

Lake Winnipeg East System Improvement Transmission Project Environmental Effects Monitoring Report



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Abbreviations

ac	Alternating Current
EA	Environmental Assessment
EEMP	Environmental Effects Monitoring Plan
EPIMS	Environmental Protection Information Management System
EPP	Environmental Protection Program
GPS	Geographic Positioning System
km	kilometre
LWESI	Lake Winnipeg East System Improvement
kV	kilovolt
m	metres
PTH	Provincial Truck Highway
ROW	Right-of-Way
SD	Sustainable Development

1 INTRODUCTION

This report presents the results of the environmental effects monitoring plan for the Lake Winnipeg East System Improvement (LWESI) Transmission Project, hereby known as “the Project”. This report is produced in compliance with clause 45 of *The Environment Act* licence No. 3210. Manitoba Hydro presents this information to inform interested parties, communities, stakeholders and the general public on progress made on construction and implementation of mitigation measures that minimize environmental effects.

This is the Project’s fifth annual monitoring report and describes monitoring from April 1, 2019 through March 31, 2020, but also includes some more recent monitoring results. Map 1 outlines the Lake Winnipeg East System Improvement Transmission Project area. Anyone interested in further information about this report or the Project is invited to contact Manitoba Hydro at:

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2 PROJECT OVERVIEW

The Lake Winnipeg East System Improvement Transmission Project involves the construction and operation of a new 75km 115 kV transmission line from the Town of Powerview-Pine Falls to Manigotagan Corner Station, a new 115-66 kV transmission station west of the intersection of Provincial Road (PR) 304 and Rice River Road, and modifications to the existing Pine Falls Generating Station Switchyard.

3 PROJECT STATUS

Construction of the Project began in August 2015. The project officially came into service on June 30th, 2018.

3.1 Pine Falls Generating Station Switchyard Modifications

Improvements to the Pine Falls Generating Station switchyard were required to accommodate the Project. Staging and outage coordination activities are completed including relay building modifications, cable trench extensions, breaker replacements, zone box installation and the installation of a new bus conductor.

