83.1
	Non-productive Forest	36,263	3.0
	Productive Forest	171,460	13.9
	<b>Total</b>	<b>1,229,441</b>	<b>100</b>

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**Table 4-61: Forest Management Unit 1 and 24 Area Classification**

FMU	Classification	Area (ha)	Percent of Total (%)
24	Non-forested	377,025	30.3
	Non-productive Forest	280,747	22.6
	Productive Forest	585,075	47.1
	<b>Total</b>	<b>1,242,847</b>	<b>100</b>
NOTES: % = percent FMU = Forest Management Unit; ha = hectare.			
SOURCE: MCWS 2010; Meng 2014, pers. comm.			

### Timber Sales and Timber Permits

MCWS awards timber sales and permits in the RAA. The timber sales and timber permits within the RAA and LAA are summarized in Table 4-62 and illustrated in Map Series 4-200 – Productive Forestland.

**Table 4-62: Timber Sales and Timber Permits**

Allocation	Regional Assessment Area		Local Assessment Area	
	Number	Area (ha)	Number	Area (ha)
Timber Sale/Timber Permit	98	32,455.4	0	0.0
NOTES: ha = hectare				
SOURCE: MCWS 2010				

### Annual Allowable Cut (AAC)

No wood supply analysis report was available for FMU 1. The AAC for FMU 1 was provided by the MCWS, Forestry and Peatland Management Branch (Lui 2014, pers. comm.). The *Wood Supply Analysis Report, Forest Management Unit 24* (Manitoba Conservation 2010) provides the AAC for FMU 24. The AAC for FMU 1 and 24 is presented in Table 4-63. In 2010, the ACC for FMU 1 and 24 totaled 305,745 m<sup>3</sup> for both softwoods and hardwoods (MCWS 2010). As of 2011 (ending March 31), the potential AAC in the Pineland Forest Section (FMU 24) was 258,349 m<sup>3</sup> for both softwoods and hardwoods (MCWS 2011).

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**Table 4-63: Annual Allowable Cut for FMU 1 and 24**

FMU	Net Harvest Level – Total Harvest Scenario <sup>3</sup>		
	Softwood (m <sup>3</sup> )	Hardwood (m <sup>3</sup> )	Total (m <sup>3</sup> )
1 <sup>1</sup>	1,010	24,530	25,540
24 <sup>2</sup>	174,112	106,093	280,205
<b>Total</b>	<b>175,122</b>	<b>130,623</b>	<b>305,745</b>
NOTES: FMU = Forest Management Unit m <sup>3</sup> = cubic metre. <sup>1</sup> Net merchantable volume calculated mid 1990's <sup>2</sup> Excludes spatial modeling and wildlife tree constraints <sup>3</sup> Net harvest level takes into account no-harvest and restricted harvest areas; total harvest scenario is total softwood and hardwood.			
SOURCE: MCWS 2010; Liu 2014, pers. comm.			

### Standing Timber

No wood supply analysis report was available for FMU 1 (Liu 2014, pers. comm.); therefore, no total growing stock approximation was available. The *Wood Supply Analysis Report, Forest Management Unit 24* (Manitoba Conservation 2010) provides approximations of total growing stock for FMU 24 (Table 4-64). The total growing stock of standing timber in FMU 24 is approximately 33.7 million m<sup>3</sup>.

**Table 4-64: Total Growing Stock for FMU 1 and 24**

FMU	Total Growing Stock <sup>1</sup>		
	Softwood (m <sup>3</sup> )	Hardwood (m <sup>3</sup> )	Total (m <sup>3</sup> )
1	N/A	N/A	N/A
24	18,500,000	15,200,000	33,700,000
<b>Total</b>	<b>18,500,000</b>	<b>15,200,000</b>	<b>33,700,000</b>
NOTES: <sup>1</sup> – Approximate values FMU = Forest Management Unit m <sup>3</sup> = cubic metre N/A = Not Available			
SOURCE: MCWS 2010; Liu 2014, pers. comm.			

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### 4.6.7.5 High Value Forest Sites

High value forest sites include enhanced silviculture sites, research and monitoring sites and privately managed woodlots, plantations, shelterbelts and productive forest areas. High value forest sites in the RAA and the LAA are described below and illustrated in Map Series 4-300 – High Value Forest Sites and Map Series 4-200 – Productive Forestland.

#### Enhanced Silviculture Sites

MCWS undertakes enhanced silvicultural treatments at selected locations within the RAA to control the establishment, growth, composition, health and quality of forests (Porteous 2014, pers. comm.). The number and area of enhanced silvicultural treatments within the RAA and LAA are provided in Table 4-65 and illustrated in Map Series 4-300 – High Value Forest Sites and Map Series 4-200 – Productive Forestland.

**Table 4-65: Enhanced Silviculture Treatments**

Treatment	Regional Assessment Area		Local Assessment Area	
	Number	Area (ha)	Number	Area (ha)
CWS Plantations	346	5,703.5	2	19.2
CWS Tending - Herbicide Release	4	79.7	0	0.0
CWS Tending - Pre-commercial Thinning	35	1,032.1	0	0.0
NOTES: ha = hectare				
SOURCE: Porteous 2014, pers. comm.				

#### Research and Monitoring Sites

MCWS has established forest research and monitoring programs within the RAA as part of a long-term investment to increase the productivity of forest plantations (Porteous 2014, pers. comm.). The number of research and monitoring sites within the RAA and LAA are provided in Table 4-66 and illustrated in Map Series 4-300 – High Value Forest Sites and Map Series 4-200 – Productive Forestland.

**Table 4-66: Research and Monitoring Sites**

Programs	Regional Assessment Area (Number)	Local Assessment Area	
		Number	Area (ha)
FRI - Permanent Sample Plots	47	0	0.0
Tree Improvement Program	1 <sup>1</sup>	2 <sup>1</sup>	9.6

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**Table 4-66: Research and Monitoring Sites**

Programs	Regional Assessment Area (Number)	Local Assessment Area	
		Number	Area (ha)
NOTES:			
1 – Site point data represented by 2 polygons for Lonesands Tree Improvement site in the LAA.			
ha = hectare			
SOURCE: Porteous 2014, pers. comm.			

### Private Forestland

The Manitoba Forestry Association works with private landowners in the development of woodlot plans. MCWS established the Trees for Tomorrow program with the goal of planting or providing trees to Manitobans. Between 2008 and 2012 MCWS established several Trees for Tomorrow plantations within the RAA (MCWS 2012). The number and size of private forestland established/maintained within the RAA and LAA are provided in Table 4-67. The woodlot plans and Trees for Tomorrow plantations are presented on Map Series 4-400 – Private Land Forest Areas and Map Series 4-200 – Productive Forestland and Map Series 4-300 – High Value Forest Sites. Shelterbelts within the LAA are presented on Map Series 4-300.

**Table 4-67: Private Forest Land**

Private Forestland	Regional Assessment Area		Local Assessment Area	
	Number	Area (ha)	Number	Area (ha)
Woodlot Plans	302	19,359.9	29	832.1
Trees For Tomorrow Plantations	40	N/A <sup>1</sup>	4	N/A <sup>2</sup>
Shelterbelts <sup>3</sup>	181 <sup>3</sup>	91.8 <sup>3</sup>	107 <sup>4</sup>	51.8 <sup>4</sup>
NOTES: ha = hectare N/A = Not Available <sup>1</sup> – Documentation only available as point data. Plantations represent a total of 663,723 trees planted. <sup>2</sup> – Documentation only available as point data. Plantations represent a total of 88,405 trees planted. <sup>3</sup> – Determined adjacent to the route evaluation, alternative route segments. <sup>4</sup> – Determined within and adjacent to the Final Preferred Route PDA.				
SOURCE: Manitoba Forestry Association 2014; MCWS 2015f; photo interpretation				

The FRI identifies federal, municipal and private productive forestlands within Manitoba. There are no First Nation Reserve/Federal lands located in the RAA. Photo interpretation and helicopter assessment were used to augment FRI data and classified productive forest areas not included in the FRI. Productive forestland within the RAA and LAA is summarized in Table 4-68.



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**Table 4-68: Productive Forestland**

Ownership	Productive Forestland	
	Regional Assessment Area (ha)	Local Assessment Area (ha)
Municipal/LGD Land	17,148.5	413.1
Private Land - FRI	92,951.3	5,652.5
<b>Total</b>	<b>110,099.8</b>	<b>6,065.6</b>
Private Land – Photo Interpretation	181.6	129.8 <sup>2</sup>
NOTES: FMU = Forestry Management Unit FRI = Forest Resource Inventory LGD = Local Government District ha = hectare <sup>1</sup> – Determined adjacent to the route evaluation, alternative route segments. <sup>2</sup> – Determined within and adjacent to the Final Preferred Route PDA.		
SOURCE: MCWS 2010; FRI FMU 1 & 24; photo interpretation		

Federal, municipal and private productive forestlands classified within the FRI and the additional photo interpreted private productive forestlands, within the LAA, are presented on Map Series 4-300 – High Value Forest Sites.

### 4.7 COMMUNITY HEALTH AND WELL-BEING AND VISUAL QUALITY

This section provides an overview of community health and well-being and visual quality including:

- Health and Well-being
  - Health care services and infrastructure (i.e., hospital and health centres, health care utilization, emergency medical services, environmental and mental health services)
  - General health conditions, chronic conditions and personal health behaviours
  - Infectious diseases
  - Stress and anxiety
  - Injury
  - Food security, diet, nutrition
  - Aboriginal health
- Visual Quality
  - Review of existing data including regional setting and viewpoint identification and prioritization
  - Field studies, analysis and results
  - Visual sensitivity class (VSC) determinations

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- Landscape character

#### 4.7.1 Health Care Services and Infrastructure

Health care services are those services that are responsible for meeting the primary health care needs of residents in the study area, including diagnosis and treatment of disease and the promotion of health and well-being. Health care infrastructure includes hospitals and health care clinics and allied health services such as pharmacy, public health, mental health and addictions services, laboratory services, health promotion and other specialty areas.

Health care in Manitoba is administered by the Manitoba Health, Healthy Living and Senior's department, which organizes service delivery through five regional health authorities (RHAs). The MMTP study area intersects four of the five RHAs: Southern Health, Interlake-Eastern Regional Health Authority, Winnipeg Regional Health Authority and Prairie Mountain Health. The RHAs organize and administer all hospital care, in addition to most ambulance, public health and allied health services.

Health care services for Aboriginal communities in Manitoba are provided through a combination of community-based programs funded by the federal First Nations and Inuit Health Branch (FNIHB) and off-reserve services administered provincially through the RHAs (Allec 2005). Southern Health, Interlake-Eastern Regional Health Authority and Winnipeg Regional Health Authority all have dedicated Aboriginal health programs

#### Hospitals and Health Centres

The Project area is serviced by hospitals and health centres in Ste. Anne, Vita and Glenboro. Hospitals with 24/7 emergency care in surrounding areas are located in Brandon, Steinbach and Winnipeg. These hospitals and health centres are listed in Table 4-69 along with the services provided in each and the catchment area they serve.

In addition, Winnipeg houses a large number of primary health centres, community and tertiary hospitals and ancillary services, and acts as the referral centre for the entire province. Southern Winnipeg relies on the services from Victoria General Hospital (personal communication, key person interview). Although there are no problems of note with hospital staffing in Winnipeg, the wait times to see physicians at certain hospitals are longer than others. The City of Winnipeg is moving towards quick care clinics to deflect some types of patients from going to emergency centres.

There are no facilities in the areas immediately surrounding Winnipeg; residents must access services in the city or small 1 to 2 person clinics in Ste. Anne, Niverville, or St. Pierre (personal communication, key person interview). Steinbach (located outside of the RAA) has the majority of family physicians, an access centre, and a walk-in clinic. The Vita Health Centre is not consistently staffed. Sprague has a community health clinic staffed by a Nurse Practitioner. There are limited ER services in this corner of the province.

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Although it is not located within the RAA, the Bethesda Regional Health Centre (BRHC) in Steinbach, noted above, is the main provider of secondary care in the southeast region of the province, serving a population of approximately 80,000 people (personal communication, key person interview). The BRHC has the main Emergency Room in southeast Manitoba, receiving 25,000 visits per year. The Vita Emergency Room is no longer staffed (personal communication, key person interview). BRHC also provides the majority of surgical services for residents in the region. People living between Steinbach and Winnipeg can choose between services in either centre, although if specialist care is needed, residents must travel to Winnipeg.

The BRHC has a mini-intensive care unit. Motor vehicle accidents and other trauma cases come to BRHC before Winnipeg, unless they require a tertiary level of care. As the BRHC does not perform heart or brain surgery, very serious farming or motor vehicle accidents will go directly to a tertiary care facility in Winnipeg, such as St. Boniface Hospital or the Health Sciences Centre. Patients requiring intubation and ventilation for more than 12 hours will also be triaged into the city for ICU. BRHC offers all diagnostic and laboratory services apart from MRIs, which are provided at the Boundary Trails Health Centre in Winkler (outside the RAA).

BRHC is currently meeting patient demand but is struggling with bed management and patient flow; it is aiming for 82-92% bed occupancy, although current occupancy is running close to 95%. This occupancy rate is partly the result of bed management issues with the elderly population, who need to be located in the appropriate care setting. Southern Health is presently planning to increase the number of personal care homes in the region.

Staffing shortages are experienced every day at BRHC, across all disciplines. Challenges with recruitment and retention stem from the fact that Steinbach is only 45 minutes away from Winnipeg – people choose to live and work in the city. Staffing shortages will likely continue to be a challenge.

A recent addition to the Health Authority's primary care service delivery is a mobile clinic that travels around Stuartburn and Piney. Staffed by a Nurse Practitioner and Registered Nurse, the clinic provides primary care to residents who are less mobile.

**Table 4-69: Health Care Facilities In and Around the LAA/RAA**

Facility Name	Location	Service Area	Key Services Provided	Number of Beds
Ste. Anne Hospital	Ste. Anne	Ste. Anne and surrounding area	<ul style="list-style-type: none"> <li>24-hour emergency</li> <li>Lab and diagnostics</li> <li>Surgical services</li> </ul>	<ul style="list-style-type: none"> <li>21-bed facility</li> </ul>
Vita and District Health Centre	Vita	Vita and surrounding area	<ul style="list-style-type: none"> <li>Emergency [24 hour?]</li> <li>Lab and diagnostics</li> </ul>	<ul style="list-style-type: none"> <li>10-bed facility</li> </ul>
Glenboro Health Centre	Glenboro	Glenboro and surrounding area	<ul style="list-style-type: none"> <li>Emergency services (not 24-hour)</li> <li>Acute care</li> <li>Diagnostic services</li> </ul>	<ul style="list-style-type: none"> <li>Acute care beds:</li> <li>Personal care beds: 20</li> </ul>

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**Table 4-69: Health Care Facilities In and Around the LAA/RAA**

Facility Name	Location	Service Area	Key Services Provided	Number of Beds
St. Boniface Hospital	Winnipeg	Winnipeg and surrounding area	<ul style="list-style-type: none"> <li>Tertiary care hospital</li> <li>24-hour emergency services</li> <li>Surgical services</li> </ul>	<ul style="list-style-type: none"> <li>554-bed facility</li> </ul>
Bethesda Regional Health Centre	Steinbach	Steinbach and surrounding area	<ul style="list-style-type: none"> <li>Emergency services</li> <li>Acute care</li> </ul>	<ul style="list-style-type: none"> <li>84-bed facility</li> </ul>
Brandon Regional Hospital	Brandon	Brandon and surrounding area	<ul style="list-style-type: none"> <li>24-hour emergency</li> <li>Acute care</li> <li>Diagnostic services</li> <li>Surgical services</li> </ul>	<ul style="list-style-type: none"> <li>398-bed facility</li> </ul>

### Health Care Utilization

Table 4-70 presents a number of key indicators of how health care is utilized in different regions of Manitoba. As shown in the table, the proportion of residents in the Southern Health area with access to a regular medical doctor is slightly above the Manitoba average. Residents in the Winnipeg Regional Health Authority area had the highest rates of physician use and ambulatory care visits.

**Table 4-70: Rates of Healthcare Utilization**

Regional Health Authorities	Southern Health	Interlake-Eastern Regional Health Authority	Winnipeg Regional Health Authority	Prairie Mountain Health	Manitoba
Regular medical doctor (%) 2011/12	85.6	89.6	85.4	83.9	85.3
Physician use (age-sex adjusted % of residents who used physician services) 2012/13)	81.3	82.7	82.9	82.8	81.9
Ambulatory care visits (age-sex adjusted average number of visits per resident) 2012/13	3.1	3.8	4.4	4.2	4.0
Hospital bed supply (number of setup hospital beds per 1,000 residents) 2011/12	Approx. 2.5	Approx. 1.9	Approx. 3.05	Approx. 5.4	Approx. 3.1
Use of hospitals (age-sex adjusted % of residents admitted to an acute care hospital at least once in the fiscal year) 2011/12	Approx. 7.1	Approx. 6.8	Approx. 5.2	Approx. 8.1	Approx. 6.3
In-patient hospitalization (age-sex adjusted rate per 1,000 residents) 2011/12	Approx. 105	Approx. 95	Approx. 70	Approx. 125	Approx. 85
Hospitalization rates for ambulatory care sensitive (ACS) conditions (age-sex adjusted rate per 1,000 residents age 0-74) 2011/12	Approx. 6.0	Approx. 7.3	Approx. 4.2	Approx. 11	Approx. 6.3

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**Table 4-70: Rates of Healthcare Utilization**

Regional Health Authorities	Southern Health	Interlake-Eastern Regional Health Authority	Winnipeg Regional Health Authority	Prairie Mountain Health	Manitoba
SOURCES: Government of Manitoba 2012-2013; Manitoba Centre for Health Policy 2013; Statistics Canada 2013					

### Emergency Medical Response Services (Ambulance)

Emergency medical response services consist of ground and air ambulance.

Ground ambulance services in Manitoba are delivered by the RHAs and by other service providers, such as municipalities and First Nation communities through an agreement with the RHAs. In a 2012 review of Manitoba's emergency medical services (EMS), Manitoba's ground ambulance services were likened to that of a "patchwork quilt", with wide variations in organization, staffing models and response times (Toews 2013).

Currently in Southern Health, ground ambulance services are provided by full-time, part-time and casual paramedics with assistance from community first responders. Ambulances and/or stations are located in Ste. Anne and Vita. As of 2012, 32 ambulances were being operated out of eighteen stations in Winnipeg. Limited data were available on ground ambulance services for Interlake-Eastern Regional Health Authority and Prairie Mountain Health.

There are four types of air ambulances services in Manitoba: Basic Air Ambulance, LifeFlight Air Ambulance, Shock Trauma Air Rescue Society (STARS) and SAAP (Toews 2013).

*Basic Air Ambulance:* A number of companies are licensed to provide air ambulance services in Manitoba, including: Perimeter Aviation, Keewatin Air, SkyNorth Air, Missinippi Airways, FastAir and SkyMedical (Toews 2013). However, most Basic Air Ambulance transports originate in northern Manitoba, providing services for the Northern Patient Transportation Program and FNIHB.

*LifeFlight Air Ambulance:* LifeFlight is a specialized, provincial air ambulance service providing "intensive care in the air" for residents who are seriously ill or injured from areas outside the 130 kilometre (km) radius of Winnipeg. Operating out of Winnipeg, the 24-hour coverage is provided by critical care physicians, emergency physicians and obstetricians who are supported by flight nurses with advanced critical care training.

*STARS:* Manitoba implemented a permanent helicopter air ambulance program with STARS in 2011 based on their experience contracting STARS' services during the floods of 2009 and 2011. According to the Government of Manitoba (n.d.), the STARS helicopter service "will be used with other emergency services and health care providers whenever the medical need and

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conditions are appropriate”. STARS is based out of Winnipeg and usually transports patients within a 250 km radius of Winnipeg; further distances are made possible by refueling in various communities across the province. A critical care nurse and critical care paramedic are on board every flight.

SAAP: The Southern Air Ambulance Inter-Facility Transport program provides inter-facility air ambulance service for residents in southern Manitoba who would experience a one-way ambulance trip in excess of 2.5 hours (Toews 2013).

For the communities served by the BRHC in Southern Health, the modality of emergency medical transport varies depending on the nature of the emergency, the patient’s location, and the professional scope of the emergency responders available (personal communication, key person interview). The BRHC does have access to STARS, although the response time for STARS can be similar to the ground ambulance given the additional time required for STARS to fly to and from Winnipeg, then transfer to another hospital within Winnipeg by ground ambulance. Additionally, there are service gaps in areas around Vita, St. Pierre and Ste. Anne, where response times can exceed 30 minutes. Lastly, not all ground ambulance personnel are advanced care paramedics – some are first responders with a more limited scope of practice.

All ambulances in rural Manitoba are dispatched through one location in Brandon (outside the RAA). If a resident calls 911 or if BRHC requests an ambulance, it is dispatched through Brandon. The ambulance service uses geolocation, so that ambulances are always out on the road and moving around the region to ensure a response time of less than 30 minutes. This is achieved about 92% of the time. In some rural places (such as around Vita, St. Pierre and Ste. Anne) where this is not always possible, STARS might be called in, although the need for STARS is determined by the dispatch service in Brandon

### Environmental Health Services

In Manitoba, Public Health Inspectors are responsible for assessing and responding to environmental health threats. Currently their mandate includes environmental health risk assessment, food protection, environmentally infectious diseases and oral health.

### Mental Health Services

The majority of mental health services in Manitoba are delivered by the RHAs, with some services administered or funded centrally by Manitoba Health. A wide range of community-based and inpatient mental health services are available.

Within the BRHC, Mental Health Liaison Nurses work in the ER to address mental health challenges in an effort to prevent unnecessary admissions where possible (personal communication, key person interview). Steinbach has a short-stay crisis stabilization unit, and the Eden Mental Health Centre (in Winkler, outside the RAA) offers acute psychiatry services. Selkirk Health Centre (located in Selkirk, outside the RAA) is the provincial mental health service,

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providing specialized in-patient mental health services. There are also many community resources available through the Southern Health mental health program, including those for adolescents and intensive case management.

### 4.7.1.1 General Health Conditions

General health indicators are used to describe population health on a broad level and to compare the health of one population group to others. These health indicators, along with most other health statistics presented in this section, are available only at the level of the RHA and not by community. It should be noted that the experience of the different communities within the RAA may vary substantially.

Perceived health status is a strong and consistent predictor of subsequent illness and premature death (Idler and Benyamini 1997). According to Statistics Canada (2014), “it can reflect aspects of health not captured in other measures, such as incipient disease, disease severity, physiological and psychological reserves, as well as social and mental function” (p. 246). Four main indicators are used:

- Infant mortality describes the rate of death among children under one year of age and is considered a measure of health status, the level of health care available in the region and the effectiveness of prenatal care (Government of Manitoba 2012-2013).
- All-cause mortality shows the overall rate of death in the population and is age and sex-adjusted<sup>8</sup> to enable comparisons between different regions.
- Potential years of life lost measures the number of years before the age of 75 that each person died, so that the death of a young person is weighted heavier than the death of an older person.
- Premature mortality rate (PMR) describes the number of people who die before the age of 75. It is “considered the best single indicator of the overall health status of a region’s population and need for healthcare” (Manitoba Centre for Health Policy 2013, p. xxiii).

General health measures differ among the four RHAs (Table 4-71). Southern Health and Winnipeg Regional Health Authority have rates of infant mortality, all-cause mortality, premature mortality and potential years of life lost below the provincial average. The same indicators for Interlake-Eastern Regional Health Authority are above the provincial average, while only two of these measures (infant mortality and all-cause mortality) are higher than the provincial average for Prairie Mountain Health. However, while there are variations in rates for these different measures among the different health authorities, the differences are not very large.

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<sup>8</sup> Adjusted rates allow different geographic populations to be compared by removing the effects of age and gender distribution. For example, if the age distribution of two populations is quite different, such that one region has a much higher proportion of seniors, a higher mortality rate would be expected on account of the region having an older population. Statistical adjustments for differences in age and gender allow a fair comparison of mortality rates by excluding differences due to variation in age and gender structure in the population—for example, differences in the number of people developing disease, the severity of illness, or the effectiveness or availability of treatment.

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**Table 4-71: Measures of General Health**

Regional Health Authorities	Southern Health	Interlake-Eastern Regional Health Authority	Winnipeg Regional Health Authority	Prairie Mountain Health	Manitoba
Population size	175,230	123,215	678,405	161,325	1,208,270
Perceived health rated as “very good or excellent” (%) 2011/12	54.5	53.6	59.5	56.8	57.6
Infant mortality (rate per 1,000 live births) 2007/08 to 2011/12	6.0	6.8	5.9	5.7	6.4
All-cause mortality (age-sex adjusted rate per 1,000 residents) 2011/12	7.9	8.1	7.8	7.9	8.0
Premature mortality (age-sex adjusted rate per 1,000 residents under age 75) 2007/08 to 2011/12	2.6	3.4	3.1	3.4	3.3
Potential years of life lost (PYLL) (age-sex adjusted rate per 1,000 residents under age 75) 2007-11	Approx. 40	approx. 52	Approx. 45	Approx. 55	51.5
Most frequent causes of death <sup>1</sup> (average annual crude %) 2007-11	Circulatory Cancer Respiratory Injury Endocrine /metabolic	Circulatory Cancer Injury Respiratory Endocrine /metabolic	Circulatory Cancer Respiratory Injury Mental illness	Circulatory Cancer Respiratory Injury Mental illness	Circulatory Cancer Respiratory Injury Mental illness
NOTES: Circ = circulatory Ca = cancer Resp = respiratory Inj/pois = injury and poisoning Endo/m = endocrine and metabolic Mental il = mental illness <sup>1</sup> Most frequent causes of death					
SOURCES: Government of Manitoba 2012-2013; Manitoba Centre for Health Policy 2013; Statistics Canada 2013					

### Chronic Conditions

Disease burden describes the burden of disease and various health conditions in a population. These conditions can considerably impair an individual’s overall quality of life and ability to function.

The rate of chronic conditions describes the proportion of the population age 20 and older having one or more of the following conditions: arthritis, asthma/COPD, diabetes, coronary heart



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disease, or stroke (Government of Manitoba 2012-13). As shown in Table 4-72, Interlake-Eastern Regional Health Authority and Prairie Mountain Health have a substantially higher rate of these conditions compared to Southern Health. Age- and sex-adjusted rates of arthritis, diabetes and high blood pressure in Southern Health and Winnipeg Regional Health Authority are the same or lower than the provincial average, while Interlake-Eastern Regional Health Authority and Prairie Mountain Health experience these conditions at rates that are higher than the provincial average (Table 4-76).

The prevalence of other chronic conditions listed in Table 4-72 varies substantially between the different health regions; however, it is only possible to directly compare the measures that are age and sex-adjusted. Differences in measures that are not statistically adjusted may be driven at least in part by differences due to the effects of age and gender distribution. Regions with a higher proportion of older people are likely to have higher rates of conditions linked to older age and regions with a higher proportion of younger adults are likely to have higher rates of injury, which is more prevalent in younger populations. While the conditions listed in the table that are not adjusted for age and gender cannot be directly compared across the different regions, the information is still useful for understanding the extent to which the overall population in any one area experiences ill health and identifying which conditions poses the biggest health challenges to individuals and the health care system.

**Table 4-72: Measures of Disease Burden**

Regional Health Authorities	Southern Health	Interlake-Eastern Regional Health Authority	Winnipeg Regional Health Authority	Prairie Mountain Health	Manitoba
Chronic conditions (% age-sex adjusted of residents age 20 and older) 2011/2012	43.9	49.3	46.5	49.3	46.8
Arthritis (%age-sex adjusted) 2010/11-2011/12	Approx. 19	Approx. 21.5	Approx. 21	Approx. 22.5	Approx. 21
Diabetes (%age-sex adjusted) 2011/12)	6.5	8.8	7.4	8.1	7.9
High blood pressure (%age-sex adjusted) 2011/12)	26.5	29.9	27.4	28.4	27.8
Asthma (%) 2011/12	7.6	8.1	9.4	9.7	9.1
Chronic Obstructive Pulmonary Disease (%) 2011/12	2.3 <sup>E</sup>	3.8 <sup>E</sup>	5.1 <sup>E</sup>	4.2 <sup>E</sup>	4.5
Ischemic heart disease (% of residents diagnosed age 19 and older) 2007/08 to 2011/12	Approx. 6.9	Approx. 7.6	Approx. 8.0	Approx. 8.8	Approx. 8.0
Pain or discomfort, moderate or severe (%) 2011/12	12.7	15.8	13.0	12.0	13.1
Pain or discomfort that prevents activities (%) 2011/12	15.0	17.9	15.9	14.5	15.7

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**Table 4-72: Measures of Disease Burden**

Regional Health Authorities	Southern Health	Interlake-Eastern Regional Health Authority	Winnipeg Regional Health Authority	Prairie Mountain Health	Manitoba
Prevalence of total respiratory morbidity (% of all residents diagnosed with disorder) 2011/12)	Approx. 6.8%	Approx. 10	Approx. 10	Approx. 12.2	Approx. 9.5
NOTES: E –use with caution (Statistics Canada symbol)					
SOURCES: Government of Manitoba 2012-2013; Manitoba Centre for Health Policy 2013; Statistics Canada 2013					

### Personal Health Behaviours

Personal health behaviours such as daily smoking and heavy drinking can negatively affect health, while physical activity and fruit and vegetable consumption can beneficially affect health. Such behaviours interact with environmental and biological factors to contribute to the prevention or onset of disease.

The prevalence of daily smokers is substantially higher in Interlake-Eastern Health Authority (21.2%) compared to the other RHAs and the Manitoba average of 14.8% (Table 4-73). Although there is less regional variation in heavy drinking, Interlake-Eastern Health Authority has the highest rate at 22.4%, also above the provincial average. The Winnipeg Regional Health Authority has the highest rates of leisure time physical activity and fruit and vegetable consumption, both exceeding the provincial averages. Overweight and obesity were lowest in the Winnipeg Regional Health Authority and higher in all other areas of the province.

**Table 4-73: Personal Health Behaviours**

Regional Health Authorities	Southern Health	Interlake-Eastern Regional Health Authority	Winnipeg Regional Health Authority	Prairie Mountain Health	Manitoba
Current smoker, daily or occasional (%)	18.3	24.6	19.2	19.6	20
Current smoker, daily (%)	14.6	21.2	13.1	15.9	14.8
Heavy drinking (%)	18	22.4	22	18.4	21.2
Leisure time physical activity, moderately active or active (%)	48.8	51.1	56.7	52.4	54.4
Fruit and vegetable consumption, 5 or more times per day (%)	33.8	31.3	39.1	33.9	36.7
Overweight or obese (%)	62.4	62.6	54.2	61.2	57.3

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**Table 4-73: Personal Health Behaviours**

Regional Health Authorities	Southern Health	Interlake-Eastern Regional Health Authority	Winnipeg Regional Health Authority	Prairie Mountain Health	Manitoba
SOURCES: Data from 2011/12; Statistics Canada 2013					

### 4.7.1.2 Infectious Diseases

Infectious diseases, also known as communicable diseases, are diseases transmitted between two people, or from an insect or animal source (such as a mosquito or bird) to a person. Three types of infectious diseases include: sexually transmitted infections (STIs); gastrointestinal disorders; and respiratory infections.

*Sexually transmitted infections:* STIs include gonorrhea, chlamydia, syphilis and HIV/AIDS as well as others such as Hepatitis B and C, genital herpes and the human papillomavirus.

Effects from STIs range from irritating symptoms to more serious consequences such as infertility or sterility, and in rare cases, death. According to Manitoba Health, Healthy Living and Seniors, STIs are the most common infectious diseases of public health importance in North America.

Southeastern Manitoba has the lowest rates of STIs in the province, although it is uncertain whether this is due to a truly lower incidence or less frequent testing for cultural reasons (personal communication, key person interview). Syphilis has recently resurged as an STI of concern. Current rates of syphilis in Winnipeg are the highest they have been in 30 to 40 years. The Southern Health Region also has experienced an increased number of syphilis cases (personal communication, key person interview).

Although there are no identified challenges with STI testing and treatment capacity in the relevant RHAs, there are challenges with cultural and religious dynamics in some Southern Health communities (e.g., Steinbach) where harm reduction and prevention activities are less well-received (personal communication, key person interview).

*Gastrointestinal disorders:* Gastrointestinal (GI) illnesses such as *E.coli*, norovirus and hepatitis A are caused by a variety of bacterial and viral pathogens. Gastrointestinal illnesses are spread by direct contact from person to person but can also be spread through contaminated food, water, or surfaces and may be linked to poor food-handling practices or sanitation.

As with respiratory diseases and other infectious diseases, there can be substantial differences in year-to-year rates in a single region due to localized outbreaks. Table 4-74 shows rates of notifiable GI illnesses for Manitoba in 2013. Salmonellosis (salmonella poisoning), campylobacteriosis and giardiasis (giardia) were the most common infections, with the largest difference between health regions observed in campylobacteriosis infection (from 9.1 cases per

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100,000 persons in the Winnipeg Regional Health Authority to 33.6 cases per 100,000 persons in Southern Health). Although rates of specific illnesses varied across the health regions, there did not appear to be any important regional trends.

**Table 4-74: Rates of Reportable Gastrointestinal Illnesses**

Regional Health Authorities	Southern Health	Interlake-Eastern Regional Health Authority	Winnipeg Regional Health Authority	Prairie Mountain Health	Manitoba
<b>Gastrointestinal illness (cases per 100,000 population)</b>					
Amebiasis	1.6	0.0	1.8	0.6	1.3
Campylobacteriosis	33.6	18.3	9.1	26.9	16.3
Cryptosporidiosis	6.4	0.8	1.0	11.4	3.1
Verotoxigenic <i>Escherichia coli</i> (VTEC)	3.7	2.4	1.2	5.4	2.2
Giardiasis	7.5	2.4	7.1	8.4	7.0
Hepatitis A	0.0	0.0	1.4	0.6	0.9
Salmonellosis	21.9	15.1	16.2	25.7	17.6
Shigellosis	0.5	1.6	1.9	0.0	1.8
NOTES:					
Data for year 2013					
SOURCE: Government of Manitoba 2013					

*Respiratory infections:* Common respiratory infections include the common cold, strep throat, influenza (flu), pneumonia, bronchitis, measles and chicken pox.

Common respiratory infections include the common cold, strep throat, influenza (flu), pneumonia, bronchitis, measles and chicken pox. Table 4-75 shows the rates of reportable respiratory illnesses in Manitoba, many of which are vaccine-preventable. Southern Health does not have a high incidence of vaccine-preventable diseases, but it does have lower rates of immunization across all age groups (personal communication, key person interview). People who have not been fully immunized against vaccine-preventable diseases are at greater risk of becoming infected and spreading the disease than those who have been fully immunized.

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**Table 4-75: Rates of Reportable Respiratory Illnesses**

Regional Health Authorities	Southern Health	Interlake-Eastern Regional Health Authority	Winnipeg Regional Health Authority	Prairie Mountain Health	Manitoba
Measles (rate per 100,000 population) 2013	NA	NA	NA	NA	0.0
Mumps (rate per 100,000 population) 2013	NA	NA	NA	NA	0.1
Pertussis (rate per 100,000 population) 2013	1.6	0.8	0.3	0.0	0.5
Pneumococcal disease (invasive), (rate per 100,000 population) 2013	10.1	11.9	8.2	7.2	10.2
Streptococcal disease (invasive) (available as cases) EpiSummary					
Influenza A (laboratory-confirmed per 100,000 population) 2013/14	49.6	73.1	22.2	74.2	54.1
Influenza B (laboratory-confirmed per 100,000 population) 2013/14	8.0	1.6	5.7	3.6	5.5
NOTES: NA – data not available at RHA level					
SOURCE: Government of Manitoba 2013					

### 4.7.1.3 Stress and Anxiety

Stress and anxiety are thought to contribute to the development of poor health conditions including heart disease, stroke, high blood pressure, upper respiratory disease and poor immune response (Schneiderman *et al.* 2005). Exposure to stress can also contribute to behaviours such as smoking, over-consumption of alcohol and less-healthy eating habits.

Table 4-76 provides statistics relevant to understanding existing conditions for a number of stresses, anxiety and mental well-being dimensions across the RHAs in Manitoba. Rates of perceived mental health (“very good or excellent”), perceived life stress and life satisfaction (“satisfied or very satisfied”) were similar across the health regions. However, Prairie Mountain Health had the highest rates of mood and anxiety disorders.

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**Table 4-76: Overall Mental Health**

Regional Health Authorities	Southern Health	Interlake-Eastern Regional Health Authority	Winnipeg Regional Health Authority	Prairie Mountain Health	Manitoba
Perceived mental health, very good or excellent (%) 2011/12	68.3	69.8	68.6	67.7	68.4
Life satisfaction, satisfied or very satisfied (%) 2011/12	93.4	89.3	90.2	91.7	90.8
Perceived life stress (%) 2011/12	20.3	18.8	21.6	22.8	21.3
Mood and anxiety disorders (% age-sex adjusted prevalence age 10 and older) 2008/09 to 2012/13	18.8	20.7	23.1	24.0	22.1
SOURCES: Government of Manitoba 2012-2013; Statistics Canada 2013					

As mentioned above, stress and anxiety can contribute to over-consumption of alcohol and substance misuse and less-healthy eating habits. As shown in Table 4-77, Southern Health had the lowest rates of heavy drinking and substance (alcohol or drug) abuse. While Prairie Mountain Health had the highest rate of substance abuse and the Interlake-Eastern Regional Health Authority had the highest rate of heavy drinking, regional trends could not be identified based on the available information.

**Table 4-77: Drug and Alcohol Use**

Regional Health Authorities	Southern Health	Interlake-Eastern Regional Health Authority	Winnipeg Regional Health Authority	Prairie Mountain Health	Manitoba
Heavy drinking (%)	18	22.4	22	18.4	21.2
Substance abuse, alcohol or drugs (age-sex adjusted prevalence age 10 and older) 2008/09 to 2012/13)	3.9	5.4	5.1	5.6	5.2
SOURCE: Government of Manitoba 2013; Statistics Canada 2012; Statistics Canada 2013					

### 4.7.1.4 Injury

Injury and poisoning were the second most frequent causes of death in the Interlake-Eastern Health Authority between 2007 and 2011 and the third most common causes of death for Southern Health, Winnipeg Regional Health Authority and Prairie Mountain Health. While injury mortality and injury hospitalization rates were below the provincial average in Southern Health and the Winnipeg Regional Health Authority, both measures were above average for Interlake-Eastern and Prairie Mountain Health (Table 4-78).

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Details on the causes of injury deaths and injury hospitalizations were not available at the current RHA level. However, the top five causes of injury deaths in Manitoba between 1992 and 1999 were suicide, motor vehicle traffic injuries, falls, fractures, suffocation and choking (Government of Manitoba 2004). Over the same period, the most common causes of injury hospitalizations were falls, motor vehicle traffic injuries, self-inflicted injuries, assault and injuries from being struck by or against an object.

Between 2000 and 2013, there were 48 construction-related fatalities out of 269 total occupational fatalities. In 2013 alone, 4,178 construction-related injuries were reported (Safe Work Manitoba 2014).

**Table 4-78: Rates of Injury and Cause of Death**

Regional Health Authorities	Southern Health	Interlake-Eastern Regional Health Authority	Winnipeg Regional Health Authority	Prairie Mountain Health	Manitoba
Injury mortality (age-sex adjusted rate per 1,000 residents) 2011/12	0.42	0.6	0.47	0.69	0.55
Injury hospitalization (age-sex adjusted rate per 1,000 residents) 2012/13	6.7	7.5	5.7	9.5	7.1
SOURCES: Government of Manitoba 2012-2013; Manitoba Centre for Health Policy 2013					

### 4.7.1.5 Food Security, Diet and Nutrition

The ability to access sufficient, safe and healthy food is an important determinant of health. Food insecurity occurs when the quality and/or quantity of food in a household is insufficient and is usually associated with limited financial resources. Food insecurity has been linked to a number of chronic diseases and conditions, including heart disease, diabetes, high blood pressure, food allergies and stress (Mikkonen and Raphael 2010).

Local data on food security were not available. However, 12.4% of households in Manitoba reported experiencing food insecurity in 2011 (Manitoba Health n.d.). In 2014, Manitoba food banks assisted 61,691 people, an increase in over 50% from 2008 (Food Banks Canada 2014). The Steinbach food bank, South East Helping Hands, currently serves over 1,000 people each month (South East Helping Hands, n.d.). Although there is also a food bank located in Ste. Anne, details on its usage could not be located.

### 4.7.1.6 First Nation and Metis Health

Development projects have the potential to affect components of the natural environment that are integral to the health and well-being of many First Nation and Metis people.

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Although there are no First Nations reserves located within the LAA, First Nation communities located near the LAA, and their reported population sizes, are described in Table 4-79.

**Table 4-79: First Nation Populations**

Community	On-Reserve	On Other Reserve	Off-Reserve <sup>1</sup>	Total
Black River First Nation	911	11	352	1,274
Brokenhead Ojibway Nation	672	3	1,255	1,931
Buffalo Point First Nation	33	5	90	128
Dakota Plains Wahpeton First Nation	167	11	89	267
Dakota Tipi First Nation	195	2	198	395
Long Plain First Nation	2,190	49	2,013	4,252
Peguis First Nation	3,568	125	6,125	9,818
Roseau River Anishinabe First Nation	1,152	28	1,390	2,570
Sagkeeng First Nation <sup>2</sup>	3,349	25	4,253	7,627
Sandy Bay Ojibway First Nation	3,929	38	2,432	6,399
Swan Lake First Nation	581	17	785	1,383
NOTES:				
<sup>1</sup> Indicates combined off-reserve First Nation population with one of the four other reported categories (On Own Crown Land, On Other Crown Land, On Other Band Crown Land, On No Band Crown Land)				
<sup>2</sup> Data for Sagkeeng First Nation is referenced from AANDC's First Nations Community Profile, which refers to the Nation by its previous name, "Fort Alexander"				
SOURCE: AANDC 2015				

Population data for the Metis population residing within the LAA are available at the former Regional Health Authority level (prior to amalgamation in 2012). The data in Table 4-80 are presented at the former Regional Health Authority level, along with the corresponding current Regional Health Authority.

**Table 4-80: Metis Population in or near the LAA**

Current Regional Health Authority	Regional Health Authority prior to 2012	Population	Year
Southern Health	Central	4,558	2010
	South Eastman	5,688	2010
Winnipeg Regional Health Authority	Winnipeg	31,647	2010
	Churchill*	220	2010
Prairie Mountain Health	Assiniboine	2,127	2010
	Brandon	2,336	2010



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**Table 4-80: Metis Population in or near the LAA**

Current Regional Health Authority	Regional Health Authority prior to 2012	Population	Year
	Parkland	5,976	2010
Interlake-Eastern Regional Health Authority	Interlake	8,817	2010
	North Eastman	3,470	2010
NOTE: * Located outside the LAA			
SOURCE: Manitoba Centre for Health Policy and Manitoba Metis Federation 2010			

### *The Meaning of Health for Aboriginal Peoples*

For many Aboriginal peoples, health is a concept that is holistic in nature and deeply rooted in the inter-relationships between land, water, culture and identity (Loppie-Reading and Wien 2009). The concept of an inter-relationship between nature and people supports a link between the well-being of the environment and the physical, social, cultural and mental well-being of individuals and communities. To many Aboriginal peoples, these factors cannot be considered separate from one another.

It is therefore important to recognize that health, for many Aboriginal peoples, comprises an array of factors that is much broader than measures of mortality and morbidity. For example, the ability to access the land and participate in traditional activities, cultural events and ceremonies is an important support for positive health, and many of the Aboriginal groups in southern Manitoba are active in these activities (personal communication, key person interview).

### *Overall Health Status of First Nation Populations in Manitoba*

In order to determine how the health of First Nations people in Manitoba compared to the non-First Nations population, the First Nations Regional Health Survey (RHS)—a First Nations -governed, national health survey—was conducted. Phase 2 of the RHS gathered data between 2008 and 2010. It found that First Nations in Manitoba experienced lower rates of several chronic conditions, including high blood pressure, arthritis, and heart disease. However, rates of diabetes, overweight or obesity, daily smoking, and heavy drinking were substantially higher in the First Nations populations compared to the non-Aboriginal population.

### *Overall Health Status of Metis Population in Manitoba*

Data for Metis health were collected by the Manitoba Centre for Health Policy in collaboration with the Manitoba Metis Federation, and are available in the 2010 report, *Profile of Metis Health Status and Healthcare Utilization in Manitoba: A Population-Based Study*. For all of the health measures included in reporting on the following health indicators: mortality, general health and chronic conditions and health behaviors, some level of variation can be seen between each of

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the former RHAs. However, premature mortality and total mortality rates are generally higher for the Metis populations compared to the rest of Manitoba, and, excluding the former RHA of Assiniboine, self-rated health is substantially lower for the Metis populations compared to the rest of Manitoba. A similar pattern can be observed for rates of chronic conditions and personal health behaviours, with Metis populations in most of the former RHAs experiencing higher rates of chronic conditions and adverse personal health behaviours than other Manitobans. These data highlight an overall gap in health status between the Metis population and the rest of Manitoba.

#### *Diet and Nutritional Outcomes*

Traditional foods are important to First Nation communities for nutritional, cultural and economic reasons. Traditional subsistence diets are relatively healthy and also have considerable social and cultural value. Because Aboriginal populations in Canada and elsewhere have transitioned away from a subsistence diet to a more Western diet and lifestyle, rates of obesity, diabetes and other chronic diseases have drastically increased (Kuhnlein and Receveur 1996). Moreover, traditional diets are associated with higher levels of physical activity and the continuity of cultural practices, both of which are supportive of physical and mental wellbeing (Chandler and Lalonde 1998). Health impacts resulting from changes in diet and nutrition are therefore a major concern when development activities affect populations reliant on subsistence foods.

Data on traditional food consumption patterns and food security for Manitoba First Nations are available through the First Nations Food, Nutrition and Environment Study (FNFNES), which examines traditional food consumption patterns and levels of contaminants in traditional foods for on-reserve First Nations populations across Canada. In Manitoba, nine First Nations communities (including some communities engaged in the project such as Swan Lake and Sagkeeng) participated in the FNFNES, and results were grouped according to the affiliated ecozone (Map 4-12 – Ecozones for the Assessment Area). Data in Table 4-81 are presented for the three ecozones.

As shown in Table 4-81, the First Nations communities represented in the three ecozones transected by the LAA have a high consumption of animal food sources, with between 73% and 94% consuming fish in the last year, between 83% and 92% consuming land mammals, and between 47% and 71% consuming birds. A substantial proportion of participants (between 58% and 73%) reported consuming berries and nuts in the last year, while somewhat fewer reported consuming wild plants, shoots and greens (8% to 38%) and mushrooms (zero to 4%). In addition, between 57% and 79% of households reporting in the Prairies ecozone reported that they would like to consume more traditional foods. Perceived benefits to consuming traditional foods include their nutritional value, safety, taste, low or no cost, cultural and educational value, and freshness (Chan et al. 2012). These data highlight the importance of subsistence foods as part of the diet of First Nations communities in these regions.

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**Table 4-81: Food Sources for Ecozones in the RAA**

Ecozone Description	Prairies	Boreal Plain	Boreal Shield	All Manitoba First Nations Communities
Ecozone	1	2	3	
<b>Percent (%) consuming traditional foods in the last year</b>				
Fish	73	94	79	83
Land mammals	87	92	83	86
Birds	57	71	47	56
Berries and nuts	63	58	73	68
Wild plant roots, shoots and greens	19	8	38	27
Mushrooms	0	4	1	2
<b>Traditional food harvest practices (%)</b>				
Hunt or set snares for food	20	21	21	21
Fished	25	30	29	29
<b>Traditional food gathering practices (%)</b>				
Collected wild plant food	16	4	15	12
Planted a garden	7	9	18	13
<b>Other</b>				
Percent (%) who eat fruits and/or vegetables from their gardens or community gardens	48	23	47	39
Percent (%) of households that would like more traditional food	79	76	57	66
NOTE: Data from 2010				
SOURCE: Chan <i>et al.</i> 2012				

Data regarding the consumption of traditional foods for the Metis population could not be located.

### Food Security

The FNFNES found a provincial rate of food insecurity for First Nations communities at 38% (Chan *et al.* 2012). When examined by ecozones within Manitoba (Prairies, Boreal Plain, and Boreal Shield), food insecurity ranged from 21% to 44% (Table 4-82). These rates are extremely high when compared to the Manitoba population as a whole. According to Manitoba Health (n.d.), 12.4% of households in Manitoba experienced food insecurity in 2011, of which 1.4% was severe.

First Nations communities may also experience food security in relation to traditional foods. The FNFNES reported that 27% of respondents “sometimes” worried about running out of

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traditional food and 13% “often” worried about running out of traditional food (Chan *et al.* 2012).

Data regarding food security within Metis population could not be located.

**Table 4-82: Rates of Food Insecurity**

Ecozone Description	Prairies	Boreal Plain	Boreal Shield	All Manitoba First Nations Communities	Manitoba Average
Ecozone	1	2	3		
Food insecurity, moderate (%)	19	20	35	31	5.7
Food insecurity, severe (%)	10	1	9	8	1.7
Food insecurity, total (%)	29	21	44	38	12.4
SOURCE: Chan <i>et al.</i> 2012 and Government of Manitoba n.d.					

### Aboriginal Health Care Service Provision

Health care services for First Nations communities in Manitoba are provided through a combination of community-based programs funded by the federal FNIHB and off-reserve services administered provincially through the RHAs (Allec 2005). In general, the province is responsible for any insured service (e.g. physician, hospital stays, medication while in hospital), while the federal government is responsible for anything that falls outside of that realm in terms of public health and non-insured health benefits (e.g. occupational therapy, physiotherapy, medical supplies, drugs, glasses, dental care, etc.) (key person interview, pers. comm.). However, responsibility for service delivery also varies depending on the location and remoteness of the community. For example, some communities may have physician services within the community, while others may need to access services through the RHA (key person interview, pers. comm.). Health care service delivery is often negotiated between the provincial and federal governments; many communities would like to entirely run their own health and primary care, or at least have more control over it (key person interview, pers. comm.).

The RHAs are autonomous with respect to how they engage with Aboriginal communities; not all RHAs have a dedicated Aboriginal Health Program (key person interview, pers. comm.). The Winnipeg Regional Health Authority and Southern Health both have Aboriginal Health Programs, while Interlake-Eastern Health Authority does not have a long history of working with Aboriginal communities within its geographic boundaries and there is some mistrust to overcome. Some Aboriginal communities feel Prairie Mountain Health has not played a role in their care (key person interview, pers. comm.). There may be some misunderstanding about health care responsibility among the RHAs (*i.e.*, that all services should be provided by the federal government), which may explain the under-response of some RHAs.

