Manitoba-Minnesota Transmission Line

Operation and Maintenance Environmental Protection Plan

May 2020

Prepared by:

Licensing and Environmental

Assessment Department

Manitoba Hydro

This page was left intentionally blank.

This document should be cited as follows:

Manitoba Hydro, 2020, Operation and Maintenance Environmental Protection Plan for Transmission Lines.

All photographs in the OMEnvPP are from MH projects and work activities unless otherwise stated.

Version Control

Version	*Version Date*	*Annual Review*	*Revisions*	*Revisions by*
1.0	2020 May 14	2021 May 14	None	Manitoba Hydro

SUMMARY

This Operation and Maintenance Environmental Protection Plan (OMEnvPP) is a specific EnvPP for the operation and maintenance phase of the transmission line. This OMEnvPP is a living document and will be updated as regulation, legislation, and environmental practices progress. This document covers transmission lines and associated infrastructure, with a section in the appendix that identifies license clauses and how those concerns are satisfied or mitigated.

The OMEnvPP:

- Describes Manitoba Hydro's Environmental Management System (EMS);
- Provides field personnel with clear instructions on the mitigation measures to be implemented and on the appropriate lines of communication and means of reporting to be followed;
- Intended to provide information to Manitoba Hydro employees as well as contractors and regulators; and
- Summarizes the environmental sensitivities and mitigation actions and emergency response plans and reporting protocols.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ACRONYMNS

ASTM	American Society for Testing and Materials standards
CCA	Chromated Copper Arsenate
CER	Canadian Energy Regulator
CSA	Canadian Standards Association
DFO	Fisheries and Oceans Canada
EnvPP	Environmental Protection Plan
FMCSA	Federal Motor Carrier Safety Administration
HPDD	High Pressure Directional Drilling
ISO	International Organization for Standardization
LEA	Licensing and Environmental Assessment Department (Manitoba Hydro)
LPT	Licensed Petroleum Technician
MH	Manitoba Hydro
MI	Manitoba Infrastructure
MCC	Manitoba Conservation and Climate
MSDS	Materials Safety Data Sheet
ROW	Right-of-Way
SOP	Standard Operating Procedure
TDG	Transportation of Dangerous Goods
TLM	Transmission Line Maintenance
WHMIS	Workplace Hazardous Materials Information System

1.0 INTRODUCTION

The Transmission Operation and Maintenance Environmental Protection Plan (OMEnvPP) is a consolidated document of environmental mitigation measures for various operation and maintenance activities anticipated to be carried out by the Transmission Line Maintenance Department (TLM) and contractors. It was developed by Manitoba Hydro to provide practical guidance and highlight regulatory requirements for Manitoba Hydro field staff and contractors while conducting activities on the Transmission rights-of-way. The direction and guidance provided in this document applies to all lands related to the both private land and crown land. The line consists of a 213 km single-circuit, 500 kV AC transmission line starting at the existing Dorsey Converter Station northwest of Winnipeg, connecting at the Manitoba-Minnesota border to the Great Northern Transmission Line

The map sheets and specific mitigation tables are presented in Appendix D of this document in a "map book" format. The map sheets provide an overview of specific Environmentally Sensitive Sites (ESS) and their mitigation. To reduce the size of the document, commonly identified mitigation measures such as "water crossings" are described in the back of each mapbook, which are linked by mitigation ID.

1.1 PURPOSE OF DOCUMENT

Recognizing that work activities have the potential to impact the environment, this document has been created to provide environmental mitigation measures and instruction to prevent or mitigate impact from Manitoba Hydro work activities.

This document provides information and guidance on environmental, regulatory and social considerations in carrying out Manitoba Hydro transmission maintenance work. The information is to be used in job planning and implementation activities. The intended audience includes supervisors, inspectors, patrollers, and environmental staff.

The OMEnvPP document serves several purposes including:

- Provide instruction to field staff on environmental requirements;
- Training purposes for staff and contractors;
- Interaction with regulators on permits and modifications to work; and
- Fulfilling licence requirements

1.2 ORGANIZATION

The OMEnvPP describes reporting and communication, summary of applicable acts and regulations, mitigation concerns with associated summary sheets, and appendices. Mitigations are an action or activity intended to remedy, reduce, or offset known negative impacts on the surrounding environment from operation and maintenance activities. Section 7 outlines the environmental mitigation by means of mitigation summary sheets which includes instruction and guidance on conducting various work activities. Each sheet is organized into a broad category with subcategories to allow quick access to desired information. Every environmental mitigation measure is assigned a number for reference.

Features of the mitigation sheets include:

- Title of the mitigation summary sheet;
- Component description; and
- Environmental protection objectives.
- Unique mitigation identification number
- Mitigation measures

The component description is a summary of the mitigation sheet topic and provides examples of where it may be applied. The environmental protection objectives identify what the goal of mitigation is and what is being protected.

1.3 INSTRUCTIONS FOR USE

This document provides general and specific mitigation measures to reduce the potential for environmental effects that may occur during operation and maintenance activities. It is designed to be a resourceful, user-friendly tool to guide onsite implementation of environmental protection measures. This document provides contractors and field personnel with details on 'where to' implement environmental protection measures.

This document is to be used to plan work and select mitigation measures for the intended work activity. To enable this, a comprehensive work description is required to ensure complete environmental coverage of the planned work.

1.4 TRANSMISSION LINE MAINTENANCE ACTIVITIES

The operation of a transmission line facility requires ongoing maintenance and repair. Some activities include:

- Vegetation management
- Foundation repair
- Tower maintenance and repair
- Structure replacement
- Conductor repair
- Spacer damper replacement
- Re-conductoring
- Thermal upgrades
- Beaver dam removal
- Ground and areal inspection surveys
- Remote Permanent and Temporary Camps
- Ground Testing
- Integrated Pole Management
- Explosives (implodes)
- Patrolling
- Access maintenance
- Field site visits
- For other activities not listed consult the TLM Environmental Specialist for advice

1.5 REGULATORY CONTEXT

Environment Act Licence No. 3288 (Appendix C) was issued to Manitoba Hydro for the construction, operation, and decommissioning of the Manitoba-Minnesota Transmission (Dorsey international power line), which includes a 213 km long, 500 kilovolt alternating current, international power line from the Dorsey Converter Station (located near Rosser, Manitoba) to the United States border crossing near Piney, Manitoba, and modifications to the existing Dorsey Converter Station, the existing Riel international power line and the Riel Converter Station (located near the intersection of Provincial Trunk Highways 101 and 15), and the existing Glenboro international power line and the Glenboro Station (located south of Glenboro, Manitoba), in accordance with the Proposal filed under The Environment Act dated November 21, 2014, the Environmental Impact Statement (EIS) dated September 2015, and the response to information requests dated April 29, 2016, in consideration of the September 2017 Clean Environment Commission Report on Public Hearings.

In Manitoba, as part of operation and maintenance, vegetation management activities are primarily regulated through The Crown Lands Act, The Environment Act, The Pesticide and Fertilizers Control Act and their related regulations. Manitoba Hydro applies to Manitoba Conservation and Climate for applicable work and pesticide use permits when vegetation management treatments are planned on the ROW. As a result of the above regulations, vegetation management activities are subject to compliance inspections by Manitoba Conservation and Climate Conservation or Environment Officers.

Additionally, by way of the Reliability Standards Regulation 25/2012 under The Manitoba Hydro Act, Manitoba Hydro must comply with North American Electric Reliability Corporation (NERC) standard FAC-003. The FAC-003 Transmission Vegetation Management Standard's purpose is:

> *"To maintain a reliable electric transmission system by using a defense- in-depth strategy to manage vegetation located on transmission rights of way (ROW) and minimize encroachments from vegetation located adjacent to the ROW, thus preventing the risk of those vegetation- related outages that could lead to Cascading."*

In addition to the following License conditions related to maintenance mitigations, please be informed that Manitoba Hydro must comply with all other applicable federal, provincial and municipal regulations and by-laws. As stated in condition 64 of *The Environment Act* licence for the line, "The Licencee shall obtain written approval from the Director of the Environmental Approvals Branch for any proposed alteration to the Development before proceeding with the alteration."

The Environment Act licence also imposes the conditions below. Mitigation associated with each of these conditions is also noted.

Manitoba-Minnesota Transmission Line Environmental Act Licence Conditions related to Operation and Maintenance		
Licence Condition Headings	Licence Condition	Manitoba Hydro Guidance and Implementation
Environmental Protection Plan	10. The Licencee shall submit, for approval of the Director of the Environmental Approvals Branch, a construction Environmental Protection Plan prior to construction , and an operations Environmental Protection Plan at least 90 days prior to in-service of the Development. The plans shall describe the approach to be used by the Licencee to ensure that mitigative measures are applied systematically, and in a manner consistent with the commitments made in the EIS and supporting information, during construction or operation of the Development. The plans shall: a) include information obtained from Indigenous communities prior to and during construction and operation of the Development regarding the locations of specifically identified sites used for the exercise of Aboriginal rights-based activities in the vicinity of the line (such as plant harvesting, ceremonial practices, hunting, and trapping) ; b) include mitigation measures and/or buffer zones for the specific sites identified to minimize impacts to the sites from construction and operation activities; c) for specifically identified plant harvesting sites, identify measures to minimize impacts to the sites by implementing mitigation measure such as flagging of the area, buffers zones, selective clearing, construction matting, and non-chemical vegetation management; and d) include mitigation measures to reduce adverse effects on wildlife and wildlife	The information required by this condition is satisfied by the production and implementation of this plan

Manitoba-Minnesota Transmission Line Environmental Act Licence Conditions related to Operation and Maintenance		
Licence Condition Headings	Licence Condition	Manitoba Hydro Guidance and Implementation
	habitat (e.g., timing windows, setbacks, and buffers).	
	11. The Licencee shall continue to engage with Indigenous communities during construction and operation of the Development to provide opportunities for the identification of culturally sensitive sites to inform the Environmental Protection Program as described in the EIS	For guidance on the implementation of mitigation to satisfy this condition see the procedures outlined in the Handbook for the Identification of Heritage Sites and Features booklet (DRAFT) for Transmission Line Maintenance.
Water Crossings	33. The Licencee shall, during construction and operation of the Development, manage activities within riparian areas as described in the EIS and supporting information.	For guidance on implementation of mitigation to satisfy this condition see #8 Clearing, #38 Wildlife Protection from the Mitigation Sheets in Appendix D and the OMEnvPP Mapbook found in Appendix F.

Manitoba-Minnesota Transmission Line Environmental Act Licence Conditions related to Operation and Maintenance		
Licence Condition Headings	Licence Condition	Manitoba Hydro Guidance and Implementation
Wetlands	35. The Licencee shall carry out activities associated with the Development that may disturb wetlands in the Caliento, Sundown, and Piney Bogs only under frozen ground conditions. Maintenance activities within these bogs shall be conducted under frozen ground conditions unless required to ensure the safe and reliable operation of the Development, in which case mitigation measures to reduce impacts to the bogs shall be implemented.	For guidance on implementation of mitigation to satisfy this condition refer to ESS polygons found in the OMEnvPP Mapbook found in Appendix F.
Golden-Winged Warbler Habitat Management Plan	37. The Licencee shall implement the plan titled "Right-of-Way Habitat Management Plan for Managing Critical Golden-winged Warbler Habitat during Construction and Operation of the Manitoba-Minnesota Transmission line" submitted as suppo1iing information on April 29, 2016, or any subsequent versions approved by the Director of the Environmental Approvals Branch.	The document "Right-of-Way Habitat Management Plan for Managing Critical Golden-winged Warbler Habitat during Construction and Operation of the Manitoba-Minnesota Transmission line" will be implemented in ESS "Wild-110-117, Wilid-119,120 and Wild-122 found in the OMEnvPP Mapbook (Appendix F).
Invasive Species	38. The Licencee shall, during construction and operation of the Development, prevent the introduction and spread of foreign aquatic biota. Equipment shall be cleaned in accordance with the requirements of Manitoba Regulation 173/2015 respecting Aquatic Invasive Species, or any future amendment thereof.	For guidance on implementation of mitigation to satisfy this condition see polygon ESS's found in the OMEnvPP Mapbook (Appendix F), as well as a general mitigation measure table on Aquatic Invasive Species mitigation table (Appendix D).
Pesticide Application	40. The Licencee shall adhere to Pesticides Regulation 94/88 R, or any future amendment thereof, for the storage, handling and application of pesticides in conjunction with the Development.	For guidance on implementation of mitigation to satisfy this condition see the procedures outlined in the Vegetation Management Plan for the line

Manitoba-Minnesota Transmission Line Environmental Act Licence Conditions related to Operation and Maintenance		
Licence Condition Headings	Licence Condition	Manitoba Hydro Guidance and Implementation
Petroleum Storage and Handling	41. The Licencee shall locate fuel storage and equipment servicing areas established for the construction and operation of the Development a minimum distance of 100 metres from any waterbody, and shall comply with the requirements of Manitoba Regulation 188/2001 respecting Storage and Handling of Petroleum Products and Allied Products, or any future amendment thereof. 42. The Licencee shall, during construction and operation of the Development, operate, maintain, and store all materials and equipment in a manner that prevents any deleterious substances including fuel, oil, grease, hydraulic fluid, coolant, and other similar substances from contaminating soil or entering any waterbody. Emergency spill kits for both land and in-water use shall be readily available on site during construction.	For guidance on implementation of mitigation to satisfy this condition see #34 Vehicle and Equipment Maintenance and #29 Petroleum Products General mitigation tables found in Appendix D.
Erosion Control	47. The Licencee shall, during construction and operation of the Development, take all appropriate measures to prevent erosion and the deposition of sediment into any waterbody.	For guidance on implementation of mitigation to satisfy this condition see general mitigation measure table #19 Erosion and Sediment Control- from the Environmental Mitigation Measure tables found in Appendix D
Noise Nuisance	48. The Licencee shall not cause or permit a noise nuisance to be created as a result of the construction, operation, or alteration of the Development, and shall take such	For guidance on implementation of mitigation to satisfy this condition see general mitigation measure table #6 Built-up and populated areas found in Appendix D

Manitoba-Minnesota Transmission Line Environmental Act Licence Conditions related to Operation and Maintenance		
Licence Condition Headings	Licence Condition	Manitoba Hydro Guidance and Implementation
	steps as the Director may require to eliminate or mitigate a noise nuisance.	
Vegetation Management	52. The Licencee shall provide notification to local Indigenous communities a minimum of 30 days prior to the application of herbicides within the transmission right-of-way of the Development.	For guidance on implementation of mitigation to satisfy this condition see the procedures outlined in the Vegetation Management Plan and the Communication Plan for line.

2.0 MANITOBA HYDRO ENVIRONMENTAL COMMITMENT

Manitoba Hydro supports and embraces the need to protect and preserve the environment affected by its transmission lines, operations and facilities. This goal can only be achieved with the full commitment of staff and contractors at all stages of work, from planning and design through construction and operation. Manitoba Hydro is committed to protecting the environment. In full recognition of the fact that corporate facilities and activities affect the environment, Manitoba Hydro integrates environmentally responsible practices into its business. This is demonstrated in Manitoba Hydro's environmental policy (Appendix A).

Additionally, Manitoba Hydro has an Environmental Management System (EMS) that is consistent with ISO 140001 standards (Appendix B). The EMS enables our corporation to identify its environmental impacts, set goals to manage them, implement plans to meet those objectives, evaluate performance, and make continual improvements to the system.

3.0 PLAN MANAGEMENT AND IMPLEMENTATION

Manitoba Hydro is committed to regulatory compliance and implementing all terms and conditions of work approvals, permits, licenses, authorizations, and environmental mitigation measures as specified in this document. This requires assignment of responsibilities, communication, and inspection and compliance activities to ensure appropriate environmental mitigation measures are implemented and effective.

3.1 ORGANIZATION

Manitoba Hydro is organized and structured to implement environmental mitigation measures requirements and environmental commitments (See Figure 1). The overall responsibility for OMEnvPP compliance rests with the Transmission Construction and Line Maintenance Division Director and the Transmission Line Maintenance (TLM) Department Manager. The TLM Supervisors, Inspectors, and Patrollers are responsible for implementing applicable measures in the OMEnvPP and ensuring that all requirements within it are followed by staff and contractors.

The OMEnvPP contact for contractors will be their main Manitoba Hydro Contract as identified in the pre-job meeting and in daily Job Work Plans. For TLM staff, the OMEnvPP contact will be the TLM Environmental Specialist (ES) or delegate. Additionally, in the absence of an ES or delegate, the Licencing and Environmental Assessment (LEA) Department can be contacted.

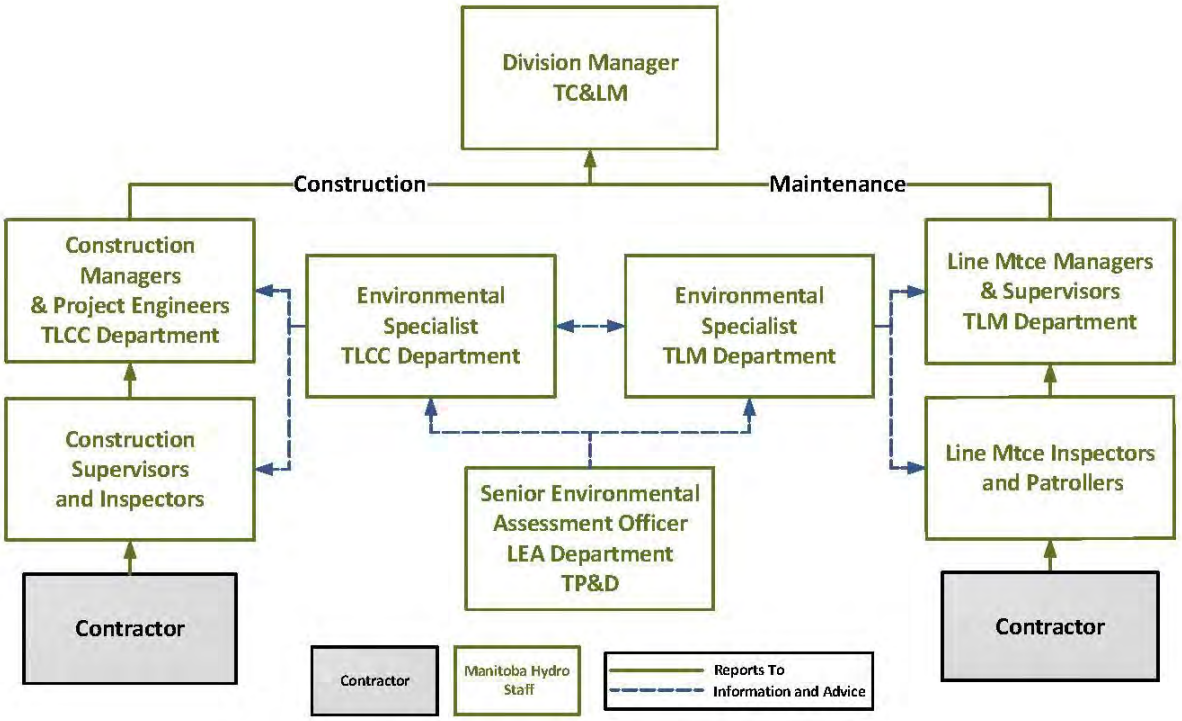

Figure 1: Environmental Program Support and Responsibilities Flow Chart

3.2 RESPONSIBILITIES

The assigning of responsibilities is essential to effective environmental mitigation measures and compliance. The following table outlines responsibilities for those involved in work activities.

