Manitoba-Minnesota Transmission Project

Post-Construction Environmental Monitoring Report

Certificate EC-059

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Manitoba Hydro

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TABLE OF CONTENTS

1.0 Introduction 1

1.1 Project Overview 1

1.1.1 Regulatory Requirement 1

1.1.2 Project Status 2

1.2 Environmental Protection Program 5

2.0 Environmental Monitoring 6

2.1 Purpose 6

2.2 Objectives 6

2.3 Scope of Work 7

2.4 Management and Coordination 7

2.5 Public Communications and Engagement 8

2.6 First Nation and Metis Engagement Process 8

2.7 Environmental Issues that arose during Construction or in the Previous Year 11

3.0 Monitoring Program Methods and Results 13

3.1 Fish and Fish Habitat 15

3.2 Vegetation 15

3.2.1 Wetland Survey 16

3.2.2 Rare Plant Survey 16

3.2.3 Non-native and Invasive Species Plant Survey 17

3.2.4 Traditional Use Plant Survey 17

3.3 Wildlife and Wildlife Habitat 18

3.3.1 Wetland Amphibian Survey 18

3.3.2 Snake Hibernacula Survey 18

3.3.3 Bird-Wire Collision Survey 18

3.3.4 Sharp-tailed Grouse Lek Survey 19

3.3.5 Bird Species of Conservation Concern Survey 20

3.3.6 Golden-winged Warbler Habitat Survey 20
3.3.7 Raptor Nest Survey 21
3.3.8 Ungulates and Predators 21
3.4 Employment and the Economy 23
3.4.1 Project Employment Reporting 23
3.4.2 Direct/Indirect Business Opportunities Reporting 23
3.4.3 Direct Labour and Income Taxes Reporting 24
3.5 Infrastructure and Services 25
3.5.1 Traffic Monitoring Survey 25
3.6 Outfitting and Falconry 25
3.6.1 Black Bear Bait Site Camera Trap Survey 25
3.6.2 Peregrine Falcon Conservation Centre Survey 25
3.7 Agriculture 26
3.7.1 Agricultural Land 26
3.8 Access 27
3.8.1 Access Management 27
4.0 Future Monitoring 27

LIST OF MAPS

Map 1-1 Project Components Map....3
Map 1-2 Project Environmental Monitoring Site Locations Map....4

LIST OF TABLES

Table 2-1 List of Environmental Deficiencies....12
Table 3-1 Monitoring Activities by Environmental Component....13
Table 4-1 Monitoring Activities Schedule....28

LIST OF FIGURES

Figure 1: Environmental Protection Program Chart....5

LIST OF PICTURES

Photo 1 Wetland monitoring site along the MMTP right of way....29
Photo 2 MMTP tower located in a wetland....29
Photo 3 Riddell's goldenrod (*Solidago riddellii*) is a threatened species that was incidentally observed post-construction on the right of way....30
Photo 4 Surveys in 2021 showed an increased cover of vegetation in the tall shrub stratum....30
Photo 5 Northern leopard frog (*Lithobates pipiens*) tadpole observed on the right of way....31
Photo 6 Funnel trap deployed along the right of way....31
Photo 7 Bird wire collision surveys were conducted along MMTP....31
Photo 8 Waterfowl observed flying over MMTP....32
Photo 9 A sharp-tailed grouse (*Tympanuchus phasianellus*) lek near MMTP....32
Photo 10 A golden-winged warbler (*Vermivora chrysoptera*) monitoring site in 2021....33
Photo 11 A golden-winged warbler (*Vermivora chrysoptera*) at a monitoring site on MMTP....33

Photo 12 White-tailed deer (*Odocoileus virginianus*) observed during an aerial survey. 34

LIST OF APPENDICES

Appendix A: MANITOBA-MINNESOTA TRANSMISSION PROJECT BOTANICAL AND VEGETATION ENVIRONMENTAL MONITORING ANNUAL TECHNICAL REPORT – 2021 35
Appendix B: MANITOBA-MINNESOTA TRANSMISSION PROJECT AMPHIBIAN MONITORING PROGRAM TECHNICAL REPORT - 2021 35
Appendix C: MANITOBA-MINNESOTA TRANSMISSION PROJECT BIRD-WIRE COLLISION MONITORING REPORT- 2021 35
Appendix D: MANITOBA-MINNESOTA TRANSMISSION PROJECT SHARP-TAILED GROUSE MONITORING REPORT - 2021 35
Appendix E: MANITOBA–MINNESOTA TRANSMISSION PROJECT GOLDEN-WINGED WARBLER MONITORING REPORT 2017-2021 35
Appendix F: MANITOBA-MINNESOTA TRANSMISSION PROJECT MAMMAL MONITORING PROGRAM TECHNICAL REPORT - 2022 35
Appendix G: MANITOBA-MINNESOTA TRANSMISSION PROJECT EMPLOYMENT AND ECONOMY REPORT - 2020 35
Appendix H: MANITOBA-MINNESOTA TRANSMISSION PROJECT TRAFFIC IMPACT STUDY REVIEW - 2021 35
Appendix I: MANITOBA-MINNESOTA TRANSMISSION PROJECT AGRICULTURAL SOIL PRODUCTIVITY MONITORING: POST-CONSTRUCTION YEAR 2 - 2021 35

ACRONYMS

AC	Alternating Current
CER	Canadian Energy Regulator
CHRPP	Cultural and Heritage Resources Protection Plan
EIS	Environmental Impact Statement
EMP	Environmental Monitoring Plan
EPIMS	Environmental Protection Information Management System
EPP	Environmental Protection Program
ESS	Environmentally Sensitive Site
FNMEP	First Nation and Metis Engagement Process
GPS	Global Positioning System Unit
km	Kilometre
kV	Kilovolt
MBCA	Migratory Birds Convention Act
MBCDC	Manitoba Conservation Data Centre
MESEA	Manitoba Endangered Species and Ecosystems Act
MMF	Manitoba Metis Federation
MMTP	Manitoba-Minnesota Transmission Project
NEB	National Energy Board
PEP	Public Engagement Process
ROW	Right-of-way
SARA	Species at Risk Act

1.0 Introduction

This document is the second monitoring report of the Manitoba Minnesota Transmission Project (MMTP) Environmental Monitoring Plan (NEB Ex. A6V3U2).

1.1 Project Overview

Manitoba Hydro has constructed and is operating a 500 kilovolt (kV) alternating current (AC) international transmission line in southeastern Manitoba that includes additions and upgrades to three associated transmission stations at Dorsey, Riel and Glenboro South. (Map 1-1) The project is called the Manitoba-Minnesota Transmission Project (the Project) and consists of approximately 213 km of single circuit, 500 kV AC transmission line (D604I) that starts at the existing Dorsey Converter Station northwest of Winnipeg, in the RM of Rosser, and connects at the Manitoba-Minnesota border to a new transmission line operated by Minnesota Power, called the Great Northern Transmission Line. Map 1-1 shows the project components. Map 1-2 shows the projects environmental monitoring locations.

Construction of the Project began in September 2019. Construction of the Project was completed on April 15, 2020. The project partially came into service on June 1, 2020. The MMTP project was fully in-service as of November 1, 2020. The MMTP project is now in the operation phase.

