

# Manitoba-Minnesota Transmission Project

## Post-Construction Environmental Monitoring

### Report

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Certificate EC-059

Prepared for:

Canadian Energy Regulator

Prepared by:

Manitoba Hydro

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Document Owner  
Transmission Distribution Environment and Engagement Department  
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# 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
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 third 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 (MMTP or “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 Project’s environmental monitoring locations.

Construction of the Project began in September 2019 and was completed on April 15, 2020. The Project came into partial service on June 1, 2020, and full service on November 1, 2020. The 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 submitted 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;

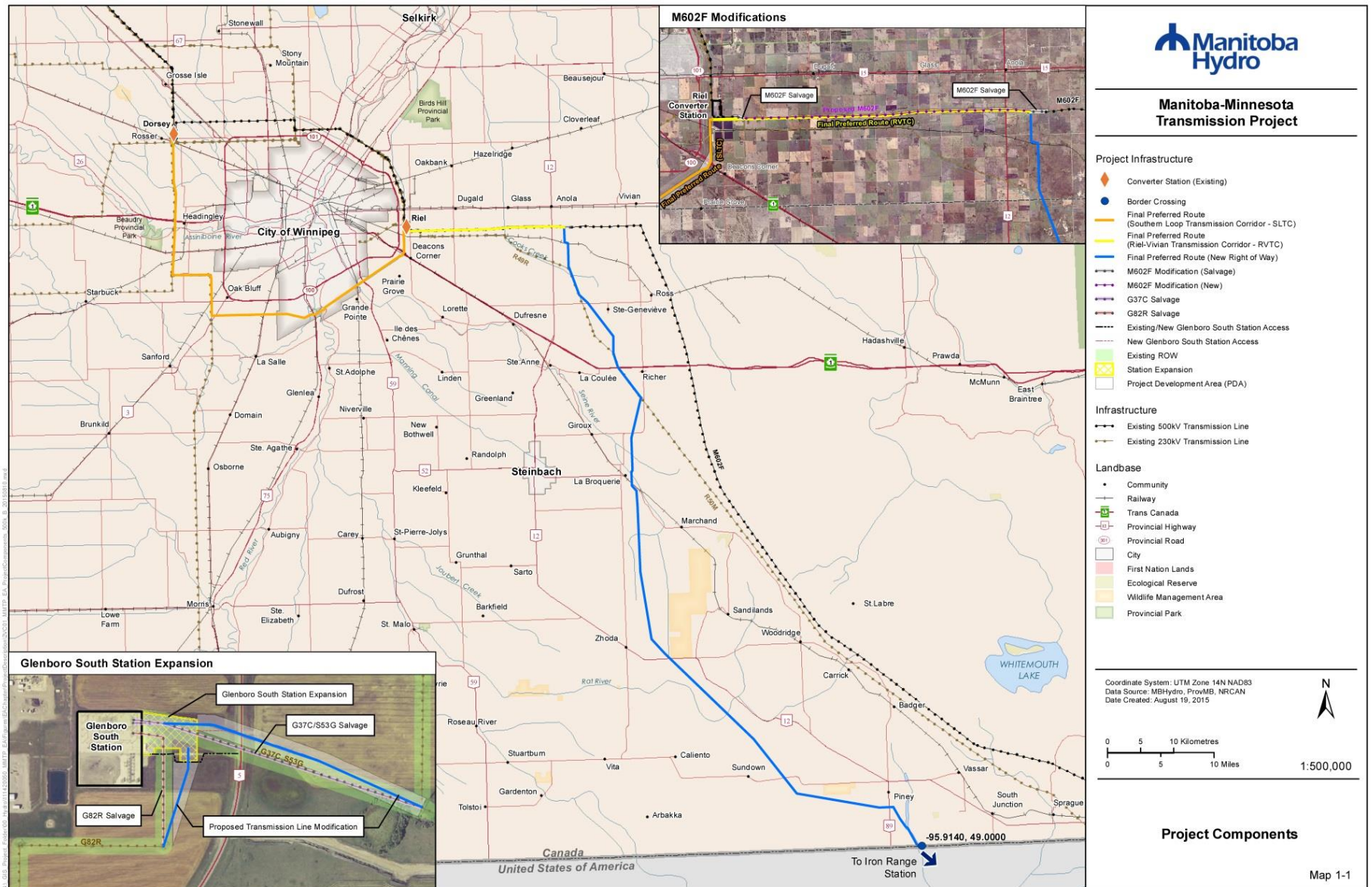
*Manitoba Hydro must file with the Board, on or before 31 January following the first year of Project operations and for a period of at least ten (10) years after commencing operations, annual post-construction monitoring reports. These reports must include:*