Table 1: Transmission Line Maintenance Description of Roles and Responsibilities

Role	*Key Responsibilities*
TLM Department Manager	Accountable for all aspects of Transmission Line Maintenance, Operation and ROWs and associated electrical equipment
	Oversees Environmental Specialists, Line Maintenance Supervisors and Utility Supervisors, and Administrative Support Staff
Environment Specialist	Reports to the Department Manager
	Responsible for the development of and training for OMEnvPPs
	Liaises with Manitoba Sustainable Development on work permits and licences
	Liaises with Licensing and Environmental Assessment Department if required
	Liaises with regulatory authorities such as the Fisheries and Oceans Canada (DFO) and Canada Energy Regulator (CER). Environment and Climate Change Canada (ECCC) where required or applicable
	Provides advice and guidance to Field Supervisors/Staff
	May complete site audits and may issue environmental improvement and stop work orders for environmental non-compliance situations and incidents
	Liaise with Environmental Auditors
	Provides support and guidance to contractors regarding OMEnvPP documents
	Responsible for implementing, and ongoing compliance monitoring to ensure department compliance
Supervisors	Reports to the Department Manager
	Reports non-compliances/non-conformances to Environmental Specialist
	Ensures all site work is in compliance and adheres to environmental mitigation measures in O&M OMEnvPP' s
	Reviews environmental audit reports with the site personnel and any contractors, and ensures remedial actions or responses to non-compliance situations or incidents are implemented as required
	Works with the Environment Specialist to ensure implementation of OMEnvPP and environmental mitigation measures
	Ensures that appropriate authorities are notified in emergency or incident situations.
	Ensure work permits are submitted and obtained as required
	Issues environmental improvement and stop work orders as required for non-compliance situations
Contractors	Accountable for all regulatory and environmental prescriptions (i.e., follow OMEnvPP and mitigation measures prescribe)
	Ensure all contractor staff are adequately trained/informed of pertinent environmental requirements related to their position.
	Report any discoveries of non-compliance, accidents or incidents to the Construction

Role	*Key Responsibilities*
	Supervisor
	Ensure that all remedial actions are carried out as per Manitoba Hydro instruction
	Ensure all discoveries of heritage resources, human remains, paleontological finds, environmentally sensitive sites, etc. are reported to the Construction Supervisor Responsible for other permits as outlined in Appendix C
	Reports to the Line Supervisors and provides advice and guidance to the Field Personnel
Live Line Inspectors and Patrollers	Monitors the line for compliance of the OMEnvPP, *Environment Act* Licence and other environmental regulatory requirements (if applicable)
	Assist the Contractor in ensuring that all necessary information is covered in the Contractor's pre-work employee orientation
	Provides daily information and guidance on work at daily tailboard meetings
	The Live Line Inspectors and Patrollers will be responsible for following OMEnvPP
	Conducts site inspections regularly and reports deficiencies/non-conformances to their Supervisor or the Environmental Specialist
	Assists in developing solutions for environmental issues on-site where applicable with the input from their supervisor and/or Environment Specialist
	Prescribes and ensures follow-up environmental mitigation measures are implemented when required
	Ensures all Environmentally Sensitive Sites (ESS) are correctly identified, delineated and flagged/marked in the field
	Complete and submit required permits

3.3 COMMUNICATION AND NOTIFICATION

Communication between Manitoba Hydro field staff and contractors is essential for implementing environmental mitigation measures and preventing environmental damage. Depending on the transmission line work activity, contractors may or may not be involved.

The standard protocol for OMEnvPP communication may include the following items:

- Pre-job meetings
- Site start-up meeting
- Regular progress meetings
- Daily job planning meetings

Managers and/or Supervisors are also responsible for notifying the local community where work has the potential to affect local people through noise, traffic or limitation on resource use or access.

3.3.1 PRE-JOB ORIENTATION MEETING

A Pre-Job Orientation (PJO) meeting will be held by Manitoba Hydro with field crews prior to the initiation of work to ensure that they are aware of the environmental requirements of the work at that location. Should conditions dictate a change in work location, another start-up meeting may be convened.

The meeting will include Manitoba Hydro's on-site Supervisor, field crews conducting the work, and key environmental personnel.

The environmental portion of a PJO meeting may include the following:

- A review of Manitoba Hydro's Environmental Policy and all environmental specifications of the contract or work description;
- Transfer of further relevant information or precautions that Manitoba Hydro is aware of and which pertain to the job (example: sensitive species, sensitive sites, riparian);
- Procedures/requirements for dealing with the environmental stop work orders or improvement orders;
- Reporting protocols for environmental incidents and emergencies;
- Documentation needs including the review of all pertinent forms (i.e. job planning form); and
- Requirement to educate/train all employees with respect to the requirements of the OMEnvPP.

The following shall be communicated with all Field Supervisors, subcontractors, and work crews: the work specifications, environmental requirements, other information provided during the pre-job

meeting, and instructions to notify their Manitoba Hydro contact in writing that the pre-job meeting has been completed.

The minutes, attendance records, and all other pertinent information should be recorded and distributed.

In situations where a new individual joins the work activities, it is the responsibility of the Field Supervisor to ensure that employee has been provided with the necessary information and/or training related to the environmental aspects of the transmission line. All instances of new employees coming to site must be documented to demonstrate that they have received the necessary training.

3.3.2 Regular Progress Meetings

Depending on the duration of the work activities staff may meet on a regular basis to review and discuss progress to date and planned upcoming work. These meetings will also review environmental requirements of the job and environmental precautions necessary. Manitoba Hydro will be responsible for the maintenance of minutes/documents related to these meetings.

3.3.3 Daily Job Planning Meetings

Field crew job planning meetings will be held daily prior to the commencement of any work. The daily job-planning meeting will be used to review safety and environmental requirements of the job and necessary environmental mitigations. The Field Supervisors shall document all job-planning meetings, including the environmental content.

Managers and Supervisors are also responsible for any community notification required about work that might affect the public through noise, traffic, or affect resource use and access.

4.0 INSPECTION, AUDIT, WORK STOPPAGES, EMERGENCY RESPONSE, AND REPORTING

Environmental inspection and site audits are a key element of environmental protection. The activity serves not only to verify that environmental mitigation measures are in place, functioning as designed and maintained, but also to anticipate potential environmental threats so that preventative measures can be taken. Verification of environmental compliance with the OMEnvPP, permits and licences are also important functions of inspection and require appropriate documentation and reporting. The inspection/audit process also includes an evaluation and response mechanism for non-compliance situations or where there is potential for imminent environmental impact or damage. Manitoba Hydro and its contractors each have specific responsibilities for inspection and reporting as per their roles and responsibilities listed in Section 3.2.

4.1 INSPECTION

Manitoba Hydro's Environmental Specialist/Staff may inspect a work location at any given time or on a predetermined schedule. The Manitoba Hydro Field Supervisor will inspect the site regularly to ensure that the site is managed in accordance with contract documentation and the OMEnvPP. The Supervisor will ensure that the installation and maintenance of environmental mitigation measures are in accordance with work specifications. This individual will be fully familiar with work permit(s), local environmental, landowner sensitivities, and environmental protection requirements for the work activities. The Supervisor, in conjunction with the Environmental Specialist, will implement, document, and enforce environmental protection actions. Any non-compliance issues and changes to existing plans will be reviewed with Manitoba Hydro's Department Manager and Environmental Specialist. Property issues are to be dealt with by the Supervisor, Line Inspector, or Environmental Specialist through Manitoba Hydro's Property Department.

4.2 AUDIT

Third party auditors may audit work sites and are usually escorted by Field Supervisor or Environmental Specialist.

Full cooperation will be given to representatives of government environmental and regulatory authorities conducting compliance inspections and to Manitoba Sustainable Development staff with interests in protecting natural resources from impacts due to operation and maintenance activities.

4.3 WORK STOPPAGES

Work may be suspended in the event of a hazardous materials spill or environmental accident, ineffective mitigation, discovery of artifacts of cultural or heritage value, or non-compliance with the OMEnvPP or Work Permit. The Department Manager, Field/Line Supervisor, Patrollers and the Environmental Specialist will all have authority to issue stop work orders. Contractors should also immediately stop work and immediately notify their Manitoba Hydro contact where circumstances indicate a serious environmental issue or the discovery of cultural and heritage artifacts.

4.4 EMERGENCY RESPONSE

Quick and effective response to contingencies and environmental emergencies is essential to prevent further environmental damage. An environmental emergency response plan (example: spill response plan) is required for all fieldwork and will provide contact information and response protocols. Field Supervisors are responsible for taking appropriate action under the plan as soon as an emergency situation is observed or brought to their attention. All staff and contractors on a work site must be familiar with the plan, contacts and actions to take upon discovery of an emergency situation.

Any hazardous material spills of fuels, solvents, hydraulic fluid, antifreeze, etc. will be immediately reported by staff and/or contractor to their Manitoba Hydro Supervisor/contact for immediate containment and clean-up. In the case of an environmental incident requiring notification under Manitoba Regulation 439/89 respecting Environmental Accident Reporting (e.g. spills), the time and reporting requirements specified in the Regulation will be followed. This information can be found in the Transmission Construction and Line Maintenance (TLM) and Licensing and Environmental Assessment (LEA) Spill Response Plan. Regardless of quantities releases are to be reported to that departments Area Spill Response Coordinator at Manitoba Hydro.

Contractors must have their own spill response plan. Contractors are responsible for reporting their spills to Manitoba Hydro immediately and to complete reporting requirements and remediation. Manitoba Hydro field personnel must provide contractor and staff spill reports to the Area Spill Response Coordinator identified in the Manitoba Hydro spill response plan.

4.5 REPORTING

For all work activities in the field where an environmental audit is completed, an audit report will be submitted to the Line Maintenance Supervisor and Department Manager. Inspections, recommendations and actions will all be recorded and saved electronically. Any non-compliance or emergency situations must be reported immediately to Environmental Specialist for regulatory notification/reporting and initiation of response.

5.0 Environmental Legislation and Regulations, and Work Permits

Knowledge of regulatory requirements is an essential part of job planning to ensure appropriate approvals, environmental mitigation measures, and scheduling are in place. The mitigation sheets are created from a combination of legislation, regulation, best management practices, previous licence and permit conditions, and guidelines. Supervisors should contact local communities directly for any potential municipal by-law requirements for the work area, as a part of job planning and before any work takes place.

5.1 Work Permits

Work permits in the form of federal Authorization may be required, for example, from Department of Fisheries and Oceans or Environment (DFO), Climate Change and Environment Canada (removal of migratory bird nests). There are several provincial acts that require work permits to be issued to allow work on or access to Crown lands. The main applicable legislation is the *Crown Lands Act,* but the *Forest Act, Wildfires Act* and *The Provincial Parks Act* also require work permits for work on Crown land. Many existing transmission line ROWs may be owned by Manitoba Hydro, but access and disturbance can occur to adjacent Crown land from work activities. Manitoba Hydro will obtain the work permits required by the province of Manitoba for the maintenance of the transmission lines on Crown Lands. Consult with the Manitoba Hydro Environmental Specialist to identify and acquire any the necessary work permits, however, if you have a relationship established with the local Conservation Officers, Regional Lands Manager, and or Parks staff (for inside a park) the permits may be acquired directly.

6.0 SPECIAL ENVIRONMENTAL CONSIDERATIONS

6.1 ENVIRONMENTALLY SENSITIVE SITES

Important environmental considerations for work activities are required at environmental sensitive sites (ESS), which include locations, features, areas, activities or facilities that were identified in the Transmission line's environmental impact statement to be ecologically, socially, economically or culturally important or sensitive to disturbance. These ESS may require protection and mitigation during work activities. ESS include riparian areas, valued and protected vegetation, wildlife and habitats, cultural (heritage/archaeological and spiritual sites), unique terrain features, erosion- and compaction-prone soils and other important locations requiring specific protection (e.g., resource use, access). These Environmental Sensitive Sites have been consolidated into a site-specific Environmental Protection Plan Mapbook (Appendix F) that augments this Operation and Maintenance Environmental Protection Plan.

Where the work activities overlap or are adjacent to the following types of previously unidentified sites they should be designated as ESS and protected:

- Historic, heritage, or archeological sites as determined by existing inventories maintained by Historic Resources Branch (Manitoba Government);
- Water crossings and Wetlands
- Designated resource use protection areas for plant harvest (berries, medicinal or traditional use plants);
- Threatened or endangered species locations or habitat;
- Mammal dens (e.g. bear dens)
- Access trails (snowmobile trials, trapper trails etc.); and
- Stick Nests

Guidance on acquiring the relevant data or information to determine protection and mitigation requirements can be obtained from the Environmental Specialist.

6.2 TIMING WINDOWS

6.2.1 WILDLIFE

The "Timing windows" table found in the Appendix E outlines wildlife reduced risk work windows applicable to the work activities. These windows are based on federal and provincial regulatory

requirements as well as best management practices. Timing periods may be expanded or refined based on further data collection and regulatory licence and work permits to be issued for the work activities. The recommended reduced risk timing windows table demonstrates periods of the year when wildlife species are sensitive to disruptive operations because of a sensitive lifecycle activity such as calving, nesting, and hibernation, etc. Appendix E is intended to assist in scheduling work activities for the time of year when risks of adverse impacts are negligible. Where conflicting timing restraints and work activities exist in a particular area, appropriate mitigation will need to be implemented to reduce effects.

6.2.2 Fish

Fish habitat can be adversely affected by in-stream work that occurs during certain periods in their life history or at certain life stages. Life history periods or life stages susceptible to disturbances from in-stream work include the following:

- Spawning and egg incubation;
- Movements to or from spawning or overwintering areas; and
- Egg and newly hatched fry.

Timing works to avoid sensitive life history periods or life stages is an effective means of mitigating adverse effects. The "Timing windows" table contains general timing windows to avoid during work activities.

6.3 Heritage Resources

Known cultural or heritage resources on or near transmission line ROWs or stations were mapped and designated as Site Specific Environmentally Sensitive Sites (ESS) in the OMEnvPP Mapbook (Appendix F). Archeological sites are sites where historic and pre-historic artifacts of human activity have been found. These sites are sensitive to disturbance and loss from ground disturbance activities, such as clearing and excavation. Artifacts may include tools and objects, such as arrowheads, pottery shards or bottles, building remnants, burial sites, or human remains.

Mitigation for protection of any mapped sites depends on the type of heritage resource and has been identified in the OMEnvPP Mapbook and data will be included in the Transmission Geographic Information System (TGIS). For suspected heritage or historic sites that are not mapped any work that could disturb the site or artifact must be stopped until the site can be assessed, and appropriate protection measures put in place. Any discovery of human remains must be immediately reported to RCMP and the Field Supervisor, the site secured, and ground work suspended in that area as per procedures outlined in the Handbook for the Identification of Heritage Sites and Features booklet (DRAFT) for Transmission Line Maintenance.

6.4 CLEARING AND BRUSHING PRACTICES

Mitigation for clearing and brushing aims to maintain ground cover to help limit rutting and erosion as well as minimizing surface damage. Targeted removal of only trees that will violate Manitoba Hydro's Vegetation Clearance requirements leaves a shrub and herbaceous layer which maintains habitat and provides competition for regrowth of those targeted tree species.

A common mitigation used to accomplish this protection is to maintain a "Vegetated (shrubs and herbaceous layer) buffer". Shrubs are woody plants that are smaller than a tree and have several main stems that grow from or near the ground while the herbaceous layer refers to any plants found in the understory that do not have woody stems.

In the majority of cases shrubs do not grow tall enough to violate Manitoba Hydro's Vegetation Clearance Requirements and can remain. The presence of a herbaceous layer prevents bare soil from eroding through wind or rain events. Selective clearing is also prescribed in areas where minimizing surface disturbance is of particular concern.

Examples of equipment and methods considered to be selective clearing are:

Brushing: Brushing is the removal of individual stems of target species that will eventually grow into transmission lines using hand tools such as chainsaws or circular brush saw or by machinery such as a Feller Buncher or Excavator with a rotary drum mulcher head.

Non-selective clearing methods and equipment include:

Mowing/Mulching: Mowing/Mulching is the indiscriminate cutting of all trees/shrubs and herbaceous vegetation with wheeled or track-mounted heavy-duty rotary/flail cutters or rotary/drum mulchers. A heavy-duty tractor or excavator is equipped with the cutting/mulching head and driven over the ROW to cut/mulch target vegetation.

Shear Blading: Shear Blading is the indiscriminate shearing of all trees/shrubs and herbaceous vegetation at ground level. Bulldozers equipped with special shear blades are utilized under frozen ground conditions.

7.0 ENVIRONMENTAL MITIGATION MEASURES

The Mitigation Sheets have been developed to summarize key environmental mitigation measures associated with undertaking Manitoba Hydro transmission line operation and maintenance activities. They are designed to provide important guidance on planning and implementing work in an appropriate manner and in compliance with relevant environmental legislation and practice.

The following matrix illustrates when Environmental Protection Measures are applicable to significant environmental aspects during transmission line maintenance work activities.

Table 2: Environmental Protection Measures

		Environmental Aspects													
EMSS #	*Environmental Mitigation Summary Sheets*	Sensitive Sites	Heritage Resources	Fisheries	Wildlife	Topography and Landscape	Air Quality	Water mgmt. & Quality	Spills & Releases	Waste	Land Users	Soils	Dust	Birds	Fish
1	Access	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	Agricultural Areas	X	X		X	X	X	X	X	X	X	X	X	X	
3	Blasting and Explosives Use	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4	Bogs, Swamps and Wetlands	X	X	X	X	X		X	X	X	X	X		X	X
5	Borrow Pits and Quarries	X	X		X	X	X	X	X	X	X	X	X	X	
6	Built Up and Populated Areas	X	X	X		X	X	X	X	X		X	X	X	
7	Burning	X	X		X	X	X		X	X	X	X	X	X	
8	Clearing	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9	Concrete Washwater and Waste	X	X	X	X			X	X		X	X			X
10	Construction Camps	X	X		X	X	X	X	X	X		X	X	X	
11	Construction Matting	X	X		X	X						X	X		
12	Contaminated Soil	X	X	x				X				X			

EMSS #	Environmental Mitigation Summary Sheets	Environmental Aspects													
		Sensitive Sites	Heritage Resources	Fisheries	Wildlife	Topography and Landscape	Air Quality	Water mgmt. & Quality	Spills & Releases	Waste	Land Users	Soils	Dust	Birds	Fish
13	Demobilization and Clean-up	X		X	X	X		X	X	X	X	X	X	X	X
14	Directional Drilling	X	X	X				X	X	X	X	X	X		X
15	Draining	X	X	x	x	x	x	X	X	X	X	X	X	X	X
16	Drilling	X	X	X	X	X	X	X	X	X	X	X	X	X	X
17	Drinking (Potable) Water	X						X	X		X				
18	Emergency Spill Response	X	X	X	X	X	X	X	X	X	X	X	X	X	X
19	Erosion and Sediment Control	X		X		X		X				X	X		X
20	Fish Protection	X	X	X				X	X						X
21	Grading	X	X	X	X	X	X	X	X	X	X	X	X	X	X
22	Groundwater	X	X	X				X	X						X
23	Grubbing	X	X	X	X	X	X	X	X	X	X	X	X	X	X
24	Hazardous Materials	X	X												
25	Heritage Resources	X	X							X	X	X			
26	Management Measures	X	X	X	X	X	X	X	X	X	X	X	X	X	X
27	Marshalling Yards	X	X		X	X	X	X	X	X		X	X		
28	Permafrost											X			
29	Petroleum Products	X		X	X		X	X	X	X		X	X	X	X
30	Rehabilitation and Re-vegetation	X	X		X	X				X	X	X			
31	Rights Of Way	X	X	X	X	X	X	X	X	X	X	X	X	X	X
32	Stripping	X	X												
33	Towers and	X	X	X	X	X	X	X	X	X	X	X	X	X	X

EMSS #	Environmental Mitigation Summary Sheets	Environmental Aspects													
		Sensitive Sites	Heritage Resources	Fisheries	Wildlife	Topography and Landscape	Air Quality	Water mgmt. & Quality	Spills & Releases	Waste	Land Users	Soils	Dust	Birds	Fish
	Conductors														
34	Vehicle and Equipment Maintenance	X	X	X	X	X	X	X	X	X	X	X	X	X	X
35	Waste Management	X	X		X			X		X					
36	Waste Water holding tanks	X	X					X	X						
37	Water Crossing	X	X	X				X	X					X	X
38	Wildlife Protection	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Each sheet provides category information on the particular topic and a reference number for each environmental mitigation measure. The Mitigation Sheets can be assembled on their own for job and site-specific environmental protection planning or the OMEnvPP can be referred to as the environmental protection plan for work activity.

Appendix D provides the full set of Standard Environmental Protection Mitigation Sheets under this OMEnvPP. Revisions and new sheets will be produced as necessary and the document will be updated on a regular basis.

Appendix A:
Manitoba Hydro Environmental Policy

Manitoba Hydro Environmental Management Policy

Manitoba Hydro recognizes that our operations both affect, and are affected by our environment. The energy services we offer Manitobans rely on natural resources that are of critical importance to us all. This is why environmental leadership is identified as a key principle of our business.

We will consider the environmental impacts of our activities, products and services. To deliver on this commitment effectively, we employ an environmental management system (EMS) that aligns with the ISO 14001 Standard.

Specifically, Manitoba Hydro strives to protect the environment by:

- Ensuring that work performed by our employees and contractors meets environmental regulatory, contractual and voluntary commitments.
- Recognizing the needs and views of our interested parties and ensuring that relevant information is communicated.
- Continuously assessing our environmental risks to ensure we are managing them effectively.
- Reviewing our environmental objectives regularly, seeking opportunities to improve our environmental performance.
- Considering the life cycle impacts of our products and services.
- Ensuring that our employees and contractors receive relevant environmental training.
- Fostering an environment of continual improvement.