1.1.1 Regulatory Requirement

The project was reviewed by Manitoba Sustainable Development (SD) and received Environment Act Licence #3288. This report is being prepared in fulfillment of Condition 56, which states;

> *The Licencee shall submit annual reports to the Director of the Environmental Approvals Branch, on the results of monitoring programs approved pursuant to Clause 53 of this Licence for the duration of the monitoring programs. The reports shall:*
>
> *a) report on the accuracy of predictions made in the EIS and supporting information,*
>
> *b) report on the success of the mitigation measures employed during construction and operation,*
>
> *c) provide a description of the adaptive management measures undertaken to address issues, and commitments for future mitigation;*
>
> *d) identify any unexpected environmental effects of the Development;*
>
> *e) identify additional mitigation measures to address unanticipated environmental effects, if required;*
>
> *f) report on how input from the monitoring advisory group, formed pursuant to Clause 55 of this licence, was incorporated into the monitoring program; and*

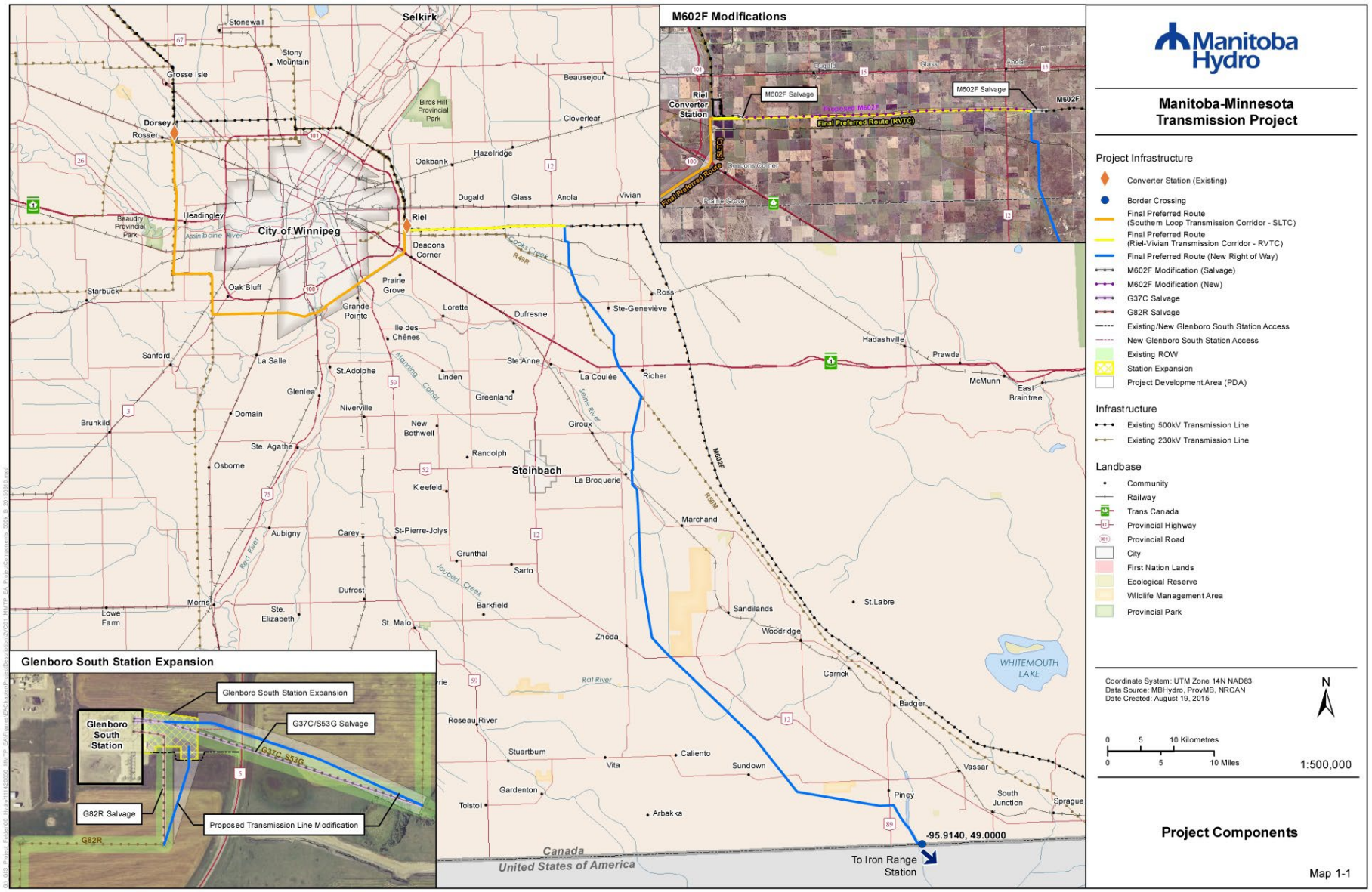
g) propose changes to the monitoring programs based on the results of the annual assessments.

Authorization for the construction and operation of the transmission line was acquired under the *National Energy Board Act* under the Certificate of Public Convenience and Necessity EC-059. This report is being submitted in partial fulfillment of Condition 23, which states;

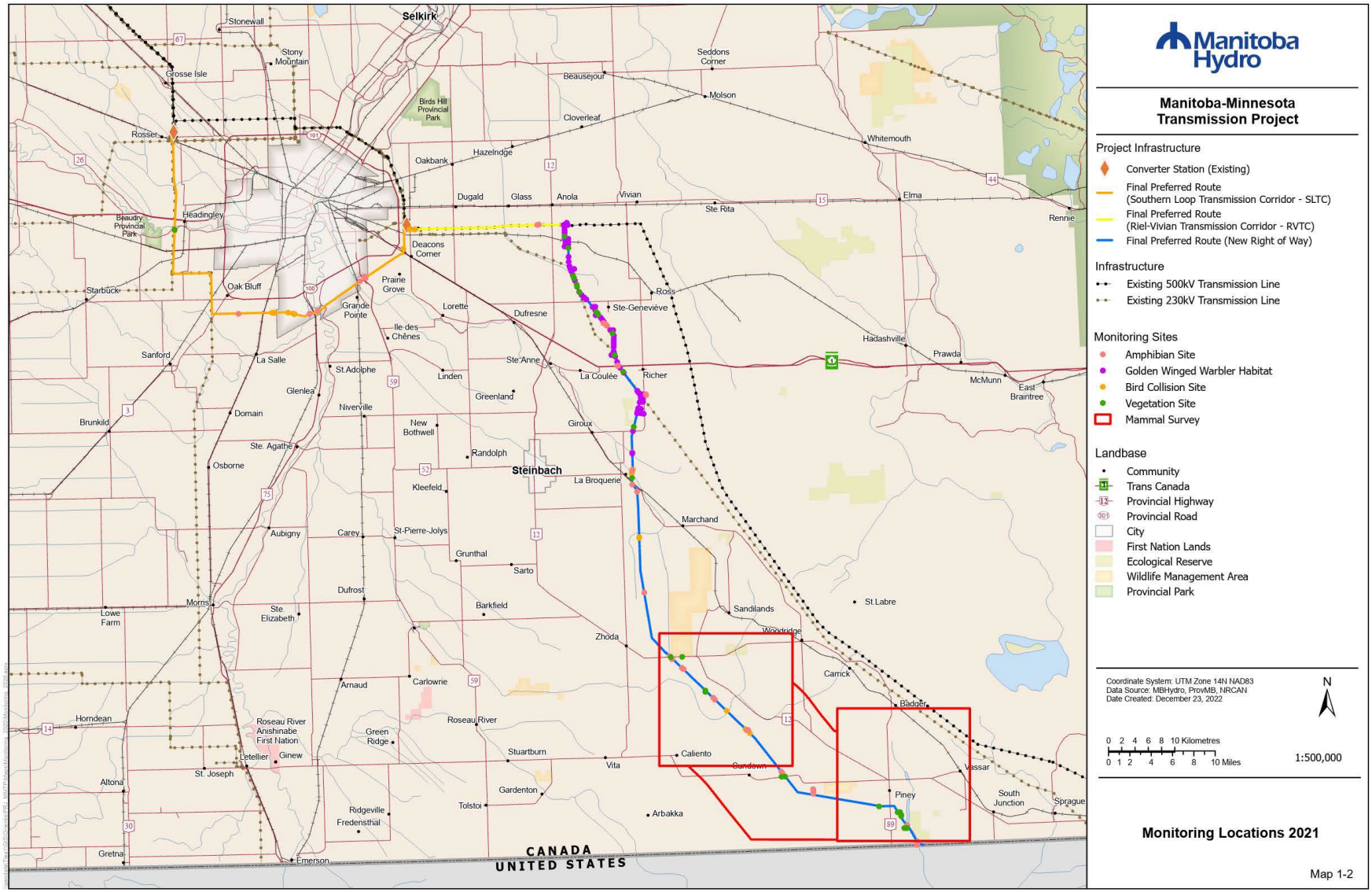
> *Manitoba Hydro must file with the Board, on or before 31 January following the first year of Project operations and for a period of at least ten (10) years after commencing operations, annual post-construction monitoring reports. These reports must include:*
>
> *a) a description of monitoring methods used;*
>
> *b) identification, including on a map or diagram, of any reclamation or other environmental issues which arose during construction or in the course of the previous year;*
>
> *c) a description of the valued components or issues that were assessed or monitored, as outlined in Manitoba Hydro's Environmental Monitoring Plan (see Condition 10);*
>
> *d) the monitoring results, including a comparison to measurable goals;*
>
> *e) an assessment of the effectiveness of the mitigation measures implemented and the accuracy the environmental assessment predictions;*
>
> *f) a description of any corrective actions taken, their observed success and current status; and,*
>
> *g) a schedule outlining when further corrective actions will be implemented or monitoring conducted to address any unresolved issues.*
>
> *Notwithstanding the requirement for filing on or before 31 January above, if the Provincial Minister responsible for issuing a Provincial Licence to Manitoba Hydro does grant such a Licence, and such a Licence requires annual submission of post-construction monitoring reports, Manitoba Hydro may submit post-construction monitoring reports to the Board in accordance with any timing requirements set out in that Provincial Licence, provided that the submission of the reports to the Board commences within the first year of operations and occurs annually for ten (10) years.*

1.1.2 Project Status

The MMTP project, including transmission line and station upgrades were fully in-service as of November 1, 2020, and continue to be in operation.