3.2 115-66kv Transmission Station

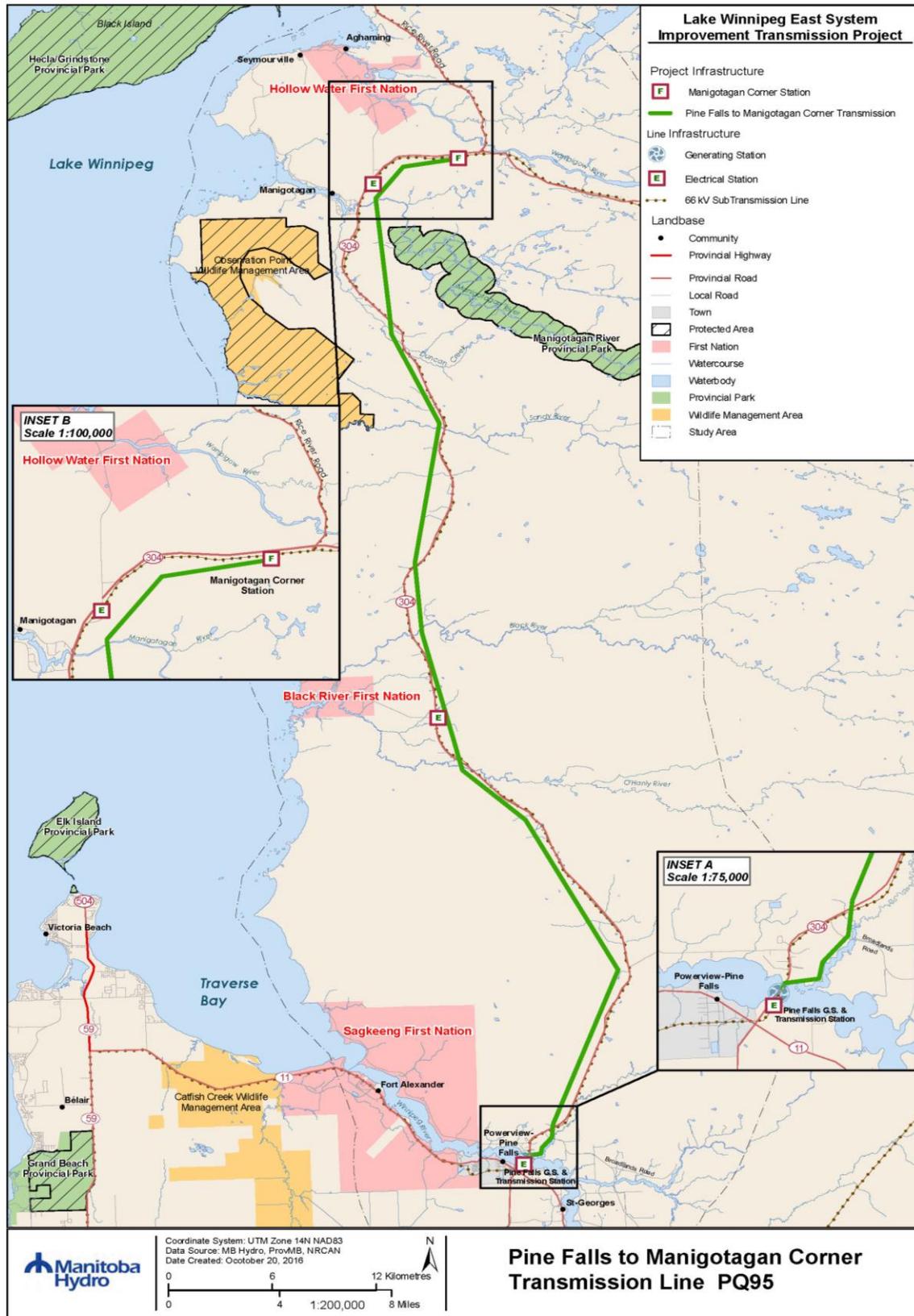
The new 115-66kv switching station near Manigotagan accepts power from the generating station via a new 75 km transmission line. Station construction was completed in April 2018.

3.3 115 kV Transmission Line

Clearing of the 60-meter ROW (right of way) was conducted in the winter 2015/16 by joint ventures with Sagkeeng First Nation, Black River First Nation, Hollow Water First Nation and electrical utility contractors. Tower assembly was conducted in 2016/17 by joint ventures with the same communities. Foundation construction and tower erection were completed in spring 2017. Transmission line stringing was completed in February 2018. Project commissioning occurred between March and June 2018.



Photo 1: The Lake Winnipeg East System Improvement Project officially came in-service on June 30th, 2018. Photo taken in September 2020.



Map 1: Lake Winnipeg East System Improvement Transmission Project Area

4 ENVIRONMENTAL EFFECTS MONITORING PLAN OVERVIEW

Manitoba Hydro's commitment to environmental protection includes the development of a comprehensive Environmental Protection Program (EPP) for the Project. This includes monitoring and follow-up of biophysical environmental components identified in the environmental assessment. The Environmental Effects Monitoring Plan (EEMP) was approved by the Department of Sustainable Development (SD) on August 9th, 2016 and outlines the various monitoring activities that will occur during the different phases of the Project.

The scope of this plan includes physical and biological components of the environment. The purpose of the EEMP is to identify the key activities that will be conducted as part of the monitoring and follow-up component of the Environmental Protection Program that will verify potential effects and effectiveness of mitigation.

The objectives of the EEMP are to:

- Confirm the nature and magnitude of predicted environmental effects as stated in the environmental assessment (EA);
- Assess the effectiveness of mitigation measures implemented;
- Identify unexpected environmental effects of the Project, if they occur;
- Identify mitigation measures to address unanticipated environmental effects, if required;
- Confirm compliance with regulatory requirements; and
- Provide baseline information to evaluate long-term changes or trends.