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### Health Resiliency and Vulnerability

Health resiliency refers to the degree to which people or populations are able to cope with, resist and recover from the impacts of environmental, economic or social stressors (International Panel on Climate Change; WHO 2002). In the context of the community health assessment, it is useful to try to understand health resiliency, because it affects how different populations may respond to the effects and impacts of the Project.

Some populations or groups tend to be less resilient than others. For example, epidemiologic research links factors such as age, poverty, disability, Aboriginality, and low education with poorer health outcomes (Loppie-Reading and Wien 2009). While not all people who fit any of these conditions suffer from poor health, on the whole these populations tend to have lower resiliency and worse outcomes.

In order to identify relative health resilience of the communities in the RSA, a health resiliency index was developed, predicated on five domains that have been shown in the research to have a strong association with poor health outcomes and for which information was available for all RSA communities. The domains and specific indicators used include:

- age (percent of the population under age 19 or over 65)
- economic power (education less than high school; unemployment rate; percent of homes owned vs. leased/rented)
- community assets and infrastructure (fire and police housed within the community)
- health care access (primary care within the community; distance to 24-hour emergency care)
- Aboriginality (percent of the population who self-identify as Aboriginal)

Map 4-13 – Health Vulnerability of Communities shows the relative degree of health resiliency within the RSA. The RMs of Headingley, Springfield, Macdonald and the town of Ste. Anne had the greatest degree of health resiliency. The RMs of Tache, Ritchot, Ste. Anne, South Cypress, Rosser and Piney exhibited somewhat less resiliency. And finally, the RM of Stuartburn, the village of Glenboro and the RM of La Broquerie had the least degree of health resiliency.

In the analysis of identifying the relative health resilience of the communities in the RAA it should be noted that:

- the analysis is based on a number of assumptions that are supported by limited and sometimes old (2006) community-level data
- the relatively close clustering of all communities in the results, indicates that overall, the degree of difference in health resiliency among communities is not great
- not all people within any one area are equally vulnerable or resilient
- individual factors remain more important than an overall assessment based on location

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### 4.7.2 Visual Quality

Travel Manitoba (2015), Interlake Tourism Association (n.d), Red River North Tourism (n.d) and RMs in the RAA emphasize the importance of visual quality to community sense of place, quality of life, outdoor recreation and the competitiveness of the tourism industry within the Project area. The southeastern region of Manitoba has several parks that are popular with community members and visitors (see Sections 4.6.5 to 4.6.6). Visual quality is an important attractor of these parks.

Visual quality is “the potential for a landscape to produce varying degrees of satisfaction among viewers” (USDA Forest Service 1994). Visual quality is influenced by human activities, such as road construction, timber harvesting, oil and gas development, transmission line and utility development (McCool 1986; Lovell and Sullivan 2006, Garre 2009; Germond 2009; Jallouli 2009; BC MOFR 2010). Visual sensitivity is a component of visual quality that indicates how the landscape is viewed and how much viewers care about the visual characteristics of that landscape (Sheppard 2004). See Appendix D for a glossary for additional visual quality terms.

### Visual Preferences

A review of visual preference studies undertaken in Canada, Spain and the US indicates that:

- Natural landscapes are preferred over human-modified landscapes (Arriaza *et al.* 2004).
- Human intervention has a negative effect on visual quality. Some interventions such as open pit mines, oil and gas wells and major transmission lines have a greater negative effect on visual quality than other land uses such as agrarian land use, forestry and tourism. Studies also demonstrate that increased levels of intervention are correlated with decreased levels of public acceptance (ACT 2015; ATPR 2013; BC MFLNRO 2011).
- Disturbance to visual quality has the potential to negatively affect property values (Section 3.1.3.1).
- Disturbances designed to maximize vegetation retention and to more closely reflect natural disturbance patterns and openings have higher public acceptance ratings (BC MFLNRO 2011).
- Tourists are less accepting of landscape alteration than residents (BC MOF 2003; BC MOFR 1996, 2010).
- Landscape alterations can negatively affect economic potential of tourism operations (BC MOF 2003).

### Government Objectives and Guidelines related to Visual Quality

Direction regarding the management of visual quality in Manitoba is contained within various national, provincial and local regulations, policies, plans and guidelines.

The NEB Filing Manual (NEB 2015) mandates identification of any predicted visual or other aesthetic effects of the project on existing land use in the study area under Human Occupancy

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and Resource Use. Similarly, aesthetics is considered under Human Health and Aesthetics if the project may change the existing environmental setting related to visual aesthetics (e.g., beauty) and requires a description of any aesthetic effects of the project on residents or other potential affected persons or users in the study area.

Provincial requirements from *The Environment Act* (Government of Manitoba 2015) include the need to sustain a high quality of life, including social and economic development, recreation and leisure; and the need to describe socio-economic implications resulting from environmental impacts.

Municipal development plans for seven of the RMs and communities (Table 4-48) that intersect with the LAA provide policy direction or statements related to the management of the visual landscape and its impact on local residents' quality of life and recreation and tourism opportunities.

The development plans for the RM of Headingley (2006), RM of La Broquerie (2011), RM of MacDonald-Ritchot (2011), RM of South Interlake (2010) and RM of Piney (2013) outline a number of common goals related to visual quality. These include the protection and improvement of the quality of the physical environment and visual amenities of the communities, ensuring adequate recreational opportunities for the health and enjoyment of residents and maintaining a semi-rural atmosphere throughout the municipalities. Two development plans (Piney and South Interlake) note the importance of applying mitigation measures such as visual buffering to mitigate the effects of wind generation turbines, which result in similar visual impacts to the landscape by virtue of the tall, linear tower features.

### 4.7.2.1 Review of Existing Data

#### Regional Setting

The character of the LAA and RAA is a product of its biogeoclimatic setting, terrain and human interventions. It is characterized by four different ecoregions including the Lake Manitoba Plain ecoregion, Interlake Plain ecoregion, Lake of the Woods ecoregion and the Aspen Parkland ecoregion. Within these ecoregions, forestry and farmland are the dominant activities with some areas of trembling aspen, shrubby understory and grasslands.

The region is defined by its low to gently sloping topographic variation, consistent vegetation patterns, and views of water along the Red, La Salle and Assiniboine Rivers. Common views of agricultural landscapes, while largely homogenous in nature, still provides views of open spaces and visually appealing rural landscapes (Benson 2008; Fleischer and Tsur 2000). Supported by the findings from visual preference literature (USDA Forest Service 1994; Sheppard 2004; MLFNRO 2011; ATPR 2013), these characteristics form a somewhat non-distinct but visually appealing landscape.



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Viewscapes throughout the LAA and RAA include considerable anthropogenic disturbances. Land use within the Project area is predominantly agricultural, but other visible anthropogenic disturbances include recent and historical forest harvesting, major industrial developments, commercial developments and residential developments. However, the degree of disturbance varies depending on the viewshed being observed.



Semi-Urban



Forested areas



Rural Residences



Community Sites of Interest



Agricultural Fields



Parks

**Photo 4-1: Sample Views of the Landscape and Development within the LAA and RAA**



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As described in Section 4.6.6, a number of recreational and tourism values exist within the RAA, which could be affected by visual disturbances. Numerous provincial forests, parks, ecological reserves and WMAs exist where recreation and eco-tourism activities take place. Common activities include horseback riding, hiking, cross-country skiing, all-terrain vehicle driving, snowmobiling hunting, fishing, camping, guided walks, bird and wildlife watching and canoeing.

### Viewpoint Identification and Prioritization

A total of 89 candidate viewpoints (Map Series 4-500 – Candidate and Priority Viewpoints) and Appendix E candidate viewpoints) were identified for consideration in the assessment as outlined in Section 3.3.6.1. The locations of candidate viewpoints comprised:

- 10 communities and 37 residences and residential developments
- 10 rural roadways
- 8 lodges, outfitters, resorts, camps/campgrounds and country clubs
- 6 golf courses
- 5 provincial, heritage, recreational and local parks
- 5 recreation and tourism outfitters and key visitation sites
- 3 local and regional trails - cross country skiing, ATV and canoeing
- 2 recreation areas (floodway, TCT)
- 2 hunting areas and 1 WMA

Seventy-five of the 89 candidate viewpoints were determined to be outside of the viewshed, beyond the LAA (8 km maximum distance), or the view toward the Project was duplicated by another viewpoint. The remaining 14 viewpoints were selected for field visits and further evaluation in the visual quality assessment. See Appendix F for detailed information on each of the 75 candidate viewpoints that were not retained as priority viewpoints. Table 4-83 provides the relative importance rating of each priority viewpoint, determined as per the methods in Section 3.3.6.1.

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**Table 4-83: Priority Viewpoint Importance and Criteria**

Viewpoint	Access		Type of Activity and Frequency		Viewing Distance		Importance Rating
	High	Moderate	High	Moderate	High	Moderate	
1 – Hutterite Colony I		X	X			X (1.1 km)	Moderate
2 – Access to Sundown Lake and Grave Site		X		X	X (0.3 km)		Moderate
3 – Ridgeland Cemetery	X		X		X (0.2 km)		High
4 – La Verendrye Golf Club	X		X		X (0.4 km)		High
5 – Oakwood Golf Course and Campground	X		X			X (1.5 km)	High
6 – Ste. Genevieve		X		X		X (1.2 km)	Moderate
7 – Hutterite Colony II		X	X		X (0.8 km)		High
8 – Hutterite Colony III		X	X		X (0.1 km)		High
9 – MacDonald Road Residence		X		X	X (0.5 km)		Moderate
10 – TransCanada Trail Courchaine Bridge	X		X		X (0.1 km)		High
11 – Red River Floodway at Chrypko Drive and Two Mile Road	X		X		X (0.5 km)		High
12 – Prairie Grove Rd 54N		X		X	X (0.2 km)		Moderate
13 – 58N Residence		X		X	X (0.3 km)		Moderate
14 – Residences on 58N		X		X	X (0.3 km)		Moderate
<p>NOTES:</p> <p><b>Access:</b> Viewpoints along primary roads or travel corridors (High)   Viewpoints along secondary roads and travel corridors (Moderate)</p> <p><b>Type of Activity and Frequency:</b> Trails, cabins and campgrounds; areas for fishing, hunting, traditional use, swimming, boating and other active or passive recreation areas; or residences and populated areas that are: Frequently visited (High)   Less frequently visited (Moderate)</p> <p><b>Viewing Distance:</b> Closest tower within foreground of 0-1 km (High)   Closest tower within mid-ground of 1-8 km (Moderate)</p>							

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### 4.7.2.2 Field Studies and Analysis Results

Fourteen priority viewpoints were field verified to photo-document and assess the existing visual condition (see Appendix F for photos of the baseline conditions in each visual sensitive unit [VSU]). Viewpoints within the LAA ranged from low to moderate visual sensitivity, with one viewpoint assessed as “low” (VSC of 4), 12 viewpoints assessed as “moderate” (VSC of 3) and one viewpoint whose view to the proposed project was obstructed (Table 4-84). Views from viewpoints with a “moderate” VSC rating are important to viewers and it is likely that there will be concern if they are altered.

**Table 4-84: Visual Sensitivity Class Determinations**

Viewpoint	BR	VCon	VR	VAC	VSC
1 – Hutterite Colony I	L	H	L	M	Moderate (3)
2 – Access to Sundown Lake & Grave Site	L	M	M	H	Low (4)
3 – Ridgeland Cemetery	L	M	M	M	Moderate (3)
4 – La Verendrye Golf Club	L	M	M	M	Moderate (3)
5 – Oakwood Golf Course & Campground	N/A, View Obstructed (vegetation)	N/A, View Obstructed (vegetation)	N/A, View Obstructed (vegetation)	N/A, View Obstructed (vegetation)	N/A, View Obstructed (vegetation)
6 – Ste. Genevieve	N/A, View Obstructed (vegetation)	N/A, View Obstructed (vegetation)	N/A, View Obstructed (vegetation)	N/A, View Obstructed (vegetation)	N/A, View Obstructed (vegetation)
7 – Hutterite Colony II	L	M	L	L	Moderate (3)
8 – Hutterite Colony III	M	M	M	M	Moderate (3)
9 – MacDonald Road Residence	L	M	M	M	Moderate (3)
10 – TransCanada Trail Courchaine Bridge	L	H	M	M	Moderate (3)
11 – Red River Floodway at Chrypko Dr. & Two Mile Rd	L	H	M	M	Moderate (3)
12 – Prairie Grove Rd 54N	L	H	L	M	Moderate (3)
13 – 58N Residence	L	H	M	M	Moderate (3)
14 – Residences on 58N	L	H	M	M	Moderate (3)
NOTES: H – high BR – biophysical rating M – moderate VCon – visual condition L – low VR – viewer rating N/A – not applicable VAC – visual absorption capability VSC – visual sensitivity class					

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### Landscape Character Classification

Nearly all of the viewpoints were determined to have the central field of views toward the Project that are Rural/Pastoral with minimal to distinguishable levels of built interventions and development. No viewpoints were considered to be Urban/Industrial in landscape character. Views were largely characterized by dirt-road networks, minimal forest cover and extensive farmland (Table 4-85). Existing transmission line towers or telephone lines were visible in many of the viewpoints assessed, though at a low to moderate prominence. The extent of baseline alteration visible in the central field of view from each priority viewpoint ranges from none to 24%, with an average of 6.8% across all viewpoints.

**Table 4-85: Landscape Character Class Determinations**

Viewpoint	Primary Visual Characteristics	Baseline Landscape Character Class	Baseline Alteration (%)
1 – Hutterite Colony I	Farmland, residences/outbuildings, shelter belts	Rural/pastoral with distinguishable development	18.5
2 – Access to Sundown Lake & Grave Site	Forest, farmland, dirt road, telephone lines	Rural/pastoral with minimal development	23.6
3 – Ridgeland Cemetery	Small cemetery, road, some vegetative screening	Rural/pastoral with minimal development	8.9
4 – La Verendrye Golf Club	Grassy open spaces, some mixed coniferous and deciduous vegetative screening	Rural/pastoral with minimal development	0.0
5 – Oakwood Golf Course & Campground	Grassy open spaces, some mixed coniferous and deciduous vegetative screening, few visible structures	Rural/pastoral with minimal development	2.0
6 – Ste. Genevieve	Residences, road networks, coniferous and deciduous vegetative screening, telephone lines	Rural/pastoral with distinguishable development	13.3
7 – Hutterite Colony II	Grassy fields, mixed deciduous and coniferous forest cover, hydro towers	Rural/pastoral with minimal development	0.3
8 – Hutterite Colony III	Farmlands, coniferous trees, hydro towers	Rural/pastoral with minimal development	10.7
9 – MacDonald Road Residence	Farmlands, residences and road networks, some mixed deciduous and coniferous forest cover, telephone lines	Rural/pastoral with distinguishable development	14.3
10 – TransCanada Trail Courchaine Bridge	Grasslands, some mixed deciduous and coniferous forest cover, river, single small residence screened by vegetation, small radio tower	Rural/pastoral with minimal development	0.2
11 – Red River Floodway at Chrypko Dr. & Two Mile Rd	Grasslands, some forest cover, no visible infrastructural disturbances	Rural/pastoral	0.0

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**Table 4-85: Landscape Character Class Determinations**

Viewpoint	Primary Visual Characteristics	Baseline Landscape Character Class	Baseline Alteration (%)
12 – Prairie Grove Rd 54N	Farmland, dirt road network, small signage, no forest cover	Rural/pastoral with minimal development	1.9
13 – 58N Residence	Farmland, residences, some mixed deciduous and coniferous forest cover, hydro towers	Rural/pastoral with distinguishable development	0.4
14 – Residences on 58N	Farmland, residences, hydro towers some coniferous forest cover	Rural/pastoral with distinguishable development	0.8

### 4.7.2.3 Baseline Visual Quality Summary

Policy and planning documents relevant to the LAA, as well as other literature, indicate that visual quality is important to the quality of life and sense of place of residents and are important to tourists and recreationalists. All of the municipal development plans reviewed indicated that recreation, maintaining green spaces and rural aesthetic qualities are important aspects of the plan. NEB Guidelines require that projects regulated under the *National Energy Board Act* must identify any predicted visual or other aesthetic effects of the project on the study area.

In total, 89 candidate viewpoints were identified for consideration in the visual quality assessment. Further evaluation of 14 of these the viewpoints was conducted to characterize potential views using qualitative and quantitative criteria.

With 12 of 14 viewpoints classified as having views with moderate visual sensitivity, it is likely that visual quality in the LAA is important to the public and stakeholders and there is a likelihood that visual alterations will be of concern. No viewpoints were identified as being of very low, high or very high visual sensitivity.

The viewshed from all of the priority viewpoints was mainly rural, characterized by open, extensive fields, low topographic variation and little vegetative variety. The primary land use as visible from each of the viewpoints is agricultural. However, scenic views are an important attraction for a number of viewpoints in the study including the golf courses (viewpoints 4 and 5), Ridgeland Cemetery (viewpoint 3), Red River Floodway (viewpoint 11) as well as a number of residences (viewpoints 7, 8 and 9).

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Environmentally Sensitive Sites  
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### 5.0 Environmentally Sensitive Sites

Environmentally sensitive sites are locations, features, areas, activities or facilities that are identified to be socially or economically important or sensitive to disturbance and require protection and mitigation during Project construction and operation. The sites were identified based on desktop studies and field research, baseline investigations and public involvement programs and First Nation and Metis involvement processes and included Traditional Local Knowledge.

Sensitive sites located adjacent to transmission line ROWs and in the immediate vicinity of other Project components are included. These sites are to be accounted for, when planning for activities such as bypass trails, borrow pits, and marshalling yards. If sensitive sites become affected by the Project, they will be assessed for environmental effect and appropriate mitigation measures applied.

In order to provide protection during the construction and maintenance and operation phases of the Project, environmentally sensitive sites will be included in the Environmental Protection Plan. Sites adjacent to the PDA have been identified as Environmentally Sensitive Sites to ensure long-term protection from potential damage during operations and maintenance activities associated with the Project. Sites/areas identified include: mining interests (*i.e.*, mineral leases, permits, aggregate deposits), designated/conservation lands and/or recreational areas/linear facilities (*e.g.*, heritage rivers, canoe routes), Crown land encumbrances, forestry research sites, private forest lands (woodlots) and planted or natural forest areas (shelterbelts). No ESS are identified for agriculture. See Appendix G for a complete listing of these sites.

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Summary  
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### 6.0 Summary

This technical data report provides a description of the socio-economic and land use baseline in support of subsequent development of an EIS for the MMTP. The process of conducting a desktop analysis consisted of the review of existing mapped data base sources already compiled for land and resource use, including agricultural resource use, as well as an initial review of 2006 and 2011 Census data on related to socio-economic factors (e.g., population, occupied dwellings and labour force). The scope of the desktop review focused on the RAA identified for the Project.

The review of desktop data sources for the socio-economic and land use environment for this technical data report was limited primarily to the review of available mapped information derived from GIS data sources. Information on the socio-economic environment was supplemented by review of provincial government websites and other statistical data sources, previous reports and EAs. Literature reviews and primary research (e.g., KPIs) were undertaken to supplement baseline information gathered. Field work in support of developing the EIS for the Project included:

- Driving field survey to confirm residences and building types and facilities;
- A helicopter survey to address the absence of private forest land value data;
- Confirmation of identified viewpoints locations on the landscape; and
- Photo-documentation and an assessment of existing visual condition based on landscape character and existing visible human interventions.

An overview of baseline information on Socio-economic topics were identified and described in Section 2.0. Valued components were identified for the socio-economic environment that have reasonable potential to interact with the Project and that are important factors in EA development in Section 1.1. The spatial boundaries were presented in Section 2.3. Methods were presented in Section 3.0 consisting of a description of data and sources by socio-economic VC, field studies undertaken, general literature review, and data limitations. Primary research was discussed in Section 3.2 and data analysis by VC component was described in Section 3.3. Baseline conditions by VC component were described in Section 4.0. Environmentally sensitive sites have been identified for Project development (Section 5.0). In total, this report provides a comprehensive description of the existing conditions for the socio-economic environment for the MMTP RAA.

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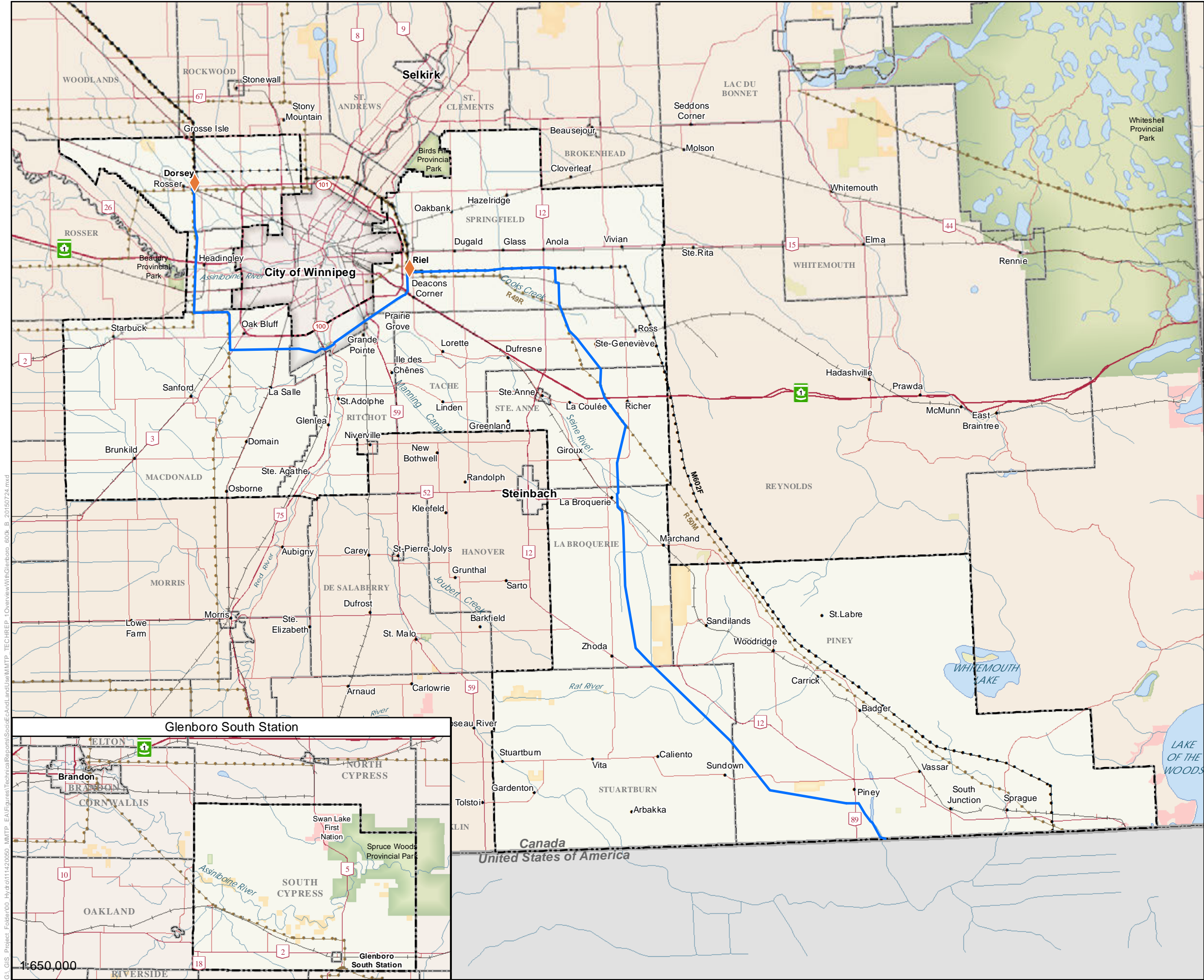
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## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### Assessment Area

- Socio-economic Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park
- Rural Municipality

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 28, 2015

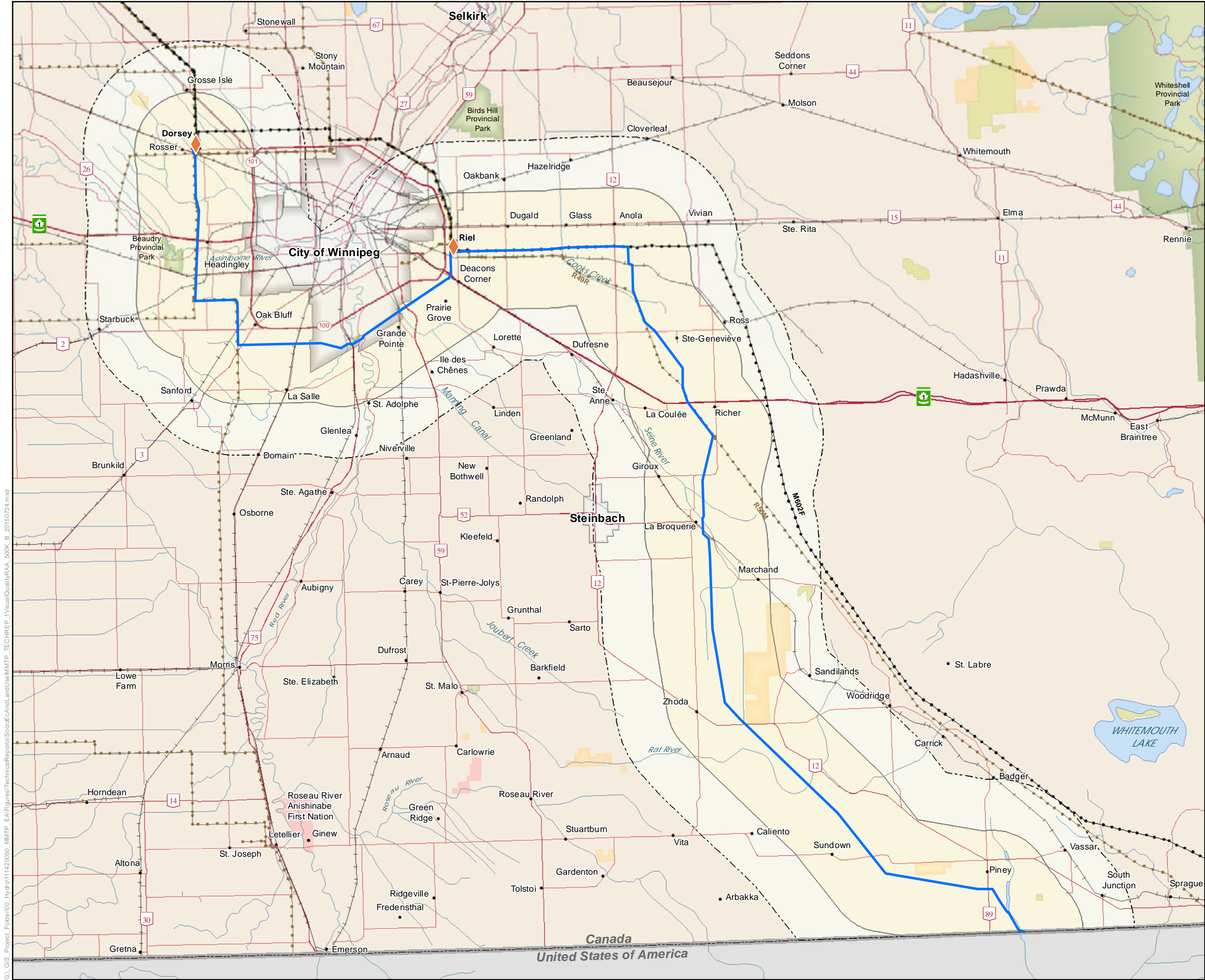


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## Socio-economic Assessment Area





Manitoba-Minnesota  
Transmission Project

Project Infrastructure

- ◆ Converter Station (Existing)
- Final Preferred Route (FPR)

Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

Assessment Area

- Visual Quality Local Assessment Area
- Visual Quality Regional Assessment Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 24, 2015

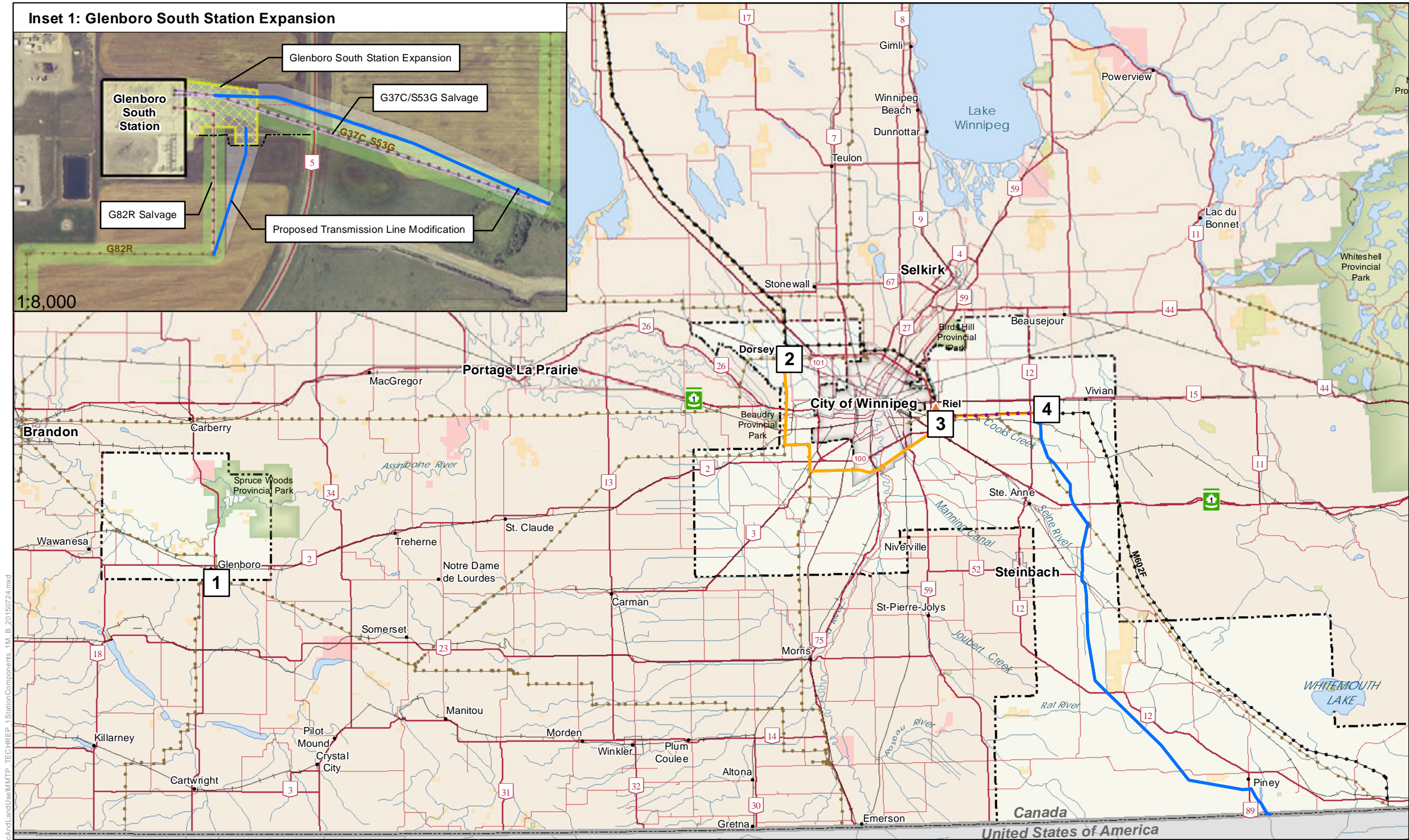


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Visual Quality  
Assessment Areas





## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- Final Preferred Route (Existing Corridor)
- Final Preferred Route (New Right-of-way)
- Transmission Line (Salvage)
- M602F Modification (New)
- Existing/New Glenboro South Station Access
- New Glenboro South Station Access
- G37C Salvage
- G82R Salvage
- Station Expansion
- Existing ROW
- Project Development Area (PDA)

### Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### Assessment Area

- Project Development Area (PDA)
- Socio-economic Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park
- Provincial Boundary

Coordinate System: UTM Zone 14N NAD83  
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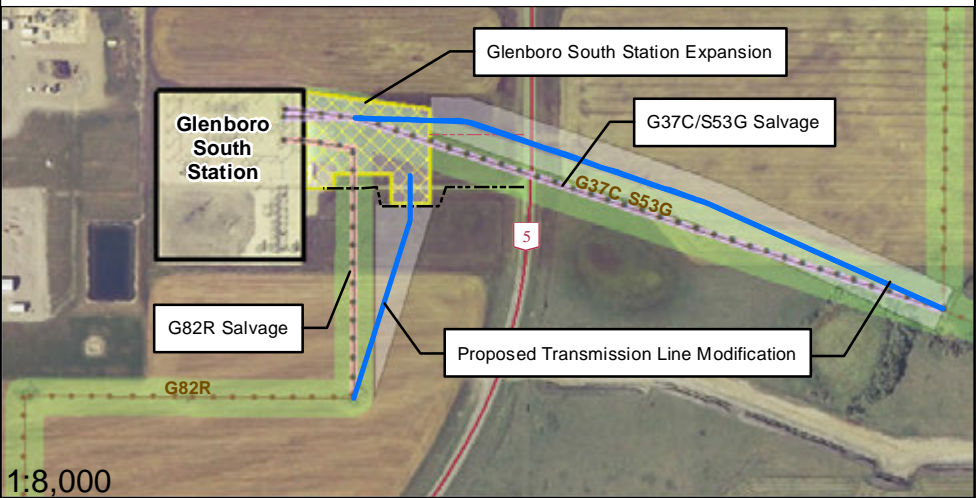
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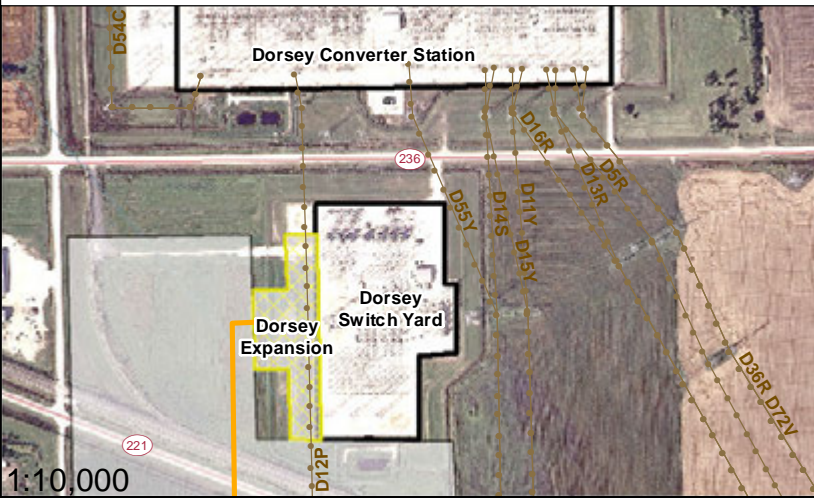
### Assessment Area and Project Components

Map 4-1

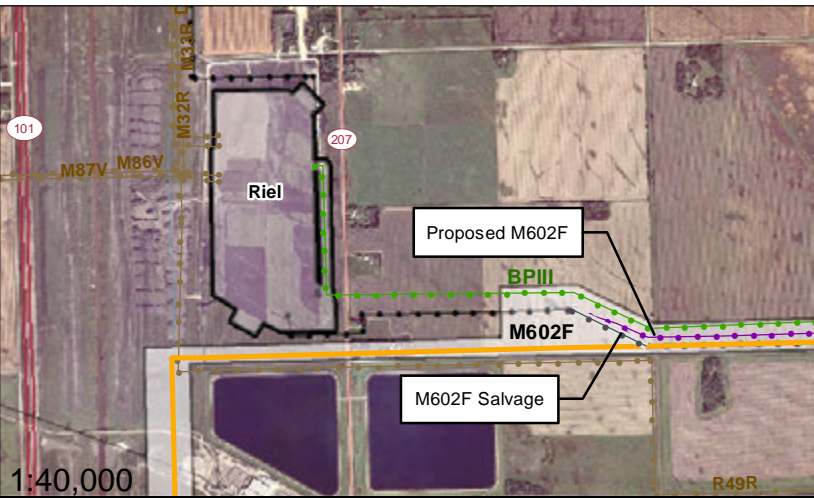
#### Inset 1: Glenboro South Station Expansion



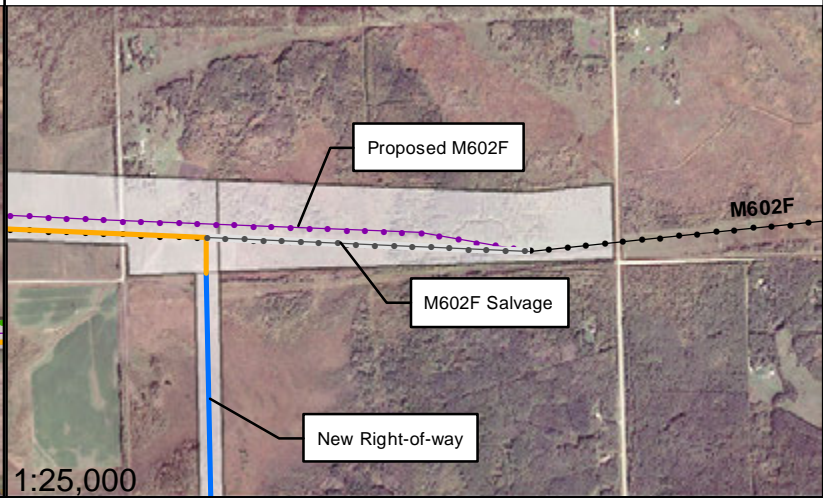
#### Inset 2: Dorsey Expansion



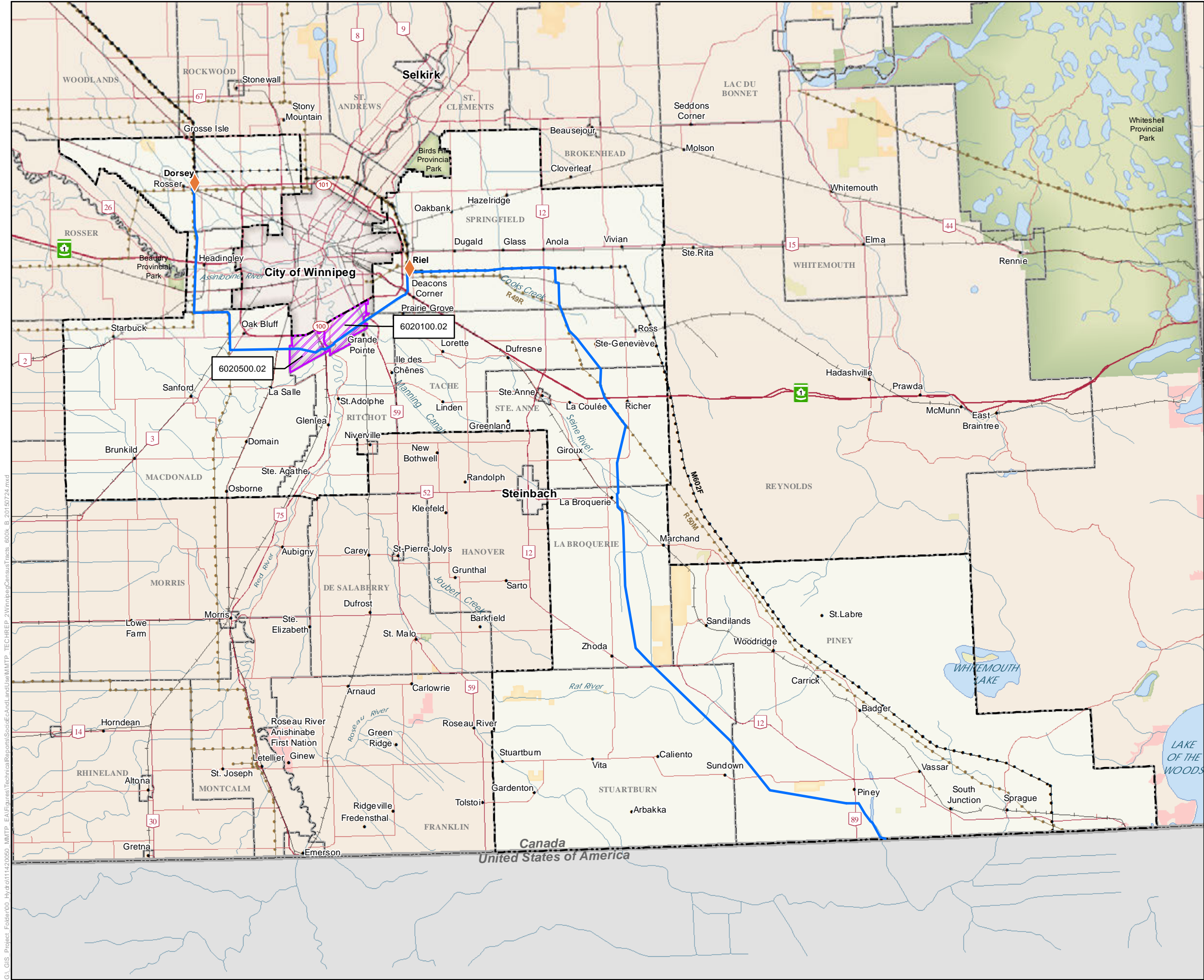
#### Inset 3: Riel and M602F Modifications



#### Inset 4: M602F Extension and Salvage







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## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- ◆ Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### Winnipeg Census Tracts

- ▨ Census Tract

### Assessment Area

- ▭ Socio-economic Assessment Area

### Landbase

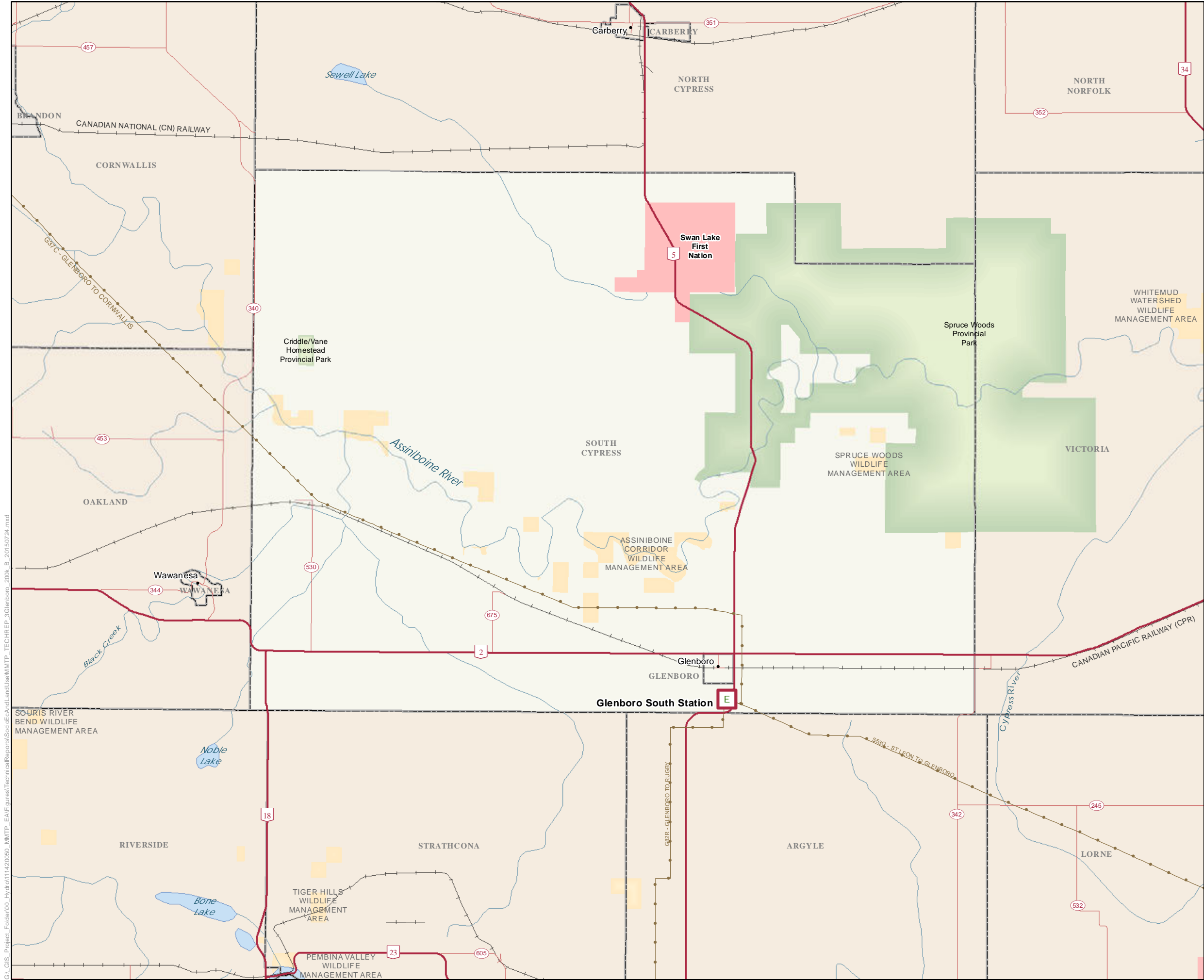
- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- ▭ City
- ▭ First Nation Lands
- ▭ Ecological Reserve
- ▭ Wildlife Management Area
- ▭ Provincial Park
- ▭ Rural Municipality

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 24, 2015

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## City of Winnipeg Census Tract Boundaries



## Manitoba-Minnesota Transmission Project










### Infrastructure

-  Electrical Station
-  Existing Transmission Line

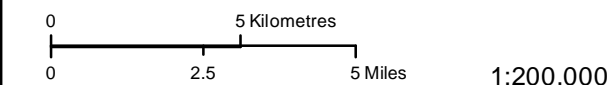
### Assessment Area

-  Socio-Economic Regional Assessment Area

### Landbase

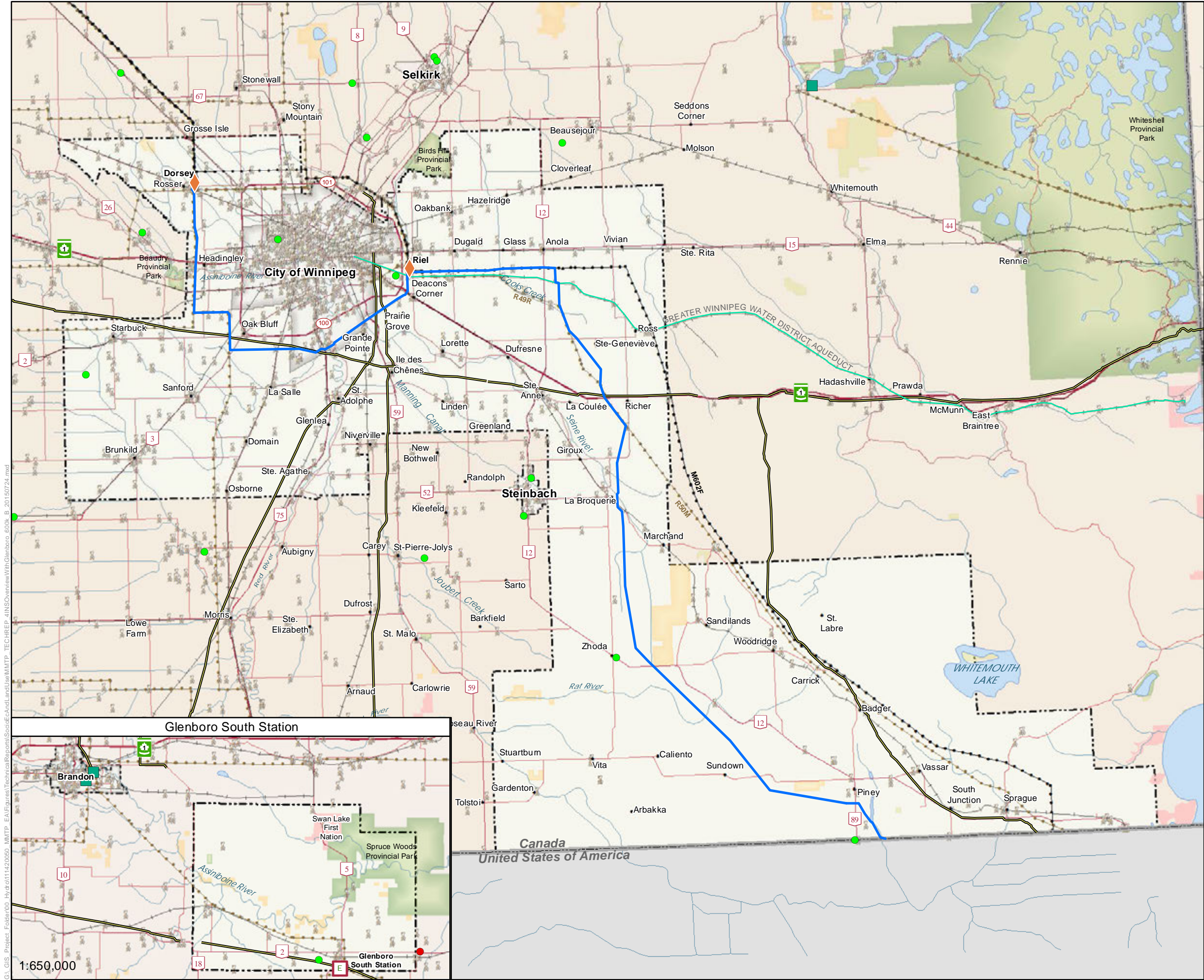
-  Community
-  Railway
-  Provincial Highway
-  Provincial Road
-  City / Town
-  First Nation
-  Wildlife Management Area
-  National/Provincial Park
-  Rural Municipality

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 24, 2015



## Glenboro South Station Assessment Area





Manitoba-Minnesota  
Transmission Project

Project Infrastructure

- Converter Station (Existing)
- Final Preferred Route (FPR)

Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

Utility Infrastructure

- Broadcast/Communication Tower/Antenna
- Aerodromes
- Solid Waste Sites (RM of Victoria)
- Transformer Station (Brandon)
- Aqueduct
- Oil and Gas Pipelines

Assessment Area

- Infrastructure and Services Assessment Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- First Nation Lands
- City
- Ecological Reserve
- Wildlife Management Area
- Provincial Park

Coordinate System: UTM Zone 14N NAD83  
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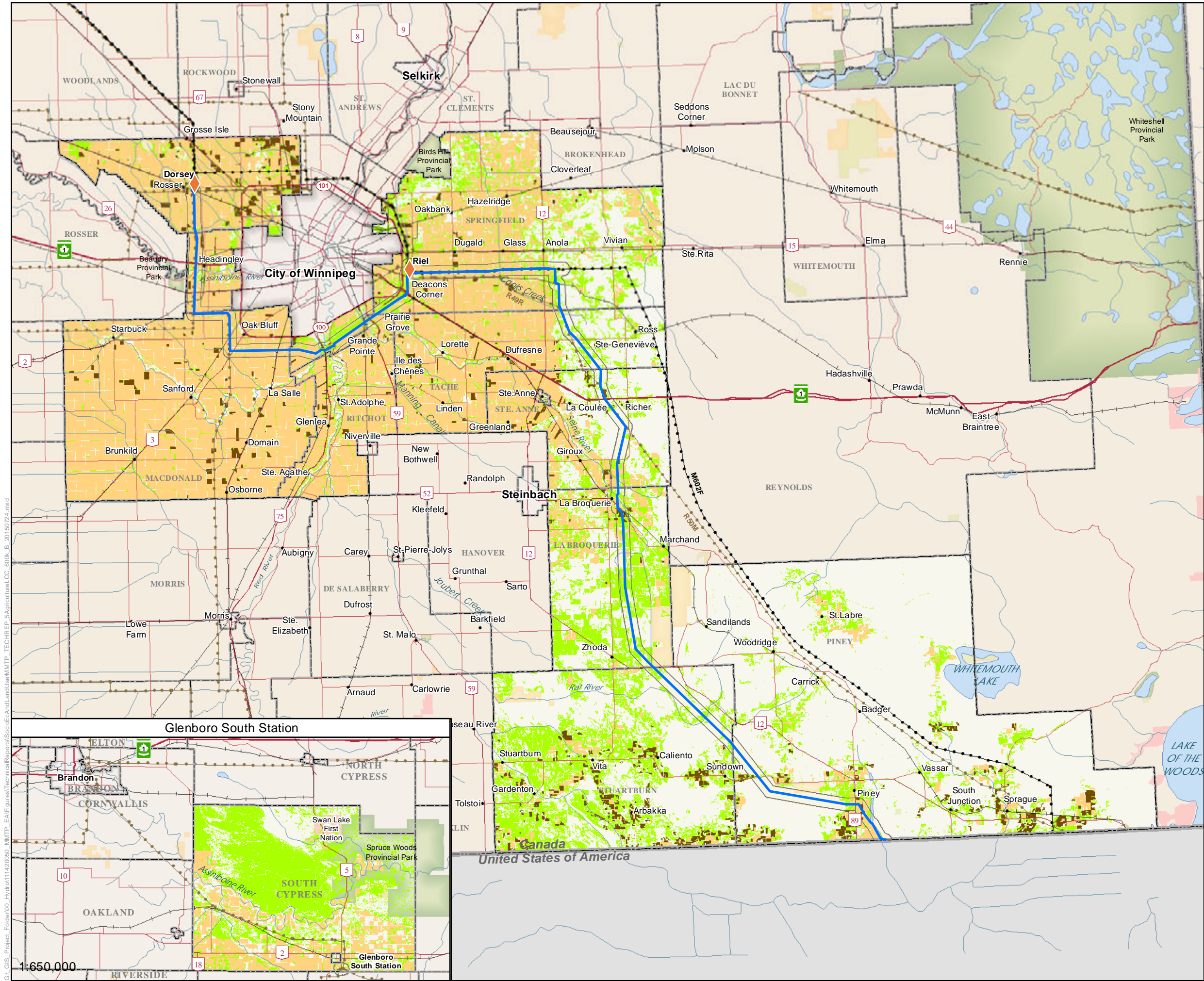
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Infrastructure and Services

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## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### Land Cover Classification

- Perennial Cropland and Pasture
- Annual Cropland
- Range and Grassland

### Assessment Area

- Agriculture  
Local Assessment Area
- Agriculture  
Regional Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park
- Rural Municipality

Source:  
1. Land Use/ Land Cover Landsat TM Maps, 2005, Manitoba Conservation  
Department, Manitoba Remote Sensing Centre(comp.)