- 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 of 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.*

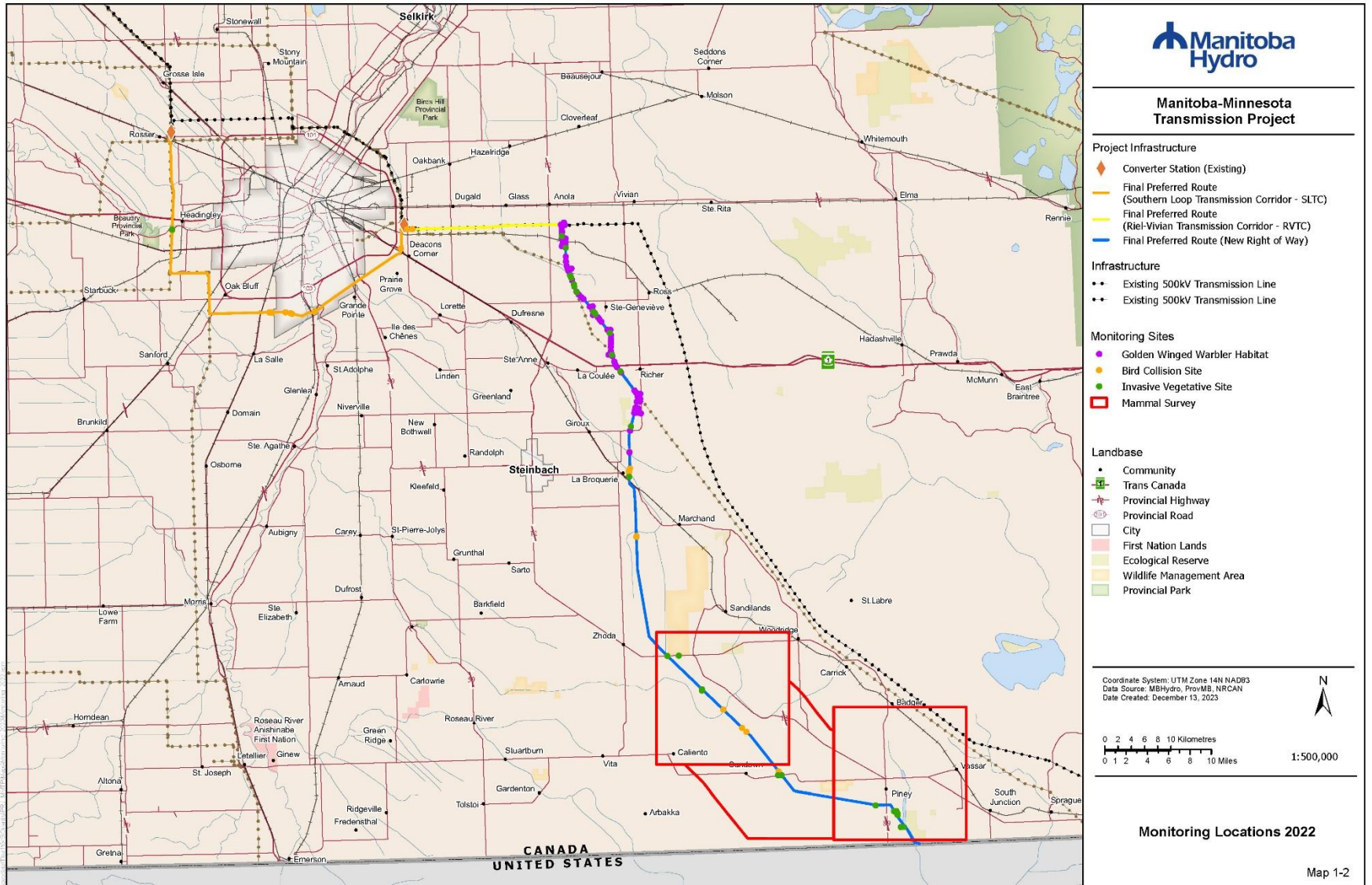
### 1.1.2 Project Status

The Project, including transmission line and station upgrades, was fully in-service as of November 1, 2020, and continues 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.