President and Chief Executive Officer

Policy Number: P850 Revised: 2020 04 14 Effective: 2020 04 14

Manitoba Hydro

Appendix B:
Environmental Management System

Environmental Management System

Manitoba Hydro and the Environment

Manitoba Hydro recognizes that the construction and operations of its facilities has an impact on the environment. To manage these impacts, the corporation has made a commitment to protecting the environment through the implementation of its Environmental Management System (EMS).

What is the EMS?

The EMS is a system used to plan and act upon our environmental objectives. Having an effective EMS enables our corporation to identify its environmental impacts, set goals to manage them, implement plans to meet those objectives, evaluate performance, and make continual improvements to the system.

Manitoba Hydro's EMS has been developed to be consistent with the ISO 14001 Standard.

What is Your Role in the EMS?

Everyone in the corporation plays a role in environmental protection at Manitoba Hydro. This includes those who are working in the field, those who support the work being done in the field and those who make decisions that affect what's happening in the field!

Using a dip net during the fish salvage

Your Responsibilities

* Identify and understand which environmental activities you are engaged in or have influence over
* Have a basic understanding of which compliance obligations are associated with those activities
* Have controls in place to minimize/mitigate the potential for an impact of the activities you are engaged/influence
* Monitor/measure performance
* Evaluate compliance
* Implement corrective and preventative actions if required
* Receive the proper training
* Document/record as required
* Have emergency preparedness plans/requirements are in place
* Participate in audits if required

Manitoba Hydro

2018-05-22

Key Elements of the EMS

Environmental Impact/Risk

Manitoba Hydro has a list of environmental activities that identifies everything we do to impact the environment. Management and employees should be aware of which activities apply to them and how these can impact the environment.

Operational Controls

Operational controls are processes used to minimize the impact employee activities have on the environment. Employees must be familiar with the controls that apply to their work, such as: operation and maintenance procedures, Safety Data Sheets and spill trays.

Compliance

All work activities must be in compliance with legislation and other requirements we have committed ourselves to. Management and employees can ensure they are in compliance by adhering to their operational controls or consulting guidance documents such as the *Hazardous Materials Management Handbook*; and by having methods in place to evaluate compliance such as site inspections.

Documentation

Documentation is a part of work processes, which may include but is not limited to, work orders, job plans and reports.

Monitoring and Performance Evaluation

Environmental objectives and targets are tracked through a number of methods, including dashboards and reports.

Collared caribou monitoring

Osprey platform nest inspection

Absorbent pads capturing oil

Releasing sturgeon in Numao Lake

For More Information

Please visit the EMS SharePoint Site:
http://hrcs.hydro.mb.ca/cem/ems/Pages/default.aspx

Bipole III transmission line construction

Appendix C:
Environmental Licences, Approvals and Permits

Table 3: Environmental Licences, Approvals and Permits Required for Operations and Maintenance

Approval required (Applicable Legislation / Regulation)	*Type of Approval*
Environment Act Licence (Class 3)	Licence Acquired
Crown Lands Act (Work Permit)	Permit
Crown Lands Act (General Permit)	Permit Acquired
Permit to cut timber on Crown Lands (*Forest Act*)	Permit
Wildfires Act (Work Permit)	Permit
Permit to burn wood (*Wildfires Act*) – outside of timing windows only	Permit
Storage and Handling of Gasoline and Associated Products Regulation, Generator Registration and Carrier Licencing Regulation (*Dangerous Goods Handling and Transportation Act*)	Permit
The Heritage Resources Act (when required)	Permit
Rail line crossing at access road intersections	Permit Acquired

This page was left intentionally blank.

National Energy Board Approvals

This page intentionally left blank

CERTIFICATE EC-059

IN THE MATTER OF the *National Energy Board Act* (NEB Act) and the regulations made thereunder; and

IN THE MATTER OF the *Canadian Environmental Assessment Act, 2012* (CEAA 2012) and the regulations made thereunder; and,

IN THE MATTER OF an application dated 16 December 2016 by Manitoba Hydro, for a permit pursuant to section 58.11 of the NEB Act (Application) to construct and operate the Manitoba-Minnesota Transmission Project (Project), which includes a 500 kV international power line from the Dorsey Converter Station near Rosser, Manitoba to the border of the United States; and other approvals for related changes pursuant to subsection 45(1) of the NEB Act and conditions of Certificate EC-III-16 and Permit EP-196, filed with the National Energy Board (Board) under File OF-Fac-IPL-Ml80-2015-0l 02.

BEFORE the Board on 20 October 2018.

WHEREAS the Application for the Project included construction and operation of a new international power line (IPL), the Dorsey IPL, which is a 500 kV alternating current IPL consisting of 213 kilometres of new transmission line with approximately 121 kilometres of new right-of-way from the Dorsey converter substation in Manitoba to a point on the international boundary south of Piney, Manitoba, connecting to the Great Northern Transmission Line in Minnesota;

AND WHEREAS the Application for the Project was preceded by an Order in Council issued by the Lieutenant Governor of the Province of Manitoba on 6 November 2013, pursuant to section 58.17 of the NEB Act, designating the Minister of Sustainable Development, formerly known as the Minister of Conservation and Water Stewardship, as the provincial regulatory agency for the proposed Dorsey IPL;

AND WHEREAS Order in Council 2017-1693, issued by the Governor in Council on 15 December 2017, designated the Project as an IPL that is to be constructed and operated under and in accordance with a Certificate issued under section 58.16 of the NEB Act;

…/2

AND WHEREAS the Board held a public hearing in respect of the Project Application pursuant to Hearing Order EH-001-2017 in Winnipeg, Manitoba on 4-8 June 2018 and 18-22 June 2018;

AND WHEREAS the Board has had regard to all considerations that are directly related to the Application and relevant, pursuant to Part III.1 of the NEB Act, and conducted an environmental assessment of the Project pursuant to CEAA 2012;

AND WHEREAS the Board has examined the Application and all subsequent submissions made by Manitoba Hydro and the participants in the EH-001-2017 proceeding;

AND WHEREAS the Board has decided, taking into account Manitoba Hydro's mitigation measures and those set out in the conditions to this Certificate, that the Project is not likely to cause significant adverse environmental effects;

AND WHEREAS the Board has found that Manitoba-Minnesota Transmission Project is and will be required by the present and future public convenience and necessity;

AND WHEREAS the Board's decisions on the Application, and reasons, are set out in the EH-001-2017 National Energy Board Reasons for Decision;

AND WHEREAS the Governor in Council by Order in Council No. P.C. 2019-784 dated the 13 June 2019 added or amended certain conditions in this Certificate and has approved the issuance of this Certificate;

NOW THEREFORE pursuant to paragraph 58.16(1)(a) of the NEB Act, the Board hereby issues this Certificate in respect of the Project.

This Certificate is subject to the twenty-eight conditions listed below:

1. Condition Compliance

Manitoba Hydro must comply with all of the conditions contained in this Certificate, as well as Order AO-006-EC-III-16 and Order MO-074-2018 unless the Board otherwise directs.

2. Certificate Expiration

Unless the Board otherwise directs prior to 20 October 2021, the Certificate for the new Dorsey IPL as well as amendments for the existing Riel IPL Certificate and the amendments for the existing Glenboro Permit shall expire on **20 October 2021**, unless construction in respect of the Project has commenced by that date.

3. Implementation of Commitments

Manitoba Hydro must implement or cause to be implemented all of the policies, practices, mitigation measures, recommendations, and procedures for the protection of the environment and promotion of safety referred to in its application, or as otherwise agreed to in its related submissions as well as all commitments made to Indigenous groups through its Project application or otherwise on the record of the EH-001-2017.

4. General

Manitoba Hydro must cause the Project to be constructed, operated, and abandoned in accordance with the specifications, standards, and other information referred to in its application or as otherwise agreed to in its related submissions.

5. Implementation of Standards

a) Manitoba Hydro must design and construct the Project to comply with the current Canadian Electrical Code, Canadian Standards Association and other relevant standards applicable to the design and construction of power lines.

b) Manitoba Hydro will ensure that any portion of the Riel IPL that may become part of the Project, will comply with the current standards in effect as of the date of construction.

6. Notification of Project Modifications

Manitoba Hydro must seek approval from the Board of any proposed modification to the Project's electrical system that may impact reliable operation for the bulk electrical system, power transfer capabilities, and the specification of the IPL structures, before any modification is made.

7. Quality Assurance and Compliance Program

Manitoba Hydro must file with the Board, **at least sixty (60) days prior to commencing construction**, confirmation by an officer of the company that they have developed and implemented a Quality Assurance and Compliance Program. The program must describe the methods by which Manitoba Hydro will ensure the Project, as described in the application, is designed, constructed, and operated in conformity with the conditions of the Certificate, and the designs, specifications, and undertakings set out in its application or as otherwise adduced in its evidence before the Board. The program must include, but not be limited to:

a) a process or procedure to identify conditions of approval, company designs, specifications, and undertakings set out in the application or otherwise adduced in Manitoba Hydro's evidence;

b) processes or procedures to monitor, measure, document, and report on compliance with conditions of approval, company designs, specifications, and undertakings set out in the application or otherwise adduced in Manitoba Hydro's evidence;

c) the position title and contact information of the person(s) responsible for each aspect of the program;

d) the qualifications, contact information, description of the job role and the position title of the person(s) authorized to stop work should work be in non-conformity with conditions of approval, company designs, specifications, and undertakings set out in the application or otherwise adduced in Manitoba Hydro's evidence;

e) a process or procedure to identify and implement any corrective action as a result of any non-conformances that may be necessary before recommencing work;

f) a process or procedure to evaluate the effectiveness of the corrective actions taken as a result of any non-conformances; and,

g) the methods by which adherence to the program will be monitored, measured, documented, and reported to Manitoba Hydro's management.

8. Construction Safety Manuals

Manitoba Hydro must file with the Board, **at least ninety (90) days prior to commencing construction**:

a) safety manuals related to the construction of the Project that address construction procedures, activities, and public safety; and,

b) an outline of the safety training program to be implemented for Project operations.

9. Navigation and Navigation Safety Plan

Manitoba Hydro must file with the Board for approval, **at least ninety (90) days prior to commencing construction**, a Navigation and Navigation Safety Plan that includes:

a) an updated listing of navigable waters to be crossed by all components of the Project described in the Application and subsequent filings;

b) an updated discussion of effects of the Project to navigation and navigation safety;

c) evidence and a summary of Manitoba Hydro's consultation with potentially affected waterway users and Indigenous communities regarding navigation use, including any concerns that were raised and how those concerns have been addressed; and,

d) for each navigable waterway, a description of mitigation measures to be implemented to address the Project's potential effects on navigation and navigation safety.

Manitoba Hydro must incorporate the Navigation and Navigation Safety Plan into the updated Construction Environmental Protection Plan (CEPP) required by Condition 10.

10. Construction Environmental Protection Plan

Manitoba Hydro must file with the Board for approval, **at least ninety (90) days prior to commencing construction,** an updated Project-specific Construction Environmental Protection Plan (CEPP) which includes:

a) all environmental protection, mitigation and monitoring measures and commitments, as set out in its Application, draft CEPP, or otherwise agreed to in its subsequent filings during both the Manitoba Clean Environment Commission hearing process and the Board's EH-001-2017 proceeding, and including any criteria that will be used to implement those measures;

b) any updates from outstanding pre-construction surveys;

c) the following plans:

i) clearing management plan
ii) blasting plan
iii) erosion protection and sediment control plan
iv) golden-winged warbler habitat management plan
v) cultural and resource heritage protection plan
vi) navigation and navigation safety plan (see Condition 9)
vii) waste and recycling management plan
viii) emergency preparedness and response plan (see Condition 14)
ix) rehabilitation and invasive species management plan
x) biosecurity management plan
xi) access management plan
xii) environmental monitoring plan
xiii) integrated vegetation management plan;

d) orthophoto maps of the Project footprint, which include the identification of environmental features, Manitoba Hydro's Environmentally Sensitive Sites, and mitigation measures to be applied; and,

e) evidence and a summary of Manitoba Hydro's consultation with potentially affected persons, organizations, Indigenous communities, and federal and provincial authorities regarding the updated CEPP, including any concerns that were raised, steps that Manitoba Hydro has taken or will take to address those concerns, and/or explanations as to why no further action is required, if applicable.

11. Indigenous Knowledge Studies Report

Manitoba Hydro must file with the Board for approval, **at least sixty (60) days prior to commencing construction**, a report outlining a plan for completing outstanding Indigenous Knowledge studies. The report must include:

a) a summary of the status of the Indigenous Knowledge studies undertaken for the Project, including group-specific studies or planned supplemental surveys;

b) a description of how Manitoba Hydro has considered and addressed information from any Indigenous Knowledge studies that it did not report on during the Board's EH-001-2017 proceeding;

c) a description of any outstanding concerns raised by potentially-affected Indigenous communities regarding potential effects of the Project on the current use of lands and resources for traditional purposes, including a description of how these concerns have been or will be addressed by Manitoba Hydro;

d) a summary of any outstanding Indigenous Knowledge studies or follow-up activities that will not be completed prior to commencing construction, including an estimated

completion date and an explanation as to why these will not be completed prior to construction, if applicable;

e) a description of how Manitoba Hydro has already identified, or will identify, any potentially-affected traditional land use sites or resources if the outstanding studies will not be completed prior to construction; and,

f) a description of how Manitoba Hydro has revised its CEPP as a result of the Indigenous Knowledge studies or follow-up activities. At the same time as this report is filed with the Board, Manitoba Hydro must send a copy to each of the Indigenous communities included in consultation activities.

12. Reliability, Safety, and Security of IPLs

Manitoba Hydro must:

a) ensure that the new Dorsey IPL will operate within reliability limits of its nominal design voltage of 500 kV AC;

b) comply with the provisions of the Board Order MO-036-2012 electric reliability;

c) file with Board a list of reliability standards applicable to the Project, at least sixty (60) days prior to commencement of construction;

d) report to the Board any event involving electrical contact between energized IPL components and terrain, vegetation, structures, vehicles, animals or people within forty-eight (48) hours of such event occurring; and,

e) file with Board within sixty (60) days after occurrence of a reportable event under b) or d), a written report that must include:

   i) the reasons why the deviation occurred;

   ii) analysis of potential negative implications of the deviation; and,

   iii) mitigation strategies for the implications identified and when the mitigation was or will be implemented.

13. Design and Interconnection Compliance

Manitoba Hydro must file with the Board for approval, **at least sixty (60) days prior to commencing construction**, a report confirming that the design of facilities, construction plan, and planned operations comply with the following:

a) With the new Dorsey IPL and with the Project alterations in place, Manitoba Hydro may export up to 3058 MW of power to the U.S. and import up to 1473 MW of power from the U.S. over all of its international power lines without prior notification to any Canadian utility.

b) Confirmation that SaskPower and the Ontario Independent Electric System Operator have reviewed the impact of both steady state and transient operation under the full set of permutations and combinations of availability of the Dorsey IPL, Riel IPL and Glenboro IPL after the Project is in service, and confirmation that none of the reviewed operating scenarios will impose unacceptable operating conditions upon the Saskatchewan or Ontario Provincial electric systems.

14. Construction Emergency Response Plan

Manitoba Hydro must file with the Board, **at least forty-five (45) days prior to commencing construction**, a Construction Emergency Response Plan for the Project that contains:

a) a response plan for spills of fuels and fluids associated with construction;

b) a response plan for medical incidents that includes provision for 24-hour emergency transport to hospital;

c) a plan for fire response and evacuation;

d) a security plan; and,

e) an emergency contact list and emergency notification plan for government and response agencies and communities (including Indigenous and Métis) adjacent to the right-of-way and/or impacted by work sites.

15. Commitments Tracking Table

Manitoba Hydro must:

a) file with the Board and post on its website, **at least thirty (30) days prior to commencing construction**, a commitments tracking table listing all commitments it made in its application, including all commitments made to Indigenous communities, and otherwise agreed to during questioning or in its related submissions in the Board's EH-001-2017 proceeding, as well as commitments from the Clean Environment Commission hearing process that are of federal interest, and that includes references to:

   i) the document in which each commitment appears (for example, the application, responses to information requests, hearing transcripts, permit requirements, condition filings, or other document);

   ii) the accountable lead for implementing each commitment; and,

   iii) the estimated timeline associated with the fulfillment of each commitment;

b) file with the Board, at the following times, an updated commitments tracking table:

   i) **within ninety (90) days after the Certificate is issued**; and,

   ii) **at least thirty (30) days prior to commencing construction**;

c) update the status of the commitments and file those updates with the Board, **on a monthly basis starting ninety (90) days after the Certificate date until commencing operations, and quarterly during operations until all commitments are satisfied (except those that involve filings for the Project's operational life)**;

d) post on its website, the same information required by b) and c), within the same indicated timeframes; and,

e) maintain at each of its construction offices:

   i) the relevant environmental portion of the commitments tracking table listing all of Manitoba Hydro's regulatory commitments, including those described

in its application and subsequent filings, and conditions from permits, authorizations, and approvals it has received;

ii) copies of any permits, authorizations, and approvals for the Project issued by federal, provincial, or other permitting authorities that include environmental conditions or site-specific mitigation or monitoring; and,

iii) copies of any subsequent variances to any permits, authorizations, and approvals in e) ii).

16. Heritage Resources

Manitoba Hydro must file with the Board, **at least thirty (30) days prior to commencing construction**:

a) confirmation, signed by an officer of the company, that it has obtained all of the required archaeological and heritage resource permits and clearances from the Manitoba Historic Resources Branch;

b) a description of how Manitoba Hydro will meet conditions and respond to comments and recommendations contained in the permits and clearances referred to in a); and,

c) a description of how Manitoba Hydro has incorporated additional mitigation measures, as applicable, into its CEPP as a result of conditions or recommendations referred to in b).

17. Landowner Advisory Committee Plan

Manitoba Hydro must file with the Board, **at least thirty (30) days prior to commencing construction**, a plan for developing a Landowner Advisory Committee (LAC) for the Project. The plan must include:

a) a summary of how potentially-affected landowners and/or their representative organizations were consulted, including a description of the design of the consultation and activities undertaken;

b) a summary of the results of consultation, in terms of input from the landowners, including whether or not there is any interest from landowners in forming a LAC; and,

c) if there is interest in forming a LAC, a description of the scope of activities that will be undertaken, in consultation with the LAC, during construction and operation of the Project, including but not limited to:

i) the standard mitigation measures to be implemented by Manitoba Hydro during construction to protect landowner interests and reduce effects to agricultural activities;

ii) measures to be implemented when site-specific issues arise during construction; and,

iii) third party monitors, including the activities and geographic locations where third-party monitoring have been proposed.

18. Operations Safety Manuals

Manitoba Hydro must file with the Board, **at least ninety (90) days prior to commencing operations**:

a) safety manuals related to operations activities for the Project that address routine operation procedures, activities, and public safety issues that might be encountered during the IPL operations; and,

b) an outline of the safety training program to be implemented for Project operations.

19. Operations and Maintenance Manual

Manitoba Hydro must file with the Board, **at least sixty (60) days prior to the commencing operations**, an Operations and Maintenance Manual for the Project. The manual must require Manitoba Hydro to conduct documented audits of its records and inspections of the Manitoba Hydro electrical system and right-of-way to confirm company conformity to the manual's requirements. The manual must also include a schedule or procedure for its yearly review and update, as appropriate, to remain current with regulatory requirements and accepted industry practice. The manual, and the programs and procedures on Manitoba Hydro's records as required by the manual, must be made available to the Board for periodic review, upon request. The manual must also include:

a) the type of maintenance followed by Manitoba Hydro;

b) maintenance schedules according to the selected maintenance practice;

c) operational procedures for steady state and transient conditions;

d) a public awareness program for the life of the Project that:

   i) promotes public awareness of ongoing hazards associated with the Project; and,

   ii) provides contact numbers for the public to report issues and concerns;

e) training requirements for personnel implementing the manual; and,

f) the maintenance and operations records that will be produced during operations, including during the performance of maintenance tasks and routine inspections.

20. Construction Progress Reports

Manitoba Hydro must file with the Board **monthly,** during construction, construction progress reports for the Project that include:

a) a summary of the Project's construction;

b) a summary of the safety, security, or environmental concerns encountered;

c) details of each incident of environmental non-compliance; and,

d) details of the adaptive management applied to achieve resolution of each non-compliance.