Map 1-1 Project Components Map



Map 1-2 Project Environmental Monitoring Site Locations Map

1.2 Environmental Protection Program

Part of Manitoba Hydro's commitment to environmental protection includes the development of a comprehensive Environmental Protection Program (EPP), this is further described in chapter 22 of the EIS, found here at NEB Ex. A81182-38. The purpose of the EPP is to provide the framework for implementing, managing, monitoring and evaluating environmental protection measures that are consistent with regulatory requirements and environmental guidelines. This EMP is a component of the EPP as illustrated in Figure 1.

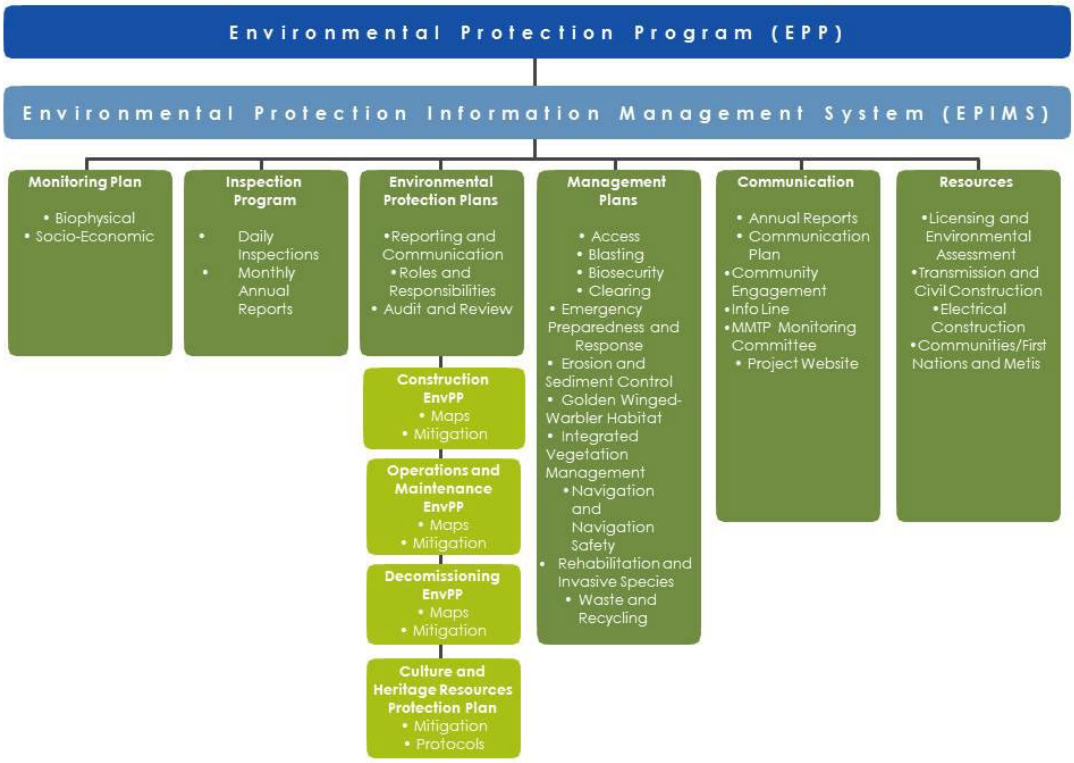


Figure 1: Environmental Protection Program Chart

2.0 Environmental Monitoring

This document reports on the outcomes of the MMTP Environmental Monitoring Plan (NEB Ex A6V3U2), which outlines the various monitoring activities that are occurring to address follow-up requirements identified for the valued components included in the environmental assessment. This is the Project's second annual monitoring report and describes monitoring results from March 2021 to March 2022. Monitoring activities were considered during all phases of Project development (i.e., pre-construction, construction and post construction). Follow-up requirements include actions implemented to assess the effectiveness of the environmental assessment and to confirm compliance with regulatory requirements.

The EMP is intended to describe how and provide assurance to regulators, the MMTP Monitoring Committee, First Nations, the Manitoba Metis Federation and Indigenous organizations, landowners, interested parties, environmental organizations, and the general public that potential environmental effects caused by the Project will be monitored, evaluated and reported in a responsible and accountable manner.

An internal Environmental Protection Information Management System (EPIMS) was developed that will manage, store and facilitate the transfer of Environmental Protection Program data and information amongst the Project team. EPIMS will facilitate the transferring of knowledge and experiences encountered on a daily basis during construction activities from Environmental Inspectors to the Specialists that are responsible for monitoring project effects. EPIMS is an essential tool that manages vast amounts of data and information that will be generated through the implementation of the plan, allowing for Manitoba Hydro to employ an adaptive management approach during this project and apply that experience and knowledge to future developments.

2.1 Purpose

The purpose of the environmental monitoring report is to meet regulatory requirements and to outline results of the key activities that were conducted as part of the monitoring and follow-up component of the Project.

2.2 Objectives

The objectives of this report are to describe the monitoring methods used, the valued components, the monitoring results with measurable goals, the effectiveness of mitigation, and future actions and monitoring. Much of this information is detailed within the following subheadings in Section 3:

- Confirm the nature and magnitude of predicted environmental effects as stated in the EIS;
- Assess effectiveness of mitigation measures implemented;
- Identify unexpected environmental effects of the project, if they occur;
- Identify additional mitigation measures to address unanticipated environmental effects, if required;
- Confirm compliance with regulatory requirements including approval terms and conditions; and
- Provide additional baseline information to evaluate long-term changes or trends.

2.3 Scope of Work

The scope of this environmental monitoring report includes the biological and socio-economic components outlined in the environmental monitoring plan. A Cultural and Heritage Resources Protection Plan (CHRPP) was also developed that outlines Manitoba Hydro's commitment to safeguard cultural and heritage resources and provide information on how to appropriately handle human remains or cultural and heritage resources discovered or disturbed during construction of the Project.

2.4 Management and Coordination

As part of the EPP, Manitoba Hydro had staff comprised of senior Manitoba Hydro management, as well as implementation teams committed to the implementation of the EMP for the Project. The Environmental Protection Management Team was responsible for the management of the environmental protection plans including compliance with regulatory and other requirements, as well as quality assurance and control. Manitoba Hydro coordinated discussions with regulators and integrated monitoring outcomes related to the MMTP Monitoring Committee, First Nation and Metis Engagement Process (FNMEP) and Public Engagement Process (PEP) into the EMP. The Environmental Protection and Implementation Team, which was comprised of Manitoba Hydro operational and office staff, was responsible for the day-to-day implementation of environmental protection plans developed for the project, which included monitoring, inspecting and reporting.

Manitoba Hydro ensured that resources were allocated to the environmental aspects of project planning, development, implementation and operation for the successful implementation of environmental protection measures and follow-up including monitoring. Manitoba Hydro committed resources early in the planning cycle to ensure effective environmental assessment, mitigation and monitoring.

2.5 Public Communications and Engagement

In addition to extensive public engagement efforts that have occurred to date throughout the development of the Project, Manitoba Hydro welcomes all members of the public to contact the corporation with questions or comments throughout the environmental monitoring process. Manitoba Hydro's Manitoba-Minnesota Transmission Project website site, www.hydro.mb.ca/mmtp, is maintained and updated regularly throughout the project with the summary of results. As noted on the Project website, additional information is available to the public upon request via a toll-free phone number, dedicated project e-mail address or by mail.