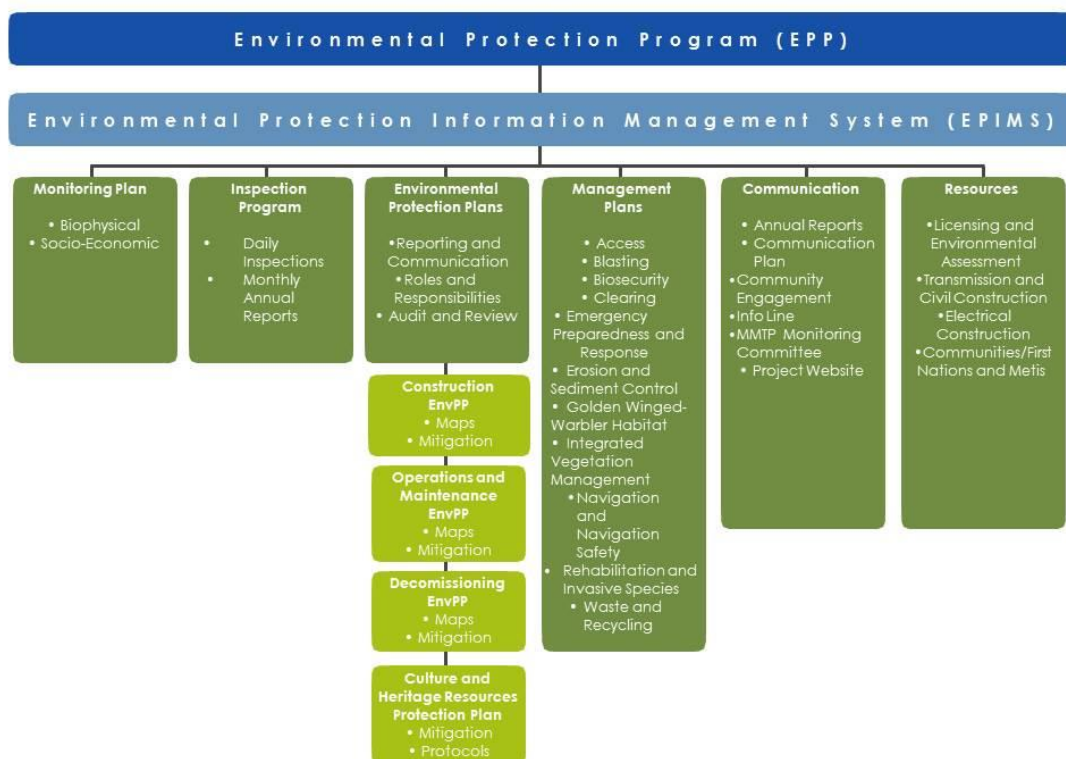


Figure 1: Environmental Protection Program Chart

## 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 third annual monitoring report and describes monitoring results from March 2022 to March 2023, with the addition of some more recent updates. 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 manages, stores and facilitates the transfer of Environmental Protection Program data and information amongst the Project team. EPIMS facilitated the transfer of knowledge and experiences encountered on a daily basis during construction activities from Environmental Inspectors to the Specialists that were responsible for monitoring project effects. EPIMS continues to be an essential tool that manages vast amounts of data and information generated through the implementation of the plan, which has allowed 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 assembled an Environmental Protection Management Team, 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 occurred throughout the development of the Project, Manitoba Hydro continues to welcome 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, [www.hydro.mb.ca/mmtp](http://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. No comments or questions regarding the Project were received by Manitoba Hydro in 2023.

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](mailto: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 Environment 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, and

- 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, and
- There is a place to discuss topics of interest to us that are beyond MMTP.

Invited Members include:

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

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 seasonal post-construction monitoring. In 2022, post-construction monitoring tours took place at four times of the year (spring, summer, fall, and winter). Manitoba Hydro representatives attended these tours and assisted in data collection and recording.

During each monitoring tour, a report was produced summarizing observations related to wildlife, traditional plant species, invasive plants, water levels, site accessibility, and level of visual disturbance. Monitoring focused on sites near MMTP towers 124, 405, 406, and 441. Multi-year vegetation monitoring quadrants at towers 405 and 406 have allowed monitors to observe changes in traditional plant species over time. Post-construction monitoring reports and photos are published following each tour on the <https://www.mmtppmonitoring.com/> webpage.