21. Issues Tracking

Manitoba Hydro must create and maintain records that chronologically track complaints by Indigenous communities, including complaints raised through the MMTP Monitoring Committee, landowners, and municipal and regional governments relating to the Project, beginning with the commencement of construction and continuing for five years after the commencement of operations. The records must be retained for five years after the commencement of operations. The complaint tracking records must include:

a) the date the complaint was received;

b) the form in which the complaint was received (for example, telephone, mail, email, or other communication methods that may evolve over time);

c) a detailed description of the complaint;

d) the date and summary of all subsequent telephone calls, visits, correspondence, site monitoring/inspections, follow-up reports and other related documentation;

e) updated contact information for all persons involved in the complaint; and,

f) any actions taken or to be taken or an explanation why no further action is required.

Manitoba Hydro must maintain these records for audit purposes and make them available to the Board upon request. Manitoba Hydro must make available to the complainant, upon request, the records related to the specific complaint(s) that the affected party has made to Manitoba Hydro.

22. Crown land Offset Measures Plan

Manitoba Hydro must file with the Board, for approval, **30 days prior to commencing operations**, a Crown Land Offset Measures Plan (the Plan) that outlines how permanent loss of crown lands available for traditional use by Indigenous Peoples resulting from the Project will be offset or compensated for. The Plan must include:

a) a description of site-specific details and maps showing the locations where Crown land is no longer available for traditional use as a result of Project activities at Dorsey Converter Station and the transmission tower locations, as well as any other locations;

b) a list of the offset or compensation measures that will be implemented to address the permanent loss of crown lands identified in a) above;

c) an explanation of the expected effectiveness of each offset measure described in b) for each Indigenous community;

d) the decision-making criteria for selecting specific offset measures that would be used and under what circumstances;

e) a schedule indicating when measures will be implemented and the estimated completion date(s);

f) summary of consultation by Manitoba Hydro with any impacted Indigenous communities and with relevant provincial and federal authorities regarding the Plan; and,

g) this summary must include a description of any issues or concerns raised regarding the plan by Indigenous communities and how Manitoba Hydro has addressed or responded to them.

23. Post Construction Monitoring Reports

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.

24. Compliance Reporting

Manitoba Hydro must file with the Board, **within thirty (30) days after commencing operations,** confirmation, signed by an officer of the company, that the Project was completed and constructed in compliance with all applicable conditions in the Certificate. If compliance with any of the Board's conditions cannot be confirmed, the officer of the company must provide details as to why compliance cannot be confirmed. The filing required by this condition must include a statement confirming that the signatory to the filing is an officer of the company.

25. As-built Drawings

Manitoba Hydro must file with the Board, **within sixty (60) days after commencing operations,** as-built drawings of structures and major equipment identifying the location and

configuration of the new Dorsey IPL, altered Riel IPL, and altered Glenboro IPL facilities, and including:

a) the termination structure at Dorsey substation;

b) transmission structures from Dorsey substation to the international border;

c) existing Riel IPL structures that will be incorporated into the new Dorsey IPL;

d) any transition structures linking the new Dorsey IPL segments with the old Riel IPL segment;

e) Bipole III crossing structures and conductor elevations;

f) configurations and elevations at all locations where the new Dorsey IPL crosses existing high-voltage transmission lines;

g) typical right-of-way cross-sections for both self-supporting and guyed structures; and,

h) right-of-way cross-sections of the structures for the segment through which the new Dorsey IPL runs parallel with the Riel IPL and/or any other high-voltage transmission lines and any other major assets comprising the new Dorsey IPL facilities.

26. Wetland Offset Measures Plan

Manitoba Hydro must file with the Board for approval, **within ninety (90) days of commencing operation of the Project**, a Wetland Offset Measures Plan which outlines how permanent loss to wetlands resulting from the Project will be offset or compensated for. This plan must include:

a) a description of site-specific details and maps showing the locations of permanent wetland loss as a result of Project activities at Dorsey Converter Station and the transmission tower locations, as well as any other locations where wetlands were affected by the Project;

b) an explanation of how wetland function will be measured during the post-construction monitoring program, and any resulting accidental permanent loss to wetlands quantified and reported to the Board as part of Condition 23;

c) a list of the offset or compensation measures that will be implemented to address permanent loss of wetlands as identified in a) and b) above;

d) an explanation of the expected effectiveness of each offset measure described in c) and the relative value of each offset measure towards achieving the offset;

e) the decision-making criteria for selecting specific offset measures and offset ratios that would be used under what circumstances;

f) a schedule indicating when measures will be implemented and estimated completion date(s);

g) evidence and summary of consultation with provincial and federal authorities, any non-governmental expert bodies, and any impacted Indigenous communitiesregarding the plan; and,

h) this summary must include a description of any issues or concerns raised regarding the plan by Indigenous communities, and how Manitoba Hydro has addressed or responded to them.

27. Conductors

Manitoba Hydro shall design and construct the Project in accordance with its application or as otherwise agreed to in its related submissions such that:

a) the transmission towers shall support one set of triple conductor bundles for each of the three phases suspended from insulators;

b) each of the nine sub conductors shall be aluminum conductor steel reinforced (ACSR) type with the following specifications:

i) Type: 1192.55 MCM 45/7 aluminum to steel stranding ACSR, code name "Bunting"

ii) Diameter 33 mm

iii) Bundle spacing: 460 mm

iv) Steel Shield Wire: Size 10 (11 mm) Steel - 7 Strand Grade 1300.

28. Annual Filing Requirements

Manitoba Hydro must file with the Board, **prior to 31 January after commencing Project operation, and by that date on an annual basis thereafter for the life of the Project**:

a) confirmation that Manitoba Hydro is still the owner and operator of the Project;

b) Manitoba Hydro's current contact information, including:

i) corporate headquarters' street and mailing addresses;

ii) phone number;

iii) fax number;

iv) email address;

v) the name and job title of an officer of the company for the Board to serve documents on, as required; and,

vi) the name and job title of a secondary contact at Manitoba Hydro;

c) a filing that complies with the provisions of the Board's General Order MO-036-2012 for Electricity Reliability Standards;

d) an updated commitments tracking table as per Condition 15; and,

e) confirmation that no changes were made to Manitoba Hydro's compliance program, safety manual, or operations and maintenance manual or, if changes have been made, provide a rationale and description of the change(s), if not already provided to the Board.

Issued at Calgary, Alberta on the 18 day of June 2019.

NATIONAL ENERGY BOARD

Original signed by L. George

for
Sheri Young
Secretary of the Board

National Energy Board | Office national de l'énergie

ORDER AO-006-EC-III-16

IN THE MATTER OF the *National Energy Board Act* (NEB Act) and the regulations made thereunder; and,

IN THE MATTER OF the *Canadian Environmental Assessment Act, 2012* (CEAA 2012) and the regulations made thereunder; and,

IN THE MATTER OF an application dated 16 December 2016 by Manitoba Hydro, for a permit pursuant to section 58.11 of the NEB Act (Application) to construct and operate the Manitoba-Minnesota Transmission Project (Project), which includes a 500 kV international power line from the Dorsey Converter Station near Rosser, Manitoba to the border of the United States; and other approvals for related changes pursuant to subsection 45(1) of the NEB Act and conditions of Certificate EC-III-16 and Permit EP-196, filed with the National Energy Board (Board) under File OF-Fac-IPL-Ml80-2015-0l 02.

BEFORE the Board on 20 October 2018.

WHEREAS on 1 September 1977, the Board issued Certificate of Public Convenience and Necessity (CPCN) EC-III-16 to Manitoba Hydro in respect of an international power line (IPL) between Canada and the United States of America pursuant to section 44 of the NEB Act, as it was then;

AND WHEREAS on 12 January 1978, the Board issued Order AO-1-EC-III-16 altering the route of the IPL approved in CPCN EC-III-16;

AND WHEREAS on 19 November 1992, the Board issued Order AO-2-EC-III-16 pursuant to subsection 58.16(2) of the NEB Act, as approved by the Governor in Council by Order in Council No. P.C. 1992-2372, authorizing the Applicant to make certain changes to terminal facilities at Dorsey Station associated with the IPL;

AND WHEREAS on 11 February 2003, the Board issued Order AO-3-EC-III-16 pursuant to subsection 21(2) of the NEB Act, as approved by the Governor in Council by Order in Council No. P.C. 2003-79 dated 30 January 2003, to authorize the Applicant to alter the Dorsey Station facilities and the power transfer notification limits;

…/2

AND WHEREAS on 8 May 2009, the Board issued Order MO-10-2009, approving a deviation to the Dorsey IPL;

AND WHEREAS on 14 June 2010, the Board issued Order AO-4-EC-III-16 pursuant to subsection 21(2) of the NEB Act, as approved by the Governor in Council by Order in Council No. P.C. 2010-745 dated 10 June 2010, authorizing the variation of Conditions 2, 3, 4 and 8 of CPCN EC-III-16;

AND WHEREAS on 22 June 2010, the Board issued an Erratum to Order AO-4-EC-Ill-16 to correct the drawing number of the approved plan and profile;

AND WHEREAS on 12 September 2017, the Board issued Order MO-045-2017, approving alterations to the Dorsey IPL;

AND WHEREAS on 12 February 2018, the Board issued Order AO-5-EC-III-16 pursuant to subsection 21(2) of the NEB Act, as approved by Governor in Council by Order in Council No. P.C. 2018-60 dated 2 February 2018, varying the Certificate to reflect the modifications relating to a deviation to the Dorsey IPL;

AND WHEREAS the Application for the Project included a request for authorization pursuant to condition 8 of the amended CPCN EC-III-16 to relocate a segment of the Riel IPL and, pursuant to subsection 45(1) of the NEB Act, authorization for the plan, profile and book of reference showing the proposed alteration;

AND WHEREAS the Board held a public hearing in respect of the Project Application pursuant to Hearing Order EH-001-2017 in Winnipeg, Manitoba on 4-8 June 2018 and 18-22 June 2018;

AND WHEREAS the Board has had regard to all considerations that are directly related to the Application and relevant, pursuant to Part III.1 of the NEB Act, and conducted an environmental assessment of the Project pursuant to CEAA 2012;

AND WHEREAS the Board has examined the Application and all subsequent submissions made by Manitoba Hydro and the participants in the EH-001-2017 proceeding and considers it to be in the public interest to grant the relief set out in this Amending Order;

AND WHEREAS the Board has decided, taking into account Manitoba Hydro's mitigation measures and those set out in the conditions to Certificate EC-059, that the Project is not likely to cause significant adverse environmental effects;

AND WHEREAS the Board's decisions on the Application, and reasons, are set out in the EH-001-2017 National Energy Board Reasons for Decision;

AND WHEREAS the Board issued Certificate EC-059 for the Dorsey IPL as part of the Manitoba-Minnesota Transmission Project, dated the 18 June 2019, as amended and approved by the Governor in Council by Order in Council No. P.C.2019-784 dated the 13 June 2019;

AND WHEREAS the Governor in Council by Order in Council No. P.C. 2019-784 dated the 13 June 2019 has approved the issuance of this amendment to Certificate EC-III-16;

IT IS ORDERED THAT, pursuant to condition 8 of the amended Certificate EC-III-16, Manitoba Hydro is authorized to relocate a segment of the Riel IPL as described in the Application for the Project;

IT IS FURTHER ORDERED THAT the Plan and Profile known as:

Drawing Number	Date Issued
1-36070-DD-10120-0002	25 November 2016
1-36070-DE-10220-0001	25 November 2016
1-36010-DE-10220-0006	25 November 2016

and related lines in the Book of Reference, all in the Province of Manitoba are hereby approved;

IT IS FURTHER ORDERED THAT condition 4 of Order AO-4-EC-III-16 is revoked and replaced with the following condition:

4. The total length of the international power line shall be approximately 159.99 kilometres.

IT IS FURTHER ORDERED THAT this Order is subject to the following condition:

1. Manitoba Hydro must comply with all of the conditions in Certificate EC-059, unless the Board otherwise directs.

2. Manitoba Hydro must file with the Board, **within thirty (30) days after commencing operations**, confirmation, signed by an officer of the company, that the relocation was completed and constructed in compliance with all applicable conditions in Certificate EC-059. If compliance with any of the Board's conditions cannot be confirmed, the officer of the company must provide details as to why compliance cannot be confirmed. The filing required by this condition must include a statement confirming that the signatory to the filing is an officer of the company.

Issued at Calgary, Alberta on the 18 day of June 2019.

NATIONAL ENERGY BOARD

Original signed by L. George

for
Sheri Young
Secretary of the Board

ORDER MO-074-2018

IN THE MATTER OF the *National Energy Board Act* (NEB Act) and the regulations made thereunder; and,

IN THE MATTER OF the *Canadian Environmental Assessment Act, 2012* (CEAA 2012) and the regulations made thereunder; and,

IN THE MATTER OF an application dated 16 December 2016 by Manitoba Hydro, for a permit pursuant to section 58.11 of the NEB Act (Application) to construct and operate the Manitoba Minnesota Transmission Project (Project), which includes a 500 kV international power line from the Dorsey Converter Station near Rosser, Manitoba to the border of the United States; and other approvals for related changes pursuant to subsection 45(1) of the NEB Act and conditions of Certificate EC-III-16 and Permit EP-196, filed with the National Energy Board (Board) under File OF-Fac-IPL-Ml80-2015-0l 02.

BEFORE the Board on 20 October 2018.

WHEREAS on 5 March 2002, the Board issued Electricity Permit EP-196 to Manitoba Hydro for the construction and operation of an international power line and ancillary facilities between Glenboro station in Southern Manitoba and extending to the international boundary near Killarney, Manitoba;

AND WHEREAS on 29 November 2012, the Board issued Order AO-001-EP-196 for Manitoba Hydro to comply with mandatory and enforceable transmission reliability standards;

AND WHEREAS the Application for the Project included a request for authorization pursuant to condition 13 of the amended Permit EP-196 for the addition of two phase-shifting transformers to the terminal facilities of the IPL and relocating a segment of the IPL;

AND WHEREAS the Board held a public hearing in respect of the Project Application pursuant to Hearing Order EH-001-2017 in Winnipeg, Manitoba on 4-8 June 2018 and 18-22 June 2018;

…/2

AND WHEREAS the Board has had regard to all considerations that are directly related to the Application and relevant, pursuant to Part III.1 of the NEB Act, and conducted an environmental assessment of the Project pursuant to CEAA 2012;

AND WHEREAS the Board has examined the Application and all subsequent submissions made by Manitoba Hydro and the participants in the EH-001-2017 proceeding and considers it to be in the public interest to grant the relief set out in this Miscellaneous Order;

AND WHEREAS the Board has decided, taking into account Manitoba Hydro's mitigation measures and those set out in the conditions to Certificate EC-059, that the Project is not likely to cause significant adverse environmental effects;

AND WHEREAS the Board's decisions on the Application, and reasons, are set out in the EH-001-2017 National Energy Board Reasons for Decision;

AND WHEREAS the Board issued Certificate EC-059 for the Dorsey IPL as part of the Manitoba-Minnesota Transmission Project, dated 18 June 2019, as amended and approved by the Governor in Council by Order in Council No. P.C. 2019-784 dated the 13 June 2019;

IT IS ORDERED THAT, pursuant to condition 13 of the amended Permit EP-196, Manitoba Hydro is authorized for the addition of two phase-shifting transformers to the terminal facilities of the IPL and to relocate a segment of the Glenboro IPL as described in the Application for the Project;

IT IS FURTHER ORDERED THAT this Order is subject to the following conditions:

1. Manitoba Hydro must comply with all of the conditions in Certificate EC-059, unless the Board otherwise directs.
2. Manitoba Hydro must file with the Board, **within thirty (30) days after commencing operations**, confirmation, signed by an officer of the company, that the alterations were completed and constructed in compliance with all applicable conditions in Certificate EC-059. If compliance with any of the Board's conditions cannot be confirmed, the officer of the company must provide details as to why compliance cannot be confirmed. The filing required by this condition must include a statement confirming that the signatory to the filing is an officer of the company.

Issued at Calgary, Alberta on the 18 day of June 2019.

NATIONAL ENERGY BOARD

Original signed by L. George

for
Sheri Young
Secretary of the Board

Provincial Environment Act Licence

This page intentionally left blank

THE ENVIRONMENT ACT
LOI SUR L'ENVIRONNEMENT

LICENCE

Manitoba

Licence No. / Licence n° 3288

Issue Date / Date de délivrance April 4, 2019

In accordance with The Environment Act (C.C.S.M. c. E125) / Conformément à la Loi sur l'environnement (C.P.L.M. c. E125)

Pursuant to Section 12(1) / Conformément au Paragraphe 12(1)

THIS LICENCE IS ISSUED TO : / CETTE LICENCE EST DONNÉE À :

MANITOBA HYDRO;
"the Licencee"

for the construction, operation, and decommissioning of the Manitoba-Minnesota Transmission Project (Dorsey international power line), which includes a 213 km long, 500 kilovolt alternating current, international power line from the Dorsey Converter Station (located near Rosser, Manitoba) to the United States border crossing near Piney, Manitoba, and modifications to the existing Dorsey Converter Station, the existing Riel international power line and the Riel Converter Station (located near the intersection of Provincial Trunk Highways 101 and 15), and the existing Glenboro international power line and the Glenboro Station (located south of Glenboro, Manitoba), in accordance with the Proposal filed under The Environment Act dated November 21, 2014, the Environmental Impact Statement (EIS) dated September 2015, and the response to information requests dated April 29, 2016, in consideration of the September 2017 Clean Environment Commission Report on Public Hearings, and subject to the following specifications, limits, terms and conditions:

DEFINITIONS

In this Licence:

"affected area" means a geographical area, excluding the property of the Development;

"cultural resource" means an object, site, or location of a traditional or cultural practice that is the focus of traditional or contemporary use and is of continuing importance to people;

"Development" means any project, industry, operation or activity, or any alteration or expansion of any project, industry, operation or activity which causes or is likely to cause

a) the release of any pollutant into the environment, or
b) an effect on any unique, rare, or endangered feature of the environment, or

c) the creation of by-products, residual or waste products not regulated by The Dangerous Goods Handling and Transportation Act, or
d) a substantial utilization or alteration of any natural resource in such a way as to pre-empt or interfere with the use or potential use of that resource for any other purpose, or
e) a substantial utilization or alteration of any natural resource in such a way as to have an adverse impact on another resource, or
f) the utilization of a technology that is concerned with resource utilization and that may induce environmental damage, or
g) a significant effect on the environment or will likely lead to a further development which is likely to have a significant effect on the environment, or
h) a significant effect on the social, economic, environmental health and cultural conditions that influence the lives of people or a community in so far as they are caused by environmental effects.

(The Environment Act E125)

"Director" means an employee so designated pursuant to The Environment Act;

"Environmental Approvals Branch" means the Environmental Approvals Branch of Manitoba Sustainable Development, or any future branch responsible for issuing licences under The Environment Act;

"Environment Officer" means an employee so designated pursuant to The Environment Act;

"Integrated Resource Management Team (IRMT)" means the regional Integrated Resource Management Team of Manitoba Sustainable Development, or equivalent body, which is organized to review applications and address issues related to the management of natural resources;

"noise nuisance" means an unwanted sound, in an affected area, which is annoying, troublesome, or disagreeable to a person:

a) residing in an affected area;
b) working in an affected area; or
c) present at a location in an affected area which is normally open to members of the public;

if the unwanted sound

d) is the subject of at least 5 written complaints, received by the Director in a form satisfactory to the Director and within a 90 day period, from 5 different persons falling within clauses (a), (b) or (c), who do not live in the same household; or
e) is the subject of at least one written complaint, received by the Director in a form satisfactory to the Director, from a person falling within clauses (a), (b) or (c) and the Director is of the opinion that if the

unwanted sound had occurred in a more densely populated area there would have been at least 5 written complaints received within a 90 day period from 5 different persons and who do not live in the same household;

"Region" means the geographic areas of the Province of Manitoba in which the Department of Sustainable Development has been divided;

"riparian area" means an area of land on the banks or in the vicinity of a waterbody, which due to the presence of water supports, or in the absence of human intervention would naturally support, an ecosystem that is distinctly different from that of adjacent upland areas (The Water Protection Act W65);

"slash" means branches and other woody debris that result from forest clearing;

"transmission line right-of-way" means the corridors for the transmission lines, as defined and described in the EIS;

"waterbody" means any body of flowing or standing water, whether naturally or artificially created, and whether the flow or presence of water is continuous, intermittent or occurs only during a flood, including but not limited to a lake, river, creek, stream, and wetland (slough, marsh, swamp, etc.), including ice on any of them (The Water Protection Act W65); and

"wetland" means

a) a marsh, bog, fen, swamp or ponded shallow water, and
b) low areas of wet or water-logged soils that are periodically inundated by standing water and that are able to support aquatic vegetation and biological activities adapted to the wet environment in normal conditions.