Environmental components, requiring follow-up monitoring, discussed further in this annual Environmental Effects Monitoring Report include:

- Aquatics;
- Vegetation;
- Birds;
- Mammals; and
- Access

Adaptive Management

Manitoba Hydro has accumulated a wealth of knowledge and lessons learned from previous monitoring programs. The successes of those programs have been useful in developing the EEMP for the Project. This previous experience has been used to improve upon the plan's approach, methods and key environmental monitoring activities.

Going forward, an adaptive management framework will continue to be used through the end of the monitoring program deal with unexpected outcomes or events based on information gathered. Data will be reviewed as collected to determine if any of the environmental thresholds specified in the EEMP have been exceeded due to shortfalls in impact prediction, ineffective mitigation measures or inadequate monitoring approaches. Actions will be developed in response to these contingencies.

5 IMPLEMENTATION OF MONITORING AND FOLLOW-UP ACTIVITIES

Environmental monitoring helps validate the accuracy of the environmental assessment and effectiveness of mitigation measures. Manitoba Hydro utilizes internal staff for the implementation of the EEMP, funded participation of Indigenous community representatives, and retained highly qualified specialists in appropriate disciplines. Manitoba Hydro's Environmental Protection Information Management System (EPIMS) will also play a major role in managing the EEMP implementation, coordination of field work, data collection and communications amongst the monitoring team.



Photo 2: Access trail monitoring continues.

2019/20 Environmental Effects Monitoring Highlights

Key monitoring highlights during this reporting period described in further detail in this document include:

- No unexpected environmental effects have been observed for any environmental components
- A survey using trail cameras showed significantly more moose, white-tailed deer and wolves were detected at control sites monitoring sites then monitoring sites on the ROW.
- Very few resources users were detected using the ROW compared to existing nearby access trails.
- With the support of Manitoba Hydro, a wolf study using GPS collars has been ongoing within and neighbouring the Project study area by PhD and MSc students from Memorial University.
 - Preliminary information from these studies on wolf movements in the region indicate that wolves generally avoid the Project area, therefore limiting the likelihood of increased predation on moose as a result of the Project.
 - Analysis of wolf-kill sites has shown a varied diet that includes moose, white-tailed deer, and beaver.
 - Field work is now complete with intensive data analysis and report preparation underway.

Table 1: 2019/20 Monitoring Activities by Environmental Component		
Component	Environmental Indicator	2019/20 Monitoring Status
Aquatics	Condition of Watercourse and Banks	Completed in 2016/17
Vegetation	Vegetation Species of Conservation Concern	Completed in 2018/19
	Plants and Plant Communities important to Aboriginal peoples	Completed in 2018/19
	Rehabilitation	Completed in 2018/19
	Invasive and Non-Native Species	Completed in 2018/19
Birds	Stick Nests	Completed in 2014/15
	Bird Collision and Bird Diverter Monitoring	Completed in 2017/18
	Bird Species of Conservation Concern	Completed in 2016/17
Mammals	Moose	Camera survey now complete
	White-tailed Deer	Camera survey now complete
	Wolves	Camera survey now complete
Access	Humans on ROW	Human access survey ongoing

6 ENVIRONMENTAL COMPONENT MONITORING

Multiple environmental components were identified for follow-up in the environmental assessment and technical reports. For each environmental component, one or more environmental indicators were selected to focus monitoring and follow-up efforts as indicated in the EEMP (Table 1). Map 2 shows an overview of monitoring site locations.

7 AQUATICS

The potential effect of the Project on aquatic habitats was a component of the environmental assessment and monitoring plan. Post-construction monitoring concluded that all aquatic habitat sites were found in compliance with no additional mitigation required. The final report

was completed in 2016/17. No aquatics related surveys were conducted in 2018/19.

8 VEGETATION

Vegetative change can be an important indicator of environmental effects of the Project.

8.1 Species of Conservation Concern

Vegetation species of conservation concern monitoring is complete and was reported on in the 2017/18 annual report.