Manitoba Hydro
Manitoba–Minnesota Transmission Project
C/O Transmission Distribution & Environment and Engagement
360 Portage Avenue (18)
Winnipeg MB, R3C 0G8
1-877-343-1631 or 204-360-7888
Projects@hydro.mb.ca

2.6 First Nation and Metis Engagement Process

Manitoba Hydro's approach to the ongoing First Nation and Metis Engagement Process (FNMEP) was the development of a MMTP Monitoring Committee. Information generated by this committee was used in an adaptive way to modify and improve the environmental monitoring plan, including adding surveys on traditional use plants.

The MMTP Monitoring Committee is made up of participants from Indigenous communities and groups across southern Manitoba and Ontario, Manitoba Hydro and Manitoba Conservation and Climate. Their comprehensive website can be found at: https://www.mmtpmonitoring.com/

The purpose of the MMTP Monitoring Committee is to:

- support Indigenous participants effective and meaningful participation in the monitoring of the project
- create a platform for understanding issues of concern to Indigenous participants and Manitoba Hydro in order to collaboratively provide informed advice on how to address issues of concern
- share information in a cooperative and transparent manner relating to the environmental issues of the Project

The goals of the MMTP Monitoring Committee are to monitor that:

- Manitoba Hydro does what they say they would do and is compliant with licence and certificate conditions.
- The land and water is respected as we use our knowledge to monitor its health
- Leadership, members and staff from communities and organizations feel informed about the status of MMTP and information is accessible to those who just want to check in if interested.
- There is a place to discuss topics of interest to us that are beyond MMTP.

Invited Members include:

Animakee Wa Zhing #37
Anishnaabeg of Naongashiing
Birdtail Sioux First Nation
Black River First Nation
Brokenhead Ojibway Nation
Buffalo Point First Nation
Canupawakpa Dakota Nation
Dakota Plains Wahpeton First Nation
Dakota Tipi First Nation
Iskatewizaagegan #39 Independent FN
Long Plain First Nation
Northwest Angle #33 First Nation
Peguis First Nation
Roseau River Anishinabe First Nation
Sagkeeng First Nation
Sandy Bay Ojibway First Nation
Swan Lake First Nation
Shoal Lake 40 First Nation
Sioux Valley Dakota Nation
Waywayseecappo First Nation
Manitoba Metis Federation
Aboriginal Chamber of Commerce
Assembly of Manitoba Chiefs
Dakota Ojibway Tribal Council
Southern Chiefs Organization
Manitoba Hydro
Manitoba Sustainable Development

In August 2019, the Monitoring Committee hired four Indigenous monitors responsible for monitoring the construction of MMTP and supporting the Committee in achieving their goals.

Travis Bird, Swan Lake First Nation	Compliance and Environment Monitor
Keith Kowall, Manitoba Metis Federation	Compliance and Environment Monitor
Darryl Taylor, Dakota Tipi First Nation	Communications Monitor
Floyd Flett, Peguis First Nation	Traditional Knowledge Monitor

The monitors visited project construction sites four days per week and reported on their daily observations of construction activities, raising matters of environmental concern and non-compliance to Manitoba Hydro. Examples of issues observed included spills, substandard machinery, and ground disturbance beyond prescribed areas.

Other responsibilities fulfilled by the monitors included providing presentations to interested communities and organizing traditional ceremonies and tobacco offerings. Firewood and cedar harvested from the project ROW were also bundled by the monitors and delivered to interested communities.

In 2020, the MMTP Indigenous monitors published a report on the observations, challenges, and recommendations developed through their experience monitoring construction of the project. Recommendations included, but were not limited to:

- A process for inspecting machinery to clear it for use on the ROW;
- Increased diligence in contractor hiring to ensure contractors understand the importance of environmental protection; and
- Indigenous involvement in early project activities such as geotechnical drilling and heritage work.

The monitors reported that Manitoba Hydro was timely in responding to concerns they identified. This was accomplished through biweekly meetings with construction managers. The opportunity to perform traditional ceremonies and make offerings of tobacco and prayers to show respect for the people, environment, and spirits affected by the project was very important to the monitors and recommended as an essential component on future projects.

Following completion of the construction phase, the monitors have continued to perform post-construction monitoring. Post-construction monitoring tours have taken place at four times a year (spring, summer, fall, and winter).

During post-construction monitoring tours, the monitors complete a report of their observations related to wildlife and habitat, presence of traditional plant species and invasive plants, water level observations, accessibility, and level of visual disturbance. Ongoing monitoring has focused primarily on four sites along the MMTP ROW located near Towers 124, 405, 406, and 441. Vegetation monitoring quadrants have been set up to allow the monitors to observe the growth of traditional plant species over time. Post-construction monitoring reports and photos are made available on the https://www.mmtpmonitoring.com/ webpage.

At times, action items for Manitoba Hydro are captured in the monitoring reports or through discussions that take place during monitoring tours. In accordance with recommendations of the Indigenous monitors, Manitoba Hydro is currently working to design, acquire, and place signs at environmentally sensitive sights along MMTP. The signs are to be written in English, Ojibway, Dakota and Michif.

The monitors have also suggested developing an information sheet to discuss common questions and topics that may arise when Indigenous people consider visiting areas near transmission lines such as clarifications about accessing the ROW.

The MMTP Indigenous monitors have shared with Manitoba Hydro that their experience monitoring MMTP has been positive and that they believe it is essential for Indigenous monitors to be present on all projects that affect the land and water.

2.7 Environmental Issues that arose during Construction or in the Previous Year

Throughout the Project construction phase routine environmental mitigation measures were applied as per the environmental protection plan. In year 2 (2021), no environmental issues arose. Table 2-1 outlines the status of environmental issues that arose during construction or in the previous year.

Table 2-1 List of Environmental Deficiencies						
Sites	Date	Item Description	Project Area/Timeframe	Corrective Action and schedule for unresolved issues	Current Status	
					Year 1 (2020)	Year 2 (2021)
Low volume release sites (197) identified at various locations along ROW.	June 17, 2021	Release site identified, contaminated material removed, and soil tested, as required. Includes NEB Inspection Report# CV1920-477 NNC#1 – Visual sign of hydrocarbon release	MMTP - S1 and S2/ identified during construction phase	All release sites cleaned up and remediated prior to November 1, 2020. No further action. Includes response to NNC#1 submitted on March 3, 2020.	Resolved and reported in 2020.	N/A
Inadequate temporary access. The eastern arm of Pine Creek. SW-4-1-12-E.	October 23, 2019	NEB Inspection Report# CV1920-108 NNC#1 – Inadequate temporary access	MMTP – S2 identified during construction	New temporary bridge installed as outlined in response to NNC #1 on November 4th, 2019.	Resolved and reported in 2020.	N/A
Major petroleum hydrocarbon release near tower 265. NE-2-9-7-E in the Rural Municipality of Tache.	January 30, 2020	~200L diesel fuel release, remove contaminated material, test samples, rehabilitate.	MMTP - S2/ identified during construction phase, completed post construction phase	Release site cleaned up, remediated. Clean up work completed by February 18, 2020. Monitoring conducted until November 2020. No further action.	Resolved and reported in 2020.	N/A
Major petroleum hydrocarbon release at MMTP laydown yard. NE-9-4-8-E in the Rural Municipality of La Broquerie.	March 21, 2020	60L hydraulic oil release, remove contaminated material, test samples, rehabilitate.	MMTP - S2/ identified during construction phase, completed post construction phase	Release site cleaned up, remediated. Clean up work completed by July 6, 2020. No further action.	Resolved and reported in 2020.	N/A
Six noxious weed sites identified at various locations along the ROW in Rural Municipality of Piney and Stuartburn.	July 24, 2020	Tier 1 and 2 weed species sites	MMTP - S2/ identified post construction phase	Contract licensed herbicide applicator to treat weed sites. Treatment conducted on September 23, 2020. Regional weed inspector satisfied. Vegetation surveys in Year 2 may identify additional weed sites.	Resolved and reported in 2020.	N/A
Woody debris in watercourse near tower 493. SW-4-1-12-E, Rural Municipality of Piney, ESS Aqua 130.	June 29, 2020	Woody debris in watercourse. A small number of woody branches and stumps.	MMTP - S2/ identified during post construction phase	Debris removed from watercourse on August 5th, 2020. No further action.	Resolved and reported in 2020.	N/A
Ground disturbance along ROW at tower 303. NW-20-7-8E, RM of Ste. Anne.	September 9, 2020	Ground disturbance	MMTP - S2/ identified during construction	Back blade and level ground on November 3, 2020, and June 21, 2021. No further action.	Resolved and reported in 2020.	N/A
Ground disturbance along ROW at towers 119A, 119B at RL-73-NO, City of Winnipeg.	Spring 2020	Ground disturbance	MMTP - S1/ identified during construction	Tilled and leveled ground and repaired access between June 4-15, 2020. No further action.	Resolved and reported in 2020.	N/A