GENERAL TERMS AND CONDITIONS

This Section of the Licence contains requirements intended to provide guidance to the Licencee in implementing practices to ensure that the environment is maintained in such a manner as to sustain a high quality of life, including social and economic development, recreation and leisure for present and future Manitobans.

Future Sampling

1. The Licencee shall, in addition to any of the specifications, limits, terms and conditions specified in this Licence, upon the request of the Director:
   a) sample, monitor, analyse or investigate specific areas of concern regarding any segment, component or aspect of the Development for such duration and at such frequencies as may be specified;

b) determine the environmental impact associated from the Development;
c) conduct specific investigations in response to the data gathered during environmental monitoring programs; and
d) provide the Director, within such time as may be specified, with such reports, drawings, specifications, analytical data, descriptions of sampling and other information as may from time to time be requested.

Reporting Format

2. The Licencee shall submit all information required to be provided to the Director or Environment Officer under this Licence, in written and electronic format, in such form (including number of copies) and of such content as may be required by the Director or Environment Officer, and each submission shall be clearly labelled with the Licence Number and Client File Number associated with this Licence.

Approvals and Permits

3. The Licencee shall, prior to construction on Crown land, apply for and obtain the appropriate land tenure allocations in accordance with the Crown Lands Act from the Real Estate Services Division of the Department of Finance.

4. The Licencee shall, prior to construction of the Development on Crown Land, obtain a Crown Lands Work Permit from Manitoba Sustainable Development, Parks and Resource Protection, Eastern Region, and comply with the conditions of the permit.

Compliance

5. The Licencee shall adhere to the commitments made in the Environmental Impact Statement (EIS), supporting information filed in association with the EIS, and any future approved alterations during construction, operation, and decommissioning of the Development.

6. The Licencee shall, during construction of the Dorsey international power line component of the Development, employ qualified environmental inspectors to monitor the work on a daily basis to ensure that all the environmental practices outlined in the EIS, supporting information, and the plans submitted pursuant to this licence are carried out.

7. The Licencee shall, prior to construction of the Development, arrange a meeting with the Manitoba Hydro construction project manager(s), the Manitoba Sustainable Development, Parks and Resource Protection, Eastern Region Integrated Resource Management Team (Eastern Region IRMT), and the Environment Officer responsible for the administration of this Licence to review construction related matters.

8. The Licencee shall, during construction of the Development, arrange quarterly meetings with the Eastern Region IRMT to discuss construction, environmental protection, and emergency response issues.

9. The Licencee shall, during construction of the Development, submit monthly reports regarding construction, environmental protection, and emergency response issues to the Director and the Eastern Region IRMT.

SPECIFICATIONS, LIMITS, TERMS AND CONDITIONS

Environmental Protection Plans

10. The Licencee shall submit, for approval of the Director of the Environmental Approvals Branch, a construction Environmental Protection Plan prior to construction, and an operations Environmental Protection Plan at least 90 days prior to in-service of the Development. The plans shall describe the approach to be used by the Licencee to ensure that mitigative measures are applied systematically, and in a manner consistent with the commitments made in the EIS and supporting information, during construction or operation of the Development. The plans shall:
    a) include information obtained from Indigenous communities prior to and during construction and operation of the Development regarding the locations of specifically identified sites used for the exercise of Aboriginal rights-based activities in the vicinity of the project (such as plant harvesting, ceremonial practices, hunting, and trapping);
    b) include mitigation measures and/or buffer zones for the specific sites identified to minimize impacts to the sites from construction and operation activities;
    c) for specifically identified plant harvesting sites, identify measures to minimize impacts to the sites by implementing mitigation measure such as flagging of the area, buffers zones, selective clearing, construction matting, and non-chemical vegetation management; and
    d) include mitigation measures to reduce adverse effects on wildlife and wildlife habitat (e.g., timing windows, setbacks, and buffers).

11. The Licencee shall continue to engage with Indigenous communities during construction and operation of the Development to provide opportunities for the identification of culturally sensitive sites to inform the Environmental Protection Program as described in the EIS.

12. The Licencee shall, prior to construction of the Development, submit management plans addressing the following topics for review by the Eastern Region IRMT and approval by the Director of the Environmental Approvals Branch:
    a) erosion protection and sediment control;
    b) rehabilitation and invasive species management, and
    c) waste and recycling.

13. The Licencee shall make available to the public all environmental management plans related to the Development that are developed by contractors.

Communication Plan

14. The Licencee shall submit a communication plan for the Development to the Director of the Environmental Approvals Branch, prior to construction. The plan shall describe how the Licencee will communicate to individuals and communities with an interest in the Development regarding information about activities, such as commencement and completion of construction, clearing, blasting, and vegetation management.

Climate Change Considerations

15. The Licencee shall consider greenhouse gas emissions throughout the supply chain in its selection process for suppliers and contractors for the Development.

Notification

16. The Licencee shall, not less than two weeks prior to beginning construction of the Development, provide notification to the Eastern Region IRMT and the Environment Officer responsible for the administration of this Licence of the intended start date of construction and the name of the contractor responsible for the construction.

17. The Licencee shall, prior to construction, provide a copy of this Licence to the contractor and subcontractor(s) involved in the Development.

18. The Licencee shall notify the Eastern Region IRMT and the Environment Officer responsible for the administration of this Licence, no less than one week prior to the completion of construction of the Development, to allow for a final inspection.

Culture and Heritage Resources

19. The Licencee shall provide an opportunity for participation of Indigenous communities in culture and heritage resource surveys conducted in association with the Development and to be contacted should culture and heritage resources be discovered during construction of the Development.

20. The Licencee shall comply with the requirements of The Heritage Resources Act and, if heritage resources are encountered during the construction of the Development, suspend construction and immediately notify the Historic Resources Branch.

21. The Licencee shall, prior to construction, submit a Cultural and Heritage Resources Protection Plan for the Development, as described in the EIS, for approval of the Director of the Environmental Approvals Branch.

22. The Licencee shall provide cultural and heritage resource awareness training for staff working in construction areas within the Development. The training shall include recognizing cultural sites and management of any resources encountered.

Access Management

23. The Licencee shall, prior to construction of the transmission line component of the Development, submit a construction access management plan for review by the Eastern Region IRMT and approval of the Director of the Environmental Approvals Branch. The construction access management plan shall include, but not be limited to, the anticipated types and locations of roads, trails, and water crossings required to access the Dorsey international power line right-of way for construction purposes and a plan for review and approval of unanticipated new access trails and by-pass trails along the right-of-way. The Licencee shall ensure construction access is not located in specifically identified sites used for the exercise of Aboriginal rights-based activities in the vicinity of the project.

24. The Licencee shall, prior to completion of construction of the transmission line component of the Development, submit an operations access management plan for Crown lands for review by the Eastern Region IRMT and approval of the Director of the Environmental Approvals Branch. If changes to the plan are proposed, they shall be reviewed with the Eastern Region IRMT and an updated plan shall be submitted for approval of the Director of the Environmental Approvals Branch. The plan shall include, but not be limited to:
    a) the location of roads, trails, and water crossings required to access the Dorsey international power line right-of way for maintenance and ongoing operations purposes;
    b) the identification of roads, trails, and water crossings to be decommissioned at the completion of construction, and the methods and timeframes for conducting decommissioning and rehabilitation works; and
    c) access methods to be used for managing vegetation along the Dorsey international power line right-of-way.

25. The Licencee shall inform all private landowners whose property is crossed by the Dorsey international power line new right-of way in forested areas that when a specific, related access issue has been identified, measures to limit access to their property from the right-of way (e.g. fencing with a gate and signage), will be included in an agreement with Manitoba Hydro and supplied and installed at the Licencee's expense.

26. The Licencee shall annually inspect the Dorsey international power line right-of-way for the effectiveness of access controls implemented in association with the Development, until otherwise directed by the Director of the Environmental Approvals Branch. Annual reports on the results of the inspections shall be submitted to the Director of the Environmental Approvals Branch. Where access controls are not effective, the Licencee shall work with either the private landowners or the Eastern Region IRMT to address the issue.

Construction Camps

27. The Licencee shall, prior to construction of the Development, obtain approval from the Eastern Region IRMT for mobile construction camps located on Crown land and not within the transmission line right-of-way.

Clearing During Construction

28. The Licencee shall, prior to construction of the Development, submit a plan for clearing of the transmission line right-of-way for approval of the Director of the Environmental Approvals Branch. The plan shall:
    a) describe the clearing methods to be used; and
    b) describe opportunities for retention of low-growth vegetation along the transmission line right-of-way, to the extent possible, without impeding maintenance activities or vegetation clearance requirements.

29. The Licencee shall, prior to construction of the Development, consult with the Regional Forester of the Forestry and Peatlands Branch related to the clearing of timber in association with the Development. Where an opportunity exists, a plan for timber operations may be established and timber shall be harvested and delivered to an approved destination identified by a scaling plan. In the event that no market exists, a timber valuation (Timber Damage Appraisal) shall be applied.

30. The Licencee shall inform Indigenous communities that firewood cleared from the right-of-way on Crown land will be stockpiled for public access in the vicinity of the Development.

31. The Licencee shall minimize the burning of slash generated during clearing of the Development where smoke may affect residences. In these areas, the Licencee shall dispose of slash using environmentally suitable methods such as chipping and mulching where feasible.

Mineral Licks

32. The Licencee shall, prior to clearing of the Development, conduct a survey in the spring and/or early summer to identify mineral licks within the transmission line right-of-way and surrounding area. All mineral lick locations shall be reported to the Eastern Region IRMT. A minimum setback distance of 120 metres shall be maintained between construction activities and mineral licks, unless otherwise approved by the Eastern Region IRMT.

Water Crossings

33. The Licencee shall, during construction and operation of the Development, manage activities within riparian areas as described in the EIS and supporting information.

34. The Licencee shall, prior to initiating construction of any portion of the Development across the Red River Floodway at the control structure, enter into a Memorandum of Agreement with the Minister of Infrastructure, with terms and conditions governing the construction and operation of the portion of the Development at this location.

Wetlands

35. The Licencee shall carry out activities associated with the Development that may disturb wetlands in the Caliento, Sundown, and Piney Bogs only under frozen ground conditions. Maintenance activities within these bogs shall be conducted under frozen ground conditions unless required to ensure the safe and reliable operation of the Development, in which case mitigation measures to reduce impacts to the bogs shall be implemented.

36. The Licencee shall, within three months of the completion of construction of the Development, submit a plan for approval of the Director of the Environmental Approvals Branch to ensure that there is no net loss of wetland benefits related to Class 3, 4, and 5 wetlands (as defined by the Stewart & Kantrud Classification System) that are altered or destroyed during construction of the Development.

Golden-Winged Warbler Habitat Management Plan

37. The Licencee shall implement the plan titled "Right-of-Way Habitat Management Plan for Managing Critical Golden-winged Warbler Habitat during Construction and Operation of the Manitoba-Minnesota Transmission Project" submitted as supporting information on April 29, 2016, or any subsequent versions approved by the Director of the Environmental Approvals Branch.

Invasive Species

38. The Licencee shall, during construction and operation of the Development, prevent the introduction and spread of foreign aquatic biota. Equipment shall be cleaned in accordance with the requirements of Manitoba Regulation 173/2015 respecting Aquatic Invasive Species, or any future amendment thereof.

39. The Licencee shall, prior to construction of the Development, submit a detailed biosecurity plan for approval of the Director of the Environmental Approvals Branch. The plan shall describe measures to be implemented to control the spread of invasive species as well as the spread of soil borne diseases from field to field in agricultural areas during construction of the Development.

Pesticide Application

40. The Licencee shall adhere to Pesticides Regulation 94/88 R, or any future amendment thereof, for the storage, handling and application of pesticides in conjunction with the Development.

Petroleum Storage and Handling

41. The Licencee shall locate fuel storage and equipment servicing areas established for the construction and operation of the Development a minimum distance of 100 metres from any waterbody, and shall comply with the requirements of Manitoba Regulation 188/2001 respecting Storage and Handling of Petroleum Products and Allied Products, or any future amendment thereof.

42. The Licencee shall, during construction and operation of the Development, operate, maintain, and store all materials and equipment in a manner that prevents any deleterious substances including fuel, oil, grease, hydraulic fluid, coolant, and other similar substances from contaminating soil or entering any waterbody. Emergency spill kits for both land and in-water use shall be readily available on site during construction.

Solid Waste Disposal

43. The Licencee shall dispose of all solid waste generated at the Development, which is not recycled, only to a waste disposal ground operating under the authority of a permit issued pursuant to Manitoba Regulation 37/2016 respecting Waste Management Facilities or any future amendment thereof, or a Licence issued pursuant to The Environment Act.

Onsite Wastewater Disposal

44. The Licencee shall, during construction of the Development, dispose of all sewage and septage from on-site sanitary facilities in accordance with the Onsite Wastewater Management Systems Regulation 83/2003, or any future amendment thereof.

Spill Response

45. The Licencee shall, in the case of physical or mechanical equipment breakdown or process upset where such breakdown or process upset results or may result in the release of a pollutant in an amount or concentration, or at a level or rate of release, that causes or may cause a significant adverse effect, immediately report the event by calling the 24-hour environmental accident reporting line at 204-944-4888 (toll-free 1-855-944-4888). The report shall indicate the nature of the event, the time and estimated duration of the event and the reason for the event.

46. The Licencee shall, following the reporting of an event pursuant to Clause 45,
    a) identify the repairs required to the mechanical equipment;

b) undertake all repairs to minimize unauthorized discharges of a pollutant;
c) complete the repairs in accordance with any written instructions of the Director; and
d) submit a report to the Director about the causes of breakdown and measures taken, within one week of the repairs being done.

Erosion Control

47. The Licencee shall, during construction and operation of the Development, take all appropriate measures to prevent erosion and the deposition of sediment into any waterbody.

Noise Nuisance

48. The Licencee shall not cause or permit a noise nuisance to be created as a result of the construction, operation, or alteration of the Development, and shall take such steps as the Director may require to eliminate or mitigate a noise nuisance.

Vegetation Management

49. The Licencee shall, within six months of the completion of construction of the Development, submit for review by the Eastern Region IRMT and approval of the Director of the Environmental Approvals Branch, a plan for the management of vegetation along the Dorsey international power line right-of-way. The plan shall describe the methods to be used for vegetation control and for communication to the public and Indigenous communities during operation of the Development.

50. The Licencee shall conduct reviews, and report to the Director of the Environmental Approvals Branch, on the results of integrated vegetation management practices implemented on the Dorsey international power line right-of-way of the Development 5 and 10 years after the completion of construction and as determined by the Director thereafter.

51. The Licencee shall offer private landowners compensation to plant shrubs or trees outside of the Dorsey international power line right-of-way to replace shelterbelts removed from their property in relation to the Development.

52. The Licencee shall provide notification to local Indigenous communities a minimum of 30 days prior to the application of herbicides within the transmission right-of-way of the Development.

Monitoring

53. The Licencee shall, prior to construction, submit a monitoring plan for the Development for the approval of the Director of the Environmental Approvals

Branch. The plan shall describe monitoring programs to be undertaken in relation to the Development, including proposed programs for:

a) collection of baseline information;
b) pre-construction surveys of the eastern tiger salamander and mottled duskywing butterfly obligate plant host, in areas of likely habitat;
c) inclusion of the least bittern and the short-eared owl in surveys;
d) pre-construction surveys for traditional use plant species and invasive plant species in areas of the Development where information on these plant species is insufficient; and
e) monitoring of peregrine falcon interactions with the Dorsey international power line in the vicinity of the Parkland Mews breeding site and reporting of mortalities.

54. The Licencee shall consult annually with the Wildlife and Fisheries Branch of Manitoba Sustainable Development on the progress of the monitoring programs approved pursuant to Clause 53 of this Licence, and on any proposed adjustments or amendments to the programs.

55. The Licencee shall establish and support a monitoring advisory group composed of nominees of First Nations communities and the Manitoba Metis Federation, which will be invited to provide input into monitoring and management of the Dorsey international power line right-of-way of the Development for the duration of the monitoring programs approved pursuant to Clause 53 of this Licence.

56. 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.

57. The Licencee shall provide the data from monitoring programs approved pursuant to Clause 53 of this Licence to the Wildlife and Fisheries Branch of Manitoba Sustainable Development. The data provided shall include sufficient detail to allow for its assessment.

58. The Licencee shall implement additional mitigation measures that are requested by the Director of the Environmental Approvals Branch to address unanticipated environmental effects of the Development identified by the monitoring programs approved pursuant to Clause 53 of this Licence.

59. The Licencee shall implement changes to monitoring programs approved by the Director of the Environmental Approvals Branch pursuant to Clause 56 g) of this licence.

Reporting

60. The Licencee shall maintain a frequently updated, project-related website where monitoring advisory group minutes and reports (when approved by the group), reports on monitoring and assessment of mitigation, and other material relevant to the Development will be posted.

Decommissioning

61. The Licencee shall decommission temporary infrastructure associated with the Development on Crown land to the satisfaction of the Eastern Region IRMT.

62. The Licencee shall, prior to decommissioning of the Development, submit for approval of the Director of the Environmental Approvals Branch, a decommissioning and rehabilitation plan for the Development.

Implementation of Plans

63. The Licencee shall implement the plans submitted and approved pursuant to this licence.

Respecting Alterations to the Development

64. The Licencee shall obtain written approval from the Director of the Environmental Approvals Branch for any proposed alteration to the Development before proceeding with the alteration.

REVIEW AND REVOCATION

A. If, in the opinion of the Director, the Licencee has exceeded or is exceeding or has or is failing to meet the specifications, limits, terms, or conditions set out in this Licence, the Director may, temporarily or permanently, revoke this Licence.

B. If construction of the development has not commenced within three years of the date of this Licence, the Licence is revoked.

C. If, in the opinion of the Director, new evidence warrants a change in the specifications, limits, terms or conditions of this Licence, the Director may require the filing of a new proposal pursuant to Section 11 of The Environment Act.

"Original signed by"

Rochelle Squires
Minister of Sustainable Development

File: 5750.00

Appendix D:
Mitigation Sheets

This page intentionally left blank

LIST OF MITIGATION SHEETS

1. Access - Environmental Mitigation Measures

Component Description

Access is required for new or existing rights-of-way (ROW) to allow equipment and personnel onto transmission line ROWs for construction and maintenance activities. Access refers to routes of entry onto existing or new ROWs. Clearing, grading and other measures to create entry on to a ROW may be required to develop new access route or enhance existing access routes. Existing roads, trails or cutlines can all be used as potential access routes. The use of existing access routes is preferred for all work activities. New access routes are treated like new ROW in terms of environmental protection.

Environmental Protection Objective

The environmental mitigation measures are designed to minimize creation of new access and prevent ground, habitat, and wildlife disturbance where existing trails need improvement or new access routes created.

Internal ID	*Mitigation*
Regulatory	
1.00	When required, Manitoba Conservation and Climate (MCC) work permits will be obtained prior to the commencement of the project, this could take months so plan accordingly.
1.01	Contact the Line Inspector to obtain all necessary MCC and Manitoba Infrastructure (MI) permits, property agreements, right-of-way easements, and local stakeholder concerns, prior to project start-up.
1.02	All constructed access points onto MI roadways (Provincial Roads or Provincial Trunk Highways) will require a permit from MI.
1.03	Heavy equipment will not be allowed access to MI roadways without the appropriate protection and permits.
1.04	All works undertaken within the MI right-of-way (ROW) will adhere to the MI traffic control policies.
Access	
1.05	Where an access management plan hasn't been created, use existing roads, trails, or cut lines. Permission to use existing resource roads (i.e., forestry roads) must be obtained.
1.06	Use existing roads and trails wherever possible. MCC must approve a temporary route before it is cleared. Snow should be compacted and leveled rather than pushing it and organic material aside. Avoid pushing debris and felled trees into standing timber. Consult a Transmission Line Maintenance (TLM) Environmental Specialist for further direction.
1.07	On Agricultural Lands, use existing access where possible. All fences and gates are to be left in an "as-found" condition re-closed upon entering or exiting fence lines.