8.2 Plants and Plant Communities important to Indigenous Peoples

Monitoring of plant and Plant communities important to Indigenous Peoples is complete and was reported on in the 2017/18 annual report.

8.3 Invasive and Non-Native Plants

Invasive and non-native plant monitoring is complete and was reported on in the 2017/18 annual report.

9 BIRDS

9.1 Bird-Wire Collision Monitoring

Bird species of conservation concern monitoring is complete and was reported on in the 2017/18 annual report.

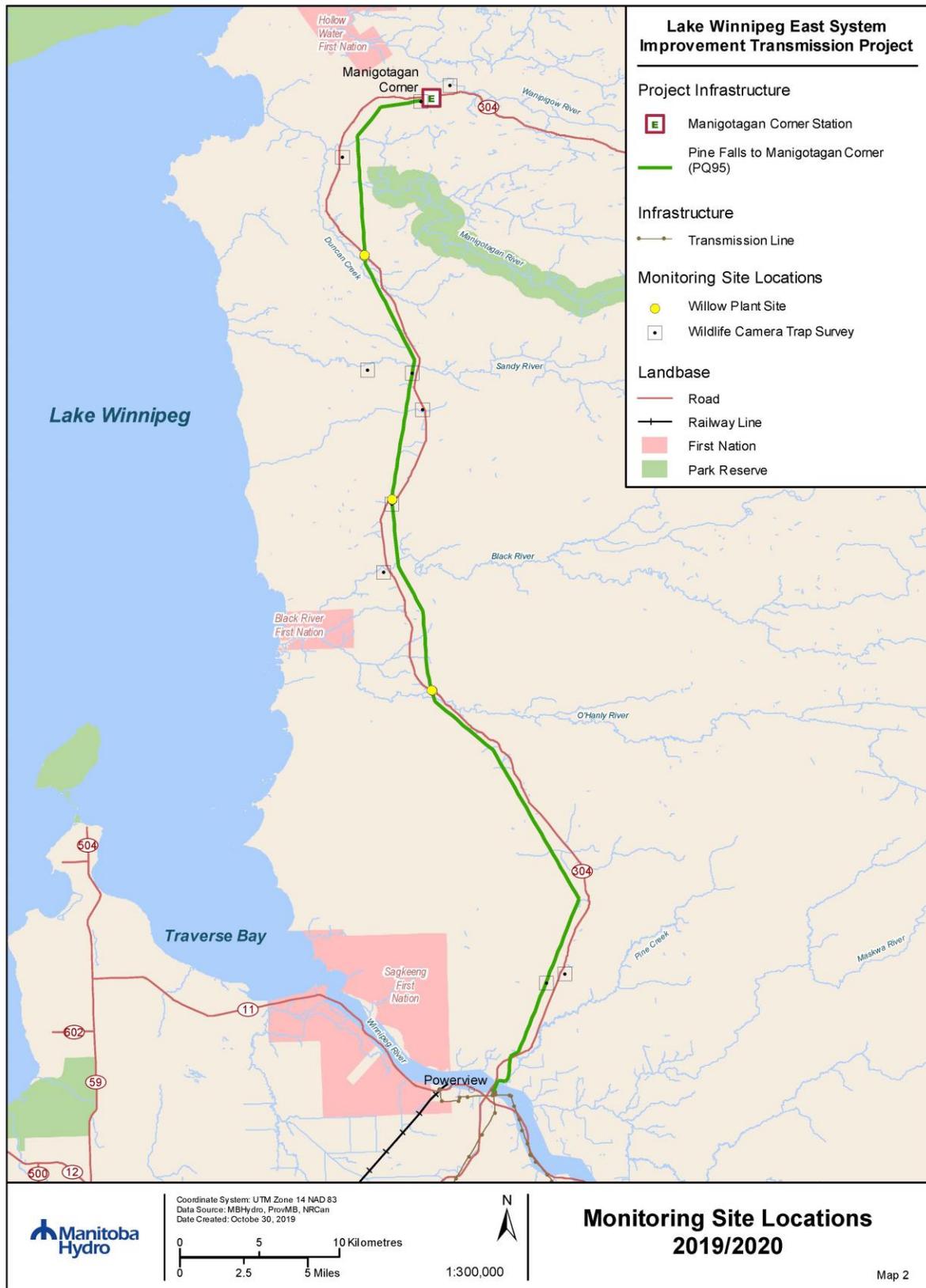
9.2 Stick Nests

An aerial stick nest search was conducted by an

experienced biologist prior to Project clearing in 2015. No stick nests were detected and therefore no additional mitigation or monitoring was required.

9.3 Bird Species of Conservation Concern

Bird species of conservation concern monitoring is complete and was reported on in the 2016/17 annual report.



Map 2: Lake Winnipeg East System Improvement Transmission Project Monitoring Site Locations

10 MAMMALS

The potential effect of the Project on mammals was the focus of the environmental assessment especially for moose (*Alces alces*), wolves (*Canis lupus*), and white-tailed deer (*Odocoileus virginianus*). All species occur within the Lake Winnipeg East System Improvement Transmission Project study area.

The overall objectives of the mammals monitoring program are to expand baseline knowledge, ensure compliance with regulatory requirements and environmental report commitments, monitor and measure mammal responses to ROW creation, and assess the success of mitigation measures. The EEMP outlines the species-specific monitoring commitments for moose, wolves, and white-tailed deer.

10.1 Moose

Aerial surveys for mammals is complete and was reported on in the 2018/19 annual report.

Results from the 2019/20 camera trap survey have shown the presence of moose occurring at 2 of 3 ROW monitoring sites and 4 of 5 control monitoring sites over an average 360 trap days. When data was pooled, significantly more moose were detected at control monitoring sites than on ROW monitoring sites (p-value = 0.005). Camera trap data is summarized in Figure 1.