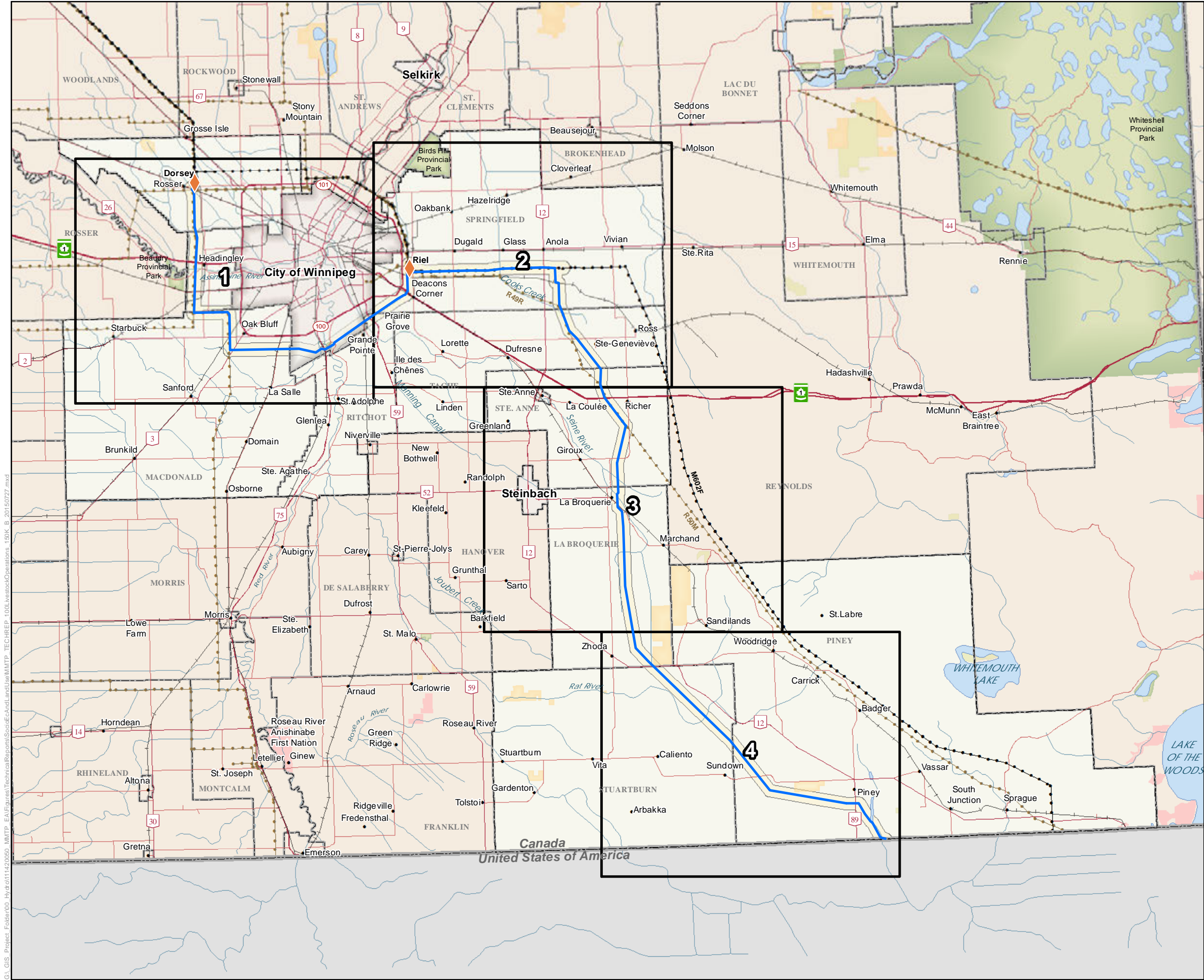
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Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 28, 2015

0 10 Kilometres  
0 5 10 Miles

1:600,000

### Annual and Perennial Cropping





Manitoba-Minnesota  
Transmission Project

Project Infrastructure

- Converter Station (Existing)
- Final Preferred Route (FPR)

Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

Map Series Index - 1:150,000

- Map Series Tile

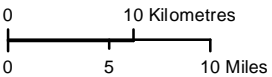
Assessment Area

- Agriculture
- Local Assessment Area
- Agriculture
- Regional Assessment Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park
- Rural Municipality

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 28, 2015



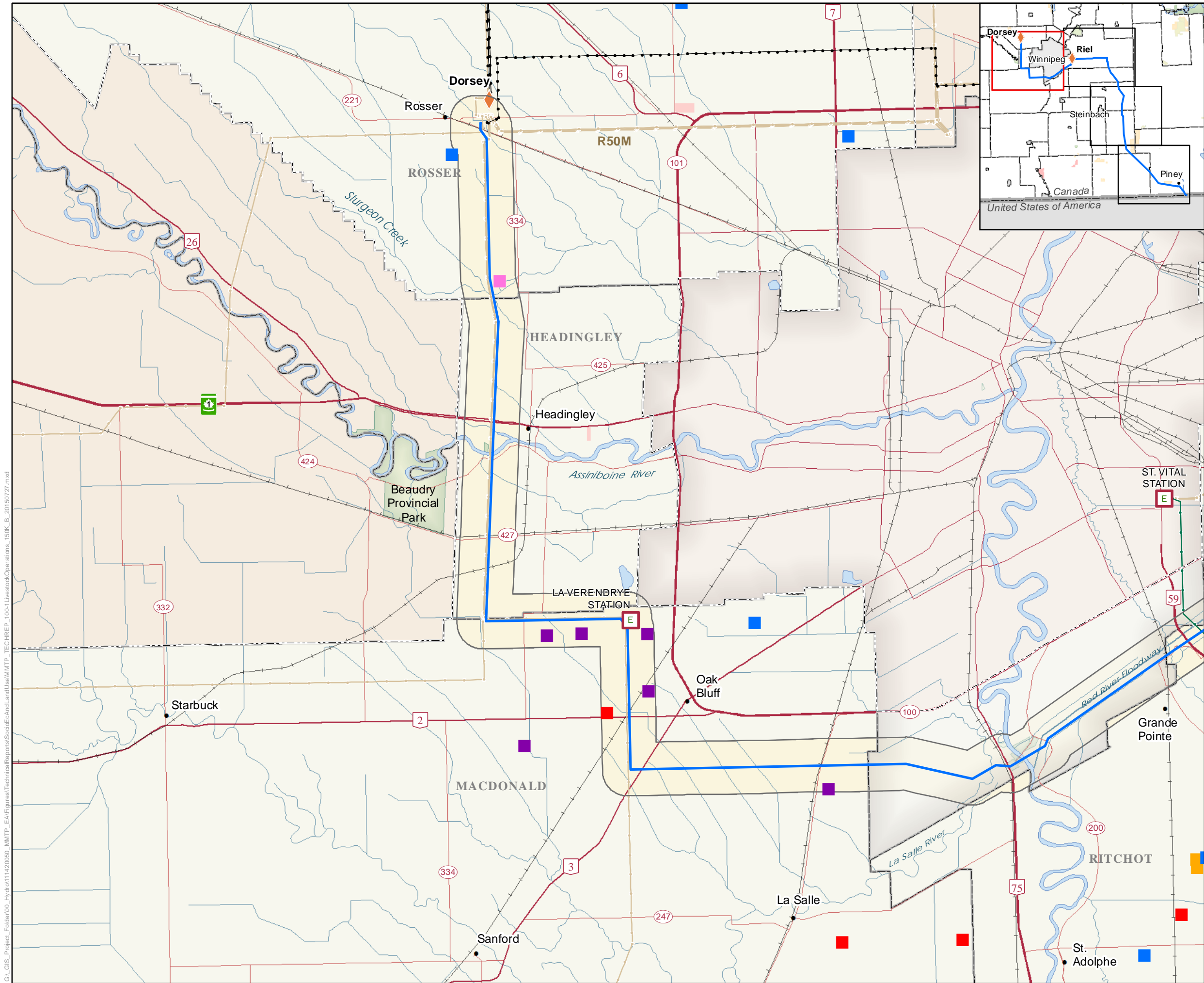
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Index of Map Series  
Known Livestock Operations

Map Series 4-100



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## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- Electrical Station
- Bipole III Transmission Line (Approved)
- St. Vital Transmission Complex (V95L)
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### Livestock Operations

- |                      |   |
|----------------------|---|
| Hog <sup>1</sup>     | Hutterite Colony - Mixed Operation <sup>4</sup> |
| Dairy <sup>2</sup>   | Unclassified <sup>4</sup>                       |
| Chicken <sup>3</sup> |   |

### Assessment Areas

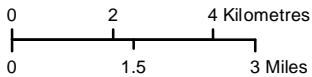
- Agriculture Local Assessment Area
- Agriculture Regional Assessment Area

### Landbase

- |                      |                          |
|----------------------|--------------------------|
| Community            | Ecological Reserve       |
| Trans Canada Highway | Crown Land               |
| Provincial Highway   | Wildlife Management Area |
| Provincial Road      | Provincial Park          |
| City / Town          | Watercourse              |
| First Nation Lands   | Waterbody                |
| Rural Municipality   |                          |

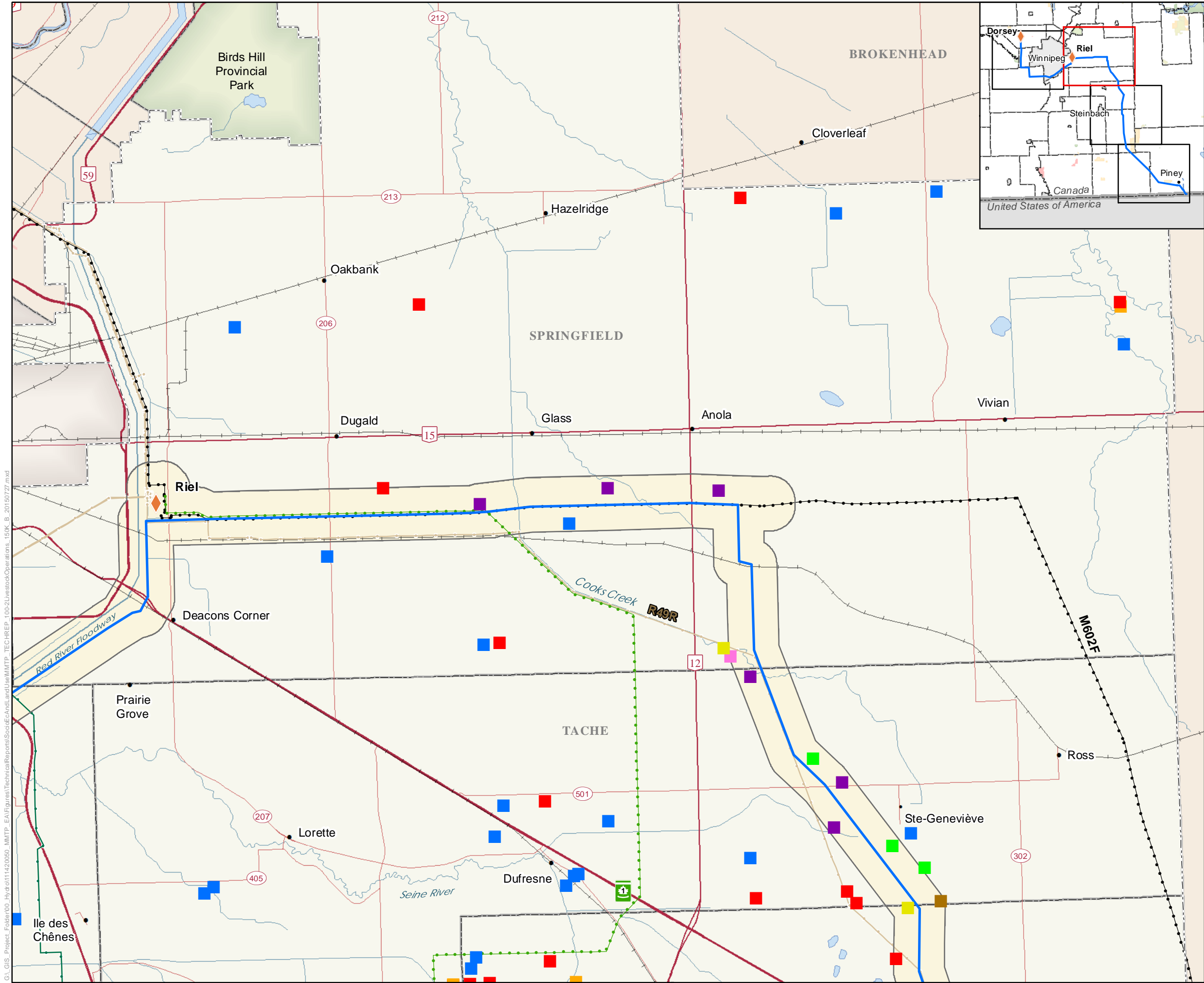
Source:  
1. Hog, 2015, Manitoba Pork Council  
2. Dairy, 2015, Dairy Farmers of Manitoba  
3. Chicken, 2015, Manitoba Chicken Producers  
4. Cattle, Horses, Hutterite Colony Mixed Operation, Trout, Unclassified, 2014-15, Stantec and Public Engagement Process. (Data acquired through air photo interpretation and public engagement focused on the LAA only)

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: August 06, 2015



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### Known Livestock Operations



## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- Bipole III Transmission Line (Approved)
- St. Vital Transmission Complex (V95L)
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### Livestock Operations

- Hog<sup>1</sup>
- Dairy<sup>2</sup>
- Chicken<sup>3</sup>
- Cattle<sup>4</sup>
- Hutterite Colony - Mixed Operation<sup>4</sup>
- Horses<sup>4</sup>
- Trout<sup>4</sup>
- Unclassified<sup>4</sup>

### Assessment Areas

- Agriculture Local Assessment Area
- Agriculture Regional Assessment Area

### Landbase

- Community
- Trans Canada Highway
- Provincial Highway
- Provincial Road
- City / Town
- First Nation Lands
- Rural Municipality
- Ecological Reserve
- Crown Land
- Wildlife Management Area
- Provincial Park
- Watercourse
- Waterbody

Source:  
1. Hog, 2015, Manitoba Pork Council  
2. Dairy, 2015, Dairy Farmers of Manitoba  
3. Chicken, 2015, Manitoba Chicken Producers  
4. Cattle, Horses, Hutterite Colony Mixed Operation, Trout, Unclassified, 2014-15, Stantec and Public Engagement Process. (Data acquired through air photo interpretation and public engagement focused on the LAA only)

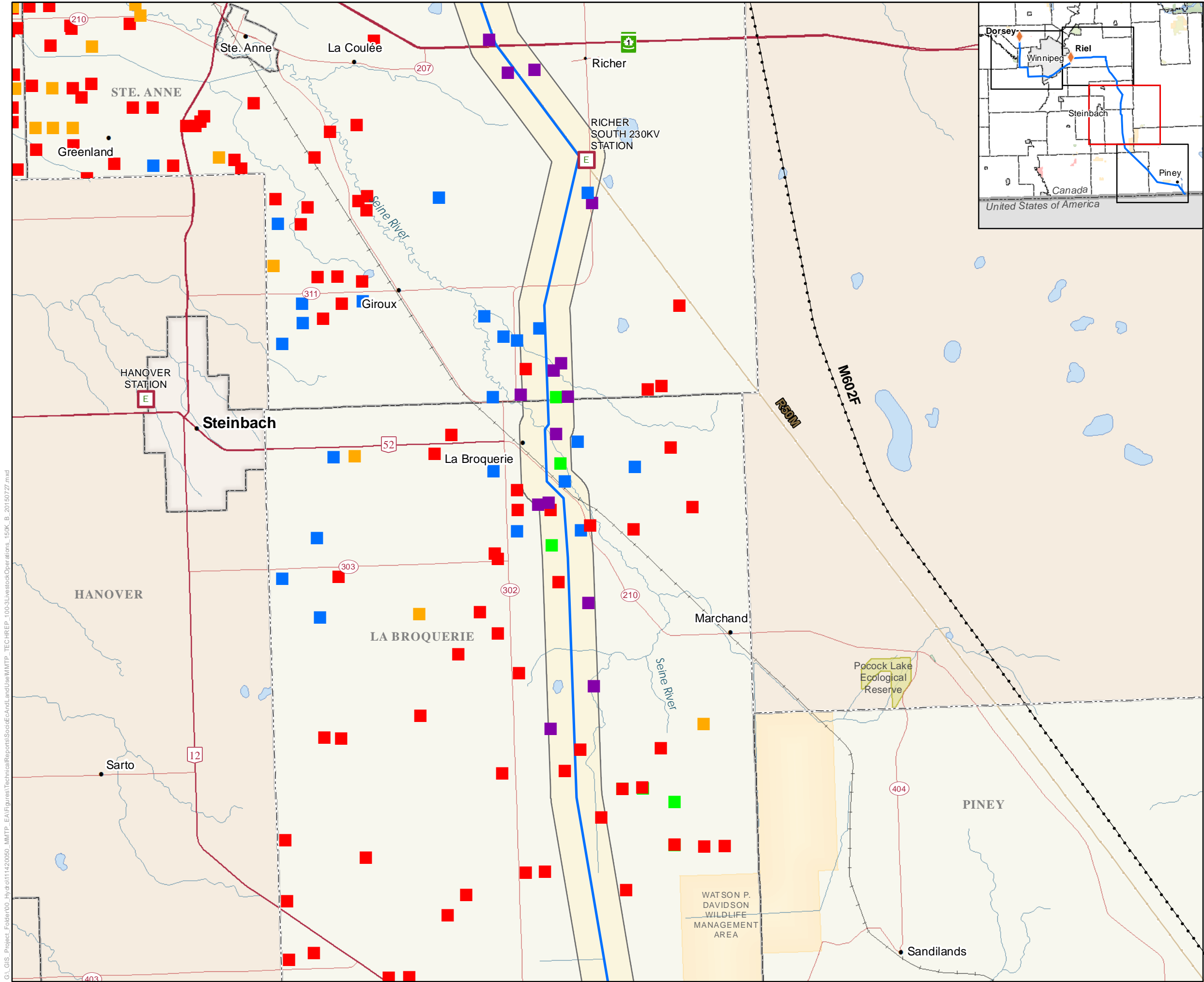
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Data Source: MBHydro, ProvMB, NRCAN  
Date Created: August 06, 2015

0 2 4 Kilometres  
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### Known Livestock Operations



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## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- Electrical Station
- Bipole III Transmission Line (Approved)
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### Livestock Operations

- Hog<sup>1</sup>
- Dairy<sup>2</sup>
- Chicken<sup>3</sup>
- Cattle<sup>4</sup>
- Unclassified<sup>4</sup>

### Assessment Areas

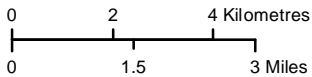
- Agriculture Local Assessment Area
- Agriculture Regional Assessment Area

### Landbase

- Community
- Trans Canada Highway
- Provincial Highway
- Provincial Road
- City / Town
- First Nation Lands
- Rural Municipality
- Ecological Reserve
- Crown Land
- Wildlife Management Area
- Provincial Park
- Watercourse
- Waterbody

Source:  
1. Hog, 2015, Manitoba Pork Council  
2. Dairy, 2015, Dairy Farmers of Manitoba  
3. Chicken, 2015, Manitoba Chicken Producers  
4. Cattle, Horses, Hutterite Colony Mixed Operation, Trout, Unclassified, 2014-15, Stantec and Public Engagement Process. (Data acquired through air photo interpretation and public engagement focused on the LAA only)

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: August 06, 2015

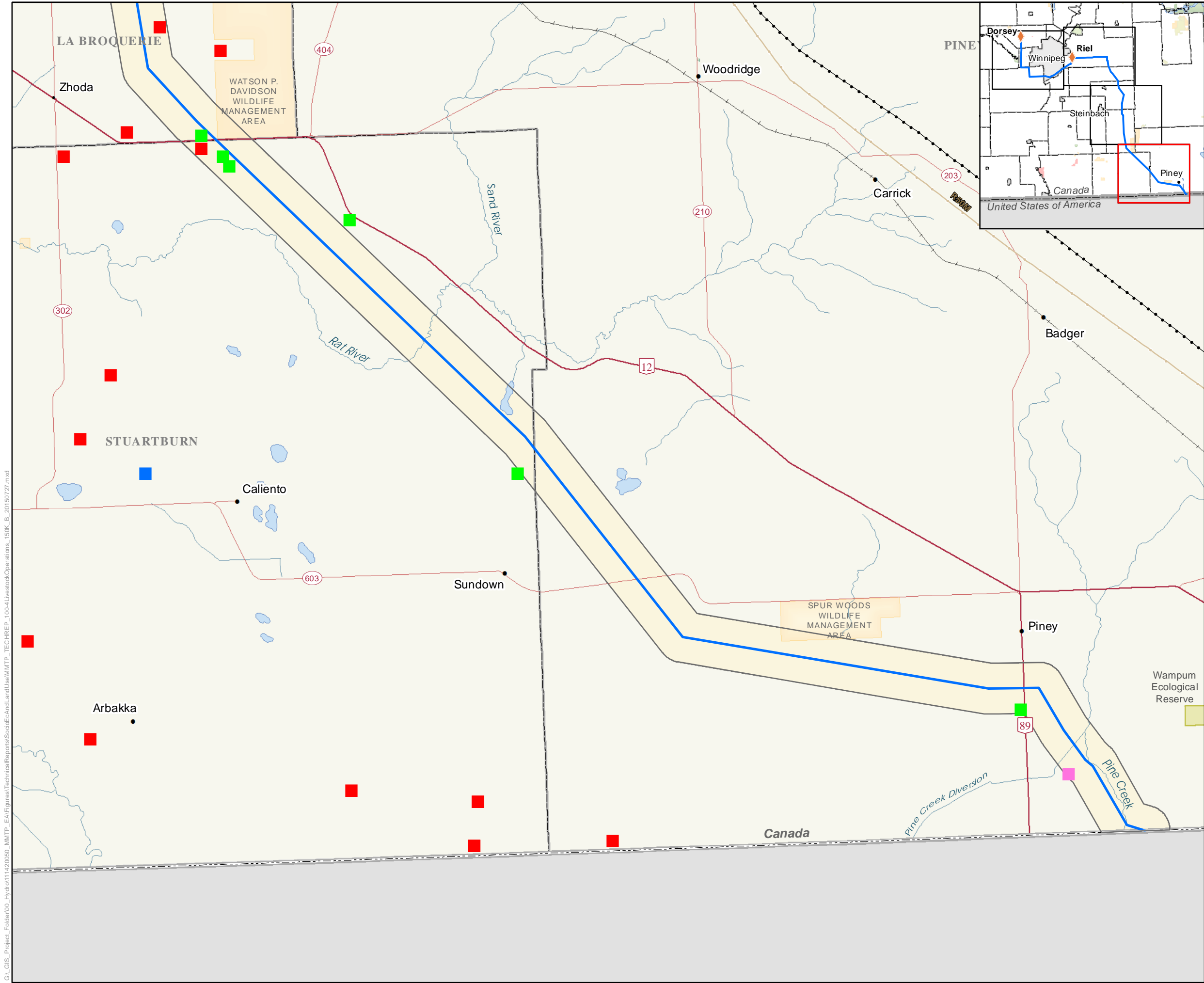


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### Known Livestock Operations



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## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- ◆ Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### Livestock Operations

- Hog<sup>1</sup>
- Dairy<sup>2</sup>
- Cattle<sup>4</sup>
- Hutterite Colony - Mixed Operation<sup>4</sup>

### Assessment Areas

- Agriculture Local Assessment Area
- Agriculture Regional Assessment Area

### Landbase

- Community
- Trans Canada Highway
- Provincial Highway
- Provincial Road
- City / Town
- First Nation Lands
- Rural Municipality
- Ecological Reserve
- Crown Land
- Wildlife Management Area
- Provincial Park
- Watercourse
- Waterbody

Source:  
1. Hog, 2015, Manitoba Pork Council  
2. Dairy, 2015, Dairy Farmers of Manitoba  
3. Chicken, 2015, Manitoba Chicken Producers  
4. Cattle, Horses, Hutterite Colony Mixed Operation, Trout, Unclassified, 2014-15, Stantec and Public Engagement Process. (Data acquired through air photo interpretation and public engagement focused on the LAA only)

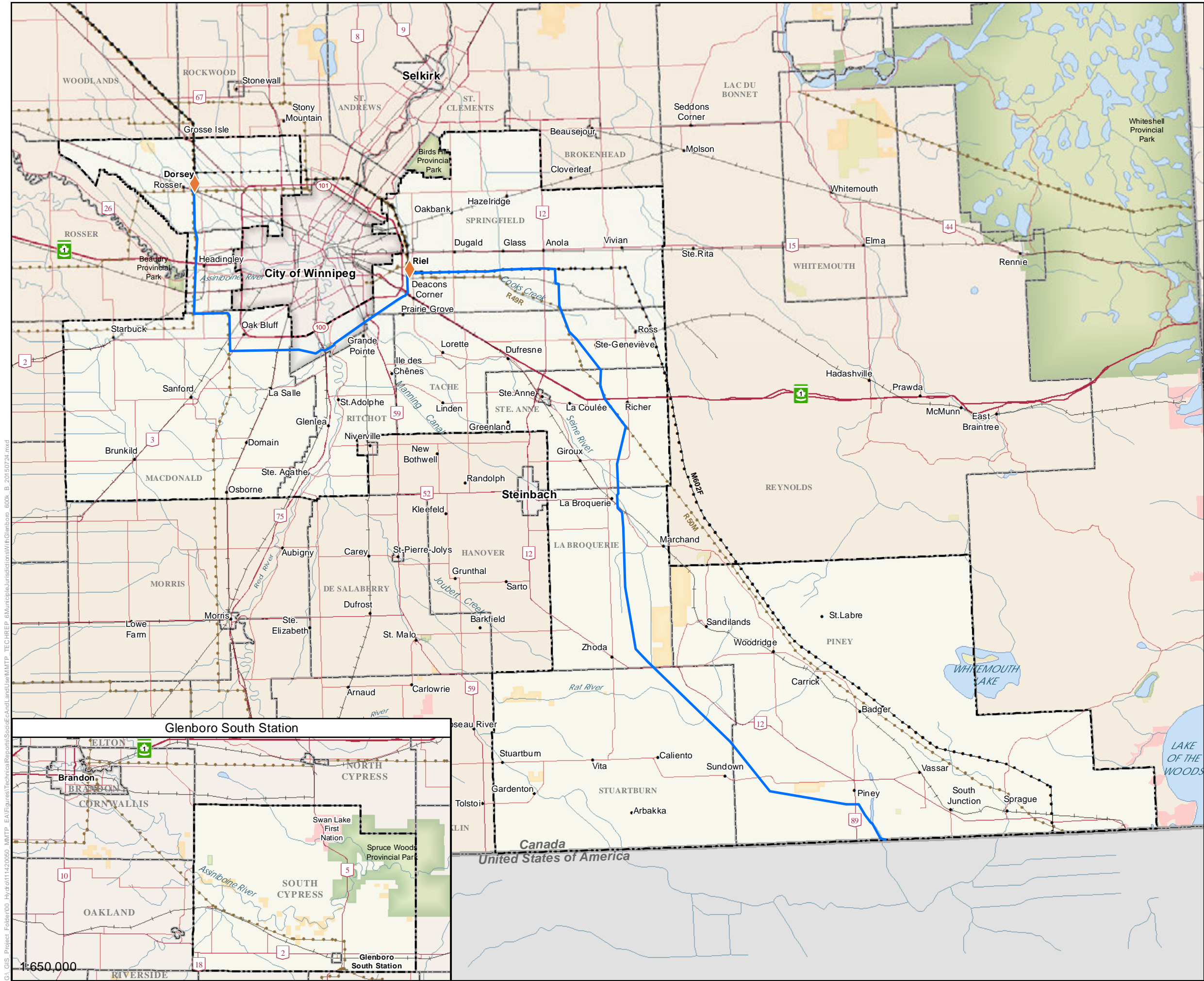
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Date Created: August 06, 2015

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### Known Livestock Operations



## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### Assessment Area

- Socio-economic Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park
- Rural Municipality

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 24, 2015

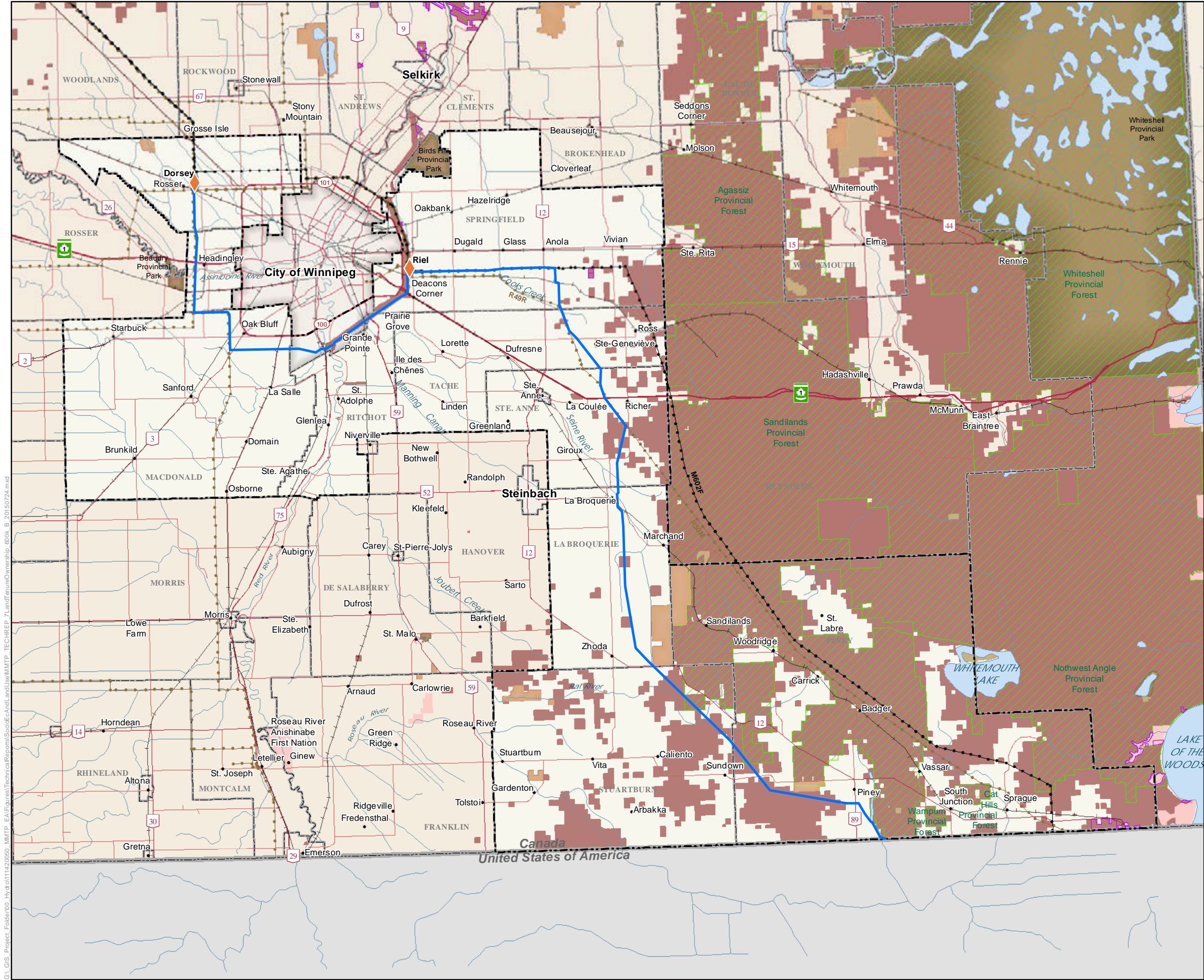


0 10 Kilometres  
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1:600,000

### Municipal Jurisdictions





## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- ◆ Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### Land Tenure / Ownership

- Treaty Land Entitlement
- Crown Land

### Assessment Area

- Socio-economic Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Forest
- Provincial Park
- Rural Municipality

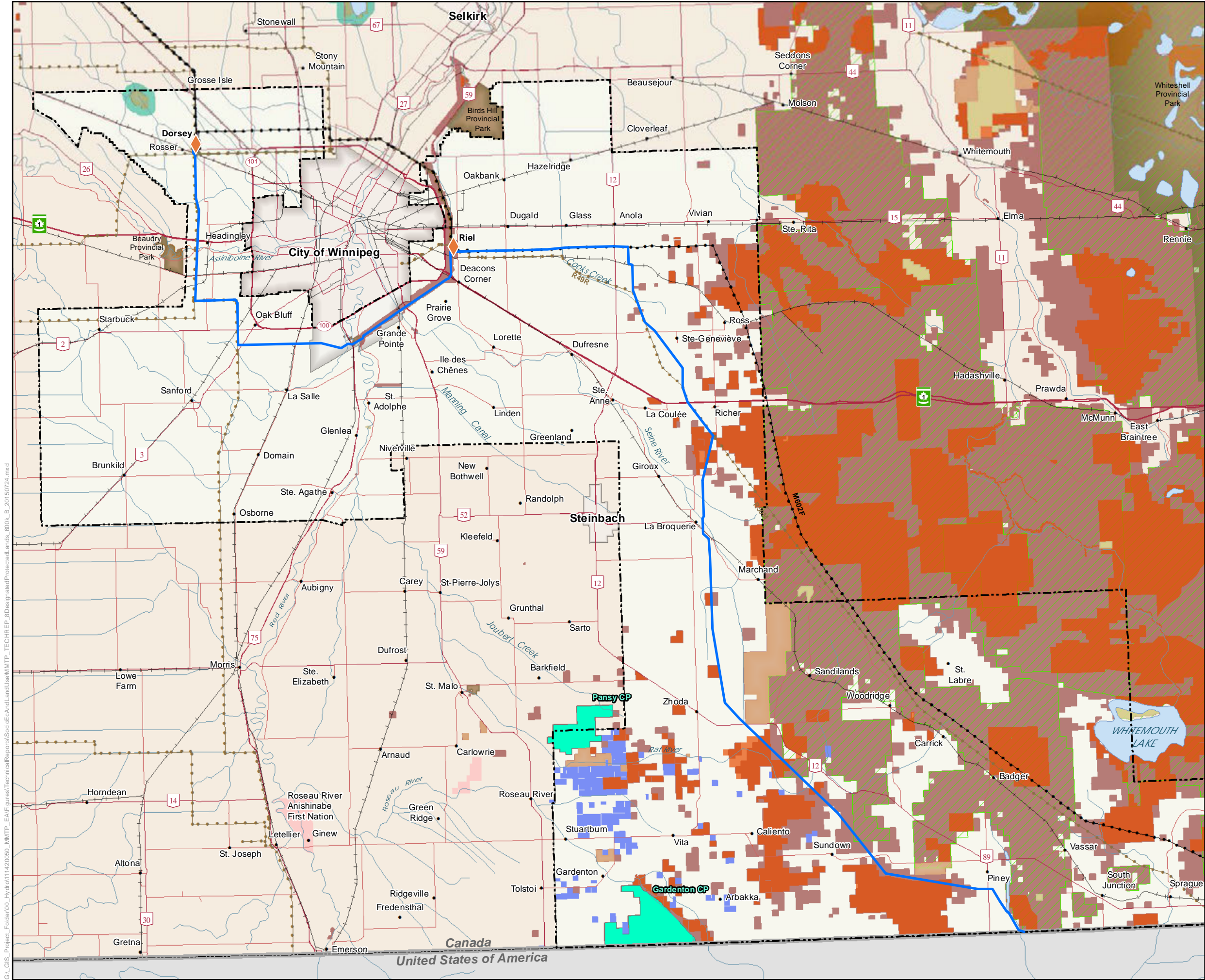
Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: August 06, 2015

0 10 Kilometres  
0 5 10 Miles

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## Land Tenure and Ownership





# Manitoba-Minnesota Transmission Project

## Project Infrastructure

- ◆ Converter Station (Existing)
- Final Preferred Route (FPR)

## Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

## Designated and Protected Lands

- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park
- Privately Owned Tall Grass
- CDC Important Bird Areas
- Community Pastures
- Candidate Protected Areas<sup>1</sup>
- Provincial Forest
- Manitoba Crown Lands

## Assessment Area

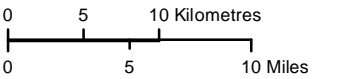
- Socio-economic Assessment Area

## Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City

Source:  
1. Candidate Protected Areas, 2013, Manitoba Conservation and Water Stewardship

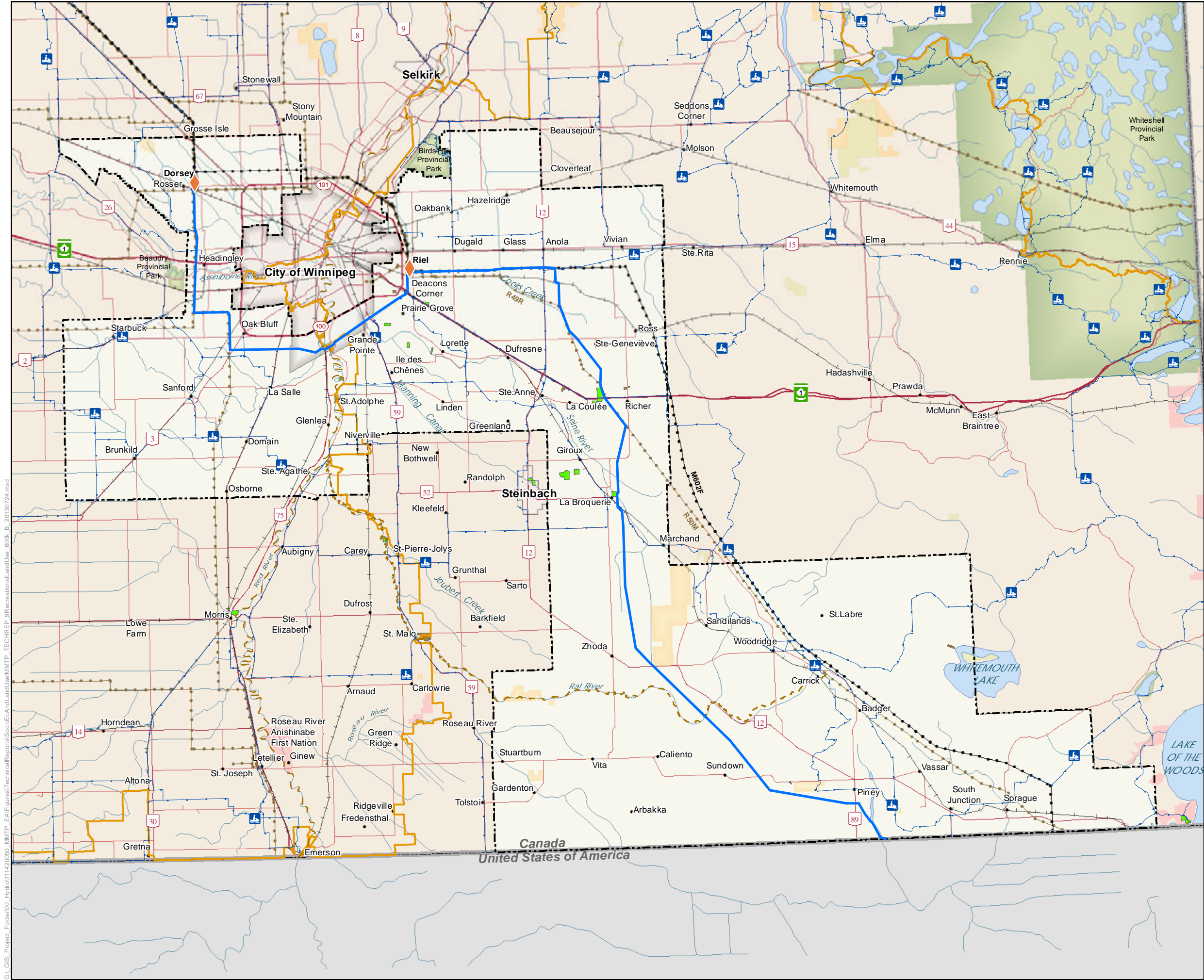
Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCan  
Date Created: August 06, 2015



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## Designated Lands and Candidate Protected Areas





# Manitoba-Minnesota Transmission Project

## Project Infrastructure

- ◆ Converter Station (Existing)
- Final Preferred Route (FPR)

## Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

## Land Use and Recreation

- Snowmobile Shelters
- Canoe Route
- Snowmobile Trails
- Trans Canada Trail
- Golf Course
- Campgrounds and Resorts
- Public Shooting Ground

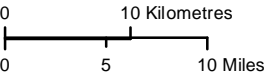
## Assessment Area

- Socio-economic Assessment Area

## Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park

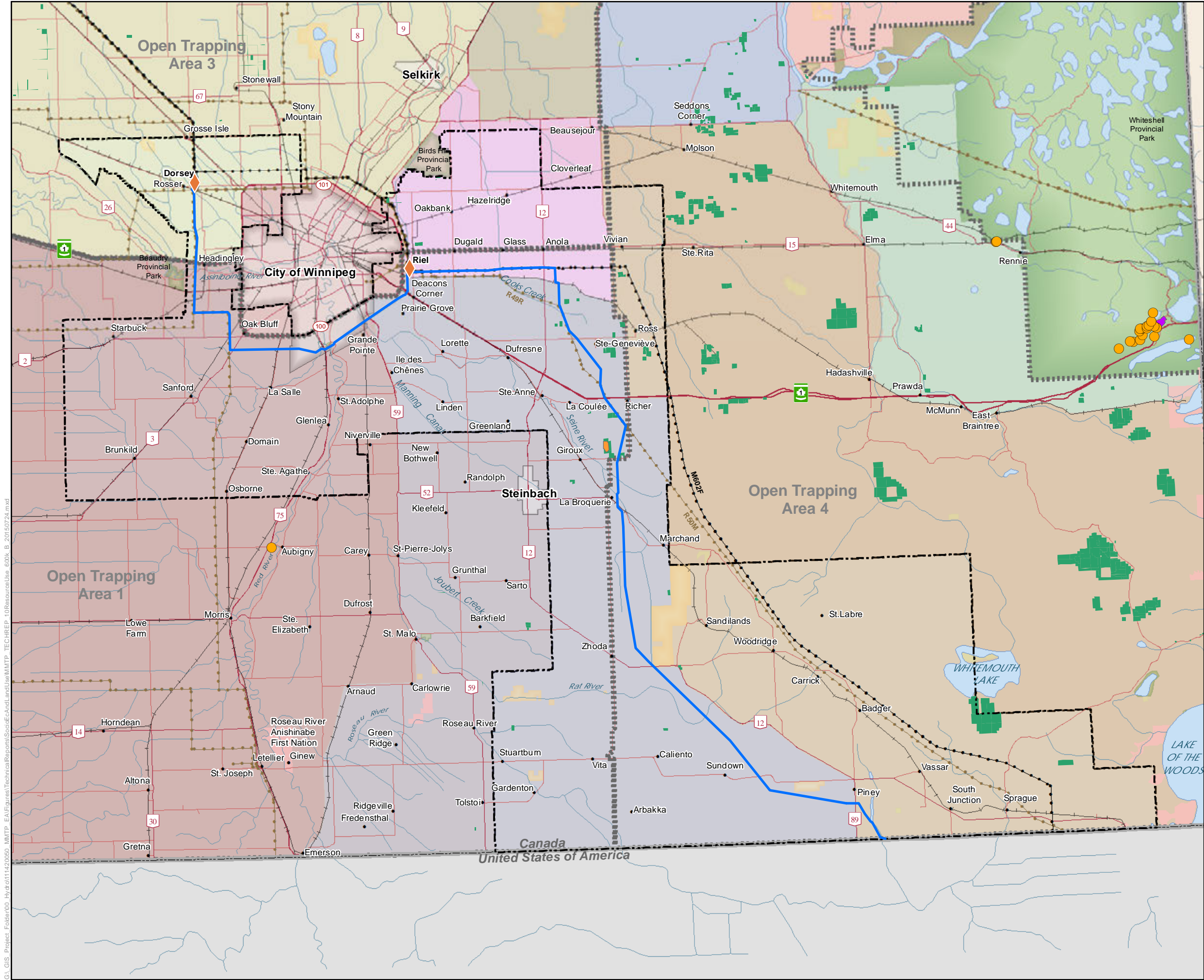
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Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 24, 2015



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## Recreational Land Use





## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### Trapping Areas

- Open Trapping Areas<sup>1</sup>

### Mineral Dispositions

- Mine Sites
- Giroux Peat Bog
- Mineral Leases<sup>2</sup>
- Mineral Exploration Licenses
- Quarry Leases

### Game Hunting Areas<sup>3</sup>

- |     |     |     |
|-----|-----|-----|
| 25B | 34  | 35  |
| 26  | 34A | 35A |
| 33  | 34C | 36  |
|     |     | 38  |

### Assessment Area

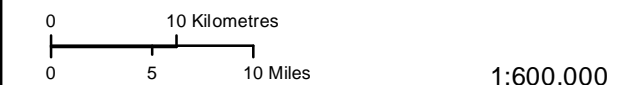
- Socio-economic Assessment Area

### Landbase

- |                    |                          |
|--------------------|--------------------------|
| Community          | City                     |
| Railway            | First Nation Lands       |
| Trans Canada       | Ecological Reserve       |
| Provincial Highway | Wildlife Management Area |
| Provincial Road    | Provincial Park          |

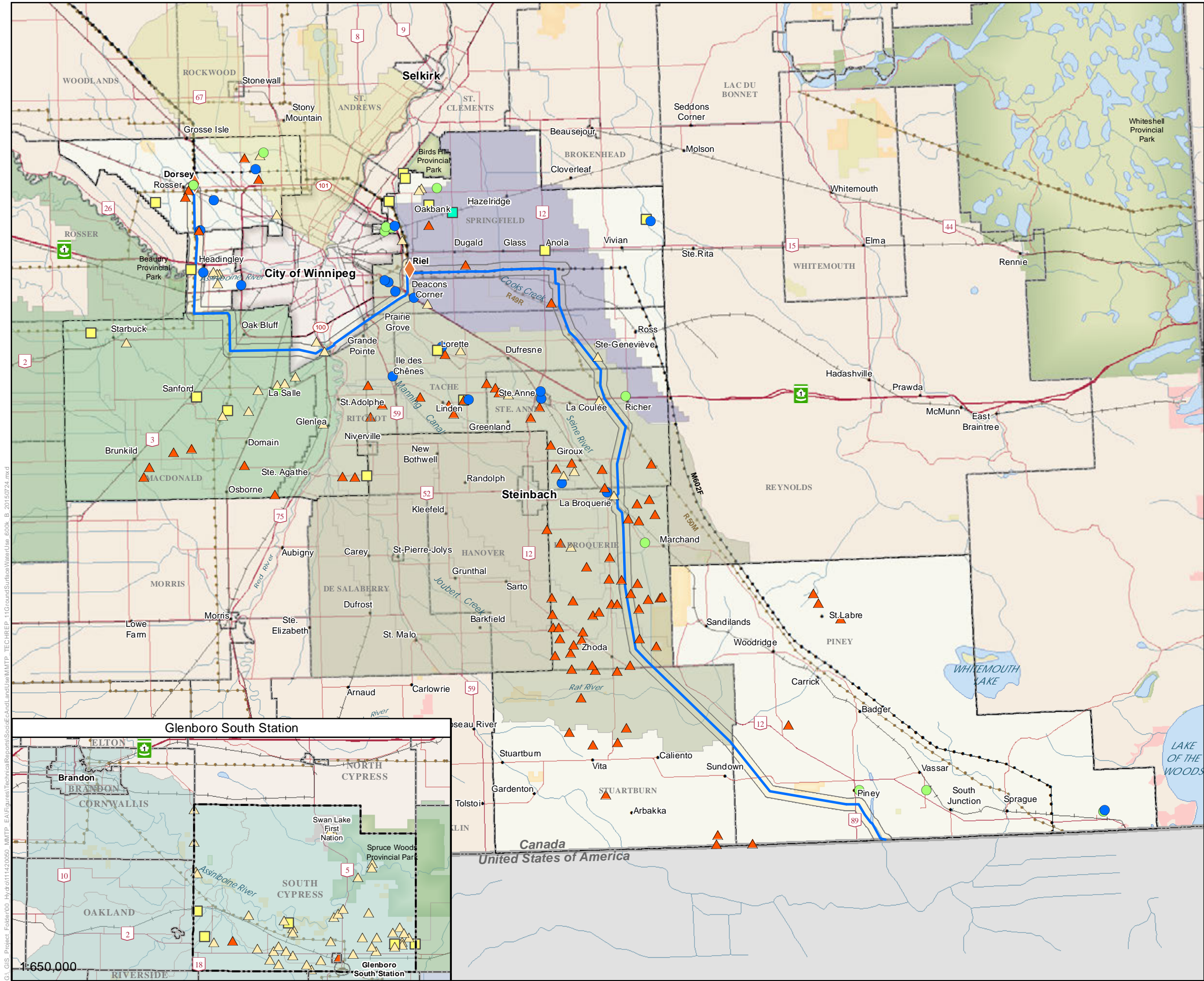
Source:  
 1. Open Trapping Areas, 2014, Manitoba Conservation and Water Stewardship  
 2. Mineral Leases, 2014, Manitoba Mineral Resources  
 3. Game Hunting Areas, 2000, Manitoba Conservation and Water Stewardship

Coordinate System: UTM Zone 14N NAD83  
 Data Source: MBHydro, ProvMB, NRCAN  
 Date Created: August 14, 2015



### Resource Use





## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### Groundwater and Surface Water Use <sup>1</sup>

- Agricultural
- Domestic
- Industrial
- Irrigation
- Municipal
- Other

### Conservation Districts

- Assiniboine Hills
- Cooks Creek
- East Interlake
- La Salle-Redboine
- Pembina Valley
- Seine-Rat River

### Assessment Area

- Land and Resource Use  
Local Assessment Area
- Land and Resource Use  
Regional Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park
- Rural Municipality

Source:  
1. Active Ground Water and Surface Water Withdrawal Sites, 2014. Manitoba  
Conservation and Water Stewardship, Water Use Licensing.