Internal ID	Mitigation
1.08	If a prospective access road or trail is located off easement and on private land, a private land agreement must be submitted to Manitoba Hydro (MH) for approval prior to any access use occurring.
Methods	
1.09	Access roads and trails will be cleared to a minimum length and width to accommodate the safe movement of required equipment.
1.10	Only water and approved dust suppression products will be used to control dust on access roads where required. Oil or petroleum products will not be used.
1.11	Rock utilized for access road construction must not have acid or alkali generating properties unless mitigated for.
1.12	The work site must be kept tidy at all times. Waste must be collected for proper disposal. All burning and slash disposal must be carried out as stipulated in the Work Permits.
1.13	Travel on Tundra, permafrost, and areas of high water content and organic soils is restricted to frozen conditions. Avoid excavations of any kind in Permafrost.
Siting-Sensitive	
1.14	Bypass trails, sensitive sites and buffer areas will be clearly marked prior to clearing, to identify that prescribed selective clearing is to occur (e.g.: as per map sheets).
1.15	If sensitive sites or areas of concern are found during clearing of a temporary access route, the Field Supervisor must be notified. New sensitive sites might include: • heritage resource sites, rare or medicinal plant areas, trees containing large stick nests, active dens or burrows.
1.16	If sensitive sites (such as heritage sites, rare plants, trees containing large stick nests, active dens or burrows) or areas of concern are found, contact the Line Inspector and/or a TLM Environmental Specialist.
1.17	Helicopter landing pads should be located within the right-of-way as much as possible and away from sensitive sites.
Siting	
1.18	Avoid wetland areas if possible. 30 m management buffers should be maintained around wetlands and riparian zones.
1.19	Approach grades to waterbodies will be minimized to limit disturbance to riparian areas.
1.20	For access roads and trails that use or cross MI roadways, care will be taken to ensure excessive amounts of material are not tracked onto the roadway, with site personnel being responsible for cleanup.
1.21	Any temporary constructed access and associated debris within an MI right of way will need to be removed seasonally and once the project is completed.
Riparian Habitat/Stream	
1.22	Surface water runoff will be directed away from disturbed and erosion prone areas but not directly into waterbodies.
1.23	Stream crossings must be at designated sites only. Where permanent bridges, culverts or ford crossings are needed, they must be approved by Manitoba Conservation and Climate (MCC) and specific Work Permits for their construction must be obtained. Trees that fall in the water must be removed by hand. The debris that results from clearing must be piled above the high water mark.
1.24	Ice crossings will be constructed and maintained as found in ice thickness chart in

Internal ID	*Mitigation*
	Appendix. Ice thickness must be checked regularly and thickness in cm and date posted.
1.25	Ice bridges should be located where winter stream flow is slow, where there is minimum approach grade and shortest crossing route. Construct using only snow, ice and de-limbed logs, or by freezing down the waterway. Chain the logs together to facilitate removal. No tree limbs or soil can be used. No disturbance of the stream banks should occur. The ice bridge must be removed or broken up (V-shaped notch) before spring thaw. Please review work permits for further instructions.
Vegetation Management	
1.26	Vegetation control along access roads and trails will be in accordance with Rehabilitation and Invasive Species Management Plan.
Soil Management	
1.27	Access roads and trails will be provided with erosion and sediment control measures in accordance with the Erosion and Sediment Control Plan.
1.28	Disturbance to soil should be minimized during construction of access roads. Snow should be compacted and leveled rather than pushing it and organic material aside.
1.29	During winter work activities, where necessary (i.e., unfrozen wetlands, creeks), equipment will be wide-tracked or equipped with low ground pressure tires to minimize rutting and limit damage and compaction to surface soils. If wet conditions exist the use of construction matting/temporary bridge is also permitted.
Signage	
1.30	Access road signage indicating road or trail number as per signage standard will need to be installed and maintained.
Decommissioning	
1.31	Access roads and trails no longer required will be decommissioned and rehabilitated in accordance with the Rehabilitation and Invasive Species Management Plan.
1.32	When access routes are no longer needed, they should be rehabilitated. If an access route is required for use in the future, it should be left in stable condition. Steps should be taken to limit public access to these routes.
Non-mitigation	
OMLM11-1\1.33	Review any applicable Environment Act licenses or existing Environmental Protection Plans that are applicable to the transmission line being worked on (see Appendices).
OMLM11-3\1.34	Tailboard meetings shall review and mitigate for environmental concerns.
OMLM11-12\1.35	In urban areas, all municipal and local by-laws shall be respected. Review work activities with local authorities. Mitigate impacts to infrastructure, trees, parks and landscaped areas.

Photos

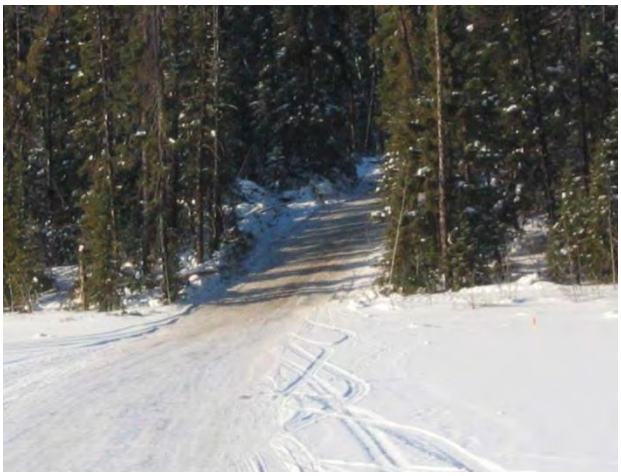

Photo 1: Access trail avoiding steep embankment at a river crossing.

Photo 2: Aerial view of access trail.

Photo 3: An Environmentally Sensitive Site properly signed along an access trail.

Photo 4: An access trail constructed on frozen ground to minimize ground disturbance and rutting.

2. Agricultural Areas - Environmental Mitigation Measures

Application

In agricultural areas there is potential to spread disease, pests and invasive plant species to agricultural land and livestock operations. Soil containing pathogens or weed seeds attached to vehicles, equipment and people are easily transferred from farm to farm without appropriate mitigation. Agricultural biosecurity is essential where equipment or personnel are moving from field to field as part of construction or maintenance activities. All Manitoba Hydro (MH) personnel, contractors and consultants must adhere to the Agricultural Biosecurity Standard Operating Procedure (SOP).

Environmental Protection Objective

To prevent the introduction and spread of disease, pests, and invasive species in agricultural land and livestock operations in Manitoba.

ID	*Mitigation*
Access	
EC-1.02/2.00	Any necessary access on agricultural lands will be discussed in advance with the landowner.
OM16-2/2.01	Existing access will be utilized where possible. Any necessary access on agricultural lands should be discussed with, and approved by the landowner. Vehicular travel should be kept to a minimum.
EC-1.07/2.02	Required travel off existing roads will be minimized and restricted to previously designated and approved routes.
EC-1.08/2.03	Vehicle and equipment travel on agricultural lands will follow existing roads, trails and paths to the extent possible.
EC-1.09/2.04	Where access to agricultural land is necessary the Transmission Agricultural Biosecurity SOP must be followed.
Regulatory	
EC-1.10/2.05	When work activities take place through agricultural lands, drainage patterns are not to be altered; any anticipated diversions of surface water will require authorization under The Water Rights Act. This applies to creating new drainage, blocking natural drainage or diverting flows around a site.
OM16-1/2.06	All licenses, permits and landowner authorization/agreements are required prior to project commencement including informing the local government officials (i.e., the municipal council).
General	
OM16-6/2.07	Any property damages are to be dealt with in accordance with Corporate Policies and Procedures.

ID	Mitigation
Methods	
EC-1.01/2.08	All fences and gates will be left in "as-found" condition.
EC-1.05/2.09	Excess materials (i.e., waste, granular fill, clay) will be removed from work sites and areas located on agricultural lands. Area will be restored to pre-existing conditions.
Rehabilitation	
EC-1.03/2.10	Work sites impacted by work activities may need to be rehabilitated for compaction or compensation paid out to the landowner\leasee.
Non-mitigation	
OM16-5/2.11	Review project plans with all workers to ensure zero impact to other utility infrastructure. Check resources such as click before you dig or the property department.

Photos

Photo 2: Clubroot infection in canola plant. Source: Manitoba Agriculture

Photo 2: A tracked-vehicle arriving on site free of soil and other debris.

Photo 3: A worker cleaning equipment in the winter with compressed air.

Photo 4: A worker disinfecting equipment to prevent the spread of bio-hazards.

Photo 5: Truck tires are scrubbed clean of any soil or debris before driving on to the next site.

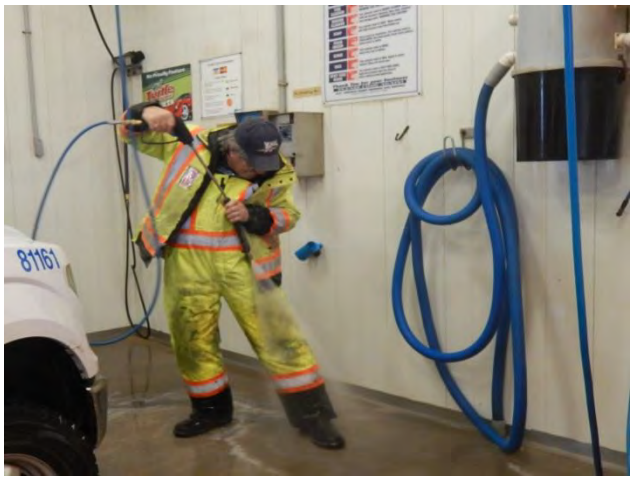

Photo 6: Boots and other clothing containing soil are sprayed clean.

3. Aquatic Invasive Species - Environmental Mitigation Measures

Component Description

Noxious Aquatic Invasive Species (AIS) including zebra mussels, spiny water flea and black algae occur in specific Manitoba water bodies. The Manitoba AIS Regulation (173/2015) must be adhered to when performing work in or adjacent to water that requires the use of watercraft and construction or personal water-related equipment.

Environmental Protection Objective

To prevent the spread of all AIS, from sources both within and outside Manitoba.

Internal ID	*Mitigation*
Regulatory	
1.00	Possession, transportation (intentional or not), deposit and release of AIS in Manitoba, is prohibited.
1.01	**Clean, Drain, Dry and Dispose**, general cleaning requirements apply to all Manitoba waters. Before transporting watercraft, trailer and/or water-related equipment away from a water body (lake, river, stream, wetland etc) remove all AIS, aquatic plants, debris, and aquatic mud; drain all water; and ensure bait is disposed of in the garbage.
1.02	**Pull the Plug.** Watercraft must be transported with all drain plugs pulled out and valves open, ensuring they can dry and water is not inadvertently moved. Ensure all hard to drain compartments and equipment are completely dry or if necessary decontaminated.
1.03	**Know Your Control Zone.** Contractors must be familiar with the six Control Zones which have been established in Manitoba, to contain and prevent the further spread of AIS.
1.04	**Decontaminate** all watercraft, trailers and water-related equipment used in a control zone, using prescribed methods of hot water, freezing or chemical applications, as per the AIS Regulation. Decontamination requirements are in addition to the general Clean, Drain, Dry and Dispose provisions, applicable when leaving all water bodies.
1.05	Apply to Manitoba Conservation and Climate (MCC) for a Transportation Permit to authorize watercraft or water-related equipment encrusted with AIS to be moved away from the source control zone water body, for decontamination at a different location.
1.06	Ensure decontamination methods are selected, prepared and planned before mobilizing to site, adhering to the AIS Regulation.
1.07	If moving between multiple water bodies, start work where AIS are not present or furthest point from known AIS occurrence; sequence work locations to ensure work

Internal ID	*Mitigation*
	occurs moving from low risk areas to high risk water bodies. Ensure appropriate cleaning and/or decontamination is conducted as required, between sites.
1.08	When transporting a watercraft or water-related equipment stop at all operating Watercraft Inspection Station en route, identifiable on the highway by signs or placards. Submit to all inspections and abide by all orders.
1.09	Reporting is the law. If you find an AIS outside its control zone, or one that is not otherwise known to occur in that water body or location, you are required to report it to Manitoba Conservation and Climate (MCC) at www.manitoba.ca/StopAIS or calling Manitoba's Invasive Species hotline at 1-877-867-2470 (toll-free).
1.10	Do not transport the suspected AIS from the water body, unless instructed by Manitoba Conservation and Climate (MCC). Take pictures, record GPS coordinates, note location and number of specimens along with other relevant information.

Photo 3: Mature zebra mussel. Zebra mussels may be as small as a grain of sand and better detected by feel. The distinctive striped pattern may also be absent.

Photo 2: Mass of spiny waterflea. Individuals measure 1.0-1.5 cm in length when fully grown.

Photo 3: Black algae filaments. Filaments may form large matts that either float or submerge on lake bottoms.

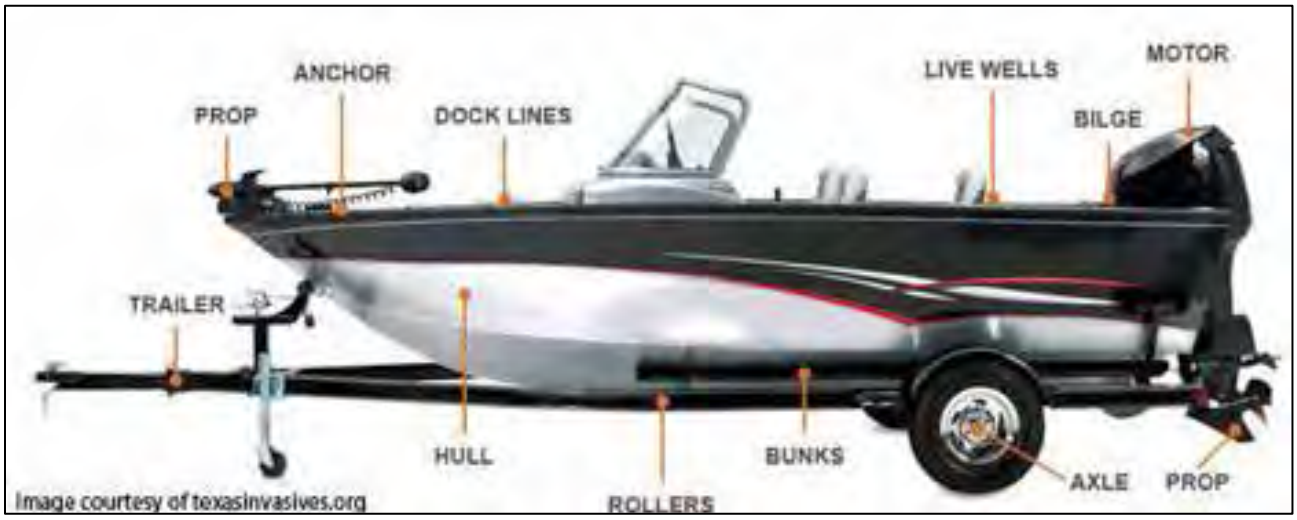

Photo 4: Common places where AIS can be found on a boat and trailer.

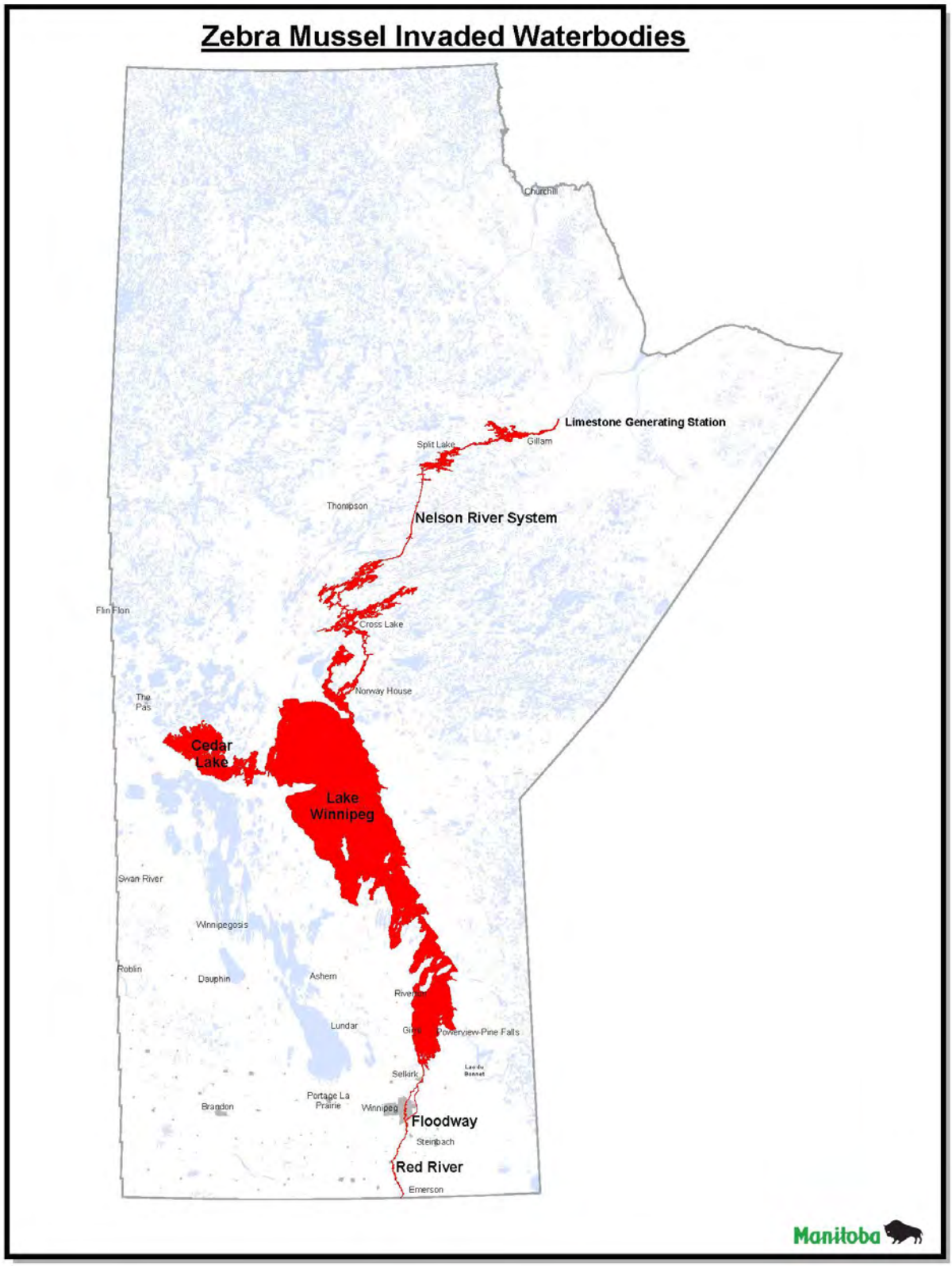

Photo 5: Map indicating Waterbodies Invaded by Zebra Mussels

4. Blasting and Explosives Use - Environmental Mitigation Measures

Activity Description

Blasting is the use of explosives in construction and maintenance work for conductor splicing, foundation work, and rock quarrying.

Environmental Protection Objective

To minimize disturbance on people, wildlife and aquatic environment while conducting blasting activities.

ID	*Mitigation*
Methods	
PA-1.01\3.00	Prior to blasting operations and conductor splicing. Activity schedule will be communicated to affected parties which may include Manitoba Conservation and Climate (MCC), RCMP, municipalities, landowners, and resource users.
PA-1.04\3.01	If blasting and implodes must occur during timing windows established for sensitive bird breeding, nesting and brood rearing months contact Transmission Line Maintenance (TLM) Environmental Specialist for further instructions. Refer to Appendix for reduced risk timing windows for wildlife.
PA-1.06\3.02	Implode compression conductor splicing will be minimized to extent possible on weekends and after normal working hours in residential areas.
PA-1.07\3.03	Quarry blasting operations and conductor splicing will be scheduled to minimize disturbance to wildlife and area residents, and to ensure the safety of workers.
PA-1.08\3.04	The blasting contractor will be in possession of valid licenses, permits and certificates required for blasting in Manitoba.
PA-1.09\3.05	The blasting contractor will submit a blasting plan to Manitoba Hydro (MH) for review and approval prior to commencement of blasting operations.
PA-1.10\3.06	Use of ammonium nitrate and fuel oil will not be permitted in or near waterways. Only Fisheries and Oceans Canada (DFO) approved explosives shall be permitted in or near waterways.
PA-1.11\3.07	Warning signals will be used to warn all project personnel and the public of safety hazards associated with blasting.
PA-1.12\3.08	Written and/or oral notification will be outlined in the communication plan prior to each blasting period.
Regulatory	
PA-1.02\3.09	Blasting will be conducted and monitored in accordance with DFO Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters.
PA-1.05\3.10	Explosives will be stored, transported and handled in accordance with federal requirements through the Explosives Act and Transportation of Dangerous Goods Act and provincial regulations stated in The Workplace Safety and Health Act.