Overall, camera trap data pooled over four years (>3603 combined days) showed no significant difference between the presence of moose at control monitoring sites than on ROW monitoring sites (p-value = 0.0509).

No moose were killed or injured as part of the Project activities and no moose carcasses or evidence of moose mortalities were identified by Manitoba Hydro crews in 2019/20. In addition, bird, vegetation, and mammals monitoring crews did not find any evidence of moose mortalities while conducting their field activities.

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

As predicted in the EA, some habitat loss and alteration has occurred as a result of the Project. However the changes have been confined to the Project right-of-way and station site. When considering the data collected as part of multiyear aerial surveys, there has been little evidence that moose have avoided the Project area. No Project related moose mortalities due to vehicle

collisions or other sources have been reported by environmental inspectors or construction crews.

Preliminary information from a MSc and PhD study on wolf movements in the region indicate that wolves have generally avoided the Project area, to date, therefore limiting the likelihood of increased moose predation as a result of the Project.

Assess the effectiveness of mitigation measures implemented:

Mitigation efforts, including Project routing, vegetation buffers, access management, and construction timing windows appear to have been effective.

Identify unexpected environmental effects of the Project, if they occur:

No unexpected environmental effects have been observed.

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

To date, none required.

Confirm compliance with regulatory requirements:

Compliance with regulatory requirements continues.

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

This monitoring has helped in understanding changes in moose distribution and provided inferences on changes in relative abundance of both moose and white-tailed deer in the Project area.



Photo 3: Moose detected in a camera trap on the Project ROW.

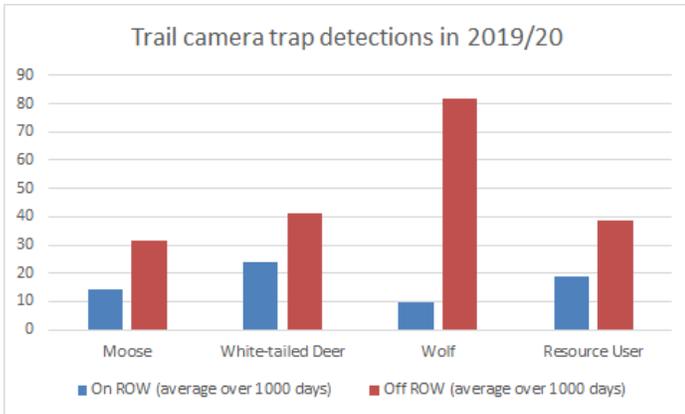


Figure 1. Trail camera trap detections in 2019/20.