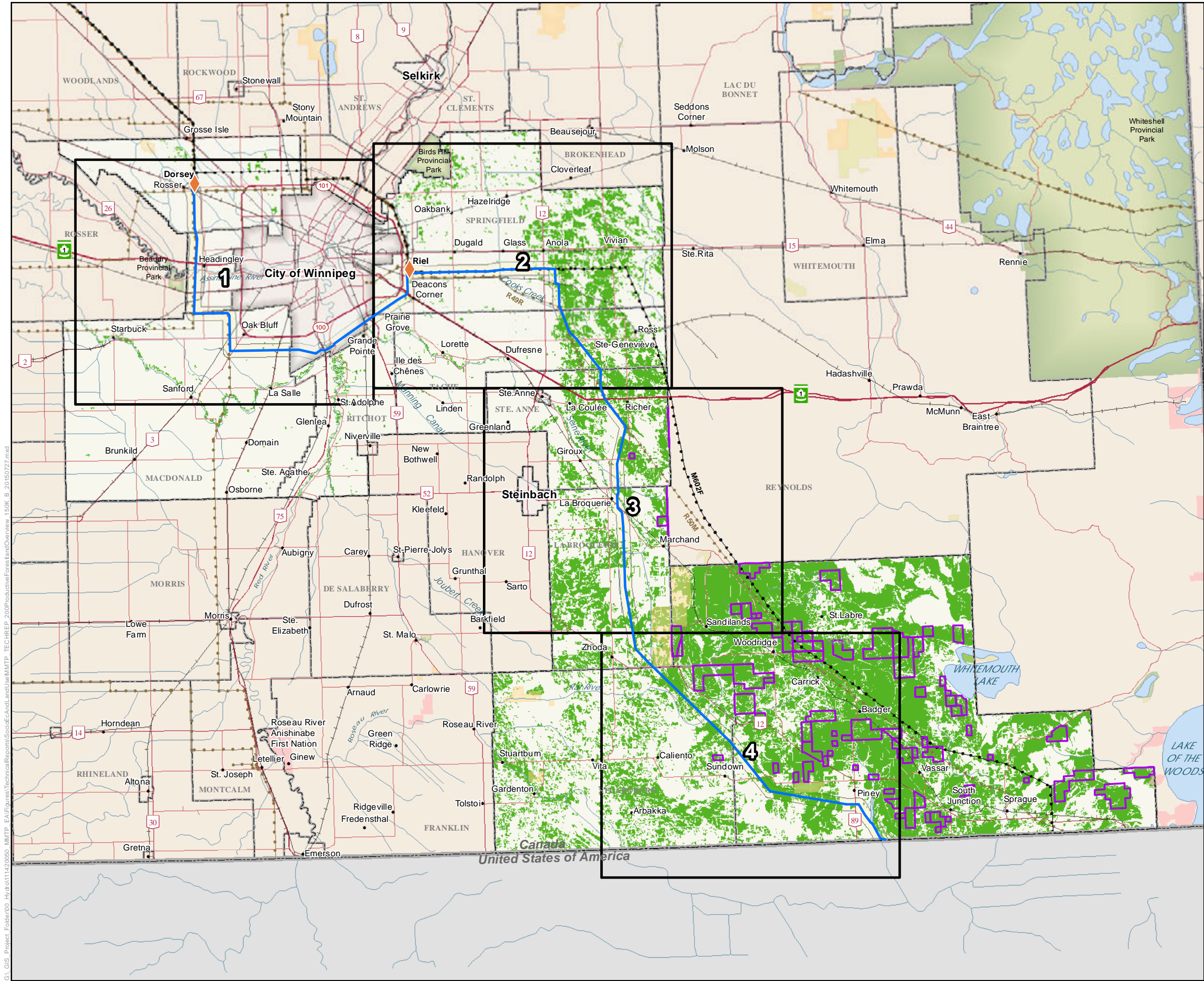
Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 24, 2015

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### Surface and Groundwater Use





## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### Map Series Index - 1:150,000

- Map Series Tile

### Productive Forestland

- Timber Sales Plan 2010-2015<sup>1</sup>
- Productive Forestland<sup>2</sup>

### Assessment Area

- Forestry Local Assessment Area
- Forestry Regional Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park
- Rural Municipality

Source:  
1. Timber Sale Plan for 2010-2015, 2013, Manitoba Conservation and Water Stewardship, Forestry Branch.  
2. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 27, 2015

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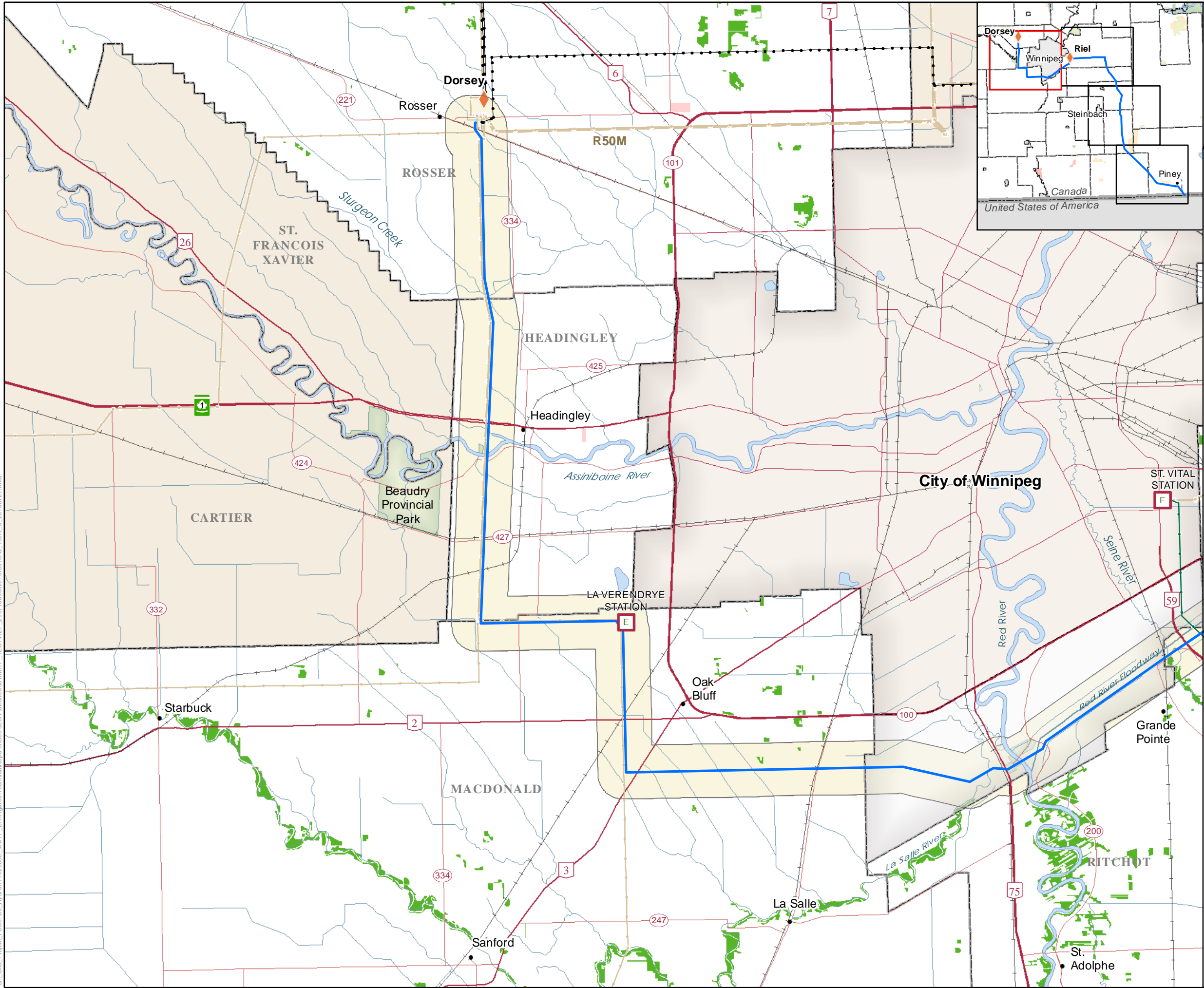
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## Index of Map Series Productive Forestland

Map Series 4-200



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## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- ◆ Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- Electrical Station
- St. Vital Transmission Complex (V95L)
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### Productive Forestland

- Timber Sales Plan 2010-2015 <sup>1</sup>
- Productive Forestland <sup>2</sup>

### Assessment Area

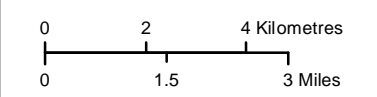
- Forestry Local Assessment Area
- Forestry Regional Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- First Nation
- City / Town
- National/Provincial Park
- Rural Municipality

Source:  
1. Timber Sale Plan for 2010-2015, 2013, Manitoba Conservation and Water Stewardship, Forestry Branch.  
2. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship

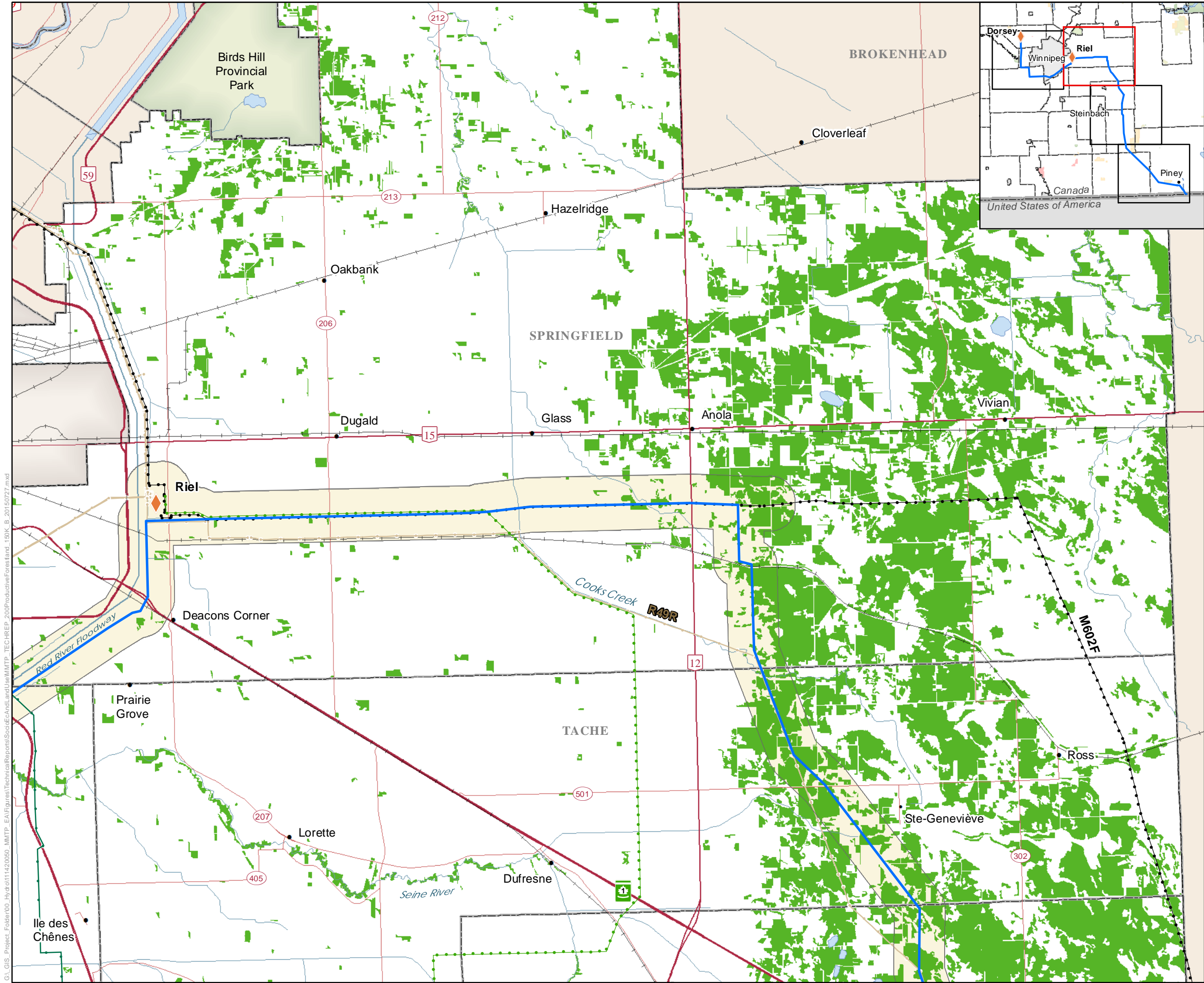
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Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 27, 2015



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## Productive Forestland





# Manitoba-Minnesota Transmission Project

**Project Infrastructure**

- Converter Station (Existing)
- Final Preferred Route (FPR)

**Infrastructure**

- Bipole III Transmission Line (Approved)
- St. Vital Transmission Complex (V95L)
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

**Productive Forestland**

- Timber Sales Plan 2010-2015 <sup>1</sup>
- Productive Forestland <sup>2</sup>

**Assessment Area**

- Forestry Local Assessment Area
- Forestry Regional Assessment Area

**Landbase**

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- First Nation
- City / Town
- National/Provincial Park
- Rural Municipality

**Source:**

- 1. Timber Sale Plan for 2010-2015, 2013, Manitoba Conservation and Water Stewardship, Forestry Branch.
- 2. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship

**Coordinate System:** UTM Zone 14N NAD83  
**Data Source:** MBHydro, ProvMB, NRCAN  
**Date Created:** July 27, 2015

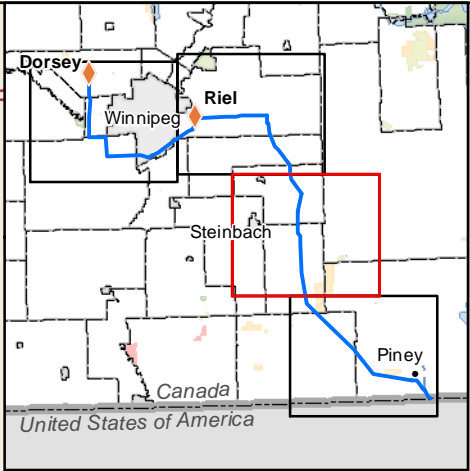
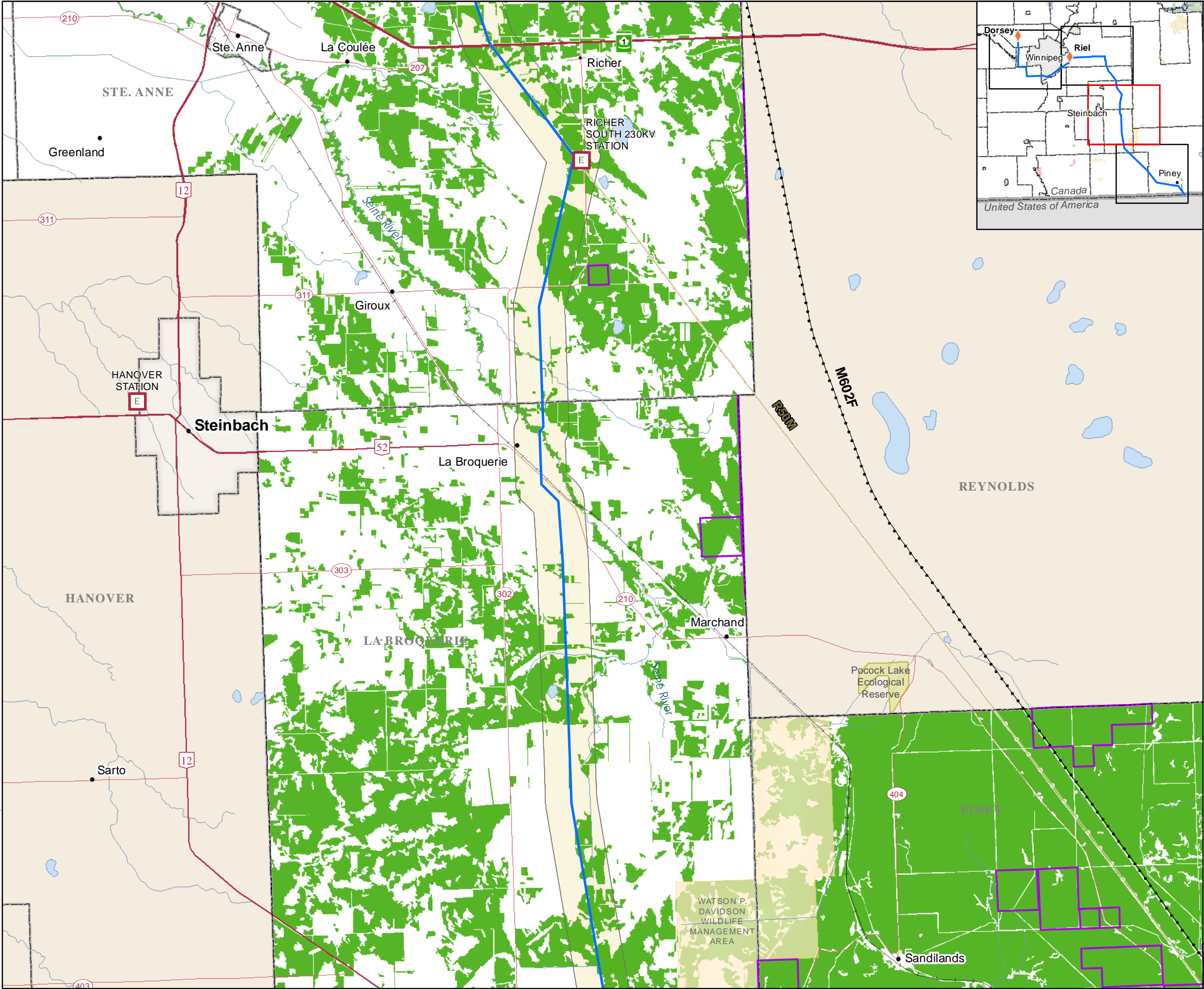
0 2 4 Kilometres

0 1.5 3 Miles

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## Productive Forestland

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## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- ◆ Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- ⓔ Electrical Station
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### Productive Forestland

- Timber Sales Plan 2010-2015 <sup>1</sup>
- Productive Forestland <sup>2</sup>

### Assessment Area

- Forestry Local Assessment Area
- Forestry Regional Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Ecological Reserve
- City / Town
- Wildlife Management Area
- National/Provincial Park
- Rural Municipality

Source:  
1. Timber Sale Plan for 2010-2015, 2013, Manitoba Conservation and Water Stewardship, Forestry Branch.  
2. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 27, 2015

0 2 4 Kilometres  
0 1.5 3 Miles

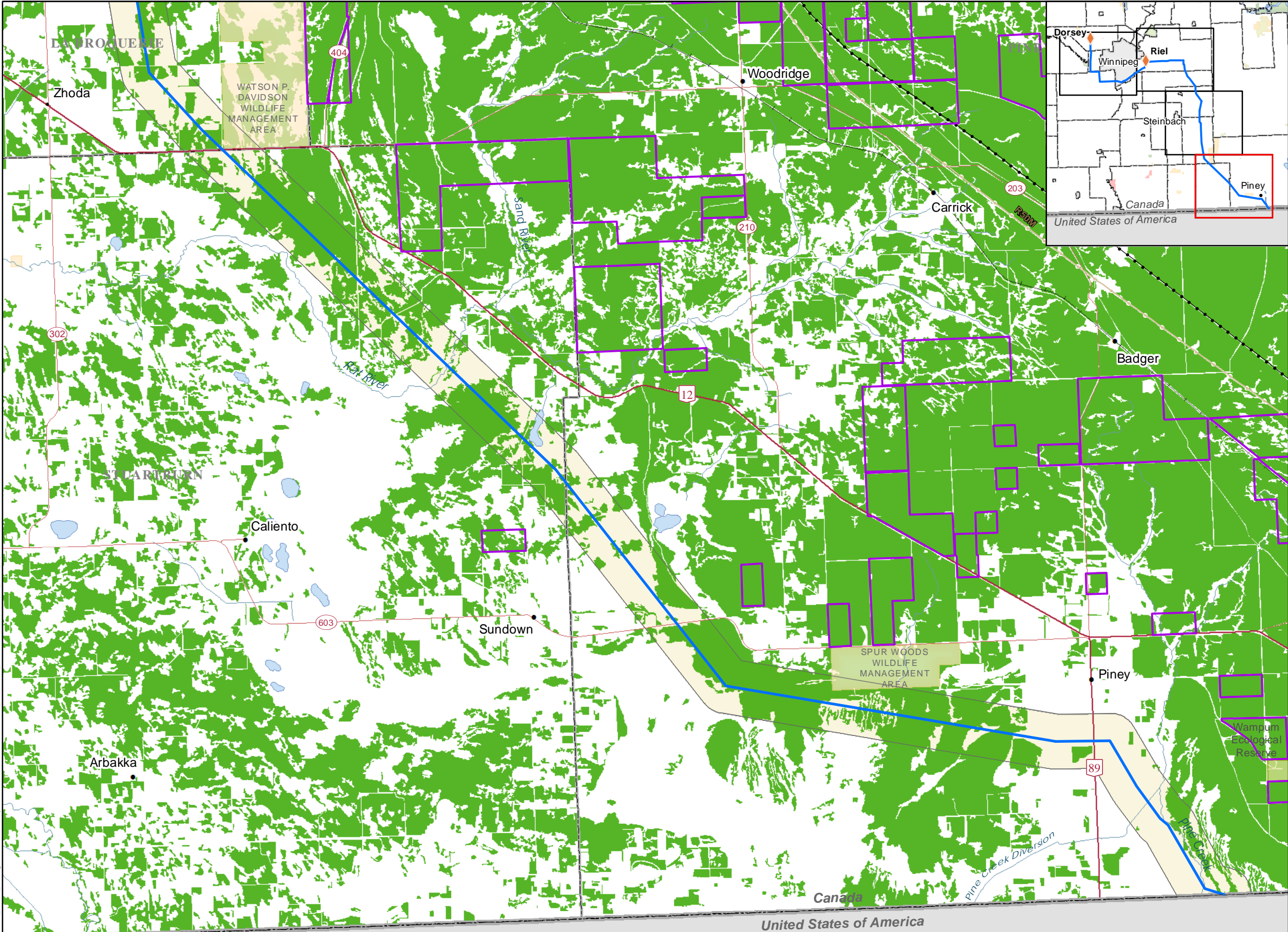


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### Productive Forestland



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## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- ◆ Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### Productive Forestland

- Timber Sales Plan 2010-2015 <sup>1</sup>
- Productive Forestland <sup>2</sup>

### Assessment Area

- Forestry Local Assessment Area
- Forestry Regional Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Ecological Reserve
- Wildlife Management Area
- National/Provincial Park
- Rural Municipality

Source:  
1. Timber Sale Plan for 2010-2015, 2013, Manitoba Conservation and Water Stewardship, Forestry Branch.  
2. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
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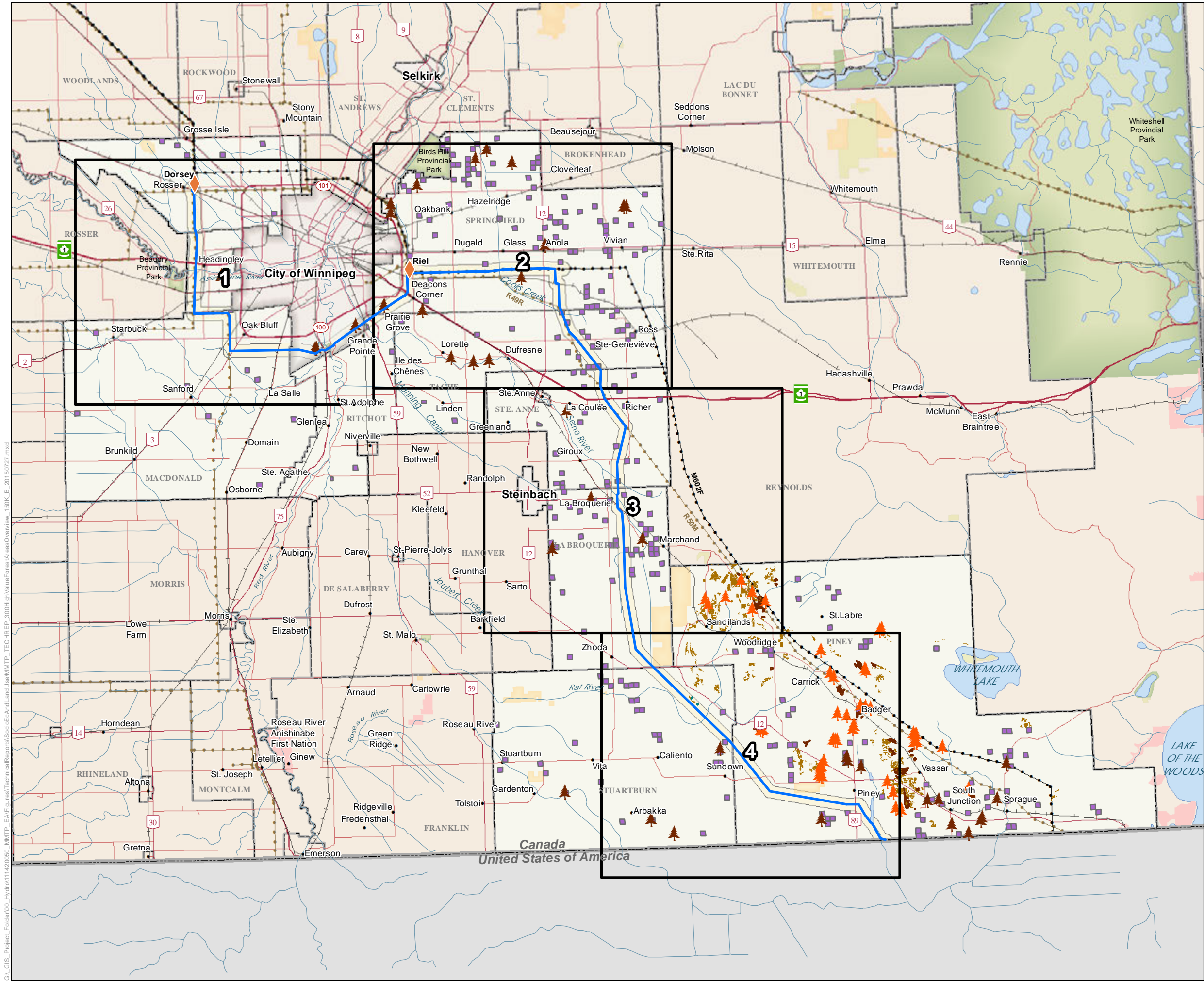
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0 1.5 3 Miles



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## Productive Forestland





## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- ◆ Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### Map Series Index - 1:150,000

- Map Series Tile

### High Value Forest Area

- ▲ Permanent Sample Plots <sup>1</sup>
- ▲ Trees For Tomorrow <sup>2</sup>
- Tending <sup>3</sup>
- Plantations <sup>4</sup>
- Tree Improvement Sites <sup>5</sup>
- Manitoba Forestry Association Woodlot Locations <sup>6</sup>

### Assessment Area

- Forestry Local Assessment
- Forestry Regional Assessment

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park
- Rural Municipality

Source:  
1. Permanent Sample Plot sites (PSP), 2013, Forestry and Peatlands Management Department of Manitoba Conservation and Water Stewardship  
2. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch  
3. Tending, 1984-2002, Manitoba Conservation and Water Stewardship  
4. Plantations, 1951-2011, Manitoba Conservation and Water Stewardship  
5. Lonesands Tree Improvement Family Test Sites, 2014, Manitoba Conservation and Water Stewardship, Forestry Branch  
6. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 28, 2015

0 10 Kilometres  
0 5 10 Miles

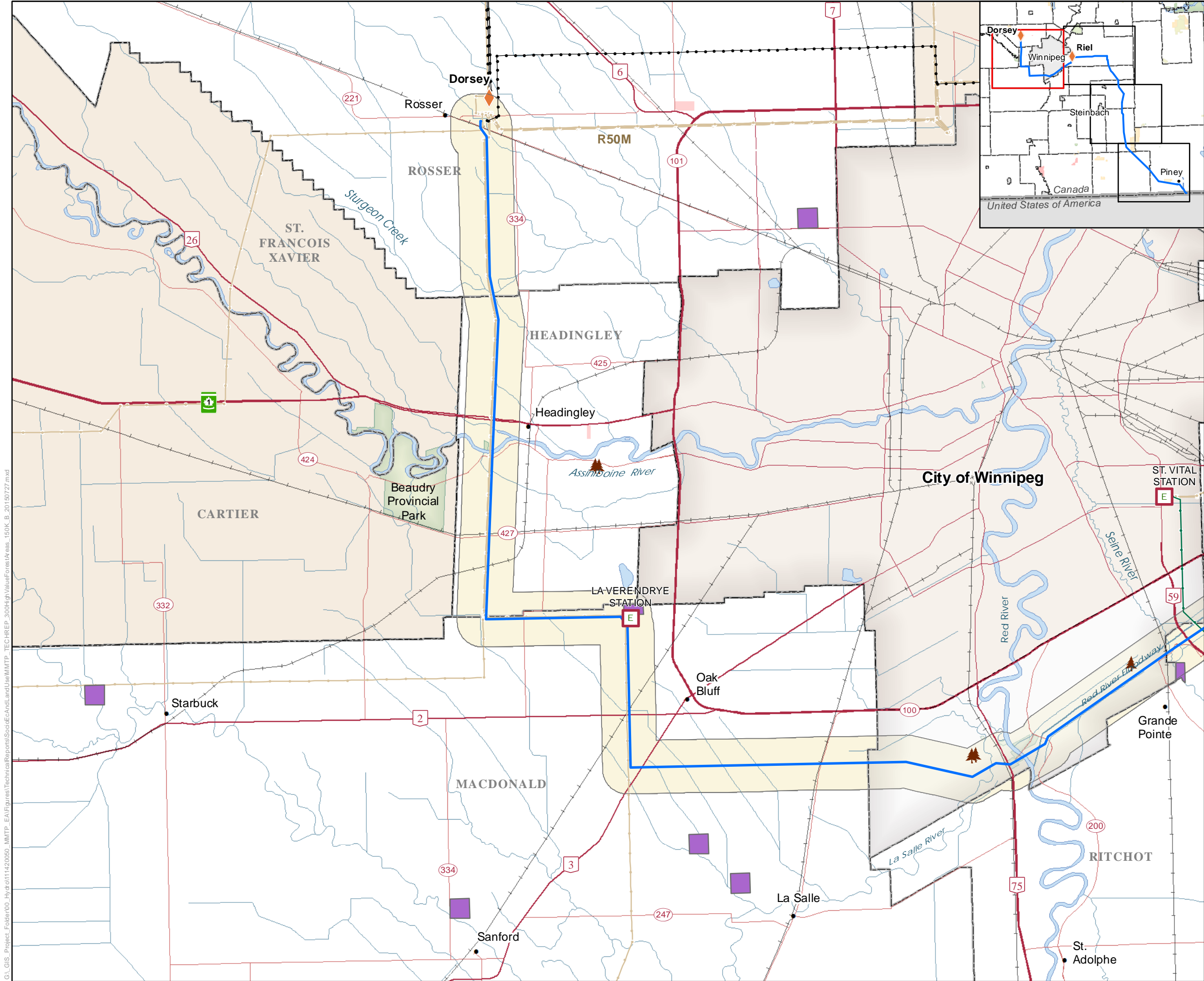


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## Index of Map Series High Value Forest Sites

Map Series 4-300





## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- ◆ Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- Electrical Station
- St. Vital Transmission Complex (V95L)
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### High Value Forest Area

- ▲ Trees For Tomorrow <sup>2</sup>
- Manitoba Forestry Association Woodlot Locations <sup>6</sup>

### Assessment Area

- Forestry Local Assessment Area
- Forestry Regional Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- First Nation
- City / Town
- National/Provincial Park
- Rural Municipality

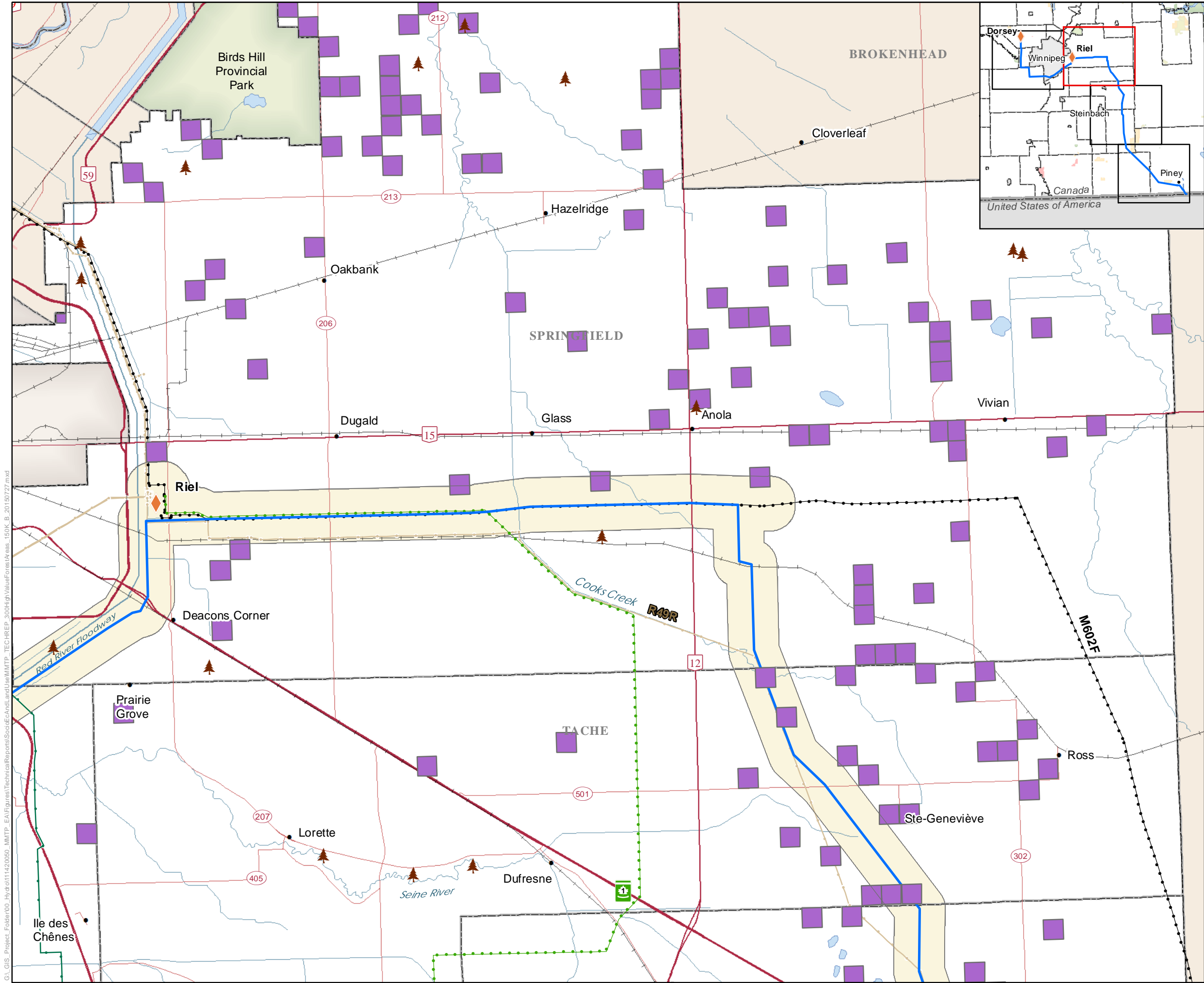
Source:  
1. Permanent Sample Plot sites (PSP), 2013, Forestry and Peatlands Management Department of Manitoba Conservation and Water Stewardship  
2. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
3. Tending, 1984-2002, Manitoba Conservation and Water Stewardship  
4. Plantations, 1951-2011, Manitoba Conservation and Water Stewardship  
5. Lonesands Tree Improvement Family Test Sites, 2014, Manitoba Conservation and Water Stewardship, Forestry Branch.  
6. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 27, 2015

0 2 4 Kilometres  
0 1.5 3 Miles

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### High Value Forest Sites



## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- ◆ Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- Bipole III Transmission Line (Approved)
- St. Vital Transmission Complex (V95L)
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### High Value Forest Area

- ▲ Trees For Tomorrow <sup>2</sup>
- Manitoba Forestry Association Woodlot Locations <sup>6</sup>

### Assessment Area

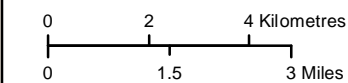
- Forestry Local Assessment Area
- Forestry Regional Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- First Nation
- City / Town
- National/Provincial Park
- Rural Municipality

Source:  
1. Permanent Sample Plot sites (PSP), 2013, Forestry and Peatlands Management Department of Manitoba Conservation and Water Stewardship  
2. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
3. Tending, 1984-2002, Manitoba Conservation and Water Stewardship  
4. Plantations, 1951-2011, Manitoba Conservation and Water Stewardship  
5. Lonesands Tree Improvement Family Test Sites, 2014, Manitoba Conservation and Water Stewardship, Forestry Branch.  
6. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 27, 2015

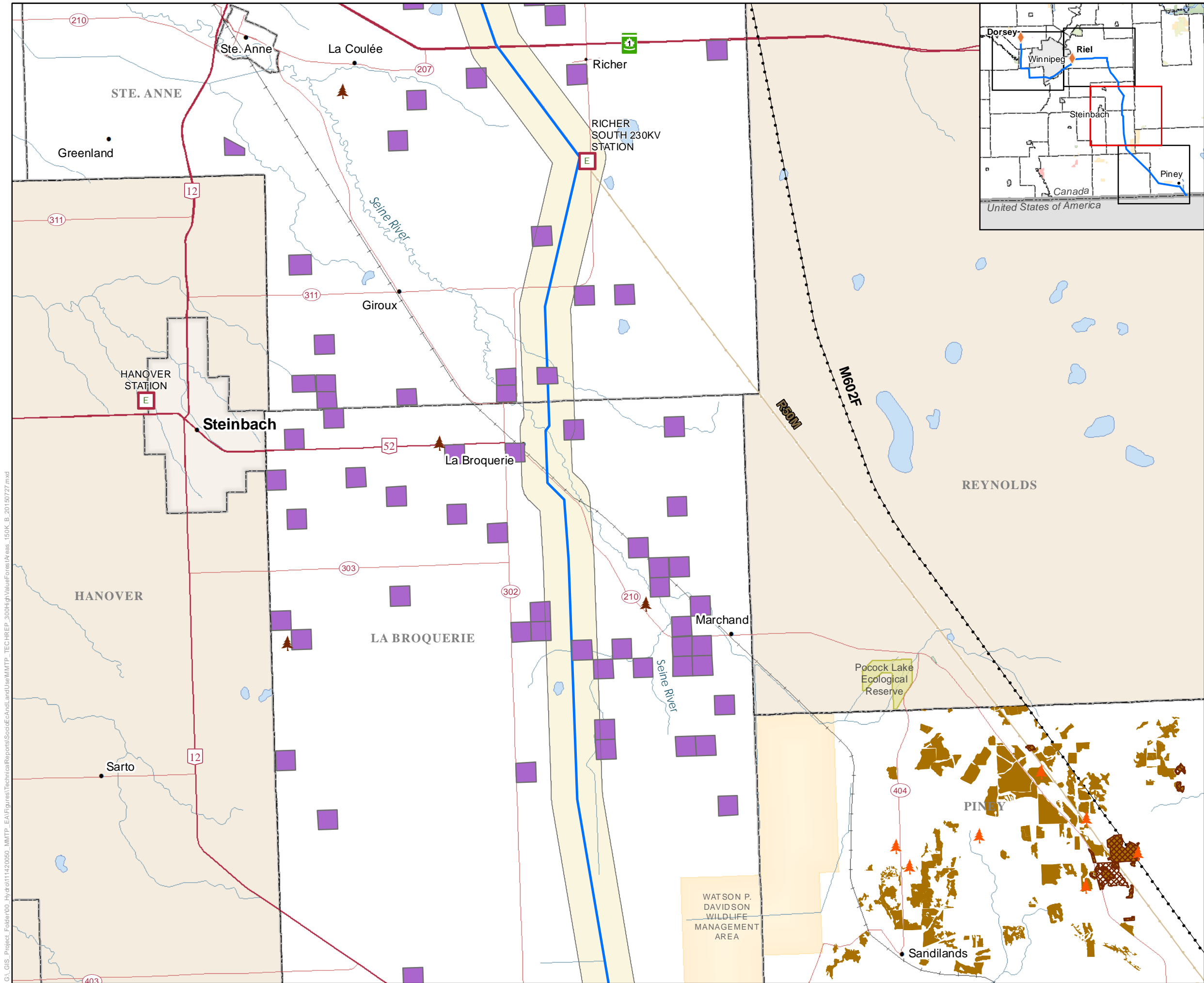


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## High Value Forest Sites

Map 4-300-02

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## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- Electrical Station
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### High Value Forest Area

- Permanent Sample Plots <sup>1</sup>
- Trees For Tomorrow <sup>2</sup>
- Tending <sup>3</sup>
- Plantations <sup>4</sup>
- Manitoba Forestry Association Woodlot Locations <sup>6</sup>

### Assessment Area

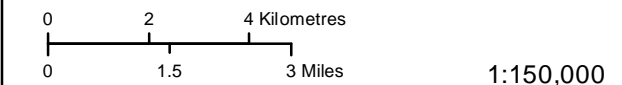
- Forestry Local Assessment Area
- Forestry Regional Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City / Town
- Ecological Reserve
- Wildlife Management Area
- National/Provincial Park
- Rural Municipality

Source:  
1. Permanent Sample Plot sites (PSP), 2013, Forestry and Peatlands Management Department of Manitoba Conservation and Water Stewardship  
2. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
3. Tending, 1984-2002, Manitoba Conservation and Water Stewardship  
4. Plantations, 1951-2011, Manitoba Conservation and Water Stewardship  
5. Lonesands Tree Improvement Family Test Sites, 2014, Manitoba Conservation and Water Stewardship, Forestry Branch.  
6. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).

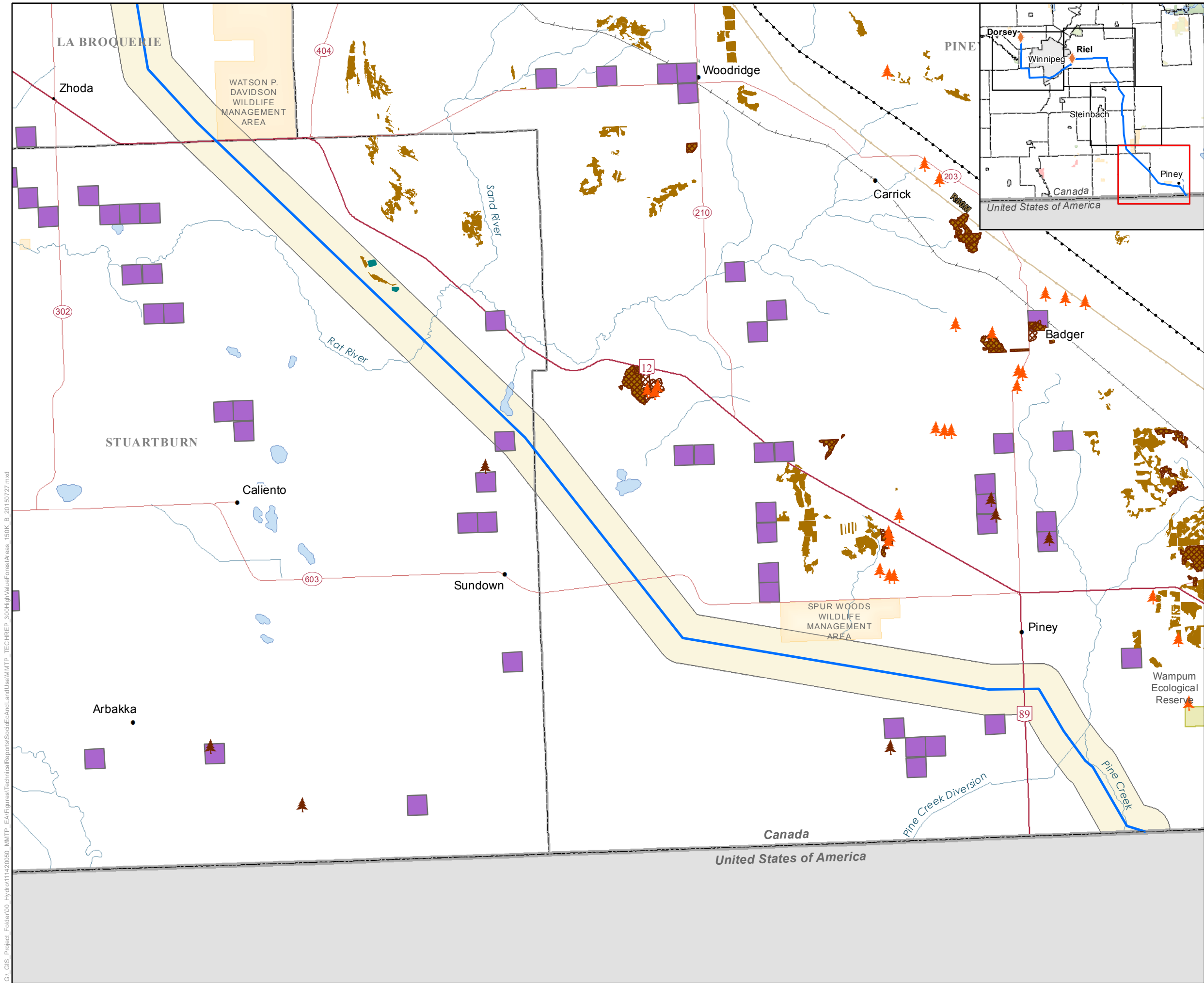
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Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 27, 2015



### High Value Forest Sites



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## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- ◆ Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### High Value Forest Area

- ▲ Permanent Sample Plots <sup>1</sup>
- ▲ Trees For Tomorrow <sup>2</sup>
- ▨ Tending <sup>3</sup>
- Plantations <sup>4</sup>
- Tree Improvement Sites <sup>5</sup>
- Manitoba Forestry Association Woodlot Locations <sup>6</sup>

### Assessment Area

- Forestry Local Assessment Area
- Forestry Regional Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Ecological Reserve
- Wildlife Management Area
- National/Provincial Park
- Rural Municipality

Source:  
1. Permanent Sample Plot sites (PSP), 2013, Forestry and Peatlands Management Department of Manitoba Conservation and Water Stewardship  
2. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch  
3. Tending, 1984-2002, Manitoba Conservation and Water Stewardship  
4. Plantations, 1951-2011, Manitoba Conservation and Water Stewardship  
5. Lonesands Tree Improvement Family Test Sites, 2014, Manitoba Conservation and Water Stewardship, Forestry Branch  
6. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 27, 2015

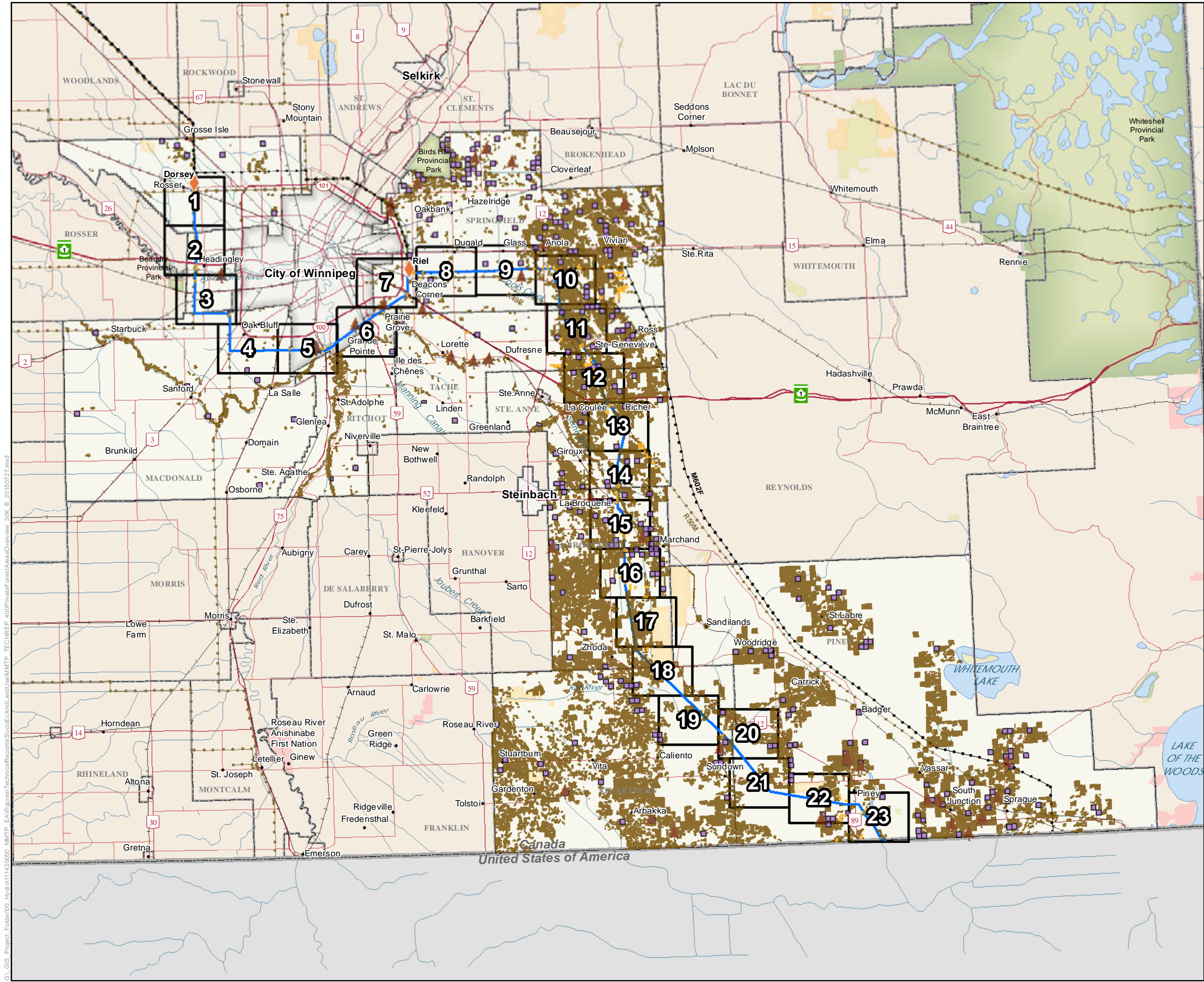
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## High Value Forest Sites

Map 4-300-04





Manitoba-Minnesota  
Transmission Project

Project Infrastructure

- Converter Station (Existing)
- Final Preferred Route (FPR)

Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

Map Series Index - 1:30,000

- Map Series Tile

Private Land Forest Areas

- Trees For Tomorrow <sup>1</sup>
- Shelterbelt <sup>2</sup>
- Private Forest Land - Photo Interpretation <sup>2</sup>
- Manitoba Forestry Association Woodlot Locations <sup>3</sup>
- Private Forest Land - Provincial Forest Inventory <sup>4</sup>

Assessment Area

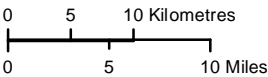
- Forestry Local Assessment Area
- Forestry Regional Assessment Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park
- Rural Municipality

Source:  
1. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
2. Private Land Forest Value, 2014, Maskwa.  
3. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).  
4. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship.