During recent monitoring tours, monitors requested summaries of Project operational activities, environmental monitoring results, and a commitment to not apply herbicides at an identified sensitive site. Manitoba Hydro followed through on these requests by designating the sensitive site as protected from chemical treatment (and installing multilingual signs), inviting monitors to accompany invasive plant surveys, and sharing detailed information on camera trap and bird monitoring survey results.

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 Manitoba Hydro 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 3 (2022), no environmental issues arose. Table 2-1 outlines the status of environmental issues that arose during construction or in the previous years.



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)	Year 3 (2022)
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	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 4 <sup>th</sup> , 2019.	Resolved and reported in 2020.	N/A	N/A
Major petroleum hydrocarbon release near tower 265. NE-2-9-7-E in the Rural Municipality of Tach.	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	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	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 treated weed sites. Treatment conducted on September 23, 2020. Regional weed inspector satisfied. Follow-up conducted in Year 2 and 3 to monitor abundance and distribution of noxious weeds.	Resolved and reported in 2020.	Follow-up conducted. Confirmed reduction of invasive weeds.	Follow-up conducted. Confirmed reduction of invasive weeds.
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 5 <sup>th</sup> , 2020. No further action.	Resolved and reported in 2020.	N/A	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	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	N/A

### 3.0 Monitoring Program Methods and Results

Table 3-1 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 2022 field studies are included in this report. Map 1-2 shows an overview of monitoring site locations.

Table 3-1 Monitoring Activities by Environmental Component				
Valued Component	Environmental Indicator	Parameter	Rationale <sup>1</sup>	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. Reported in 2021.
	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. Follow-up info provided.
	Traditional Use Plant Species	Species occurrence	Cultural and environmental importance	Complete. Reported in 2021.
Wildlife and Wildlife Habitat	Amphibians	Presence of northern leopard frogs, eastern tiger salamanders and habitat	Regulatory importance – SARA <i>The Wildlife Act</i>	Complete. Reported in 2021.
	Common Garter Snakes	Presence of garter snake hibernacula	Regulatory importance – <i>The Wildlife Act</i>	None identified.
	Bird-Wire Collision	Abundance and mortality	Environmental and cultural importance; Regulatory importance	2022 results presented.

Table 3-1 Monitoring Activities by Environmental Component

Valued Component	Environmental Indicator	Parameter	Rationale <sup>1</sup>	Reporting Status
	Sharp-tailed Grouse Lekking Sites	Lek abundance, number of males, mortality changes	Vulnerable and sensitive to change; Regulatory importance	Complete. Reported in 2021.
	Bird Species of Conservation Concern	Presence/Absence habitat suitability	Regulatory importance - MESEA; SARA; MBCA; MB CDC, designated Golden-winged Warbler critical habitat	Complete. Reported in 2021.
	Golden-winged Warbler Habitat	Vegetation cover	Regulatory importance – MESEA and SARA	2022 results reported. Next report in 2024.
	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	Complete and 2022 results presented.
	Black Bear	Occurrence, annual prevalence	Environmental and cultural importance; Regulatory importance	Complete and 2022 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. Reported in 2021.
	Direct/Indirect Business Effects	Direct project expenditures Indirect business opportunities	Socio-economic and cultural importance	Complete. Reported in 2021.
	Direct Labour Income and Taxes	Direct labour income. Project taxes generated (non-labour).	Socio-economic and cultural importance	Complete. Reported in 2021.

Table 3-1 Monitoring Activities by Environmental Component

Valued Component	Environmental Indicator	Parameter	Rationale <sup>1</sup>	Reporting Status
Infrastructure and Services	Transportation	Traffic volumes and accidents on key roadways.	Socio-economic and cultural importance	Complete. Reported in 2021.
Outfitters and Falconry	Outfitter Resource Use	Change in occurrence of black bears frequenting bear bait sites	Socio-economic importance	Complete. Reported in 2021.
	Peregrine Falcon Conservation Centre	Location of peregrine perch sites, distance moved and mortality	Socio-economic and environmental importance	Complete. Reported in 2021.
Agricultural Land	Soil Productivity	Crop performance	Socio-economic and environmental importance	Complete. Reported in 2021.
	Rutting and Compaction	Return to pre-construction condition	Socio-economic and environmental importance	Complete. Reported in 2021.
	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. Reported in 2021.