10.2 White-tailed Deer

Aerial surveys for mammals is complete and was reported on in the 2018/19 annual report.

Results from the 2019/2020 camera trap survey have shown the presence of white-tailed deer occurring at 2 of the 3 ROW monitoring and 4 of the 5 control sites during 360 trap days. When data was pooled, significantly more deer were detected at control monitoring sites than on ROW monitoring sites (p-value = 0.016). White-tailed deer were primarily detected in the central and southern portion of the study area. Only six were detected in the northern portion.

Overall, camera trap data pooled over three years (>3,603 combined days) showed significantly more white-tailed deer on ROW monitoring sites than on control monitoring sites (p-value = 0.0001).

No white-tailed deer were killed or injured as part of the Project activities in 2019/20.

The overall low number of white-tailed deer detected during the 2019/20 survey period corresponds to what was detected in previous survey periods. There is some evidence from aerial survey results and camera trap detections of recent white-tailed deer population growth, especially in the southern portion of the study area.

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

As predicted in the EA, some habitat loss and alteration has occurred as a result of the Project. However the changes have been confined to the Project ROW and station site.

Assess the effectiveness of mitigation measures implemented:

Mitigation efforts, including Project routing, vegetation buffes, access management, and construction timing windows appear to be effective.

Identify unexpected environmental effects of the Project, if they occur:

No unexpected environmental effects have been observed.

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

To date, none required.

Confirm compliance with regulatory requirements:

Compliance with regulatory requirements continues.

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

This monitoring has helped our understanding of white-tailed deer distribution and provided some inferences on changes in relative abundance of both moose and white-tailed deer in the Project area. White-tailed deer are at the northern limit of their range in this Project area. During the course of this study we found that deer detections decreased from south to north. Over the course of the four year study, deer detections were generally low but appeared relatively consistent over time.



Photo 4: White-tailed deer detected in a camera trap.

10.3 Wolves

Results from the 2019/2020 camera trap program have shown that wolves have been detected on 1 of 3 ROW monitoring sites, and 2 of 5 control monitoring sites after 360 trap days. When data was pooled, significantly more wolves were detected at the control monitoring sites than at ROW monitoring sites (p value = 0.0001). This may be partially due to one of the control monitoring sites being located near a confirmed wolf denning site (by coincidence), resulting in an increased number of detections.

Overall, camera trap data pooled over three years (>3,603 combined days) showed significantly more wolves on control monitoring sites than on ROW monitoring sites (p -value = 0.0001).

No wolves were killed or injured as part of the Project activities in 2018/19. In addition, no wolf mortalities were observed by Project staff (i.e. hunter or vehicle collisions).

Manitoba Hydro has sponsored PhD and MSc students from the Wildlife Evolutionary Ecology Lab at Memorial University (<https://weel.gitlab.io/>) who are investigating the movement patterns of wolves along linear features in southeastern Manitoba. This multi-year study involves placing GPS collars on wolves and tracking them throughout the year (Figure 2). The final results will help Manitoba Hydro understand the extent wolves utilize linear features and other natural features to move within their environment.

Results of the study to date indicate that most wolves avoid locations close to major highways, all wolves select to be closer to secondary roads and waterways and have a neutral response to tertiary roads.

Transmission ROWs with an adjacent major highway, including the Lake Winnipeg East System Improvement Project were generally avoided by wolves. The continuation of this multi-year study will help improve our understanding of wolf movements.