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 28, 2015



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Index of Map Series  
Private Land Forest Areas

Map Series 4-400



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## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- Final Preferred Route (FPR)
- Station Expansion
- Converter Station Footprint

### Infrastructure

- Existing 500 kV Transmission Line
- Existing 230kV Transmission Line

### Private Forest Land Areas

- Shelterbelt <sup>2</sup>

### Assessment Area

- Project Development Area (PDA)
- Forestry Local Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Rural Municipality

Source:  
1. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
2. Private Land Forest Value, 2014, Maskwa.  
3. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).  
4. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship.

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 28, 2015



0 0.5 1 Kilometres  
0 0.25 0.5 Miles

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## Private Land Forest Areas

Map 4-400-01





## Manitoba-Minnesota Transmission Project

### Project Infrastructure

Final Preferred Route (FPR)

### Infrastructure

Existing 230kV Transmission Line

### Private Forest Land Areas

- Trees For Tomorrow <sup>1</sup>
- Shelterbelt <sup>2</sup>
- Private Forest Land - Photo Interpretation <sup>2</sup>
- Private Forest Land - Provincial Forest Inventory <sup>4</sup>

### Assessment Area

- Project Development Area (PDA)
- Forestry Local Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- First Nation Lands
- National/Provincial Park
- Rural Municipality

Source:  
1. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
2. Private Land Forest Value, 2014, Maskwa.  
3. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).  
4. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship.

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Date Created: July 28, 2015

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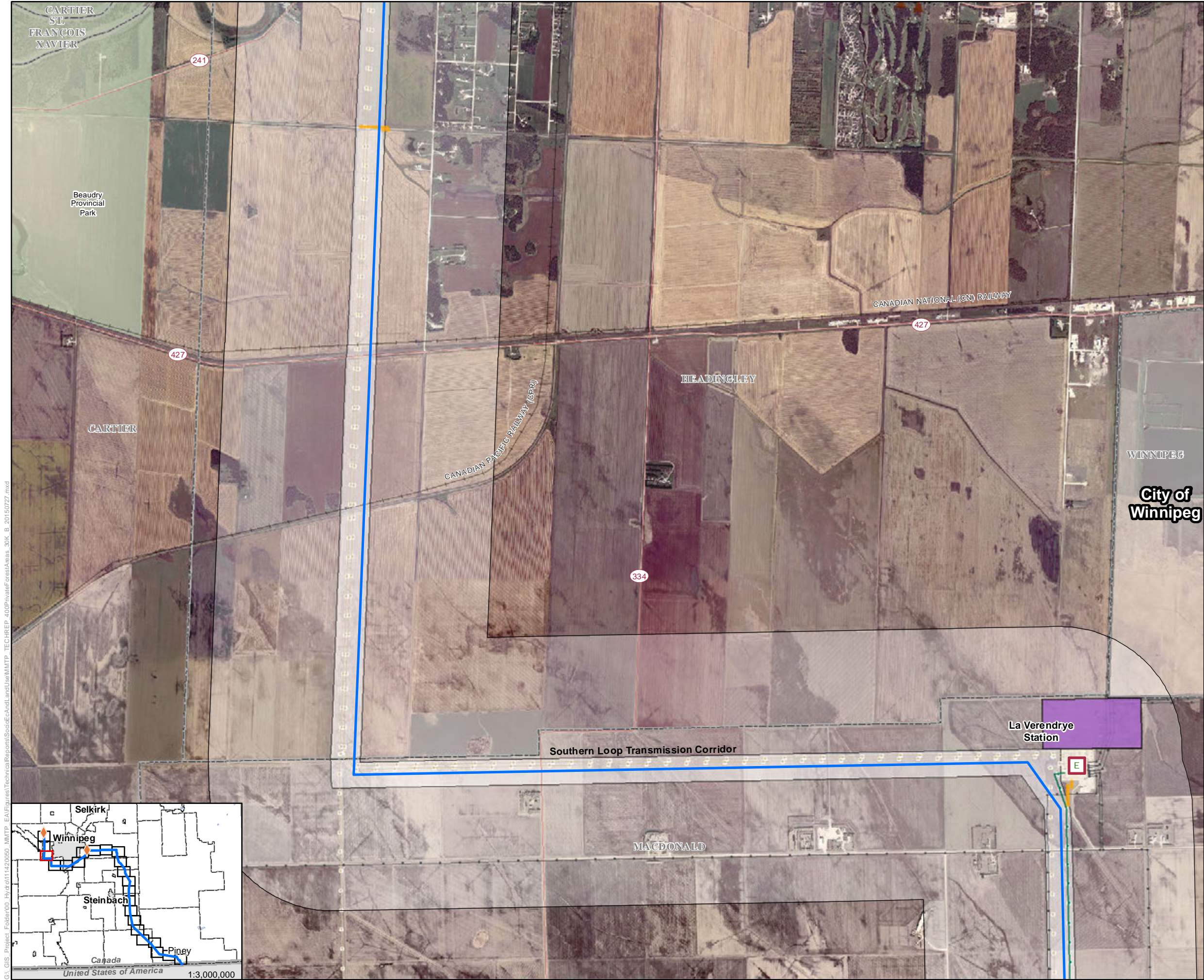


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## Private Land Forest Areas

Map 4-400-02





## Manitoba-Minnesota Transmission Project

### Project Infrastructure

Final Preferred Route (FPR)

### Infrastructure

- Electrical Station
- Existing 230kV Transmission Line
- St. Vital Transmission Complex (Proposed)
- Existing 115-230kV Transmission Line

### Private Forest Land Areas

- Trees For Tomorrow <sup>1</sup>
- Shelterbelt <sup>2</sup>
- Manitoba Forestry Association Woodlot Locations <sup>3</sup>

### Assessment Area

- Project Development Area (PDA)
- Forestry Local Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City / Town
- National/Provincial Park
- Rural Municipality

Source:  
1. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
2. Private Land Forest Value, 2014, Maskwa.  
3. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).  
4. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship.

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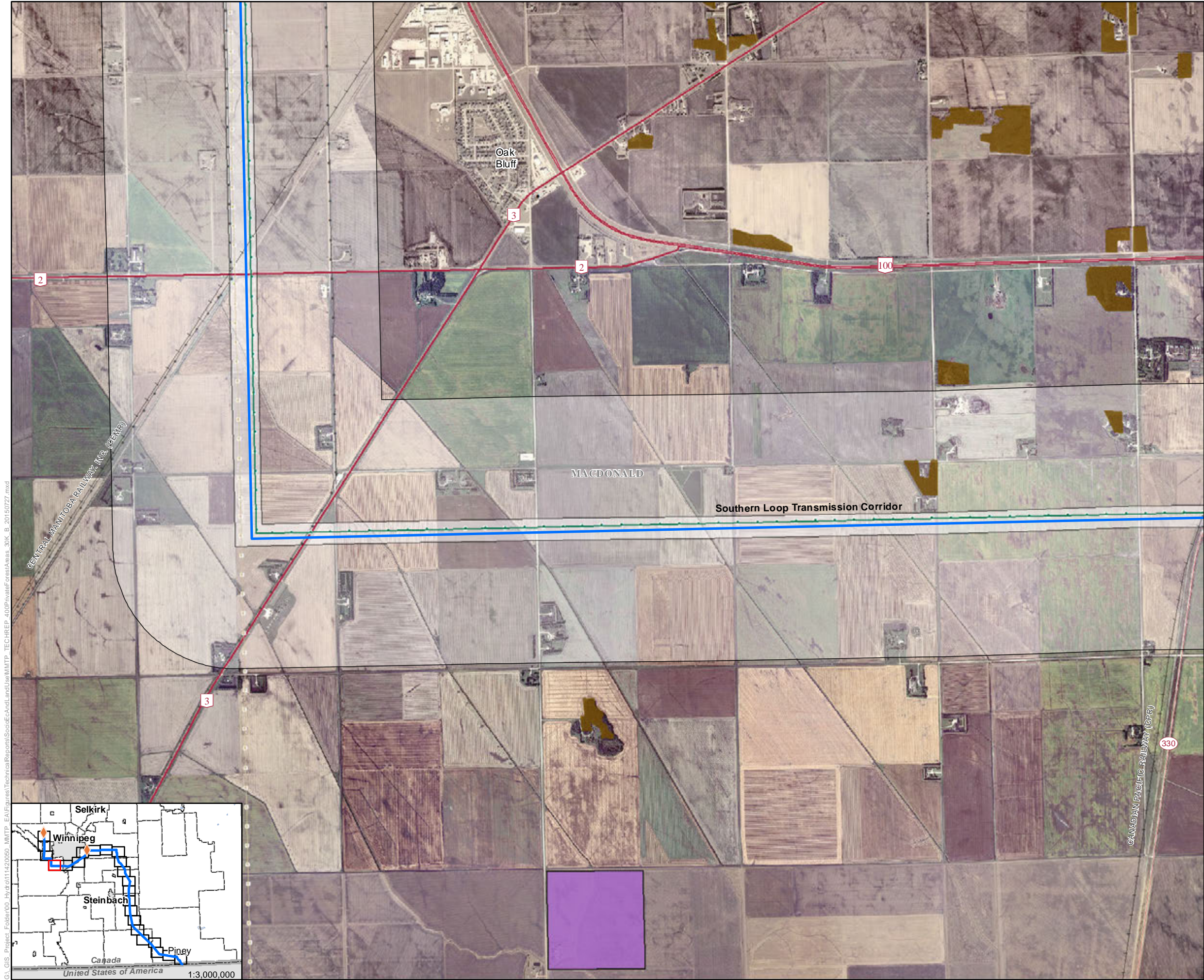
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### Private Land Forest Areas

Map 4-400-03





## Manitoba-Minnesota Transmission Project

### Project Infrastructure

Final Preferred Route (FPR)

### Infrastructure

- Existing 230kV Transmission Line
- St. Vital Transmission Complex (Proposed)
- Existing 115-230kV Transmission Line

### Private Forest Land Areas

- Manitoba Forestry Association Woodlot Locations <sup>3</sup>
- Private Forest Land - Provincial Forest Inventory <sup>4</sup>

### Assessment Area

- Project Development Area (PDA)
- Forestry Local Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Rural Municipality

Source:  
1. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
2. Private Land Forest Value, 2014, Maskwa.  
3. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).  
4. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship.

Coordinate System: UTM Zone 14N NAD83  
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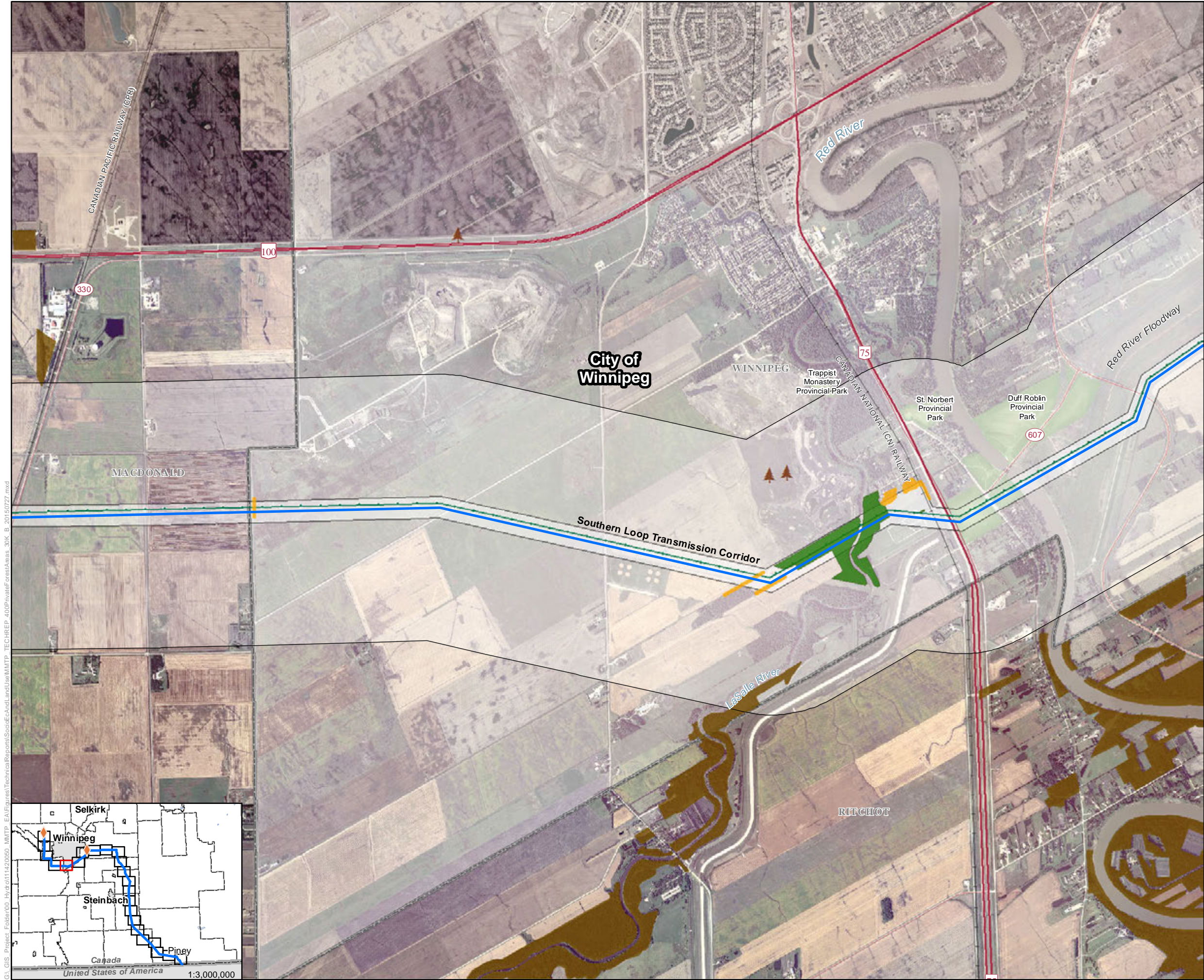
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### Private Land Forest Areas





Manitoba-Minnesota  
Transmission Project

Project Infrastructure

Final Preferred Route (FPR)

Infrastructure

St. Vital Transmission Complex (Proposed)

Private Forest Land Areas

- Trees For Tomorrow <sup>1</sup>
- Shelterbelt <sup>2</sup>
- Private Forest Land - Photo Interpretation <sup>2</sup>
- Private Forest Land - Provincial Forest Inventory <sup>4</sup>

Assessment Area

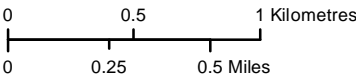
- Project Development Area (PDA)
- Forestry Local Assessment Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City / Town
- National/Provincial Park
- Rural Municipality

Source:  
1. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
2. Private Land Forest Value, 2014, Maskwa.  
3. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).  
4. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship.

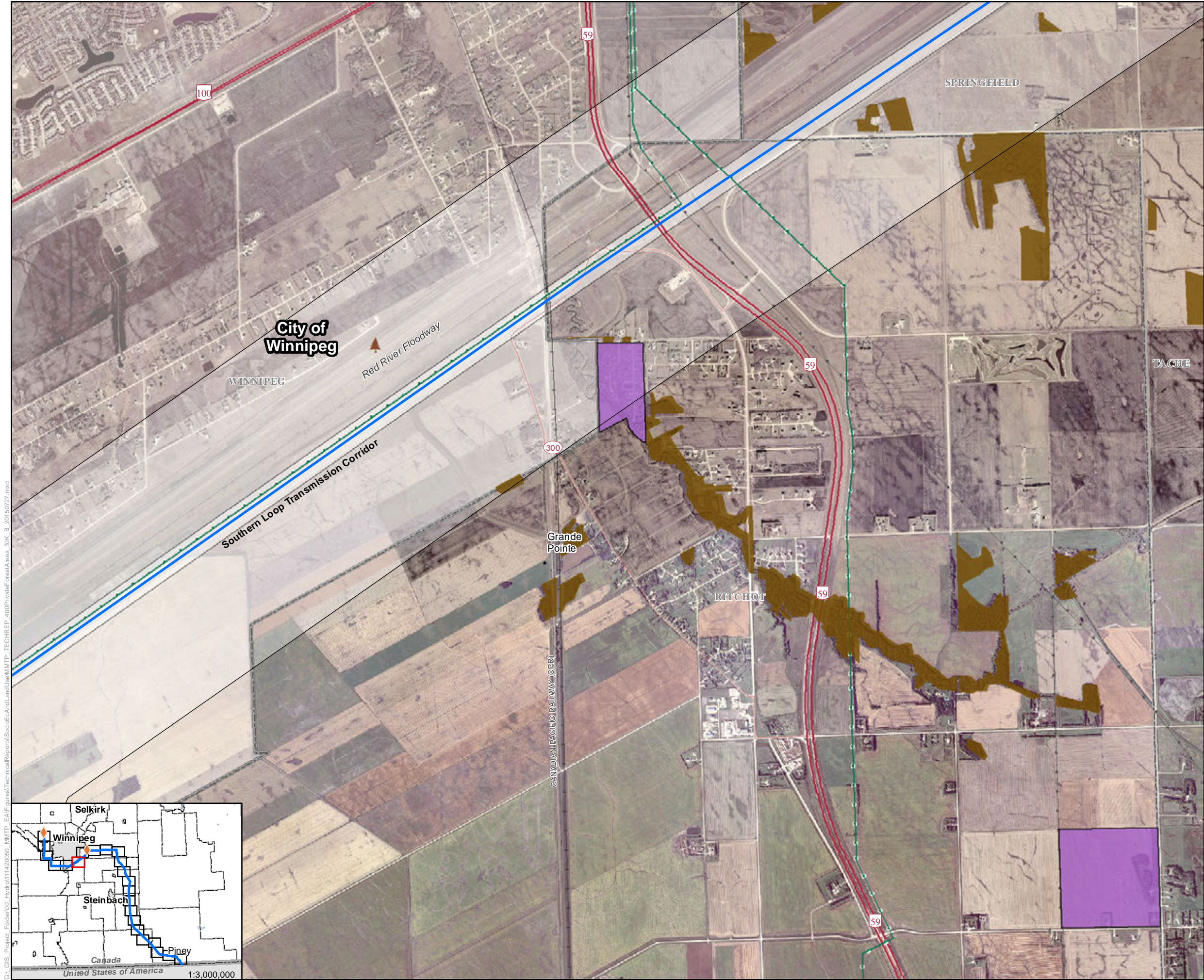
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Date Created: July 28, 2015



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Private Land Forest Areas





## Manitoba-Minnesota Transmission Project

### Project Infrastructure

Final Preferred Route (FPR)

### Infrastructure

- St. Vital Transmission Complex (Proposed)
- Existing 115-230kV Transmission Line

### Private Forest Land Areas

- Trees For Tomorrow <sup>1</sup>
- Manitoba Forestry Association Woodlot Locations <sup>3</sup>
- Private Forest Land - Provincial Forest Inventory <sup>4</sup>

### Assessment Area

- Project Development Area (PDA)
- Forestry Local Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City / Town
- Rural Municipality

Source:  
1. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
2. Private Land Forest Value, 2014, Maskwa.  
3. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).  
4. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship.

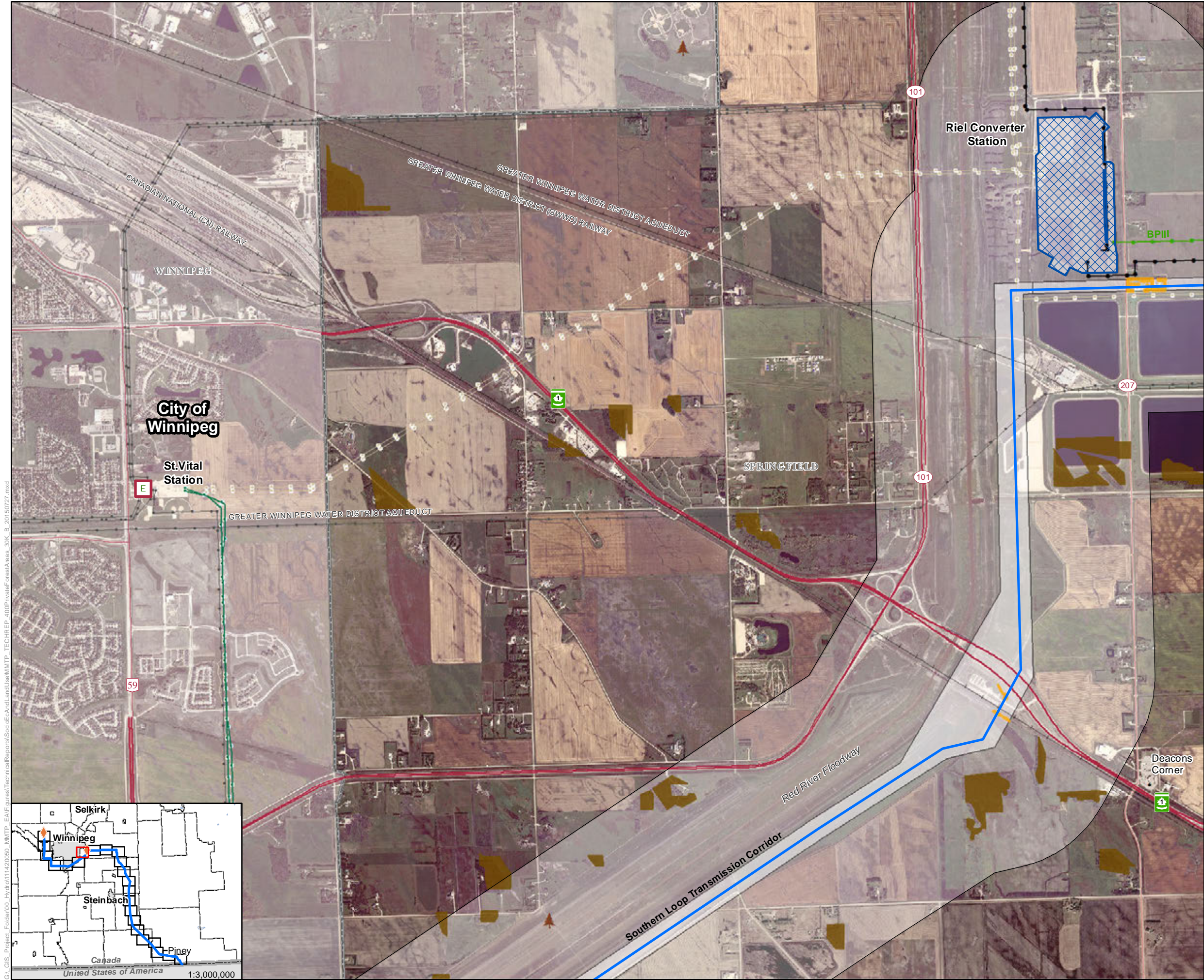
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0 0.25 0.5 Miles

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### Private Land Forest Areas





## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- Final Preferred Route (FPR)
- Converter Station Footprint

### Infrastructure

- Electrical Station
- Existing 500 kV Transmission Line
- Existing 230kV Transmission Line
- Bipole III Transmission Line (Approved)
- St. Vital Transmission Complex (Proposed)
- Existing 115-230kV Transmission Line

### Private Forest Land Areas

- Trees For Tomorrow <sup>1</sup>
- Shelterbelt <sup>2</sup>
- Private Forest Land - Provincial Forest Inventory <sup>4</sup>

### Assessment Area

- Project Development Area (PDA)
- Forestry Local Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City / Town
- Rural Municipality

Source:  
1. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
2. Private Land Forest Value, 2014, Maskwa.  
3. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).  
4. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship.

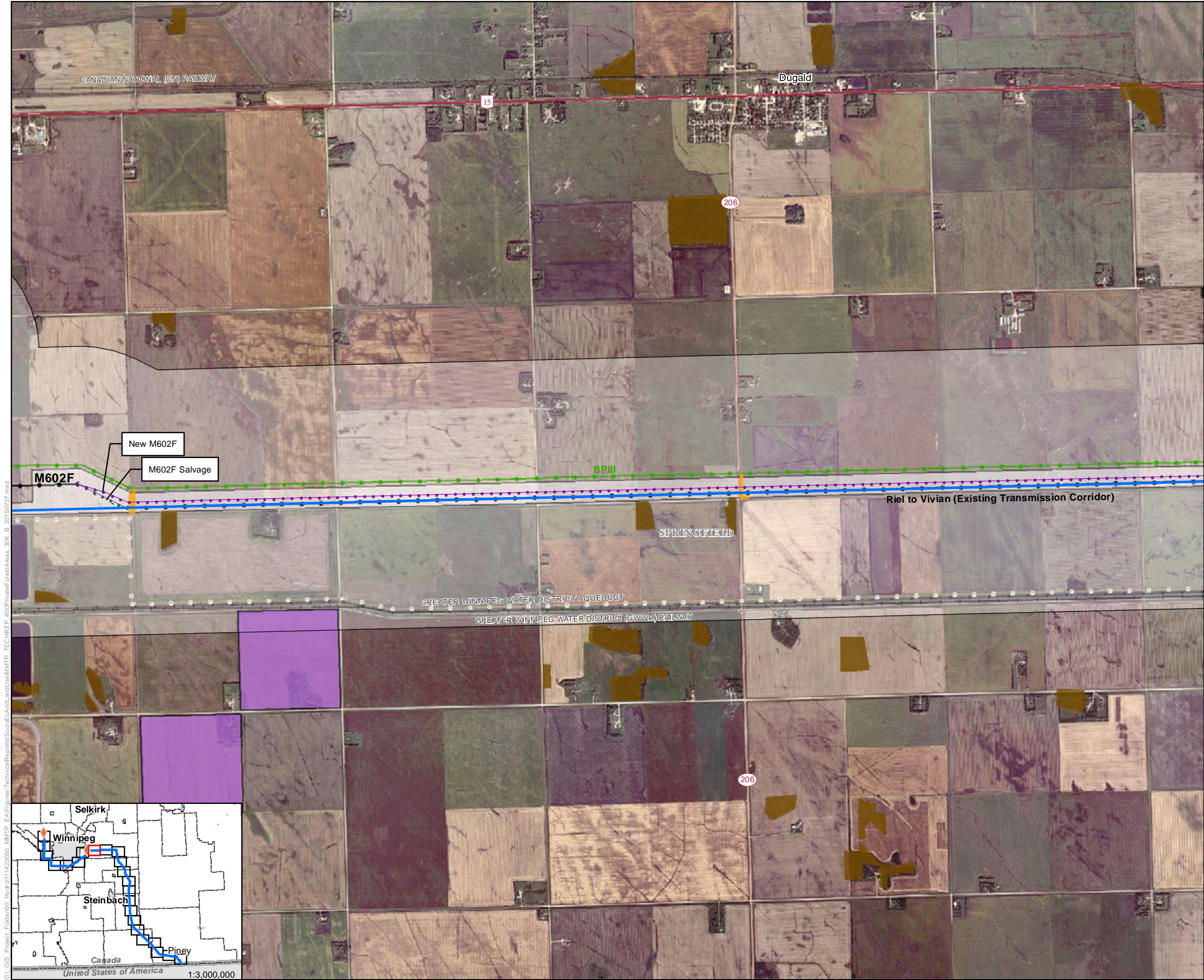
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Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 28, 2015

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### Private Land Forest Areas





## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- Final Preferred Route (FPR)
- M602F Modification (Salvage)
- M602F Modification (New)

### Infrastructure

- Existing 500 kV Transmission Line
- Existing 230kV Transmission Line
- Bipole III Transmission Line (Approved)
- Existing 115-230kV Transmission Line

### Private Forest Land Areas

- Shelterbelt <sup>2</sup>
- Manitoba Forestry Association Woodlot Locations <sup>3</sup>
- Private Forest Land - Provincial Forest Inventory <sup>4</sup>

### Assessment Area

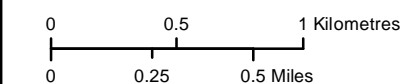
- Project Development Area (PDA)
- Forestry Local Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Rural Municipality

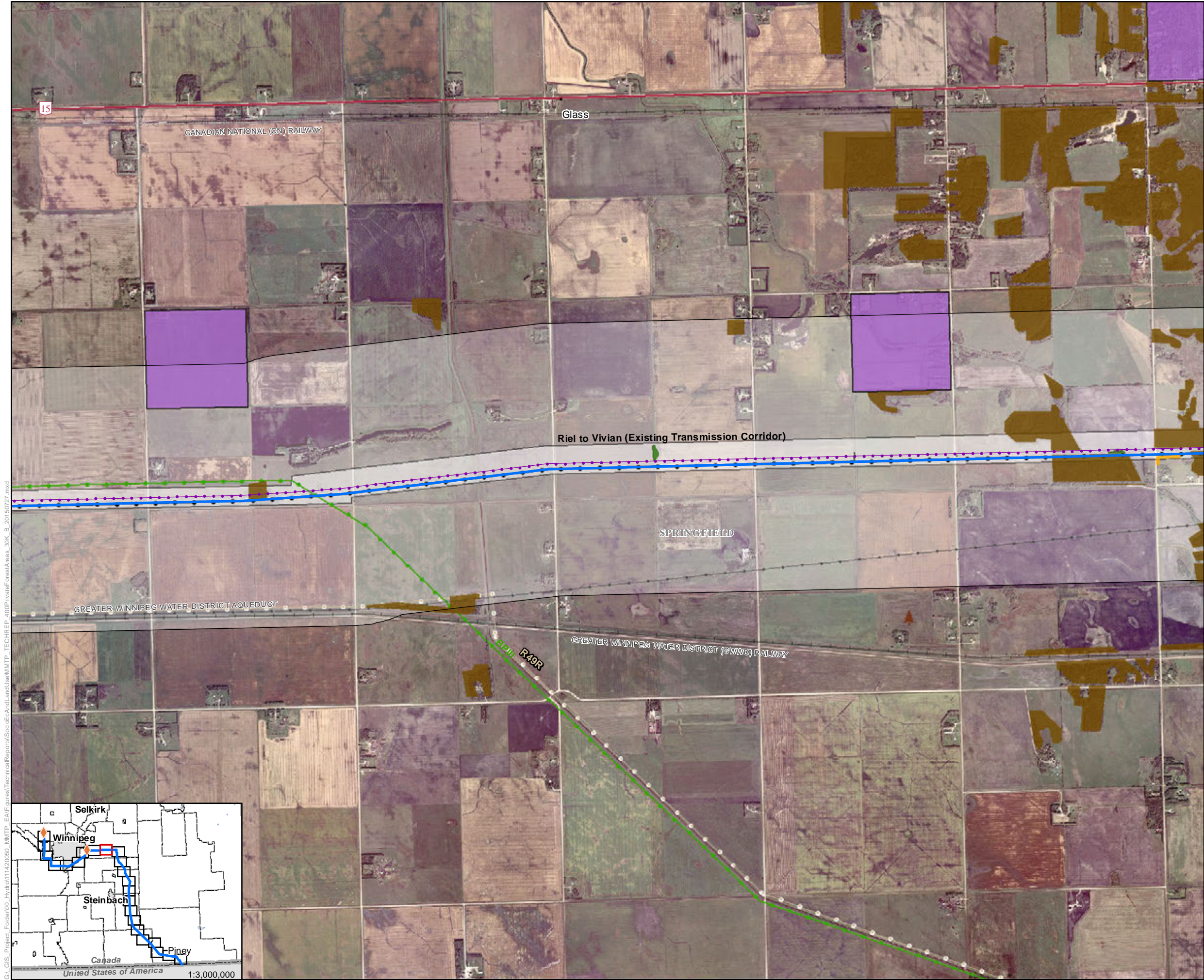
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2. Private Land Forest Value, 2014, Maskwa.  
3. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).  
4. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship.

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 28, 2015



## Private Land Forest Areas





## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- Final Preferred Route (FPR)
- M602F Modification (New)

### Infrastructure

- Existing 500 kV Transmission Line
- Existing 230kV Transmission Line
- Bipole III Transmission Line (Approved)
- Existing 115-230kV Transmission Line

### Private Forest Land Areas

- Trees For Tomorrow <sup>1</sup>
- Shelterbelt <sup>2</sup>
- Private Forest Land - Photo Interpretation <sup>2</sup>
- Manitoba Forestry Association Woodlot Locations <sup>3</sup>
- Private Forest Land - Provincial Forest Inventory <sup>4</sup>

### Assessment Area

- Project Development Area (PDA)
- Forestry Local Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Rural Municipality

Source:  
1. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
2. Private Land Forest Value, 2014, Maskwa.  
3. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).  
4. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship.

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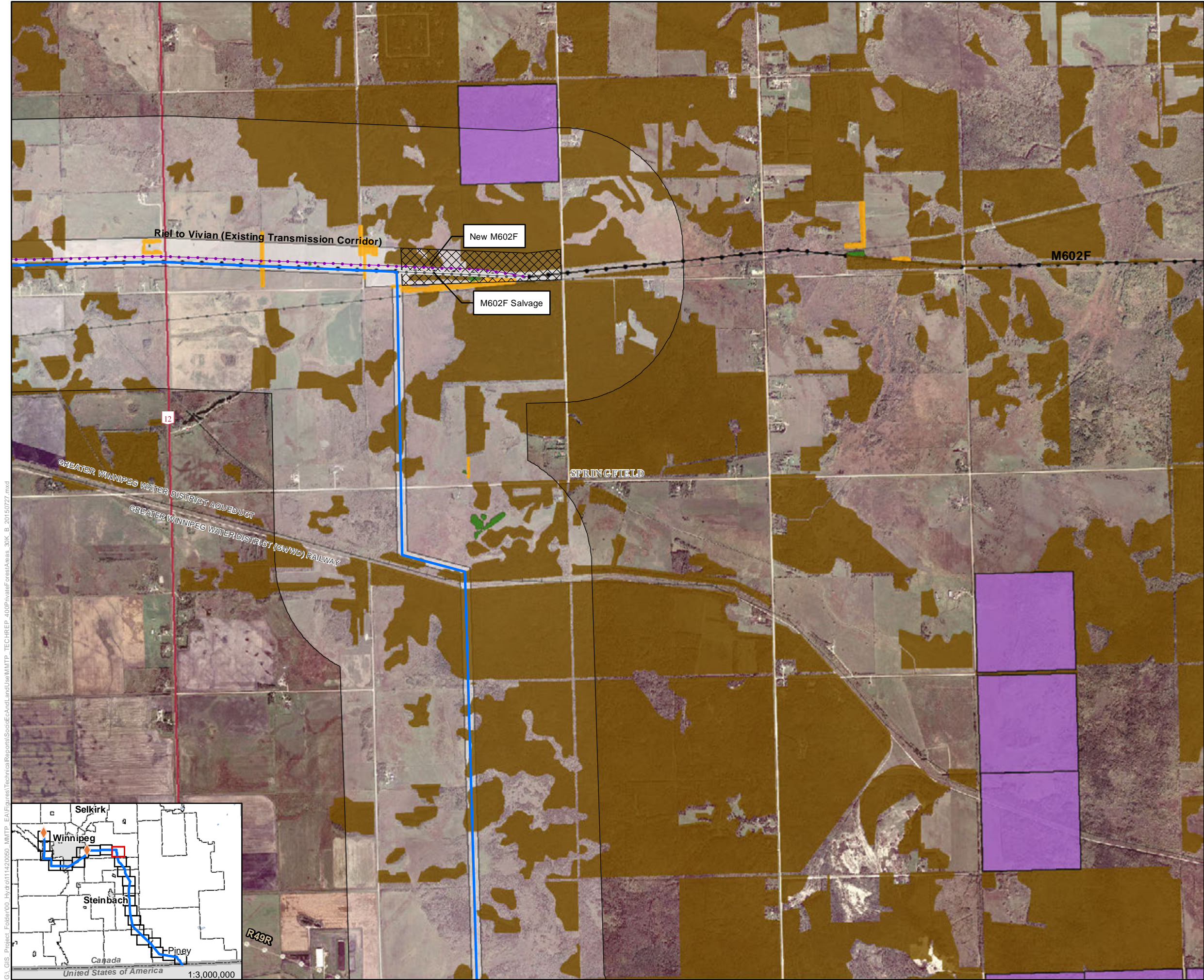
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### Private Land Forest Areas





## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- Final Preferred Route (FPR)
- M602F Modification (Salvage)
- M602F Modification (New)
- M602F Extension and Salvage

### Infrastructure

- Existing 500 kV Transmission Line
- Existing 230kV Transmission Line
- Existing 115-230kV Transmission Line

### Private Forest Land Areas

- Shelterbelt <sup>2</sup>
- Private Forest Land - Photo Interpretation <sup>2</sup>
- Manitoba Forestry Association Woodlot Locations <sup>3</sup>
- Private Forest Land - Provincial Forest Inventory <sup>4</sup>

### Assessment Area

- Project Development Area (PDA)
- Forestry Local Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Rural Municipality

Source:  
1. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
2. Private Land Forest Value, 2014, Maskwa.  
3. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).  
4. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship.

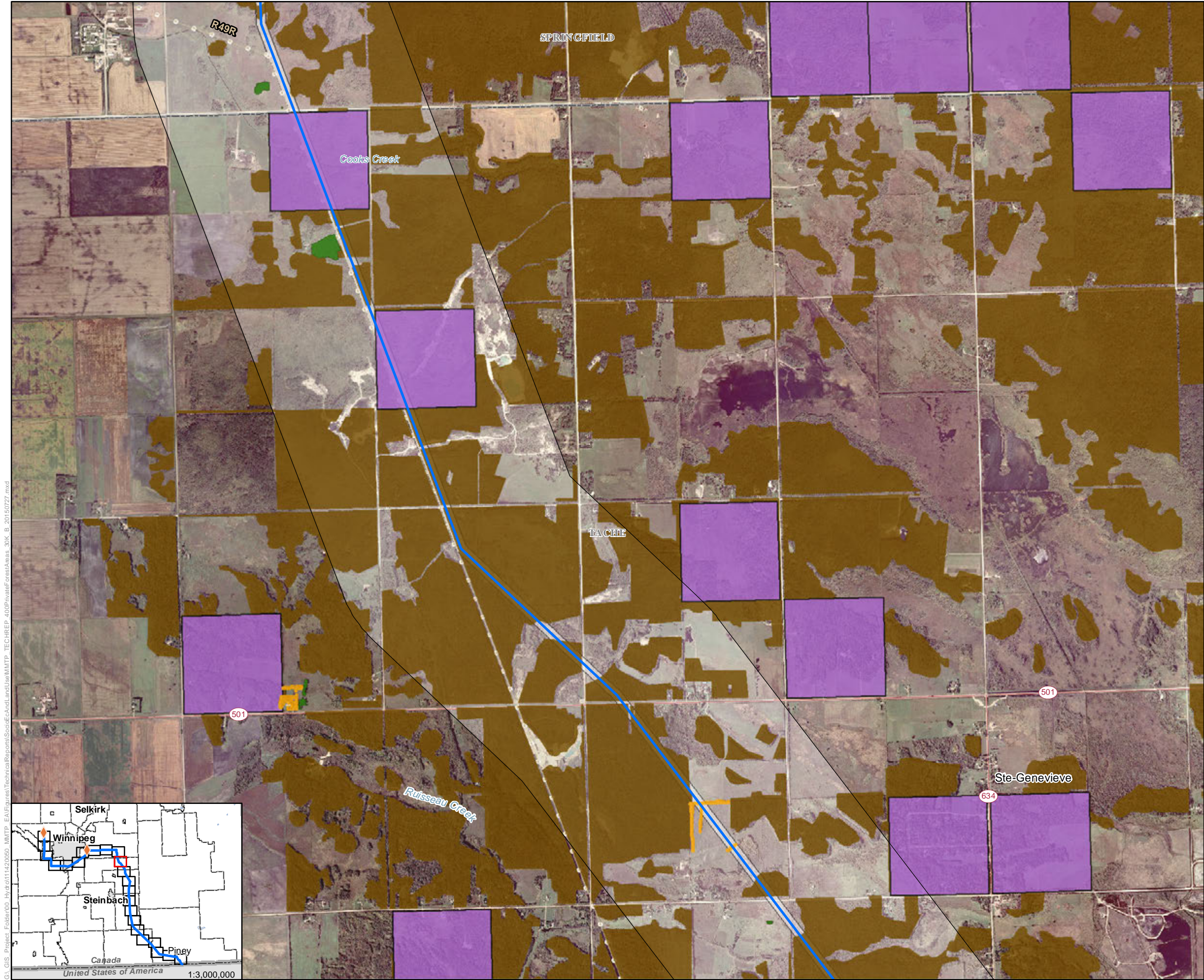
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Date Created: July 28, 2015

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0 0.25 0.5 Miles

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### Private Land Forest Areas





# Manitoba-Minnesota Transmission Project

## Project Infrastructure

Final Preferred Route (FPR)

## Infrastructure

Existing 230kV Transmission Line

## Private Forest Land Areas

- Shelterbelt <sup>2</sup>
- Private Forest Land - Photo Interpretation <sup>2</sup>
- Manitoba Forestry Association Woodlot Locations <sup>3</sup>
- Private Forest Land - Provincial Forest Inventory <sup>4</sup>

## Assessment Area

- Project Development Area (PDA)
- Forestry Local Assessment Area

## Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Rural Municipality

Source:  
1. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
2. Private Land Forest Value, 2014, Maskwa.  
3. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).  
4. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship.

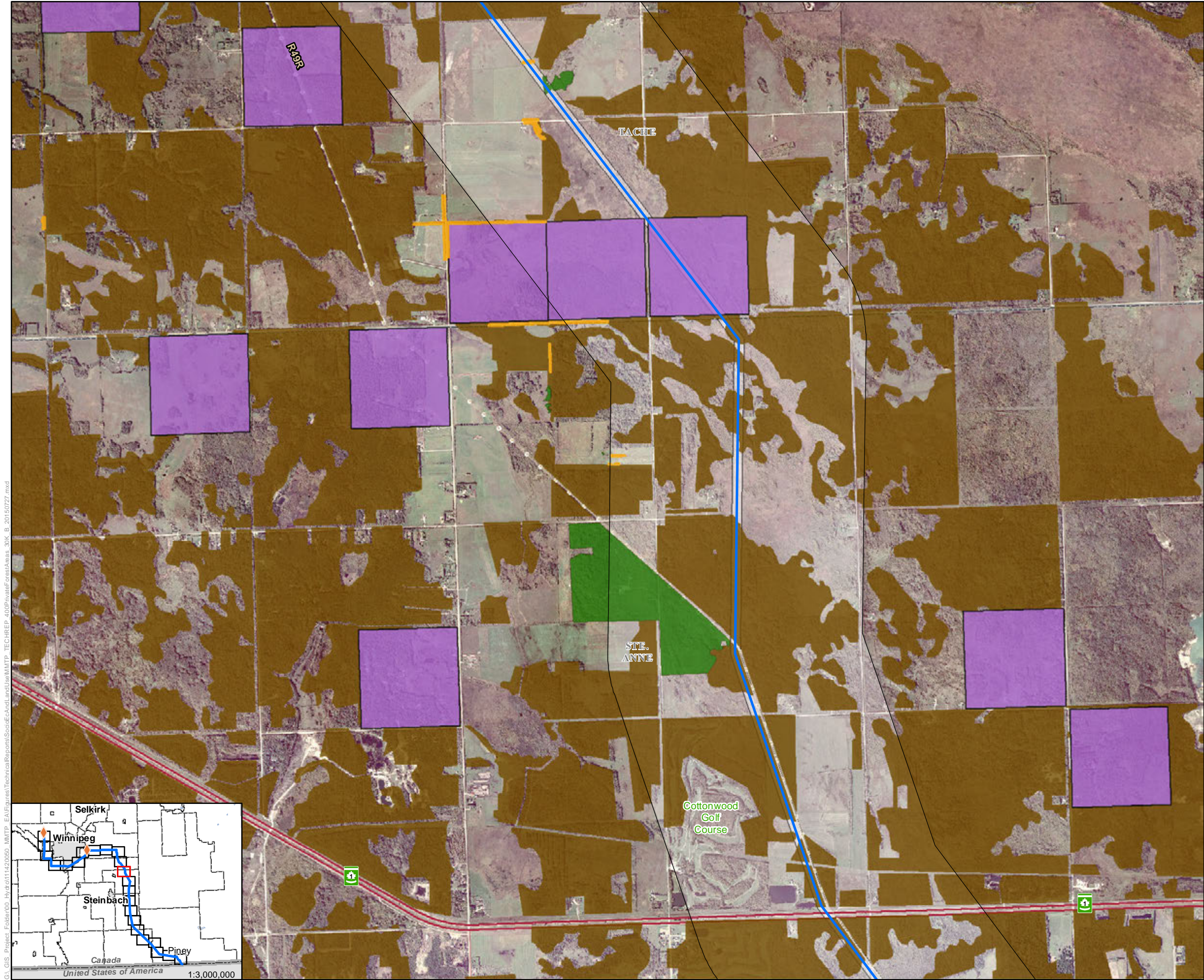
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Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 28, 2015

0 0.5 1 Kilometres  
0 0.25 0.5 Miles

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## Private Land Forest Areas





## Manitoba-Minnesota Transmission Project

### Project Infrastructure

Final Preferred Route (FPR)

### Infrastructure

Existing 230kV Transmission Line

### Private Forest Land Areas

- Shelterbelt <sup>2</sup>
- Private Forest Land - Photo Interpretation <sup>2</sup>
- Manitoba Forestry Association Woodlot Locations <sup>3</sup>
- Private Forest Land - Provincial Forest Inventory <sup>4</sup>

### Assessment Area

- Project Development Area (PDA)
- Forestry Local Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Rural Municipality

Source:  
1. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
2. Private Land Forest Value, 2014, Maskwa.  
3. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).  
4. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship.