<sup>1</sup> 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 Vegetation

Vegetative change can be an important indicator of environmental effects of the Project. A vegetation technical report with a more detailed description of methods, maps, and results is included in Appendix A of this report.

### 3.1.1 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. However, in 2022 incidental observations of non-native and invasive plant species were recorded during golden-winged warbler (*Vermivora chrysoptera*) habitat surveys. Twenty-two previously invasive monitoring sites were also revisited in 2022. As in previous years, areas of bare ground were treated with an approved seed mix, and Tier 2 weed species were pulled and removed where encountered. Although the number of discrete observations of Tier 1 and 2 noxious plants is similar at these specific sites between monitoring in 2020 (18

observations) and 2022 (17 observations), the abundance of noxious plants (by distribution code) from observations in 2022 is generally reduced compared to 2020. Higher distribution codes (including multiple patches plus greater sporadic occurrence) were far more frequent in 2020 (13 observations) than in 2022 (five observations). Further details can be found in the vegetation technical report included in Appendix A.

## 3.2 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.

### 3.2.1 Bird-Wire Collision Survey

Bird-wire collision surveys using standardized methods were conducted by qualified contractors at twelve pre-selected sites from May 11-19<sup>th</sup> and June 1-9<sup>th</sup>, 2022 (Photo 1). 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 B.

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

As predicted in the EIS, 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. The estimated collision mortality rates observed during this study were higher than those observed during the pre-construction studies conducted along the proxy transmission lines in 2014, and those observed at other transmission lines in the Manitoba. The apparent high rates of bird collision mortality along the MMTP, particularly at sites with bird diverters in the spring period, may be attributed to the high scavenging rates observed and the relatively high number of collisions observed at some sites. In spring surveys at sites with bird diverters, scavengers took 90-94% of all the planted bird carcasses, which amplified the collision mortality estimates. No mortalities of species of conservation concern were identified in 2022.

*Assess the effectiveness of mitigation measures implemented:*

Bird-wire diverters along MMTP appear to be effective at reducing the number of bird-wire collision mortalities. However, as per Manitoba Hydro's response in CER filing [A8S0X5](#), additional mitigation measures were implemented to improve effectiveness (Appendix C).

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

As Manitoba Hydro committed to in CER filing [A8S0X5](#), significant additional mitigation measures were implemented to improve bird-collision mitigation effectiveness at sites that showed evidence of higher rates of bird collisions. In total, over 3,000 new bird diverters were installed on MMTP and adjacent transmission lines between October 7-9<sup>th</sup>, 2023 (Appendix C). At most sites, diverter spacing intervals were doubled from the industry standard of 5 meters to 2.5 meters. Manitoba Hydro installed a relatively new model of bird diverter produced by Power Line Sentry, which have shown high rates of reliability, durability, and glow in the dark

visibility for low-light conditions. The bird diverter installation work was conducted by highly trained Manitoba Hydro crews with a specialized helicopter.

*Confirm compliance with regulatory requirements including approval terms and conditions:*

All information collected indicates compliance with regulatory requirements has been met. To evaluate effectiveness of the additional mitigation measures, further bird collision monitoring will be conducted in spring 2024.

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

The additional information has improved understanding of the prevalence and rates of bird-wire collisions in Manitoba and promoted the use of new innovative methods and products to reduce the risk.

### 3.2.2 Golden-winged Warbler Habitat Survey

Golden-winged warbler habitat surveys were conducted by qualified contractors using standardized vegetation surveys at thirteen pre-selected sites from August 6-8<sup>th</sup>, 2022 (Photo 2). 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 as outlined in the habitat management plan to enhance suitability for golden-winged warblers. Overall, there was an increase in vegetation cover and species richness in the lower vegetation canopies between 2021 and 2022. Cover and richness measures in the understory were comparable to or above their baseline values (2019), and no significant differences were found between understory cover ( $p=0.057$ ) or richness ( $p=0.223$ ) from 2019 and 2022 surveys. However, the understory diversity ( $p=0.003$ ) and evenness ( $p=0.002$ ) measured in 2022 has increased over baseline measures. As predicted, post-construction monitoring shows mean total species cover in sites has risen as a result of vegetation species regeneration and changing structure.