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

As predicted in the EA, some habitat loss and alteration has occurred as a result of the Project. However the habitat changes have been confined to the Project right-of-way and station site.

Assess the effectiveness of mitigation measures

implemented:

Mitigation efforts, including Project routing, vegetation buffers, access management, and construction timing windows appear to be effective.

Identify unexpected environmental effects of the Project, if they occur:

No unexpected environmental effects have been observed.

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

To date, none required.

Confirm compliance with regulatory requirements;

Compliance with regulatory requirements continues.

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

This monitoring has helped our understanding of changes in wolf distribution and provided some inferences on changes in movements before and after the Project.

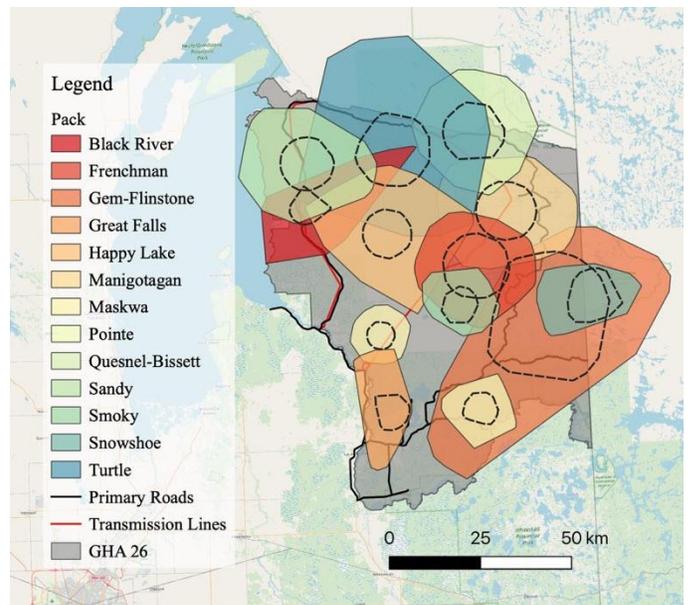


Figure 2. Home range and movements of wolves as collected by graduate students from Memorial University (data from 2016-2019).



Photo 5: PhD candidate conducting analysis of wolf predation in the Project area.

In 2019/20, 15 camera traps were maintained in the LWESI study area. Seven cameras were located directly on the ROW, and eight were located on adjacent access trails. The cameras on the ROW detected very low levels of use by resource users.

Over approximately 259 days, the average number of resource users detected on each camera on the ROW was four (highest was 12). Over a similar period of time the average number of resource users detected on each camera on adjacent access trails was 26 (highest was 108). This demonstrates that although resource users are using the ROW, their use is minimal compared to the other pre-existing access trails in the area. This is likely due to the wet conditions on much of the ROW, lack of a maintained trail, dense shrubby vegetation, and because the Project parallels PTH 304, offering limited access to novel areas. Resource users were found on foot, ATV's, and snowmobiles.



Photo 7: Access camera servicing at a decommissioned site with signage and boulders.



Photo 6: Wolf carrying a beaver carcass along a trail.

11 ACCESS

Access trail decommissioning was conducted after construction. This involved placing large boulders, trenching, and felling trees over unnecessary access trails to prevent future vehicular traffic. These decommissioning efforts appear to have been effective. The Pine Falls District Conservation Officer has reported to Manitoba Hydro that recreational vehicle traffic appears to be generally low on the ROW.

12 COMPLIANCE MONITORING

Compliance monitoring involves reviewing Project activities for adherence to legislation, licence conditions, permits, and environmental protection plans. With the conclusion of Project construction, compliance monitoring is now completed.

13 FUTURE MONITORING

The following monitoring activities are planned for 2020/21. The environmental effects monitoring plan contains detailed descriptions of all monitoring activities.

Aquatics, Birds, Vegetation

These surveys were completed and presented in previous reports.

Mammals

Mammal surveys are now completed.

Access

Surveys will be completed in 2020/21 in accordance with the EEMP. These include camera trap surveys along the Project area, including access points.