Photos

Photo 4: Conductor splicing using implosion sleeves.

Photo 2: Rock is blasted and quarried for project use.

Photo 3: Crews prepare a site for blasting after all required licences, permits and certificates are obtained.

Photo 4: Blasting occurring outside of timing windows for sensitive bird breeding, nesting and brood rearing.

5. Bogs, Swamps and Wetlands - Environmental Mitigation Measures

Activity Description

Crossing swamps and wetlands is necessary for maintenance activities and involves temporary crossings in winter, ford crossings, installation of bridges and/or culverts, low pressure tracked/tired vehicles, and amphibic vehicles.

Environmental Protection Objective

To plan and execute project avtivites to minimize impacts to wetland ecosystems. Wetlands sometimes referred to as bogs and/or swamps, are a range of sensitive aquatic ecosystems that can be easily impacted by project activitites.

ID	Mitigation
Methods	
OM10-7\4.00	Although beaver dams can be a nuisance, they create valuable wildlife and aquatic habitat for many species. When possible, work with local area trappers and consult local Conservation Officer for Beaver Dam Removal.
EC-9.10\4.01	Prior to seeking authorization from Manitoba Conservation and Climate (MCC) for removal of a Muskrat house, Beaver Dam or Lodge documentation of reasonable attempts to trap resident beavers/muskrat must be provided. Attempts to trap resident Beavers/muskrats must be undertaken by a licensed trapper or person with a valid Wild Animal Kill Permit.
EC-8.05\4.02	Cleared trees and woody debris will not be pushed into (or adjacent) to standing timber, or within the high-water mark of wetlands or waterbodies.
OM10-4\4.03	Keep clearing and construction debris/waste out of wetland and riparian zones.
4.04	DO NOT DEWATER A WETLAND. Contact the Transmission Line Maintenance (TLM) Environmental Specialist regarding de-watering a wetland for regulatory approval.
OM10-6\4.05	Any dewatering of excavations or alterations to drainage should be done so that it avoids entering the natural water system.
Riparian Buffer	
EC-8.02\4.06	Wetland areas will be prescribed riparian buffers in site specific mitigation tables in which understory low-growth vegetation will be maintained where possible. Environmental protection measures for working in and around wetlands will be reviewed with the contractor and employees prior to commencement of any construction activities.
Siting	
OM10-5\4.07	Infrastructure placement should be planned to avoid wetland sites. If avoidance is not an option, use of Cromated-Copper Arsenate (CCA) treated poles or steel/concrete (or approved alternate) structures must be used.
Wildlife	
OM10-3\4.08	Work activities are allowed only within the reduced risk time period for wildlife illustrated (in Appendix). If work within the sensitive time period for wildlife is necessary, further mitigation and approvals would be required.

Examples of wetlands:

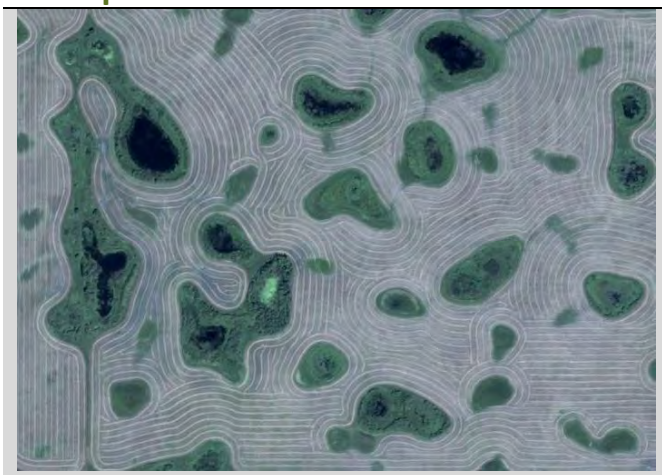

Figure 11: GoogleEarth (2019 Apr 12) Prairie Pothole Wetland

Figure 2: GoogleEarth (2019 Apr 12) Netley Libau Marsh (Wetland)

Figure 3: GoogleEarth (2019 Apr 12) Slough (Wetland)

Figure 4: GoogleEarth (2019 Apr 12) Sting Fen (features, Wetland)

Figure 5: MH stock photo beaver lodge in open wetland.

Figure 6: MH stock photo, grass and open wetland.

6. Borrow Pits and Quarries - Environmental Mitigation Measures

Component Description

Borrow pits are surface areas excavated for granular and fill material for use in construction or maintenance. Quarries generally refer to pits where rock is excavated and crushed for various construction uses. Collectively they are mineral resource extraction and processing areas subject to provincial regulation.

Environmental Protection Objective

Borrow pits and quarries are construction sites that require mitigation to minimize environmental effects. Groundwater protection is a major objective of for this type of work. Erosion control and heritage resources are also important categories for environmental protection during excavation activities.

ID	Mitigation
Decommissioning	
PC-2.01\5.00	Decommissioning of access to abandoned borrow pits and quarries will be managed in accordance with the Access Management Plan.
OM3-7\5.01	Once a borrow pit is no longer required, the pit must be re-contoured to create stable slopes. Stockpiled slash and soil should be spread over the area to promote the re-establishment of vegetation. The area should be restored to as close to the original state as possible.
PC-2.02\5.02	All equipment and structures will be removed from borrow pits prior to abandonment.
Fuel & Hazardous Materials	
PC-2.08\5.03	Fuel storage will not be permitted near stockpiles.
Heritage	
PC-2.27\5.04	As marshalling yards, borrow sources, temporary work spaces, work camps are identified, additional heritage monitoring activities may be required to be conducted prior to approval contact the Transmission Line Maintenance (TLM) Environmental Specialist prior to establishing new borrow pits and quarries.
OM3-1\5.05	Obtain borrow pit approval and work permit from Manitoba Conservation and Climate (MCC) and make sure all work permit conditions are met.
OM3-6\5.06	If heritage resource material such as bones, pottery, etc. is discovered during the working of the borrow pit, a stoppage in work will take place and the Field Supervisor must be notified immediately.
Methods	
PC-2.03\5.07	Borrow pits and quarries will be designed, constructed and operated in compliance with provincial legislation and guidelines.
PC-2.06\5.08	Drainage water from borrow pits and quarries will be diverted through vegetated areas, existing drainage ditch(es) or employ a means of sediment control prior to entering a waterbody.
PC-2.10\5.09	Only water and approved dust suppression products will be used to control dust on access roads where required. Oil or petroleum products will not be used.
PC-2.11\5.10	Organic material, topsoil and subsoil with-in borrow pits and quarries will be stripped

ID	Mitigation
	and stockpiled for use in future site rehabilitation.
PC-2.12\5.11	Previously developed borrow sites and quarries will be used to the extent possible before any new sites are developed.
PC-2.18\5.12	Worked out borrow pits and granular quarries will be left with a slope no steeper than 4:1 (horizontal to vertical) side slopes.
PC-2.24\5.13	The blasting contractor shall check that blast rock does not have acid or alkali generating properties and mitigate for contaminated run-off.
PC-2.26\5.14	Vehicles hauling materials to or from the work site that have the potential for dust emissions should be hauled with the load enclosed by an anchored tarp, plastic or other material.
Siting	
PC-2.04\5.15	Borrow pits and quarries will not be located within 150 m of a provincial trunk highway or provincial road unless an effective vegetated berm is provided to shield the area from view.
OM3-2\5.16	The borrow pit should be located as close to the existing access as possible.
PC-2.05\5.17	Borrow pits and quarries will not be located within established buffer zones and setback distances from identified environmentally sensitive sites without approval from MH Specialist.
OM4\5.18	The borrow pit must be located more than 100 m away from the high water mark of water bodies.
Vegetation Management	
PC-2.15\5.19	Vegetated buffer areas will be left in place when borrow pits are cleared to help prevent soil erosion, to help enhance wildlife habitat in accordance with provincial guidelines.
PC-2.16\5.20	Vegetation control at borrow pits and quarries will be in accordance with the Rehabilitation and Invasive Species Management Plan.
PC-2.17\5.21	Vegetation in active Manitoba Hydro (MH) permitted borrow pits and quarries will be maintained as per the Rehabilitation and Invasive Species Management Plan.
Waste Management	
PC-2.09\5.22	Waste/garbage, debris or refuse will not be discarded into borrow pits and quarries or buried during reclamation activities.

Photos

Photo 1: Gravel from a borrow pit being loaded onto a truck for transportation.

Photo 2: A borrow pit next to a highway with a vegetative berm to shield the area from view.

Photo 3: Ariel view of a borrow pit during winter.

Photo 4: Spreading stockpiled soils over borrow pit slopes for rehabilitation.

7. Built-up and Populated Areas - Environmental Mitigation Measures

Component Description

Residential and industrial zones areas that are built up and populated that may be impacted by operation and maintenance activities. This may include areas such as homes, farms, cabins, cottages, stores, work yards.

Environmental Protection Objective

Built-up and populated areas may require planning and permitting to minimize effects to the surrounding people and infrastructure. Noise and dust pollution are the main concerns to mitigate for.

ID	*Mitigation*
Methods	
EC-2.01\6.00	Work activities and equipment will be managed to avoid damage and disturbance to adjacent properties, structures, and operations.
EC-2.02\6.01	Mud, dust, and vehicle emissions will be managed in a manner that ensures safe and continuous public activities near work sites.
EC-2.03\6.02	Noisy work activities where noise and vibration may cause disturbance and stress in built up areas will be limited by applicable noise bylaws.
EC-2.05\6.03	Vehicles hauling materials to or from the work site that have the potential for dust emissions should be hauled with the load enclosed by an anchored tarp, plastic or other material.
Soil Management	
EC-2.04\6.04	All stockpiles shall be maintained as to minimize dust associated with fine soils prone to wind erosion (i.e., covering with tarp/poly, maintain wetted surface).

8. Burning - Environmental Mitigation Measures

Activity Description

Burning is used to dispose of cleared woody vegetation on new rights-of way ROWS. It involves gathering timber and debris into discrete piles on the ROW and burning to dispose of the material. It is used primarily in remote areas where timber is merchantable and uneconomical to take off site.

Environmental Protection Objective

To conduct burning activity in a safe manor than minimizes environmental impacts and is isolated to the ROW being cleared.

ID	Mitigation
Methods	
PA-2.01\7.00	All occurrences of uncontrolled burning or fire spreading beyond the debris pile will be reported immediately to Manitoba Hydro (MH).
PA-2.09\7.01	Debris piles scheduled for burning will be piled on mineral soils where possible.
PA-2.11\7.02	Slash will be piled in a manner that allows for clean, efficient burning of all material and on mineral soils where applicable.
PA-2.13\7.03	Site personnel will take steps (such as choosing location and weather conditions) to minimize the impact that smoke from slash burning may have on landowners, and specifically landowner residences.
Monitoring	
PA-2.05\7.04	Burning will be monitored to ensure that fires are contained and subsequent fire hazards are not present. Post season all burn piles will be scanned for hot spots using infrared scanning technology.
Regulatory	
PA-2.07\7.05	A burning permit is required between April 1st and November 15. And notification is required for remainder of year. Consult MS website to confirm there are no restrictions.
PA-2.10\7.06	Firefighting equipment required by legislation, guidelines, contract specifications and work permits will be kept on site and maintained in serviceable condition during burning.
Riparian Habitat/ Stream Crossings	
PA-2.06\7.07	Burning will not be carried out within riparian buffer zones or setbacks for stream crossings or waterbodies.
Limitations	
PA-2.02\7.08	Any residue or unburned materials remaining post-burn is not to encumber operations or re-vegetating activities.
PA-2.03\7.09	Burning of slash on permafrost soils should be avoided. If it is unavoidable, the utilization of other methods such as a metal container that can be removed from site.
PA-2.04\7.10	Burning of solid wastes including kitchen wastes and treated wood will not be permitted.

ID	*Mitigation*
PA-2.08\7.11	Debris and wood chip piles located near habitation or highways will only be burned when weather conditions are favorable to ensure the safe dispersal of smoke and in accordance with burning permits where applicable.
PA-2.12\7.12	Burning of any material is not permitted on Manitoba Infrastructure (MI) roadway ROW's.

Photos

Photo 1: Moving timber and slash into piles for burning.

Photo 2: A fire extinguisher is marked and located near a burning pile.

Photo 3: This burning location was selected to avoid impacts on residences, towns and highways.

Photo 4: Merchantable timber neatly piled to be brought to market.

9. CLEARING - ENVIRONMENTAL MITIGATION MEASURES

Activity Description

Clearing generally refers to the cutting and disposal of trees, shrubs and other vegetation on rights-of-way (ROW) or worksite. There are several different methods of clearing and associated activities such as mechanical, low-disturbance and hand clearing.

Environmental Protection Objective

The environmental mitigation measures for clearing are designed to prevent environmental impact on soils, water, and wildlife while creating a sustainable ROW that meets transmission line requirements for safe, reliable operation. Clearing method and timing is key in environmental protection.

ID	*Mitigation*
Access	
PA-3.02\8.00	Access to clearing areas will utilize existing roads and trails to the extent possible.
OMLM7-10\8.01	Use existing roads and trails wherever possible. The Natural Resource Officer must approve a temporary route before it is cleared. Snow should be compacted and leveled rather than pushing it and organic material aside. Avoid pushing debris and felled trees into standing timber.
OMLM7-16\8.02	On Agricultural Lands, use existing access where possible. All fences and gates are to be re-closed upon entering or exiting fence lines.
Methods	
PA-3.03\8.03	All clearing and maintenance equipment is to remain within the bounds of access routes and project footprint identified.
PA-3.05\8.04	Chipped or mulched material may be collected for use in work areas and sediment / erosion control on site.
PA-3.07\8.05	Cleared trees and woody debris will not be pushed into (or adjacent) to standing timber, or within the high-water mark of wetlands or waterbodies
PA-3.12\8.06	Vehicles where possible will be wide-tracked or equipped with high flotation tires to minimize rutting and compaction to surface soils.
PA-3.13\8.07	Vehicles, machinery and heavy equipment will not be permitted in designated machine-free zones except at designated crossings.
PA-3.14\8.08	Danger trees will be flagged/marked for removal using methods that do not damage soils and adjacent vegetation.
PA-3.17\8.09	Machine clearing will remove trees and brush with minimal disturbance to existing organic soil layer using a shear "V" or "K-G" type blades, feller-bunchers, mulcher, chipper and other means approved by the Transmission Line Maintenance (TLM) Environmental Specialist. Straight “bulldozer” blades must not be used.

ID	Mitigation
PA-3.20\8.10	Slash piles will be placed at least 15 m from forest stands.
PA-3.21\8.11	Slash piles will not be placed on the surface of frozen waterbodies and will not be located within established setbacks from waterbodies or within the ordinary high water mark.
PA-3.32\8.12	During mulching or chipping activities, debris must be directed away and not enter watercourses.
OM4-5\8.13	The slash from the right-of-way must be cut, piled, burned or disposed of as specified in the Work Permit. Debris and brush must not be pushed into standing timber.
OMLM7-5\8.14	"Shearing" shall be with K-G blades, or V-Blades, straight bulldozer blades are not acceptable
OMLM7-6\8.15	Avoid leaving brush piles and windrows. Reduce fire hazard and restrictions to wildlife and recreational vehicle travel.
OMLM7-15\8.16	Travel on Tundra, permafrost, and areas of high water content and organic soils is restricted to frozen conditions or mitigated for with low ground pressure vehicles and equipment.
Regulatory	
PA-3.28\8.17	If clearing is needed on a Manitoba Infrastructure (MI) roadway ROW, clearance must be obtained from MI in advance.
PA-3.31\8.18	Storing elm wood firewood is prohibited under the Dutch Elm Disease Act.
OMLM7-2\8.19	Contact the Line Inspector to obtain all necessary Manitoba Conservation work permits, property agreements, right-of-way easements and local stakeholder concerns.
OMLM7-17\8.20	In Urban Areas, all municipal and local by-laws shall be respected. Review work activities with local authorities. Mitigate impacts to infrastructure, trees, parks and landscaped areas.
Riparian Habitat/ Stream Crossings	
PA-3.01\8.21	A Riparian Buffer must be used on all Riparian Areas, within this area shrub and understory vegetation will be maintained along with trees that will not violate Manitoba Hydro vegetation clearance requirements. This Buffer shall be a minimum of 30 m, measured from the Ordinary High Water Mark where no ground disturbance is permitted. This distance will increase in size based on slope of land entering waterway. Within the Riparian Buffer a "Machine Free Zone" applies which also increases with slope, this area can be cleared of trees by reaching in with mechanical harvesting equipment or hand cleared. The remainder of the Riparian Buffer is the "Management Zone" which can be cleared using harvesting equipment. See Figure 1.
OMLM7-13\8.22	Stream crossings must be at designated sites only. Where an ice bridge is required at a crossing, using only snow, ice and de-limbed logs, or by freezing down the waterway. Chain the logs together to facilitate removal. No tree limbs, organic or mineral soil can be used. No disturbance of the stream banks should occur. The ice bridge must be removed or broken up before spring thaw. Check with current Manitoba Stream Crossing Guidelines in Appendix.
OMLM7-14\8.23	Where temporary or permanent bridges, culverts or ford crossings are needed, they must be approved by the Natural Resource Officer and specific Work Permits for their construction must be obtained. Check with current Manitoba Stream Crossing Guidelines in Appendix.
Signage	
OM4-1\8.24	Areas identified for selective clearing (e.g., buffer zones, sensitive sites) must be clearly marked and appropriate mitigation measures must be identified and applied.

ID	Mitigation
PA-3.18\8.25	Buffers and sensitive areas (where applicable) should be clearly marked with stakes and/or flagging tape prior to clearing.
Sensitive Sites	
OMLM7-11\8.26	If sensitive sites or areas of concern are found, contact the Line Inspector and/or the Transmission Line Maintenance (TLM) Environment Specialist. This may include: heritage sites, rare plants, trees containing large stick nests, active dens or burrows.
PA-3.11\8.27	Clearing within environmentally sensitive sites, not designated for organic removal will be carried out in a manner that minimizes disturbance to existing organic soil layer.
OM4-4\8.28	If new sensitive sites or areas of concern are found during clearing, the Field Supervisor must be notified. New sensitive sites might include: heritage resource sites, rare or medicinal plant areas, trees containing large stick nests, active animal dens or burrows and trapper trails.
Soil Management	
PA-3.16\8.29	In locations where grubbing and vegetation stripping is not required, disturbance to roots and adjacent soils will be minimized.
OM5-6\8.30	Retain all shrub understory Disturb the ground surface as little as possible.
Training/Communication	
OMLM7-1\8.31	Review any applicable *Environment Act* licenses or existing Environmental Protection Plans that are applicable to the transmission line being worked on (see Appendix).
Vegetation Management-(Elm Trees)	
PA-3.29\8.32	When elm trees are removed the stump must be debarked to the soil line or stump must be ground or removed to flush or just below the soil line.
PA-3.30\8.33	All elm wood must be immediately disposed of onsite by burning/chipping (<5cm) or transported to a designated elm disposal site.
OMLM7-8\8.34	Trimming elm trees is prohibited between April 15 to July 31; cut stumps below ground level; burry, burn or chip (5cm or less) all elm wood (no firewood).
Waste Management	
OMLM7-9\8.35	The work site must be kept tidy at all times. Waste must be collected for proper disposal. All burning and slash disposal must be carried out as stipulated in the Work Permits.
Wildlife	
PA-3.10\8.36	Clearing is allowed only within the reduced risk time period for wildlife illustrated (in Appendix). If clearing within the sensitive time period for wildlife, further mitigation and approvals would be required.
OMLM7-7\8.37	Avoid disturbing bird nests during the nesting periods (spring to early summer). If large stick nests are encountered, contact the Line Inspector and TLM Environmental Specialist for instructions.
PA-3.23\8.38	Trees containing active nests and areas where active animal dens or burrows are encountered will be left undisturbed until unoccupied.
OMLM7-18\8.39	Refer nuisance wildlife to local Natural Resource Officer.
Non-mitigation	
OMLM7-3\8.40	Tailboard meetings shall review environmental concerns.
OM4-3\8.41	Clearing by mulching and mechanized forestry equipment may also be considered.

Photos

Photo 1: Clearing during frozen ground periods to minimize soil and vegetation disturbance.

Photo 2: Right-of-way clearing on the Bipole III Transmission Project.

Photo 3: A danger tree is carefully removed to prevent impacts to soils and adjacent vegetation.

Photo 4: Hand clearing methods used for an identified Environmentally Sensitive Site.