*Assess the effectiveness of mitigation measures implemented:*

Mitigation was effective at meeting the objectives of the golden-winged warbler habitat management plan.

*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 vegetation recovery and use by golden winged warblers will enhance

knowledge and management.

### 3.2.3 Ungulates and Predators

Information on the distribution of ungulates and predators were collected from camera trap monitoring surveys.

#### 3.2.3.1 Distribution / Occurrence Mapping Survey

Distribution and occurrence mapping surveys for mammals was conducted by a qualified contractor using standardized survey methods. Camera-trap monitoring during the post-construction phase was conducted in the winter 2020-21 season through to August of 2023. There was a total of twelve camera trap arrays deployed, including six cameras positioned in potentially affected areas along the ROW and six cameras in reference or control areas adjacent to and outside the ROW. Monitoring was active for a combined total of 11,166 camera-days between November 2020 and August 2023, observing a total of 2,491 white-tailed deer (*Odocoileus virginianus*) events (3,453 individuals), 581 black bear (*Ursus americanus*) events (784 individuals), 55 gray wolf (*Canis lupus*) events (87 individuals) and 87 coyote (*Canis latrans*) events (104 individuals). Detailed description of methods, maps, and results of distribution and occurrence mapping survey can be found in Appendix D.

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

Results of statistical analysis of reference and control sites continues to support the predictions as outlined in the EIS and support the null hypothesis that the operation of the transmission line did not change the distribution or mortality risk for white-tailed deer and black bear. Small numbers of gray wolves and coyotes were observed during all phases of the MMTP. Observations of predators have not illustrated any detectable changes in densities or occurrence from the preconstruction to operational phase. There were no detections of moose or elk during the 2022 monitoring period.

*Assess effectiveness of mitigation measures implemented:*

Mitigation such as timing of construction, location of access routes, and environmental training and related protection measures appeared to have been 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 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 detectable changes in abundance or occurrence of ungulates or predators.

### **3.2.3.2 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 the Provincial regional wildlife manager indicated no known or observed negative effect of the operation of MMTP on the elk population. Due to sensitive nature of elk movements, information is held by the Provincial regional wildlife manager.

### **3.2.3.3 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 pre-construction phase, however support for report development continued through 2023. Peer-reviewed publications continue to be prepared. Project information available from Memorial University at <https://weel.gitlab.io/team/current/katrien.html> and <https://weel.gitlab.io/team/current/daniel.html>.

## **4.0 Future Monitoring**

Future monitoring activities will be carried out as per Table 4-1 and as outlined in the MMTP Environmental Monitoring Plan (NEB Ex. [A6V3U2](#)). Apart from golden-winged warbler habitat survey reporting, which will continue biennially until 2030, all other scheduled environmental monitoring activity reporting is complete. As per condition 28 of NEB Certificate EC-059, annual environmental monitoring reports will continue to be filed to describe any environmental issues and corrective actions which arose in the previous year.



Table 4-1 Monitoring Activities Schedule						
Valued Component	Key Monitoring Activity	Post Construction				
		Year 1 (2020)	Year 2 (2021)	Year 3 (2022)	Year 4 (2023)	Year 5 (2024)
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					

**Dark shading denotes when final monitoring activity reporting has been met.**

*\*As per the MMTP Environmental Monitoring Plan, golden-winged warbler habitat monitoring will shift to biennial intervals until 2030.*



Photo 1 Bird-wire collision surveys were conducted along MMTP.



Photo 2 A golden-winged warbler (*Vermivora chrysoptera*) monitoring site with dense aspen regeneration in 2022.



Photo 3 A white-tailed deer (*Odocoileus virginianus*) photographed on MMTP.

# APPENDICIES

Appendix A: MANITOBA-MINNESOTA TRANSMISSION PROJECT VEGETATION MONITORING  
REPORT - 2022

Appendix B: MANITOBA-MINNESOTA TRANSMISSION PROJECT BIRD-WIRE COLLISION  
MONITORING REPORT- 2022

Appendix C: MANITOBA-MINNESOTA TRANSMISSION PROJECT BIRD DIVERter RETROFIT  
PROJECT REPORT – 2023

Appendix D: MANITOBA-MINNESOTA TRANSMISSION PROJECT MAMMAL MONITORING  
REPORT - 2022