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 28, 2015

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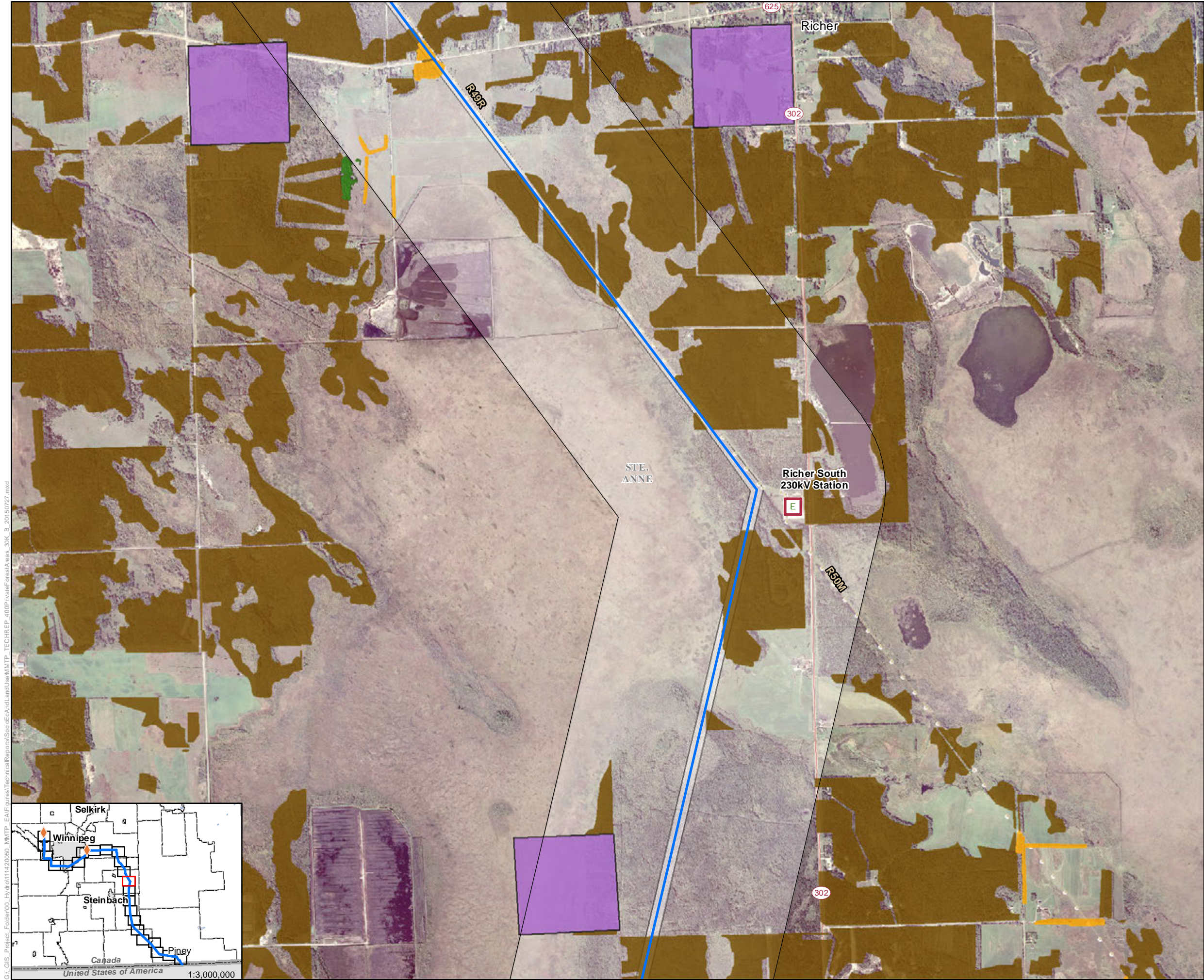
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### Private Land Forest Areas

Map 4-400-12





## Manitoba-Minnesota Transmission Project

### Project Infrastructure

Final Preferred Route (FPR)

### Infrastructure

Electrical Station

Existing 230kV Transmission Line

### Private Forest Land Areas

- Shelterbelt <sup>2</sup>
- Private Forest Land - Photo Interpretation <sup>2</sup>
- Manitoba Forestry Association Woodlot Locations <sup>3</sup>
- Private Forest Land - Provincial Forest Inventory <sup>4</sup>

### Assessment Area

- Project Development Area (PDA)
- Forestry Local Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Rural Municipality

Source:  
1. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
2. Private Land Forest Value, 2014, Maskwa.  
3. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).  
4. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship.

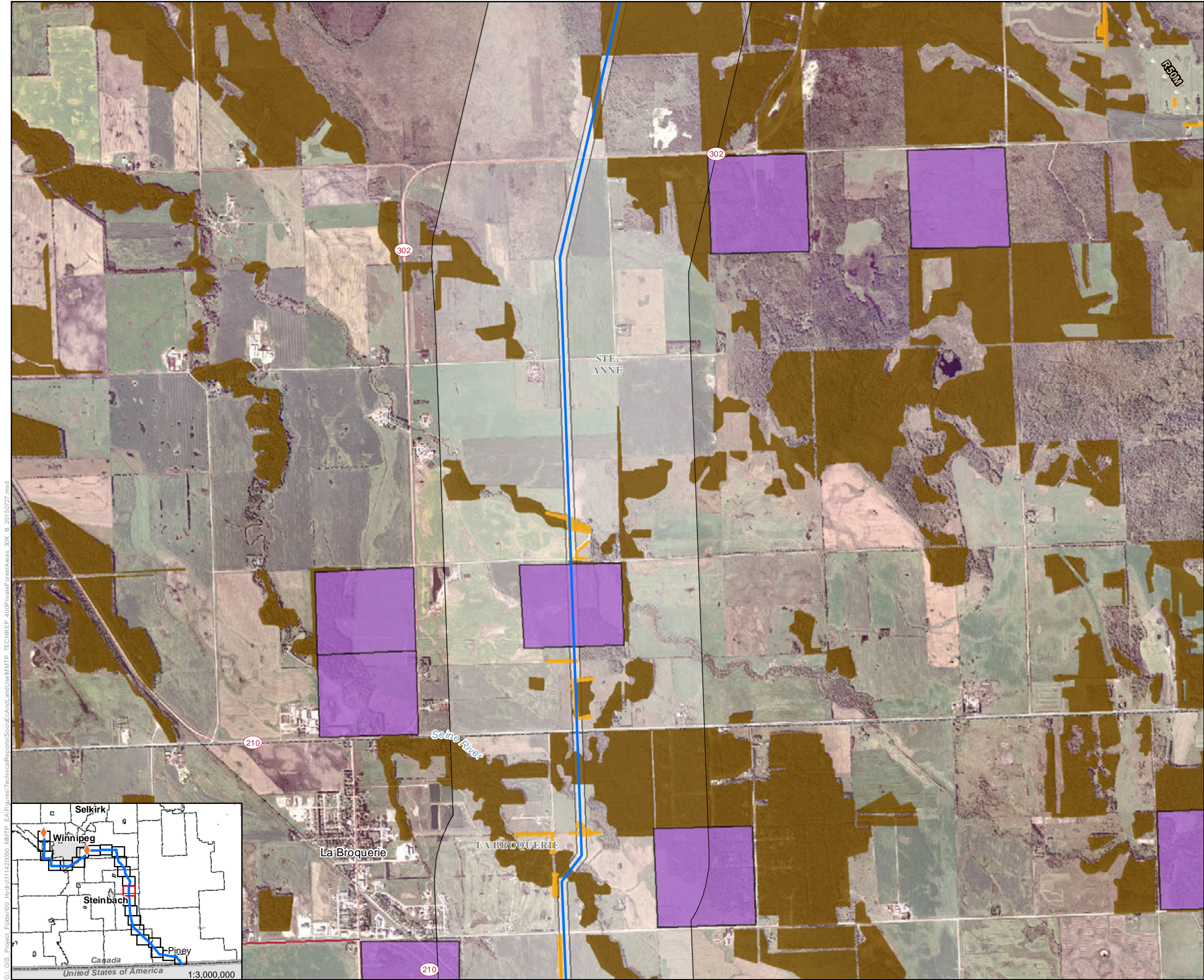
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Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 28, 2015

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0 0.25 0.5 Miles

1:30,000

## Private Land Forest Areas





# Manitoba-Minnesota Transmission Project

## Project Infrastructure

Final Preferred Route (FPR)

## Infrastructure

Existing 230kV Transmission Line

## Private Forest Land Areas

- Trees For Tomorrow <sup>1</sup>
- Shelterbelt <sup>2</sup>
- Manitoba Forestry Association Woodlot Locations <sup>3</sup>
- Private Forest Land - Provincial Forest Inventory <sup>4</sup>

## Assessment Area

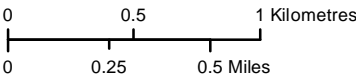
- Project Development Area (PDA)
- Forestry Local Assessment Area

## Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Rural Municipality

Source:  
1. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
2. Private Land Forest Value, 2014, Maskwa.  
3. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).  
4. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship.

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 28, 2015

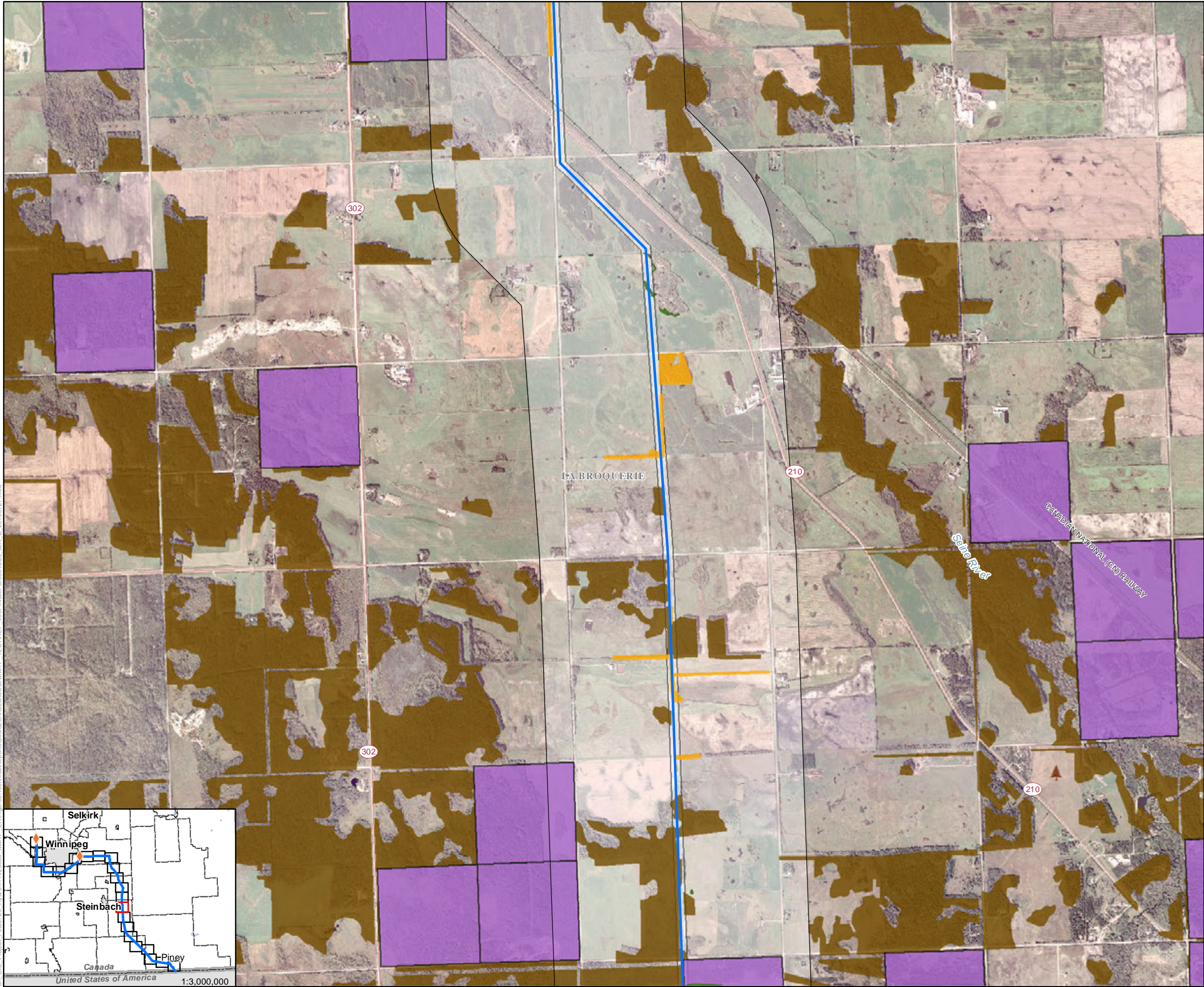


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## Private Land Forest Areas



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## Manitoba-Minnesota Transmission Project

### Project Infrastructure

Final Preferred Route (FPR)

### Private Forest Land Areas

- Trees For Tomorrow <sup>1</sup>
- Shelterbelt <sup>2</sup>
- Private Forest Land - Photo Interpretation <sup>2</sup>
- Manitoba Forestry Association Woodlot Locations <sup>3</sup>
- Private Forest Land - Provincial Forest Inventory <sup>4</sup>

### Assessment Area

- Project Development Area (PDA)
- Forestry Local Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Rural Municipality

Source:  
1. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
2. Private Land Forest Value, 2014, Maskwa.  
3. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).  
4. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship.

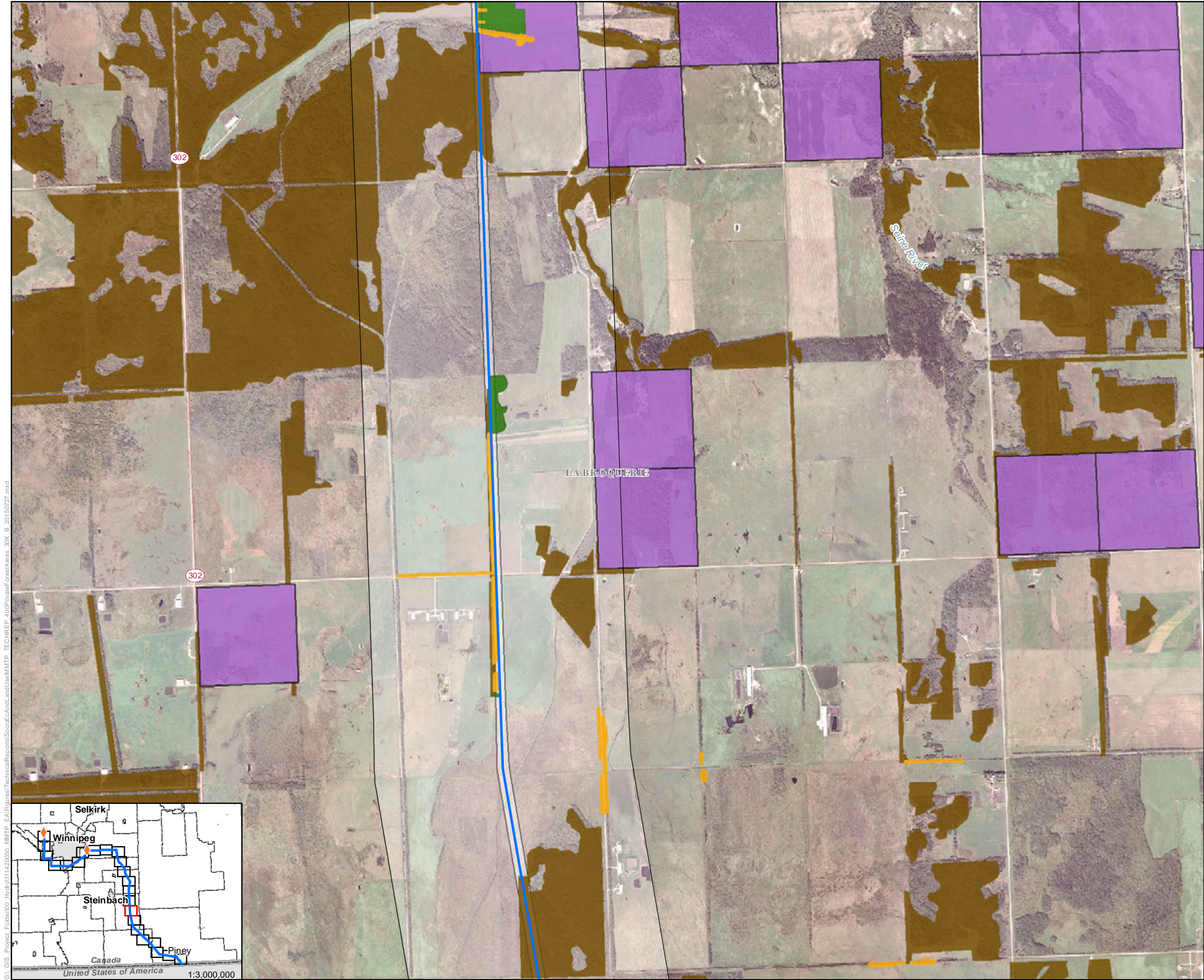
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Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 28, 2015

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0 0.25 0.5 Miles

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### Private Land Forest Areas





## Manitoba-Minnesota Transmission Project

### Project Infrastructure

Final Preferred Route (FPR)

### Private Forest Land Areas

- Shelterbelt <sup>2</sup>
- Private Forest Land - Photo Interpretation <sup>2</sup>
- Manitoba Forestry Association Woodlot Locations <sup>3</sup>
- Private Forest Land - Provincial Forest Inventory <sup>4</sup>

### Assessment Area

- Project Development Area (PDA)
- Forestry Local Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Rural Municipality

Source:  
1. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
2. Private Land Forest Value, 2014, Maskwa.  
3. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).  
4. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship.

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 28, 2015

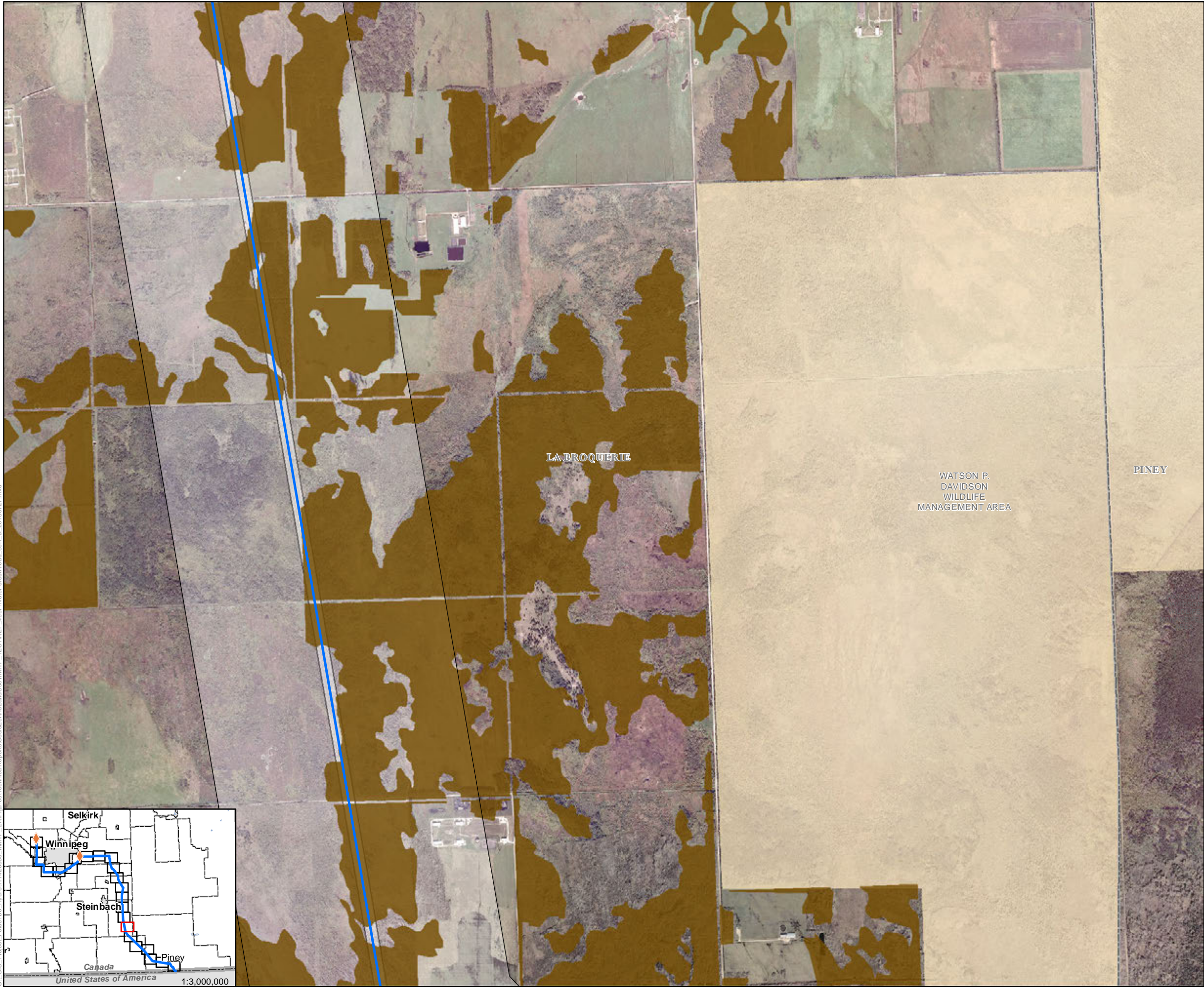
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0 0.25 0.5 Miles

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### Private Land Forest Areas



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## Manitoba-Minnesota Transmission Project

### Project Infrastructure

 Final Preferred Route (FPR)

### Private Forest Land Areas







 Private Forest Land - Provincial Forest Inventory <sup>4</sup>

### Assessment Area

 Project Development Area (PDA)

 Forestry Local Assessment Area

### Landbase

- Community
-  Railway
-  Trans Canada
-  Provincial Highway
-  Provincial Road
-  Wildlife Management Area
-  Rural Municipality

Source:  
1. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
2. Private Land Forest Value, 2014, Maskwa.  
3. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).  
4. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship.

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 28, 2015



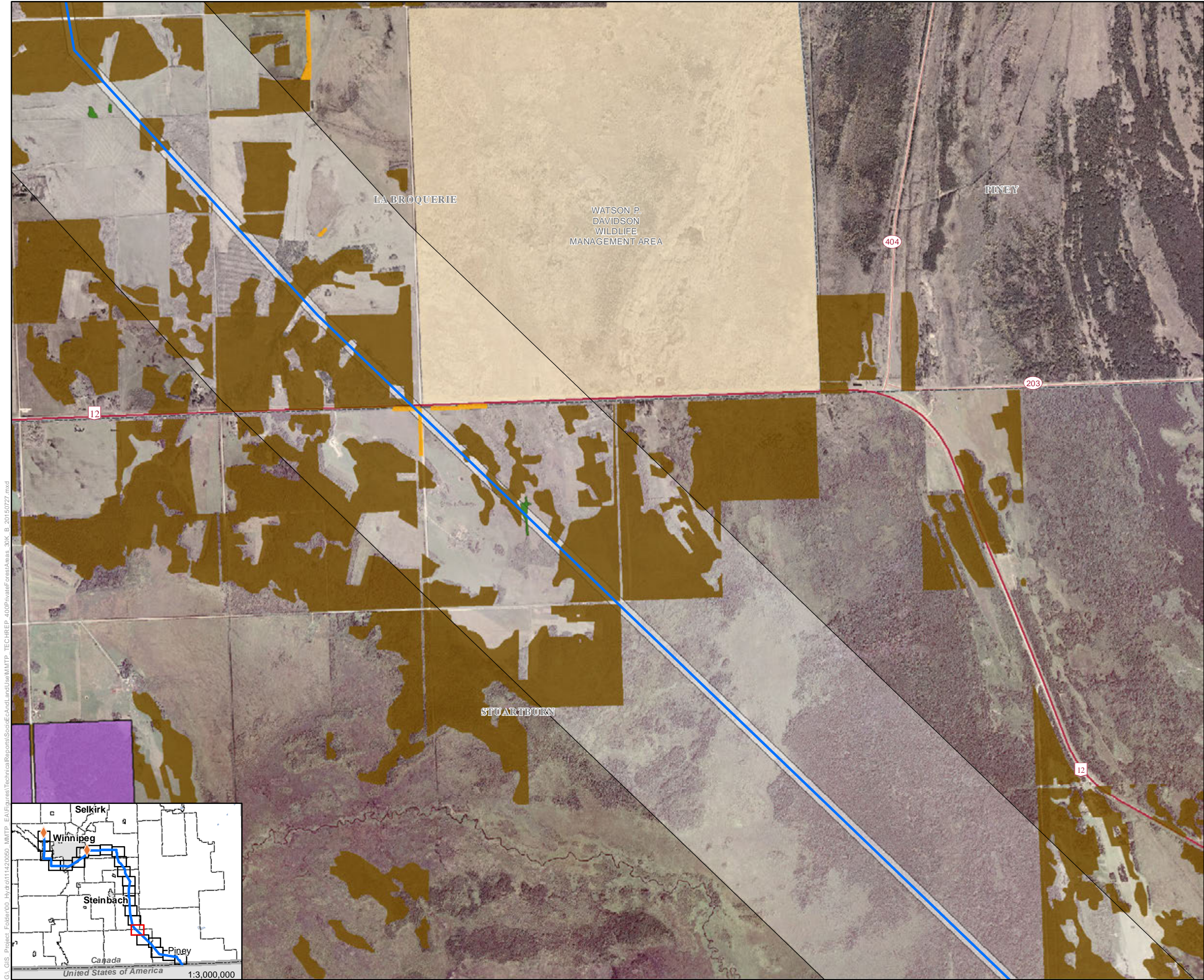
0 0.5 1 Kilometres  
0 0.25 0.5 Miles

1:30,000

## Private Land Forest Areas


Map 4-400-17






## Manitoba-Minnesota Transmission Project



### Project Infrastructure

 Final Preferred Route (FPR)




### Private Forest Land Areas

-  Shelterbelt <sup>2</sup>
-  Private Forest Land - Photo Interpretation <sup>2</sup>
-  Manitoba Forestry Association Woodlot Locations <sup>3</sup>
-  Private Forest Land - Provincial Forest Inventory <sup>4</sup>

### Assessment Area

-  Project Development Area (PDA)
-  Forestry Local Assessment Area

### Landbase

-  Community
-  Railway
-  Trans Canada
-  Provincial Highway
-  Provincial Road
-  Wildlife Management Area
-  Rural Municipality

Source:  
1. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
2. Private Land Forest Value, 2014, Maskwa.  
3. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).  
4. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship.

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 28, 2015

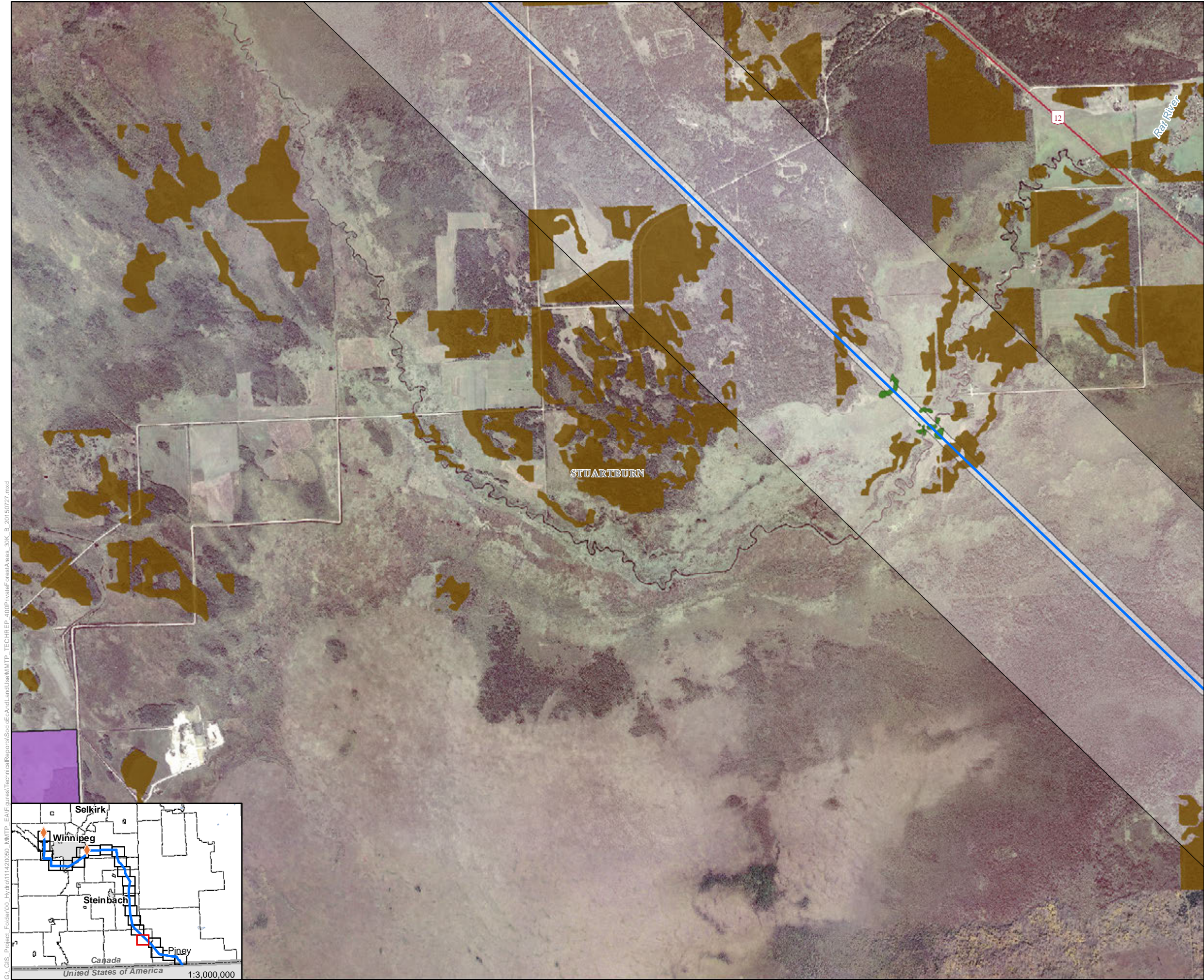


0 0.5 1 Kilometres  
0 0.25 0.5 Miles

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### Private Land Forest Areas





## Manitoba-Minnesota Transmission Project

### Project Infrastructure

Final Preferred Route (FPR)

### Private Forest Land Areas

- Private Forest Land - Photo Interpretation <sup>2</sup>
- Manitoba Forestry Association Woodlot Locations <sup>3</sup>
- Private Forest Land - Provincial Forest Inventory <sup>4</sup>

### Assessment Area

- Project Development Area (PDA)
- Forestry Local Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Rural Municipality

Source:  
1. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
2. Private Land Forest Value, 2014, Maskwa.  
3. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).  
4. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship.

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 28, 2015

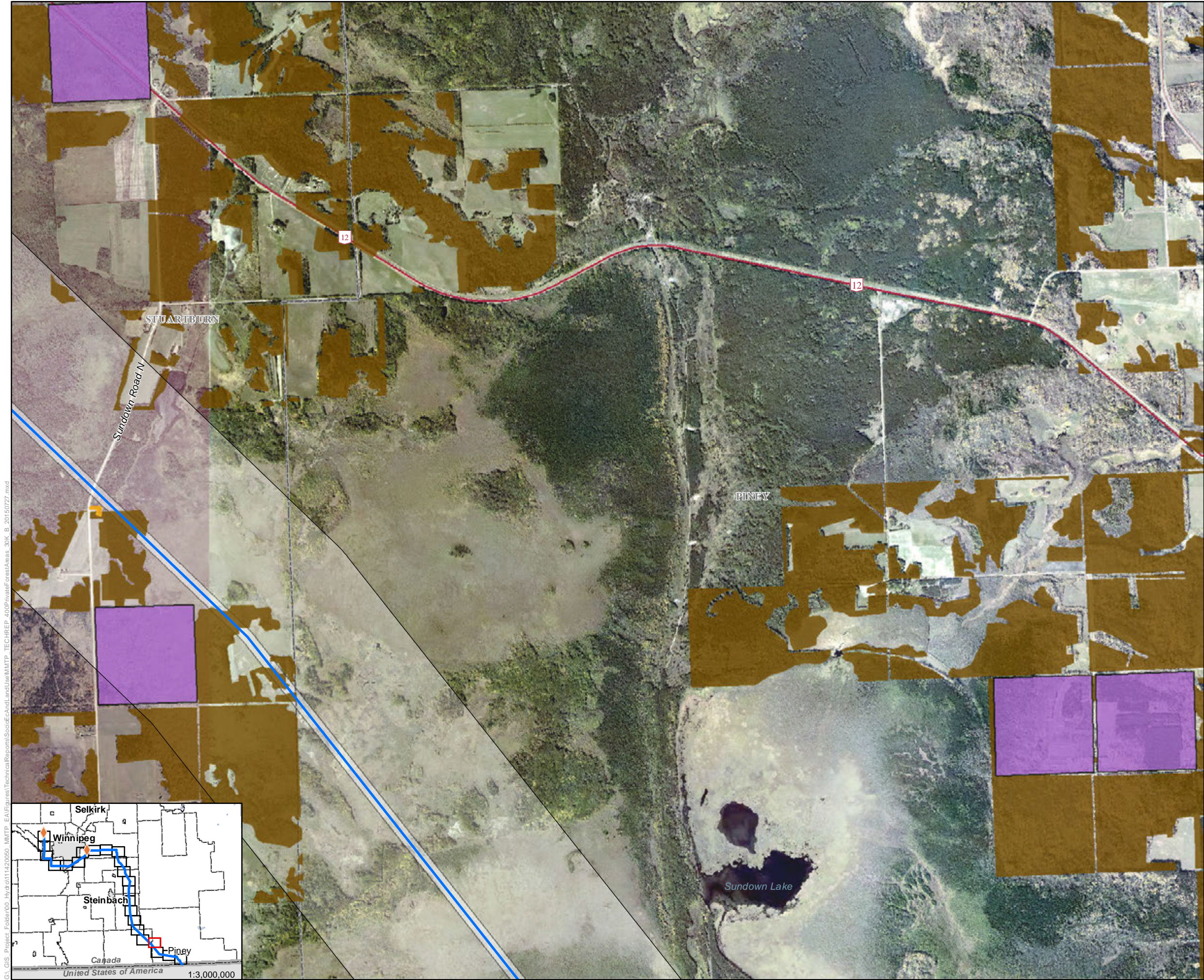
0 0.5 1 Kilometres  
0 0.25 0.5 Miles

1:30,000



## Private Land Forest Areas





## Manitoba-Minnesota Transmission Project

### Project Infrastructure

Final Preferred Route (FPR)

### Private Forest Land Areas

- Trees For Tomorrow <sup>1</sup>
- Shelterbelt <sup>2</sup>
- Manitoba Forestry Association Woodlot Locations <sup>3</sup>
- Private Forest Land - Provincial Forest Inventory <sup>4</sup>

### Assessment Area

- Project Development Area (PDA)
- Forestry Local Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Rural Municipality

Source:  
1. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
2. Private Land Forest Value, 2014, Maskwa.  
3. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).  
4. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship.

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 28, 2015

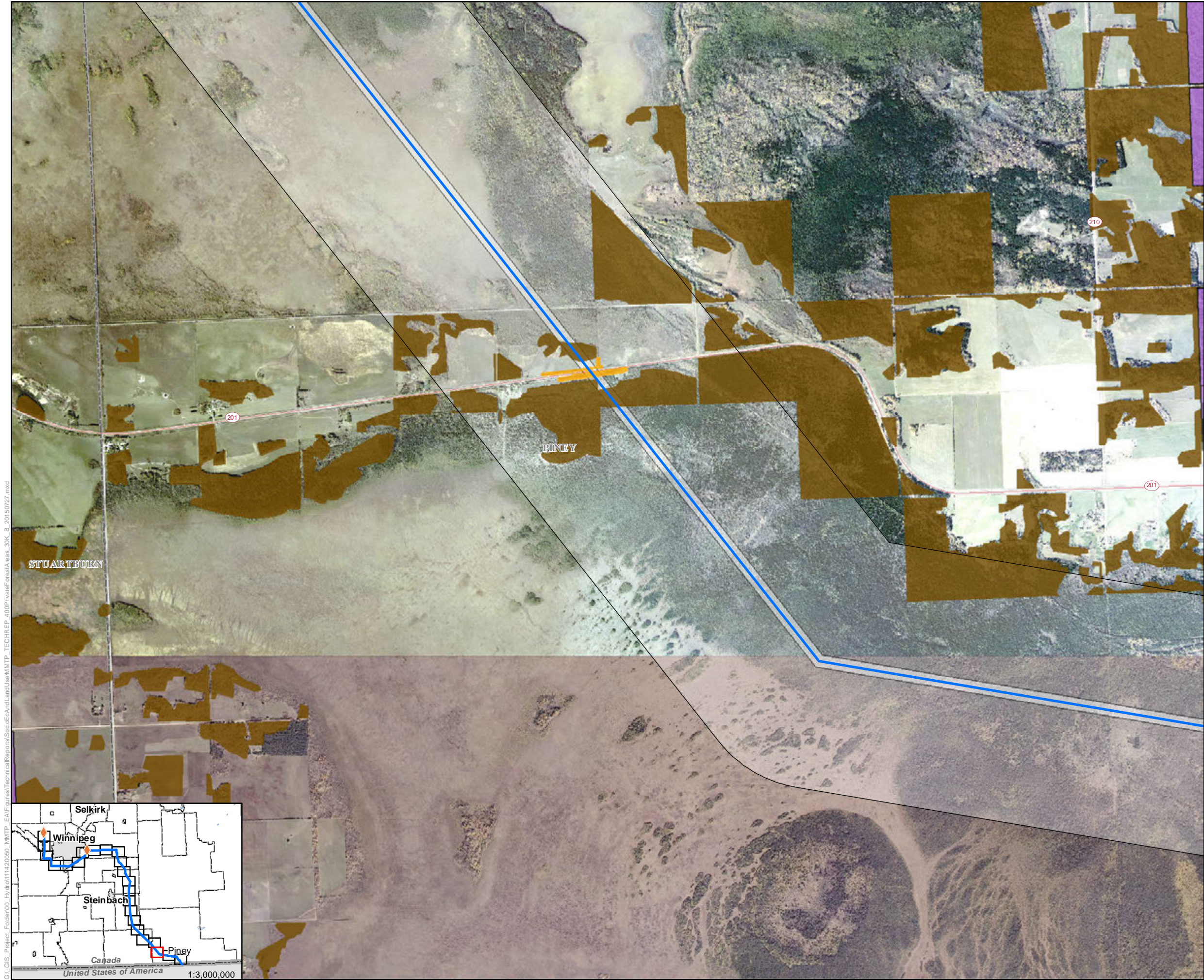


0 0.5 1 Kilometres  
0 0.25 0.5 Miles

1:30,000




### Private Land Forest Areas





— Final Preferred Route (FPR)





### Private Forest Land Areas

-  Shelterbelt <sup>2</sup>  
 Manitoba Forestry Association Woodlot Locations <sup>3</sup>  
 Private Forest Land - Provincial Forest Inventory <sup>4</sup>

### Assessment Area

- ☐ Project Development Area (PDA)
- ☐ Forestry Local Assessment Area

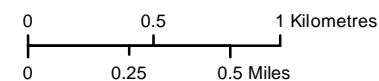
## Landbase

- Community
- +— Railway
-  Trans Canada
-  Provincial Highway
-  Provincial Road
-  Rural Municipality

Source:

1. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.
2. Private Land Forest Value, 2014, Maskwa.
3. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).
4. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship.

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 28, 2015

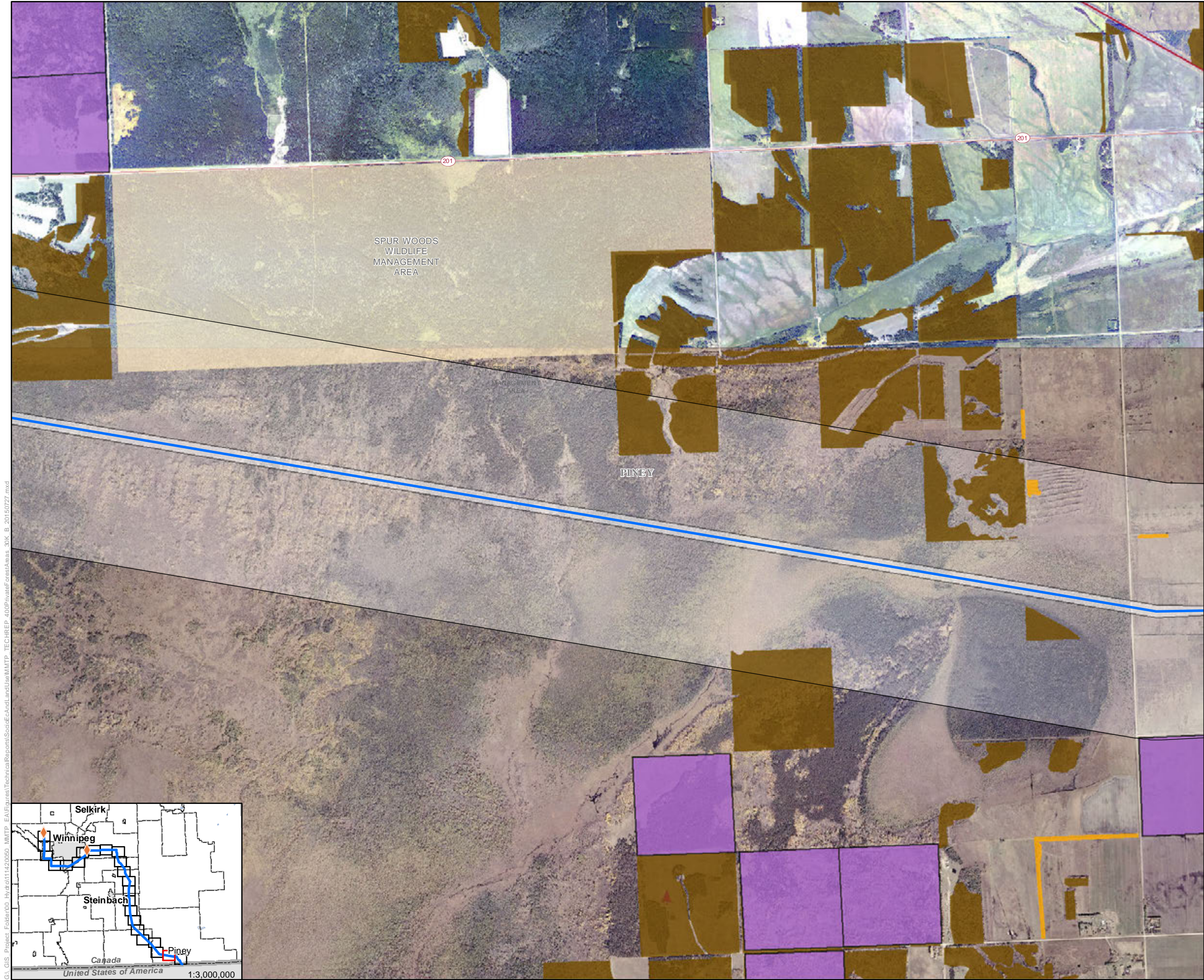


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## Private Land Forest Areas


Map 4-400-21









## Manitoba-Minnesota Transmission Project



### Project Infrastructure

 Final Preferred Route (FPR)





### Private Forest Land Areas

-  Trees For Tomorrow <sup>1</sup>
-  Shelterbelt <sup>2</sup>
-  Manitoba Forestry Association Woodlot Locations <sup>3</sup>
-  Private Forest Land - Provincial Forest Inventory <sup>4</sup>

### Assessment Area

-  Project Development Area (PDA)
-  Forestry Local Assessment Area

### Landbase

-  Community
-  Railway
-  Trans Canada
-  Provincial Highway
-  Provincial Road
-  Wildlife Management Area
-  Rural Municipality

Source:  
1. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
2. Private Land Forest Value, 2014, Maskwa.  
3. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).  
4. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship.

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 28, 2015



0 0.5 1 Kilometres  
0 0.25 0.5 Miles

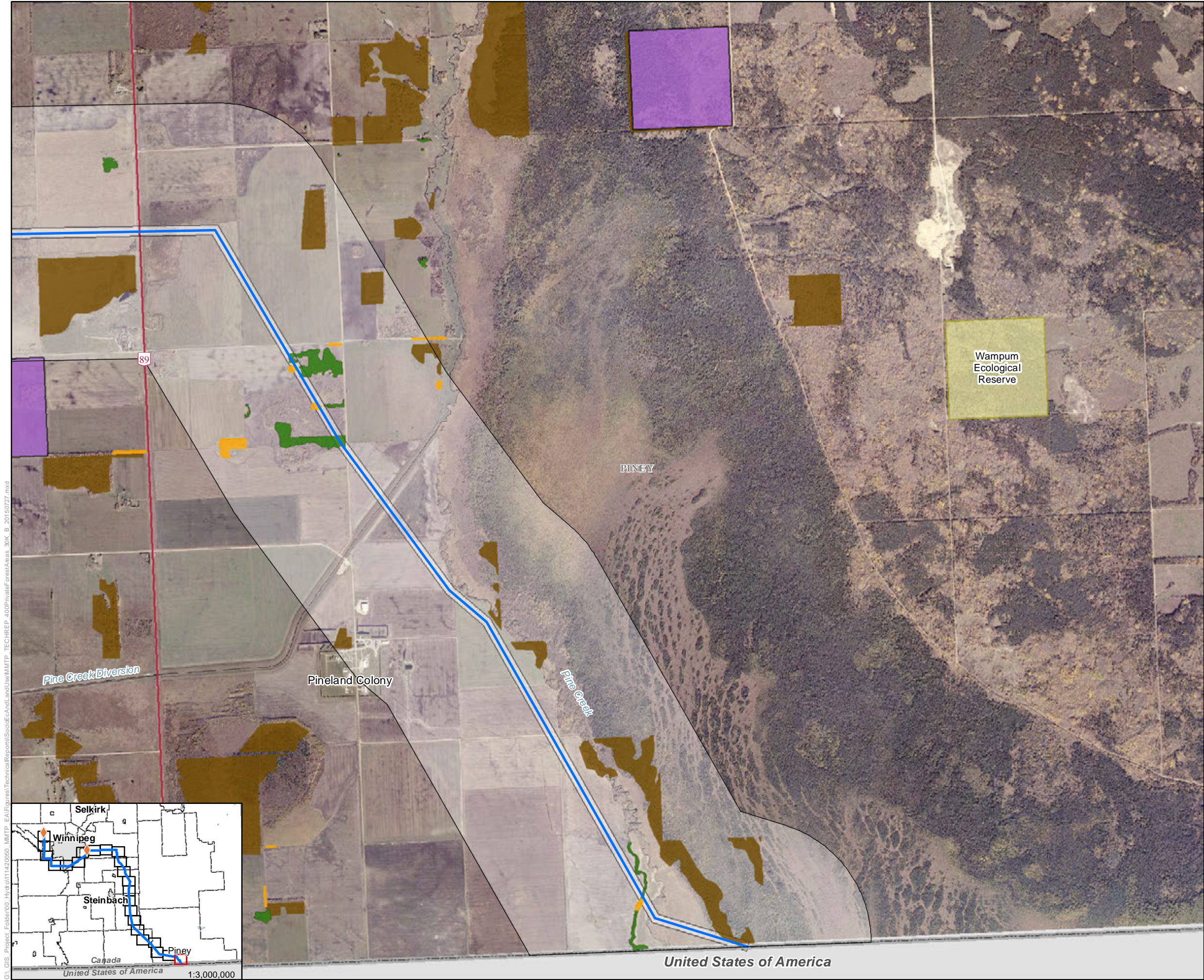
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## Private Land Forest Areas

Map 4-400-22

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## Manitoba-Minnesota Transmission Project

### Project Infrastructure

Final Preferred Route (FPR)

### Private Forest Land Areas

- Shelterbelt <sup>2</sup>
- Private Forest Land - Photo Interpretation <sup>2</sup>
- Manitoba Forestry Association Woodlot Locations <sup>3</sup>
- Private Forest Land - Provincial Forest Inventory <sup>4</sup>

### Assessment Area

- Project Development Area (PDA)
- Forestry Local Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Ecological Reserve
- Rural Municipality

Source:  
1. Trees for Tomorrow Planting Sites (2008-2010), 2010, Manitoba Conservation Forestry Branch.  
2. Private Land Forest Value, 2014, Maskwa.  
3. Woodlot Locations, 2013, Manitoba Forestry Association (MFA).  
4. Forest Resource Inventory, 1979-1983, Manitoba Conservation and Water Stewardship.