3.0 Monitoring Program Methods and Results

Table 4-1 below provides the list of valued components and their environmental indicators that were outlined in the environmental monitoring plan. It also describes the parameters measured, rationale for their selection, and status in this report. Outcomes from 2021 field studies are included in this report. Data from environmental surveys conducted in 2022 are currently being analysed and will reported in January 2024. Map 1-2 shows an overview of monitoring site locations.

Table 3-1 Monitoring Activities by Environmental Component

Valued Component	Environmental Indicator	Parameter	Rationale[1]	Reporting Status
Fish and Fish Habitat	Stream Crossings	Riparian buffers, ground cover, erosion;	Environmental importance; protection of aquatic life; Regulatory importance	Complete. Reported in 2020.
Vegetation and Wetlands	Wetlands	Vegetation cover and area of wetland affected by the project	Environmental importance; protection of aquatic life, no net loss	Complete. 2021 results presented.
	Plant Species of Conservation Concern	Species occurrence	Regulatory importance – MESEA and SARA	Complete. Reported in 2020.
	Invasive Plant Species	Species occurrence	Environmental importance	Complete. Reported in 2020.
	Traditional Use Plant Species	Species occurrence	Cultural and environmental importance	Complete. 2021 results presented.
Wildlife and Wildlife Habitat	Amphibians	Presence of northern leopard frogs, eastern tiger salamanders and habitat	Regulatory importance – SARA *The Wildlife Act*	Complete. 2021 results presented.
	Common Garter Snakes	Presence of garter snake hibernacula	Regulatory importance – *The Wildlife Act*	None identified.
	Bird-Wire Collision	Abundance and mortality	Environmental and cultural importance; Regulatory importance	2021 results presented.

Table 3-1 Monitoring Activities by Environmental Component

Valued Component	Environmental Indicator	Parameter	Rationale[1]	Reporting Status
	Sharp-tailed Grouse Lekking Sites	Lek abundance, number of males, mortality changes	Vulnerable and sensitive to change; Regulatory importance	Complete. 2021 results presented.
	Bird Species of Conservation Concern	Presence/Absence habitat suitability	Regulatory importance - MESEA; SARA; MBCA;MB CDC, designated Golden-winged Warbler critical habitat	Complete. 2021 results presented.
	Golden-winged Warbler Habitat	Vegetation cover	Regulatory importance – MESEA and SARA	2021 results presented.
	Birds of Prey	Nest site locations	Environmental and cultural importance; Regulatory importance	Complete. Reported in 2020.
	Ungulates and Predators	Occurrence and/or seasonal distribution, vehicle collision related mortality	Environmental and cultural importance; Regulatory importance	2021 results presented.
	Black Bear	Occurrence, annual prevalence	Environmental and cultural importance; Regulatory importance	2021 results presented.
Employment and Economy	Project Employment	Total person years of employment, total number of hires, total number of employees. Type (job classifications) of work available.	Socio-economic and cultural importance	Complete. 2020 results presented.
	Direct/Indirect Business Effects	Direct project expenditures Indirect business opportunities	Socio-economic and cultural importance	Complete. 2020 results presented.
	Direct Labour Income and Taxes	Direct labour income. Project taxes generated (non-labour).	Socio-economic and cultural importance	Complete. 2020 results presented.
Infrastructure and Services	Transportation	Traffic volumes and accidents on key roadways.	Socio-economic and cultural importance	Complete. 2020 results presented.

Table 3-1 Monitoring Activities by Environmental Component

Valued Component	Environmental Indicator	Parameter	Rationale[1]	Reporting Status
Outfitters and Falconry	Outfitter Resource Use	Change in occurrence of black bears frequenting bear bait sites	Socio-economic importance	Complete. 2020 results presented.
	Peregrine Falcon Conservation Centre	Location of peregrine perch sites, distance moved and mortality	Socio-economic and environmental importance	Complete. 2020 results presented.
Agricultural Land	Soil Productivity	Crop performance	Socio-economic and environmental importance	Complete. 2020 results presented.
	Rutting and Compaction	Return to pre-construction condition	Socio-economic and environmental importance	Complete. 2020 results presented.
	Tile Drainage Reclamation	Tile drain performance	Socio-economic and environmental importance	Not required.
Access	Access Controls	Effectiveness of access controls	Socio-economic and environmental importance	Complete. 2020 results presented.

[1] Manitoba Endangered Species and Ecosystems Act (MESEA); Species at Risk Act (SARA); Manitoba Conservation Data Centre (MB CDC); Migratory Bird Convention Act (MBCA)

3.1 Fish and Fish Habitat

Fish and fish habitat change can be an important indicator of environmental effects of the Project. Post-construction monitoring conducted in 2020 concluded that all watercourse crossing sites were found in compliance with no additional mitigation required. Results were reported in the 2020 MMTP post-construction environmental monitoring report.

3.2 Vegetation

Vegetative change can be an important indicator of environmental effects of the Project. Post-construction vegetation monitoring was conducted over the course of the 2021 vegetation growing season. This monitoring year featured dry conditions throughout southern Manitoba. A vegetation technical report with a more detailed description of methods, maps, and results is included in Appendix A of this report.

3.2.1 Wetland Survey

Wetland surveys were conducted by qualified contractors who evaluated aerial photography and conducted site inspections on pre-selected long-term monitoring sites on July 18-21st, 2021 (Photos 1, 2). A summary of the results can be found below. Detailed description of methods, maps, and results can be found in the vegetation technical report included in Appendix A.

Confirm the nature and magnitude of predicted environmental effects as stated in the EIS:

As predicted in the EIS, some wetlands assessed showed a physical change in appearance from clearing and construction activities (i.e., sparse tree and shrub removal), but wetland distribution and function remained unchanged. Wetland recovery from construction effects was evident and there was no loss of wetlands. The same sixteen wetland sites were assessed again in 2020 and 2021. No wetlands were accidently lost as part of the Project.

Assess the effectiveness of mitigation measures implemented:

Mitigation measures during vegetation clearing and construction appear to have minimized surface disturbance and have been effective. No major disturbances were noted at any wetland sites, and surface soils appeared relatively undisturbed without major rutting observed. Low water levels due to ongoing regional drought conditions were noted.

Identify mitigation measures to address unanticipated environmental effects, if required:

No further mitigation is required. No further action is required.

Confirm compliance with regulatory requirements including approval terms and conditions:

All information collected to this point indicates compliance with regulatory requirements has been met.

Provide baseline information to evaluate long-term changes or trends:

Survey information showed minimal change in baseline information or long-term trends for wetlands.

3.2.2 Rare Plant Survey

Surveys for rare plants concluded in 2020 and were reported in the 2020 MMTP post-construction monitoring report. No further action or mitigation was identified. However, incidental observations of rare plants were recorded during wetland, invasive plant and golden-winged warbler habitat surveys in 2021. One rare plant was observed during project monitoring in 2021, listed under Manitoba's *The Endangered Species and Ecosystems Act* (ESEA) and the federal *Species at Risk Act* (SARA) (Photo 3). Riddell's goldenrod (*Solidago riddellii*) was incidentally observed at a site with approximately 45 plants recorded. This site was reported to the Province of Manitoba Conservation Data Centre and new mitigation measures were added to the MMTP operational environmental protection plan.