Photo 5: Merchantable timber neatly piled to be brought to market.

Photo 6: A 30 m riparian buffer established from the ordinary high water mark.

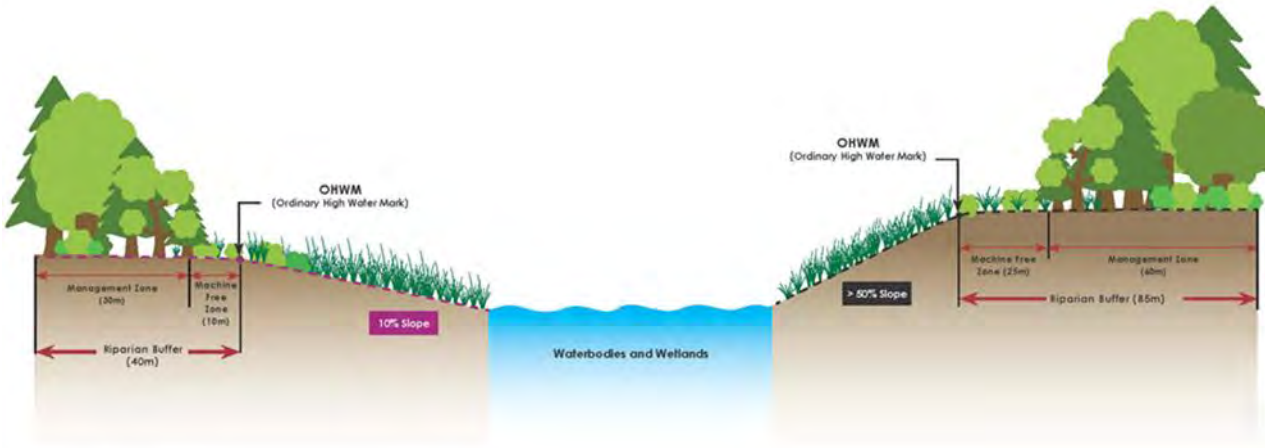

Figure 2: Examples of the Riparian Buffer Zones width changes based on bank slope

10. CONCRETE WASHWATER AND WASTE - ENVIRONMENTAL MITIGATION MEASURES

Application

Water that has been used to clean equipment of concrete is generally caustic with a high pH and high level of suspended solids which is not suitable for direct discharge to surface waterbodies. Wastewater from concrete preparation and equipment cleaning and washing requires containment and treatment.

Environmental Protection Objective

To safely collect, store and treat waste concrete and wash water to appropriate environmental limits prior to discharge to surface water.

ID	*Mitigation*
Water Collection and Treatment	
EI-13.01\9.00	Wash water and solid waste will not be discharged onto the ground at the project site.
EI-13.02\9.01	All concrete solid waste and wash water will be collected and removed from the project site by the concrete supplier or treated on site in an approved settling pond.
EI-13.03\9.02	High density polyethylene geomembrane liners and either earth or physical berms may be used for a temporary concrete washout for uncured or partially cured concrete.
EI-13.04\9.03	All water from chute washing activities will be contained in leak proof containers or in an approved settling pond.
EI-13.05\9.04	All water that has been used for wash out purposes and associated activities will be disposed in an appropriately sized settling pond(s) treated to meet turbidity (total suspended solids [TSS]) and pH requirements prior to discharge. Turbidity will be treated by settlement or filtration; pH will be treated by use of acid, dry ice, carbon dioxide gas or other methods.
EI-13.06\9.05	All water that has been used for wash out purposes and associated activities will be treated to meet the Manitoba Water Quality Standards, Objectives, and Guidelines (Tier 1) for municipal wastewater effluents of 25 mg/L TSS prior to discharge.
EI-13.07\9.06	All water that has been used for wash out purposes and associated activities will be treated to meet the Manitoba Water Quality Standards, Objectives, and Guidelines (Tier 3; MWS 2011) for the protection of aquatic life for pH 6.5-9.0, prior to discharge into a watercourse.
Concrete	
EI-13.08\9.07	Cured concrete can be transported in non-hazardous waste containers and disposed of at a licensed facility.
EI-13.09\9.08	Any uncured and partly cured concrete will be kept isolated from watercourses/ditches.

11. CONSTRUCTION CAMPS - ENVIRONMENTAL MITIGATION MEASURES

Component Description

Workcamps are places with services and infrastructure to accommodate workers, crews, and supervisory personnel for overnight stays in remote areas. Workcamps include all amenities for temporary shelter, food service, and water and waste facilities. Workcamps may also contain equipment and material storage associated with a complex.

Environmental Protection Objective

To minimize the impact of temporary human habitation on the environment in remote areas by proper siting, servicing, and operation of workcamps.

ID	*Mitigation*
Fuel & Hazardous Materials	
PC-3.12\10.00	Propane tanks for camp use will be stored in dedicated, vehicle protected and secure areas at a safe distance from kitchen and sleeping quarters in accordance with provincial legislation and national codes.
PC-3.15\10.01	Spill control and clean-up equipment and materials will be provided for construction camps in accordance with an Emergency Preparedness and Response Plan.
OM11-5\10.02	Specific camp activities such as water supply, sewage disposal, handling and storage of fuel, lubricants and other potentially hazardous materials are regulated by law. If you have any questions, concerns or suggestions, contact the Field Supervisor.
OMLM12-8\10.03	Storage of petroleum products must be located a minimum of 100 meters from any lake, river or stream. The dedicated storage area shall be bermed, or the fuel must be in approved bulk storage containers (Enviro Tanks). Ensure filling pumps and hoses and nozzles are maintained leak free. All persons involved in the handling and storage of fuels and hazardous materials shall have Workplace Hazardous Materials Information System (WHMIS) training.
OMLM12-9\10.04	Ensure there are appropriate spill kits available – including equipment service and fuel storage areas. Project sites must have an emergency spill response plan and designated on-site Emergency Response Coordinators. All spills regardless of size must be reported to your Area Spill Response Coordinator.
OMLM13-7\10.05	Manitoba Hydro's "Code of Practice" for Storage and Handling of Petroleum Products and Allied Products must be followed. Storage of petroleum products must be located a minimum of 100 metres from any lake, river or stream. The dedicated storage area shall be bermed, or the fuel must be in approved bulk storage containers (Enviro Tanks). Ensure filling pumps and hoses and nozzles are maintained leak free. All persons involved in the handling and storage of fuels and hazardous materials shall have WHMIS training.
Heritage	
PC-3.21\10.06	As marshaling yards, borrow sources, temporary work spaces, work camps are identified, additional heritage monitoring activities may be required to be conducted prior to approval.
OM11-	The camp should be located 200m away from any known heritage resource sites or

ID	*Mitigation*
1\10.07	other sensitive features so as not to disturb sensitive sites. Try to choose a natural or existing opening and obtain prior approval from Manitoba Conservation.
Food Health & Safety	
PC-3.01\10.08	A food handling permit will be obtained from the local public health inspector prior to the operation of kitchens.
PC-3.19\10.09	Food, greases and wastes will be stored in sealed, air-tight containers and managed to prevent attraction of wildlife.

Photos

Photo 1: Keewatinohk workcamp in northern Manitoba.

Photo 2: Construction of the Keeyask workcamp.

Photo 3: A permit may be required for the operation of a kitchen and food services.

Photo 4: Hazardous material, septic and solid waste a safe distance from camp.

12. CONSTRUCTION MATTING - ENVIRONMENTAL MITIGATION MEASURES

Figure 2: MH TLM stock photo

Component Description

Matting is used on projects to stabilize the work area and to prevent compaction and rutting.

Environmental Protection Objective

To minimize the impact of equipment and activities on sensitive soil and wetter areas. To minimize admixing, rutting, and compaction of agricultural areas and to use in areas of high risk biosecurity.

ID	*Mitigation*
Methods	
PA-11.01\11.00	Verify that mats are clean and free of soil, debris and plant material when they arrive for use on site.
PA-11.02\11.01	Mats cannot be constructed of chemically treated wood products.
PA-11.03\11.02	In wetlands three mats is the maximum number that can be stacked and used in one location.
PA-11.06\11.03	Matting should not impede or redirect natural drainage patterns or water courses.
Preparation/Prevention	
PA-11.04\11.04	Follow the Transmission Bio-security Standard Operating Procedure (SOP) for cleaning washing and disinfecting matting prior to moving it to a new project location.
Removal	
PA-11.07\11.05	Mat removal will take place from the existing mat road, working in a backwards fashion (from work site to initial access point).
PA-11.08\11.06	When mat removal is complete all remaining matting debris will be cleaned, up and transported to an approved waste disposal facility.
PA-11.09\11.07	When matting is removed from Agricultural areas any compaction of soils may have to be rehabilitated or landowner may be compensated.

13. CONTAMINATED SOIL - ENVIRONMENTAL MITIGATION MEASURES

Application

Soil can become contaminated from many construction and maintenance activities including spills, leaks and improper waste storage or containment. Contaminated soil includes all sites where fuels, oils, solvents, or hazardous materials have touched or seeped into surface gravel, organic material, and/or mineral soil.

Environmental Protection Objective

To properly handle, transport, dispose and remediate contaminated surface materials and leave no residual contamination on work sites.

ID	*Mitigation*
Methods	
EI-7.13\12.00	When a spill or release is identified, it shall be flagged off to prevent disruption of that area until remediation occurs.
Monitoring	
EI-7.12\12.01	A Manitoba Hydro (MH) Environmental Representative may inspect contaminated site assessment and remediation work regularly to confirm that environmental protection measures are implemented and effective.
Plans	
EI-7.02\12.02	A remediation plan may be required for sites contaminated by project activities including remediating soils according to provincial standards.
Prevention	
EI-7.05\12.03	Site personnel will take all reasonable steps to prevent soil, groundwater and surface water contamination.
Regulatory	
EI-7.01\12.04	A closure report may be required for completed soil remediation projects in accordance with provincial and MH guidelines.
EI-7.03\12.05	All spills and releases reported will be responded to in accordance with provincial legislation and guidelines and MH guidelines.
EI-7.10\12.06	Marshaling yards, camps or petroleum storage, dispensing areas and hazardous materials storage areas may need to be assessed for potential contamination using Canadian Standards Association Environmental Site Assessment (CSA Z768- 01) procedures.
EI-7.11\12.07	A CSA Phase I Environmental Site Assessment (CSA Z768-01) at abandoned construction camps, marshaling yards, petroleum product storage, dispensing areas and hazardous materials storage areas may be required if contamination is suspected. If required Phase II Environmental Site Assessment (CSA Z769-00) will be conducted.

Photos

Photo 5: Clean-up of petroleum storage site in Keewatinohk area.

Photo 2: Contaminated soil being placed in a hazardous materials bag along transmission rights-of –way (ROW).

Photo 3: A spill response kit being used to clean a fluid leak.

Photo 4: A fluid leak from a piece of machinery is contained.

Photo 5: Contaminated soil is removed by shovel.

Photo 6: Spill pads to soak up an oil leak.

14. Demobilization and Clean-up - Environmental Mitigation Measures

Application

At the completion of work or activity there is often residual material and equipment that requires removal, and site cleanup and/or restoration is required. Marshalling yards, rights-of-way (ROWs), workcamps, borrow pits and other worksites are some of the sites that clean up measures apply to. Demobilization from ROWs or station sites also require clean up measures to ensure there is no residual environmental impact from activities.

Environmental Protection Objective

To demobilize, clean up and restore work-sites to natural or pre-work conditions in a timely manner post construction or use.

ID	Mitigation
Decommissioning	
PA-4.01\13.00	Temporary buildings, structures, trailers, equipment, utilities, waste materials, etc. will be removed from work areas and sites when work is completed. Tools, surplus and waste materials, rubbish and debris must also be removed from the work site once work has been completed.
OMLM15-5\13.01	Temporary camps and facilities must be removed from project
OMLM15-6\13.02	A final inspection might be required after decommissioning, to be conducted with Manitoba Conservation and Climate (MCC)
Fuel & Hazardous Materials	
PA-4.05\13.03	Petroleum product and other temporary hazardous material storage areas will be cleaned up, assessed and, if necessary, remediated in accordance with provincial guidelines and Manitoba Hydro (MH) guidelines.
Rehabilitation	
PA-4.03\13.04	After demobilizing and clean-up, work areas and sites will be assessed for rehabilitation. Prescriptions will be developed for approval to the Transmission Line Maintenance (TLM) Environmental Specialist.
Riparian Habitat/ Stream Crossings	
PA-4.06\13.05	Water crossings, ditches and drains will be left free of obstructions so as not to impede water flow.
Waste Management	
OMLM15-1\13.06	The work site must be kept tidy at all times. Work and personal waste must be collected for proper disposal. Garbage must be removed regularly to an approved site so that wildlife is not attracted to work sites.
OMLM15-3\13.07	Burning and slash disposal must be carried out as stipulated in the Work Permits.

Photos

Photo 1: The excavation of a petroleum fuel storage area at Keewatinohk.

Photo 2: After the excavation of a petroleum fuel storage area at Keewatinohk.

Photo 3: Stockpiled soils are placed over the edges of a borrow pit.

Photo 4: All hazardous material storage areas are to be inspected for any spills of leaks and cleaned up.

15. DIRECTIONAL DRILLING - ENVIRONMENTAL MITIGATION MEASURES

Application

Directional drilling to bore holes and install pipelines, cables and/or conduits.

Environmental Protection Objective

To conduct drilling activities in a way that minimizes environmental impact and prevents drilling fluids from entering waterbodies.

ID	*Mitigation*
Methods	
PA-12.02\14.00	When drilling takes place under a watercourse, the drill entry and exit points will be outside of the riparian buffer of that watercourse.
PA-12.05\14.01	Keep all material and equipment needed to contain and clean up drilling mud releases on site and readily accessible in the event of a frac-out.
Rehabilitation	
PA-12.08\14.02	Re-vegetate any disturbed native vegetation by seeding with native grass species and cover such areas with mulch to prevent erosion and to assist in seeds germination. If there is insufficient time remaining in the growing season, the site should be stabilized (e.g., cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and vegetated the following spring.
Preparation/Prevention	
PA-12.01\14.03	A frac-out contingency plan will be prepared that includes monitoring control and potentially impacted waters, measures to stop work, contain the drilling mud and prevent its further migration into the watercourse. Contact the Transmission Line Maintenance (TLM) Environmental Specialist for further information.
PA-12.03\14.04	A dugout/settling basin at the drilling exit site will be constructed to contain drilling mud to prevent sediment and other deleterious substances from entering the watercourse. If this cannot be achieved, silt fences or other effective sediment and erosion control measures will be installed to prevent drilling mud from entering the watercourse.
PA-12.06\14.05	In the event of a frac-out, implement the frac-out contingency plan and notify all applicable authorities. Prioritize clean-up activities relative to the risk of potential harm and dispose of the drilling mud in a manner that prevents re-entry into the watercourse.
Disposal	
PA-12.04\14.06	Excess drilling mud, cuttings will be disposed of at an adequately sized disposal site located away from the water to prevent it from entering the watercourse.
PA-12.07\14.07	Stabilize any spoil materials to prevent them from entering the watercourse.
Water Management	
PA-12.10\14.08	When obtaining water from fish bearing waterways all pump intakes will be screened according to the Freshwater Intake End-of-Pipe Fish Screen Guideline (DFO 1995). (Found in Appendix)

ID	*Mitigation*
PA-12.11\14.09	Water, to mix the drilling mud, shall be brought in from off site and stored in tanks at the entry locations or be withdrawn from local a watercourse.
Soil/Erosion Management	
PA-12.09\14.10	Maintain effective sediment and erosion control measures in accordance with the Erosion and Sediment Control Plan until revegetation of disturbed areas is achieved.

16. DRAINING - ENVIRONMENTAL MITIGATION MEASURES

Activity Description

Draining is an activity to remove excessive or accumulated water from an area to facilitate construction or for on-going site protection.

Environmental Protection Objective

To create site drainage or dewatering that does not alter water-quality, aquatic habitat, or sediment regime of nearby natural or manmade waterbodies.

ID	Mitigation
Methods	
PA-5.01\15.00	Work activities shall not block natural drainage patterns
PA-5.03\15.01	Dewatering discharges from work activities will be directed into vegetated areas, existing drainage ditch(es) or a means of sediment control at such a rate that will have adequate flow dissipation at the outlet to ensure it does not cause erosion at the discharge point or at any point downstream.
PA-5.04\15.02	Drainage water from work areas will be diverted through vegetated areas, existing drainage ditch(es) or a means of sediment control prior to entering a water body.
PA-5.06\15.03	Existing, natural drainage patterns and flows will be identified and maintained to the extent possible.
PA-5.14\15.04	Flows to Manitoba Infrastructure (MI) roadway drains and ditches will not be altered by work activities (increased flow, de-watering and other flow effects) without department approval in advance.
Regulatory	
PA-5.02\15.05	Culverts will be installed and maintained in accordance with Manitoba Stream Crossing Guidelines (1996) and relevant provincial and municipal acts, regulations and bylaws.
Soil/Erosion Management	
PA-5.05\15.06	Erosion and sediment control will be provided by the contractor where necessary
PA-5.15\15.07	All drainage, natural or manmade that may deposit construction generated sediments on the MI roadway right-of-way will be managed through the Erosion and Sediment Controls.

17. DRILLING - ENVIRONMENTAL MITIGATION MEASURES

Activity Description

Drilling involves the use of specialized machinery to drill bore holes for soil testing, foundations, pipeline installation or water-well development. Drilling includes directional drilling which also involves specialized equipment for subsurface horizontal drilling.

Environmental Protection Objective

To conduct drilling activities that prevents water and soil contamination and does not mix surface and groundwater.

ID	Mitigation
Fuel & Hazardous Materials	
PA-6.04\16.00	Drilling fluids and waste materials will be contained and not allowed to drain into waterbodies, riparian areas or wetlands.
Heritage	
OM7-8\16.01	If an archaeological or heritage artifact is discovered, refer to the Cultural and Heritage Resources Handbook.
Methods	
PA-6.01\16.02	Abandoned drill holes will be sealed with bentonite or other effective sealers to prevent interconnection and cross-contamination of ground and surface waters.
OM7-6\16.03	Make sure all necessary equipment arrives on site in a clean and leak free condition. Service equipment 100m back of the high water mark to avoid deleterious substances entering the water course and have a sufficient emergency spill kit readily available.
PA-6.07\16.04	Drilling will not be permitted within established buffer zones and setback distances from waterbodies unless approved in advance by a Transmission Line Maintenance (TLM) Environmental Specialist.
PA-6.08\16.05	Spill control and clean-up equipment will be provided at all drilling locations.
PA-6.09\16.06	The drilling contractor will ensure that equipment and materials are available on site for sealing drill holes.
PA-6.10\16.07	The drilling contractor will inspect drilling equipment and machinery for fuel and oil leaks prior to arrival at the project site, and will inspect for fuel and oil leaks and spills regularly.
PA-6.11\16.08	Where there is potential for mixing of surface and groundwater, precautions will be taken to prevent the interconnection of these waters.
PA-6.12\16.09	The contractor must submit a plan to the TLM Environmental Specialist describing how surface water, drill flush, and excess waste grout will be controlled and disposed of, including emergency response plans for working in groundwater environmentally sensitive sites for sealing/grouting artesian wells and pumping (if required) excess groundwater.
OM7-4\16.10	In situations where there is high risk of a frac-out occurrence, a contingency plan must be in place which should include a qualified professional available to be brought to site to monitor and advise the High Pressure Directional Drilling (HPDD) contractor. Contact

ID	Mitigation
	the TLM Environmental Specialist for assistance in this regard.
Regulatory	
OM7-2\16.11	Fisheries and Oceans Canada (DFO) self-assessment must be completed to determine whether or not the project needs to be submitted for DFO review. If project is on a line that is regulated by Canadian Energy Regulator (CER), consult DFO guidance document on regulatory partnerships. Or contact the TLM Environmental Specialist for further instruction.
Sensitive Sites	
PA-6.05\16.12	Drilling in environmentally sensitive sites, features and areas will not be permitted unless approved in advance by TLM Environmental Specialist and mitigation measures are implemented.
Non-mitigation	
OM7-3\16.13	Review the professionally prepared geo-technical assessment, emergency frac-out response and contingency crossing plans with all project participants.

Photos

Photo 1: Low disturbance methods for drilling.

Photo 2: Drilling equipment being inspected regularly for fuel and oil leaks and spills.

Photo 3: Directional drilling operations.

Photo 4: Drilling activities in northern Manitoba are carried out under frozen ground.

Photo 5: A drill hole being sealed with bentonite to prevent water contamination