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 28, 2015

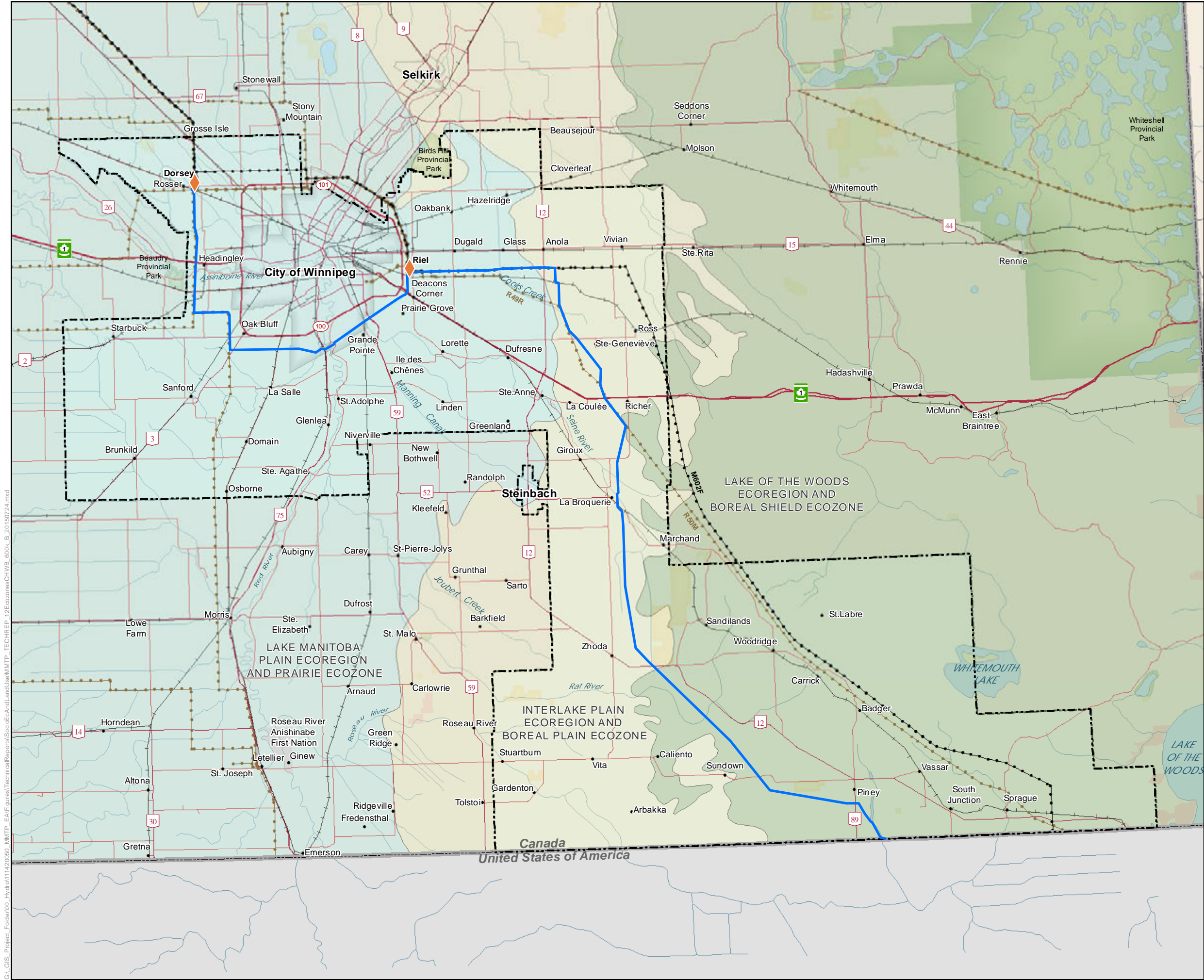
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0 0.25 0.5 Miles

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### Private Land Forest Areas





# Manitoba-Minnesota Transmission Project

## Project Infrastructure

- Converter Station (Existing)
- Final Preferred Route (FPR)

## Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

## Ecological Boundaries

- Interlake Plain Ecozone / Boreal Plain Ecozone
- Lake Manitoba Plain Ecozone / Prairie Ecozone
- Lake of the Woods Ecozone / Boreal Shield Ecozone

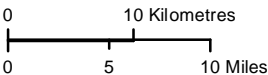
## Assessment Area

- Community Health and Well-being Assessment Area

## Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park

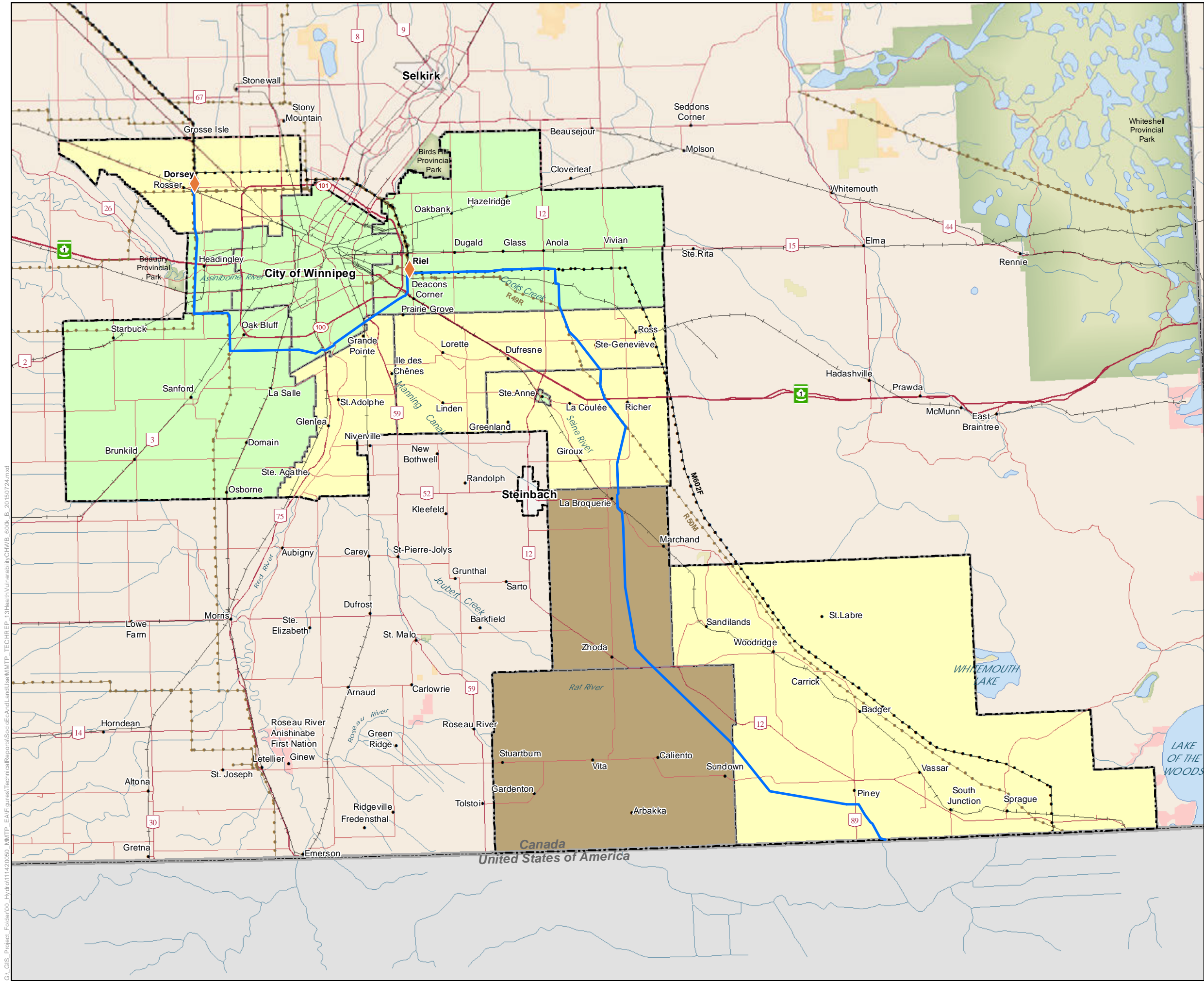
Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 24, 2015



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## Ecozones for the Assessment Area





## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- ◆ Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### Relative Health Resiliency of Rural Municipality

- |                             |                     |
|-----------------------------|---------------------|
| 1 - Most Resilient          | South Cypress, RM   |
| Winnipeg, City              | Ste. Anne, RM       |
| Headingley, RM              | Ritchot, RM         |
| Macdonald, RM               | Tache, RM           |
| Springfield, RM             | 3 - Least Resilient |
| Ste. Anne, Town             | Glenboro, Village   |
| 2 - Slightly Less Resilient | La Broquerie, RM    |
| Piney, RM                   | Stuartburn, RM      |
| Rosser, RM                  |                     |

### Assessment Area

- Community Health and Well-being Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 28, 2015

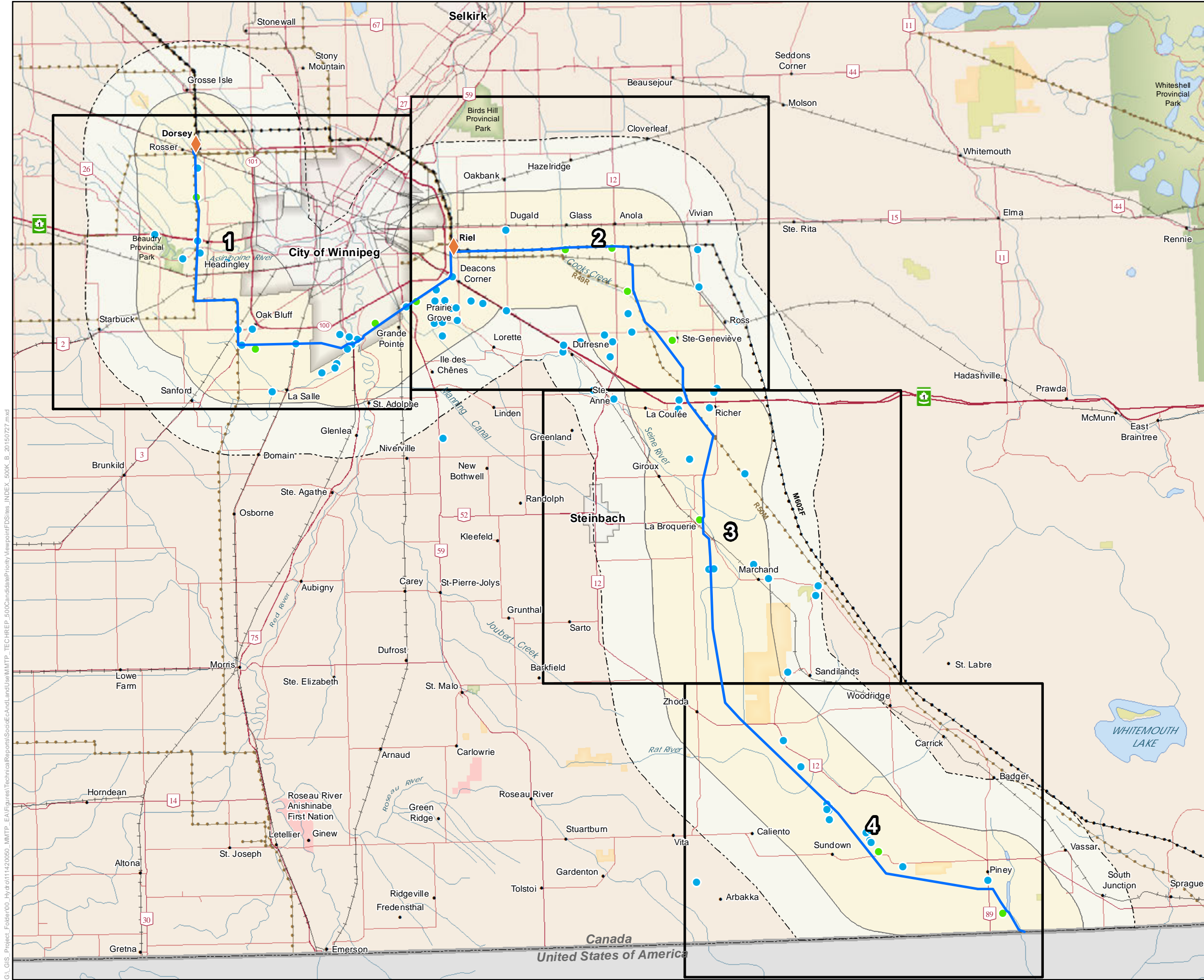


0 10 Kilometres  
0 5 10 Miles

1:600,000

## Health Vulnerability of Communities





## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- ◆ Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### Map Tile Index - 1:150,000

- Map Series Tile

### Viewshed Survey Assessment <sup>1</sup>

- Candidate Viewpoint Sites
- Priority Viewpoint Sites

### Assessment Area

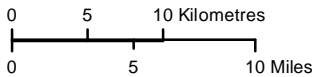
- Visual Quality Local Assessment Area
- Visual Quality Regional Assessment Area

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park
- City

Source:  
1. Visual Quality Survey Locations, 2014. Stantec.

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 27, 2015

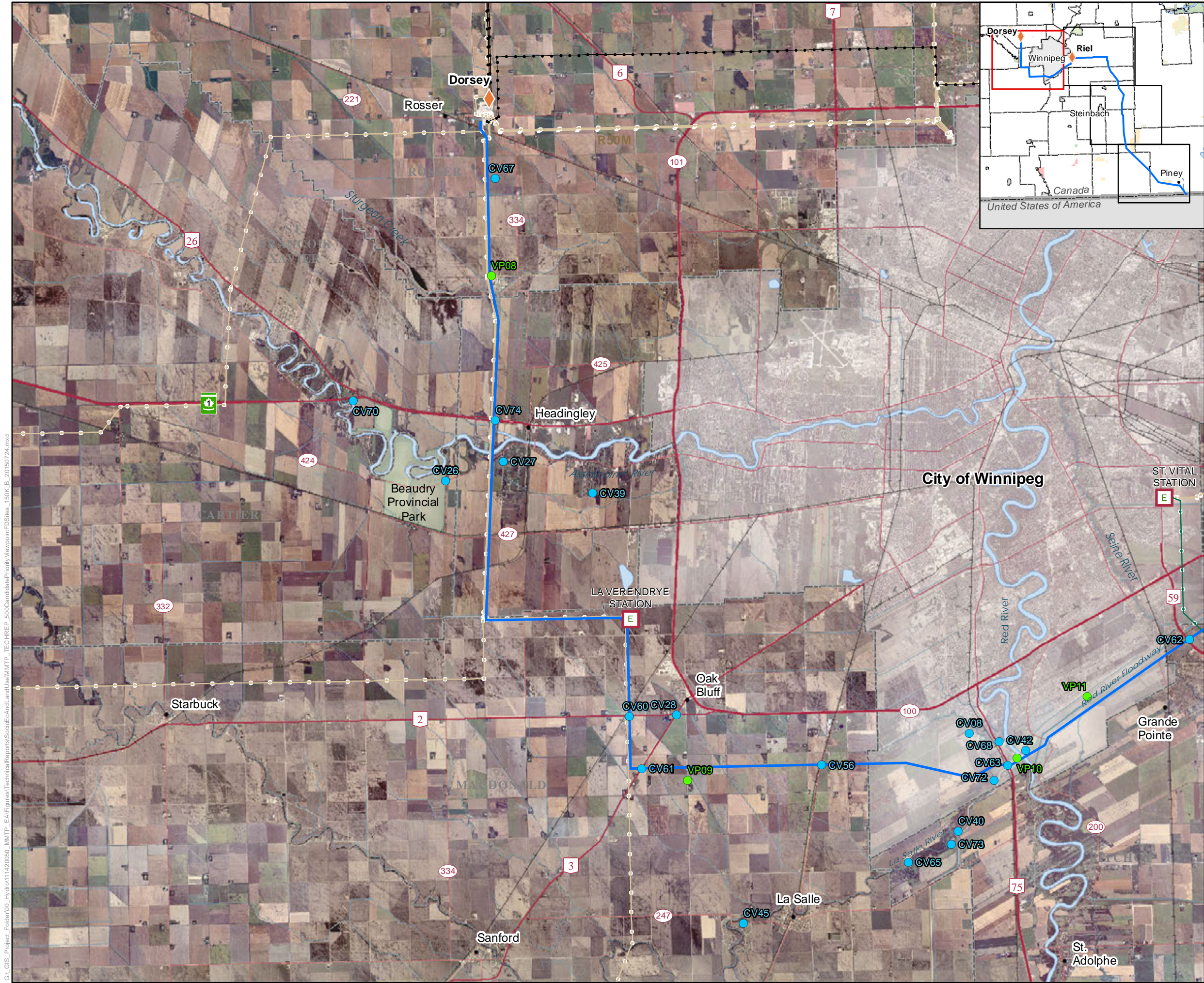


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## Index of Map Series Candidate and Priority Viewpoints

Map Series 4-500





## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- ◆ Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- Electrical Station
- St. Vital Transmission Complex (V95L)
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### Viewshed Survey Assessment <sup>1</sup>

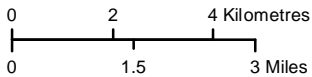
- Priority Viewpoint
- Candidate Viewpoint

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- First Nation
- City / Town
- National/Provincial Park
- Rural Municipality
- Provincial Boundary

Source:  
1. Visual Quality Survey Locations, 2014. Stantec.

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 27, 2015

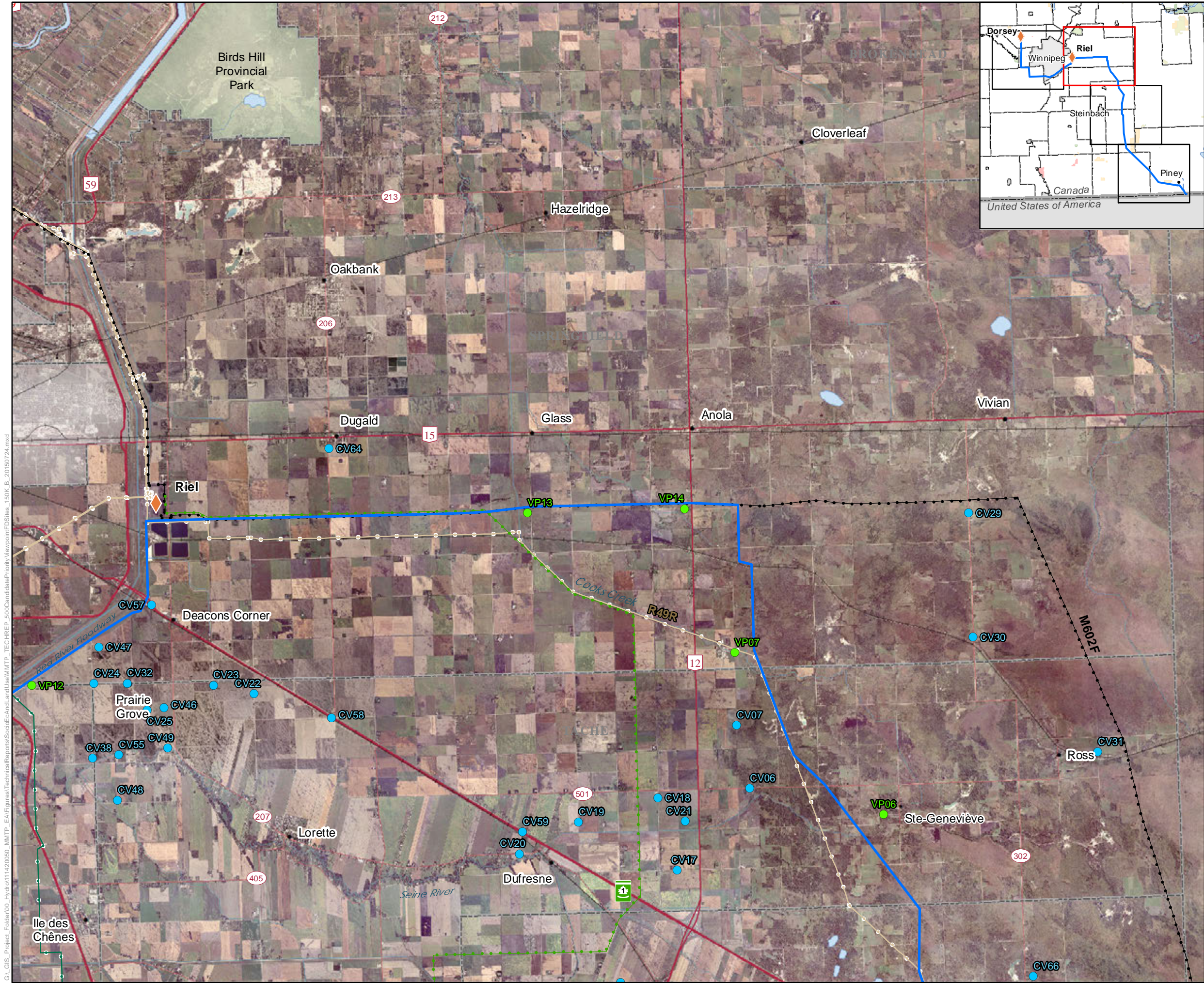


1:150,000

## Visual Quality Candidate and Priority Viewpoints

Map 4-500-01





## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- ◆ Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- Bipole III Transmission Line (Approved)
- St. Vital Transmission Complex (V95L)
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### Viewshed Survey Assessment <sup>1</sup>

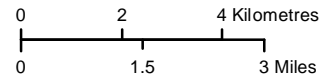
- Priority Viewpoint
- Candidate Viewpoint

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- First Nation
- City / Town
- National/Provincial Park
- Rural Municipality
- Provincial Boundary

Source:  
1. Visual Quality Survey Locations, 2014. Stantec.

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 27, 2015



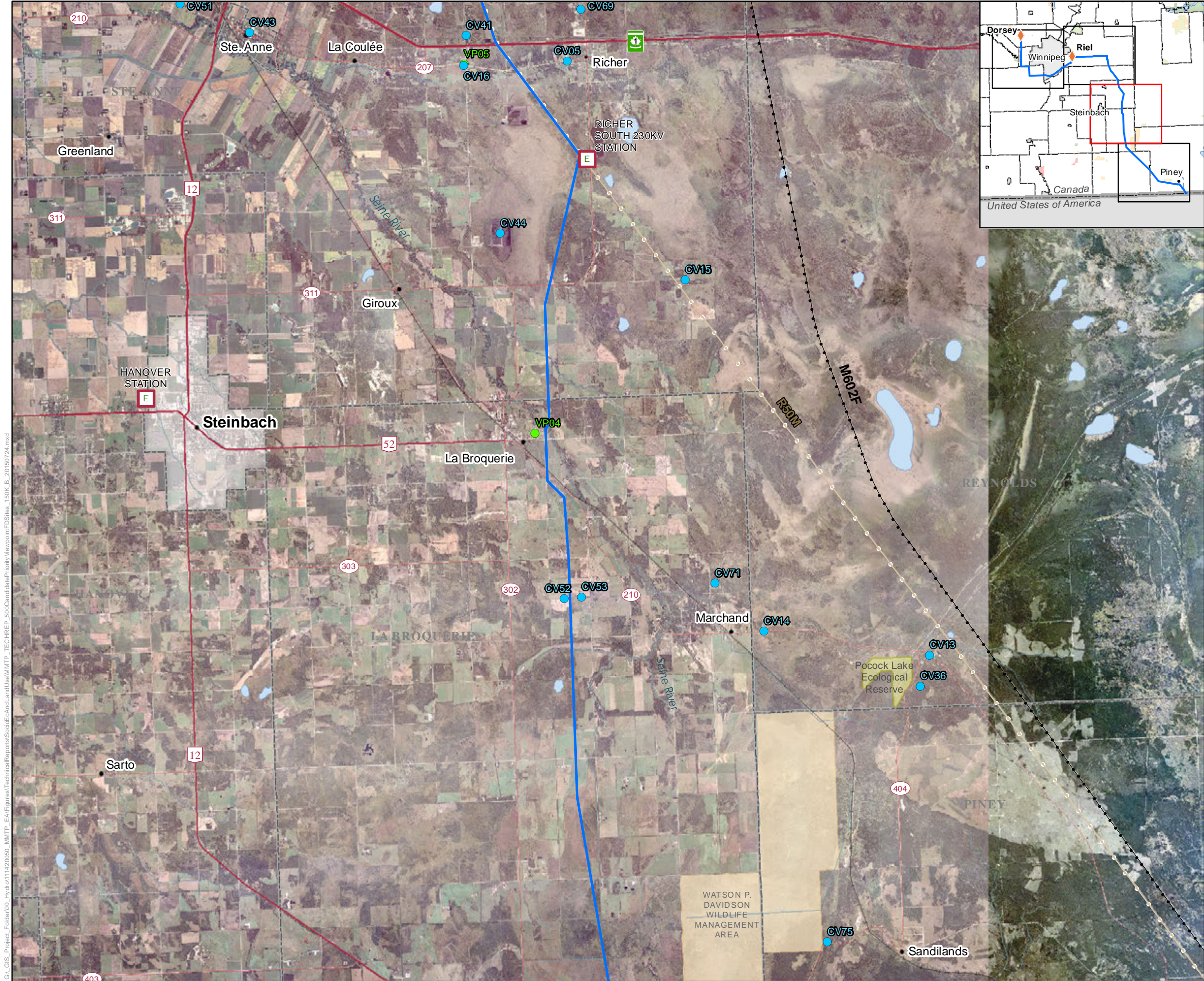
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## Visual Quality Candidate and Priority Viewpoints

Map 4-500-02

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## Manitoba-Minnesota Transmission Project

### Project Infrastructure

- ◆ Converter Station (Existing)
- Final Preferred Route (FPR)

### Infrastructure

- Electrical Station
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

### Viewshed Survey Assessment <sup>1</sup>

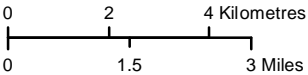
- Priority Viewpoint
- Candidate Viewpoint

### Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Ecological Reserve
- City / Town
- Wildlife Management Area
- National/Provincial Park
- Rural Municipality
- Provincial Boundary

Source:  
1. Visual Quality Survey Locations, 2014. Stantec.

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 27, 2015



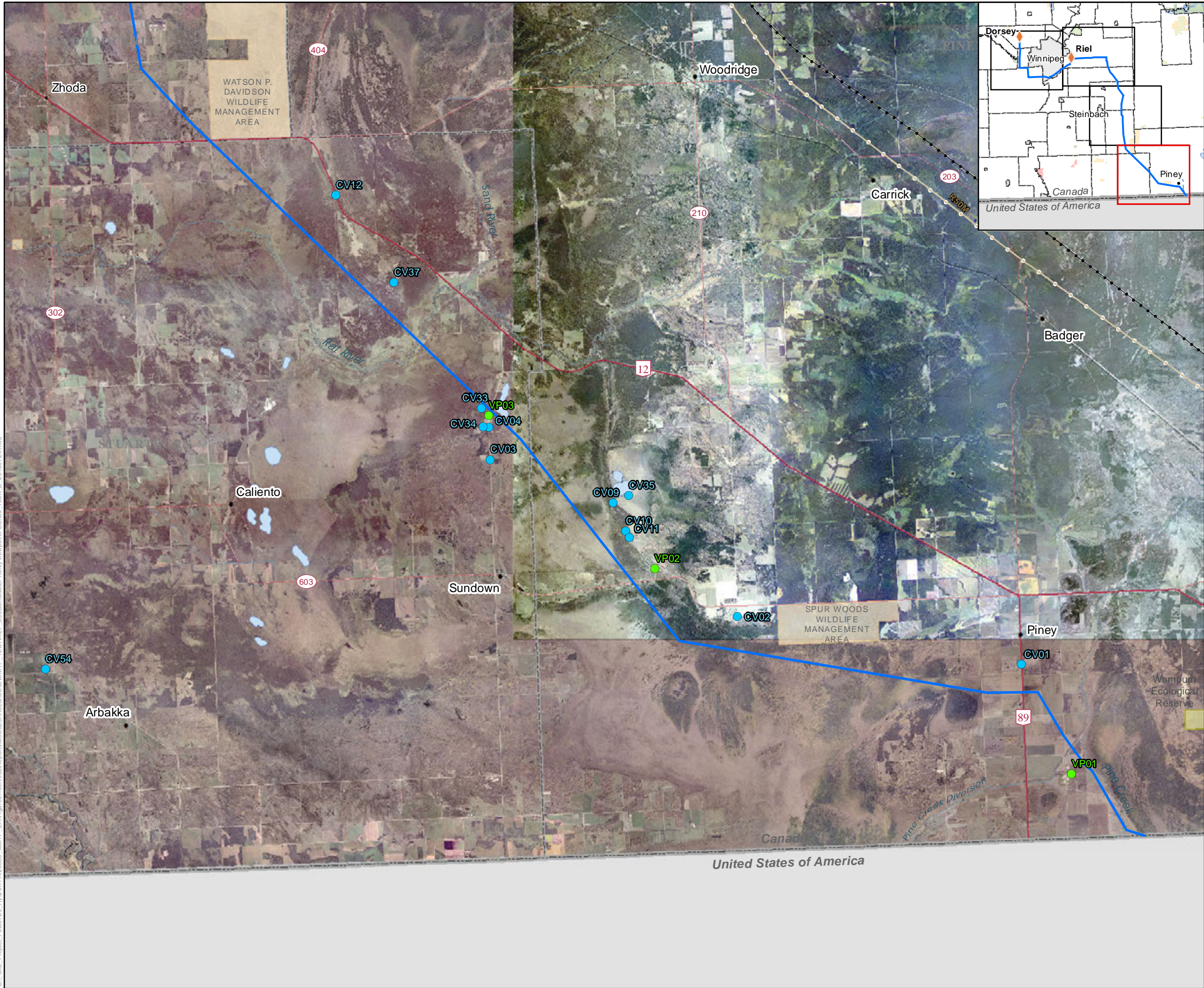
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## Visual Quality Candidate and Priority Viewpoints

Map 4-500-03



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Manitoba-Minnesota  
Transmission Project

Project Infrastructure

- ◆ Converter Station (Existing)
- Final Preferred Route (FPR)

Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

Viewshed Survey Assessment <sup>1</sup>

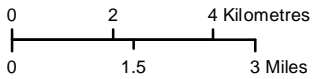
- Priority Viewpoint
- Candidate Viewpoint

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Ecological Reserve
- Wildlife Management Area
- National/Provincial Park
- Rural Municipality
- Provincial Boundary

Source:  
1. Visual Quality Survey Locations, 2014. Stantec.

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date Created: July 27, 2015



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Visual Quality  
Candidate and Priority Viewpoints



# MANITOBA-MINNESOTA TRANSMISSION PROJECT

## SOCIO-ECONOMIC AND LAND USE ENVIRONMENT – TECHNICAL DATA REPORT

Appendix A Property Value Literature Review  
September 2015

### Appendix A Property Value Literature Review

The following presents the results of a literature review on the effects of transmission line development on property value, focusing on published studies and peer reviewed journal sources.

Colwell (1990) looked at whether high voltage transmission lines and/or their towers impact the selling price of nearby residential land. Colwell (1990) concluded that that proximity to a power line is associated with reduced selling prices, but this effect is diminished with time. The cause of the diminished effect is thought to be as a result of tree/vegetative growth surrounding the corridor. However, Colwell (1990) found that properties situated in proximity to transmission towers experienced reduced values, which did not diminish over time.

A study conducted by Cowger et al (1996) that looked at High Voltage Urban Transmission Lines and Urban Property Values for the Heartland Transmission Line Project utilized a matched pair method using multiple regression analysis. Cowger et al concluded that high voltage transmission lines had minimal impact on property values.

Bottemiller (2000) was an update of the Cowger et al. (1996) study. It utilized the same study methodology, but compared houses sold in the years 1994 and 1995. Bottemiller (2000) showed that high voltage power lines do have an impact on property values. That impact is, however, minimal with a decrease of around 0.04 % to 2.05 %. Greater short term impacts were noted under conditions related to the construction of a new transmission line, or a rebuild.

Jackson and Pitts (2007) investigated the effects of power lines on residential property value and found the following:

- The effects of HVTL on property value are varied and are determined by five interplaying factors: proximity to towers and lines; the view of towers and lines, the type and size of HTVL structures; the appearance of easement landscaping; and surrounding topography.
- Many studies indicated that the HTVL have no significant effect on residential property values.
- A number of studies have demonstrated a small diminution in value, attributable to close proximity of lines.
  - The studies reported an average discount of 1% and 10% of property value.
  - The diminution in value was attributable to the visual unattractiveness of lines, potential health hazards, disturbing sounds and safety concerns.
  - The impacts diminished as the distance from the line increased and disappeared at a distance of 200 ft. (60 m) from the lines.
  - Where views were completely unobstructed, negative impacts can extend up to a quarter mile. The screening of structures by trees, landscaping, or topography reduces negative effects considerably.

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- Value diminution attributed to tower line proximity was temporary and usually decreased over time, disappearing completely in four to 10 years.

Grover, Elliott & Co. Ltd. (2008) conducted a property value assessment for the Interior to Lower Mainland (ILM) 500 kV AC Transmission Project in British Columbia. The authors noted that the potential value effects of HVTL have been well studied with research published in peer-reviewed professional appraisal and real-estate journals, including the studies discussed above.

Conclusions noted included the following:

- Property values can be negatively affected on properties containing the ROW and on immediately adjacent properties.
- The value effect is much greater for small properties than for large properties and greater for urban properties than unpopulated rural or remote locations.
- The value effect diminishes quickly with distance.
- The value effect varies the extent to which the HVTL is visible.

Grover *et al.* (2008) concluded that the majority of adverse effects to property values from the ILM Project would be associated with the visibility of the HVTL. Minimizing the potential effects of the towers and lines on visual quality would serve to reduce potential negative effects on property values.

Chalmers and Voorvaart (2009) looked at the effects of an existing 345 kV transmission on property values sold between the years of 1998 and 2007. The study focused on Connecticut and Massachusetts involving rural residential and suburban residential developments. The authors concluded transmission line proximity or visibility did not affect property values in residential neighborhoods. However, a consistent negative effect was found when transmission line easements border private property. Chalmers and Voorvaart (2009) found no data supporting the hypothesis that property values are more vulnerable to transmission line effects in a downturn market or that higher valued properties are more vulnerable to effects from transmission lines.

Jackson and Pitts (2010) reviewed numerous studies on the effects on property value from proximity to transmission lines in various locations in the US involving suburban towns, rural land areas and unimproved recreational lands. The authors concluded that the results were inconsistent but that transmission lines have a small or no effect on property values. When a negative effect was found, it ranged from -2% to 9% and decreased with time and distance. Jackson and Pitts (2010) also noted that in some cases a premium was observed because of the additional open area of the transmission line corridor.

Headwaters Economics (2012) reviewed the published research on property value impacts from high voltage transmission lines as part of the Mountain States Transmission Intertie (MSTI) Project between Montana and Idaho. Key findings from the review included:



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- From the market response perspective, transmission lines would affect property adversely if they sell at prices lower or more slowly than comparable properties without transmission lines.
- Most of the studies cited focused on residential properties in suburban or urban areas. However, Chalmers (2011/2012) for a BPA 500 kV line in Montana looked at sales involving agricultural and residential properties using appraisal-based research techniques and statistical evaluation.
  - Chalmers' (2011/2012) research found cases where the adverse effects to parcels of land in rural residential subdivisions exceeded what was expected.
  - Statistical analysis showed an average impact of 15 percent devaluation within 1000 ft. (304 m) of the line.
  - The research found little sensitivity to price impacts within production agriculture and amenity-influenced agricultural properties.
  - There is some limited evidence from other research that market impacts can be greatest during the siting and construction period.
- In the absence of further conclusive research, the Headwaters Economics 2012 review concluded that the siting process for MSTI will continue to demand discussions with landowners and communities about perceived impacts and how best to mitigate them in the event that the project is permitted. Additional conclusions drawn by Headwaters Economics from the review included:
  - Property values impacts that do occur tend to be negative.
  - Impacts are the highest when the impact of the line on the property's use cannot be mitigated.
  - From a siting process perspective that seeks to minimize the risk of lost property value, there is credible data to suggest that small-lot rural residential subdivisions face high risk as a class of properties.
- Headwaters Economics (2012) concluded that the impact on larger properties is difficult to predict without considering how the line would affect the use of the property. They further stated that formal appraisal was the only appropriate mechanism to assess the impacts to individual properties.

Bottemiller *et al.* (2013) undertook a study to gain a further understanding on the effects of Bonneville Power Administration's (BPA) high voltage transmission line (HVTL) ROW on abutting single-family home prices in the Portland and Seattle areas. The study, which took place between 2005 and 2007, looked at HVTL proximity effects on higher-priced homes averaging \$1 million compared to HVTL effects on more typically-priced homes in the Seattle area. The study also examined changing market conditions and investigated whether HVTL abutting homes appreciated in value at a rate different from non-HVTL abutting homes. Key findings of the study included:

- In both of the Portland and Seattle study areas there was very little difference in the percentage change in price from 2005 to 2007 for HVTL-abutting homes and non-HVTL abutting homes.

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- The Portland study found no appreciable difference in price response to changing market conditions for HVTL abutting and non-abutting homes.
- The analysis from the Portland and Seattle studies indicated a small, significant, negative HVTL price effect overall; when higher-priced homes and more typically-priced homes in Seattle were analyzed separately the effects were found to be different – data for more typically-priced homes showed a very small negative and statistically insignificant HVTL price effect; whereas the negative HVTL price effect for higher-priced Seattle homes was substantial and highly significant.
- In both Portland and Seattle, the study concluded that there was no evidence that HVTL proximity affected the rate of change in home prices.

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Environmental Groups <sup>1</sup>	RiversWest – Red River Corridor Inc.	<p>Key issues - social and environmental responsibility.</p> <ul style="list-style-type: none"> <li>• Important natural environment features include water quality, wetlands, green spaces and river bank stabilization.</li> <li>• Concerns - maintaining the integrity of river bank stabilization and possible create wetlands and not negatively impact tourism/ recreational areas or points of interest.</li> <li>• Recreational activities for RiversWest occur along the Red River Corridor. Where the line is expected to go over the Red River is not a popular area for fishing or boating activities.</li> </ul>
Business and Industry <sup>1</sup>	Lyncrest Airfield/Springfield Flying Club	<p>Key issues – obstructions and updating map information.</p> <ul style="list-style-type: none"> <li>• Obstructions over 100 feet high can cause problems with heavy-loaded planes on hot days.</li> <li>• Concern - updated maps and information are not given to airfields about the construction of hydro towers. This can cause serious hazards to pilots if they are not aware of the new vertical construction.</li> </ul>
Construction Association <sup>1</sup>	Winnipeg Construction Association	<p>Key topics discussed: construction labour force in Manitoba (current and future projections), construction labour force mobility, current/approved projects and how change to oil industry may or may not affect Manitoba.</p> <ul style="list-style-type: none"> <li>• Steady growth in the construction industry over the past 15 years. The construction labour force with MMTP will most likely overlap with the BPIII transmission line labour force.</li> <li>• Since transmission line labour is highly specialized and not an apprenticeable trade, it will most likely be out-of-province workers working on the transmission line (installing towers and stringing the line).</li> <li>• Manitoba (and the rest of Canada) has no requirements that companies must hire local workers on construction projects.</li> </ul>



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Hotels, Motels and B&B's	Motel 6 Headingley	Key topics: hotel vacancy rates and project effects <ul style="list-style-type: none"> <li>• Busy season - March to Sept/October with 90-95% occupancy rates. Winter occupancy rates are approximately 60%.</li> <li>• Anticipate that the project will not affect them unless re-routing traffic.</li> </ul>
	Ile Des Chenes Motor Hotel	Key topics: Busy season and support for project <ul style="list-style-type: none"> <li>• Busy season – summer</li> <li>• In the winter, two of the four rooms are typically vacant. One room is always rented for trucking.</li> <li>• Supportive of development in the community.</li> </ul>
	Hotel La Broquerie	Key topic: vacancy rates <ul style="list-style-type: none"> <li>• Vacancy rate year round is 30%.</li> <li>• No concerns mentioned.</li> </ul>
	Richer Motor Hotel	Key topic: busy season <ul style="list-style-type: none"> <li>• Busy season – summer, advance notice required for reservations.</li> <li>• No issues/concerns about the project.</li> </ul>
	Headingley Motor Hotel	Key topic: busy season <ul style="list-style-type: none"> <li>• Busy season - spring and summer with a 0% vacancy rate. Vacancy rate for the rest of the year is 40%.</li> <li>• No issues/concerns about the project.</li> </ul>
	Ste. Anne Hotel	Key topics: busy season, preferred location for transmission line <ul style="list-style-type: none"> <li>• Busy season – none. Very intermittent because of proximity to Winnipeg and Steinbach.</li> <li>• Positive towards growth in the appropriate places (e.g., commercial areas).</li> <li>• Prefers transmission lines to be on farming or forested areas over residential.</li> </ul>
	Calder House B&B	Key topics: B&B operations, health effects of EMF and disruption to nature & wildlife. <ul style="list-style-type: none"> <li>• Busy season - June to August. No rooms available during this period.</li> <li>• Not happy with the development. Expects positive economic benefits for accommodations and restaurants in the area.</li> <li>• Worried about the health effects of EMF.</li> </ul>

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	Lilac Resort, RV Lodging and Water Park	<p>Key topic: busy season, transmission line location concerns and environment.</p> <ul style="list-style-type: none"> <li>• Busy season- open during the spring/summer.</li> <li>• Concerns/issues with transmission line built on or in close proximity to residential and densely populated areas.</li> <li>• Concerned about maintaining clean air, forests and wildlife.</li> <li>• Not happy with the development.</li> </ul>
	Carberry Motor Inn	<p>Key topics: busy season</p> <ul style="list-style-type: none"> <li>• Busy season - summer</li> <li>• No issues/concerns were raised</li> </ul>
Emergency Services	Glenboro Fire Department	<p>Key topics: number of staff, staffing calls and areas served.</p> <ul style="list-style-type: none"> <li>• Staff - volunteer fire department (21-25 volunteers)</li> <li>• Difficult to staff calls during the day because most people work out of town. Evenings are easier to respond to calls</li> <li>• Areas served - Glenboro and South Cypress.</li> <li>• Average response time - 7 minutes.</li> <li>• Anticipating increase in accidents and wildlife collisions because of new casino on the #5 highway.</li> </ul>
	Headingley Fire Department	<p>Key topics: number of calls, response time and ability to respond to calls</p> <ul style="list-style-type: none"> <li>• Number of calls per year - approximately 300</li> <li>• Response time - 10 minutes.</li> <li>• Ability to respond to calls - road closures can affect response times/ability to respond to calls. Interruption in power can cause affects if firefighters cannot receive their pages.</li> </ul>
	La Broquerie Fire Department	<p>Key topics: number of calls per year, response times, expansion plans and changes to service.</p> <ul style="list-style-type: none"> <li>• Number of calls per year- approximately 80-100</li> <li>• Response time - 7 minutes.</li> <li>• Number of firefighters - 25</li> <li>• Expansions plans - increase hall size and get another fire truck.</li> <li>• Changes to service - things always change in regards to new projects and infrastructure. Response time has never been affected.</li> </ul>

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	Piney Fire Department and RM of Piney (re: Piney Fire Department)	<p>Key topics: number of calls per year, response time, number of firefighters, department locations, effects on response time, fire department mandate and concern over use of small roads.</p> <ul style="list-style-type: none"> <li>• Number of calls per year – 60. Capacity for more calls is debatable.</li> <li>• Response time – dependent on location. Approximately 10-20 minutes</li> <li>• Number of firefighters – 40</li> <li>• Department locations – Piney, Sprague and Woodreach</li> <li>• Affects to response time - no past infrastructure projects have affected emergency response time. Weather conditions are the biggest issue. Most calls are received during dry conditions.</li> <li>• Fire department mandate - would put a stop to Manitoba Hydro work if the conditions are dry and highly susceptible to fires. The RM mandate, if Hydro decided to keep working they would need to put up a \$10,000 bond to cover any fire expense that might occur due to their continuance of work.</li> <li>• Concern about Manitoba Hydro's use of small roads which may lead to the deterioration of road quality.</li> </ul>
	Ritchot Fire Department	<p>Key topics: number of calls per year, number of staff and fire hall locations.</p> <ul style="list-style-type: none"> <li>• Number of calls per year – approximately 110</li> <li>• Number of staff – 14</li> <li>• Fire hall locations - St. Adolphe and Ile Des Chenes</li> <li>• No issues mentioned</li> </ul>
	Rosser Fire Department	<p>Key topics: number of calls per year, number of staff, response time and affects to response time.</p> <ul style="list-style-type: none"> <li>• Number of calls per year – approximately 90-110</li> <li>• Number of staff – 26</li> <li>• Response time – 5-7 minutes</li> <li>• Affects to response time – changes in road has increased response time to Centerport</li> </ul>
	Sainte Anne Fire Department	<p>Key topics: number of calls per year, response time and affects to response times</p> <ul style="list-style-type: none"> <li>• Number of calls per year – approximately 110</li> <li>• Response time – 8-10 minutes</li> <li>• Affects to response time - work on the #1 Highway affects response times.</li> </ul>



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	Springfield Fire Department	<p>Key topics: number of calls per year, number of staff, fire station locations, response time and affects to response time.</p> <ul style="list-style-type: none"> <li>• Number of calls per year – approximately 500</li> <li>• Number of staff – 60</li> <li>• Fire station locations – Oakbank, Anola and Redonda</li> <li>• Average response time - 3-4 minutes.</li> <li>• Affects to response time - bridge replacements, highway construction and road detours. Infrastructure projects have not affected response times in the past.</li> </ul>
Agricultural land use	Manitoba Pork Council	<p>Key topic: biosecurity</p> <ul style="list-style-type: none"> <li>• Compromised biosecurity due to project-related activities or work is of primary concern</li> </ul>
	Manitoba Beef Producers	<p>Key topics: biosecurity and compensation</p> <ul style="list-style-type: none"> <li>• Potential for need of animal relocation and comprised biosecurity during construction are primary concerns.</li> <li>• The group hopes that Manitoba Hydro will consider giving beef producers the option of annual compensation in addition to the existing one-time compensation.</li> </ul>
	Manitoba Chicken Producers	N/A <sup>2</sup>
	Dairy Farmers of Manitoba	<p>Key topic: voltage effects on cow productivity</p> <ul style="list-style-type: none"> <li>• Proximity of the Project to two dairy operations southeast of La Broquerie might increase the potential for stray voltage effects on cow productivity</li> </ul>
	Manitoba Aerial Applicators Association (MB AAA)	<p>Key topic: compensation and operator safety</p> <ul style="list-style-type: none"> <li>• Compensation for lost revenue due to reduced aerial application areas</li> <li>• Operator safety around project structures</li> </ul>
	Manitoba Egg Farmers	<p>Key topic: biosecurity</p> <ul style="list-style-type: none"> <li>• Compromised biosecurity due to project-related activities or work is of primary concern</li> </ul>
	Keystone Agricultural Producers	<p>Key topic: compensation to landowners</p> <ul style="list-style-type: none"> <li>• Fair compensation for landowners – hope for improvement relative to the Bipole III experience</li> </ul>
	Organic Producers Association of Manitoba (OPAM)	N/A <sup>1</sup>
	Manitoba Bee Keepers Association	<p>Key topic: loss of vegetation</p> <ul style="list-style-type: none"> <li>• Concerned about loss of vegetation, e.g., poplar, willow and shelterbelts, which provide pollen for bees</li> </ul>
	Prairie Fruit Growers Association	N/A <sup>2</sup>

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	Manitoba Turkey Producers	N/A <sup>2</sup>
Recreation Groups <sup>1</sup>	SnoMan Inc.	<p>Key topics: effects on trails and biosecurity</p> <ul style="list-style-type: none"> <li>Concerned about effects on SnoMan trails and costs associated with potential re-routing of trails. SnoMan trails have agreement with Manitoba Conservation that companies help cover costs of re-routing trails. It is huge financial burden and labour intensive to clear new routes. SnoMan suggested that Manitoba Hydro works with clubs to preserve trails.</li> <li>the bio-security concerns and spread of disease issue is with Canola. Currently this is not a huge concern in Manitoba but SnoMan is trying to be proactive on the issue because it can become an issue in Manitoba if there isn't enough snow and dirt is ridden on by snowmobiles/ ATV's when work is occurring. Protocols have been put in place in other provinces (Alberta).</li> </ul>
	AtvMB	<p>Key topics: preferred route choice, agreement similar to SnoMan's agreement with Manitoba Hydro and signage.</p> <ul style="list-style-type: none"> <li>The preferred route chosen is the one AtvMB would have chosen. No concerns with the preferred route.</li> <li>AtvMB would like a similar agreement that SnoMan has with Manitoba Hydro to have trails along the transmission lines.</li> <li>Would like to have well posted signage in heavy traffic areas for people to watch out for heavy machinery and increased traffic.</li> </ul>
	Southwood Golf and Country Club	<p>Key topics: health concerns, tourism, increased access, loss of pristine environment, effects on expansion initiatives and Hydro development.</p> <ul style="list-style-type: none"> <li>Concerned with proximity of transmission line to golf course and perception of health concerns.</li> <li>Concerned that tourism will be affected. The transmission will be an eyesore and may affect business from tourists coming from across Canada and internationally.</li> <li>Concerned about increased access on that side of the golf course.</li> <li>Concerned about loss of pristine natural environment features and visual quality.</li> <li>Transmission line will affect future expansion initiatives. Plans to expand would make golf greens even closer to the transmission line.</li> <li>Happy with development in Manitoba and Manitoba becoming a major supplier to power. Prefers development to occur in areas with little population.</li> </ul>

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	La Verendrye Golf Club	<p>Key topics: access, health concerns and visual quality.</p> <ul style="list-style-type: none"> <li>Concerned about cutting of trees on the road allowance. Will allow access to the golf course from snowmobilers and ATV's. Concerned about damage snowmobiles and ATV's will cause to his greens and lost revenue from potential damage. Concerned about the cost of fencing (and if Hydro will help cover these costs) required to keep people off the golf course.</li> <li>Concerned about tourists (British and Scottish) perceptions of health concerns (e.g., leukemia and cancer) from transmission lines.</li> <li>Visual quality concerns from the transmission line and potential removal of trees.</li> </ul>
	Manitoba Lodges and Outfitters Association	<p>Key topics: bear outfitters along the transmission line, compensation program for outfitters losing area/bait stands etc., disruption to bear population, transmission line opening area to hunters/poachers and toxic waste concerns.</p> <ul style="list-style-type: none"> <li>Concerned about bear outfitters along the transmission line. From an association perspective, would like to see a compensation program (similar to BPIII) for outfitters that are losing area, bait areas, stands, etc. to compensate them for their time to relocate their bait areas and stands</li> <li>Anticipates disruption to bear population. Transmission line construction will scatter bears, damage denning sites. Have already noticed this with BPIII.</li> <li>Concern about the TL opening area up to resident hunters and poachers (especially poachers). TL's are a good area to hunt deer. In BPIII, the line was zig-zagged in areas to reduced hunting and visibility to a few hundred meters. Other mitigation factors including letting brush grow.</li> <li>Outfitters wouldn't take clients to hunt on a hydro line, but resident hunters and poachers don't care.</li> <li>Concerned about toxic waste spilled on the line.</li> <li>Does not see hydro lines being really disruptive.</li> </ul>
	Birch Point Outfitters	<p>Key topics: increased access and pristine wilderness,</p> <ul style="list-style-type: none"> <li>Concerned with increased access. Currently, personal and machine related transportation are used to access the wilderness area (e.g., truck, ATV, snowmobile, boat, walking, hunting, etc.). The area will become busier with the ROW opened up with increased people in the area.</li> <li>Concerned that a transmission line would ruin the quiet and untouched scenery for customers who come to enjoy the pristine wilderness. Considers the transmission line an "eye sore".</li> <li>Does not want the transmission line.</li> </ul>



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	K.C. Outfitting	<p>Key topics: economic benefits, preferred route location, impacts on personal appreciation, terrain/wildlife effects and maintenance operations on bear dens.</p> <ul style="list-style-type: none"> <li>• Anticipates positive economic benefits to the province (does not want Manitoba to end up subsidizing the transmission line for the US).</li> <li>• Preferred route location - higher ground to not affect bogs.</li> <li>• Concerned with impacts on personal appreciation of the area by users.</li> <li>• Increased access will affect wildlife and terrain. Some ATV riders don't care what the terrain looks like after they've gone through. One or two might not make a difference but numerous riders will affect bogs.</li> <li>• Concerned about maintenance operations being carried out when a client is using the bait station. The transmission line is in close proximity to his trapline (200 m in some cases).</li> <li>• Concerned about bear population during construction and if dens get damaged</li> </ul>
Resource Groups <sup>1</sup>	Barry Vermette Backhoe Services	<p>Key topics: job creation, positive effects on the economy and support for the project.</p> <ul style="list-style-type: none"> <li>• the project will create temporary and some permanent jobs</li> <li>• will have positive impacts on the economy (e.g., using local suppliers, gravel, etc.)</li> <li>• No concerns about the project</li> </ul>
Health Services	Manitoba Regional Health Authorities: Prairie Mountain Heath (Glenboro); Interlake-Eastern Regional Health Authority	<p>Key topics: health trends, health care service ability, consulting level of detail done on this project compared to previous projects and whether land will be purchased or leased by Manitoba Hydro.</p> <ul style="list-style-type: none"> <li>• Current population health trends, potential impacts of project and recommendations for maximizing benefits and minimizing adverse outcomes.</li> <li>• Recommended that Manitoba Hydro check in closer to the Project construction time regarding health care service availability in and around Glenboro.</li> <li>• Concerned about why consulting at this level has not been done on previous projects so concerned that there are new risks associated with this project.</li> <li>• Concerned about whether Manitoba Hydro will be purchasing land or leasing land from landowners where the project crosses private land.</li> </ul>

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	Central Medical Officers of Health Services, Manitoba Health, Healthy Living & Seniors	<p>Key topics: population health trends, introduction of temporary workers on communicable diseases transmission, immunization rates, deer ticks and cultural context.</p> <ul style="list-style-type: none"> <li>• Current population health trends, potential impacts of project and recommendations for maximizing benefits and minimizing adverse outcomes.</li> <li>• Concerned that the introduction of temporary workers poses the risk for communicable disease transmission within affected communities. Winnipeg has had the highest rates of syphilis in 30-40 years.</li> <li>• Southern Health has the lowest immunization rates across all age groups.</li> <li>• Southern Manitoba has the province's most established deer tick population (implications for Lyme disease).</li> <li>• Cultural context (e.g., Mennonite, religious) is important to consider in terms of herd reduction activities.</li> </ul>
	Prairie Mountain Health	<p>Key topics: health care services and EMS.</p> <ul style="list-style-type: none"> <li>• Health care services in Glenboro.</li> <li>• Glenboro Health Centre is not open 24/7. If EMS is dispatched, the closest and most appropriate station will respond to the call and EMS personnel will transfer the patient to the closest emergency room. The Medical Transportation Centre dispatches the appropriate resources as needed. It is impossible to predict what services will look like in 2019.</li> </ul>
	Southern Health	<p>Key topics: current health care services, potential impacts to services, recommendations for minimizing adverse effects and maximizing benefits.</p> <ul style="list-style-type: none"> <li>• There may be issues with health care capacity in terms of primary and episodic care. The BRHC serves the communities between Steinbach and Morris serving a population of approximately 80,000 people. It is the main emergency room and provider of secondary care in the southeast region of Manitoba.</li> <li>• The BRHC currently has 76 beds of which 22 are in the ER and 16 are for surgery. Current occupancy is 95%.</li> <li>• BRHC emergency room has 25,000 visits per year.</li> <li>• Additional service planning may be needed if temporary workers become permanent residents in the area.</li> <li>• The current physician is not meeting demand. Concern about how mobile workers will receive primary care.</li> <li>• Should consider traffic safety and ambulance access in construction areas.</li> </ul>

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### Key Person Interview Contacts

Interview Category	Group/Organization/ Stakeholder	Topics/ Key Issues/Concerns
	Office of Disaster Management; Health, Healthy Living and Seniors Department	<p>Key topic: past construction projects have not affected Disaster Management services.</p> <ul style="list-style-type: none"> <li>No concerns that MMTP will affect the Office of Disaster Management. Large construction projects in the past have not affected usage of Disaster Management services in the past. Manitoba Hydro and the Office of Disaster Management work together on a daily basis.</li> </ul>
	Manitoba Health, Healthy Living and Seniors; Southern Health; Winnipeg Regional Health Authority	<p>Key topics: current population health trends, potential impacts of project and recommendations for maximizing benefits and minimizing adverse outcomes.</p> <ul style="list-style-type: none"> <li>Rapidly growing populations surrounding the City of Winnipeg.</li> <li>The only ER in the east portion of the transmission line is in Steinbach. The Vita ER is no longer staffed.</li> <li>It would be helpful to know which communities the mobile workforces will be located and the length of time they will be there for a better indication of community impact. It would be helpful to communicate with all Medical Officers of Health as they work collaboratively.</li> <li>Concerned about locations of increased construction traffic areas (e.g., schools) and if they are at increased risk of accidents.</li> </ul>
<p>NOTES:</p> <p><sup>1</sup> Numerous environmental, business, industry and resource groups were contacted. Several declined while others did not return email and/or voicemail messages, including: Save Our Seine Inc., Rock Garden Campground, Wild Oaks Campground, Qualico Communities (Oak Bluff West), Manitoba Hotel Association, Cross Country Snow Drifters, Snow Raiders Club, Southeast Snowriders, Winnipeg Trails Association (Trans Canada Trail Association), Cross-country Skiing Association of Manitoba, Cottonwood Golf Course, Oakwood Golf Course &amp; Campground, Travel Manitoba, Eastern Manitoba Tourism Association, CN, CP, GWWD, Enbridge, MTS, Telus, Manitoba Heavy Construction Association, Premier Horticulture Inc. Dave's Aggregates, L.S.L. Contracting, Ltd., Riverside Gravel (1985) Inc., D &amp; P Backhoe, South East Quota Holders Association, Woodlot Association of Manitoba, Manitoba Forestry Association.</p> <p><sup>2</sup> Manitoba Chicken Producers declined a KPI and asked Stantec to defer to the KPI with KAP which includes Manitoba Chicken Producers' members in the groups it represents. OPAM declined a KPI as they do not have members in the project area. Prairie Fruit Growers Association declined a KPI and said they would leave participation to individual producers. Manitoba Turkey Producers did not provide feedback on availability for KPI despite numerous email and telephone call follow-ups by Stantec.</p>		

### KEY PERSON INTERVIEW GUIDES A TO G FOLLOW



# MANITOBA-MINNESOTA TRANSMISSION PROJECT

## SOCIO-ECONOMIC AND LAND USE ENVIRONMENT – TECHNICAL DATA REPORT

Appendix C Land Use Development Controls  
September 2015

### Appendix C Land Use Development Controls

#### LAND USE AND DEVELOPMENT CONTROLS IN THE RAA

##### City of Winnipeg

Land use in the City of Winnipeg is subject to the development planning document *OurWinnipeg By-Law No. 67/2010* and the *Complete Communities Direction Strategy Secondary Plan No. 68/2010*. "Rural/Agricultural" land use is traversed by the SLTC and is the only City of Winnipeg land use which occurs in the RAA (City of Winnipeg 2011).