3.2.3 Non-native and Invasive Species Plant Survey

Non-native and invasive species plant surveys were completed in July 2020 and reported in the first annual report. Only incidental observations of non-native and invasive species were recorded in 2021. In 2021, areas of bare ground were treated with an approved seed mix, and Tier 2 weed species were pulled and removed where encountered. Further details can be found in the vegetation technical report included in Appendix A.

3.2.4 Traditional Use Plant Survey

As part of the First Nation and Metis engagement process, traditional use plant surveys were identified as an important element for environmental monitoring. The MMTP monitoring committee is conducting ongoing traditional use plant surveys as part of the post-construction monitoring program (Section 2.6 of this report). In concert with this process, traditional use plant surveys were also conducted by a contractor specializing in plant identification at eleven pre-selected sites between August 4-7th, 2021 (Photo 4). These sites are valued for their provision of resources used by First Nation and Metis people, including gathering of food and medicines and harvesting plants and trees. A summary of the results can be found below. Detailed description of methods, maps, and results of the traditional use plant survey can be found in the vegetation technical report included in Appendix A.

Confirm the nature and magnitude of predicted environmental effects as stated in the EIS:

The predicted change in vegetation cover and structure was accurate for traditional use plant species sites. Vegetation total mean cover decreased from pre-construction values and structure has been modified to accommodate the transmission line. Clearing on the right of way has temporarily reduced vegetation cover due to the removal of multiple vegetation stratums, including the tree layer, tall shrub, low shrub and ground vegetation.

Assess the effectiveness of mitigation measures implemented:

Monitoring determined that the recommended mitigation measures were implemented for traditional use plant species, which minimized the ground disturbance from construction activities.

Identify mitigation measures to address unanticipated environmental effects, if required:

None identified at this time. No further mitigation is required.

Confirm compliance with regulatory requirements including approval terms and conditions:

All information collected to this point indicates compliance with regulatory requirements has been met.

Provide baseline information to evaluate long-term changes or trends:

Survey information showed minimal change in baseline information or long-term trends, however the data provided in the technical report will provide long term information on the prevalence of traditional use plant species along MMTP and in southeast Manitoba.

3.3 Wildlife and Wildlife Habitat

Wildlife and wildlife habitat change can be an important indicator of environmental effects of the Project. Post-construction monitoring was conducted throughout 2021. Technical reports on wildlife monitoring are included as appendices in this report.

3.3.1 Wetland Amphibian Survey

Wetland amphibian surveys were conducted by qualified contractors at preselected sites on May 10-16th, July 9-13th, and October 12-14th, 2021 (Photos 5 and 6). Sixteen sites were surveyed and assessed for species presence and water quality parameters. A summary of the results can be found below. Detailed description of methods, maps, and results of the wetland amphibian survey can be found in Appendix B.

Confirm the nature and magnitude of predicted environmental effects as stated in the EIS:

As predicted in the EIS, there did not appear to be any unanticipated project effects on northern leopard frogs, eastern tiger salamanders, or water quality within or adjacent to the Project in 2021. Amphibian species continue to be present and water quality at sites was similar during pre-construction and post-construction surveys. Dry regional conditions and low water levels in 2021 prevented water quality sampling at some sites.

Assess the effectiveness of mitigation measures implemented:

Construction was compliant with prescribed mitigation and considered to be effective.

Identify mitigation measures to address unanticipated environmental effects, if required:

No further mitigation is required. One more year of monitoring will be conducted.

Confirm compliance with regulatory requirements including approval terms and conditions:

All information collected to this point indicates compliance with regulatory requirements has been met.

Provide baseline information to evaluate long-term changes or trends:

Data provided in the technical report will provide long term information on the prevalence of northern leopard frogs and eastern tiger salamanders along MMTP and in southeast Manitoba.

3.3.2 Snake Hibernacula Survey

No snake hibernacula were found in the pre-construction surveys or construction phase of the project. Therefore, no post construction monitoring was required.

3.3.3 Bird-Wire Collision Survey

Bird-wire collision surveys using standardized methods were conducted by qualified contractors at sixteen pre-selected sites in May 11-13th, June 1-10th, and August 23-September 2nd, 2021 (Photos 7 and 8). A summary of the results can be found below. Detailed description of methods, maps, and results of the bird-collision survey can be found in Appendix C.

Confirm the nature and magnitude of predicted environmental effects as stated in the EIS:

As predicted in the EIS, some bird collisions were observed in post-construction phase of the Project. Estimated collision mortality rates were calculated based on number of collisions detected on surveyed transects, while accounting for site specific variables. Collision rates appear to be higher in comparison to other studies, but may be a result of dense vegetation conditions, which despite a robust effort, led to relatively low searcher efficiency metrics in 2021. Despite mitigation, two mortalities of species of conservation concern (a western grebe and rusty blackbird) were identified at spans marked with bird diverters. Further surveys will be conducted in 2022.

Assess the effectiveness of mitigation measures implemented:

Bird-wire diverters along the MMTP appear to be effective at reducing the number of bird-wire collision mortalities.

Identify mitigation measures to address unanticipated environmental effects, if required:

No further mitigation is required at this time. One more year of monitoring will be conducted.

Confirm compliance with regulatory requirements including approval terms and conditions:

All information collected to this point indicates compliance with regulatory requirements has been met.

Provide baseline information to evaluate long-term changes or trends:

The information provided in this, and future technical reports will provide long term information on the prevalence of bird wire collisions in Manitoba.

3.3.4 Sharp-tailed Grouse Lek Survey

Sharp-tailed grouse lek surveys using standardized avian and camera trap methods were conducted by qualified contractors at seventy-four identified sites from April 16-May 4th, 2021 (Photo 9). A summary of the results can be found below. Detailed description of methods, maps, and results of the sharp-tailed grouse lek survey can be found in the technical report included in Appendix D.

Confirm the nature and magnitude of predicted environmental effects as stated in the EIS:

The EIS predicted that the there could be a decline in sharp-tailed grouse at lek sites. However, no significant effects on sharp-tailed grouse near the transmission line were identified during the survey.

Assess the effectiveness of mitigation measures implemented:

Mitigation measures including timing of construction, appeared to have been effective.

Identify mitigation measures to address unanticipated environmental effects, if required:

No further mitigation is required.

Confirm compliance with regulatory requirements including approval terms and conditions:

All information collected to this point indicates compliance with regulatory requirements has been met.

Provide baseline information to evaluate long-term changes or trends:

The information provided in this, and future technical reports will provide long term information on the long term changes and trends in sharp-tailed grouse ecology in southeast Manitoba that will enhance management.

3.3.5 Bird Species of Conservation Concern Survey

Bird species of conservation concern surveys were conducted by qualified contractors using standard avian point count and call-back surveys at pre-selected sites between June 14-16th, 2021 (Photos 10 and 11). A summary of the results can be found below. Detailed description of methods, maps, and results of the bird species of conservation concern survey can be found in the technical report included in Appendix E.

Confirm the nature and magnitude of predicted environmental effects as stated in the EIS:

The EIS predicted small, low magnitude environmental effects on golden-winged warblers. Post-construction monitoring for golden-winged warblers has shown no effect of construction and installation of the transmission line on golden-winged warbler density, and no unanticipated local population effects were observed. In addition, no least bittern or short-eared owls were observed.

Assess effectiveness of mitigation measures implemented:

Mitigation appeared to be effective. Although post-construction monitoring of golden-winged warbler habitat indicated that habitat mitigation did not appear to meet all objectives of immediately enhancing or maintaining golden-winged warbler habitat throughout the ROW, it did not appear to affect population abundance.

Identify mitigation measures to address unanticipated environmental effects, if required:

No further mitigation is required.

Confirm compliance with regulatory requirements including approval terms and conditions:

Compliance with regulatory requirements has been met.

Provide baseline information to evaluate long-term changes or trends:

Information on use by golden-winged warblers will enhance knowledge and management and species recovery.

3.3.6 Golden-winged Warbler Habitat Survey

Golden-winged warbler habitat surveys were conducted by qualified contractors using standardized vegetation surveys at pre-selected sites from August 4-7th, 2021 (Photo 10). A summary of the results can be found below. Detailed description of methods, maps, and results of the golden-winged warbler habitat survey can be found in the vegetation technical report included in Appendix A.