Land use zoning is subject to the City of Winnipeg Zoning By-Law No. 200-2006 (City of Winnipeg, 2007). The north-west portion includes zoning districts dominated by "Agricultural". Other districts in vicinity of Pembina Highway, Perimeter Highway and the La Salle River include: "Rural Residential 5", "Residential Single-Family/Manufacturing", "Parks and Recreation 2 (Community)", "Residential Two-Family", "Parks and Recreation 1 (Neighbourhood)", "Commercial Corridor", "Parks and Recreation 3 (Regional)", "Residential Single-Family/Educational and Institutional", "Residential Single-Family/Low Density" and "Commercial Community". The north-east portion includes zoning districts for "Agricultural", "Rural Residential 2", "Rural Residential 5" and "Commercial Community" in vicinity of St. Mary's Road, Jean Louis Road and Forbes Road. The south-west portion includes the zoning district "Agricultural" in vicinity of Waverly Street and the La Salle River. The south-east portion includes the zoning district "Agricultural" in vicinity of St. Mary's Road (City of Winnipeg 2007).

##### RM of Headingley

Land use in the RM of Headingley is subject to the Rural Municipality of Headingley Development Plan By-Law No.12-2006. Land use adjacent to the Assiniboine River is largely categorized as "Neighbourhood", with "General Business" and "Institutional" scattered at the fringes of neighbourhoods. "General Agricultural" is the dominant land use category within the RM north and south of the Assiniboine River. An isolated pocket of "General Industrial" is located in the south east corner of the RM (Landmark Planning and Design Inc. 2006).

Land use zoning is subject to the Rural Municipality of Headingley Zoning By-Law No. 3-2011. Zoning in the west portion includes several zoning districts with "Residential" distributed along the Assiniboine River and "Development Reserves" at the outer edges of "Residential" areas. The majority of zoning districts in the west includes "Rural" with pockets of "Industrial" and "Commercial". The south-loop transmission corridor passes in a north-south direction in the west portion of the RM through zoning sub-districts including "Rural General", "Institutional", "Development Reserve" and "Rural Residential" (Landmark Planning and Design Inc. 2011).

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### RM of La Broquerie

Land use in the RM of La Broquerie is subject to the Rural Municipality of La Broquerie Development Plan By-Law No. 20-2011. Land use categories have been organized near the community of Marchand at the east side of the rural municipality and the Local Urban District (LUD) of La Broquerie at the north side of the RM. Land use categories at Marchand include "Principle Policy Area" within the core community and "Agriculture 2 Area" along the outer periphery. Land use categories surrounding the LUD of La Broquerie include "Principle Policy Area" within the core community, "Agriculture 2 Area" along the outer periphery and scattered portions of "Rural Residential Area". The majority of the rural municipality has been designated as "Agriculture 1 Area" in the development plan (The Rural Municipality of La Broquerie 2011).

Land use zoning is subject to the rural municipality's Zoning By-law No. 10-2013. Zoning categories have been placed around the LUD of La Broquerie in the north and includes "Residential", "Development Reserve", "Highway Commercial", "Main Street Commercial/Residential", "General Industrial" and "Open Space" in the core community and "Rural Area 2", "Rural Commercial Industrial" and "Rural Residential" along the LUDs periphery. Land use zoning around the community of Marchand includes "General Development" and "Rural Area 2". The majority of the RM has been designed as "Rural Area 1" in the zoning by-law (The Rural Municipality of La Broquerie 2013).

### RM of Tache

Land use in the RM of Tache is subject to the Rural Municipality of Tache Development Plan By-Law No. 4-2000. Most of the land in the rural municipality is designated "General Agricultural Area". Land in the northwest portion of the rural municipality has been designated as "Limited Agricultural Area" or "Rural Residential Area", with pockets of "Residential Area" and "Open Space and Recreational" along the Seine River in vicinity of the LUD of Lorette. Land designated in the east portion of the rural municipality includes "Limited Agricultural Area", "Natural Environment Area", "Natural Resource Area", "Rural Residential" and "Settlement Centre" at the communities of Ste. Genevieve and Ross. Land designated in the south portion of the rural municipality includes scattered portions of "Rural Residential Area". Land designated in the LUD of Lorette and LUD of Landmark includes "Residential Area", "Commercial Area", "Industrial Area" and "Open Space & Recreational Area" (The Rural Municipality of Tache 2000).

Land use zoning is subject to the Rural Municipality of Tache Zoning By-Law No. 12-2009. Land in the LUD of Lorette and LUD of Landmark has been designated as "Residential Limited Zone", "Residential General Zone", "Mobile Home Park Zone", "Commercial Zone", "Industrial Zone" and "Open Space Recreational Zone". "Settlement Centre Zone" designations have been given to lands in the communities of Dufresne, Linden, Ste. Genevieve and Ross (The Rural Municipality of Tache 2009).

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Appendix C Land Use Development Controls  
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#### RM of Springfield

Land use in the Rural Municipality of Springfield is subject to the Rural Municipality of Springfield Development Plan By-Law No. 98-22. The majority of lands in the rural municipality have been designated "Agricultural Preserve Area". Lands in the north west portion of the RM include "Aggregate", "Commercial", "Hamlet", "Industrial", "Institutional", "Open Space", "Recreation", "Residential", "Rural & Agricultural Area", "Rural Residential" and "Ecological Areas". Lands in the north east portion of the RM include "Aggregate", "Rural & Agricultural Area" and "Rural Residential". Lands in the south west portion of the rural municipality include "Aggregate", "Commercial", "Hamlet", "Industrial", "Institutional", "Open Space", "Recreation", "Residential", "Rural & Agricultural Area" and "Rural Residential". Lands in the south east portion of the rural municipality include "Aggregate", "Commercial", "Hamlet", "Industrial", "Institutional", "Open Space", "Residential", "Rural & Agricultural Area", "Rural Residential" and "Ecological Areas" (The Rural Municipality of Springfield 2013).

Land use zoning is subject to the Rural Municipality of Springfield Zoning By-Law No. 08-01. Most of land use in the rural municipality has been designated "Agricultural General Zoning District". Lands designated in the north east portion of the rural municipality have been zoned "Agricultural Restricted Zoning District", "Rural Residential Zoning District", "Commercial Recreational Zoning District" and "Industrial Extractive Zoning District" along the periphery of Birds Hill Provincial Park. Lands in the east portion of the rural municipality included scattered designations including "Agricultural General Zoning District (site specific)", "Rural Residential Zoning District", "Sensitive and Natural Resource Zoning District", "Industrial Extractive Zoning District", "Industrial Extractive Holding Zoning District", "Development Reserve Zoning District". Lands in the south west portion of the rural municipality are confined between the Floodway and City of Winnipeg limits, where designations included "Agricultural Restricted Zoning District", "Commercial Highway Zoning District", "Rural Residential Zoning District", "Hamlet Area Zoning District", "Commercial Central Zoning District" and "Commercial Recreation Zoning District" (Landmark Planning and Design Inc. 2010).

#### Macdonald-Ritchot Planning District

Land use in the rural municipality of Macdonald and rural municipality of Ritchot is subject to the Macdonald-Ritchot Planning District Development Plan By-Law No. 2/10. Most of land use in the rural municipalities has been designated "Green/Agricultural". Planning policies have been designated in the communities of Starbuck, Oak Bluff, Sanford, La Salle, St. Adolphe, Ile des Chenes, Ste. Agathe, Domain, Brunkild and Grande Point. Land use planning policies include "Urban Centre", "Urban Centre Hold", "Environmental", "Green/Agricultural", "Enterprise Centre" and "Rural Centre". Livestock management areas (Restricted, Limited and Mutual Separation) have been applied to lands within, or in vicinity of these communities (Lombard North Group 2011).

Land use zoning in the rural municipality of Macdonald is subject to the Rural Municipality of Macdonald Zoning By-Law No. 15/95. Most of lands in the rural municipality is designated



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"Agricultural General Zone". Lands around the periphery of Starbuck, Oak Bluff, Sanford, La Salle, Brunkild and Domain are zoned "Agricultural Restricted Zone". Land use zoning in the community of Starbuck includes designations for "Residential General Zone", "Industrial General Zone", "Open Space Zone", "Institutional Zone", "Residential General Zone", "Commercial General Zone", "Industrial Agriculture Zone" and "Residential Rural Zone" (at the outer periphery). Land use zoning in the community of Oak Bluff includes designations for "Industrial General Zone", "Commercial General Zone", "Open Space Zone", "Residential General Zone", "Commercial Highway Zone" and "Institutional Zone". Land use zoning in the community of La Salle includes designations for "Residential General Zone", "Open Space Zone", "Residential General Zone", "Commercial General Zone" and "Residential Suburban Zone". Land use zoning in the community of Sanford includes designations for "Residential General Zone", "Residential General Zone", "Open Space Zone", "Institutional Zone", "Industrial General Zone" and "Residential Rural Zone" (at the outer periphery). Land use zoning in the communities of Brunkild and Domain includes a designation for "General Development Zone" (The Rural Municipality of Macdonald 1995).

Land use zoning in the rural municipality of Ritchot is subject to the Rural Municipality of Ritchot Zoning By-Law No. 18-2002. The majority of lands in the rural municipality are designated as "Agricultural General" and "Agricultural Restricted". Land use zones have been provided for the communities of Ste. Agathe, St. Adolphe, Ile des Chenes and Grande Pointe. Lands in these communities have been designated "Agricultural Restricted", "Commercial Agricultural", "Commercial Highway", "Industrial General", "Residential Rural", "Residential Mobile Home", "Commercial General" and "Open Space" (The Rural Municipality of Ritchot 2002).

### RM of Piney

Land use in the rural municipality of Piney is subject to the Rural Municipality of Piney Development Plan By-Law No. 53-09. The majority of land use in the rural municipality has been designated "Rural Area 3". "Settlement Centre" designations have been provided to the communities of Middlebro, Sprague, South Junction, Vassar, Piney and Woodridge. "Limited Rural Area", "Rural Area 1", "Rural Area 2" and "Rural Area 3" designations occur in areas adjacent to Provincial Forests throughout all areas of the rural municipality (The Rural Municipality of Piney 2009).

Land use zoning in the rural municipality of Piney is subject to the Rural Municipality of Piney Zoning By-Law No. 80/2012. The majority of lands in the rural municipality are designated as "Rural Zone 3". "General Development Zone" designations have been provided to the communities of Middlebro, Sprague, South Junction, Vassar, Piney and Woodridge. "Limited Rural Zone", "Rural Zone 1", "Rural Zone 2" and "Rural Zone 3". A "Rural Seasonal Residential Zone" land use designation exists adjacent to PTH 308, west of the Northwest Angle Provincial Forest (The Rural Municipality of Piney 2012).

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## SOCIO-ECONOMIC AND LAND USE ENVIRONMENT – TECHNICAL DATA REPORT

Appendix C Land Use Development Controls  
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### South Interlake Planning District

Land use in the rural municipality of Rockwood and rural municipality of Rosser is subject to The South Interlake Planning District Development Plan By-Law No. 3/10. The majority of land use in the planning district has been designated "Agricultural Rural Area". A land use designation for "CentrePort Canada Area" is included for the lands in the south east corner of the rural municipality of Rosser and bounded by PTH101. "Rural Settlement Centre" land use designations are provided for the communities of Marquette, Meadows, Grosse Isle and Rosser (The South Interlake Planning District 2010).

Land use zoning in the rural municipality of Rosser is subject to The Rural Municipality of Rosser Zoning By-Law No. 4-85. The majority of lands in the rural municipality are designated as "Agricultural Zone". The south east portion of the rural municipality includes lands designated for "Agricultural Limited", "Open Space Zone", "Highway Commercial Zone" and "Airport Industrial Zone". "General Development Zone" land use has been designated for the communities of Meadows, Gross Isle and Rosser. "Agricultural Limited" lands are designated for areas at the periphery of these communities. Land use zoning in the south east portion of the RM is also subject to the Rural Municipality of Rosser CentrePort Zoning By-Law No. 10-14. The By-Law provides designations for lands within PTH101 required for the CentrePort Canada Way project. Designations for land use found within CentrePort include "Industrial Centre Zone", "Industrial General Zone", "Industrial Heavy Zone" and "Open Space Zone" (The Rural Municipality of Rosser 1985).

### RM of Ste. Anne

Land use in the rural municipality of Ste. Anne is subject to The Rural Municipality of Ste. Anne Development Plan By-Law No. 13-2007. The majority of land use in the rural municipality has been designated "Rural Agriculture Area". Lands east and west of the town of Ste. Anne, south of Giroux, north of Richer and La Coulee are designated "Rural Mixed Use Area". Lands north east and south of Richer are designated "Rural Natural Area". "Settlement Centre" designations have been provided for the communities of Giroux, Richer, La Coulee and Greenland. Smaller portions of land in the north east and south east areas of the rural municipality are designated "Rural Residential Area" (The Rural Municipality of Ste. Anne 2010).

Land use zoning in the rural municipality of Ste. Anne is subject to The Rural Municipality of Ste. Anne Zoning By-Law No. 10-2010. The majority of lands in the rural municipality are designated as "Agriculture Zone". Non-agriculture land use designations occur primarily in the eastern portion of the rural municipality, surrounding the communities of Ste. Anne, La Coulee, Richer and south of Giroux, including designations for "Rural Mixed Use Zone", "Natural Environment Zone", "Rural Residential Zone", "Rural Residential 5 Zone", "Residential Mobile Home Zone", "Commercial Recreational Zone", "Highway Commercial Zone". The communities of Giroux, Greenland and La Coulee are designated as a "General Development Zone" (Manitoba Intergovernmental Affairs Community Planning Services 2007).

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## SOCIO-ECONOMIC AND LAND USE ENVIRONMENT – TECHNICAL DATA REPORT

Appendix C Land Use Development Controls  
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### RM of Stuartburn

Land use in the rural municipality of Stuartburn is subject to The Rural Municipality of Stuartburn Development Plan By-Law No. 081-2008. Most of the land in the rural municipality has been designated "Agriculture 1 Area". Areas of land in the north east, north-west and south have been designated "Limited Development Area". "Restricted Rural Area" designations have been given to the periphery at the communities of Stuartburn, Gardenton, Vita and Sundown. "Settlement Centre" designations have been provided for these the core lands within these communities (The Rural Municipality of Stuartburn 2008).

Land use zoning in the rural municipality of Stuartburn is subject to The Rural Municipality of Stuartburn Zoning By-Law No. (098-2011). Most of the lands in the rural municipality are designated as "Agriculture Zone". Areas of land in the north east, northwest and south have been designated "Limited Development Zone". "Restricted Rural Zone" designations have been given to the periphery at the communities of Stuartburn, Gardenton, Vita and Sundown. "General Development Zone" designations have been provided for these the core lands within these communities (The Rural Municipality of Stuartburn 2011).

### RM of South Cypress

Land use in the rural municipality of South Cypress is subject to the Cypress Planning District Development Plan By-Law No. 49-2009. Most of the land use in the rural municipality has been designated "Agricultural Area". "General Development Area" land uses have been provided for Treesbank and Stockton in the south. A "Rural Highway Commercial Area" and "Industrial Area" are designated in lands in the south west. Lands in the Village of Glenboro have been designated "Urban-Agricultural Limited Area", "Residential Area", "Open Space Area", "Urban Highway Commercial Area", "Downtown Commercial Area" and "Industrial Area". Lands at the outer periphery of Glenboro are designated "Rural-Agricultural Area", "Industrial Area" and "Rural-Agricultural Moderately Limited Area" (The Cypress Planning District 2009).

Land in the rural municipality of South Cypress is subject to the Rural Municipality of South Cypress Zoning By-Law No. 1485. Most of land in the rural municipality is designated as "Agricultural (General) District". Lands at the outer periphery of Glenboro in the south are designated "Industrial District", "Agricultural (Moderately Limited) District" and "Agricultural (Limited) District". "General Development District" lands are designated for Treesbank and Stockton. A "Rural Highway Commercial District" is designated for a portion of lands at the junction of PTH 2 and PTH 18. An "Industrial District" is designated for a portion of lands located in the south west adjacent to PTH 2 (The Rural Municipality of South Cypress 2010).



# MANITOBA-MINNESOTA TRANSMISSION PROJECT

## SOCIO-ECONOMIC AND LAND USE ENVIRONMENT – TECHNICAL DATA REPORT

Appendix D Glossary of Visual Quality Technical Terms  
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### Appendix D Glossary of Visual Quality Technical Terms

Term	Definition
Biophysical rating	A measure of the degree to which biophysical characteristics of a view create visual interest and draw people's attention.
Candidate viewpoint	A viewpoint that is identified as important for community use, Aboriginal Group's use, recreation use or tourism use.
Interventions	Landscape alterations caused by activities such as forestry, industrial development, mining, road construction, utility corridors and agriculture.
Landscape Character Class	The level and type of landscape alterations in a view.
Local assessment area	All lands with a potential view of the Project that is visible in the foreground (0 km to 1 km) and mid-ground (1 km to 8 km) as alterations will be most apparent at these distances. The local study area considers direct visual effects of the Project.
Priority viewpoint	A candidate viewpoint that is located in the project viewshed is within 8 km of the Project and its view is not represented by other identified viewpoints.
Prominence	The degree to which an object occupies a person's central field of vision.
Regional assessment area	The area of the LAA plus the land and marine areas beyond where the Project is visible in the background (greater than 8 km, to a maximum extent of 15 km). The regional study area considers cumulative effects of the Project and other major projects nearby.
Viewing condition	A measure of the condition under which the view is most commonly viewed.
Viewer rating	A measure of the number of people likely to experience the view and the preferences, expectations, or concerns they have about how they would like the view to look.
Viewpoint	An on-the-ground or water-based location from which the surrounding landscape can be viewed or observed.
Viewshed	A viewshed includes the area that can potentially be seen from single or multiple viewpoints of the Project. A direct sight line potentially exists between the viewpoint and the area being viewed.
Visual absorption capability	The relative capacity of a landscape to absorb visual alterations and still maintain its visual integrity.
Visual quality	The potential for a landscape to produce varying degrees of satisfaction among viewers. It is a human response to a landscape, which arises from the relationship between the landscape character and its effects on viewers.
Visual sensitivity class	The sensitivity of the landscape to alteration based on biophysical characteristics and viewing and viewer-related factors.
View	A viewscape as seen within an approximate 60 degree view, consistent with a human's central field of vision, including some near peripheral vision. This is generally representative of two 50 mm frames stitched into a mini-panorama, which are chosen to represent the area of greatest visual disturbance anticipated from each viewpoint.

# MANITOBA-MINNESOTA TRANSMISSION PROJECT

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Appendix E Candidate Viewpoints  
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### Appendix E Candidate Viewpoints

Candidate Viewpoint	Filter Applied
CV01 - Piney	Representative views from other assessed viewpoint(s).
CV02- Menisino	Representative views from other assessed viewpoint(s).
CV09 - Bear Hunting Area I	Vegetation screening. Representative views from other assessed viewpoint(s).
CV10 - Access to Sundown Lake and Grave Site I	Vegetation screening. Representative views from other assessed viewpoint(s).
CV11 - Access to Sundown Lake and Grave Site II	Vegetation screening. Representative views from other assessed viewpoint(s).
CV03 - KC Outfitters	Representative views from other assessed viewpoint(s).
CV04 - Collins Property	Representative views from other assessed viewpoint(s).
CV12 - Bear Hunting Area II	Lack of access. Representative views from other assessed viewpoint(s).
CV13 - Marchand Provincial Recreation Park	Outside of LAA.
CV14 - Marchand	Identified in relation to initial route options, no view of preferred route anticipated.
CV15 - Sandilands Arabians	Identified in relation to initial route options, no view of preferred route anticipated.
CV05 - Richer Community Park	Representative views from other assessed viewpoint(s).
CV16 - Country Charm Romantic Resort	Representative views from other assessed viewpoint(s).
CV17 - Residences 49N Just W of PTH 12	Identified in relation to initial route options, no view of preferred route anticipated.
CV18 - 2 farms and residences. 35E and 501	Identified in relation to initial route options, no view of preferred route anticipated.
CV19 - Residence NE of Dufresne on Arondale Rd	Outside of LAA.
CV20 - Res House W of Dufresne	Outside of LAA.
CV21 - Residences on 50N Just W of 40E	Identified in relation to initial route options, no view of preferred route anticipated.
CV06 - Res on 501, W of St Genevieve	Representative views from other assessed viewpoint(s).
CV07 - Fields. 53N just E of 12.	Representative views from other assessed viewpoint(s).
CV22 - Property Owner w Concerns re aesthetics	Identified in relation to initial route options, no view of preferred route anticipated.
CV23 - Residence on Pineridge Rd 24E	Identified in relation to initial route options, no view of preferred route anticipated.
CV24 - Prairie Grove Arnould Rd and 54N	Representative views from other assessed viewpoint(s).
CV25 - Prairie Grove Dawson Road	Identified in relation to initial route options, no view of preferred route anticipated.
CV26 - Beaudry Provincial Park Boundary	Representative views from other assessed viewpoint(s).

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Appendix E Candidate Viewpoints  
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Candidate Viewpoint	Filter Applied
CV27 - Residential Development Wescana Street	Representative views from other assessed viewpoint(s).
CV28 - Oak Bluff West	Representative views from other assessed viewpoint(s).
CV08 - Trappist Monestary & Southwood Golf Course	Representative views from other assessed viewpoint(s).
CV29 - Vivian Station Residences	Outside of LAA.
CV30 - Ostenfeld	Outside of LAA.
CV31 - Residences on 46E	Outside of LAA.
CV32 - Prairie Grove	Identified in relation to initial route options, no view of preferred route anticipated.
CV33 - T Barker	Representative views from other assessed viewpoint(s).
CV34 - T Barker	Representative views from other assessed viewpoint(s).
CV35 - T Barker	Representative views from other assessed viewpoint(s).
CV36 - Cross-country ski trails	Outside of LAA.
CV37 - ATV trail	Representative views from other assessed viewpoint(s).
CV38 - Avenza	Representative views from other assessed viewpoint(s).
CV39 - Breezy Bend Country Club	Representative views from other assessed viewpoint(s).
CV40 - Camp Amisk	Representative views from other assessed viewpoint(s).
CV41 - Cottonwood Golf Course	Representative views from other assessed viewpoint(s).
CV42 - Duff Roblin Provincial Park	Representative views from other assessed viewpoint(s).
CV43 - Dunlop's Fly-In Lodge & Outposts	Outside of LAA.
CV44 - Grioux Bog	Representative views from other assessed viewpoint(s).
CV45 - Kingswood Golf Course	Identified in relation to initial route options, no view of preferred route anticipated.
CV46 - N Henault	Identified in relation to initial route options, no view of preferred route anticipated.
CV47 - Open House	Representative views from other assessed viewpoint(s).
CV48 - Open House	Identified in relation to initial route options, no view of preferred route anticipated.
CV49 - Open House	Identified in relation to initial route options, no view of preferred route anticipated.
CV50 - Open House	Outside of LAA.
CV51 - Open House	Outside of LAA.
CV52 - Open House	Representative views from other assessed viewpoint(s).
CV53 - Open House	Representative views from other assessed viewpoint(s).
CV54 - Open House	Outside of LAA.
CV55 - P McGarry	Identified in relation to initial route options, no view of preferred route anticipated.



# **MANITOBA-MINNESOTA TRANSMISSION PROJECT** **SOCIO-ECONOMIC AND LAND USE ENVIRONMENT – TECHNICAL DATA REPORT**

Appendix E Candidate Viewpoints  
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Candidate Viewpoint	Filter Applied
CV56 - PR 330	Representative views from other assessed viewpoint(s).
CV57 - PTH 1E	Representative views from other assessed viewpoint(s).
CV58 - PTH 1E	Outside of LAA.
CV59 - PTH 1E	Outside of LAA.
CV60 - PTH 2	Representative views from other assessed viewpoint(s).
CV61 - PTH 3	Representative views from other assessed viewpoint(s).
CV62 - PTH 59	Representative views from other assessed viewpoint(s).
CV63 - PTH 75	Representative views from other assessed viewpoint(s).
CV64 - Qualico - Wheatland Parkmore	Representative views from other assessed viewpoint(s).
CV65 - River Oaks Golf Course	Identified in relation to initial route options, no view of preferred route anticipated.
CV66 - Rock Garden Campground	Representative views from other assessed viewpoint(s).
CV67 - Rural Landscape	Representative views from other assessed viewpoint(s).
CV68 - St. Norbert Provincial Heritage Park	Representative views from other assessed viewpoint(s).
CV69 - Wild Oaks Campground	Representative views from other assessed viewpoint(s).
CV70 - Winnipeg West KOA	Representative views from other assessed viewpoint(s).
CV71 - B Andronak	Identified in relation to initial route options, no view of preferred route anticipated.
CV72 - Canoe Route on La Salle	Representative views from other assessed viewpoint(s).
CV73 - La Barriere Park	Identified in relation to initial route options, no view of preferred route anticipated.
CV74 - PTH 1W/PTH 16	Representative views from other assessed viewpoint(s).
CV75 - WMA	Identified in relation to initial route options, no view of preferred route anticipated.
NOTES: CV – Candidate Viewpoint VP – Priority Viewpoint PTH - Provincial Trunk Highway WMA – Wildlife Management Area	

**MANITOBA-MINNESOTA TRANSMISSION PROJECT  
SOCIO-ECONOMIC AND LAND USE ENVIRONMENT – TECHNICAL DATA REPORT**

Appendix F Baseline Photos and Existing Visual Condition  
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**Appendix F Baseline Photos and Existing Visual Condition**



**BASELINE CONDITIONS**



**BASELINE CONDITIONS – LANDSCAPE CHARACTER CLASS AND EXISTING ALTERATION**



**BASELINE CONDITIONS – CONTEXT PANORAMA**

**VIEWPOINT 1: BASELINE PHOTOS AND ASSOCIATED ANALYSIS**





**BASELINE CONDITIONS**



**BASELINE CONDITIONS – LANDSCAPE CHARACTER CLASS AND EXISTING ALTERATION**



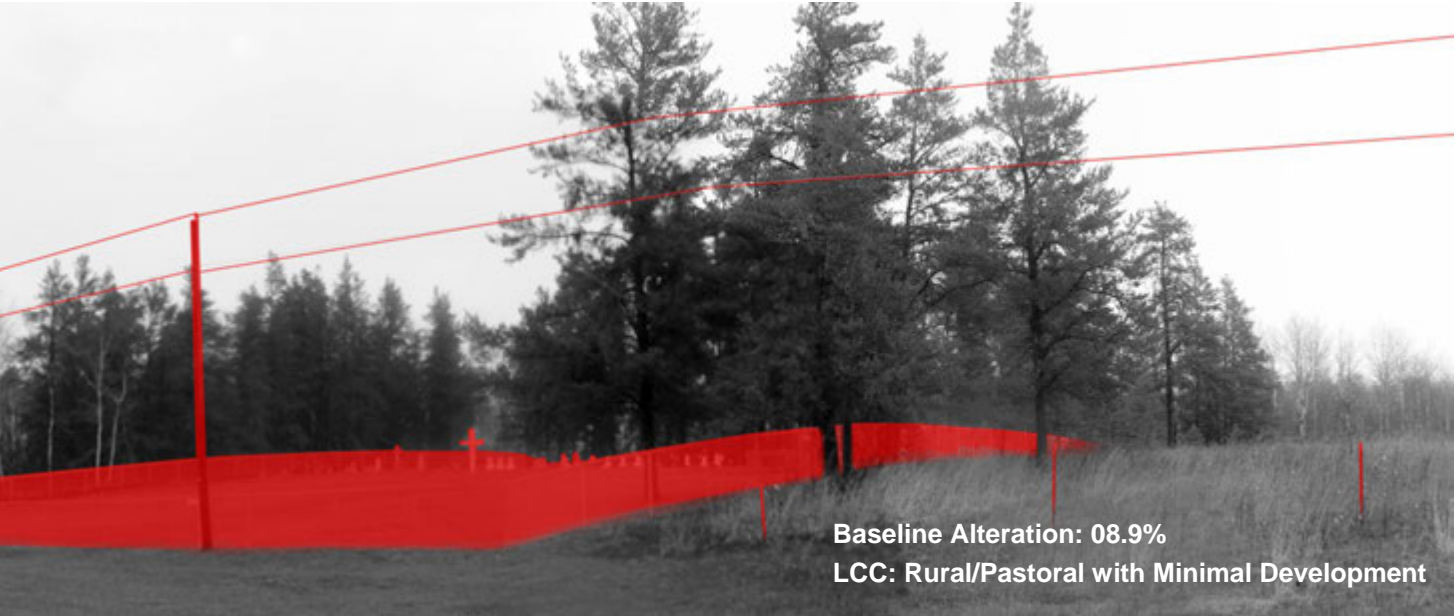
**BASELINE CONDITIONS – CONTEXT PANORAMA**

**VIEWPOINT 2: BASELINE PHOTOS AND ASSOCIATED ANALYSIS**





**BASELINE CONDITIONS**



**BASELINE CONDITIONS – LANDSCAPE CHARACTER CLASS AND EXISTING ALTERATION**



**BASELINE CONDITIONS – CONTEXT PANORAMA**

**VIEWPOINT 3: BASELINE PHOTOS AND ASSOCIATED ANALYSIS**





**BASELINE CONDITIONS**



**BASELINE CONDITIONS – LANDSCAPE CHARACTER CLASS AND EXISTING ALTERATION**



**BASELINE CONDITIONS – CONTEXT PANORAMA**

**VIEWPOINT 4: BASELINE PHOTOS AND ASSOCIATED ANALYSIS**





**BASELINE CONDITIONS**



**BASELINE CONDITIONS – LANDSCAPE CHARACTER CLASS AND EXISTING ALTERATION**



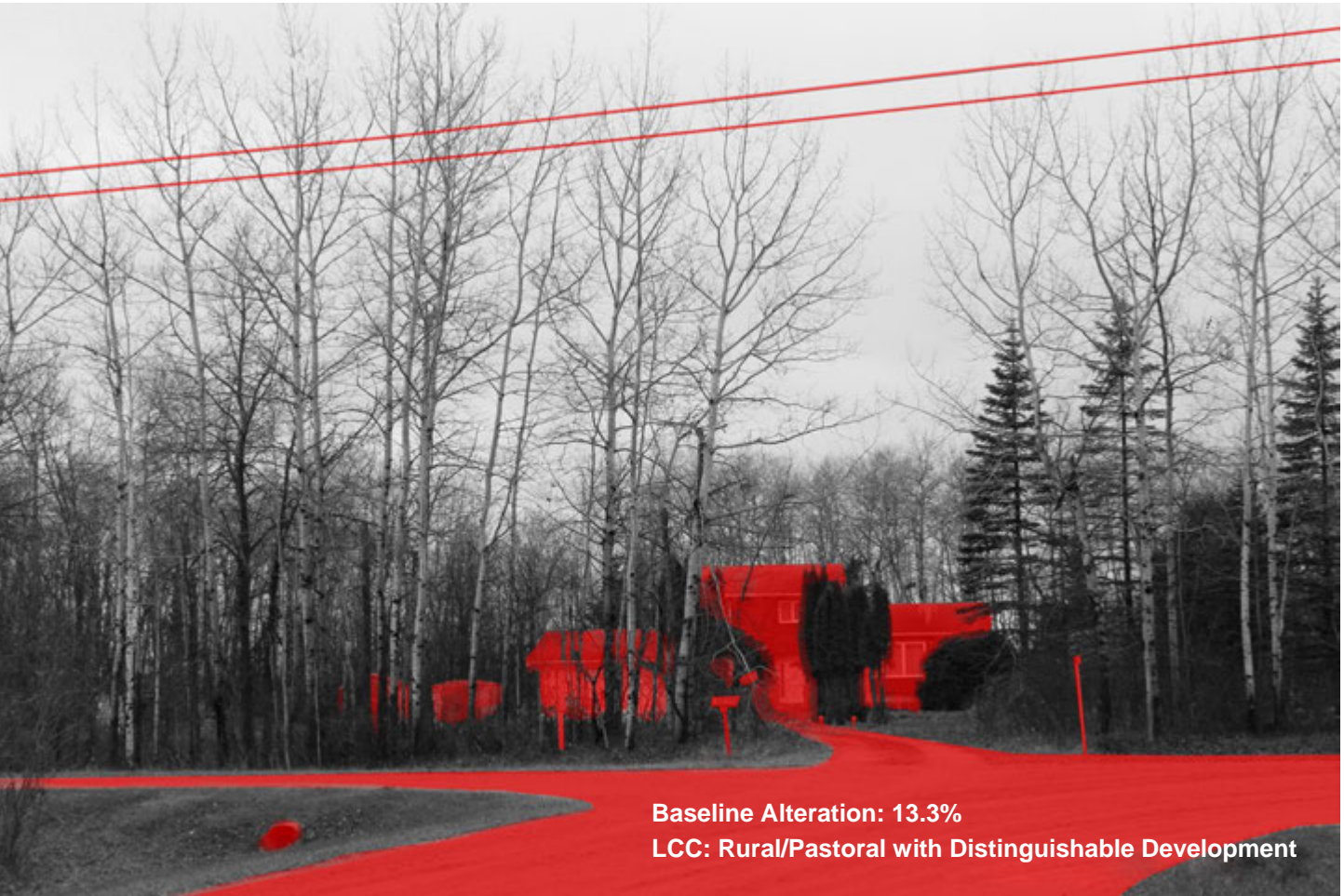
**BASELINE CONDITIONS – CONTEXT PANORAMA**

**VIEWPOINT 5: BASELINE PHOTOS AND ASSOCIATED ANALYSIS**





**BASELINE CONDITIONS**



**BASELINE CONDITIONS – LANDSCAPE CHARACTER CLASS AND EXISTING ALTERATION**

**VIEWPOINT 6: BASELINE PHOTOS AND ASSOCIATED ANALYSIS**





**BASELINE CONDITIONS**



**BASELINE CONDITIONS – LANDSCAPE CHARACTER CLASS AND EXISTING ALTERATION**



**BASELINE CONDITIONS – CONTEXT PANORAMA**

**VIEWPOINT 7: BASELINE PHOTOS AND ASSOCIATED ANALYSIS**





**BASELINE CONDITIONS**



**BASELINE CONDITIONS – LANDSCAPE CHARACTER CLASS AND EXISTING ALTERATION**



**BASELINE CONDITIONS – CONTEXT PANORAMA**

**VIEWPOINT 8: BASELINE PHOTOS AND ASSOCIATED ANALYSIS**





**BASELINE CONDITIONS**



**BASELINE CONDITIONS – LANDSCAPE CHARACTER CLASS AND EXISTING ALTERATION**



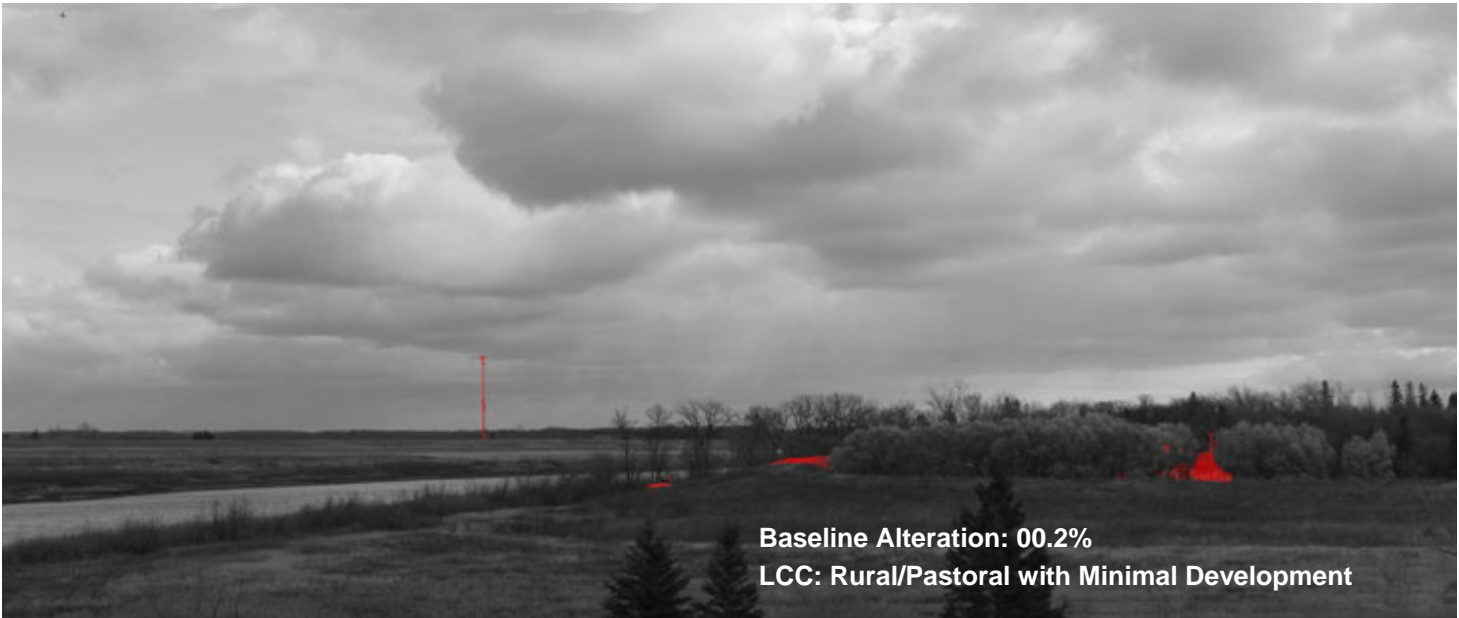
**BASELINE CONDITIONS – CONTEXT PANORAMA**

**VIEWPOINT 9: BASELINE PHOTOS AND ASSOCIATED ANALYSIS**





**BASELINE CONDITIONS**



**BASELINE CONDITIONS – LANDSCAPE CHARACTER CLASS AND EXISTING ALTERATION**



**BASELINE CONDITIONS – CONTEXT PANORAMA**

**VIEWPOINT 10: BASELINE PHOTOS AND ASSOCIATED ANALYSIS**





**BASELINE CONDITIONS**



**BASELINE CONDITIONS – LANDSCAPE CHARACTER CLASS AND EXISTING ALTERATION**



**BASELINE CONDITIONS – CONTEXT PANORAMA**

**VIEWPOINT 11: BASELINE PHOTOS AND ASSOCIATED ANALYSIS**



**BASELINE CONDITIONS**



**BASELINE CONDITIONS – LANDSCAPE CHARACTER CLASS AND EXISTING ALTERATION**



**BASELINE CONDITIONS – CONTEXT PANORAMA**

**VIEWPOINT 12: BASELINE PHOTOS AND ASSOCIATED ANALYSIS**





**BASELINE CONDITIONS**



**BASELINE CONDITIONS – LANDSCAPE CHARACTER CLASS AND EXISTING ALTERATION**



**BASELINE CONDITIONS – CONTEXT PANORAMA**

**VIEWPOINT 13: BASELINE PHOTOS AND ASSOCIATED ANALYSIS**





**BASELINE CONDITIONS**



**BASELINE CONDITIONS – LANDSCAPE CHARACTER CLASS AND EXISTING ALTERATION**



**BASELINE CONDITIONS – CONTEXT PANORAMA**

**VIEWPOINT 14: BASELINE PHOTOS AND ASSOCIATED ANALYSIS**

# MANITOBA-MINNESOTA TRANSMISSION PROJECT

## SOCIO-ECONOMIC AND LAND USE ENVIRONMENT – TECHNICAL DATA REPORT

Appendix G Environmentally Sensitive Sites  
September 2015

### Appendix G Environmentally Sensitive Sites

ESS Name	ESS Description	Rationale	Phase of Development
Sturgeon Creek Colony	Hutterite Colony	Identified as area of intensive development	Construction phase, access development, Operation phase
South Headingley	Existing residential area	Identified as area of rural residential development	Construction phase, access development, Operation phase
Oak Bluff West	Residential Development	Identified area for future residential development	Construction phase, access development, Operation phase
Private land subdivision lots – 28	Rural Residential Developments	Identified as areas of rural residential development	Construction phase, access development, Operation phase
Private Residence	Residence within 100 m of centerline (Lot 7, Plan 17769) in RM of Headingley	Identified house within 100 m of centreline	Construction phase, access development, Operation phase
Private Residence	Residence within 100 m of ROW (SW18-8-8E) in RM of Ste. Anne	Identified house within 100 m of ROW	Construction phase, access development, Operation phase
Municipal Sewage Lagoon	RM of Macdonald Sewage Lagoon (NE18-9-2E)	Operating municipal lagoon	Construction phase, access development, Operation phase
Municipal Sewage Lagoon	RM of Macdonald Sewage Lagoon (SW17-9-2E)	Operating municipal lagoon	Construction phase, access development, Operation phase
Airstrip	Private landing strip north of & parallel to Southern Loop Corridor (NE16-9-2E)	Identified as an active landing strip	Construction phase, access development, Operation phase
Watson P. Davidson WMA	Protected Area	Identified as a protected area under the PAI	Construction phase, access development, Operation phase
Assiniboine River Clam Beds	Candidate Protected Area	Identified as a proposed protected area under the PAI	Construction phase, access development, Operation phase
Balsam Willows	Candidate Protected Area	Identified as an ASI under the PAI	Construction phase, access development, Operation phase
Caliento Bog	Candidate Protected Area	Identified as a proposed protected area under PAI	Construction phase, access development, Operation phase
Lone Sand	Area of Special Interest	Identified as an ASI under the PAI	Construction phase, access development, Operation phase

# MANITOBA-MINNESOTA TRANSMISSION PROJECT

## SOCIO-ECONOMIC AND LAND USE ENVIRONMENT – TECHNICAL DATA REPORT

Appendix G Environmentally Sensitive Sites  
September 2015

ESS Name	ESS Description	Rationale	Phase of Development
Somme Area	Area of Special Interest	Identified as an ASI under the PAI	Construction phase, access development, Operation phase
Piney Area	Area of Special Interest	Identified as an ASI under the PAI	Construction phase, access development, Operation phase
Beaudry Provincial Natural Park	Provincial Natural Park (parcel)	Identified under the Provincial Park System Plan	Construction phase, access development, Operation phase
Duff Roblin Provincial Heritage Park	Provincial Heritage Park	Identified under the Provincial Park System Plan	Construction phase, access development, Operation phase
Recreational Facility	Baseball Diamonds (City of Winnipeg)	Identified as an active recreational facility	Construction phase, access development, Operation phase
Golf Course	Southwood Golf and Country Club	Identified as an active golf course (adjacent to ROW to north)	Construction phase, access development, Operation phase
Recreational Trails	Trans Canada Trail/ Duff Roblin Heritage Parkway (Red River Floodway)	Identified as active recreational trails	Construction phase, access development, Operation phase
Golf Course	Cottonwood Golf Course	Identified as an active golf course (NE corner crossed)	Construction phase, access development, Operation phase
Golf Course	La Verendrye Golf Course	Identified as an active golf course (west of ROW)	Construction phase, access development, Operation phase
Treaty Land Entitlement	Peguis First Nation (part NE5-10-7E, NW4-10-7E)	Identified as a recent TLE selection adjacent to ROW, east of ROW	Construction phase, access development, Operation phase
Recreational Land/Leased Crown land	Seven Oaks Game & Fish Association (SW32-8-5E; W ½ 29-8-5E)	Identified game and fish lands, with clubhouse, shooting area, warm-up shelter, trails (Round 3 PEP)	Construction phase, access development, Operation phase
Private wildlife area	Private land – sections 27 and 28-8-4E (four quarters in section 27 crossed)	Potential future use for wildlife management, recreation, and hunting	Construction phase, access development, Operation phase
Floodway	Red River Floodway	Flood protection channel	Construction phase, access development, Operation phase
Assiniboine River	Identified navigable waterway crossing	Scheduled under the Navigation Protection Act	Construction phase, access development



# MANITOBA-MINNESOTA TRANSMISSION PROJECT

## SOCIO-ECONOMIC AND LAND USE ENVIRONMENT – TECHNICAL DATA REPORT

Appendix G Environmentally Sensitive Sites  
September 2015

ESS Name	ESS Description	Rationale	Phase of Development
La Salle River	Permanent waterbody crossing	Natural/Recreational waterway	Construction phase, access development
Red River	Identified navigable waterway crossing  Heritage River crossing	Scheduled under the Navigation Protection Act  Designated under the Canadian Heritage Rivers System	Construction phase, access development
Seine River	Seine River Siphon (near PTH 59)  Permanent waterbody crossing	Diversion structure to facilitate river flow under the Floodway  Natural/Recreational waterway	Construction phase, access development
Rat River	Permanent waterbody crossing	Provincial designated canoe route	Construction phase, access development
Private Quarry Permit	RM of Springfield private quarry (SW29-10-6E)	Issued private quarry permit	Construction phase, access development
Sand and Gravel/Private Quarry	RM of Tache Municipal Sand and Gravel/Quarry site (28-9-7E)	Important existing operating site and area for future development	Construction phase, access development
Quarry Withdrawal	MIT Sand & Gravel (RM of Ste. Anne south of PTH 1E to QL at PR 302)	Identified Highways quarry withdrawal area	Construction phase, access development
Quarry Lease	Private quarry lease (SE7-8-8E)	Issued private quarry lease	Construction phase, access development
Quarry Withdrawal	MIT Quarry (SE5-8-8E)	Identified Highways quarry withdrawal area	Construction phase, access development
Quarry Withdrawal	MIT Sand & Gravel (SW17-3-9E)	Identified Highways quarry withdrawal area	Construction phase, access development
Lonesands Tree Improvement - 2	CWS Family Test site	To protect sites identified to guide management prescriptions on seed orchards	Construction phase, access development, Operation phase
Woodlot Plans - 7	Private forestland areas	Established to manage timber, environmental and aesthetic values	Construction phase, access development, Operation phase
Shelterbelts - 79	Planted or natural forest areas	Established for aesthetic purposes, and/or wind erosion control on agricultural fields, farmsteads and rural residences	Construction phase, access development, Operation phase