Confirm the nature and magnitude of predicted environmental effects as stated in the EIS:

As predicted in the EIS, vegetation was selectively cleared in areas to enhance suitability for golden-winged warblers. Thirteen sites in critical habitat were surveyed in 2021. Post-construction monitoring shows continued recovery of vegetation with increasing cover and changing structure.

Assess the effectiveness of mitigation measures implemented:

Mitigation was effective at meeting vegetation clearing objectives.

Identify mitigation measures to address unanticipated environmental effects, if required:

No further mitigation is required. One more year of monitoring will be conducted.

Confirm compliance with regulatory requirements including approval terms and conditions:

All information collected to this point indicates compliance with regulatory requirements has been met.

Provide baseline information to evaluate long-term changes or trends:

Information on vegetation recovery and use by golden winged warblers will enhance knowledge and management. Surveys in future years will support this.

3.3.7 Raptor Nest Survey

Completed and reported in the construction phase in 2020.

3.3.8 Ungulates and Predators

Information on the distribution of ungulates and predators, including elk, were collected from monitoring surveys and information from the Vita Cross-Border Elk Monitoring Partnership.

3.3.8.1 Distribution / Occurrence Mapping Survey

Distribution and occurrence mapping surveys for mammals was conducted by a qualified contractor using a standardized aerial survey between March 8-10th, 2022. This survey was conducted by trained observers from a helicopter under appropriate snow conditions to identify and record the abundance and location of mammals (Photo 12). Detailed description of methods, maps, and results of distribution and occurrence mapping survey can be found in Appendix F.

Confirm the nature and magnitude of predicted environmental effects as stated in the EIS:

The distribution and relative abundance of deer densities in the 2020 construction phase and 2022 operation phases matched patterns during pre-construction (2017-2018) and support hypotheses that null effects have been observed during the construction and operation periods relative to ungulate density, distribution, and mortality. Observations of predators have not illustrated any detectable changes in densities or occurrence from the pre and postconstruction period. There was no detections of moose or elk during 2021.

Assess effectiveness of mitigation measures implemented:

Mitigation such as timing of construction, location of access routes, and environmental training appeared to be effective.

Identify additional mitigation measures to address unanticipated environmental effects, if required:

No further mitigation is required.

Confirm compliance with regulatory requirements including approval terms and conditions:

All information collected to this point indicates compliance with regulatory requirements has been met.

Provide additional baseline information to evaluate long-term changes or trends:

White-tailed deer continue to be very abundant. No detectible changes in abundance or occurance of ungulates or predators.

3.3.8.2 Vehicle Collision Statistic Gathering

Completed and reported in the construction phase in 2020. As supplement information, there were no reports of vehicle collisions in 2021.

3.3.8.3 Mineral Lick Survey

Completed and reported in preconstruction phase NEB at Ex A93043-1 and A93043-4. The Project did not affect mineral licks.

3.3.8.4 Support the "Vita Cross-Border Elk Monitoring Partnership" (RM of Stuartburn, Nature Conservancy Canada, Manitoba Sustainable Development)

Completed in pre-construction and construction phase. Discussion with Provincial regional wildlife manager indicated no known negative effect of MMTP operation on elk population. Due to sensitive nature of elk movements, information is held by Provincial regional wildlife manager.

3.3.8.5 Support a Memorial University PhD project titled "Testing the Effects of Hydropower Transmission Line Right-of-Ways on Wildlife Movements and Predator-Prey Dynamics"

Completed in preconstruction phase and continued through 2021. Project information available from Memorial University at https://weel.gitlab.io/team/daniel/ and https://weel.gitlab.io/team/katrien/.

3.4 Employment and the Economy

3.4.1 Project Employment Reporting

Project employment reporting was conducted as part of the Project. A summary of the results can be found below. Detailed description of methods and results can be found in the technical report included in Appendix G.

Confirm the nature and magnitude of predicted environmental effects as stated in the EIS:

As predicted in the EIS a variety of job classifications made up the construction labour force. During construction the actual hours of direct employment totaled 597 person years in terms of a 2,000 hour per year basis (398 person years in terms of a 3,000 hour per year basis). Of the 597 person years of direct employment generated, 37% were worked by Indigenous persons and 61% were worked by Manitoba residents. For the entire duration of the construction phase of the Project, there were 2,059 hires.

Assess the effectiveness of mitigation measures implemented:

Project employment tracking was effective.

Identify mitigation measures to address unanticipated environmental effects, if required:

No further mitigation is required.

Confirm compliance with regulatory requirements including approval terms and conditions:

All information collected to this point indicates compliance with regulatory requirements has been met.

Provide baseline information to evaluate long-term changes or trends:

Information will enhance knowledge of employment requirements for large transmission projects.

3.4.2 Direct/Indirect Business Opportunities Reporting

Business opportunities reporting was conducted as part of the Project. A summary of the results can be found below. Detailed description of methods and results can be found in the technical report included in Appendix G.

Confirm the nature and magnitude of predicted environmental effects as stated in the EIS:

Construction of the Project has resulted in business opportunities locally, regionally and throughout the province and Canada. There was a total of $282.4 million dollars spent on goods and services for the construction of the Project. The estimated direct Project expenditures for materials and services during the construction phase reported in the EIS was $211.8 million dollars. The actual value is approximately 133% of the EIS estimated construction phase Project expenditures.

Assess the effectiveness of mitigation measures implemented:

Business opportunities tracking was effective.

Identify mitigation measures to address unanticipated environmental effects, if required:

No further mitigation is required.

Confirm compliance with regulatory requirements including approval terms and conditions:

All information collected to this point indicates compliance with regulatory requirements has been met.

Provide baseline information to evaluate long-term changes or trends:

Information will enhance knowledge and management of costs for large transmission projects.

3.4.3 Direct Labour and Income Taxes Reporting

Direct labour and income tax reporting was conducted as part of the Project. A summary of the results can be found below. Detailed description of methods and results can be found in the technical report included in Appendix G.

Confirm the nature and magnitude of predicted environmental effects as stated in the EIS:

During the construction phase of the Project, the total labour income earned by Manitoba workers was $30.3 million, accounting for 86% of the Manitoba-based labor income predicted in the EIS ($35.3 million). The total labour income earned by all workers during the construction phase of the Project was $55.3 million which is 103% of the EIS estimated labour income to Canada ($53.7 million). The estimate of total tax impacts from the Project is $27.64 million. The estimate includes $1.19 million in payroll taxes, $8.9 million in personal income taxes, $1.74 million in capital tax, $0.52 million in fuel tax and $15.3 million in provincial sales tax.

Assess the effectiveness of mitigation measures implemented:

Tax and labour tracking was effective.

Identify mitigation measures to address unanticipated environmental effects, if required:

No further mitigation is required.

Confirm compliance with regulatory requirements including approval terms and conditions:

All information collected to this point indicates,compliance with regulatory requirements has been met.

Provide baseline information to evaluate long-term changes or trends:

Information will enhance knowledge and long term planning for large transmission projects.

3.5 Infrastructure and Services

3.5.1 Traffic Monitoring Survey

A traffic impact study was conducted by a qualified consultant by analysing traffic volumes, vehicle use and number of workers. A summary of the results can be found below. Detailed description of methods, maps, and can be found in Appendix H.

Confirm the nature and magnitude of predicted environmental effects as stated in the EIS:

As predicted in the EIS, the impact of traffic generated by the construction of the MMTP was generally insignificant. There were no project-related disruptions or increases in traffic.

Assess the effectiveness of mitigation measures implemented:

Mitigation was effective at minimizing traffic flow and avoiding collisions.

Identify mitigation measures to address unanticipated environmental effects, if required:

No further mitigation is required.

Confirm compliance with regulatory requirements including approval terms and conditions:

All information collected to this point indicates, compliance with regulatory requirements has been met.

Provide baseline information to evaluate long-term changes or trends:

Information on traffic and collision frequencies for transmission line projects will support use of mitigation for future construction projects.

3.6 Outfitting and Falconry

3.6.1 Black Bear Bait Site Camera Trap Survey

The covid-19 pandemic and the closure of international borders had a significant effect on black bear outfitting in Manitoba. A new company purchased the regional outfitting business and did not wish to participate in the black bear bait site camera trap survey as was conducted prior to construction. Although multiple attempts were made to engage and maintain the survey program, no monitoring was conducted in the post-construction phase.

3.6.2 Peregrine Falcon Conservation Centre Survey

Manitoba Hydro attempted to work with the Peregrine Falcon Conservation Centre to conduct monitoring, but did not receive a response to our offers of support. No monitoring was

conducted in 2022. As supplementary information, Manitoba Hydro did not observe any interactions between peregrine falcons and the MMTP project in the post-construction phase.

3.7 Agriculture

3.7.1 Agricultural Land

To assess Project effects on soil productivity, differences in Normalized Difference Vegetation Index values (computer generated spatial data) were compared between areas within the ROW and adjacent, comparable off ROW areas within a defined agricultural evaluation area. The agricultural evaluation area is comprised of areas of annual crop, forage (hay) and pasture (grassland, grazing) production traversed by the Project. Detailed description of methods, maps, and results of can be found in Appendix I.

3.7.1.1 Soil Productivity

Confirm the nature and magnitude of predicted environmental effects as stated in the EIS:

Results from the monitoring program are consistent with the predictions made in the EIS. Project activities resulted in disturbance to soil and crop productivity within the ROW, but were largely recovered in the second year of post-construction monitoring. Effects were found to be limited to the ROW and associated with areas of construction activity (e.g., tower work areas, construction access and trails) within the ROW. Where limited disturbance still exists in a few sites, nearly all was trending to full recovery. As documented in the EIS, effects to soil productivity due to compaction from construction activities within the ROW were anticipated, and where effects from compaction occur, they could persist for a few years following construction.

Assess the effectiveness of mitigation measures implemented:

Results suggest the mitigation program has been effective as 95% of farmed management units were considered to not have negative effects to soil productivity following post-construction year 2 (2021).

Identify additional mitigation measures to address unanticipated environmental effects, if required:

No further mitigation is required at this time.

Confirm compliance with regulatory requirements including approval terms and conditions:

All information collected to this point indicates,compliance with regulatory requirements has been met.

Provide baseline information to evaluate long-term changes or trends:

Information on vegetation recovery will enhance knowledge and future mitigation for transmission line construction projects.

3.7.1.2 Rutting and Compaction

Completed and reported in the construction phase in 2020. As part of daily construction and post-construction inspections, environmental inspectors reviewed the condition of agricultural fields. Landowner complaints about rutting and compaction issues submitted to Manitoba Hydro were recorded in MMTP landowner registry for follow up. Complaints were resolved and final project commitment letters were submitted to all landowners.

3.7.1.3 Tile Drainage Reclamation

Tile drainage was not encountered during Project construction.

3.8 Access

3.8.1 Access Management

Completed and reported in the construction phase in 2020. In 2021, no access related concerns were identified incidentally during field surveys or operational activities. In addition, private landowners or others did not communicate any access related concerns to Manitoba Hydro.

4.0 Future Monitoring

Future monitoring activities for year 3 post construction will be carried out as outlined in the MMTP Environmental Monitoring Plan (NEB Ex A6V3U2). The schedule includes:

Table 4-1 Monitoring Activities Schedule				
Valued Component	Key Monitoring Activity	Post Construction		
		Year 1 (2020)	Year 2 (2021)	Year 3 (2022) +
Fish and Fish Habitat	Stream Crossing Assessment			
Vegetation and Wetlands	Wetland Surveys			
	Rare Plant Surveys			
	Invasive Species Survey			
	Traditional Use Plant Species Survey			
Wildlife and Wildlife Habitat	Wetland Amphibian Survey			
	Snake Hibernacula Survey			
	Bird-Wire Collision Survey			
	Sharp-tailed Grouse Lek Survey			
	Bird Species of Conservation Concern Survey			
	Golden-winged Warbler Habitat Survey			*
	Raptor Nest Survey			
	Distribution / Occurrence Mapping Survey			
	Camera Trap Survey			
	Vehicle Collision Statistic Gathering			
	Mineral Lick Survey			
Employment and Economy	Project Employment Reporting			
	Direct/Indirect Business Opportunities Reporting			
	Direct Labor Income and Taxes Reporting			
Infrastructure and Services	Traffic Monitoring Survey			
Outfitting and Falconry	Black Bear Bait Site Camera Trap Survey			
	Peregrine Falcon Conservation Centre Survey			
Agriculture	Soil Productivity			
	Rutting and Compaction			
	Tile Drainage Reclamation			
Access	Access Controls			

**As per the environmental monitoring plan, golden-winged warbler habitat monitoring will shift to biennial intervals until 2030.*

Photo 1 Wetland monitoring site along the MMTP right of way.

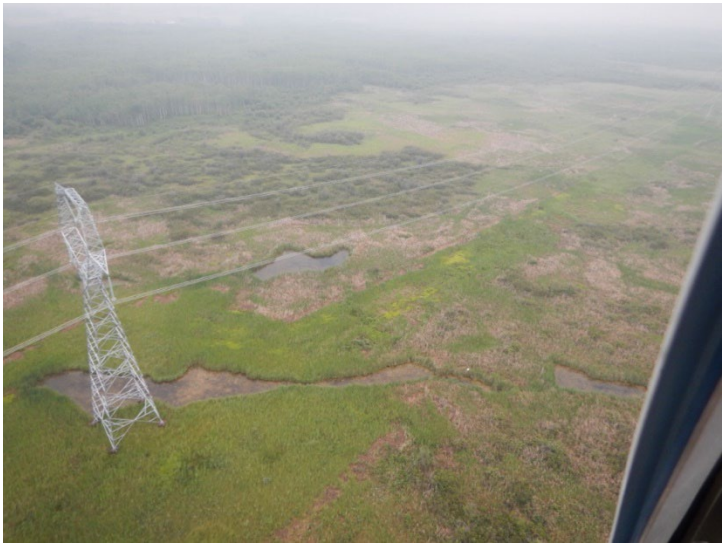


Photo 2 MMTP tower located in a wetland.

Photo 3 Riddell's goldenrod (*Solidago riddellii*) is a threatened species that was incidentally observed post-construction on the right of way.

Photo 4 Surveys in 2021 showed an increased cover of vegetation in the tall shrub stratum.

Photo 5 Northern leopard frog (*Lithobates pipiens*) tadpole observed on the right of way.

Photo 6 Funnel trap deployed along the right of way.

Photo 7 Bird wire collision surveys were conducted along MMTP.

Photo 8 Waterfowl observed flying over MMTP.

Photo 9 A sharp-tailed grouse (*Tympanuchus phasianellus*) lek near MMTP.

Photo 10 A golden-winged warbler (*Vermivora chrysoptera*) monitoring site in 2021.

Photo 11 A golden-winged warbler (*Vermivora chrysoptera*) at a monitoring site on MMTP.

Photo 12 White-tailed deer (*Odocoileus virginianus*) observed during an aerial survey.

APPENDICIES

Appendix A: MANITOBA-MINNESOTA TRANSMISSION PROJECT BOTANICAL AND VEGETATION ENVIRONMENTAL MONITORING ANNUAL TECHNICAL REPORT – 2021

Appendix B: MANITOBA-MINNESOTA TRANSMISSION PROJECT AMPHIBIAN MONITORING PROGRAM TECHNICAL REPORT - 2021

Appendix C: MANITOBA-MINNESOTA TRANSMISSION PROJECT BIRD-WIRE COLLISION MONITORING REPORT- 2021

Appendix D: MANITOBA-MINNESOTA TRANSMISSION PROJECT SHARP-TAILED GROUSE MONITORING REPORT - 2021

Appendix E: MANITOBA–MINNESOTA TRANSMISSION PROJECT GOLDEN-WINGED WARBLER MONITORING REPORT 2017-2021

Appendix F: MANITOBA-MINNESOTA TRANSMISSION PROJECT MAMMAL MONITORING PROGRAM TECHNICAL REPORT - 2022

Appendix G: MANITOBA-MINNESOTA TRANSMISSION PROJECT EMPLOYMENT AND ECONOMY REPORT - 2020

Appendix H: MANITOBA-MINNESOTA TRANSMISSION PROJECT TRAFFIC IMPACT STUDY REVIEW - 2021

Appendix I: MANITOBA-MINNESOTA TRANSMISSION PROJECT AGRICULTURAL SOIL PRODUCTIVITY MONITORING: POST-CONSTRUCTION YEAR 2 - 2021

Available in accessible formats upon request